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## APPENDIX F-1

### CalEEMod Construction and Operational Emissions Calculations

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# **“Remarks” for the Antonio Azevedo Dairy #4 Expansion Project CalEEMod (v.2016.3.2) Model Run**

“Remarks” are typically used in California Emissions Estimator Model (CalEEMod) to explain non-default inputs. For the current modeling, this document replaces the “remarks” section of the referenced CalEEMod model to provide more space to both identify non-default inputs and to explain how CalEEMod is used to calculate emissions for the current project. When defaults were retained and no further explanation was necessary, no “remarks” are recorded below. The proposed project construction emissions and increment of increase of operational emissions were estimated as set forth below.

## **Antonio Azevedo Dairy #4 Expansion Model Run**

### **Land Use**

- The General Light Industrial land use subtype was used to represent the dairy project, an industrial agriculture project. With implementation of the proposed dairy expansion, new structures would consist of approximately 143,950 square feet of construction.

### **Construction Phase**

- The proposed dairy expansion would be constructed in one phase within five (5) years after issuance of the CUP, and construction of the proposed improvements would be completed within 10 years after issuance of the CUP. To calculate the worst-case scenario, all project components were assumed to be constructed in one phase, with construction beginning in 2026.
- Off-road Equipment - While there would likely be a small construction crew, most default equipment was used since construction details are unknown at this time. Anticipated construction equipment would include scrapers, water trucks, construction crew pickups, concrete trucks, material delivery trucks, and lifts.
- Dust from Material Movement – the applicant estimates 101,000 cubic yards of excavation, with 51,000 cubic yards of dirt exported.

### **Vehicle Trips**

- Since the residential dwellings would not change, these trips were not included in the model as an increment of increase. Animal Confinement Facilities operate 7 days a week. The proposed expanded operations would generate an increase of approximately 20.9 average daily trips (ADTs) (or 0.15 trips per 1,000 square feet).

### **Operational Off-Road Equipment**

- The increase in the number of hours for feed loading, bedding delivery, manure scraping, manure loading, and feed delivery was used based on estimates from the project applicant.

### **Area Sources, Energy, Water and Wastewater**

- These rates are not applicable to the Antonio Azevedo Dairy #4 Dairy, and were not included. Electricity use provided separately by project applicant.

### **Solid Waste**

- Estimated generation rates provided by the project.

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## Azevedo Dairy #4 Expansion - Merced County, Annual

## Azevedo Dairy #4 Expansion

### Merced County, Annual

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	143.95	1000sqft	3.30	143,950.00	0

### 1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	49
Climate Zone	3			Operational Year	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

### 1.3 User Entered Comments & Non-Default Data

## Azevedo Dairy #4 Expansion - Merced County, Annual

Project Characteristics -

Land Use -

Construction Phase -

Grading - Provided by the project applicant

Vehicle Trips - Revised to reflect project-specific ADT

Area Coating - Not applicable

Landscape Equipment - Not applicable

Energy Use - Not applicable

Water And Wastewater - Not applicable

Solid Waste - Conservative assumption based on applicant provided estimate of total solid waste

Operational Off-Road Equipment - Increase in hours per day for feed loading, bedding delivery, manure scraping, manure loading, and feed delivery provided by project applicant

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	MaterialExported	0.00	51,000.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	183.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	140.00

## Azevedo Dairy #4 Expansion - Merced County, Annual

tblOperationalOffRoadEquipment	OperHorsePower	97.00	140.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	173.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	455.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	0.20
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	0.20
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	178.50	150.80
tblTripsAndVMT	HaulingTripNumber	6,375.00	0.00
tblVehicleTrips	ST_TR	1.32	0.15
tblVehicleTrips	SU_TR	0.68	0.15
tblVehicleTrips	WD_TR	6.97	0.15
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	33,288,437.50	0.00

## Azevedo Dairy #4 Expansion - Merced County, Annual

tblWater	:	SepticTankPercent	:	10.33	:	100.00
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## 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					
2026	0.1997	1.7582	2.1550	4.6200e-003	0.1759	0.0656	0.2414	0.0661	0.0616	0.1277	0.0000	407.2538	407.2538	0.0742	0.0000	409.1084
2027	0.0113	0.0971	0.1504	2.7000e-004	4.0100e-003	4.2500e-003	8.2600e-003	1.0700e-003	3.9500e-003	5.0200e-003	0.0000	23.1260	23.1260	5.8700e-003	0.0000	23.2727
Maximum	0.1997	1.7582	2.1550	4.6200e-003	0.1759	0.0656	0.2414	0.0661	0.0616	0.1277	0.0000	407.2538	407.2538	0.0742	0.0000	409.1084

#### 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					
2026	0.1997	1.7582	2.1550	4.6200e-003	0.1759	0.0656	0.2414	0.0661	0.0616	0.1277	0.0000	407.2534	407.2534	0.0742	0.0000	409.1081
2027	0.0113	0.0971	0.1504	2.7000e-004	4.0100e-003	4.2500e-003	8.2600e-003	1.0700e-003	3.9500e-003	5.0200e-003	0.0000	23.1259	23.1259	5.8700e-003	0.0000	23.2726
Maximum	0.1997	1.7582	2.1550	4.6200e-003	0.1759	0.0656	0.2414	0.0661	0.0616	0.1277	0.0000	407.2534	407.2534	0.0742	0.0000	409.1081

## Azevedo Dairy #4 Expansion - Merced County, Annual

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-5-2026	4-4-2026	0.4016	0.4016
2	4-5-2026	7-4-2026	0.5237	0.5237
3	7-5-2026	10-4-2026	0.5295	0.5295
4	10-5-2026	1-4-2027	0.5303	0.5303
5	1-5-2027	4-4-2027	0.0903	0.0903
		Highest	0.5303	0.5303



## Azevedo Dairy #4 Expansion - Merced County, Annual

**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	0.5623	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003
Energy	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
Mobile	6.9100e-003	0.0834	0.0760	5.0000e-004	0.0319	2.8000e-004	0.0322	8.5800e-003	2.6000e-004	8.8500e-003	0.0000	46.7377	46.7377	3.0500e-003	0.0000	46.8141
Offroad	0.0189	0.1401	0.2078	6.1000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	53.4082	53.4082	0.0173	0.0000	53.8400
Waste						0.0000	0.0000		0.0000	0.0000	30.6110	0.0000	30.6110	1.8091	0.0000	75.8376
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.5881</b>	<b>0.2234</b>	<b>0.2851</b>	<b>1.1100e-003</b>	<b>0.0319</b>	<b>6.0000e-003</b>	<b>0.0379</b>	<b>8.5800e-003</b>	<b>5.5200e-003</b>	<b>0.0141</b>	<b>30.6110</b>	<b>100.1485</b>	<b>130.7595</b>	<b>1.8294</b>	<b>0.0000</b>	<b>176.4944</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**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	0.5623	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003
Energy	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
Mobile	6.9100e-003	0.0834	0.0760	5.0000e-004	0.0319	2.8000e-004	0.0322	8.5800e-003	2.6000e-004	8.8500e-003	0.0000	46.7377	46.7377	3.0500e-003	0.0000	46.8141
Offroad	0.0189	0.1401	0.2078	6.1000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	53.4082	53.4082	0.0173	0.0000	53.8400
Waste						0.0000	0.0000		0.0000	0.0000	30.6110	0.0000	30.6110	1.8091	0.0000	75.8376
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.5881</b>	<b>0.2234</b>	<b>0.2851</b>	<b>1.1100e-003</b>	<b>0.0319</b>	<b>6.0000e-003</b>	<b>0.0379</b>	<b>8.5800e-003</b>	<b>5.5200e-003</b>	<b>0.0141</b>	<b>30.6110</b>	<b>100.1485</b>	<b>130.7595</b>	<b>1.8294</b>	<b>0.0000</b>	<b>176.4944</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

## Azevedo Dairy #4 Expansion - Merced County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/31/2026	2/6/2026	5	5	
2	Grading	Grading	2/7/2026	2/18/2026	5	8	
3	Building Construction	Building Construction	2/19/2026	1/6/2027	5	230	
4	Paving	Paving	1/7/2027	2/1/2027	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

## Azevedo Dairy #4 Expansion - Merced County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	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	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

**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
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	60.00	24.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.2 Site Preparation - 2026****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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1800e-003	0.0631	0.0448	1.0000e-004		2.7200e-003	2.7200e-003		2.5000e-003	2.5000e-003	0.0000	8.3668	8.3668	2.7100e-003	0.0000	8.4344
<b>Total</b>	<b>6.1800e-003</b>	<b>0.0631</b>	<b>0.0448</b>	<b>1.0000e-004</b>	<b>0.0452</b>	<b>2.7200e-003</b>	<b>0.0479</b>	<b>0.0248</b>	<b>2.5000e-003</b>	<b>0.0273</b>	<b>0.0000</b>	<b>8.3668</b>	<b>8.3668</b>	<b>2.7100e-003</b>	<b>0.0000</b>	<b>8.4344</b>

**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	1.8000e-004	1.1000e-004	1.3000e-003	0.0000	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4068	0.4068	1.0000e-005	0.0000	0.4070
<b>Total</b>	<b>1.8000e-004</b>	<b>1.1000e-004</b>	<b>1.3000e-003</b>	<b>0.0000</b>	<b>5.6000e-004</b>	<b>0.0000</b>	<b>5.6000e-004</b>	<b>1.5000e-004</b>	<b>0.0000</b>	<b>1.5000e-004</b>	<b>0.0000</b>	<b>0.4068</b>	<b>0.4068</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.4070</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.2 Site Preparation - 2026****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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1800e-003	0.0631	0.0448	1.0000e-004		2.7200e-003	2.7200e-003		2.5000e-003	2.5000e-003	0.0000	8.3667	8.3667	2.7100e-003	0.0000	8.4344
<b>Total</b>	<b>6.1800e-003</b>	<b>0.0631</b>	<b>0.0448</b>	<b>1.0000e-004</b>	<b>0.0452</b>	<b>2.7200e-003</b>	<b>0.0479</b>	<b>0.0248</b>	<b>2.5000e-003</b>	<b>0.0273</b>	<b>0.0000</b>	<b>8.3667</b>	<b>8.3667</b>	<b>2.7100e-003</b>	<b>0.0000</b>	<b>8.4344</b>

**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	1.8000e-004	1.1000e-004	1.3000e-003	0.0000	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4068	0.4068	1.0000e-005	0.0000	0.4070
<b>Total</b>	<b>1.8000e-004</b>	<b>1.1000e-004</b>	<b>1.3000e-003</b>	<b>0.0000</b>	<b>5.6000e-004</b>	<b>0.0000</b>	<b>5.6000e-004</b>	<b>1.5000e-004</b>	<b>0.0000</b>	<b>1.5000e-004</b>	<b>0.0000</b>	<b>0.4068</b>	<b>0.4068</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.4070</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.3 Grading - 2026****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					0.0291	0.0000	0.0291	0.0139	0.0000	0.0139	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0900e-003	0.0613	0.0582	1.2000e-004		2.4900e-003	2.4900e-003		2.2900e-003	2.2900e-003	0.0000	10.4279	10.4279	3.3700e-003	0.0000	10.5122
<b>Total</b>	<b>6.0900e-003</b>	<b>0.0613</b>	<b>0.0582</b>	<b>1.2000e-004</b>	<b>0.0291</b>	<b>2.4900e-003</b>	<b>0.0316</b>	<b>0.0139</b>	<b>2.2900e-003</b>	<b>0.0162</b>	<b>0.0000</b>	<b>10.4279</b>	<b>10.4279</b>	<b>3.3700e-003</b>	<b>0.0000</b>	<b>10.5122</b>

**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	2.4000e-004	1.5000e-004	1.7300e-003	1.0000e-005	7.4000e-004	0.0000	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5423	0.5423	1.0000e-005	0.0000	0.5426
<b>Total</b>	<b>2.4000e-004</b>	<b>1.5000e-004</b>	<b>1.7300e-003</b>	<b>1.0000e-005</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>7.5000e-004</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>0.5423</b>	<b>0.5423</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.5426</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.3 Grading - 2026****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					0.0291	0.0000	0.0291	0.0139	0.0000	0.0139	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0900e-003	0.0613	0.0582	1.2000e-004		2.4900e-003	2.4900e-003		2.2900e-003	2.2900e-003	0.0000	10.4279	10.4279	3.3700e-003	0.0000	10.5122
<b>Total</b>	<b>6.0900e-003</b>	<b>0.0613</b>	<b>0.0582</b>	<b>1.2000e-004</b>	<b>0.0291</b>	<b>2.4900e-003</b>	<b>0.0316</b>	<b>0.0139</b>	<b>2.2900e-003</b>	<b>0.0162</b>	<b>0.0000</b>	<b>10.4279</b>	<b>10.4279</b>	<b>3.3700e-003</b>	<b>0.0000</b>	<b>10.5122</b>

**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	2.4000e-004	1.5000e-004	1.7300e-003	1.0000e-005	7.4000e-004	0.0000	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5423	0.5423	1.0000e-005	0.0000	0.5426
<b>Total</b>	<b>2.4000e-004</b>	<b>1.5000e-004</b>	<b>1.7300e-003</b>	<b>1.0000e-005</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>7.5000e-004</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>0.5423</b>	<b>0.5423</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.5426</b>



## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.4 Building Construction - 2026****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	0.1545	1.4091	1.8176	3.0500e-003		0.0596	0.0596		0.0561	0.0561	0.0000	262.0690	262.0690	0.0616	0.0000	263.6091
<b>Total</b>	<b>0.1545</b>	<b>1.4091</b>	<b>1.8176</b>	<b>3.0500e-003</b>		<b>0.0596</b>	<b>0.0596</b>		<b>0.0561</b>	<b>0.0561</b>	<b>0.0000</b>	<b>262.0690</b>	<b>262.0690</b>	<b>0.0616</b>	<b>0.0000</b>	<b>263.6091</b>

**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	5.1500e-003	0.2076	0.0362	6.8000e-004	0.0162	1.9000e-004	0.0164	4.6900e-003	1.8000e-004	4.8800e-003	0.0000	64.1566	64.1566	5.2000e-003	0.0000	64.2865
Worker	0.0274	0.0169	0.1953	6.8000e-004	0.0841	5.4000e-004	0.0846	0.0224	5.0000e-004	0.0228	0.0000	61.2844	61.2844	1.2900e-003	0.0000	61.3166
<b>Total</b>	<b>0.0325</b>	<b>0.2245</b>	<b>0.2314</b>	<b>1.3600e-003</b>	<b>0.1003</b>	<b>7.3000e-004</b>	<b>0.1010</b>	<b>0.0270</b>	<b>6.8000e-004</b>	<b>0.0277</b>	<b>0.0000</b>	<b>125.4410</b>	<b>125.4410</b>	<b>6.4900e-003</b>	<b>0.0000</b>	<b>125.6031</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.4 Building Construction - 2026****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	0.1545	1.4091	1.8176	3.0500e-003		0.0596	0.0596		0.0561	0.0561	0.0000	262.0687	262.0687	0.0616	0.0000	263.6088
<b>Total</b>	<b>0.1545</b>	<b>1.4091</b>	<b>1.8176</b>	<b>3.0500e-003</b>		<b>0.0596</b>	<b>0.0596</b>		<b>0.0561</b>	<b>0.0561</b>	<b>0.0000</b>	<b>262.0687</b>	<b>262.0687</b>	<b>0.0616</b>	<b>0.0000</b>	<b>263.6088</b>

**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	5.1500e-003	0.2076	0.0362	6.8000e-004	0.0162	1.9000e-004	0.0164	4.6900e-003	1.8000e-004	4.8800e-003	0.0000	64.1566	64.1566	5.2000e-003	0.0000	64.2865
Worker	0.0274	0.0169	0.1953	6.8000e-004	0.0841	5.4000e-004	0.0846	0.0224	5.0000e-004	0.0228	0.0000	61.2844	61.2844	1.2900e-003	0.0000	61.3166
<b>Total</b>	<b>0.0325</b>	<b>0.2245</b>	<b>0.2314</b>	<b>1.3600e-003</b>	<b>0.1003</b>	<b>7.3000e-004</b>	<b>0.1010</b>	<b>0.0270</b>	<b>6.8000e-004</b>	<b>0.0277</b>	<b>0.0000</b>	<b>125.4410</b>	<b>125.4410</b>	<b>6.4900e-003</b>	<b>0.0000</b>	<b>125.6031</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.4 Building Construction - 2027****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	2.7300e-003	0.0249	0.0322	5.0000e-005		1.0600e-003	1.0600e-003		9.9000e-004	9.9000e-004	0.0000	4.6384	4.6384	1.0900e-003	0.0000	4.6657
<b>Total</b>	<b>2.7300e-003</b>	<b>0.0249</b>	<b>0.0322</b>	<b>5.0000e-005</b>		<b>1.0600e-003</b>	<b>1.0600e-003</b>		<b>9.9000e-004</b>	<b>9.9000e-004</b>	<b>0.0000</b>	<b>4.6384</b>	<b>4.6384</b>	<b>1.0900e-003</b>	<b>0.0000</b>	<b>4.6657</b>

**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	9.0000e-005	3.6500e-003	6.1000e-004	1.0000e-005	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	1.1289	1.1289	9.0000e-005	0.0000	1.1313
Worker	4.5000e-004	2.7000e-004	3.2000e-003	1.0000e-005	1.4900e-003	1.0000e-005	1.5000e-003	4.0000e-004	1.0000e-005	4.0000e-004	0.0000	1.0473	1.0473	2.0000e-005	0.0000	1.0478
<b>Total</b>	<b>5.4000e-004</b>	<b>3.9200e-003</b>	<b>3.8100e-003</b>	<b>2.0000e-005</b>	<b>1.7800e-003</b>	<b>1.0000e-005</b>	<b>1.7900e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>2.1762</b>	<b>2.1762</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>2.1791</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.4 Building Construction - 2027****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	2.7300e-003	0.0249	0.0322	5.0000e-005		1.0600e-003	1.0600e-003		9.9000e-004	9.9000e-004	0.0000	4.6384	4.6384	1.0900e-003	0.0000	4.6656
<b>Total</b>	<b>2.7300e-003</b>	<b>0.0249</b>	<b>0.0322</b>	<b>5.0000e-005</b>		<b>1.0600e-003</b>	<b>1.0600e-003</b>		<b>9.9000e-004</b>	<b>9.9000e-004</b>	<b>0.0000</b>	<b>4.6384</b>	<b>4.6384</b>	<b>1.0900e-003</b>	<b>0.0000</b>	<b>4.6656</b>

**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	9.0000e-005	3.6500e-003	6.1000e-004	1.0000e-005	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	1.1289	1.1289	9.0000e-005	0.0000	1.1313
Worker	4.5000e-004	2.7000e-004	3.2000e-003	1.0000e-005	1.4900e-003	1.0000e-005	1.5000e-003	4.0000e-004	1.0000e-005	4.0000e-004	0.0000	1.0473	1.0473	2.0000e-005	0.0000	1.0478
<b>Total</b>	<b>5.4000e-004</b>	<b>3.9200e-003</b>	<b>3.8100e-003</b>	<b>2.0000e-005</b>	<b>1.7800e-003</b>	<b>1.0000e-005</b>	<b>1.7900e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>2.1762</b>	<b>2.1762</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>2.1791</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.5 Paving - 2027****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	7.3800e-003	0.0678	0.1096	1.7000e-004		3.1700e-003	3.1700e-003		2.9300e-003	2.9300e-003	0.0000	14.7404	14.7404	4.6300e-003	0.0000	14.8562
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.3800e-003</b>	<b>0.0678</b>	<b>0.1096</b>	<b>1.7000e-004</b>		<b>3.1700e-003</b>	<b>3.1700e-003</b>		<b>2.9300e-003</b>	<b>2.9300e-003</b>	<b>0.0000</b>	<b>14.7404</b>	<b>14.7404</b>	<b>4.6300e-003</b>	<b>0.0000</b>	<b>14.8562</b>

**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	6.8000e-004	4.1000e-004	4.8000e-003	2.0000e-005	2.2300e-003	1.0000e-005	2.2500e-003	5.9000e-004	1.0000e-005	6.1000e-004	0.0000	1.5709	1.5709	3.0000e-005	0.0000	1.5717
<b>Total</b>	<b>6.8000e-004</b>	<b>4.1000e-004</b>	<b>4.8000e-003</b>	<b>2.0000e-005</b>	<b>2.2300e-003</b>	<b>1.0000e-005</b>	<b>2.2500e-003</b>	<b>5.9000e-004</b>	<b>1.0000e-005</b>	<b>6.1000e-004</b>	<b>0.0000</b>	<b>1.5709</b>	<b>1.5709</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>1.5717</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**3.5 Paving - 2027****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	7.3800e-003	0.0678	0.1096	1.7000e-004		3.1700e-003	3.1700e-003		2.9300e-003	2.9300e-003	0.0000	14.7404	14.7404	4.6300e-003	0.0000	14.8562
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.3800e-003</b>	<b>0.0678</b>	<b>0.1096</b>	<b>1.7000e-004</b>		<b>3.1700e-003</b>	<b>3.1700e-003</b>		<b>2.9300e-003</b>	<b>2.9300e-003</b>	<b>0.0000</b>	<b>14.7404</b>	<b>14.7404</b>	<b>4.6300e-003</b>	<b>0.0000</b>	<b>14.8562</b>

**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	6.8000e-004	4.1000e-004	4.8000e-003	2.0000e-005	2.2300e-003	1.0000e-005	2.2500e-003	5.9000e-004	1.0000e-005	6.1000e-004	0.0000	1.5709	1.5709	3.0000e-005	0.0000	1.5717
<b>Total</b>	<b>6.8000e-004</b>	<b>4.1000e-004</b>	<b>4.8000e-003</b>	<b>2.0000e-005</b>	<b>2.2300e-003</b>	<b>1.0000e-005</b>	<b>2.2500e-003</b>	<b>5.9000e-004</b>	<b>1.0000e-005</b>	<b>6.1000e-004</b>	<b>0.0000</b>	<b>1.5709</b>	<b>1.5709</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>1.5717</b>

**4.0 Operational Detail - Mobile**

## Azevedo Dairy #4 Expansion - Merced County, Annual

## 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	6.9100e-003	0.0834	0.0760	5.0000e-004	0.0319	2.8000e-004	0.0322	8.5800e-003	2.6000e-004	8.8500e-003	0.0000	46.7377	46.7377	3.0500e-003	0.0000	46.8141
Unmitigated	6.9100e-003	0.0834	0.0760	5.0000e-004	0.0319	2.8000e-004	0.0322	8.5800e-003	2.6000e-004	8.8500e-003	0.0000	46.7377	46.7377	3.0500e-003	0.0000	46.8141

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	21.59	21.59	21.59	83,422	83,422
Total	21.59	21.59	21.59	83,422	83,422

## 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 Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.525132	0.027799	0.158546	0.091215	0.012316	0.003677	0.014844	0.154721	0.002367	0.001760	0.005724	0.001413	0.000487

Azevedo Dairy #4 Expansion - Merced County, Annual

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

[illegible]



Azevedo Dairy #4 Expansion - Merced County, Annual

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

[illegible]

**Mitigated**

[illegible]

## Azevedo Dairy #4 Expansion - Merced County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

## Azevedo Dairy #4 Expansion - Merced County, Annual

	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	0.5623	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003
Unmitigated	0.5623	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003

## 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	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-004	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003
<b>Total</b>	<b>0.5623</b>	<b>1.0000e-005</b>	<b>1.3200e-003</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.5700e-003</b>	<b>2.5700e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>2.7400e-003</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**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	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-004	1.0000e-005	1.3200e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5700e-003	2.5700e-003	1.0000e-005	0.0000	2.7400e-003
<b>Total</b>	<b>0.5623</b>	<b>1.0000e-005</b>	<b>1.3200e-003</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.5700e-003</b>	<b>2.5700e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>2.7400e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Azevedo Dairy #4 Expansion - Merced County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Azevedo Dairy #4 Expansion - Merced County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	30.6110	1.8091	0.0000	75.8376
Unmitigated	30.6110	1.8091	0.0000	75.8376

## Azevedo Dairy #4 Expansion - Merced County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	150.8	30.6110	1.8091	0.0000	75.8376
<b>Total</b>		<b>30.6110</b>	<b>1.8091</b>	<b>0.0000</b>	<b>75.8376</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	150.8	30.6110	1.8091	0.0000	75.8376
<b>Total</b>		<b>30.6110</b>	<b>1.8091</b>	<b>0.0000</b>	<b>75.8376</b>

**9.0 Operational Offroad**

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## Azevedo Dairy #4 Expansion - Merced County, Annual

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Tractors/Loaders/Backhoes	1	1.00	365	183	0.37	Diesel
Tractors/Loaders/Backhoes	1	1.00	365	140	0.37	Diesel
Tractors/Loaders/Backhoes	1	0.20	365	140	0.37	Diesel
Tractors/Loaders/Backhoes	1	0.20	365	173	0.37	Diesel
Tractors/Loaders/Backhoes	1	1.00	365	455	0.37	Diesel

**UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Tractors/Loaders/Backhoes	0.0189	0.1401	0.2078	6.1000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	53.4082	53.4082	0.0173	0.0000	53.8400
<b>Total</b>	<b>0.0189</b>	<b>0.1401</b>	<b>0.2078</b>	<b>6.1000e-004</b>		<b>5.7200e-003</b>	<b>5.7200e-003</b>		<b>5.2600e-003</b>	<b>5.2600e-003</b>	<b>0.0000</b>	<b>53.4082</b>	<b>53.4082</b>	<b>0.0173</b>	<b>0.0000</b>	<b>53.8400</b>

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**



Azevedo Dairy #4 Expansion - Merced County, Annual

Equipment Type	Number
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## 11.0 Vegetation

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## APPENDIX F-2

### VOC and PM<sub>10</sub> Emissions Calculations

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## Pre-Project Facility Information

- Does this facility house Holstein or Jersey cows?   
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?   
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?   
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon/storage pond?   
Answering "yes" assumes worst case.

Pre-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	370				370		
Dry Cows	61				61		
Support Stock (Heifers, Calves, and Bulls)	300			999	1,299		
Large Heifers					0		
Medium Heifers					0		
Small Heifers					0		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves							0

Total Herd Summary	
Total Milk Cows	370
Total Mature Cows	431
Support Stock (Heifers, Calves, and Bulls)	1,299
Total Calves	0
Total Dairy Head	1,730

Pre-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn	1	25	90
Alfalfa			
Wheat	1	25	90

## Post-Project Facility Information

- Does this facility house Holstein or Jersey cows?   
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?   
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?   
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon/storage pond?   
Answering "yes" assumes worst case.
- Does this project result in an increase or relocation of uncovered surface area for any lagoon/storage pond?

NOTE: An increase in total lagoon/storage pond surface area may result in an increase in H2S emissions. The District's Technical Services Division may need to conduct H2S modeling.

Post-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	2,500				2,500		
Dry Cows	500				500		
Support Stock (Heifers, Calves, and Bulls)	667			333	1,000		
Large Heifers					0		
Medium Heifers					0		
Small Heifers					0		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves							0

Total Herd Summary	
Total Milk Cows	2,500
Total Mature Cows	3,000
Support Stock (Heifers, Calves, and Bulls)	1,000
Total Calves	0
Total Dairy Head	4,000

Post-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn	1	25	90
Alfalfa			
Wheat	1	25	90

# Pre-Project Potential to Emit (PE1)

Pre-Project Herd Size					
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals
Milk Cows	370	0	0	0	370
Dry Cows	61	0	0	0	61
Support Stock (Heifers, Calves and Bulls)	300	0	0	999	1,299
Large Heifers	0	0	0	0	0
Medium Heifers	0	0	0	0	0
Small Heifers	0	0	0	0	0
Bulls	0	0	0	0	0
	Calf Hutches			Calf Corrals	
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Total # of Calves
Calves	0	0	0	0	0

Silage Information				
Feed Type	Maximum # Open Piles	Maximum Height (ft)	Maximum Width (ft)	Open Face Area (ft^2)
Corn	1	25	90	1,782
Alfalfa	0	0	0	
Wheat	1	25	90	1,782

Milking Parlor				
Cow	VOC		NH3	
	lb/day	lb/yr	lb/day	lb/yr
Milk Cows	0.4	155	0.1	51

Cow Housing						
Cow	VOC		NH3		PM10	
	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr
Total	37.5	13,698	78.0	28,479	31.6	11,541

Liquid Manure Handling						
Cow	VOC		NH3		H2S*	
	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr
Milk Cows	2.9	1,051	12.5	4,555	N/A	N/A
Dry Cows	0.3	94	1.0	382	N/A	N/A
Support Stock (Heifers, Calves and Bulls)	4.2	1,546	11.5	4,209	N/A	N/A
Large Heifers	0.0	0	0.0	0	N/A	N/A
Medium Heifers	0.0	0	0.0	0	N/A	N/A
Small Heifers	0.0	0	0.0	0	N/A	N/A
Calves	0.0	0	0.0	0	N/A	N/A
Bulls	0.0	0	0.0	0	N/A	N/A
Total	7.4	2,691	25.0	9,145	N/A*	N/A*

Solid Manure Handling				
Cow	VOC		NH3	
	lb/day	lb/yr	lb/day	lb/yr
Milk Cows	0.6	204	2.9	1,047
Dry Cows	0.1	18	0.2	87
Support Stock (Heifers, Calves and Bulls)	0.8	299	2.7	974
Large Heifers	0.0	0	0.0	0
Medium Heifers	0.0	0	0.0	0
Small Heifers	0.0	0	0.0	0
Calves	0.0	0	0.0	0
Bulls	0.0	0	0.0	0
Total	1.5	521	5.8	2,109

Feed Handling and Storage		
	Daily PE (lb-VOC/day)	Annual PE (lb-VOC/yr)
Corn Emissions	18.2	6,641
Alfalfa Emissions	0.0	0
Wheat Emissions	23.0	8,395
TMR	47.1	17,185
Total	88.3	32,221

Total Daily Pre-Project Potential to Emit (lb/day)							
Permit	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0.0	0.0	0.0	0.0	0.4	0.1	0.0
Cow Housing	0.0	0.0	31.6	0.0	37.5	78.0	0.0
Liquid Manure	0.0	0.0	0.0	0.0	7.4	25.0	N/A*
Solid Manure	0.0	0.0	0.0	0.0	1.5	5.8	0.0
Feed Handling	0.0	0.0	0.0	0.0	88.3	0.0	0.0
Total	0.0	0.0	31.6	0.0	135.1	108.9	0.0

Total Annual Pre-Project Potential to Emit (lb/yr)							
Permit	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	155	51	0
Cow Housing	0	0	11,541	0	13,698	28,479	0
Liquid Manure	0	0	0	0	2,691	9,145	N/A*
Solid Manure	0	0	0	0	521	2,109	0
Feed Handling	0	0	0	0	32,221	0	0
Total	0	0	11,541	0	49,286	39,784	0

## Calculations for milking parlor:

Annual PE = (# milk cows) x (EF1 lb-pollutant/hd-yr)

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

## Calculations for cow housing:

See detailed calculations under Cow Housing Calculations worksheet.

## Calculations for liquid manure and solid manure handling:

Annual PE = [(# milk cows) x (EF1 lb-pollutant/hd-yr)] + [(# dry cows) x (EF1 lb-pollutant/hd-yr)] + [(# large heifers) x (EF1 lb-pollutant/hd-yr)] + [(# medium heifers) x (EF1 lb-pollutant/hd-yr)] + [(# small heifers) x (EF1 lb-pollutant/hd-yr)] + [(# calves) x (EF1 lb-pollutant/hd-yr)] + [(# bulls) x (EF1 lb-pollutant/hd-yr)]

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

The H2S emission factor is assumed to be 10% of the NH3 lagoon/storage pond(s) emission factor, for each respective herd size.

## Calculations for silage emissions:

Annual PE = (EF1) x (area ft²) x (0.0929 m²/ft²) x (8,760 hr/yr) x (60 min/hr) x 2.20E-9 lb/μg

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

## Calculation for TMR emissions:

Annual PE = (# cows) x (EF1) x (0.658 m²) x (525,600 min/yr) x (2.20E-9 lb/μg)

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

## Notes

Calves are not included in TMR calculation.

\*Since there is a change in lagoon/storage pond surface area, H2S emissions will be calculated separately.

Major Source Emissions (lb/yr)					
Permit	NOx	SOx	PM10	CO	VOC
Milk Parlor	0	0	0	0	0
Cow Housing	0	0	0	0	0
Liquid Manure	0	0	0	0	1,298
Solid Manure	0	0	0	0	0
Feed Handling	0	0	0	0	0
Total	0	0	0	0	1,298

## Post-Project Potential to Emit (PE2)

Post-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	2,500	0	0	0	2,500		
Dry Cows	500	0	0	0	500		
Support Stock (Heifers, Calves, and Bulls)	667	0	0	333	1,000		
Large Heifers	0	0	0	0	0		
Medium Heifers	0	0	0	0	0		
Small Heifers	0	0	0	0	0		
Bulls	0	0	0	0	0		
	Calf Hutches			Calf Corrals			
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	Total # of Calves
Calves	0	0	0	0	0	0	0

Silage Information				
Feed Type	Maximum # Open Piles	Maximum Height (ft)	Maximum Width (ft)	Open Face Area (ft*2)
Corn	1	25	90	1,782
Alfalfa	0	0	0	
Wheat	1	25	90	1,782

Milking Parlor				
	VOC		NH3	
	lb/day	lb/yr	lb/day	lb/yr
Milk Cows				
<b>Total</b>	<b>2.7</b>	<b>1,000</b>	<b>0.9</b>	<b>342</b>

Cow Housing						
	VOC		NH3		PM10	
	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr
<b>Total</b>	<b>89.2</b>	<b>32,561</b>	<b>317</b>	<b>115,741</b>	<b>16</b>	<b>5,714</b>

Liquid Manure Handling						
Cow	VOC		NH3		H2S	
	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr
Milk Cows	16.6	6,075	84.3	30,775	N/A	N/A
Dry Cows	1.8	665	8.6	3,130	N/A	N/A
Support Stock (Heifers, Calves, and Bulls)	1.9	680	5.9	2,161	N/A	N/A
Large Heifers	0.0	0	0.0	0	N/A	N/A
Medium Heifers	0.0	0	0.0	0	N/A	N/A
Small Heifers	0.0	0	0.0	0	N/A	N/A
Calves	0.0	0	0.0	0	N/A	N/A
Bulls	0.0	0	0.0	0	N/A	N/A
<b>Total</b>	<b>20.3</b>	<b>7,420</b>	<b>98.8</b>	<b>36,066</b>	<b>N/A*</b>	<b>N/A*</b>

Solid Manure Handling				
Cow	VOC		NH3	
	lb/day	lb/yr	lb/day	lb/yr
Milk Cows	3.4	1,225	19.4	7,075
Dry Cows	0.4	130	2.0	715
Support Stock (Heifers, Calves, and Bulls)	0.5	200	2.1	750
Large Heifers	0.0	0	0.0	0
Medium Heifers	0.0	0	0.0	0
Small Heifers	0.0	0	0.0	0
Calves	0.0	0	0.0	0
Bulls	0.0	0	0.0	0
<b>Total</b>	<b>4.3</b>	<b>1,555</b>	<b>23.5</b>	<b>8,540</b>

Feed Handling and Storage		
	Daily PE (lb-VOC/day)	Annual PE (lb-VOC/yr)
Corn Emissions	18.2	6,641
Alfalfa Emissions	0.0	0
Wheat Emissions	23.0	8,395
TMR	108.9	39,735
<b>Total</b>	<b>150.1</b>	<b>54,771</b>

Total Daily Post-Project Potential to Emit (lb/day)							
Permit	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0.0	0.0	0.0	0.0	2.7	0.9	0.0
Cow Housing	0.0	0.0	15.6	0.0	89.2	317.1	0.0
Liquid Manure	0.0	0.0	0.0	0.0	20.3	98.8	N/A*
Solid Manure	0.0	0.0	0.0	0.0	4.3	23.5	0.0
Feed Handling	0.0	0.0	0.0	0.0	150.1	0.0	0.0
Total	0.0	0.0	15.6	0.0	266.6	440.3	0.0

Total Annual Post-Project Potential to Emit (lb/yr)							
Permit	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	1,000	342	0
Cow Housing	0	0	5,714	0	32,561	115,741	0
Liquid Manure	0	0	0	0	7,420	36,066	N/A*
Solid Manure	0	0	0	0	1,555	8,540	0
Feed Handling	0	0	0	0	54,771	0	0
Total	0	0	5,714	0	97,307	160,689	0

### Calculations for milking parlor:

Annual PE = (# milk cows) x (EF2 lb-pollutant/hd-yr)

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

### Calculations for cow housing:

See detailed calculations under Cow Housing Calculations worksheet.

### Calculations for liquid manure and solid manure handling:

Annual PE = [(# milk cows) x (EF1 lb-pollutant/hd-yr)] + [(# dry cows) x (EF2 lb-pollutant/hd-yr)] + [(# large heifers) x (EF2 lb-pollutant/hd-yr)] + [(# medium heifers) x (EF2 lb-pollutant/hd-yr)] + [(# small heifers) x (EF2 lb-pollutant/hd-yr)] + [(# calves) x (EF2 lb-pollutant/hd-yr)] + [(# bulls) x (EF2 lb-pollutant/hd-yr)]

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

The H2S emission factor is assumed to be 10% of the NH3 lagoon/storage pond(s) emission factor, for each respective herd size.

### Calculations for silage emissions:

Annual PE = (EF2) x (area ft<sup>2</sup>) x (0.0929 m<sup>2</sup>/ft<sup>2</sup>) x (8,760 hr/yr) x (60 min/hr) x 2.20E-9 lb/μg

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

### Calculation for TMR emissions:

Annual PE = (# cows) x (EF2) x (0.658 m<sup>2</sup>) x (525,600 min/yr) x (2.20E-9 lb/μg)

Daily PE = (Annual PE lb/yr) ÷ (365 day/yr)

~~Calves~~ are not included in TMR calculation.

\*Since there is a change in lagoon/storage pond surface area, H2S emissions will be calculated separately.

Major Source Emissions (lb/yr)					
Permit	NOx	SOx	PM10	CO	VOC
Milk Parlor	0	0	0	0	0
Cow Housing	0	0	0	0	0
Liquid Manure	0	0	0	0	3,572
Solid Manure	0	0	0	0	0
Feed Handling	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,572</b>

### Herd Breakout

	Existing	Proposed
Milking Cow	370	2,500
Dry Cow	61	500
Heifer (15-24 mo)	640	334
Heifer (7-14 mo)	599	333
Calves (4-6 mo)	60	333
Calf (under 3 mo)	0	0
Bulls	0	0
<b>Totals</b>	1,730	4,000

The estimated VOC emissions used in this analysis are from the SJVAPCD dairy emissions calculator dated May 2019 and estimates from CalEEMod v. 2016.3.2.

### VOC Emissions from Harvested Acres in Merced County

	tons/day	lbs/year	lbs/acre/yr
<b>Merced Farm</b>	0.98	715,400	1.49
<b>Harvested Acres</b>	480,103		
		lbs/year	tons/year
<b>Acres Existing</b>	428	638	0.32
<b>Acres Proposed</b>	350	522	0.26

Farm Equipment emissions were calculated using an emissions factor of 1.49 lbs/acre/year of VOC based on an estimated 0.95 tons/day VOC emitted from farming equipment in the County, with 466,304 acres harvested. This emission factor is based on 2012 inventory data, the latest available, and would represent a conservative estimate of emissions.

This emission factor was applied to the existing 428 acres harvested (fields are harvested multiple times a year with double-cropping patterns) and to the proposed 350 acres harvested (fields would be harvested multiple times a year with double-cropping patterns). California Air Resources Board. San Joaquin Valley Air Basin 2012 Emission Inventory by Air Basin and by County for Other Mobile Sources, Farm Equipment. Published 2013. Accessed on July 1, 2021 at <[www.arb.ca.gov/ei/maps/basins/absjvmap.htm](http://www.arb.ca.gov/ei/maps/basins/absjvmap.htm)>

United States, Department of Agriculture (USDA). 2014. 2012 Census of Agriculture – County Data: Total Cropland - Harvested Cropland, Acres. Merced County. Published May 2, 2014. Accessed on May 17, 2021 at < <http://www.agcensus.usda.gov/Publications/2012/> >

### VOC Emissions

Emission Source	Existing VOC/ ROG Emissions (tons/yr)	Proposed VOC/ROG Emissions (tons/yr)	Increment of Increase with Proposed Expansion
Traffic, Onsite Mobile Source, and Area Sources			0.59
Farm Equipment	0.32	0.26	-0.06
Feed and Manure Management	24.64	48.65	24.01
	24.96	48.91	24.54

VOC emissions from traffic and area sources were estimated using CalEEMod Version 2016.3.2. VOC emissions from feed and manure management (including cow housing, liquid manure, and solid manure) were estimated using the SJVAPCD dairy emissions calculator. See Appendix F for calculator emissions and CalEEMod results.

### Herd Breakout

	Existing	Proposed
Milking Cow	370	2,500
Dry Cow	61	500
Heifer (15-24 mo)	640	334
Heifer (7-14 mo)	599	333
Heifer (4-6 mo)	60	333
Calf (under 3 mo)	0	0
Bulls	0	0
Totals	1,730	4,000

### PM 10 Emissions from Cow Housing

	Existing Total Emissions (lbs/yr)	Proposed Total Emissions (lbs/yr)	Increment of Increase
Totals	11,541	5,714	
Tons/Year	5.77	2.86	-2.91

See SJVAPCD Calculator for PM10 Calculation Worksheets and Controls

### Wind Erosion Cropped Fields

	PM Emission Factor (tons/acre/yr)	PM10/PM2.5 Emission Factor (tons/acre/yr)	Emission Factor (lbs/acre/yr)	Existing Acreage	Existing Emissions (tons/year)	Proposed Acreage	Proposed Emissions (tons/year)
PM10	0.013659	0.0068295	13.7	428	2.92	350	2.39
PM2.5*		0.0011851	2.37	428	0.51	350	0.41
Note: PM2.5 Emissions Factor estimated from a comparison of Annual Average Emissions of both PM10 and PM2.5 as found in CARB Almanac Emission Projection Data (Published in 2013). 2012 Estimated Annual Average Emissions. 2012 Emissions Data for Merced County, Dust from Agricultural Lands (Non-Pasture). <a href="http://www.arb.ca.gov/ei/emissiondata.htm">http://www.arb.ca.gov/ei/emissiondata.htm</a>							
California Air Resources Board, Section 7.12, Windblown Dust - Agricultural Lands, Revised July 1997. <a href="http://www.arb.ca.gov/ei/areasrc/index7.htm">http://www.arb.ca.gov/ei/areasrc/index7.htm</a>							

### PM 10 Emissions from Mobile Sources

Emissions	Increment of Increase (tons/year)
Traffic & Onsite Mobile Source	0.0379
Tons/Year	0.0379

See Appendix F-1 for CalEEMod results.



### Land Preparation and Harvesting

	Crop Type	PM10 Emission Factor (lbs/acre/ year)	PM2.5 Emission Factor (lbs/ acre/year)	Existing Acreage	Existing PM10 Emissions (tons/year)	Existing PM2.5 Emissions (tons/ year)	Proposed Acreage	Proposed PM10 Emissions (tons/year)	Proposed PM2.5 Emissions (tons/year)
<b>Land Preparation</b>	Oats, silage soft dough	3.70	0.55	131	0.24	0.04	105	0.19	0.03
	Corn, silage	6.90	1.03	35	0.12	0.02	35	0.12	0.02
	Sudangrass, silage	4.00	0.60	96	0.19	0.03	70	0.14	0.02
<b>Total Land</b>					0.56	0.08		0.46	0.07
<b>Harvesting</b>	Oats, silage soft dough	5.80	0.87	131	0.38	0.06	105	0.30	0.05
	Corn, silage	0.17	0.03	35	0.00	0.00	35	0.00	0.00
	Sudangrass, silage	0.00	0.00	262	0.00	0.00	210	0.00	0.00
<b>Total Harvesting</b>					0.38	0.06		0.31	0.05
<b>Total Farming Operations</b>					<b>0.94</b>	<b>0.14</b>		<b>0.76</b>	<b>0.11</b>
	Notes: CARB PM10 emission factors based on 2000 crop acreage. PM2.5 Emissions Factor estimated from a comparison of Annual Average Emissions of both PM10 and PM2.5 as found in CARB Almanac Emission Projection Data (Published in 2013). 2012 Estimated Annual Average Emissions. 2012 Emissions Data for Merced County, Dust from Agricultural Lands (Non-Pasture). <a href="http://www.arb.ca.gov/ei/emissiondata.htm">http://www.arb.ca.gov/ei/emissiondata.htm</a>								
	California Air Resources Board, Section 7.4, Agricultural Land Preparation, Revised January 2003. Section 7.5, Agricultural Harvest Operations, Revised January 2003. <a href="http://www.arb.ca.gov/ei/areasrc/index7.htm">http://www.arb.ca.gov/ei/areasrc/index7.htm</a>								
	Based on double-cropping, several fields would undergo land preparation twice in a year, and therefore the acreage was considered for each occurrence. Harvesting operations would occur multiple times for project fields. Cropping patterns obtained from existing and proposed NMPs.								

### Dry Manure Application PM10 Emissions

	Emission Factor (lbs/acre/yr)	Existing Acreage	Existing Emissions (tons/year)	Proposed Acreage	Proposed Emissions (tons/year)
<b>PM10</b>	5.07	140	0.35	0	0.00
	Based on double-cropping, triple-cropping, and quadruple several fields would undergo land preparation and harvesting operations twice in a year, and therefore the acreage was considered for each occurrence. Cropping patterns obtained from existing and proposed NMPs.				

### Aggregate PM10 and PM2.5

Emission Source	Existing PM <sub>10</sub> Emissions (tons/year)	Proposed PM <sub>10</sub> Emissions (tons/year)	Project Increase PM10 Emissions	Existing PM <sub>2.5</sub> Emissions (tons/year)	Proposed PM <sub>2.5</sub> Emissions (tons/year)	Project Increase PM2.5 Emissions
<b>Wind Erosion</b>	2.92	2.39	-0.53	0.51	0.41	-0.09
<b>Farming Operations</b>	0.94	0.76	-0.18	0.14	0.11	-0.03
<b>Traffic &amp; On-Site Mobile Source</b>	-	-	0.04			0.01
<b>Animal Movement</b>	5.77	2.86	-2.91			
<b>Dry Manure Application</b>	0.35	0.00	-0.35	NA	NA	NA
<b>Total</b>	<b>9.99</b>	<b>6.01</b>	<b>-3.94</b>	<b>0.65</b>	<b>0.53</b>	<b>-0.11</b>

### Farming Equipment: NO<sub>x</sub> Emissions from Harvested Acres in Merced County

	tons/day	lbs/year	lbs/acre/yr	tons/year	Increment of Increase
Merced Farm	5.37	3,920,100	8.17		
Total Harvested Acres	480,103				
Harvested Acres Existing	428	3,494.67		1.75	
Harvested Acres Proposed	350	2,857.79		1.43	-0.32

Farm Equipment emissions were calculated using an emissions factor of 8.17 lbs/acre/year of NO<sub>x</sub> based on an estimated 5.37 tons/day NO<sub>x</sub> emitted from farming equipment in Merced County, with 480,103 acres harvested. This emission factor is based on 2012 inventory data, the latest available, and would represent a conservative estimate of emissions.

This emission factor was applied to the existing 428 acres harvested (fields are harvested multiple times a year) and to the proposed 350 acres harvested (fields would be harvested multiple times a year).

California Air Resources Board. San Joaquin Valley Air Basin 2012 Emission Inventory by Air Basin and by County for Other Mobile Sources, Farm Equipment. Published 2013. Accessed on July 1, 2021 at <[www.arb.ca.gov/ei/maps/basins/absjvmap.htm](http://www.arb.ca.gov/ei/maps/basins/absjvmap.htm)>

United States, Department of Agriculture (USDA). 2014. 2012 Census of Agriculture – County Data: Total Cropland - Harvested Cropland, Acres. Merced County. Published May 2, 2014. Accessed on May 17, 2021 at < <http://www.agcensus.usda.gov/Publications/2012/> >

### Total NO<sub>x</sub> Emissions

	Increment of Increase
	tons/yr
Traffic, Onsite Mobile Source, and Area Sources	0.22
Farming Equipment	-0.32
Total	-0.10

Vehicle Trips estimated using CalEEMod v.2016.3.2

**Table 1. County Summary Highlights: 2012 (continued)**

[For meaning of abbreviations and symbols, see introductory text.]

Item	Marin	Mariposa	Mendocino	Merced	Modoc	Mono	Monterey
Farms ..... number	323	364	1,220	2,486	437	72	1,179
Land in farms ..... acres	170,876	283,611	770,257	978,667	523,522	56,386	1,268,144
Average size of farm ..... acres	529	779	631	394	1,198	783	1,076
Median size of farm ..... acres	100	113	50	38	277	166	80
Estimated market value of land and buildings:							
Average per farm ..... dollars	3,295,414	1,638,972	2,533,399	3,045,778	2,061,595	2,205,825	5,263,068
Average per acre ..... dollars	6,229	2,104	4,013	7,737	1,721	2,817	4,893
Estimated market value of all machinery and equipment ..... \$1,000	22,360	16,286	63,290	587,824	54,649	10,420	467,834
Average per farm ..... dollars	69,225	44,742	51,877	236,644	125,055	144,720	396,806
Farms by size:							
1 to 9 acres .....	61	39	251	374	35	7	234
10 to 49 acres .....	68	99	344	1,035	63	16	261
50 to 179 acres .....	50	75	310	490	93	14	233
180 to 499 acres .....	34	65	141	269	81	15	140
500 to 999 acres .....	46	26	66	140	57	5	98
1,000 acres or more .....	64	60	108	178	108	15	213
Total cropland ..... farms	162	99	832	1,998	327	33	814
..... acres	14,409	12,575	49,298	522,593	154,728	11,378	358,294
Harvested cropland ..... farms	135	66	758	1,903	257	30	694
..... acres	7,868	835	31,411	480,103	123,008	10,591	282,694
Irrigated land ..... farms	99	87	648	1,987	282	44	608
..... acres	3,732	1,806	25,693	468,226	128,360	21,506	263,835

**ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2013)**  
**2012 Estimated Annual Average Emissions**  
**MERCED COUNTY**

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
<b>FARM EQUIPMENT</b>	<b>0.86</b>	<b>0.98</b>	<b>4.55</b>	<b>5.37</b>	<b>0.00</b>	<b>0.23</b>	<b>0.33</b>	<b>0.31</b>

**ALMANAC EMISSION PROJECTION DATA BY EIC (PUBLISHED IN 2013)**

**Annual Average Emissions (Tons/Day)**



**MERCED COUNTY  
MISCELLANEOUS PROCESSES  
650-FUGITIVE WINDBLOWN DUST**

Download these results (as a comma delimited file).  
Start a new query.

<b>EMISSIONS INVENTORY CATEGORY</b>	<b>TOG</b>	<b>ROG</b>	<b>CO</b>	<b>NOX</b>	<b>SOX</b>	<b>PM</b>	<b>PM10</b>	<b>PM2.5</b>
650-650-5400-0000 <a href="#">Methodology</a> 650-DUST FROM AGRICULTURAL LANDS (NON-PASTURE) 5400-DUST 0000-SUB-CATEGORY UNSPECIFIED	-	-	-	-	-	12.31	5.59	0.97
650-651-5400-0000 <a href="#">Methodology</a> 651-DUST FROM PASTURE LANDS 5400-DUST 0000-SUB-CATEGORY UNSPECIFIED	-	-	-	-	-	2.74	1.24	0.22
650-652-5400-0000 <a href="#">Methodology</a> 652-DUST FROM UNPAVED ROADS AND ASSOCIATED AREAS 5400-DUST 0000-SUB-CATEGORY UNSPECIFIED	-	-	-	-	-	0.78	0.46	0.06
<b>TOTAL</b>	-	-	-	-	-	15.83	7.30	1.24

**ALMANAC EMISSION PROJECTION DATA BY EIC (PUBLISHED IN 2013)**  
**Annual Average Emissions (Tons/Day)**  
**MERCED COUNTY**  
**MISCELLANEOUS PROCESSES**  
**620-FARMING OPERATIONS**

Download these results (as a comma delimited file).  
[Start a new query.](#)

<b>EMISSIONS INVENTORY CATEGORY</b>	<b>TOG</b>	<b>ROG</b>	<b>CO</b>	<b>NOX</b>	<b>SOX</b>	<b>PM</b>	<b>PM10</b>	<b>PM2.5</b>
620-614-5400-0000  <a href="#">Methodology</a> 614-TILLING DUST 5400-DUST 0000-SUB-CATEGORY UNSPECIFIED	-	-	-	-	-	10.28	4.67	0.70
620-615-5400-0000  <a href="#">Methodology</a> 615-HARVEST OPERATIONS - DUST 5400-DUST 0000-SUB-CATEGORY UNSPECIFIED	-	-	-	-	-	11.56	5.25	0.79

Existing Cropped Fields							
Field	Acres Planted	Acres Harvested	Crop		Total Planted Acres	Total Harvested Acres	Crop Type
Field 1	35	35	oats, silage-soft dough		131	131	oats, silage-soft dough
	35	35	corn, silage		35	35	corn, silage
Field #2	15	15	oats, silage-soft dough			0	Alfalfa, hay
	15	15	Sudangrass silage			0	earlage
		15	Sudangrass silage		96	262	Sudangrass, silage
Field #3	11	11	oats, silage-soft dough			0	Almond
	11	11	Sudangrass silage		262	428	
		11	Sudangrass silage				
Heifer Facility	70	70	oats, silage-soft dough				
	70	70	Sudangrass silage				
		70	Sudangrass silage				
		70	Sudangrass silage				
<b>Total Acres</b>	<b>131</b>	<b>131</b>					

Proposed Cropped Fields							
Field	Acres Planted	Acres Harvested	Crop		Total Planted Acres	Total Harvested Acres	Crop Type
Field 1	35	35	oats, silage-soft dough		105	105	oats, silage-soft dough
	35	35	corn, silage		35	35	corn, silage
Field 2	70	70	oats, silage-soft dough			0	Alfalfa, hay
	70	70	Sudangrass silage			0	earlage
		70	Sudangrass silage		70	210	Sudangrass, silage
		70	Sudangrass silage			0	Almond
<b>Total Acres</b>	<b>105</b>	<b>105</b>			<b>210</b>	<b>350</b>	

Dry Manure Applied - Existing	
Field Name	Acres
Field 1	0
	0
Field #2	0
	0
	0
Field #3	0
	0
	0
Heifer Facility	70
	70
<b>Total Acres</b>	<b>140</b>

Dry Manure Applied - Proposed	
Field Name	Acres
Field 1	0
	0
Field 2	0
	0
	0
	0
<b>Total Acres</b>	<b>0</b>



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## APPENDIX F-3

### Greenhouse Gas Emissions Model Methodology and Calculations

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## GREENHOUSE GAS EMISSIONS QUANTIFICATION: METHODOLOGY AND CALCULATIONS

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For the proposed dairy project Environmental Impact Report (EIR), greenhouse gas (GHG) emissions were estimated using the Dairy Gas Emissions Model, Version 3.3, from the Pasture Systems and Watershed Management Research Unit, Agricultural Research Service (ARS), United States Department of Agriculture (USDA). The Dairy Gas Emissions Model (DairyGEM) was created for the USDA ARS and made available for public use in February 2011. An earlier model, the Dairy Greenhouse Gas Emissions Model, was made available in June 2009 in conjunction with tools and information to help affected producers comply with the Environmental Protection Agency (EPA) Final Mandatory GHG Reporting Rule. Because this model estimates GHG emissions from the entire production system, and some assumptions were made regarding the project operations with best available information, the calculations reported in this EIR are considered a conservative estimate.

The DairyGEM is a software tool for estimating the ammonia, hydrogen sulfide, GHG, and volatile organic compound (VOC) emissions of dairy production systems. A dairy production system generally represents the processes used on a given farm, but the full system extends beyond the farm boundaries. A production system is defined to include emissions during the production of all feeds whether produced on a given farm or elsewhere. It also includes GHG emissions and energy use that occur during the production of resources used on the farm such as machinery, fuel, electricity, and fertilizer. Manure is assumed to be applied to cropland producing feed, but any portion of the manure produced can be exported to other uses external to the system.

DairyGEM also uses process-based relationships and emission factors to predict the primary GHG emissions from the production system. Primary sources include the net emission of carbon dioxide plus all emissions of methane and nitrous oxide occurring from the production system. Emissions are predicted through a daily simulation of feed use and manure handling. Daily emission values of each gas are summed to obtain annual values. For the purposes of this analysis, only the GHG emission results of the modeling are included in the EIR.

Total greenhouse gas emission is determined as the sum of the net emissions of the three GHG where methane and nitrous oxide are converted to carbon dioxide equivalent units (CO<sub>2</sub>e)<sup>1</sup>. This net emission is determined through a partial life cycle assessment of the production system. Emissions include both primary and secondary sources. Secondary emissions are those that occur during the manufacture or production of resources used in the production system. These resources include machinery, fuel, electricity, fertilizer, pesticides, plastic, and any replacement animals not raised on the farm. Secondary emissions from the manufacture of equipment are apportioned to the feed produced or manure handled over their useful life.

For more in depth description on modeling equations and rationale, the reference manual can be found at: [www.ars.usda.gov/Main/docs.htm?docid=21345](http://www.ars.usda.gov/Main/docs.htm?docid=21345)

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<sup>1</sup> The conversion to CO<sub>2</sub>e is done using global warming potentials for methane and nitrous oxide of 25 and 298, respectively. Therefore, each unit of methane is equal to 25 units of carbon dioxide and each unit of nitrous oxide is equal to 298 units of carbon dioxide.

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### GHG Emissions Azevedo Dairy #4 Expansion

Total Greenhouse Gas (CO2e)		Existing (lb/yr)	Existing (ton/yr)	Proposed (lb/yr)	Proposed (ton/yr)
	Housed animals	8,411,936	3,816	21,966,314	9,964
	Manure storage	3,439,699	1,560	19,007,370	8,622
	Feed production	1,146,867	520	2,849,607	1,293
	Net CO2	-5,382,012	-2,441	-33,126,326	-15,026
	Fuel combustion	627,290	285	1,897,192	861
	Secondary sources	3,790,730	1,719	17,761,150	8,056
	Not allocated to milk	-8,826,271	-4,004	-10,515,905	-4,770
	Net emission	3,208,239	1,455	19,839,402	8,999
GHG Increase from Project (CO2e)					7,544

Azevedo #4 Existing

GASEOUS EMISSIONS

	Average daily		Total annual	
	lb/cow	lb	lb/cow	lb
Ammonia				
Housing facility	1.190	440	434.4	160723
Manure storage	0.021	8	7.8	2898
Field applied manure	0.142	52	51.8	19158
Total farm	1.353	501	494.0	182779
Hydrogen Sulfide				
Housing facility	0.448	166	163.5	60506
Manure storage	0.000	0	0.0	0
Field applied manure	0.000	0	0.0	0
Total farm	0.448	166	163.5	60506
VOC (Ozone Equivalents)				
Silo face	0.037	14	13.5	4984
Silage feeding	0.084	31	30.7	11354
Housing manure	0.008	3	3.0	1095
Manure storage	0.008	3	3.0	1101
Field applied manure	0.083	31	30.3	11229
Total farm	0.220	82	80.4	29762
Methane				
Housed animals	2.307	853	841.9	311509
Manure storage	0.244	90	88.9	32892
Field applied manure	0.001	0	0.5	177
Total emission	2.551	944	931.3	344578
Nitrous Oxide				
Housed animals	0.062	23	22.5	8315
Direct and indirect land	0.032	12	11.7	4328
Total emission	0.094	35	34.2	12643
Biogenic Carbon Dioxide				
Housed animals	81.445	30135	29727.4	10999137
Manure storage	0.862	319	314.8	116460
Assimilated in feed	-121.297	-44880	-44273.4	-16381142
Net emission	-38.990	-14426	-14231.2	-5265555
Anthropogenic Carbon Dioxide	4.645	1719	1695.4	627290

## ANNUAL ENVIRONMENTAL FOOTPRINTS

	Unit	Mean	SD
<b>Water Use</b>			
Feed production	ton	2711200	0
Drinking	ton	18148	135
Animal cooling	ton	1870	198
Parlor and equipment cleaning	ton	3722	0
Supplementary feed and resource inputs	ton	3208886	9116
Not allocated to milk production	ton	-3161962	1149
Water footprint	lb/lb FPCM	697	2
<b>Energy Use</b>			
Feed production and feeding	MBtu	3116368	1568
Manure handling	MBtu	562164	765
Milking and milk cooling	MBtu	802307	0
Animal housing ventilation and lighting	MBtu	286104	0
Production of resource inputs	MBtu	12920868	17476
Not allocated to milk production	MBtu	-10014873	2421
Energy footprint	MBtu/lb FPCM	0.96	0.00
<b>Greenhouse Gas Emissions (CO<sub>2</sub>e)</b>			
Animal emissions	lb	8411936	11177
Manure emissions	lb	3439699	948077
Direct and indirect land emissions	lb	1146867	20223
Net biogenic carbon dioxide emission	lb	-5382012	3333
Anthropogenic carbon dioxide emission	lb	627290	371
Production of resource inputs	lb	3790730	5672
Not allocated to milk production	lb	-8826271	118231
Carbon footprint without biogenic CO <sub>2</sub>	lb/lb FPCM	1.08	0.11
Carbon footprint with biogenic CO <sub>2</sub>	lb/lb FPCM	0.48	0.11

FPCM is fat and protein corrected milk (4.0% fat and 3.3% protein)

Azevedo #4 Proposed

GASEOUS EMISSIONS

	Average daily		Total annual	
	lb/cow	lb	lb/cow	lb
Ammonia				
Housing facility	0.367	917	133.9	334733
Manure storage	0.033	83	12.0	30124
Field applied manure	0.009	22	3.2	8050
Total farm	0.409	1022	149.2	372907
Hydrogen Sulfide				
Housing facility	0.132	330	48.3	120628
Manure storage	0.000	0	0.0	0
Field applied manure	0.000	0	0.0	0
Total farm	0.132	330	48.3	120628
VOC (Ozone Equivalents)				
Silo face	0.005	13	1.9	4626
Silage feeding	0.045	112	16.4	40980
Housing manure	0.003	9	1.3	3125
Manure storage	0.014	36	5.3	13209
Field applied manure	0.007	17	2.4	6067
Total farm	0.075	186	27.2	68007
Methane				
Housed animals	0.894	2235	326.3	815783
Manure storage	0.490	1224	178.7	446763
Field applied manure	0.000	1	0.1	203
Total emission	1.384	3460	505.1	1262749
Nitrous Oxide				
Housed animals	0.023	58	8.5	21195
Direct and indirect land	0.012	29	4.3	10753
Total emission	0.035	88	12.8	31949
Biogenic Carbon Dioxide				
Housed animals	39.814	99534	14532.0	36329880
Manure storage	1.734	4334	632.7	1581857
Assimilated in feed	-76.116	-190291	-27782.5	-69456256
Net emission	-34.569	-86423	-12617.8	-31544500
Anthropogenic Carbon Dioxide	2.079	5198	758.9	1897192

## ANNUAL ENVIRONMENTAL FOOTPRINTS

	Unit	Mean	SD
<b>Water Use</b>			
Feed production	ton	7495641	0
Drinking	ton	99539	817
Animal cooling	ton	12638	1341
Parlor and equipment cleaning	ton	25146	0
Supplementary feed and resource inputs	ton	13074684	22395
Not allocated to milk production	ton	-3430279	4021
Water footprint	lb/lb FPCM	645	1
<b>Energy Use</b>			
Feed production and feeding	MBtu	10083027	3710
Manure handling	MBtu	51367	49
Milking and milk cooling	MBtu	5381697	1
Animal housing ventilation and lighting	MBtu	924010	0
Production of resource inputs	MBtu	51312904	90274
Not allocated to milk production	MBtu	-11223473	15423
Energy footprint	MBtu/lb FPCM	1.06	0.00
<b>Greenhouse Gas Emissions (CO<sub>2</sub>e)</b>			
Animal emissions	lb	21966314	21527
Manure emissions	lb	19007370	2722055
Direct and indirect land emissions	lb	2849607	67623
Net biogenic carbon dioxide emission	lb	-33126326	39127
Anthropogenic carbon dioxide emission	lb	1897192	597
Production of resource inputs	lb	17761150	19907
Not allocated to milk production	lb	-10515905	463688
Carbon footprint without biogenic CO <sub>2</sub>	lb/lb FPCM	0.99	0.04
Carbon footprint with biogenic CO <sub>2</sub>	lb/lb FPCM	0.47	0.04

FPCM is fat and protein corrected milk (4.0% fat and 3.3% protein)



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## APPENDIX F-4

### Proposed Greenhouse Gas Emissions Threshold

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# PROPOSED GREENHOUSE GAS EMISSIONS THRESHOLD FOR THE ANTONIO AZEVEDO DAIRY #4 EXPANSION EIR

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## *Introduction*

The California Environmental Quality Act (CEQA) requires agencies to identify a project's potentially significant effects on the environment, and to mitigate significant effects whenever feasible. This includes the potential environmental effects of greenhouse gas (GHG) emissions. CEQA encourages public agencies to adopt "thresholds of significance" to use in determining the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Exceedance of a threshold of significance would normally result in a determination that the project would have a significant environmental impact. Conversely, non-exceedance of a significance threshold would normally result in a determination that project would not have a significant environmental impact. In regards to thresholds of significance for GHG emissions, CEQA Guidelines Section 15064.7(c) states that a lead agency "may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

CEQA requires projects to be evaluated for consistency with "applicable general plans and regional plans" (CEQA Guidelines Section 15125(e)). Such plans would include "plans for the reduction of greenhouse gas emissions" (CEQA Guidelines Section 15183.5(b)). These plans involve legislative or regulatory programs applicable to all projects or classes of projects within the region. They establish standards that are independent of the impact analysis described in the CEQA Guidelines (see provisions beginning with Section 15126). The program for GHG emission reductions and maintenance, which ultimately is intended to result from AB 32, would constitute such a regional plan **when adopted**. However, under AB 32, that program does not yet exist. Furthermore, at this time there is no regional or Merced County greenhouse gas reduction plan or climate action plan. Therefore, there is no local, regional, or statewide plan regulating global warming by which the proposed project can be measured. The California Air Resources Board (CARB) has established preliminary approaches to establishing significance thresholds, and the San Joaquin Valley Air Pollution Control District (SJVAPCD) has issued guidance for evaluating project-level GHG effects.

## *Threshold Options*

In January of 2008, the California Air Pollution Control Officers Association (CAPCOA) released a resource document, *CEQA and Climate Change* (CAPCOA 2008), that collected and presented information to support local governments as they undertake a review of GHG emissions from projects subject to CEQA. The document considers various approaches to determining the significance of emissions, evaluates available methodologies and tools for quantifying GHG emissions, and provides a summary of GHG mitigation measures for projects.

The CAPCOA white paper discusses three basic options air districts and lead agencies can pursue when contemplating the issues of CEQA thresholds for greenhouse gas emissions. The paper explores each path and discusses the benefits and detriments of each. The three basic paths are:

- No significance threshold for GHG emissions;
- GHG emissions threshold set at zero; or
- GHG threshold set at a non-zero level.

The CAPCOA paper explores the basis and implications of setting no threshold, setting a threshold at zero, and two primary approaches for those who may choose to consider a non-zero threshold. Each has inherent advantages and disadvantages. Air districts and lead agencies may believe the state or national government should take the lead in identifying significance thresholds to address this global impact. Alternatively, the agency may believe it is premature or speculative to determine a clear level at which a threshold should be set. A brief summary of each methodology and its implications are included below.

### **Implementing CEQA Without a Threshold**

A lead agency is not required to establish significance thresholds for GHG emissions from stationary sources. The lead agency may find that it needs more information or experience evaluating GHG from these types of projects to determine an appropriate significance threshold. As with other project types, the lead agency could conduct a project specific analysis to determine whether an environmental impact report is needed and to determine the level of mitigation that is appropriate. The agency might also rely on thresholds established for criteria pollutants as a screening method, and analyze GHG emissions (and require mitigation) from projects with emissions above the criteria pollutant thresholds. Over time, the agency could amass information and experience with specific project categories that would support establishing explicit thresholds. The lead agency may also choose to base local CEQA thresholds on state guidelines or on the category-specific reduction targets established by ARB in its scoping plan for implementing AB 32. It is important to note here that lack of a threshold does *not* mean lack of significance. An agency may argue lack of significance for any project, but that argument would have to be carried forth on a case-by-case, project specific basis. By extension then, a decision not to establish thresholds for GHG is likely to result in a greater workload for responsible and lead agencies as they consider individual projects under CEQA.

### **Implementing CEQA with Threshold of Zero**

A lead agency may find that any increase in GHG emissions is potentially significant under CEQA. If the zero threshold option is chosen, all projects subject to CEQA would be required to quantify and mitigate their GHG emissions, regardless of the size of the project or the availability of GHG reduction measures available to reduce the project's emissions. Projects that could not meet the zero-emission threshold would be required to prepare environmental impact reports to disclose the unmitigable significant impact, and develop the justification for a statement of overriding consideration to be adopted by the lead agency.

### **Implementing CEQA with a Non-Zero Threshold**

A non-zero threshold could minimize the resources spent reviewing environmental analyses that do not result in real GHG reductions or to prevent the environmental review system from being overwhelmed. The practical advantages of considering non-zero thresholds for GHG significance

determinations can fit into the concept regarding whether the project's GHG emissions represent a "considerable contribution to the cumulative impact" and therefore warrant analysis. Specifying a non-zero threshold could be construed as setting a de minimis value for a cumulative impact. In effect, this would be indicating that there are certain GHG emission sources that are so small that they would not contribute substantially to the global GHG budget. This could be interpreted as allowing public agencies to approve certain projects without requiring any mitigation of their GHG emissions.

### ***Thresholds Previously Adopted or Recommended***

#### **United States Environmental Protection Agency (EPA)**

EPA's Final Mandatory GHG Reporting Rule became effective December 29, 2009. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons per year (t/yr) or more of GHG emissions are required to submit annual reports to EPA. EPA estimates that the reporting rule will cover about 85 percent of GHG emissions in the United States.

For manure management systems, such as on a dairy, the animal population threshold level below which facilities are not required to report emissions is 3,200-cow dairy herd, which represents a conservative estimate of the 25,000 t/yr CO<sub>2</sub> equivalent (CO<sub>2</sub>e) threshold level. Facilities that meet or exceed these populations will need to conduct an analysis to determine if they emit more than 25,000 t/yr CO<sub>2</sub>e. While congress restricted EPA from expending any funds in fiscal years 2010 through 2021 for the purpose of implementing the manure management section of the rule, this did not change the requirements of the rule, and facilities that meet the threshold size are advised to keep the appropriate records.

#### **California Air Resources Board**

On October 24, 2008, CARB released its Preliminary Draft Staff Proposal, *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*. CARB staff believes that zero thresholds are not warranted in light of the fact that (1) some level of emissions in the near term and at mid-century is still consistent with climate stabilization and (2) current and anticipated regulations and programs apart from CEQA will proliferate and increasingly will reduce the GHG contributions of past, present, and future projects. But any non-zero threshold must be sufficiently stringent to make substantial contributions to reducing the State's GHG emissions peak, causing that peak to occur sooner, and putting California on track to meet its interim (2020) and long-term (2050) emissions reduction targets. CARB staff's objective was to develop a threshold of significance that would result in the vast majority (~90 percent statewide) of the GHG emissions from new industrial projects being subject to CEQA's requirement to impose feasible mitigation (CARB 2008).

A key aspect of CARB's approach is to recognize that different GHG thresholds of significance may apply to projects in different sectors. Two primary reasons that sector-specific thresholds are appropriate are: (1) some sectors contribute more substantially to the problem, and therefore should have a greater obligation for emissions reductions, and, (2) looking forward, there are differing levels of emissions reductions expected from different sectors in order to meet California's climate objectives. CARB also believes that different types of thresholds - quantitative, qualitative, and

performance-based - can apply to different sectors under the premise that the sectors can and must be treated separately given the state of the science and data. A sector-specific approach is consistent with CARB's proposed Scoping Plan.

CARB staff used existing data for the industrial sector to derive a proposed hybrid threshold. The threshold consists of a quantitative threshold of 7,000 t/y CO<sub>2</sub>e for operational emissions (excluding transportation), and performance standards for construction and transportation emissions. For residential and commercial projects, CARB staff recommended thresholds based on clear and stringent performance standards. Performance standards will address the five major emission sub-sources for the sector: energy use, transportation, water use, waste, and construction.

As of preparation of this EIR (July 2021), CARB has not finalized its recommendation, and has not scheduled any additional workshops or hearings on the draft proposals.

### **South Coast Air Quality Management District (SCAQMD)**

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. As described below, the SCAQMD recommended interim GHG significance threshold proposal uses a tiered approach to determining significance. Tier 3, which is expected to be the primary tier by which the AQMD will determine significance for projects where it is the lead agency, uses the Executive Order S-3-05 goal as the basis for deriving the screening level. Specifically, the Tier 3 screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects.

A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

For the purposes of determining whether or not GHG emissions from affected projects are significant, project emissions will include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Construction emissions will be amortized over the life of the project, defined as 30 years, added to the operational emissions, and compared to the applicable interim GHG significance threshold tier. The following bullet points describe the basic structure of SCAQMD staff's tiered GHG significance threshold proposal for stationary sources.

- *Tier 1* – consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.

- *Tier 2* – consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan. If the proposed project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If the project is not consistent with a local GHG reduction plan, there is no approved plan, or the GHG reduction plan does not include all of the components described above, the project would move to Tier 3.
- *Tier 3* – establishes a screening significance threshold level to determine significance using a 90 percent emission capture rate approach. This was calculated as 10,000 t/yr CO<sub>2</sub>e emissions. If the project exceeds the GHG screening significance threshold level and GHG emissions cannot be mitigated to less than the screening level, the project would move to Tier 4.
- *Tier 4* – consists of a decision tree approach that allows the lead agency to choose one of three compliance options based on performance standards. The purpose of Tier 4 is to provide a means of determining significance relative to GHG emissions for very large projects that include design features and or other measures to mitigate GHG emissions to the maximum extent feasible, but residual GHG emissions still exceed the interim Tier 3 screening levels. This tier is being further developed by SCAQMD staff and not recommended for adoption.
- *Tier 5* – under this tier, the project proponent would implement offsite mitigation (GHG reduction projects) to reduce GHG emission impacts to less than the proposed screening level. Any offsite mitigation measures that include purchase of offsets would require the project proponent provide offsets for the life of the project, which is defined as 30 years.

*Residential/Commercial Sectors GHG Significance Threshold* – To achieve the same policy objective of capturing 90 percent of GHG emissions from new development projects in the residential/commercial sectors and implement a “fair share” approach to reducing emission increases from each sector, SCAQMD staff discussed with the working group a proposal combining performance standards and screening thresholds. The performance standards primarily focus on energy efficiency measures beyond Title 24 and a screening level of 3,000 t/yr CO<sub>2</sub>e based on the relative GHG emissions contribution between residential/commercial sectors and stationary source (industrial) sectors. It was determined that additional analysis is needed to further define the performance standards and to coordinate with CARB staff’s interim GHG proposal.

As of the date of this EIR (July 2021), the Stakeholder Working Group last met on September 28, 2010 to further refine the interim recommendations. The SCAQMD interim recommendations do not contain guidance specific to agricultural activities.

### **Bay Area Air Quality Management District (BAAQMD)**

On May 2017, the BAAQMD’s Board of Directors unanimously adopted the proposed CEQA thresholds of significance. BAAQMD’s approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. If mitigation can be applied to lessen the emissions such that the project meets its share of emission

reductions needed to address the cumulative impact, the project would normally be considered less than significant.

The BAAQMD's *Thresholds of Significance* for operational-related GHG emissions are:

- For land use development projects other than stationary sources, the threshold is: compliance with a qualified GHG Reduction Strategy; or annual emissions less than 1,100 t/yr CO<sub>2</sub>e; or 4.6 t CO<sub>2</sub>e/SP/yr (residents + employees). Land use development projects include residential, commercial, industrial, and public land uses and facilities.
- For stationary-source projects, the threshold is 10,000 t/yr CO<sub>2</sub>e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate.

If annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change.

The bright-line numeric threshold of 1,100 t/yr CO<sub>2</sub>e is a numeric emissions level below which a project's contribution to global climate change would be less than "cumulatively considerable." This emissions rate is equivalent to a project size of approximately 56 single-family dwelling units, and approximately 59 percent of all future projects and 92 percent of all emissions from future projects through 2020 would exceed this level. For projects that are above this bright-line cutoff level, emissions from these projects would still be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 t/yr CO<sub>2</sub>e per service population or better for mixed-use projects. Projects with emissions above 1,100 t/yr CO<sub>2</sub>e would therefore still be less than significant if they achieved project efficiencies below these levels.

The BAAQMD does not have an adopted *Threshold of Significance* for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. The Lead Agency is encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable.

The BAAQMD CEQA thresholds of significance does not contain guidance specific to agricultural activities.

### **Sacramento Metropolitan Air Quality Management District (SMAQMD)**

In December 2009, the SMAQMD updated its CEQA Guide to Air Quality Assessment, which includes a chapter on greenhouse gas emissions. The greenhouse gas emissions chapter was revised most recently in February 2021. Generally, the SMAQMD believes that GHG emissions are best analyzed and mitigated at the program-level; however, until more program-level GHG analyses have been performed in Sacramento County, the SMAQMD offers the following guidance for addressing the GHG emissions associated with individual development projects:

- The SMAQMD recommended threshold for land development projects is 1,100 t/yr CO<sub>2</sub>e for the construction phase. For the operational phase, the project must demonstrate consistency with ARB's 2017 Climate Change Scoping Plan by implementing applicable BMP, or equivalent on-site or off-site mitigation.
- The stationary source project recommended threshold is 1,100 t/yr CO<sub>2</sub>e for construction and 10,000 t/yr CO<sub>2</sub>e for operations.

The recommended thresholds were developed to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals of AB 32 and the Scoping Plan. The SMAQMD guidance does not contain any numeric thresholds or guidance specific to agricultural activities.

### **San Joaquin County Air Pollution Control District (SJVAPCD)**

To assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG on global climate change, the SJVAPCD adopted the following guidance on December 17, 2009: *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* and the policy: *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency* (SJVAPCD 2009). The guidance and policy rely on the use of performance based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from business-as-usual, is required to determine that a project would have a less than cumulatively significant impact. The guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project related impacts on global climate change.

Projects complying with BPS would not require specific quantification of GHG emissions and would be determined to have a less than significant cumulative impact for GHG emissions. Projects not complying with Best Performance Standards would require quantification of GHG emissions and demonstration that GHG emissions have been reduced or mitigated by 29 percent, as targeted by CARB's AB 32 Scoping Plan. Furthermore, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an Environmental Impact Report is required, regardless of whether the project incorporates BPS. (SJVAPCD 2009)

Best performance standards for GHG emissions have not yet been developed for all sources of GHG emissions. Given that understanding and regulation of GHG emission sources and mitigations is evolving, the SJVAPCD staff expects the development of BPS to be an ongoing effort. Consistent with CEQA Guidelines Section 15064(h)(3), for projects implementing best performance standards, or their equivalent, the District would conclude that the project's incremental contribution to the cumulative impact on global climatic change is not cumulatively considerable. (SJVAPCD 2009)

The following bullet points illustrate the SJVAPCD's process for evaluating GHG significance. Project impact can be reduced by:



- Using any combination of District approved GHG Emission Reduction Measures to meet BPS
- Complying with an approved GHG plan or mitigation program
- Reducing GHG emissions by at least 29 percent.

The SJVAPCD has developed illustrative examples for potential BPS. At this stage, these illustrative BPS should not be considered District-approved standards, but rather provide an opportunity for public input into the development of BPS and ultimate development of final BPS. The illustrative BPS now being proposed for livestock operations include that all operations shall utilize all three following control measures:

- (1) All ruminant animal feed shall include at least six percent cottonseed, or, upon SJVAPCD approval, based on sufficient demonstration that use of cottonseed is not feasible, an equivalent substitute (estimated to generate a 12 percent reduction in methane emissions from this source);
- (2) Manure from animal housing areas for mature cows shall be removed and transferred into appropriate treatment facilities at least four times a day and at least once a day for all other animals (estimated to generate a 7.1 percent reduction in methane emissions from this source); and
- (3) Collected manure shall be treated anaerobically in digesters or covered lagoons, designed and operated per NRCS standards, with captured methane used for energy recovery in a method that displaces current or required fossil fuel use, such as, but not limited to, injection into natural gas pipeline, or powering mobile equipment. Taking the effect of the CO<sub>2</sub> produced from the combustion of CH<sub>4</sub> into account, an overall reduction of 63.5 percent of fugitive CH<sub>4</sub> emissions can be achieved by the use of properly designed and controlled anaerobic treatment as a BPS. (SJVAPCD 2009)

Although permit requirements for many livestock farms took effect in 2004, the particular BPS proposed, with the exception of frequent manure removal from livestock housing areas, have never been implemented as mandatory permit requirements. Instead, many other control measures aimed at reducing VOC and PM<sub>10</sub> emissions have been applied with greater emphasis. Until these BPS are finalized, the following conditions would be most applicable according to the SJVAPCD:

- In order to minimize Green House Gas emissions and optimize equipment efficiency, all equipment shall be operated in accordance with manufacturer specifications and approved design specifications.
- All ruminant animal feed shall include at least 6 percent cottonseed.
- Manure from animal housing areas shall be removed and transferred into appropriate treatment facilities at least four times a day for mature cows and at least once a day for all other animals. (SJVAPCD 2009)

The illustrative BPS now being proposed by the SJVAPCD for farming operations and the application of manure to cropland include that all operations shall utilize the following control measure:

- (1) Manure shall be incorporated into soil within 24 hours after application. In a report entitled “Recommendations to the San Joaquin Valley Air Pollution Control Officer Regarding Best Available Control Technology for Dairies in the San Joaquin Valley”, the Dairy Permitting Advisory Group (DPAG) concluded that VOC emissions could be reduced by 29 to 58 percent by the prompt incorporation of manure into soil after application to land. Based on this information, this BPS assumes a similar benefit as far as the reduction of CH<sub>4</sub> emissions is concerned. However due to the lack of data, the lower control efficiency of 29 percent of methane emissions from this source will be used.

The California Attorney General (AG) has expressed opposition to SJVAPCD strategy, claiming it leaves a number of unanswered questions, and the AG’s office issued a letter dated November 4, 2009 stating that the proposed approach would “not withstand legal scrutiny and may result in significant lost opportunities for the Air District and local governments to require mitigation of GHG emissions.” The AG noted several deficiencies, primarily that the SJVAPCD does not discuss a particular environmental objective that would be achieved by implementing the proposed thresholds, such as meeting a GHG emissions reduction trajectory consistent with that set forth in AB 32 and Executive Order S-03-05 within the Air District’s jurisdiction. Also, the BPS are described as “illustrative” only, and it is not possible at this time to determine whether the BPS ultimately adopted will reduce GHG emissions in the San Joaquin Valley and, if so, by how much. Further, the threshold does not take into account the need for new development to be more GHG-efficient than existing development to achieve AB 32 goals, given that past and current sources of emissions, which are substantially less efficient than this average, will continue to exist and emit. The AG also points out that the SJVAPCD proposal appears to award emission reduction “points” for undertaking mitigation measures that are already required by local or state law and could offer an incentive to project proponents to artificially inflate the hypothetical project to show that the proposed project is, by comparison, GHG-efficient. Most importantly, the AG noted that according to the SJVAPCD guidance, any project employing certain, as of yet unidentified, mitigation measures would be considered to not result in a significant level of GHG emissions or a significant impact, regardless of the project’s total GHG emissions, which could be very large.

Because of the uncertain direction of legal opinion, and because BPS for dairies and agricultural operations have not been adopted and are illustrative only, this EIR does not use project compliance with BPS as a threshold of significance.

### **Comparison of Non-Zero Significance Thresholds**

In efforts to identify a numeric threshold that could be appropriate for this analysis, the table below summarizes thresholds discussed above.

### Comparison of Numeric Thresholds

Category	EPA	SCAQMD	BAAQMD	SJVAPCD	SMAQMD
Construction	--	30-yr amortization applied to operational	None recommended	--	1,100 t/yr CO <sub>2e</sub>
Stationary Sources Operation	25,000 t/yr CO <sub>2e</sub>	10,000 t/yr CO <sub>2e</sub>	10,000 t/yr CO <sub>2e</sub>	--	10,000 t/yr CO <sub>2e</sub>
Land Use Projects	--	3,000 t/yr CO <sub>2e</sub> OR 4.6 t CO <sub>2e</sub> /SP/yr	1,100 t/yr CO <sub>2e</sub> OR 4.6 t CO <sub>2e</sub> /SP/yr	--	Consistent with Scoping Plan
Dairy/Agricultural Project	25,000 t/yr CO <sub>2e</sub>	--	--	--	--

SP = Service Population; t/yr = metric tons per year; CO<sub>2e</sub> = carbon dioxide equivalents

While the EPA's Mandatory GHG Reporting Rule threshold of 25,000 t/yr CO<sub>2e</sub> represents a reporting threshold and not a threshold of significance specifically, it is estimated to capture approximately 85 percent of the U.S emissions of GHGs and capture all large sources of GHG emissions. This is very similar to the CARB and SCAQMD goal of emissions capture of 90 percent to meet AB 32 goals.

Except for EPA, no other agency has established any adopted thresholds for agricultural or dairy uses at this time (July 2021). Because SJVAPCD BPS for dairies and agricultural operations have not been adopted and are illustrative only, application of BPS as a threshold is not possible at this time. The EPA's reporting threshold of 25,000 t/yr of CO<sub>2e</sub> represents a conservative value that would capture many large emitters of GHGs. However, the EPA's 25,000 t/yr CO<sub>2e</sub> is a permit threshold that represents emissions from the entire facility and not just the increment of increase. Therefore, a dual threshold is identified that uses 10,000 t/yr CO<sub>2e</sub> (used by both SCAQMD and BAAQMD for industrial stationary sources) as the maximum increment of increase and also 25,000 t/yr CO<sub>2e</sub> as a threshold for total facility emissions.

### Identified EIR Threshold

In accordance with CEQA Guideline Section 15064.4, Determining the Significance of Impacts from Greenhouse Gas Emissions, a lead agency should determine the amount of GHG emissions resulting from a project, which may be determined by either using a model or methodology to quantify GHG emissions or by relying on a qualitative analysis or performance based standards. Additionally, a lead agency may consider: (1) whether the project would increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project's emissions exceed a threshold of significance that the lead agency has determined applies to the project; or (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Merced County has not established significance criteria for GHG emissions. Many GHG emission reduction strategies have few or limited agricultural measures, making compliance with these strategies as a threshold an illogical choice. In efforts to capture both large increases in GHG emissions and large emitters of GHGs, and in consideration of the foregoing, for the purposes of this EIR, the project's contribution to GHG emissions would be considered significant if either of the following apply:

- The increment of increase of the project's GHG emissions would be greater than 10,000 t/yr of CO<sub>2</sub>e.
- The increment of increase of the project's GHG emissions would be less than 10,000 t/yr of CO<sub>2</sub>e, but the total project facility's GHG emissions (existing plus project increment) would be greater than 25,000 t/yr of CO<sub>2</sub>e.

This numeric threshold would only be applicable to dairies, and would not apply to industrial, commercial, residential, or other development types.

## WORKS CITED

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