

Appendix M

Health Risk Assessment

August 30, 2019

Community Development Department
City of Burbank
150 North Third Street
Burbank, California 91510
Attn: Leonard Bechet, Senior Planner

Re: 777 North Front Street Project (Project) – Health Risk Assessment

Mr. Bechet:

Air Quality Dynamics has reviewed the comment letters on the Draft Environmental Impact Report (DEIR) and Recirculated Draft Environmental Impact Report (RDEIR) prepared by Gideon Kracov on behalf of UNITE HERE Local 11 and associated SWAPE analyses which alleges the DEIR and RDEIR prepared for the proposed Project fail to “adequately evaluate” the Projects health risk impacts. SWAPE contends that diesel particulate matter (DPM) emissions associated with Project construction and operation may have the potential to expose sensitive receptors to substantial pollutant concentrations. This is based upon the preparation of a "simple screening-level HRA" which reports cancer risk estimates for the maximum exposed residential receptor exceed the significance threshold incremental cancer risk of one in one hundred thousand (1.0E-05) established by the South Coast Air Quality Management District (SCAQMD) for projects prepared under the auspices of the California Environmental Quality Act (CEQA).

As a result, SWAPE notes that should a "potentially significant health impact" be identified utilizing a screening dispersion model methodology, “a more refined health risk assessment" be prepared which incorporates "correct exposure assumptions and up-to-date" guidance. Specifically, SWAPE is asserting that early-life exposure adjustments must be used when quantifying carcinogenic risk estimates and the incorporation of DPM exposures from operation of the proposed Project. However, their use and subsequent incorporation in the quantification of carcinogenic risk are incorrect and without merit and only serve to provide an improbable assessment of potential carcinogenic risk.

Based upon both the SWAPE recommendation and assessment methodology noted above, Air Quality Dynamics presents a refined health risk assessment which provides clarification and use of its assessment and dispersion modeling methodologies and demonstrates consistency with U.S. Environmental Protection Agency, California Environmental Protection Agency and SCAQMD guidance to ensure a viable quantification of pollutant exposures associated with the generation of DPM emissions from construction related activity.

Results of the refined health risk assessment showed lower DPM concentrations than the

SWAPE screening-level analyses, whereby cancer risk estimates were found to be well below the SCAQMD significance threshold of 1.0E-05 and noncarcinogenic hazard estimates were predicted to be below unity. The following discussion outlines the methodology utilized to conduct the refined health risk assessment and presents the revised estimates of pollutant exposure.

Source Identification

The proposed Project is situated on a vacant 8.09-acre parcel on the east side of North Front Street between West Burbank Boulevard and West Magnolia Boulevard. The Project consists of a mixed-use development and includes one eight-story and one seven-story building with a total of 573 residential units and approximately 1,067 square feet of commercial retail space and one seven-story 307 room hotel. A total of 1,454 parking spaces located in an integrated parking structure with one level of subterranean parking and up to 7 levels of above grade parking are additionally proposed. The construction and buildout of the proposed Project will occur over a 73-month (6.08 year) period.

Source Characterization

For on-site construction, emission estimates were based upon the Los Angeles-South Coast County profile generated by the CalEEMod land use emission software as presented in the RDEIR (Appendix D) whereby off-road PM₁₀ exhaust estimates were used as a surrogate for DPM emissions. To assess localized impacts, construction phase, calendar year and number of days associated with each activity were identified to produce an average daily emission rate. Construction operations are reported to occur 5 days per week for 1,587 days.

Table 1 provides a summary of estimated maximum daily particulate emissions associated with each identified construction phase and year. The emission rates for both winter and summer scenarios were found to be commensurate. Attachment B presents the emission calculation worksheet used to quantify pollutant source strength. Excerpts from the CalEEMod output file which identify construction phase timelines and associated emission rates are provided in Attachment C.

Table 1
Maximum Daily Emissions/PM₁₀

Construction Phase/Year	Emissions (Lbs/Day)
Site Preparation/2019	0.9462
Grading/2019	0.7555
Grading/2020	0.7555
Building Construction/2020	0.9036
Building Construction/2021	0.9036
Building Construction/2022	0.9036

Table 1 continued
Maximum Daily Emissions/PM₁₀

Construction Phase/Year	Emissions (Lbs/Day)
Building Construction/2023	0.9036
Building Construction/2024	0.9036
Building Construction/2025	0.9036
Architectural Coating/2023	0.0950
Architectural Coating/2024	0.0951
Architectural Coating/2025	0.0951
Paving/2025	0.6093
Average Daily Emissions	0.96515

For operational emissions, CalEEMod model estimates are associated with area, energy and mobile sources. On-site area source emissions include hearths and landscape maintenance equipment. Energy related emissions are associated with natural gas and electricity consumption. On-road mobile sources include running and start emissions. In consideration of these source categories, DPM emissions are only associated with a portion of the mobile source profile whereby the predominant source of emissions relate to off-site vehicle miles traveled to and from the project site. Although a portion of start emissions are generated on-site, they are associated with gasoline fueled vehicles not diesel vehicles. To assume that these sources generate on-site DPM emissions is inconsistent with the CalEEMod operational profile. As such, DPM exhaust emissions associated with operational sources are not associated with on-site generation and therefore, not considered in the refined health risk assessment.

Exposure Quantification

In order to assess the impact of DPM emissions, air quality modeling utilizing the AMS/EPA Regulatory Model AERMOD was performed. AERMOD's air dispersion algorithms are based upon a planetary boundary layer turbulence structure and scaling concepts, including the treatment of surface and elevated sources in simple and complex terrain. AERMOD is a steady-state Gaussian plume model applicable to directly emitted air pollutants that employs best state-of-practice parameterizations for characterizing meteorological influences and atmospheric dispersion. AERMOD is the U.S. Environmental Protection Agency's guideline model for the assessment of near-field pollutant dispersion and was, therefore, utilized in the refined health risk assessment.

The SCAQMD provides guidance (*Localized Significance Threshold Methodology*, July 2008) on the evaluation of localized air quality impacts to public agencies conducting environmental review of projects located within its jurisdiction. As such, source treatment outlined in the Localized Significance Threshold (LST) methodology was utilized whereby exhaust emissions

from construction equipment were treated as a set of side-by-side elevated volume sources with a release height of five meters and an initial vertical (σ_z) dimension of 1.4 meters. A horizontal (σ_y) parameter of 4.65 meters was utilized and produced by dividing a source separation distance of 10 meters by a standard deviation of 2.15. A flagpole receptor height of 2 meters was assumed and terrain height adjustments were incorporated into the modeling exercise to account for the discrepancy in receptor elevations and the average grade plane of the Project site.

Refined air dispersion models require meteorological information to account for local atmospheric conditions. Due to their sensitivity to individual meteorological parameters such as wind speed and direction, the U.S. Environmental Protection Agency recommends that meteorological data used as input into dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. In response to this recommendation, meteorological data from the SCAQMD Burbank Airport monitoring station was used to represent local weather conditions and prevailing winds. In a manner consistent with SCAQMD guidance for the assessment of chronic exposures, maximum concentrations were produced by incorporating all five years of available data. The model scalar option was additionally invoked to account for emissions generated during construction related activity corresponding to 8 hours per day as reported in the CalEEMod construction profile from 8 a.m. to 4 p.m. (ending hours 9 to 16).

The modeling analysis also considered the spatial distribution of volume source emissions in relation to residential receptors as reported in the Recirculated DEIR. Graphical representations for the off-road equipment and receptor grid networks are presented in Figures 1 and 2.

Figure 1
Off-Road Equipment Source Network

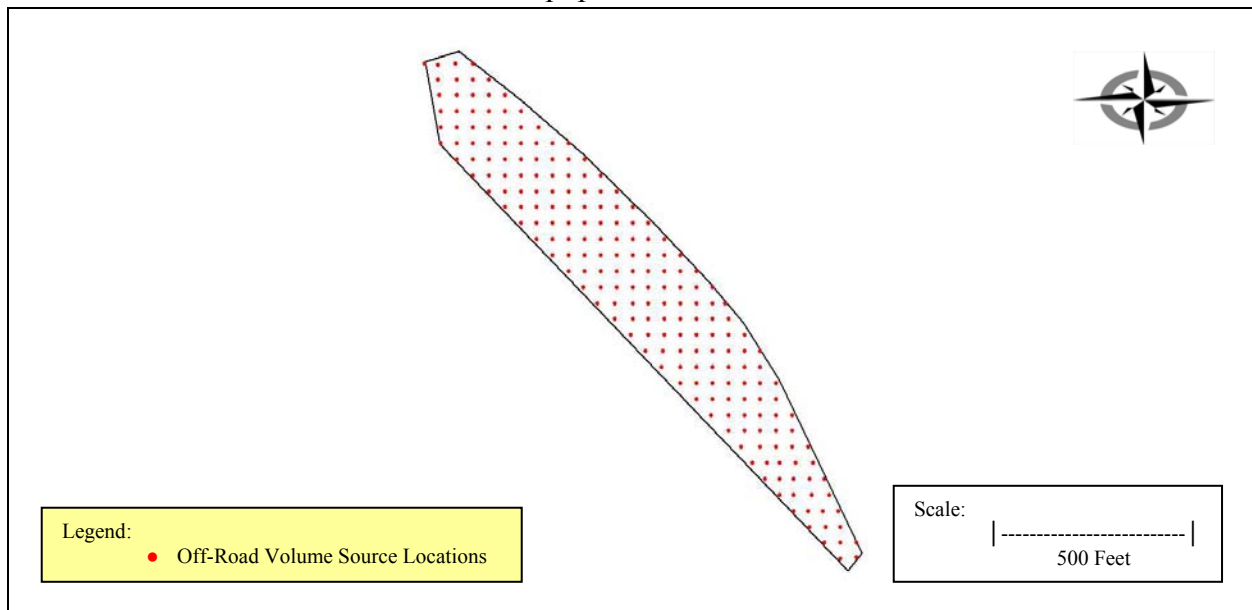
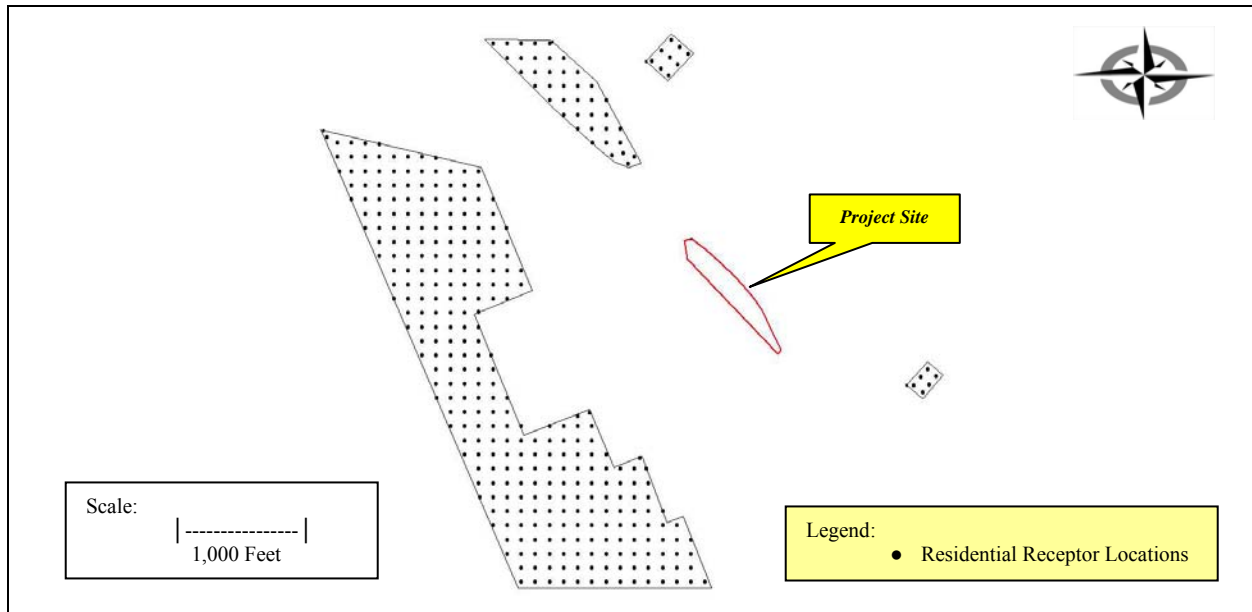


Figure 2
Source-Receptor Grid Network



Attachment D presents an aerial depiction of receptor locations commensurate with the modeled characterizations identified in Figure 2. Attachment E provides a copy of the AERMOD dispersion model output file associated with the assessment of residential exposures.

Risk Characterization

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. As a result, the State of California has established a threshold of one in one hundred thousand (1.0E-05) as a level posing no significant risk for exposures to carcinogens regulated under the Safe Drinking Water and Toxic Enforcement Act (Proposition 65). This threshold is also consistent with the maximum incremental cancer risk established by the SCAQMD for projects analyzed under CEQA.

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF is a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It represents an upper bound estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu\text{g}/\text{m}^3$) over a 70-year lifetime. The URF and corresponding cancer potency factor for DPM utilized in the assessment was obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*.

A review of available guidance was conducted to determine applicability of the use of early-life exposure adjustments to DPM emissions. For risk assessments conducted under the auspices of The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly, Statutes of 1987; Health and Safety Code Section 44300 et seq.) and associated guidelines promulgated by the California Office of Environmental Health Hazard Assessment (OEHHA) a weighting factor is applied to all carcinogens regardless of purported mechanism of action. Notwithstanding, applicability of AB 2588 is limited to commercial and industrial operations. There are two broad classes of facilities subject to the AB 2588 Program: Core facilities and facilities identified within discrete industry-wide source categories. Core facilities subject to AB 2588 compliance are sources whose criteria pollutant emissions (particulate matter, oxides of sulfur, oxides of nitrogen and volatile organic compounds) are 25 tons per year or more as well as those facilities whose criteria pollutant emissions are 10 tons per year or more but less than 25 tons per year. Industry-wide source facilities are classified as smaller operations with relatively similar emission profiles (e.g., auto body shops, gas stations and dry cleaners using perchloroethylene). The emissions generated from off-road mobile equipment are not classified as core operations nor subject to industry-wide source evaluation.

Additionally, in comments presented to the SCAQMD Governing Board (Meeting Date: June 5, 2015, Agenda No. 28) relating to toxic air contaminant exposures under Rules 1401, 1401.1, 1402 and 212 revisions, use of the OEHHA guidelines specifically related to the applicability and use of early-life exposure adjustments for projects subject to CEQA, it was reported that:

The Proposed Amended Rules are separate from the CEQA significance thresholds. The Response to Comments Staff Report PAR 1401, 1401.1, 1402, and 212 A - 8 June 2015 SCAQMD staff is currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public workshops to gather input before bringing recommendations to the Governing Board. In the interim, staff will continue to use the previous guidelines for CEQA determinations.

To date, the SCAQMD, as a commenting agency, has not conducted public workshops nor developed policy relating to the application of early-life exposure adjustments utilizing OEHHA guidance for projects prepared by other public/lead agencies subject to CEQA.

As a result, this health risk assessment relied upon U.S. Environmental Protection Agency guidance relating to the use of early-life exposure adjustment factors (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, EPA/630/R-003F) whereby adjustment factors are only considered when carcinogens act "through the mutagenic mode of action." In 2006, the U.S. Environmental Protection Agency published a memorandum which provides guidance regarding the preparation of health risk assessments should

carcinogenic compounds elicit a mutagenic mode of action (USEPA, 2006). As presented in the technical memorandum, numerous compounds were identified as having a mutagenic mode of action. For diesel particulates, polycyclic aromatic hydrocarbons (PAHs) and their derivatives, which are known to exhibit a mutagenic mode of action, comprise < 1% of the exhaust particulate mass. To date, the U.S. Environmental Protection Agency reports that whole diesel engine exhaust has not been shown to elicit a mutagenic mode of action (USEPA, 2018).

Additionally, the California Department of Toxic Substances Control (DTSC) which is charged with protecting individuals and the environment from the effects of toxic substances and responsible for assessing, investigating and evaluating sensitive receptor populations to ensure that properties are free of contamination or that health protective remediation levels are achieved has adopted the U.S. Environmental Protection Agency's policy in the application of early-life exposure adjustments which is consistent with the methodology considered in the assessment of residential exposures. As such, incorporation of early-life exposure adjustments for exposures to DPM emissions in the quantification of carcinogenic risk for construction of the proposed Project were not considered in the refined health risk assessment.

To quantify dose, the procedure requires the incorporation of several discrete exposure variates. To account for exposures to residential occupancies, an exposure frequency of 260 days per year for 6.08 years (73 months) was assumed.

Point estimates for daily breathing rates associated with the 95th percentile were employed representing 3rd trimester and infant/child exposures and incorporated into the following dose algorithm:

$$Dose_{air} = C_{air} \times \{BR/BW\} \times A \times EF \times 10^{-6}$$

Where:

$Dose_{air}$	=	dose through inhalation (mg/kg/day)
C_{air}	=	concentration of contaminant in air ($\mu\text{g}/\text{m}^3$)
$\{BR/BW\}$	=	daily breathing rate normalized to body weight (L/kg body weight/day)
A	=	inhalation absorption factor (unitless)
EF	=	exposure frequency (days/365 days)
10^{-6}	=	micrograms to milligrams conversion

Inhalation dose estimates for the identified age groups were incorporated into the following equation to produce carcinogenic risk estimates commensurate with the duration of construction activity:

$$Risk_{inh} = Dose_{air} \times CPF \times ED/AT \times FAH$$

Where:

$Risk_{inh}$	=	inhalation cancer risk
$Dose_{air}$	=	daily inhalation dose (mg/kg/day)
CPF	=	inhalation cancer potency factor (mg/kg/day ⁻¹)
ED	=	exposure duration for specified age group (years)
AT	=	averaging time (years)
FAH	=	fraction of exposure time (default 1)

Table 2 presents the carcinogenic risk estimate for the maximum exposed residential receptor which is located approximately 0.2 miles northwest of the Project site. Attachment A, Tables A1 through A3, column b identify the predicted DPM concentration, columns f-h, present the URF, corresponding cancer potency factor and dose estimates for exposures considered in the assessment. The cancer risk estimate is presented in column i.

Table 2
Maximum Carcinogenic Risk / Residential Receptor

Age Group/Exposure Duration	Risk
3rd Trimester/0.25 years	1.0E-08
Infant/1.75 years	2.1E-07
Child/4.08 years	3.9E-07
Total	6.1E-07

As noted above, the cancer risk estimates for the maximum exposed residential receptor was predicted to be below the SCQAMD significance threshold of one in one hundred thousand (1.0E-05).

An evaluation of the potential noncancer effects of DPM exposures was also conducted. Under the point estimate approach, adverse health effects are evaluated by comparing the pollutant concentration with the appropriate Reference Exposure Level (REL). The REL presented in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* was considered in the assessment.

To quantify noncarcinogenic impacts, the hazard quotient approach was used. The hazard quotient assumes that subthreshold exposures adversely affect a specific organ or organ system (i.e., toxicological endpoint). To calculate the hazard quotient, the pollutant concentration or dose is divided by its toxicity value. Should the total equal or exceed one (i.e., unity), a health hazard is presumed to exist. No exposure frequency or duration adjustments are considered for noncarcinogenic exposures.

For chronic noncarcinogenic effects, the hazard quotient for the identified toxicological endpoint totaled less than one for the maximum exposed residential receptor.

Attachment A, Tables A1 through A3, columns j-k, present the REL and corresponding reference dose value used in the evaluation of chronic noncarcinogenic exposures. The noncancer hazard quotient generated from off-road mobile source activity is presented in column l.

Conclusion

Based upon the predicted carcinogenic risk and noncarcinogenic hazard estimates for the residential exposure scenario, the refined health risk assessment demonstrates that construction of the proposed Project will not result in unacceptable localized air quality impacts.

I can be reached at (818) 703-3294 should you have any questions or require additional information.

Sincerely,

Bill Piazza

Attachment A: Carcinogenic Risk/Noncarcinogenic Hazard Calculation Worksheets
Attachment B: Emission Calculation Worksheet
Attachment C: CalEEMod Output File
Attachment D: Aerial Depiction of Residential Receptors
Attachment E: Dispersion Model Output File
Attachment F: List of References

ATTACHMENT A

Carcinogenic Risk/Noncarcinogenic Hazard Calculation Worksheets

Table A1
Quantification of Carcinogenic Risks and Noncarcinogenic Hazards
3rd Trimester Exposure Scenario / Maximum Infant Residential Receptor

Source (a)	Mass GLC		Weight Fraction (d)	Contaminant (e)	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints*									
	(ug/m ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (j)	RfD (mg/kg/day) (k)	RESP (l)	CNS/PNS (m)	CV/BL (n)	IMMUN (o)	KIDN (p)	GI/LV (q)	REPRO (r)	EYES (s)
Construction	0.01042	1.04E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	2.7E-06	1.0E-08	5.0E+00	1.4E-03	2.1E-03							
TOTAL								1.0E-08		2.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

* Key to Toxicological Endpoints

RESP Respiratory System
CNS/PNS Central/Peripheral Nervous System
CV/BL Cardiovascular/Blood System
IMMUN Immune System
KIDN Kidney
GI/LV Gastrointestinal System/Liver
REPRO Reproductive System (e.g. teratogenic and developmental effects)
EYES Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	260
exposure duration (years)	0.25
inhalation rate (L/kg-day)	361
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	1
breathing rate third trimester	361
breathing rate 0-2	1090
breathing rate 2-9	861
breathing rate 2-16	745
breathing rate 16-30	335
breathing rate 16-70	290

Table A2
Quantification of Carcinogenic Risks and Noncarcinogenic Hazards
1.75 Year Exposure Scenario / Maximum Infant Residential Receptor

Source (a)	Mass GLC		Weight Fraction (d)	Contaminant (e)	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints*									
	(ug/m ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (j)	RfD (mg/kg/day) (k)	RESP (l)	CNS/PNS (m)	CV/BL (n)	IMMUN (o)	KIDN (p)	GI/LV (q)	REPRO (r)	EYES (s)
Construction	0.01042	1.04E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	8.1E-06	2.1E-07	5.0E+00	1.4E-03	2.1E-03							
TOTAL								2.1E-07		2.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

* Key to Toxicological Endpoints

RESP Respiratory System
CNS/PNS Central/Peripheral Nervous System
CV/BL Cardiovascular/Blood System
IMMUN Immune System
KIDN Kidney
GI/LV Gastrointestinal System/Liver
REPRO Reproductive System (e.g. teratogenic and developmental effects)
EYES Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	260
exposure duration (years)	1.75
inhalation rate (L/kg-day)	1090
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	1
breathing rate third trimester	361
breathing rate 0-2	1090
breathing rate 2-9	861
breathing rate 2-16	745
breathing rate 16-30	335
breathing rate 16-70	290

Table A3
Quantification of Carcinogenic Risks and Noncarcinogenic Hazards
4.08 Year Exposure Scenario / Maximum Child Residential Receptor

Source (a)	Mass GLC		Weight Fraction (d)	Contaminant (e)	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints*									
	(ug/m ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (j)	RfD (mg/kg/day) (k)	RESP (l)	CNS/PNS (m)	CV/BL (n)	IMMUN (o)	KIDN (p)	GI/LV (q)	REPRO (r)	EYES (s)
Construction	0.01042	1.04E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	6.4E-06	3.9E-07	5.0E+00	1.4E-03	2.1E-03							
TOTAL								3.9E-07		2.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

* Key to Toxicological Endpoints

RESP Respiratory System
CNS/PNS Central/Peripheral Nervous System
CV/BL Cardiovascular/Blood System
IMMUN Immune System
KIDN Kidney
GI/LV Gastrointestinal System/Liver
REPRO Reproductive System (e.g. teratogenic and developmental effects)
EYES Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	260
exposure duration (years)	4.08
inhalation rate (L/kg-day)	861
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	1
breathing rate third trimester	361
breathing rate 0-2	1090
breathing rate 2-9	861
breathing rate 2-16	745
breathing rate 16-30	335
breathing rate 16-70	290

ATTACHMENT B

Emission Calculation Worksheet

Emission Calculation Worksheet

Emissions	Phase	Year	Lb/Day	# Days	Emissions
On-Site Exhaust PM 10	Site Preparation	2019	0.9462	65	61.503
	Grading	2019	0.7555	22	16.621
	Grading	2020	0.7555	65	49.108
	Building Construction	2020	0.9036	197	178.009
	Building Construction	2021	0.9036	261	235.840
	Building Construction	2022	0.9036	260	234.936
	Building Construction	2023	0.9036	260	234.936
	Building Construction	2024	0.9036	262	236.743
	Building Construction	2025	0.9036	195	176.202
	Architectural Coating	2023	0.0951	260	24.726
	Architectural Coating	2024	0.0951	262	24.916
	Architectural Coating	2025	0.0951	195	18.545
	Paving	2025	0.6093	65	39.605
	Construction Emissions (Lbs)				
Construction Activity (Days)					1587
Average Daily Construction Emissions (Lb/Day)					0.96515
Exhaust PM10				Combustion mass	Combustion g/s/source
	Combustion Sources	211		0.96515	7.2041E-05

Note: Construction activity is based upon a 5 day per week operating schedule from 9/2/2019 to 9/30/2025.

ATTACHMENT C

CalEEMod Output File

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/2/2019	11/29/2019	5	65	
2	Grading	Grading	12/2/2019	3/31/2020	5	87	
3	Building Construction	Building Construction	4/1/2020	9/30/2025	5	1435	
4	Architectural Coating	Architectural Coating	1/2/2023	9/30/2025	5	717	
5	Paving	Paving	6/30/2025	9/26/2025	5	65	

Acres of Grading (Site Preparation Phase): 8.09

Acres of Grading (Grading Phase): 8.09

Acres of Paving: 0.64

Residential Indoor: 1,307,757; Residential Outdoor: 435,919; Non-Residential Indoor: 322,830; Non-Residential Outdoor: 107,610; Striped Parking Area: 38,556 (Architectural Coating – sqft)

OffRoad Equipment

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.2 Site Preparation - 2019

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	lb/day										lb/day					
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
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
Worker	0.0997	0.0732	0.7965	2.0700e-003	0.2012	1.7300e-003	0.2029	0.0534	1.6000e-003	0.0550		205.5836	205.5836	7.0700e-003		205.7604
Total	0.0997	0.0732	0.7965	2.0700e-003	0.2012	1.7300e-003	0.2029	0.0534	1.6000e-003	0.0550		205.5836	205.5836	7.0700e-003		205.7604

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	lb/day										lb/day					
Fugitive Dust					8.1892	0.0000	8.1892	4.4752	0.0000	4.4752			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.9462	0.9462		0.9462	0.9462	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	0.9312	19.0656	22.9600	0.0380	8.1892	0.9462	9.1354	4.4752	0.9462	5.4214	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.3 Grading - 2019

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	lb/day										lb/day					
Hauling	4.8588	145.4007	34.2487	0.4295	33.6818	0.6472	34.3290	8.5648	0.6192	9.1840		46,482.3544	46,482.3544	2.8520		46,553.6538
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
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		171.3196	171.3196	5.8900e-003		171.4670
Total	4.9419	145.4617	34.9124	0.4312	33.8495	0.6487	34.4981	8.6093	0.6205	9.2298		46,653.6740	46,653.6740	2.8579		46,725.1207

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	lb/day										lb/day					
Fugitive Dust					2.8286	0.0000	2.8286	1.5056	0.0000	1.5056			0.0000			0.0000
Off-Road	0.7263	14.8397	18.9906	0.0297		0.7555	0.7555		0.7555	0.7555	0.0000	2,936.8068	2,936.8068	0.9292		2,960.0361
Total	0.7263	14.8397	18.9906	0.0297	2.8286	0.7555	3.5841	1.5056	0.7555	2.2612	0.0000	2,936.8068	2,936.8068	0.9292		2,960.0361

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.3 Grading - 2020

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	lb/day										lb/day					
Hauling	4.5438	135.3316	33.5783	0.4240	13.0748	0.5320	13.6067	3.5068	0.5089	4.0157		45,956.43 49	45,956.43 49	2.8292		46,027.16 44
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
Worker	0.0767	0.0544	0.6015	1.6700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		166.1131	166.1131	5.2400e-003		166.2440
Total	4.6204	135.3860	34.1798	0.4256	13.2424	0.5334	13.7758	3.5513	0.5102	4.0615		46,122.54 79	46,122.54 79	2.8344		46,193.40 84

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	lb/day										lb/day					
Fugitive Dust					2.8286	0.0000	2.8286	1.5056	0.0000	1.5056			0.0000			0.0000
Off-Road	0.7263	14.8397	18.9906	0.0297		0.7555	0.7555		0.7555	0.7555	0.0000	2,872.485 1	2,872.485 1	0.9290		2,895.710 6
Total	0.7263	14.8397	18.9906	0.0297	2.8286	0.7555	3.5841	1.5056	0.7555	2.2612	0.0000	2,872.485 1	2,872.485 1	0.9290		2,895.710 6

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2020

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	lb/day										lb/day					
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
Vendor	0.7585	21.6955	6.2706	0.0515	1.3060	0.1038	1.4098	0.3760	0.0993	0.4753		5,496.7609	5,496.7609	0.3676		5,505.9500
Worker	3.9809	2.8237	31.2387	0.0866	8.7074	0.0728	8.7802	2.3092	0.0671	2.3763		8,626.8048	8,626.8048	0.2719		8,633.6026
Total	4.7394	24.5192	37.5094	0.1381	10.0134	0.1766	10.1899	2.6853	0.1663	2.8516		14,123.5657	14,123.5657	0.6395		14,139.5526

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2021

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	lb/day										lb/day					
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
Vendor	0.6510	19.7653	5.7277	0.0510	1.3060	0.0418	1.3478	0.3760	0.0400	0.4160		5,453.8487	5,453.8487	0.3521		5,462.6508
Worker	3.7144	2.5407	28.6871	0.0838	8.7074	0.0704	8.7777	2.3092	0.0648	2.3741		8,352.8360	8,352.8360	0.2458		8,358.9808
Total	4.3654	22.3060	34.4148	0.1349	10.0134	0.1122	10.1256	2.6853	0.1048	2.7901		13,806.6847	13,806.6847	0.5979		13,821.6316

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2022

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	lb/day										lb/day					
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
Vendor	0.6111	18.7842	5.4217	0.0506	1.3061	0.0366	1.3426	0.3760	0.0350	0.4110		5,405.3937	5,405.3937	0.3397		5,413.8865
Worker	3.4887	2.2945	26.4218	0.0809	8.7074	0.0682	8.7756	2.3092	0.0628	2.3720		8,059.2961	8,059.2961	0.2219		8,064.8439
Total	4.0998	21.0787	31.8435	0.1314	10.0135	0.1047	10.1182	2.6853	0.0978	2.7830		13,464.6898	13,464.6898	0.5616		13,478.7304

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.4540	14.2267	4.8177	0.0489	1.3061	0.0174	1.3235	0.3761	0.0166	0.3927		5,237.5227	5,237.5227	0.2991		5,244.9993
Worker	3.2867	2.0752	24.2866	0.0779	8.7074	0.0662	8.7736	2.3092	0.0610	2.3702		7,764.4533	7,764.4533	0.1998		7,769.4487
Total	3.7407	16.3019	29.1043	0.1268	10.0135	0.0836	10.0971	2.6853	0.0776	2.7629		13,001.9760	13,001.9760	0.4989		13,014.4479

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2024

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	lb/day										lb/day					
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
Vendor	0.4428	14.1756	4.6716	0.0487	1.3061	0.0171	1.3232	0.3761	0.0163	0.3924		5,217.2097	5,217.2097	0.2945		5,224.5729
Worker	3.1189	1.8920	22.6099	0.0755	8.7074	0.0653	8.7727	2.3092	0.0601	2.3693		7,523.6114	7,523.6114	0.1831		7,528.1886
Total	3.5617	16.0677	27.2815	0.1241	10.0135	0.0823	10.0958	2.6853	0.0764	2.7617		12,740.8211	12,740.8211	0.4776		12,752.7615

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0270		0.9036	0.9036		0.9036	0.9036	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	0.6739	14.2261	17.8738	0.0270		0.9036	0.9036		0.9036	0.9036	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.4 Building Construction - 2025

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	lb/day										lb/day					
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
Vendor	0.4315	14.0556	4.5523	0.0484	1.3062	0.0167	1.3229	0.3761	0.0160	0.3921		5,189.234 7	5,189.234 7	0.2901		5,196.487 2
Worker	2.9708	1.7307	20.9791	0.0725	8.7074	0.0639	8.7713	2.3092	0.0588	2.3681		7,232.367 2	7,232.367 2	0.1669		7,236.539 1
Total	3.4024	15.7864	25.5315	0.1209	10.0135	0.0806	10.0942	2.6853	0.0748	2.7601		12,421.60 19	12,421.60 19	0.4570		12,433.02 63

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	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0270		0.9036	0.9036		0.9036	0.9036	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	0.6739	14.2261	17.8738	0.0270		0.9036	0.9036		0.9036	0.9036	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.5 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.6582	0.4156	4.8636	0.0156	1.7437	0.0133	1.7570	0.4624	0.0122	0.4747		1,554.884 1	1,554.884 1	0.0400		1,555.884 5
Total	0.6582	0.4156	4.8636	0.0156	1.7437	0.0133	1.7570	0.4624	0.0122	0.4747		1,554.884 1	1,554.884 1	0.0400		1,555.884 5

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	lb/day										lb/day					
Archit. Coating	8.6677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0168		281.8690
Total	8.7272	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0168		281.8690

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.5 Architectural Coating - 2024

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	lb/day										lb/day					
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
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
Worker	0.6246	0.3789	4.5278	0.0151	1.7437	0.0131	1.7568	0.4624	0.0120	0.4745		1,506.6539	1,506.6539	0.0367		1,507.5705
Total	0.6246	0.3789	4.5278	0.0151	1.7437	0.0131	1.7568	0.4624	0.0120	0.4745		1,506.6539	1,506.6539	0.0367		1,507.5705

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	lb/day										lb/day					
Archit. Coating	8.6677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0159		281.8443
Total	8.7272	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0159		281.8443

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.5 Architectural Coating - 2025

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	lb/day										lb/day					
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
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
Worker	0.5949	0.3466	4.2012	0.0145	1.7437	0.0128	1.7565	0.4624	0.0118	0.4742		1,448.3303	1,448.3303	0.0334		1,449.1657
Total	0.5949	0.3466	4.2012	0.0145	1.7437	0.0128	1.7565	0.4624	0.0118	0.4742		1,448.3303	1,448.3303	0.0334		1,449.1657

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	lb/day										lb/day					
Archit. Coating	8.6677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0154		281.8319
Total	8.7272	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0154		281.8319

La Terra Mixed Use Project - Los Angeles-South Coast County, Winter

3.6 Paving - 2025

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	lb/day										lb/day					
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
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
Worker	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429
Total	0.0572	0.0333	0.4040	1.4000e-003	0.1677	1.2300e-003	0.1689	0.0445	1.1300e-003	0.0456		139.2625	139.2625	3.2100e-003		139.3429

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	lb/day										lb/day					
Off-Road	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0258					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5867	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878

ATTACHMENT D

Aerial Depiction of Residential Receptors

Aerial Depiction of Residential Receptors



ATTACHMENT E

Dispersion Model Output File

**BEE-Line Software: (Version 11.13) data input file
** Model: AERMOD.EXE Input File Creation Date: 8/25/2019 Time: 11:58:14 AM
NO ECHO

Input File - C:\External Hard Drive\WD Passport\front street\construction hra\model\FRONT_DPM_RESIDENTIAL_REV.DTA
Output File - C:\External Hard Drive\WD Passport\front street\construction hra\model\FRONT_DPM_RESIDENTIAL_REV.LST
Met File - C:\External Hard Drive\WD Passport\front street\construction hra\metdata\KBUR_V9.SFC

*** Message Summary For AERMOD Model Setup ***

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 0 Informational Message(s)

***** FATAL ERROR MESSAGES *****
*** NONE ***

***** WARNING MESSAGES *****
ME W186 1035 MEOPEN: THRESH_LMIN 1-min ASOS wind speed threshold used 0.50
ME W187 1035 MEOPEN: ADJ_U* Option for Stable Low winds used in AERMET

*** SETUP Finishes Successfully ***

♀ *** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
PAGE 1

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --

**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for 211 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9818605.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEvated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
ADJ_U* - Use ADJ_U* option for SBL in AERMET
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates ANNUAL Averages Only

**This Run Includes: 211 Source(s); 1 Source Group(s); and 369 Receptor(s)

with: 0 POINT(s), including 0 POINTCAP(s) and 0 POINTHOR(s)
and: 211 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16216

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

NOTE: Option for EXponential format used in formatted output result files (FILEFORM Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 236.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Input Runstream File: FRONT_DPM_RESIDENTIAL_REV.DTA

**Output Print File: FRONT_DPM_RESIDENTIAL_REV.LST

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR	VARY BY
C1	0	0.72041E-04	378758.0	3783145.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C2	0	0.72041E-04	378768.0	3783146.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C3	0	0.72041E-04	378748.0	3783155.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C4	0	0.72041E-04	378758.0	3783155.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C5	0	0.72041E-04	378768.0	3783155.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C6	0	0.72041E-04	378739.0	3783165.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C7	0	0.72041E-04	378749.0	3783165.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C8	0	0.72041E-04	378758.0	3783165.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C9	0	0.72041E-04	378729.0	3783175.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C10	0	0.72041E-04	378738.0	3783175.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C11	0	0.72041E-04	378747.0	3783175.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C12	0	0.72041E-04	378757.0	3783175.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C13	0	0.72041E-04	378720.0	3783185.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C14	0	0.72041E-04	378729.0	3783185.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C15	0	0.72041E-04	378740.0	3783185.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C16	0	0.72041E-04	378751.0	3783185.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C17	0	0.72041E-04	378711.0	3783195.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C18	0	0.72041E-04	378720.0	3783195.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C19	0	0.72041E-04	378729.0	3783195.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C20	0	0.72041E-04	378739.0	3783195.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C21	0	0.72041E-04	378748.0	3783195.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C22	0	0.72041E-04	378703.2	3783205.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C23	0	0.72041E-04	378712.0	3783205.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C24	0	0.72041E-04	378720.0	3783205.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C25	0	0.72041E-04	378730.0	3783205.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C26	0	0.72041E-04	378741.0	3783205.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C27	0	0.72041E-04	378696.0	3783215.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C28	0	0.72041E-04	378708.0	3783215.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C29	0	0.72041E-04	378718.0	3783215.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C30	0	0.72041E-04	378728.0	3783215.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C31	0	0.72041E-04	378738.0	3783215.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C32	0	0.72041E-04	378688.0	3783225.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C33	0	0.72041E-04	378698.0	3783225.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C34	0	0.72041E-04	378708.0	3783225.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C35	0	0.72041E-04	378718.0	3783225.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C36	0	0.72041E-04	378728.0	3783225.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C37	0	0.72041E-04	378677.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C38	0	0.72041E-04	378688.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C39	0	0.72041E-04	378698.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C40	0	0.72041E-04	378708.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	

AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
AERMET - VERSION 16216 *** Particulates (Diesel)

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR	VARY BY
C41	0	0.72041E-04	378718.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C42	0	0.72041E-04	378728.0	3783235.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C43	0	0.72041E-04	378668.0	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C44	0	0.72041E-04	378678.0	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C45	0	0.72041E-04	378688.0	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C46	0	0.72041E-04	378698.1	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C47	0	0.72041E-04	378708.0	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C48	0	0.72041E-04	378718.0	3783245.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C49	0	0.72041E-04	378658.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C50	0	0.72041E-04	378668.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C51	0	0.72041E-04	378678.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C52	0	0.72041E-04	378688.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C53	0	0.72041E-04	378698.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C54	0	0.72041E-04	378708.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C55	0	0.72041E-04	378718.0	3783255.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C56	0	0.72041E-04	378646.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C57	0	0.72041E-04	378658.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C58	0	0.72041E-04	378668.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C59	0	0.72041E-04	378678.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C60	0	0.72041E-04	378688.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C61	0	0.72041E-04	378698.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C62	0	0.72041E-04	378708.0	3783265.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C63	0	0.72041E-04	378636.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C64	0	0.72041E-04	378647.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C65	0	0.72041E-04	378658.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C66	0	0.72041E-04	378668.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C67	0	0.72041E-04	378678.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C68	0	0.72041E-04	378688.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C69	0	0.72041E-04	378698.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C70	0	0.72041E-04	378708.0	3783275.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C71	0	0.72041E-04	378627.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C72	0	0.72041E-04	378638.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C73	0	0.72041E-04	378648.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C74	0	0.72041E-04	378658.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C75	0	0.72041E-04	378668.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C76	0	0.72041E-04	378678.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C77	0	0.72041E-04	378688.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C78	0	0.72041E-04	378698.0	3783285.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C79	0	0.72041E-04	378617.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C80	0	0.72041E-04	378628.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY	

AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
AERMET - VERSION 16216 *** Particulates (Diesel)

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION SCALAR VARY BY
C81	0	0.72041E-04	378638.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C82	0	0.72041E-04	378648.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C83	0	0.72041E-04	378658.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C84	0	0.72041E-04	378668.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C85	0	0.72041E-04	378678.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C86	0	0.72041E-04	378688.0	3783295.0	178.6	5.00	4.65	1.40	YES	HROFDY
C87	0	0.72041E-04	378606.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C88	0	0.72041E-04	378617.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C89	0	0.72041E-04	378628.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C90	0	0.72041E-04	378638.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C91	0	0.72041E-04	378648.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C92	0	0.72041E-04	378658.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C93	0	0.72041E-04	378668.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C94	0	0.72041E-04	378678.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C95	0	0.72041E-04	378686.0	3783305.0	178.6	5.00	4.65	1.40	YES	HROFDY
C96	0	0.72041E-04	378597.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C97	0	0.72041E-04	378608.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C98	0	0.72041E-04	378618.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C99	0	0.72041E-04	378628.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C100	0	0.72041E-04	378638.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C101	0	0.72041E-04	378648.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C102	0	0.72041E-04	378658.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C103	0	0.72041E-04	378668.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C104	0	0.72041E-04	378678.0	3783315.0	178.6	5.00	4.65	1.40	YES	HROFDY
C105	0	0.72041E-04	378588.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C106	0	0.72041E-04	378598.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C107	0	0.72041E-04	378608.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C108	0	0.72041E-04	378618.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C109	0	0.72041E-04	378628.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C110	0	0.72041E-04	378638.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C111	0	0.72041E-04	378648.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C112	0	0.72041E-04	378658.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C113	0	0.72041E-04	378668.0	3783325.0	178.6	5.00	4.65	1.40	YES	HROFDY
C114	0	0.72041E-04	378578.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C115	0	0.72041E-04	378588.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C116	0	0.72041E-04	378598.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C117	0	0.72041E-04	378608.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C118	0	0.72041E-04	378618.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C119	0	0.72041E-04	378628.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C120	0	0.72041E-04	378638.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
 *** AERMET - VERSION 16216 *** Particulates (Diesel)

 08/25/19 11:58:23
 PAGE 5

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION SCALAR VARY BY
C121	0	0.72041E-04	378648.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C122	0	0.72041E-04	378658.0	3783335.0	178.6	5.00	4.65	1.40	YES	HROFDY
C123	0	0.72041E-04	378568.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C124	0	0.72041E-04	378578.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C125	0	0.72041E-04	378588.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C126	0	0.72041E-04	378598.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C127	0	0.72041E-04	378608.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C128	0	0.72041E-04	378618.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C129	0	0.72041E-04	378628.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C130	0	0.72041E-04	378638.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C131	0	0.72041E-04	378648.0	3783345.0	178.6	5.00	4.65	1.40	YES	HROFDY
C132	0	0.72041E-04	378558.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C133	0	0.72041E-04	378568.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C134	0	0.72041E-04	378578.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C135	0	0.72041E-04	378588.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C136	0	0.72041E-04	378598.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C137	0	0.72041E-04	378608.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C138	0	0.72041E-04	378618.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C139	0	0.72041E-04	378628.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C140	0	0.72041E-04	378638.0	3783355.0	178.6	5.00	4.65	1.40	YES	HROFDY
C141	0	0.72041E-04	378548.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C142	0	0.72041E-04	378558.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C143	0	0.72041E-04	378568.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C144	0	0.72041E-04	378578.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C145	0	0.72041E-04	378588.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C146	0	0.72041E-04	378598.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C147	0	0.72041E-04	378608.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C148	0	0.72041E-04	378618.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C149	0	0.72041E-04	378628.0	3783365.0	178.6	5.00	4.65	1.40	YES	HROFDY
C150	0	0.72041E-04	378538.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C151	0	0.72041E-04	378548.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C152	0	0.72041E-04	378558.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C153	0	0.72041E-04	378568.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C154	0	0.72041E-04	378578.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C155	0	0.72041E-04	378588.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C156	0	0.72041E-04	378598.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C157	0	0.72041E-04	378608.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C158	0	0.72041E-04	378618.0	3783375.0	178.6	5.00	4.65	1.40	YES	HROFDY
C159	0	0.72041E-04	378528.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY
C160	0	0.72041E-04	378538.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
 *** AERMET - VERSION 16216 *** Particulates (Diesel)

 08/25/19 11:58:23
 PAGE 6

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR	VARY BY
C161	0	0.72041E-04	378548.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C162	0	0.72041E-04	378558.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C163	0	0.72041E-04	378568.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C164	0	0.72041E-04	378578.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C165	0	0.72041E-04	378588.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C166	0	0.72041E-04	378598.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C167	0	0.72041E-04	378608.0	3783385.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C168	0	0.72041E-04	378518.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C169	0	0.72041E-04	378528.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C170	0	0.72041E-04	378538.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C171	0	0.72041E-04	378548.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C172	0	0.72041E-04	378558.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C173	0	0.72041E-04	378568.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C174	0	0.72041E-04	378578.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C175	0	0.72041E-04	378588.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C176	0	0.72041E-04	378598.0	3783395.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C177	0	0.72041E-04	378508.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C178	0	0.72041E-04	378518.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C179	0	0.72041E-04	378528.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C180	0	0.72041E-04	378538.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C181	0	0.72041E-04	378548.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C182	0	0.72041E-04	378558.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C183	0	0.72041E-04	378568.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C184	0	0.72041E-04	378578.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C185	0	0.72041E-04	378588.0	3783405.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C186	0	0.72041E-04	378508.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C187	0	0.72041E-04	378518.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C188	0	0.72041E-04	378528.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C189	0	0.72041E-04	378538.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C190	0	0.72041E-04	378548.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C191	0	0.72041E-04	378558.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C192	0	0.72041E-04	378569.0	3783415.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C193	0	0.72041E-04	378508.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C194	0	0.72041E-04	378518.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C195	0	0.72041E-04	378528.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C196	0	0.72041E-04	378538.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C197	0	0.72041E-04	378548.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C198	0	0.72041E-04	378558.0	3783425.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C199	0	0.72041E-04	378507.0	3783435.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C200	0	0.72041E-04	378518.0	3783435.0	178.6	5.00	4.65	1.40	YES	HROFDY	

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
 *** AERMET - VERSION 16216 *** Particulates (Diesel)

08/25/19
 11:58:23
 PAGE 7

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYPLT NOWETDPLT URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR	VARY BY
C201	0	0.72041E-04	378528.0	3783435.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C202	0	0.72041E-04	378538.0	3783435.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C203	0	0.72041E-04	378548.0	3783435.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C204	0	0.72041E-04	378506.0	3783445.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C205	0	0.72041E-04	378518.0	3783445.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C206	0	0.72041E-04	378528.0	3783445.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C207	0	0.72041E-04	378538.0	3783445.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C208	0	0.72041E-04	378498.0	3783455.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C209	0	0.72041E-04	378506.0	3783454.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C210	0	0.72041E-04	378517.0	3783455.0	178.6	5.00	4.65	1.40	YES	HROFDY	
C211	0	0.72041E-04	378528.0	3783455.0	178.6	5.00	4.65	1.40	YES	HROFDY	

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev
 *** AERMET - VERSION 16216 *** Particulates (Diesel)

08/25/19
 11:58:23
 PAGE 8

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYPLT NOWETDPLT URBAN ADJ_U*

*** SOURCE IDS DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	C1, C2, C3, C4, C5, C6, C7, C8
	C9, C10, C11, C12, C13, C14, C15, C16
	C17, C18, C19, C20, C21, C22, C23, C24
	C25, C26, C27, C28, C29, C30, C31, C32
	C33, C34, C35, C36, C37, C38, C39, C40
	C41, C42, C43, C44, C45, C46, C47, C48
	C49, C50, C51, C52, C53, C54, C55, C56
	C57, C58, C59, C60, C61, C62, C63, C64
	C65, C66, C67, C68, C69, C70, C71, C72
	C73, C74, C75, C76, C77, C78, C79, C80
	C81, C82, C83, C84, C85, C86, C87, C88
	C89, C90, C91, C92, C93, C94, C95, C96
	C97, C98, C99, C100, C101, C102, C103, C104
	C105, C106, C107, C108, C109, C110, C111, C112
	C113, C114, C115, C116, C117, C118, C119, C120

13 .10000E+01 14 .10000E+01 15 .10000E+01 16 .10000E+01 17 .00000E+00 18 .00000E+00
19 .00000E+00 20 .00000E+00 21 .00000E+00 22 .00000E+00 23 .00000E+00 24 .00000E+00

*** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
PAGE 54

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
SOURCE ID = C211		; SOURCE TYPE = VOLUME									
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.00000E+00	10	.00000E+00	11	.00000E+00	12	.00000E+00
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

*** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
PAGE 55

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(378037.0, 3782494.0, 172.8, 1543.1, 2.0);	(378077.0, 3782494.0, 172.8, 1543.1, 2.0);
(378117.0, 3782494.0, 172.7, 1543.1, 2.0);	(378157.0, 3782494.0, 172.6, 1543.1, 2.0);
(378197.0, 3782494.0, 172.5, 1543.1, 2.0);	(378237.0, 3782494.0, 172.4, 1543.1, 2.0);
(378277.0, 3782494.0, 172.3, 1543.1, 2.0);	(378317.0, 3782494.0, 172.2, 1543.1, 2.0);
(378357.0, 3782494.0, 172.1, 1543.1, 2.0);	(378397.0, 3782494.0, 172.1, 1543.1, 2.0);
(378437.0, 3782494.0, 172.0, 1543.1, 2.0);	(378477.0, 3782494.0, 171.7, 1543.1, 2.0);
(378517.0, 3782494.0, 171.9, 1543.1, 2.0);	(378557.0, 3782494.0, 171.7, 1543.1, 2.0);
(378037.0, 3782534.0, 173.3, 1543.1, 2.0);	(378077.0, 3782534.0, 173.2, 1543.1, 2.0);
(378117.0, 3782534.0, 173.1, 1543.1, 2.0);	(378157.0, 3782534.0, 172.9, 1543.1, 2.0);
(378197.0, 3782534.0, 173.0, 1543.1, 2.0);	(378237.0, 3782534.0, 172.8, 1543.1, 2.0);
(378277.0, 3782534.0, 172.8, 1543.1, 2.0);	(378317.0, 3782534.0, 172.7, 1543.1, 2.0);
(378357.0, 3782534.0, 172.6, 1543.1, 2.0);	(378397.0, 3782534.0, 172.5, 1543.1, 2.0);
(378437.0, 3782534.0, 172.4, 1543.1, 2.0);	(378477.0, 3782534.0, 172.5, 1543.1, 2.0);
(378517.0, 3782534.0, 172.3, 1543.1, 2.0);	(377997.0, 3782574.0, 173.8, 1543.1, 2.0);
(378037.0, 3782574.0, 173.7, 1543.1, 2.0);	(378077.0, 3782574.0, 173.6, 1543.1, 2.0);
(378117.0, 3782574.0, 173.6, 1543.1, 2.0);	(378157.0, 3782574.0, 173.5, 1543.1, 2.0);
(378197.0, 3782574.0, 173.4, 1543.1, 2.0);	(378237.0, 3782574.0, 173.3, 1543.1, 2.0);
(378277.0, 3782574.0, 173.2, 1543.1, 2.0);	(378317.0, 3782574.0, 173.1, 1543.1, 2.0);
(378357.0, 3782574.0, 173.0, 1543.1, 2.0);	(378397.0, 3782574.0, 173.0, 1543.1, 2.0);
(378437.0, 3782574.0, 172.9, 1543.1, 2.0);	(378477.0, 3782574.0, 172.9, 1543.1, 2.0);
(378517.0, 3782574.0, 172.8, 1543.1, 2.0);	(377997.0, 3782614.0, 174.3, 1543.1, 2.0);
(378037.0, 3782614.0, 174.1, 1543.1, 2.0);	(378077.0, 3782614.0, 174.0, 1543.1, 2.0);
(378117.0, 3782614.0, 174.0, 1543.1, 2.0);	(378157.0, 3782614.0, 173.9, 1543.1, 2.0);
(378197.0, 3782614.0, 173.8, 1543.1, 2.0);	(378237.0, 3782614.0, 173.7, 1543.1, 2.0);
(378277.0, 3782614.0, 173.6, 1543.1, 2.0);	(378317.0, 3782614.0, 173.6, 1543.1, 2.0);
(378357.0, 3782614.0, 173.5, 1543.1, 2.0);	(378397.0, 3782614.0, 173.4, 1543.1, 2.0);
(378437.0, 3782614.0, 173.2, 1543.1, 2.0);	(378477.0, 3782614.0, 173.3, 1543.1, 2.0);
(378517.0, 3782614.0, 173.2, 1543.1, 2.0);	(377957.0, 3782654.0, 174.6, 1543.1, 2.0);
(377997.0, 3782654.0, 174.7, 1543.1, 2.0);	(378037.0, 3782654.0, 174.5, 1543.1, 2.0);
(378077.0, 3782654.0, 174.4, 1543.1, 2.0);	(378117.0, 3782654.0, 174.4, 1543.1, 2.0);
(378157.0, 3782654.0, 174.3, 1543.1, 2.0);	(378197.0, 3782654.0, 174.2, 1543.1, 2.0);
(378237.0, 3782654.0, 174.1, 1543.1, 2.0);	(378277.0, 3782654.0, 174.1, 1543.1, 2.0);
(378317.0, 3782654.0, 174.0, 1543.1, 2.0);	(378357.0, 3782654.0, 173.9, 1543.1, 2.0);
(378397.0, 3782654.0, 173.8, 1543.1, 2.0);	(378437.0, 3782654.0, 173.7, 1543.1, 2.0);
(378477.0, 3782654.0, 173.7, 1543.1, 2.0);	(377957.0, 3782694.0, 175.1, 1543.1, 2.0);
(377997.0, 3782694.0, 175.0, 1543.1, 2.0);	(378037.0, 3782694.0, 174.8, 1543.1, 2.0);
(378077.0, 3782694.0, 174.8, 1543.1, 2.0);	(378117.0, 3782694.0, 174.7, 1543.1, 2.0);
(378157.0, 3782694.0, 174.6, 1543.1, 2.0);	(378197.0, 3782694.0, 174.6, 1543.1, 2.0);
(378237.0, 3782694.0, 174.5, 1543.1, 2.0);	(378277.0, 3782694.0, 174.5, 1543.1, 2.0);
(378317.0, 3782694.0, 174.4, 1543.1, 2.0);	(378357.0, 3782694.0, 174.3, 1543.1, 2.0);
(378397.0, 3782694.0, 174.2, 1543.1, 2.0);	(378437.0, 3782694.0, 174.1, 1543.1, 2.0);
(377920.0, 3782734.0, 175.7, 1543.1, 2.0);	(377957.0, 3782734.0, 175.6, 1543.1, 2.0);
(377997.0, 3782734.0, 175.4, 1543.1, 2.0);	(378037.0, 3782734.0, 175.2, 1543.1, 2.0);
(378077.0, 3782734.0, 175.2, 1543.1, 2.0);	(378117.0, 3782734.0, 175.1, 1543.1, 2.0);
(378157.0, 3782734.0, 175.0, 1543.1, 2.0);	(378197.0, 3782734.0, 174.9, 1543.1, 2.0);

*** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
PAGE 56

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(378237.0, 3782734.0, 174.8, 1543.1, 2.0);	(378277.0, 3782734.0, 174.8, 1543.1, 2.0);
(378317.0, 3782734.0, 174.6, 1543.1, 2.0);	(378357.0, 3782734.0, 174.6, 1543.1, 2.0);
(378397.0, 3782734.0, 174.6, 1543.1, 2.0);	(377917.0, 3782774.0, 176.2, 1543.1, 2.0);
(377957.0, 3782774.0, 176.1, 1543.1, 2.0);	(377997.0, 3782774.0, 176.0, 1543.1, 2.0);
(378037.0, 3782774.0, 175.7, 1543.1, 2.0);	(378077.0, 3782774.0, 175.6, 1543.1, 2.0);
(378117.0, 3782774.0, 175.5, 1543.1, 2.0);	(378157.0, 3782774.0, 175.4, 1543.1, 2.0);
(378197.0, 3782774.0, 175.2, 1543.1, 2.0);	(378237.0, 3782774.0, 175.1, 1543.1, 2.0);
(378277.0, 3782774.0, 175.0, 1543.1, 2.0);	(378317.0, 3782774.0, 174.8, 1543.1, 2.0);
(378357.0, 3782774.0, 174.7, 1543.1, 2.0);	(378397.0, 3782774.0, 174.9, 1543.1, 2.0);
(377917.0, 3782814.0, 176.7, 1543.1, 2.0);	(377957.0, 3782814.0, 176.6, 1543.1, 2.0);
(377997.0, 3782814.0, 176.5, 1543.1, 2.0);	(378037.0, 3782814.0, 176.3, 1543.1, 2.0);
(378077.0, 3782814.0, 176.2, 1543.1, 2.0);	(378117.0, 3782814.0, 176.0, 1543.1, 2.0);
(378157.0, 3782814.0, 175.8, 1543.1, 2.0);	(378197.0, 3782814.0, 175.6, 1543.1, 2.0);
(378237.0, 3782814.0, 175.3, 1543.1, 2.0);	(378277.0, 3782814.0, 175.3, 1543.1, 2.0);
(378317.0, 3782814.0, 175.2, 1543.1, 2.0);	(378357.0, 3782814.0, 174.9, 1543.1, 2.0);
(378390.0, 3782814.0, 175.0, 1543.1, 2.0);	(377877.0, 3782854.0, 177.2, 1543.1, 2.0);
(377917.0, 3782854.0, 177.2, 1543.1, 2.0);	(377957.0, 3782854.0, 177.0, 1543.1, 2.0);
(377997.0, 3782854.0, 176.9, 1543.1, 2.0);	(378037.0, 3782854.0, 176.9, 1543.1, 2.0);
(378077.0, 3782854.0, 176.8, 1543.1, 2.0);	(378117.0, 3782854.0, 176.6, 1543.1, 2.0);
(378157.0, 3782854.0, 176.3, 1543.1, 2.0);	(378197.0, 3782854.0, 176.0, 1543.1, 2.0);
(378237.0, 3782854.0, 175.6, 1543.1, 2.0);	(378277.0, 3782854.0, 175.5, 1543.1, 2.0);
(378277.0, 3782854.0, 175.6, 1543.1, 2.0);	(377917.0, 3782894.0, 177.6, 1543.1, 2.0);
(377957.0, 3782894.0, 177.4, 1543.1, 2.0);	(377997.0, 3782894.0, 177.3, 1543.1, 2.0);
(378037.0, 3782894.0, 177.4, 1543.1, 2.0);	(378077.0, 3782894.0, 177.3, 1543.1, 2.0);
(378117.0, 3782894.0, 177.1, 1543.1, 2.0);	(378157.0, 3782894.0, 176.7, 1543.1, 2.0);
(378197.0, 3782894.0, 176.4, 1543.1, 2.0);	(378237.0, 3782894.0, 176.0, 1543.1, 2.0);
(377837.0, 3782934.0, 178.1, 1543.1, 2.0);	(377877.0, 3782934.0, 178.1, 1543.1, 2.0);
(377917.0, 3782934.0, 178.0, 1543.1, 2.0);	(377957.0, 3782934.0, 177.8, 1543.1, 2.0);

(377997.0,	3782934.0,	177.7,	1543.1,	2.0);	(378037.0,	3782934.0,	177.8,	1543.1,	2.0);
(378117.0,	3782934.0,	177.3,	1543.1,	2.0);	(378157.0,	3782934.0,	177.0,	1543.1,	2.0);
(378197.0,	3782934.0,	176.7,	1543.1,	2.0);	(378237.0,	3782934.0,	176.4,	1543.1,	2.0);
(377837.0,	3782974.0,	178.7,	1543.1,	2.0);	(377877.0,	3782974.0,	178.6,	1543.1,	2.0);
(377917.0,	3782974.0,	178.4,	1543.1,	2.0);	(377957.0,	3782974.0,	178.3,	1543.1,	2.0);
(377997.0,	3782974.0,	178.2,	1543.1,	2.0);	(378197.1,	3782962.2,	176.9,	1543.1,	2.0);
(377799.0,	3783014.0,	179.3,	1543.1,	2.0);	(377837.0,	3783014.0,	179.1,	1543.1,	2.0);
(377877.0,	3783014.0,	179.0,	1543.1,	2.0);	(377917.0,	3783014.0,	178.9,	1543.1,	2.0);
(377957.0,	3783014.0,	178.8,	1543.1,	2.0);	(377997.0,	3783014.0,	178.6,	1543.1,	2.0);
(377797.0,	3783054.0,	179.7,	1543.1,	2.0);	(377837.0,	3783054.0,	179.6,	1543.1,	2.0);
(377877.0,	3783054.0,	179.4,	1543.1,	2.0);	(377917.0,	3783054.0,	179.4,	1543.1,	2.0);
(377957.0,	3783054.0,	179.2,	1543.1,	2.0);	(377997.0,	3783054.0,	179.1,	1543.1,	2.0);
(377837.0,	3783094.0,	180.0,	1543.1,	2.0);	(377797.0,	3783094.0,	180.2,	1543.1,	2.0);
(377917.0,	3783094.0,	179.8,	1543.1,	2.0);	(377877.0,	3783094.0,	179.9,	1543.1,	2.0);
(377757.0,	3783134.0,	180.6,	1543.1,	2.0);	(377957.0,	3783094.0,	179.8,	1543.1,	2.0);
(377837.0,	3783134.0,	180.5,	1543.1,	2.0);	(377997.0,	3783134.0,	180.6,	1543.1,	2.0);
(377917.0,	3783134.0,	180.2,	1543.1,	2.0);	(377877.0,	3783134.0,	180.3,	1543.1,	2.0);
(377997.0,	3783134.0,	180.2,	1543.1,	2.0);	(377952.0,	3783134.0,	180.2,	1543.1,	2.0);

♀ *** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
 *** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
 PAGE 57

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYPLT NOWETDPLT URBAN ADJ_U*
 *** DISCRETE CARTESIAN RECEPTORS ***
 (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
 (METERS)

(377757.0,	3783174.0,	181.0,	1543.1,	2.0);	(377797.0,	3783174.0,	180.9,	1543.1,	2.0);
(377837.0,	3783174.0,	180.7,	1543.1,	2.0);	(377877.0,	3783174.0,	180.7,	1543.1,	2.0);
(377917.0,	3783174.0,	180.6,	1543.1,	2.0);	(377717.0,	3783214.0,	181.5,	1543.1,	2.0);
(377757.0,	3783214.0,	181.4,	1543.1,	2.0);	(377797.0,	3783214.0,	181.2,	1543.1,	2.0);
(377837.0,	3783214.0,	181.1,	1543.1,	2.0);	(377877.0,	3783214.0,	181.0,	1543.1,	2.0);
(377917.0,	3783214.0,	181.0,	1543.1,	2.0);	(377717.0,	3783254.0,	181.8,	1543.1,	2.0);
(377757.0,	3783254.0,	181.8,	1543.1,	2.0);	(377797.0,	3783254.0,	181.6,	1543.1,	2.0);
(377837.0,	3783254.0,	181.5,	1543.1,	2.0);	(377877.0,	3783254.0,	181.4,	1543.1,	2.0);
(377917.0,	3783254.0,	181.4,	1543.1,	2.0);	(377797.0,	3783294.0,	182.3,	1543.1,	2.0);
(377717.0,	3783294.0,	182.2,	1543.1,	2.0);	(377757.0,	3783294.0,	182.1,	1543.1,	2.0);
(377797.0,	3783294.0,	182.0,	1543.1,	2.0);	(377837.0,	3783294.0,	181.9,	1543.1,	2.0);
(377877.0,	3783294.0,	181.7,	1543.1,	2.0);	(377917.0,	3783294.0,	181.6,	1543.1,	2.0);
(377957.0,	3783294.0,	181.4,	1543.1,	2.0);	(377997.0,	3783294.0,	181.3,	1543.1,	2.0);
(377677.0,	3783334.0,	182.8,	1543.1,	2.0);	(377717.0,	3783334.0,	182.7,	1543.1,	2.0);
(377757.0,	3783334.0,	182.6,	1543.1,	2.0);	(377797.0,	3783334.0,	182.5,	1543.1,	2.0);
(377837.0,	3783334.0,	182.4,	1543.1,	2.0);	(377877.0,	3783334.0,	182.2,	1543.1,	2.0);
(377917.0,	3783334.0,	182.0,	1543.1,	2.0);	(377957.0,	3783334.0,	181.7,	1543.1,	2.0);
(377997.0,	3783334.0,	181.3,	1543.1,	2.0);	(378037.0,	3783334.0,	180.8,	1543.1,	2.0);
(377677.0,	3783374.0,	183.1,	1543.1,	2.0);	(377717.0,	3783374.0,	183.1,	1543.1,	2.0);
(377757.0,	3783374.0,	183.0,	1543.1,	2.0);	(377797.0,	3783374.0,	183.0,	1543.1,	2.0);
(377837.0,	3783374.0,	182.8,	1543.1,	2.0);	(377877.0,	3783374.0,	182.7,	1543.1,	2.0);
(377917.0,	3783374.0,	182.4,	1543.1,	2.0);	(377957.0,	3783374.0,	182.0,	1543.1,	2.0);
(377997.0,	3783374.0,	181.6,	1543.1,	2.0);	(378037.0,	3783374.0,	181.2,	1543.1,	2.0);
(377637.0,	3783414.0,	183.6,	1543.1,	2.0);	(377677.0,	3783414.0,	183.6,	1543.1,	2.0);
(377717.0,	3783414.0,	183.5,	1543.1,	2.0);	(377757.0,	3783414.0,	183.4,	1543.1,	2.0);
(377797.0,	3783414.0,	183.4,	1543.1,	2.0);	(377837.0,	3783414.0,	183.3,	1543.1,	2.0);
(377877.0,	3783414.0,	183.2,	1543.1,	2.0);	(377917.0,	3783414.0,	182.8,	1543.1,	2.0);
(377957.0,	3783414.0,	182.4,	1543.1,	2.0);	(377997.0,	3783414.0,	181.9,	1543.1,	2.0);
(377637.0,	3783454.0,	183.9,	1543.1,	2.0);	(377677.0,	3783454.0,	183.9,	1543.1,	2.0);
(377717.0,	3783454.0,	183.8,	1543.1,	2.0);	(377757.0,	3783454.0,	183.8,	1543.1,	2.0);
(377797.0,	3783454.0,	183.6,	1543.1,	2.0);	(377837.0,	3783454.0,	183.7,	1543.1,	2.0);
(377877.0,	3783454.0,	183.5,	1543.1,	2.0);	(377917.0,	3783454.0,	183.2,	1543.1,	2.0);
(377957.0,	3783454.0,	182.8,	1543.1,	2.0);	(377997.0,	3783454.0,	182.2,	1543.1,	2.0);
(377597.0,	3783494.0,	184.3,	1543.1,	2.0);	(377637.0,	3783494.0,	184.3,	1543.1,	2.0);
(377677.0,	3783494.0,	184.2,	1543.1,	2.0);	(377717.0,	3783494.0,	184.1,	1543.1,	2.0);
(377757.0,	3783494.0,	184.1,	1543.1,	2.0);	(377797.0,	3783494.0,	183.9,	1543.1,	2.0);
(377837.0,	3783494.0,	183.9,	1543.1,	2.0);	(377877.0,	3783494.0,	183.7,	1543.1,	2.0);
(377917.0,	3783494.0,	183.6,	1543.1,	2.0);	(377957.0,	3783494.0,	183.1,	1543.1,	2.0);
(377995.0,	3783494.0,	182.3,	1543.1,	2.0);	(377597.0,	3783534.0,	184.8,	1543.1,	2.0);
(377637.0,	3783534.0,	184.6,	1543.1,	2.0);	(377677.0,	3783534.0,	184.4,	1543.1,	2.0);
(377717.0,	3783534.0,	184.3,	1543.1,	2.0);	(377757.0,	3783534.0,	184.2,	1543.1,	2.0);
(377797.0,	3783534.0,	184.1,	1543.1,	2.0);	(377837.0,	3783534.0,	184.0,	1543.1,	2.0);
(377877.0,	3783534.0,	183.9,	1543.1,	2.0);	(377917.0,	3783534.0,	183.7,	1543.1,	2.0);
(377957.0,	3783534.0,	183.1,	1543.1,	2.0);	(377557.0,	3783574.0,	185.5,	1543.1,	2.0);
(377597.0,	3783574.0,	185.3,	1543.1,	2.0);	(377637.0,	3783574.0,	185.1,	1543.1,	2.0);

♀ *** AERMOD - VERSION 18081 *** *** Front Street Construction Scenario - Rev *** 08/25/19
 *** AERMET - VERSION 16216 *** *** Particulates (Diesel) *** 11:58:23
 PAGE 58

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYPLT NOWETDPLT URBAN ADJ_U*
 *** DISCRETE CARTESIAN RECEPTORS ***
 (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
 (METERS)

(377677.0,	3783574.0,	184.8,	1543.1,	2.0);	(377717.0,	3783574.0,	184.6,	1543.1,	2.0);
(377757.0,	3783574.0,	184.3,	1543.1,	2.0);	(377797.0,	3783574.0,	184.3,	1543.1,	2.0);
(377837.0,	3783574.0,	184.0,	1543.1,	2.0);	(377877.0,	3783574.0,	183.9,	1543.1,	2.0);
(377917.0,	3783574.0,	183.6,	1543.1,	2.0);	(377957.0,	3783574.0,	183.2,	1543.1,	2.0);
(377557.0,	3783614.0,	186.0,	1543.1,	2.0);	(377597.0,	3783614.0,	185.8,	1543.1,	2.0);
(377637.0,	3783614.0,	185.5,	1543.1,	2.0);	(377677.0,	3783614.0,	185.1,	1543.1,	2.0);
(377717.0,	3783614.0,	184.8,	1543.1,	2.0);	(377757.0,	3783614.0,	184.4,	1543.1,	2.0);
(377797.0,	3783614.0,	184.3,	1543.1,	2.0);	(377837.0,	3783614.0,	184.1,	1543.1,	2.0);
(377877.0,	3783614.0,	183.9,	1543.1,	2.0);	(377917.0,	3783614.0,	183.6,	1543.1,	2.0);
(377524.0,	3783654.0,	186.6,	1543.1,	2.0);	(377557.0,	3783654.0,	186.4,	1543.1,	2.0);
(377597.0,	3783654.0,	186.2,	1543.1,	2.0);	(377637.0,	3783654.0,	185.9,	1543.1,	2.0);
(377677.0,	3783654.0,	185.5,	1543.1,	2.0);	(377717.0,	3783654.0,	184.9,	1543.1,	2.0);
(377757.0,	3783654.0,	184.6,	1543.1,	2.0);	(377797.0,	3783654.0,	184.3,	1543.1,	2.0);
(377837.0,	3783654.0,	184.1,	1543.1,	2.0);	(377877.0,	3783654.0,	183.9,	1543.1,	2.0);
(377917.0,	3783654.0,	183.6,	1543.1,	2.0);	(378338.1,	3783674.4,	182.5,	1543.1,	2.0);
(377517.0,	3783694.0,	186.8,	1543.1,	2.0);	(377557.0,	3783694.0,	186.8,	1543.1,	2.0);
(377597.0,	3783694.0,	186.6,	1543.1,	2.0);	(377637.0,	3783694.0,	186.4,	1543.1,	2.0);
(377677.0,	3783694.0,	185.8,	1543.1,	2.0);	(377717.0,	3783694.0,	185.1,	1543.1,	2.0);
(377757.0,	3783694.0,	184.8,	1543.1,	2.0);	(377797.0,	3783692.0,	184.5,	1543.1,	2.0);
(378292.8,	3783699.6,	182.4,	1543.1,	2.0);	(378326.0,	3783704.6,	182.7,	1543.1,	2.0);
(378357.0,	3783694.0,	182.9,	1543.1,	2.0);	(377517.0,	3783734.0,	186.9,	1543.1,	2.0);
(377557.0,	3783734.0,	186.9,	1543.1,	2.0);	(377597.0,	3783733.0,	186.9,	1543.1,	2.0);
(377637.0,	3783730.0,	186.8,	1543.1,	2.0);	(378239.0,	3783734.0,	182.7,	1543.1,	2.0);
(378277.0,	3783734.0,	182.6,	1543.1,	2.0);	(378317.0,	3783734.0,	182.8,	1543.1,	2.0);
(377487.5,	3783749.9,	186.9,	1543.1,	2.0);	(378197.0,	3783774.0,	183.1,	1543.1,	2.0);
(378237.0,	3783774.0,	182.8,	1543.1,	2.0);	(378277.0,	3783774.0,	182.9,	1543.1,	2.0);
(378317.0,	3783774.0,	183.1,	1543.1,	2.0);	(378157.0,	3783814.0,	183.5,	1543.1,	2.0);
(378197.0,	3783814.0,	183.0,	1543.1,	2.0);	(378237.0,	3783814.0,	183.1,	1543.1,	2.0);
(378277.0,	3783814.0,	183.3,	1543.1,	2.0);	(378117.0,	3783854.0,	183.8,	1543.1,	2.0);
(378157.0,	3783854.0,	183.3,	1543.1,	2.0);	(378197.0,	3783854.0,	183.3,	1543.1,	2.0);
(378237.0,	3783854.0,	183.5,	1543.1,	2.0);	(378277.0,	3783854.0,	183.8,	1543.1,	2.0);

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
378037.00	3782494.00	0.00033	378077.00	3782494.00	0.00035
378117.00	3782494.00	0.00037	378157.00	3782494.00	0.00038
378197.00	3782494.00	0.00040	378237.00	3782494.00	0.00042
378277.00	3782494.00	0.00044	378317.00	3782494.00	0.00045
378357.00	3782494.00	0.00047	378397.00	3782494.00	0.00048
378437.00	3782494.00	0.00050	378477.00	3782494.00	0.00051
378517.00	3782494.00	0.00052	378557.00	3782494.00	0.00053
378037.00	3782534.00	0.00035	378077.00	3782534.00	0.00037
378117.00	3782534.00	0.00039	378157.00	3782534.00	0.00041
378197.00	3782534.00	0.00043	378237.00	3782534.00	0.00045
378277.00	3782534.00	0.00047	378317.00	3782534.00	0.00049
378357.00	3782534.00	0.00051	378397.00	3782534.00	0.00053
378437.00	3782534.00	0.00055	378477.00	3782534.00	0.00056
378517.00	3782534.00	0.00058	377997.00	3782574.00	0.00036
378037.00	3782574.00	0.00038	378077.00	3782574.00	0.00040
378117.00	3782574.00	0.00042	378157.00	3782574.00	0.00044
378197.00	3782574.00	0.00047	378237.00	3782574.00	0.00049
378277.00	3782574.00	0.00052	378317.00	3782574.00	0.00054
378357.00	3782574.00	0.00057	378397.00	3782574.00	0.00059
378437.00	3782574.00	0.00061	378477.00	3782574.00	0.00063
378517.00	3782574.00	0.00065	377997.00	3782614.00	0.00038
378037.00	3782614.00	0.00040	378077.00	3782614.00	0.00042
378117.00	3782614.00	0.00045	378157.00	3782614.00	0.00048
378197.00	3782614.00	0.00051	378237.00	3782614.00	0.00054
378277.00	3782614.00	0.00057	378317.00	3782614.00	0.00060
378357.00	3782614.00	0.00063	378397.00	3782614.00	0.00065
378437.00	3782614.00	0.00068	378477.00	3782614.00	0.00071
378517.00	3782614.00	0.00073	377957.00	3782654.00	0.00037
377997.00	3782654.00	0.00040	378037.00	3782654.00	0.00042
378077.00	3782654.00	0.00045	378117.00	3782654.00	0.00048
378157.00	3782654.00	0.00052	378197.00	3782654.00	0.00055
378237.00	3782654.00	0.00059	378277.00	3782654.00	0.00062
378317.00	3782654.00	0.00066	378357.00	3782654.00	0.00070
378397.00	3782654.00	0.00073	378437.00	3782654.00	0.00077
378477.00	3782654.00	0.00080	377957.00	3782694.00	0.00039
377997.00	3782694.00	0.00042	378037.00	3782694.00	0.00045
378077.00	3782694.00	0.00049	378117.00	3782694.00	0.00052
378157.00	3782694.00	0.00056	378197.00	3782694.00	0.00060
378237.00	3782694.00	0.00064	378277.00	3782694.00	0.00069
378317.00	3782694.00	0.00073	378357.00	3782694.00	0.00078

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev *** 08/25/19
 *** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
 PAGE 63

RegDFault	CONC	ELEV	FLGPOL	NODRYDPLT	NOWETDPLT	URBAN	ADJ_U*
*** THE ANNUAL AVERAGE CONCENTRATION	VALUES AVERAGED OVER	5 YEARS FOR SOURCE	GROUP: ALL	***			
INCLUDING SOURCE(S):	C1	C2	C3	C4	C5		
C6	C7	C8	C9	C10	C11	C12	C13
C14	C15	C16	C17	C18	C19	C20	C21
C22	C23	C24	C25	C26	C27	C28	

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
378397.00	3782694.00	0.00082	378437.00	3782694.00	0.00087
377920.00	3782734.00	0.00039	377957.00	3782734.00	0.00041
377997.00	3782734.00	0.00045	378037.00	3782734.00	0.00048
378077.00	3782734.00	0.00052	378117.00	3782734.00	0.00056
378157.00	3782734.00	0.00061	378197.00	3782734.00	0.00066
378237.00	3782734.00	0.00071	378277.00	3782734.00	0.00076
378317.00	3782734.00	0.00082	378357.00	3782734.00	0.00088
378397.00	3782734.00	0.00093	377917.00	3782774.00	0.00040
377957.00	3782774.00	0.00044	377997.00	3782774.00	0.00047
378037.00	3782774.00	0.00051	378077.00	3782774.00	0.00056
378117.00	3782774.00	0.00061	378157.00	3782774.00	0.00066
378197.00	3782774.00	0.00072	378237.00	3782774.00	0.00078
378277.00	3782774.00	0.00085	378317.00	3782774.00	0.00092
378357.00	3782774.00	0.00099	378397.00	3782774.00	0.00107
377917.00	3782814.00	0.00042	377957.00	3782814.00	0.00046
377997.00	3782814.00	0.00050	378037.00	3782814.00	0.00055
378077.00	3782814.00	0.00060	378117.00	3782814.00	0.00065
378157.00	3782814.00	0.00072	378197.00	3782814.00	0.00079
378237.00	3782814.00	0.00086	378277.00	3782814.00	0.00095
378317.00	3782814.00	0.00103	378357.00	3782814.00	0.00113
378390.00	3782814.00	0.00121	377877.00	3782854.00	0.00041
377917.00	3782854.00	0.00045	377957.00	3782854.00	0.00049
377997.00	3782854.00	0.00053	378037.00	3782854.00	0.00058
378077.00	3782854.00	0.00064	378117.00	3782854.00	0.00071
378157.00	3782854.00	0.00078	378197.00	3782854.00	0.00086
378237.00	3782854.00	0.00096	378277.00	3782854.00	0.00106
377877.00	3782894.00	0.00043	377917.00	3782894.00	0.00047
377957.00	3782894.00	0.00051	377997.00	3782894.00	0.00056
378037.00	3782894.00	0.00062	378077.00	3782894.00	0.00069
378117.00	3782894.00	0.00076	378157.00	3782894.00	0.00085
378197.00	3782894.00	0.00095	378237.00	3782894.00	0.00106
377837.00	3782934.00	0.00041	377877.00	3782934.00	0.00045
377917.00	3782934.00	0.00049	377957.00	3782934.00	0.00054
377997.00	3782934.00	0.00059	378037.00	3782934.00	0.00066
378117.00	3782934.00	0.00082	378157.00	3782934.00	0.00093
378197.00	3782934.00	0.00105	378237.00	3782934.00	0.00118
377837.00	3782974.00	0.00043	377877.00	3782974.00	0.00046
377917.00	3782974.00	0.00051	377957.00	3782974.00	0.00056
377997.00	3782974.00	0.00062	378197.15	3782962.22	0.00112
377799.00	3783014.00	0.00041	377837.00	3783014.00	0.00044

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev *** 08/25/19
 *** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
 PAGE 64

RegDFault	CONC	ELEV	FLGPOL	NODRYDPLT	NOWETDPLT	URBAN	ADJ_U*
*** THE ANNUAL AVERAGE CONCENTRATION	VALUES AVERAGED OVER	5 YEARS FOR SOURCE	GROUP: ALL	***			

INCLUDING SOURCE(S): C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
377877.00	3783014.00	0.00048	377917.00	3783014.00	0.00053
377957.00	3783014.00	0.00059	377997.00	3783014.00	0.00066
377797.00	3783054.00	0.00042	377837.00	3783054.00	0.00046
377877.00	3783054.00	0.00050	377917.00	3783054.00	0.00056
377957.00	3783054.00	0.00062	377797.00	3783094.00	0.00044
377837.00	3783094.00	0.00048	377877.00	3783094.00	0.00053
377917.00	3783094.00	0.00058	377957.00	3783094.00	0.00065
377757.00	3783134.00	0.00041	377797.00	3783134.00	0.00045
377837.00	3783134.00	0.00050	377877.00	3783134.00	0.00055
377917.00	3783134.00	0.00061	377952.00	3783134.00	0.00067
377757.00	3783174.00	0.00043	377797.00	3783174.00	0.00047
377837.00	3783174.00	0.00052	377877.00	3783174.00	0.00057
377917.00	3783174.00	0.00064	377717.00	3783214.00	0.00040
377757.00	3783214.00	0.00044	377797.00	3783214.00	0.00048
377837.00	3783214.00	0.00054	377877.00	3783214.00	0.00060
377917.00	3783214.00	0.00067	377717.00	3783254.00	0.00042
377757.00	3783254.00	0.00046	377797.00	3783254.00	0.00050
377837.00	3783254.00	0.00056	377877.00	3783254.00	0.00062
377917.00	3783256.00	0.00070	377678.00	3783294.00	0.00040
377717.00	3783294.00	0.00043	377757.00	3783294.00	0.00048
377797.00	3783294.00	0.00052	377837.00	3783294.00	0.00058
377877.00	3783294.00	0.00065	377917.00	3783294.00	0.00073
377957.00	3783294.00	0.00084	377997.00	3783294.00	0.00096
377677.00	3783334.00	0.00041	377717.00	3783334.00	0.00045
377757.00	3783334.00	0.00049	377797.00	3783334.00	0.00055
377837.00	3783334.00	0.00061	377877.00	3783334.00	0.00068
377917.00	3783334.00	0.00077	377957.00	3783334.00	0.00089
377997.00	3783334.00	0.00102	378037.00	3783334.00	0.00120
377677.00	3783374.00	0.00043	377717.00	3783374.00	0.00047
377757.00	3783374.00	0.00051	377797.00	3783374.00	0.00057
377837.00	3783374.00	0.00064	377877.00	3783374.00	0.00072
377917.00	3783374.00	0.00082	377957.00	3783374.00	0.00094
377997.00	3783374.00	0.00110	378037.00	3783374.00	0.00129
377637.00	3783414.00	0.00041	377677.00	3783414.00	0.00044
377717.00	3783414.00	0.00049	377757.00	3783414.00	0.00054
377797.00	3783414.00	0.00060	377837.00	3783414.00	0.00067
377877.00	3783414.00	0.00076	377917.00	3783414.00	0.00087
377957.00	3783414.00	0.00101	377997.00	3783414.00	0.00118
377637.00	3783454.00	0.00042	377677.00	3783454.00	0.00046
377717.00	3783454.00	0.00051	377757.00	3783454.00	0.00057

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev 08/25/19
 *** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
 PAGE 65

*** MODELOPTS: RegDFault CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
377797.00	3783454.00	0.00064	377837.00	3783454.00	0.00072
377877.00	3783454.00	0.00081	377917.00	3783454.00	0.00093
377957.00	3783454.00	0.00109	377997.00	3783454.00	0.00128
377597.00	3783494.00	0.00041	377637.00	3783494.00	0.00044
377677.00	3783494.00	0.00049	377717.00	3783494.00	0.00054
377757.00	3783494.00	0.00060	377797.00	3783494.00	0.00068
377837.00	3783494.00	0.00076	377877.00	3783494.00	0.00087
377917.00	3783494.00	0.00101	377957.00	3783494.00	0.00118
377995.00	3783494.00	0.00138	377997.00	3783534.00	0.00043
377637.00	3783534.00	0.00047	377677.00	3783534.00	0.00052
377717.00	3783534.00	0.00057	377757.00	3783534.00	0.00064
377797.00	3783534.00	0.00072	377837.00	3783534.00	0.00082
377877.00	3783534.00	0.00094	377917.00	3783534.00	0.00109
377957.00	3783534.00	0.00128	377957.00	3783574.00	0.00041
377597.00	3783574.00	0.00045	377637.00	3783574.00	0.00049
377677.00	3783574.00	0.00055	377717.00	3783574.00	0.00061
377757.00	3783574.00	0.00068	377797.00	3783574.00	0.00077
377837.00	3783574.00	0.00088	377877.00	3783574.00	0.00101
377917.00	3783574.00	0.00117	377957.00	3783574.00	0.00138
377597.00	3783614.00	0.00043	377597.00	3783614.00	0.00047
377637.00	3783614.00	0.00052	377677.00	3783614.00	0.00058
377717.00	3783614.00	0.00065	377757.00	3783614.00	0.00073
377797.00	3783614.00	0.00083	377837.00	3783614.00	0.00094
377877.00	3783614.00	0.00108	377917.00	3783614.00	0.00126
377524.00	3783654.00	0.00042	377557.00	3783654.00	0.00045
377597.00	3783654.00	0.00050	377637.00	3783654.00	0.00055
377677.00	3783654.00	0.00061	377717.00	3783654.00	0.00069
377757.00	3783654.00	0.00078	377797.00	3783654.00	0.00088
377837.00	3783654.00	0.00100	377877.00	3783654.00	0.00116
377917.00	3783654.00	0.00134	378338.08	3783674.40	0.00985
377517.00	3783694.00	0.00044	377557.00	3783694.00	0.00048
377597.00	3783694.00	0.00053	377637.00	3783694.00	0.00058
377677.00	3783694.00	0.00065	377717.00	3783694.00	0.00073
377757.00	3783694.00	0.00082	377797.00	3783692.00	0.00093
378292.78	3783699.56	0.00724	378326.00	3783704.60	0.00852
378357.00	3783694.00	0.01042	377517.00	3783734.00	0.00046
377557.00	3783734.00	0.00050	377597.00	3783733.00	0.00055
377637.00	3783730.00	0.00061	378239.00	3783734.00	0.00523
378277.00	3783734.00	0.00624	378317.00	3783734.00	0.00757
377487.49	3783749.90	0.00044	378197.00	3783774.00	0.00411

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev 08/25/19
 *** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
 PAGE 66

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): C1, C2, C3, C4, C5,
C6, C7, C8, C9, C10, C11, C12, C13,
C14, C15, C16, C17, C18, C19, C20, C21,
C22, C23, C24, C25, C26, C27, C28

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

Table with columns: X-COORD (M), Y-COORD (M), CONC, X-COORD (M), Y-COORD (M), CONC. Contains 35 rows of coordinate and concentration data.

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
PAGE 67

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

Table with columns: GROUP ID, AVERAGE CONC, RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG), OF TYPE, NETWORK GRID-ID. Lists receptor types and their corresponding coordinates and concentrations.

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** AERMOD - VERSION 18081 *** Front Street Construction Scenario - Rev *** 08/25/19
*** AERMET - VERSION 16216 *** Particulates (Diesel) *** 11:58:23
PAGE 68

*** MODELOPTS: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 713 Informational Message(s)
A Total of 43848 Hours Were Processed
A Total of 519 Calm Hours Identified
A Total of 194 Missing Hours Identified (0.44 Percent)

***** FATAL ERROR MESSAGES *****
*** NONE ***

***** WARNING MESSAGES *****
ME W186 1035 MEOPEN: THRESH_LMIN 1-min ASOS wind speed threshold used 0.50
ME W187 1035 MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

***** AERMOD Finishes Successfully ***

ATTACHMENT F

List of References

1. California Air Pollution Control Officers Association, 2016. California Emissions Estimator Model (CalEEMod).
2. California Air Resources Board, 2018. *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*.
3. California Code of Regulations, Title 22, Section 12703.
4. California Health and Safety Code, Section 44360.
5. City of Burbank, 2019. 777 North Front Street Project - Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, Inc.
6. Office of Environmental Health Hazard Assessment, 2015. *Air Toxic Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments*.
7. South Coast Air Quality Management District (SCAQMD), 2008. *Localized Significance Threshold Methodology*.
8. South Coast Air Quality Management District (SCAQMD), 2015. *Proposed Amended Rules 1401 – New Source Review of Toxic Air Contaminants, 1401.1 – Requirements for New and Relocated Facilities Near Schools, Rule 1402 – Control of Toxic Air Contaminants from Existing Sources, and 212 – Standards for Approving Permits and Issuing Public Notice . Agenda No. 28*.
9. South Coast Air Quality Management District (SCAQMD), 2019. *Air Quality Significance Thresholds*.
10. South Coast Air Quality Management District (SCAQMD). Meteorological Data Set for Burbank Airport.
11. SWAPE, 2019. Comments on the 777 North Front Street Project (Draft EIR SCH # 2018041012).
12. SWAPE, 2019. Comments on the 777 North Front Street Project (Recirculated Draft EIR SCH # 2018041012).
13. Unite Here Local 11, 2019. Comment on the 777 North Front Street Project (Project No. 170001265); Draft EIR (SCH # 2018041012).
14. Unite Here Local 11, 2019. Comment on the 777 North Front Street Project (Project No. 170001265); Recirculated Draft EIR (SCH # 2018041012).
15. United States Environmental Protection Agency, 2005. *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, EPA/630/R-003F).
16. United States Environmental Protection Agency, 2006. Memorandum - Implementation of the Cancer Guidelines and Accompanying Supplemental Guidance - Science Policy Council Cancer Guidelines Implementation Workgroup Communication II: Performing Risk Assessments that include Carcinogens Described in the *Supplemental Guidance* as having a Mutagenic Mode of Action.

17. United States Environmental Protection Agency, Office of Research and Development, 2008. *Child-Specific Exposure Factors Handbook*. EPA/600/R-06/096F.
18. United States Environmental Protection Agency, 2015. *User's Guide for the AMS/EPA Regulatory Model - AERMOD - Addendum*. EPA-454/B-03-001.
19. United States Environmental Protection Agency, 2016. *AERMOD Implementation Guide*. EPA-454/B-16-013.
20. United States Environmental Protection Agency, 2017. *Guideline on Air Quality Models (Final Rule)*. 40 CFR Part 51.
21. United States Environmental Protection Agency, National Center for Environmental Assessment, 2018. *Integrated Risk Information System (IRIS)*. Diesel Engine Exhaust.

Appendix N

GGRP Mitigation Measure Quantification Analysis



City of Burbank

Greenhouse Gas Reduction Program Measure Quantification Analysis

prepared for

City of Burbank-Planning Division
150 North Third Street
Burbank, California 91502

prepared by

Rincon Consultants, Inc.
250 1st Street, Suite 1400
Los Angeles, California 90012

October 2019



RINCON CONSULTANTS, INC.

Environmental Scientists | Planners | Engineers
rinconconsultants.com

City of Burbank

Greenhouse Gas Reduction Program Measure
Quantification Analysis

prepared for

City of Burbank-Planning Division
150 North Third Street
Burbank, California 91502

prepared by

Rincon Consultants, Inc.
250 1st Street, Suite 1400
Los Angeles, California 90012

October 2019



RINCON CONSULTANTS, INC.

Environmental Scientists | Planners | Engineers
rinconconsultants.com

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City of Burbank

Background

The City of Burbank's Greenhouse Gas Reduction Plan (GGRP; Adopted February 19, 2013) contains measures for reducing greenhouse gas (GHG) emissions within the City. The GGRP is consistent with *Burbank2035*, the City's General Plan (Adopted February 19, 2013), and was developed to meet statewide reduction targets mandated by Executive Order (EO) S-3-05, AB 32, AB 1493, EO-S-1-07, Senate Bill (SB) 1078, and AB 1109. Included within the GGRP are an inventory of the City's emissions data, reduction targets and goals, measures for meeting those targets and goals, and implementation protocols for plan realization.

GHG Reduction Target and Goal

The GGRP includes the following GHG reduction target and goal:

- Target: 15% reduction in City GHG emissions from current levels¹ by 2020
 - Local Measure Reduction: 45,677 MT CO₂e/yr
- Goal: 30% reduction in City GHG emissions from current levels¹ by 2035
 - Local Measure Reduction: 77,348 MT CO₂e/yr

The GHG reduction target and goal are supported by 18 measures. To evaluate the City's initial progress towards their 2020 target and goal, the GGRP included an inventory of GHG emissions for the entire City of Burbank, conducted in 2010.

Climate Action Plan Measures

The City of Burbank's GGRP includes 18 measures that are designed to reduce GHG emissions in Burbank during the period of 2010-2020. Measures were developed by evaluating existing community conditions, identifying emission reduction opportunities, reviewing best practices from other jurisdictions and organizations, and incorporating State and regional laws, guidelines, and recommendations. Measures are organized by strategy areas, consisting of buildings and energy, transportation, water conservations, waste reduction, and municipal.

GGRP Scorecard

The GGRP established goals for 2020 and 2035, where a majority of 2035 measures were designed to build off the 2020 measure or may be updated based on the success of the established 2020 measures. The implementation of measures prior to 2020 are intended to achieve a majority of the reduction needed to reach the City's 2020 target, with the remaining gap of emissions to be reduced through the community's initiative. Because it is not possible to track the community's contribution to overall GHG reduction without conducting a GHG inventory update, the GGRP scorecard is designed to summarize and report the City's progress towards meeting the GHG Measure reduction 2020 target quantified in the GGRP and adopted by the City Council. Measures that have been successfully implemented to the

¹ "Current levels" for the establishment of the GGRP targets is based on the 2010 GHG emission inventory

extent that reductions exceed the 2020 target provide substantial progress towards the City achieving the established 2035 goal.

The progress on each measure in the GGRP to meet the 2020 measure targets and overall goal is presented, including the status of implementation, reductions originally estimated, progress quantification methodology, and actual reductions resulting from implementation to date. Progress towards each quantifiable measure was based on available data provided by the City that generally spanned from the start of the 2013 fiscal year to the end of the 2019 fiscal year. It should be noted that many of measures implemented are voluntary therefore the tracking of data is inherently limited to participation in the City’s permit process and rebate programs. As noted by BWP staff overseeing the Energy Star rebate programs, the current participation rate for rebate program available to qualifying Energy Star rated appliances is estimated to be at 20 percent of the actual purchases by City residents that have occurred over the current reporting period. Therefore, the actual GHG reductions associated with the measures and local community action is likely greater than the quantities calculated in this report. Supporting measures, where GHG reductions were not quantified, have been evaluated qualitatively based on information provided by the City related to the implementation of defined actions. A summary of the progress towards each measure is presented in Table 1.

Table 1 GGRP 2020 Measures: Target Reductions and Target Progress

Measures	2020 Target Reduction (MT CO2e)	2020 Measure Implementation Progress (MT CO2e)
Building and Energy	14,358	20,574
E-1.1: Energy Efficiency in New Construction	702	441
E-1.2: Energy Efficiency Retrofits	1,932	9,142
E-1.3: Energy Star Appliances	735	223
E-1.4: Smart Grid Integration	1,027	63
E-1.5: Cool Roofs	261	505
E-1.6: BWP Energy Conservation Programs ¹	2,291	3,544
E-1.7: Building Shade Trees	671	675
E-2.1: Renewable Energy Requirements ²	3,422	9,623
E-2.2: Solar Photovoltaic Systems ²	3,317	
E-2.3: Solar Water Heater Systems	Supporting Measure – Not Quantified	
E-3.1: Light-emitting Diode Street Lights	Supporting Measure – Not Quantified	
Transportation	17,233	9,714
T-1.1: Pedestrian Enhancements	191	508
T-1.2: Safe Routes to School	Supporting Measure – Not Quantified	
T-1.3: Bicycle Education Program	Supporting Measure – Not Quantified	
T-1.4: Bicycle Infrastructure Expansion	355	399

Measures	2020 Target Reduction (MT CO ₂ e)	2020 Measure Implementation Progress (MT CO ₂ e)
T-1.5: Bicycle Accommodation Ordinance		Supporting Measure – Not Quantified
T-2.1: Transportation Management Organization Expansion	16,687	8,807
T-3.1: Traffic Signal Coordination		Supporting Measure – Not Quantified
Water Conservation	198	146
W-1.1: Water Conservation Programs	20	20
W-1.2: Recycled Water Use Master Plan	178	126
W-1.3: Stormwater Management Plan		Supporting Measure – Not Quantified
Waste Reduction	13,888	12,769
SW-1.1: Food Scrap and Compostable Paper Diversion Ordinance	2,032	1,080
SW-1.2: Yard Waste Diversion Ordinance	244	212
SW-1.3: Lumber Diversion Ordinance	1,012	877
SW-1.4: Reusable Bags		Supporting Measure – Not Quantified
SW-1.5: Recycling Ordinance		Supporting Measure – Not Quantified
SW-1.4: Enhanced Methane Recovery	10,600	10,600
Municipal Measures		Supporting Measure – Not Quantified
CG-1.1: Sustainability Coordinator		Supporting Measure – Not Quantified
CG-1.2: Sustainability Element		Supporting Measure – Not Quantified
Subtotal GGRP Measures	45,677	43,302³
Emissions Gap (MT CO₂e)		2,375
Shortage of Goal ⁴ (%)		5%

¹Measure E-1.6 is quantified for informational purposes but is not included in the overall progress towards the 2020 GGRP goal as several to all of the conservation programs within this measure have already been included in other energy measures. See below discussion for how BWP energy conservation programs were incorporated into the energy measures.

²The performance metrics ultimately used to track progress of measure E-2.1 and E-2.2 were the same therefore, were quantified together.

³The quantified GHG emission reductions presented here may be an underestimation due to data collection limitations. Completing an updated GHG inventory allows for a better estimation of actual reductions achieved and progress towards the 2020 target.

⁴Measures were quantified based on data provided from 2013 to 2019, when available.

Introduction

The City of Burbank's progress towards their 2020 goal has been quantified by assessing progress towards achieving the 2020 performance metrics established for each GGRP measure. Where possible, an estimation of GHG emission reductions achieved to date was quantified following the measure quantification methodology established in Appendix B of the GGRP and using data provided by the City. Below each measure and performance metric or action is summarized along with the GGRP estimated GHG reduction associated with the measure and the actual GHG reduction calculated using data tracked by the City. Following each measure is a description of the data provided and methodology used to quantify the reductions and a detailed description of City actions that have been taken towards achieving the measure actions. Opportunities for improvement related to data collection or implementation have also been included.

It should be noted that because many of the measures established in the GGRP are voluntary it is likely that not all the progress towards the measure and 2020 goals have been captured with the City's performance tracking system. As such, the emissions reductions quantified here are likely an underestimation of the City's actual progress towards their 2020 goal. Completing an updated GHG inventory would better evaluate the City's progress and capture GHG reductions that may not have been tracked.

<h2>E-1.1: Energy Efficiency in New Construction</h2>	<p>Target 702 MT CO₂e/yr</p>
<p><i>The City will require new commercial projects to be constructed to Title 24 Tier 1 levels (e.g., exceed current efficiency standards by 15%) beginning in January 2015.</i></p>	<p>2020 Measure Status</p>
<p>2020 Performance Metric: 2.1 million square feet of new non-residential construction exceeds baseline energy code by 15%</p>	<p>In progress 441 MT CO₂e/yr</p>

Methodology: The Community Development Department provided the square footage of non-residential developments that have been constructed since 2013 or have been approved for development and are anticipated to be constructed prior to 2020. Based on the provided data, 1.97 million square feet of new residential construction would be required to comply with this measure. Energy conversion factors used in the GGRP were applied to applicable square footage to determine the difference between the business-as-usual energy use and mitigated energy use given implementation of this measure.² The projected Burbank Water and Power (BWP) 2020 electricity emission factor and most recent natural gas emission factor were applied to the activity data.³

Improvement Opportunity

The measure was developed to exceed the California Green Building Standards Code energy efficiency baseline at the time, which was the 2013 Title 24 requirements. Since then, the 2016 Title 24 and 2019 Title 24 requirements have been released. To achieve a greater reduction in emissions from building energy it is recommended that a newer Title 24 code be adopted. It is anticipated that the City will be adopting the newer Title 24 Code with its upcoming update of the City’s building and energy codes at the end of 2019 (i.e., 2019 California Energy Code and 2019 California Green Building Standards Code).

² Business as usual energy conversion factors used in the GGRP were estimated as 12.36 kWh/sqft for electricity use, and 5.36 kBtu/sqft for natural gas usage. Mitigated energy conversion factors used in the GGRP were estimated as 11.77 kWh/sqft for electricity use, and 4.60 kBtu/sqft for natural gas usage. The mitigated energy use is based on exceeding the 2013 Title 24 requirements by 15 percent; 2013 Title 24 requirements were the baseline energy code at the time of the GGRP development.

³ To provide the most accurate representation of emission reductions from this measure, a more recent BWP emission factor that considers the current power mix was utilized rather than the GGRP projected 2020 emission factor. The electricity emission factor for BWP was estimated given the most recent annual report electricity sales data (<https://www.burbankwaterandpower.com/annual-reports>) and reported entity GHG emissions data (<https://ww2.arb.ca.gov/mrr-data>).

<h2 style="margin: 0;">E-1.2: Energy Efficiency Retrofits</h2>				
Target 1,932 MT CO ₂ e/yr				
<p><i>The City will adopt an ordinance requiring point-of-sale energy performance ratings to be conducted by a HERS-certified contractor for all residential buildings (i.e., single-family and multi-family). Under this ordinance, residential building sellers would arrange to have the energy performance ratings completed, and would then be required to share the results with potential homebuyers or renters.</i></p> <p><i>The City will also adopt a mandatory energy audit ordinance for all residential and commercial properties sold within the City. The audits must provide a list of recommended energy efficiency improvements and information on the simple payback period of recommended improvements. Adoption of recommended improvements is voluntary, and left to the discretion of the buyer.</i></p> <p><i>The City will develop a comprehensive public outreach campaign to provide information on the benefits of energy efficiency improvements and available rebates. Targeted outreach will be conducted for certain building owners, including:</i></p> <ul style="list-style-type: none"> ▪ <i>single-family homeowners and neighborhood organizations in neighborhoods with older homes, who could benefit substantially from a whole-house energy efficiency upgrades.</i> ▪ <i>management companies with multi-family properties in Burbank to advertise available rebates and incentives that would improve their buildings' HERS rating, such as ENERGY STAR appliances, low-flow water fixtures, and high-efficiency HVAC systems, windows, and doors.</i> ▪ <i>small- and medium-sized businesses that would benefit from BWP's Business Bucks program. Outreach will include technical support for interested business owners during the Business Bucks application process to ensure program participation is maxed out each year.</i> <p>2020 Performance Metric: 2.1 million square feet of new non-residential construction exceeds baseline energy code by 15%</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">2020 Measure Status</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Achieved/Exceeded</td> </tr> <tr> <td style="padding: 5px;">9,142 MT CO₂e/yr</td> </tr> </tbody> </table>	2020 Measure Status	Achieved/Exceeded	9,142 MT CO ₂ e/yr
2020 Measure Status				
Achieved/Exceeded				
9,142 MT CO ₂ e/yr				

Methodology: Emission reductions related to this measure was estimated based on pre-defined packages of energy efficiency retrofits (i.e., low, medium, and advanced). The packages included components such as: installation of programmable thermostats, gas water heater upgrades, high-efficiency light bulbs, improved insulation, et cetera. BWP has a program that tracks their electric rebate programs related to specific energy efficient appliances and equipment, however, they did not collect detail on the measures specified energy efficiency retrofit packages. In the absence of data specific to the installation of the measures pre-defined retrofit packages, progress towards achieving this measure

was based on the quantified energy savings related to the participation in the various Electric Programs offered by BWP.⁴

BWP tracks the performance of the established Electric Programs annually and calculates energy savings using the Energy Efficiency Technical Reference Manual.⁵ Program specific emission factors were developed based on the reported net lifecycle energy savings and the net lifecycle GHG reductions annually reported pursuant to Senate Bill 1037.⁶ The program specific emission factors were applied to the overall annual energy savings calculated for that program. The total annual energy savings per program in 2020 takes into account the number of units (or participants) in use by 2020, the annual savings calculated per unit, and the unit lifetime.

Improvement Opportunity

There were several actions meant to supplement the measure that have not yet been achieved. Currently there is no ordinance requiring HERS-certified energy performance ratings for all residential buildings sold within the City nor an ordinance requiring point-of-sale energy audits for all residential and commercial buildings sold within the City. To improve implementation of these actions an updated GGRP should be established including a feasibility study for the adoption of such ordinances.

BWP has established a comprehensive energy efficiency upgrade outreach program and the City Council has adopted BWP's Integrated Resource Plan (IRP). The IRP is a long-term planning document designed to provide policy guidance for BWP's electric supply to its customers over the next twenty years, from 2019 through 2038. However, current progress tracking for this measure is limited by the available data and data collection process. To better track implementation of these pre-defined retrofit packages, collected data should be specific to the performance metric, i.e., the number of retrofit packages installed. Additionally, because the implementation of such retrofit packages is voluntary, the above discussed quantification may underestimate the GHG emission reductions achieved through energy efficient retrofits. Completing an updated GHG inventory would better evaluate the City's progress and capture GHG reductions that may not have been tracked.

⁴ Savings from the following Electric Programs was included in the quantification of this measure: Home Rewards Rebates, Energy Solutions Rebates, Business Bucks Program, Low-Income Refrigerator Exchange, Air Conditioning Tune-up Program, Home Improvement Program, Home Energy Reports, and Upstream HVAC Program.

⁵ Energy Efficiency Technical Reference Manual (TRM) (https://www.cmua.org/files/CMUA-POU-TRM_2017_FINAL_12-5-2017%20-%20Copy.pdf) is reviewed and updated on a regular basis. The TRM leverages the Database for Energy Efficiency Resources (DEER) (<http://www.deeresources.net/workpapers>) as a source for measure information and calculations.

⁶ Energy Efficiency in California's Public Power Sector – 13th edition. 2019.
http://scppa.org/file.axd?file=/2019/07/2019%20POU%20EE%20Report_13th%20Edition.pdf

<h2 style="margin: 0;">E-1.3: ENERGY STAR Appliances</h2>	
Target	
735 MT CO ₂ e/yr	
<p><i>The City will encourage voluntary community participation to install ENERGY STAR appliances or other energy-efficient appliance models in both new and existing residential units. Successful implementation of this measure relies on leveraging existing BWP rebates and other rebates offered through Energy Upgrade California. The City will develop a multi-pronged public outreach campaign to increase community participation in these voluntary rebate programs, including:</i></p> <ul style="list-style-type: none"> ▪ <i>utility bill inserts to advertise existing rebate programs and the simple cost payback associated with replacing inefficient appliances,</i> ▪ <i>targeted outreach to builders and property managers with an informational brochure describing the financial benefits of including energy-efficient appliances in new construction when they apply for building permits,</i> ▪ <i>targeted outreach to local property managers to address appliance energy use in multi-family units, and</i> ▪ <i>informational booths at community events to advertise energy-efficiency rebates and local businesses that sell ENERGY STAR appliances; events could include the Downtown Burbank Farmer’s Market, 12 Days of Holiday Cheer, and the Downtown Burbank ARTS’s Festival.</i> <p>2020 Performance Metric: 1) 9,300 ENERGY STAR refrigerators are installed; 2) 7,200 ENERGY STAR clothes washers are installed; 3) 8,100 ENERGY STAR dishwashers are installed</p>	<p>2020 Measure Status</p> <hr/> <p>In progress</p> <p>223 MT CO₂e/yr</p>

Methodology: BWP has successfully implemented a public outreach program that has increased community participation in ENERGY STAR appliance purchase and installation. In addition to a public outreach program, BWP provides rebates for ENERGY STAR appliances including ceiling fans, refrigerators, freezers, room air conditioners, dishwashers, and clothes washers.

Since 2012 a total of 2,980 ENERGY STAR refrigerators, 1,966 ENERGY STAR clothes washers, and 1,498 ENERGY STAR dishwashers were installed through customer rebates or BWP’s free installation program for qualified customers. Additionally, a mixed-used development (Talaria) consisted of 241 residential units. Consistent with the GGRP assumptions, it assumed that 100% of residential units included a refrigerator, 50% included a clothes washer, and 25% included a dishwasher. With the completion of these development projects prior to 2020 the total installation of ENERGY STAR appliances will include 3,221 refrigerators, 2,087 clothes washers, and 1,558 dish washers. The GGRP used the CAPCOA guidance to estimate the GHG emission reduction for installation of ENERGY STAR appliances for the 2020 goal. Based on the estimated GHG reduction, a GHG emission reduction factor per ENERGY STAR

unit was developed and applied to the actual number of ENERGY STAR appliances installed at residential units to estimate the achieved emission reductions..^{7,8}

Improvement Opportunity

Implementation of this measure is based solely on the ENERGY STAR rebates tracked by BWP. As the measure is voluntary this method of data tracking excludes any voluntary purchases of ENERGY STAR appliances. As such, quantification of GHG reductions tracked only through rebates is likely a significant underestimation of GHG emission reductions actually achieved from this measure. Revision of this measure should the focus on trackable ENERGY STAR rebates or installations. Alternatively, development of an updated GHG inventory would inherently capture any energy savings and GHG emission reductions achieved through this measure regardless of whether ENERGY STAR appliances were installed through the rebate program or voluntarily. Additionally, to improve implementation of these actions an updated CAP should be developed to increase the outreach and incentives to increase voluntary adoption of this measure by the community.

⁷ Talaria project was built in compliance with E-1.1 hence the use of the mitigated energy conversion factor (11.77 kWh/sqft) to estimate energy use.

⁸ Energy Efficient Appliance Reduction: CAPCOA. 2010 (August). Quantifying Greenhouse Gas Mitigation Measures. Available: <<http://www.capcoa.org/wpcontent/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>>

<h2 style="margin: 0;">E-1.4: Smart Grid Integration</h2>		Target		
		1,027 MT CO₂e/yr		
<p><i>The City will encourage voluntary adoption of smart grid technology in new and existing construction, promoting the use of smart appliances in homes and businesses and the use of OPower to track building energy use. The City will develop an outreach campaign highlighting the benefits of smart grid integration that can occur following smart meter installation. The outreach campaign should describe how energy management systems work inside a building, including internet-based displays that show how much energy is being used and smart appliances that can defer discretionary electricity use to off-peak hours. BWP will continue advancing time-of-use pricing to its residential customers, with full adoption completed by 2020. BWP will also continue implementation of its thermal energy storage system demonstration program to reduce peak electricity demand by 2 MW by 2015.</i></p> <p>2020 Performance Metric: 1) 5% of existing residential units and existing commercial floor area install smart grid-compatible technologies, such as smart appliances, programmable thermostats, and internet-based displays. 2) 15% of new residential units and new commercial floor area install smart-grid compatible technologies, such as smart appliances, programmable thermostats, and internet-based displays.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">2020 Measure Status</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">In progress</td> </tr> <tr> <td style="text-align: center; padding: 5px;">63 MT CO₂e/yr</td> </tr> </tbody> </table>	2020 Measure Status	In progress	63 MT CO ₂ e/yr
2020 Measure Status				
In progress				
63 MT CO ₂ e/yr				

Methodology: Progress towards this measure was based on the quantified energy savings related to the participation in the Home Rewards Rebate Program for smart thermostats offered by BWP.⁹ BWP tracked the number of smart thermostat rebates and calculated energy savings using the Energy Efficiency Technical Reference Manual.¹⁰ Program specific emission factors were developed based on the reported net lifecycle energy savings and the net lifecycle GHG reductions annually reported pursuant to Senate Bill 1037.¹¹ The Home Rewards Rebate program specific emission factor was applied to the overall annual energy savings calculated for the smart thermostat rebates. The total annual energy savings per rebate type in 2020 takes into account the number of units in use by 2020, the annual savings calculated per unit, and the unit lifetime.

Improvement Opportunity

Implementation of this measure is based solely on the installation rate of smart thermostats in new construction tracked by BWP. As the measure is voluntary this method of data tracking excludes any voluntary purchases and installation of smart thermostats or other smart-grid technologies. As such, quantification of GHG reductions is likely an underestimation of GHG emission reductions actually achieved from this measure. Revision of the measure should focus on trackable installations of smart

⁹ Savings from the following Electric Programs was included in the quantification of this measure: Home Rewards Rebates, Energy Solutions Rebates, Business Bucks Program, Low-Income Refrigerator Exchange, Air Conditioning Tune-up Program, Home Improvement Program, Home Energy Reports, and Upstream HVAC Program.

¹⁰ Energy Efficiency Technical Reference Manual (TRM) (https://www.cmua.org/files/CMUA-POU-TRM_2017_FINAL_12-5-2017%20-%20Copy.pdf) is reviewed and updated on a regular basis. The TRM leverages the Database for Energy Efficiency Resources (DEER) (<http://www.deeresources.net/workpapers>) as a source for measure information and calculations.

¹¹ Energy Efficiency in California's Public Power Sector – 13th edition. 2019. http://scppa.org/file.axd?file=/2019/07/2019%20POU%20EE%20Report_13th%20Edition.pdf

grid technologies. Alternatively, development of an updated GHG inventory would inherently capture any energy savings and GHG emission reductions achieved through this measure regardless of whether smart grid technologies were installed through the rebate program or voluntarily. Additionally, to improve implementation of this measure an updated GGRP should establish the type of data sources specific to the performance metric that can be tracked, i.e., the percentage of existing units, new units and commercial floor space that have smart-grid compatible technologies

E-1.5: Cool Roofs		Target
		261 MT CO₂e/yr
<i>The City will extend its current Cool Roof Pilot Program and will advertise BWP's non-residential cool roof incentives to building owners when they obtain permits for re-roofing.</i>		2020 Measure Status
2020 Performance Metric: 1) 6 homes per year install a cool roof through 2020; 2) 100,000 sf of non-residential buildings per year install cool roofs through 2020.		Achieved/Exceeded
		505 MT CO ₂ e/yr

Methodology: Since 2013, there were 2,542 existing homes (~ 363 homes/year) that were re-roofed with cool roofs and an additional 75 new residential cool roofs installed. Additionally, 1.9 million sf of non-residential buildings with cool roofs were installed. Following methodology described in the GGRP, the energy savings associated with the installation of cool roofs was quantified using the EPA Cool Roofs Calculator.¹² It was assumed that baseline residential roofs were composed of black asphalt shingles with conventional pigments and the cool roof scenario would use medium grey or brown asphalt shingles with cool pigments.¹³ It was assumed that a residential home was on average 1,500 s.f.¹⁴ Current BWP electricity rates were utilized in the Cool Roof Calculator to determine energy savings by square footage. The projected BWP 2020 emission factor for electricity was utilized to estimate GHG emission reductions based on the total energy savings estimated.

Improvement Opportunity

Implementation of this measure is based solely on the installation of cool roofs in new construction or on re-roofing projects that have been tracked by the Community Development Department. As the measure is voluntary this method of data tracking excludes any voluntary re-roofing installations. Additionally, the methodology utilized to quantify this measure relies on a number of assumptions related to building square footage, initial roof characteristics, cool roof characteristics, and how the heating appliances are fueled. As such, quantification of GHG reductions for this measure are based on conservative assumptions and is likely an underestimation of GHG emission reductions achieved from this measure. Revision of the measure should focus on collecting data specific to the performance metric and necessary to accurately quantify potential GHG emission reductions. Alternatively, development of an updated GHG inventory would inherently capture any energy savings and GHG emission reductions achieved through this measure without needing extensive data collection.

¹² EPA Cool Roofs Calculator is available at <https://web.ornl.gov/sci/buildings/tools/cool-roof/>

¹³ Solar reflectance associated with color of shingles was obtained from an example of product information (<http://www.deansteelbuildings.com/products/panels/sr-sri-by-color/>).

¹⁴ Assumed that a residence is approximately 1,500 sf given the median price of residences in Burbank and the mean price per square footage in the area (\$588/sqft). (<https://www.zillow.com/burbank-ca/home-values/>).

<h2 style="margin: 0;">E-1.6: BWP Energy Conservation Programs</h2>	Target 2,291 MT CO ₂ e/yr
	2020 Measure Status <hr/> Achieved/Exceeded 3,544 MT CO ₂ e/yr
<p><i>BWP will continue to implement a variety of energy conservation programs in order to achieve its goal of 1% annual reductions in projected energy loads. BWP will also provide energy conservation updates to the City Council and staff to support future GGRP update efforts.</i></p> <p>2020 Performance Metric: Achieve net annual energy savings of 9,900 MWh.</p>	

Methodology: Based on information provided by the City, from (Fiscal year FY) 2012-13 to FY 2018-19, BWP achieved net annual energy savings of 11,390 MWh on average which exceeds the 2020 performance metric. This energy savings was achieved through the BWP’s current energy conservation programs, which include the Electric Programs offered and tracked by BWP.¹⁵ BWP tracks the performance of the established Electric Programs annually and calculates energy savings using the Energy Efficiency Technical Reference Manual.¹⁶ The conservation programs included in this measure have already been accounted for through the estimation of emission reductions for E-1.2, E-1.3, E-1.4, and E-1.7. Therefore, to avoid double counting the estimated reduction for this measure has not been included in the overall estimation of GHG emission reductions met.

Improvement Opportunity

To better track the progress of this measure and to ensure that no double counting of GHG emission reductions occurs, an updated GGRP should revise this measure to clearly distinguish the conservation programs in this measure that differ from those encompassed in other established measures (e.g., the Made in the Shade program is included in this measure, but is also encompassed in E-1.7). Additionally, an updated GGRP should investigate the potential for additional marketing of funding programs and increased funding to build out established conservation programs and establish new conservation programs that are in alignment with local consumer characteristics such as the recently City Council-approved EV residential charging equipment rebate program that is intended to offset the cost for new electric vehicle charging equipment in homes to facilitate and encourage the purchase and use of electric vehicles.

¹⁵ Savings from the following Electric Programs was included in the quantification of this measure: Home Rewards Rebates, Energy Solutions Rebates, Business Bucks Program, Low-Income Refrigerator Exchange, Air Conditioning Tune-up Program, Home Improvement Program, Home Energy Reports, and Upstream HVAC Program.

¹⁶ Energy Efficiency Technical Reference Manual (TRM) (https://www.cmua.org/files/CMUA-POU-TRM_2017_FINAL_12-5-2017%20-%20Copy.pdf) is reviewed and updated on a regular basis. The TRM leverages the Database for Energy Efficiency Resources (DEER) (<http://www.deeresources.net/workpapers>) as a source for measure information and calculations.

<h2 style="margin: 0;">E-1.7: Building Shade Trees</h2>			
Target 671 MT CO ₂ e/yr			
<p><i>BWP will continue to administer the Made in the Shade Program. The City will also revise the Zoning Ordinance to require the planting of two building shade trees per parcel to accompany each new single-family residential unit. The City will update its Street Tree Plan and Urban Forestry program, with a focus on identifying streets that currently lack street trees, parking lots that could accommodate additional shade trees, and locations for new tree plantings in City parks and open space.</i></p> <p>2020 Performance Metric: Plant 5,250 shade trees.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="padding: 5px;">2020 Measure Status</th> </tr> <tr> <td style="padding: 5px; text-align: center;"> <p>Achieved</p> <p>675 MT CO₂e/yr</p> </td> </tr> </table>	2020 Measure Status	<p>Achieved</p> <p>675 MT CO₂e/yr</p>
2020 Measure Status			
<p>Achieved</p> <p>675 MT CO₂e/yr</p>			

Methodology: Through the Made in the Shade program, BWP has provided 2,000 shade trees to BWP customers from July 2012 to July 2019. Additionally, the Parks and Recreations Department has planted 2,191 trees since 2013. In total the City has tracked the planting of 4,191, however, this excludes all trees that were planted by the community on a voluntary basis and is therefore, likely an underestimate of the total trees planted in Burbank over the monitored timeframe.

The per-tree GHG emission reduction factor provided by BWP (0.13 MT CO₂e/yr) was used to quantify the reductions from this this measure. The current estimation also includes the 1,000 trees that will be planted as part of the Avion Burbank Project as the project will be built prior to end of 2020. The Made in the Shade program has been in place since 2005 with BWP tracking the energy savings associated with the program. Given the BWP performance metrics and energy savings estimation from the programs start, there is a net annual GHG reduction of 732 MT CO₂e. For the purpose of estimating progress since the development of the GGRP, only trees planted since the GGRP adoption (2012) were included in this estimation.

Improvement Opportunity

To improve implementation of this measure, an updated GGRP should include supportive measures focused on improved advertisement of the program. Additionally, an updated GGRP should evaluate the feasibility of increasing funding to the Parks and Recreations department to increase the number of trees planted annually. Furthermore, the City should continue its policy efforts to require enhanced public amenities with new planned developments that provide for new on-site and street tree installation, increased tree canopy, reduction of the urban heat island effect, and installation of tree species that maximize opportunities for carbon sequestration.

E-2.1: Renewable Energy Requirements		Target
		3,422 MT CO ₂ e/yr
<p><i>The City will require new single-family residential homes to include a 1.8 kWh solar photovoltaic system, and will require new multi-family and commercial construction to provide 10% of the building’s modeled energy use from renewable sources (e.g., solar PV, geothermal heat pumps).</i></p> <p><i>The City will require installation of solar water heaters in all new residential construction, to the fullest extent possible. The City will also require pre-wiring and pre-plumbing on new construction for residential solar PV and solar water heaters to provide for easier and less costly future installation.</i></p> <p>2020 Performance Metric: 1) 925 single-family residential units install a 1.8 kWh solar PV system; 2) New multi-family residential units and commercial buildings install 2.0 MW combined of solar PV; 3) 925 single-family residential units install a solar hot water system; 4) 1,150 multi-family residential units install a solar hot water system</p>	<p>2020 Measure Status</p> <hr/> <p>Achieved/Exceeded</p> <p>9,623 MT CO₂e/yr</p>	

Methodology: The Community Development Department reported that a total of 937 single-family dwellings installed PV systems with a combined capacity of 4.98 MW capacity. BWP reported that since 2013, 655 PV systems were installed by single-family residential customers, with a 3.270 MW combined capacity. To prevent double counting, only the Community Development Department reported single-family installation of PV systems was included in the quantification of this measures progress as that estimation was assumed to include the homes estimated in the BWP report. In addition to the single-family residences, BWP reported that 39 PV systems with a combined capacity of 2.143 MW had been installed by multi-family residences and commercial customers. Community Development Department also reported that IKEA installed a PV system with 1.2 MW capacity and that First Street Village incorporated renewable energy that results in an offset of 193,359 kWh/year. There were little to no solar hot water heaters installs in single-family dwellings or multi-family dwellings, therefore, GHG emission reduction related to solar water heater installation was not quantified. Annual energy generation was estimated based on the average solar radiation data specific to Burbank’s geographic location and climate and annual operational time.¹⁷ The associated reduction in GHG emissions were estimated assuming that generated solar energy would displace a fraction of the annual power generated by fossil fuels in the BWP market.¹⁸

¹⁷ Photovoltaic cell capacity is rated in terms of mega or kilowatts and indicates the amount of instantaneous power produced when operating at peak sun exposure. Total amount of electricity produced is measured in watt-hours and is dependent on operational time. Operational time of a solar panel is defined by the amount of time that the photovoltaic cells are actively converting solar energy into power, which depends on solar radiation (6.22 kWh/m²/day). Solar radiation is the measure of energy emitted from the sun and varies daily depending on the time of day, season, local landscape, and geography. Source: National Renewable Energy Laboratories, U.S. Department of Energy (<https://pvwatts.nrel.gov/pvwatts.php>)

¹⁸ BWP 2017 Power Mix assumptions are based on data from BWP website (<https://www.burbankwaterandpower.com/electric-1/supply-and-quality/power-content-information>).

Improvement Opportunity

Data for this measure is tracked by the Community Development Department and BWP and overlaps with data tracked as part of measure E-2.2. To improve accurate quantification of this measure (and E-2.2), the tracking systems between the two departments should be consistent and clarify if and where there is overlap of data sources. Additionally, this measure and measure E-2.2 should be updated to be distinctly different from one another.

The 2019 California Energy Code effective on January 1, 2020, will require all new single-family homes, and multi-family homes three stories and less, to install a solar photovoltaic system – the first in the nation to implement such requirements. Due to emerging technologies of tankless and electric water heaters there was a noted reduction or complete elimination of financial incentives for solar water heating, and homeowner and building owners preferred choice of rooftop coverage with solar photovoltaic panels for electrical generation. Further, solar photovoltaic systems or the purchasing of renewable power are more effective at increasing energy savings than the installation of solar water heaters. As such, an updated Climate Action Plan and GGRP should consider removing the development of an ordinance requiring solar water heaters to be installed in all new residential construction.

<h2 style="margin: 0;">E-2.2: Solar Photovoltaic Systems</h2>	
Target 3,317 MT CO ₂ e/yr	
<p><i>The City will actively promote development of building-scale solar energy. The City will develop an outreach campaign to ensure BWP's Solar Photovoltaic Power program is fully subscribed between 2013 and 2016 to meet its solar goal.</i></p> <p><i>The City will also reduce or remove its third-party electrical review for non-residential solar PV permits through January 1, 2017 to further encourage full participation in the program.</i></p> <p>2020 Performance Metric: 1) 925 single-family residential units install a 1.8 kWh solar PV system; 2) New multi-family residential units and commercial buildings install 2.0 MW combined of solar PV; 3) 925 single-family residential units install a solar hot water system; 4) 1,150 multi-family residential units install a solar hot water system</p> <p>¹Due to the overlap of the data collected as performance metric with this measure and E-2.1, emission reduction achieved list here is the same as E-2.1 but is not included separately in the total emission reduction estimation.</p>	2020 Measure Status <hr/> Achieved/Exceeded 9,623 MT CO ₂ e/yr ¹

Methodology: BWP tracks the number of residential and commercial PV systems connected to the grid and the associated electricity use through the Solar Photovoltaic Power Program. BWP calculates net energy savings associated with PV connection to the grid using the Energy Efficiency Technical Reference Manual.¹⁶ Since the start of the program by the end of the fiscal year in June 2019, there were 795 customer-owned PV systems connected to the grid with a 7.88 MW capacity.¹⁹ Annual energy generation was estimated based on the average solar radiation data specific to Burbank's geographic location and climate and annual operational time.²⁰ The associated reduction in GHG emissions were estimated assuming that generated solar energy would displace a fraction of the annual power generated by fossil fuels in the BWP market.²¹ There was significant overlap in the performance metric data received for this measure and measure E-2.1. Therefore, data utilized for the two measures was quantified together. The reduction achieved here is the same as reported for E-2.1, but is not included separately in the total emissions reduction estimation.

Improvement Opportunity

Data was provided for this measure is tracked by the Community Development Department and BWP and overlaps with data tracked as part of measure E-2.2. To improve accurate quantification of this

¹⁹ Market performance data was obtained from the City on behalf of BWP's tracking system.

²⁰ Photovoltaic cell capacity is rated in terms of mega or kilowatts and indicates the amount of instantaneous power produced when operating at peak sun exposure. Total amount of electricity produced is measured in watt-hours and is dependent on operational time. Operational time of a solar panel is defined by the amount of time that the photovoltaic cells are actively converting solar energy into power, which depends on solar radiation (6.22 kWh/m²/day). Solar radiation is the measure of energy emitted from the sun and varies daily depending on the time of day, season, local landscape, and geography. Source: National Renewable Energy Laboratories, U.S. Department of Energy (<https://pvwatts.nrel.gov/pvwatts.php>)

²¹ BWP 2017 Power Mix assumptions are based on data from BWP website (<https://www.burbankwaterandpower.com/electric-1/supply-and-quality/power-content-information>).

measure (and E-2.2), the tracking systems between the two departments should be consistent and clarify if and where there is overlap of data sources. Given the performance metrics and spirit of this measure it is generally redundant with E-2.1. As such, an updated Climate Action Plan/GGRP should consider removing or revising this measure to distinguish it from E-2.1. Further, revision of this measure for an updated Climate Action Plan/GGRP so include a feasibility study in tracking energy savings with after the removal of a third-party electrical review.

<h2>E-2.3: Solar Water Heater Systems</h2>	
Target	Supporting Measure
<p><i>The City will actively promote and facilitate the installation of solar water heaters (SWH) systems on existing residential buildings, including distribution of information about the benefits of solar water heaters and installation and maintenance assistance programs designed to maximize community participation.</i></p> <p><i>The City will review its building code and zoning ordinance to identify and remove regulatory barriers to the installation of residential or commercial SWH systems.</i></p> <p><i>The City will collaborate with non-profit organizations to identify additional local, State, or national financing options for residents and businesses to voluntarily replace inefficient water heating systems with SWH systems.</i></p> <p><i>The City will also work with SoCal Gas to identify residents and businesses that are eligible for the CSI Thermal Program, and provide targeted outreach to advertise the incentives, explain the savings potential, and provide technical assistance in navigating the application process.</i></p> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Develop a public outreach campaign to advertise available SWH rebates and incentives offered through BWP and the CSI-Thermal Program. 2) Work with non-profit organizations to identify additional financing options for SWH installations. 3) Remove regulatory barriers to the installation of SWH systems. 	<p style="text-align: center;">2020 Measure Status</p> <hr style="border: 0.5px solid black;"/> <p style="text-align: center;">Achieved (no longer applicable)</p>

City Comments on Measure Implementation

BWP has achieved actions supporting this measure by providing extensive information about solar photovoltaic (PV) and SWH on the City's website. Anyone who is interested in installing solar can learn about how PV systems work, what size solar system needed, purchasing vs. leasing solar system, and understanding how solar will affect utility bills. This level of information encourages and facilitates the installation of PV systems and SWH by eliminating the knowledge barrier.

There was previously a rebate for solar water heaters to incentivize residents to install SWH, however, residents were more interested in other technology for water heaters (e.g., tankless and electric options). As such, this measure has lost its applicability.

Improvement Opportunity

The market determines the demand for SWH, and there has been a lack to interest even when there was a rebate program. Due to the lack of interest in SWH and the demand for other advanced technology for water heaters, an updated GGRP should consider removing this measure unless the market changes.

<h2 style="margin: 0;">E-3.1: Light-emitting Diode Street Lights</h2>	
Target <i>Supporting Measure</i>	
<p><i>Upon completion of the pilot testing, the City will install energy-efficient street lights throughout Burbank. The City will also update its Street Light Master Plan to include lighting efficiency requirements.</i></p> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Expand efficient lighting technology throughout the city. 2) Update the Street Light Master Plan. <p><small>¹This measure was not initially quantified in the GGRP however an estimation of emission reduction based on the annual electricity savings has been included.</small></p>	<p>2020 Measure Status</p> <p>Achieved</p> <p>49 MT CO₂e/yr¹</p>

City Comments on Measure Implementation

BWP provides free direct installation services, including high efficiency lighting, to all qualified small businesses in Burbank. In addition, BWP provides rebates per annual electricity saved for customized lighting projects, including \$0.10 per kWh saved for LED lighting. Through these efforts, BWP achieved 1.7 MW in peak demand savings and 158,000 kWh in annual electricity savings for their commercial customers (Energy Efficiency in California’s Public Power Section: 13th Edition - 2019). Although not included in the initial quantification of this measure in the GGRP, the annual emission reduction due to electricity savings was calculated by multiplying the annual energy savings by the BWP 2020 projected emission factor.

On July 30, 2019, the City Council adopted the 2019 Street Lighting Master Plan. Since the completion of the 2014 Street Lighting Master Plan, BWP has steadily replaced 100-watt and 250-watt High-Pressure Sodium (HPS) luminaires with Light-Emitting Diodes (LED). To date, approximately 50% of all HPS luminaires in the City have been replaced with LEDs. As part of the 2019 Street Lighting Master Plan, all HPS luminaires are expected to be converted to LEDs by the year 2024. Also, within the 2019 Street Lighting Master Plan, BWP continues to convert high-voltage series streetlight circuits to safer lower-voltage circuits. The luminaires are also replaced with LEDs during these conversions. Of the 15 series circuits that existed in 2014, only 4 remain in the City and their conversion is expected to be completed by the year 2020. In addition, BWP has identified several deteriorated streetlight standards that need to be replaced in the next several years. Staff is also identifying streetlights on deteriorated wood "stub" poles through electric intrusive pole inspection program. These stub poles will be replaced with Marbelite streetlight standards to improve the reliability of the system, long-term sustainability, and overall aesthetic value to the City.

Improvement Opportunity

The City has qualitatively assessed the success of this measure, however the energy savings and associated GHG emission reductions associated with this measure are not quantified. As such, it is likely that GHG emission reductions associated with this measure are underestimated. To improve quantification of progress of this measure an updated GGRP should focus on collecting and quantifying

electricity savings related to the improvements and replacement of street lights with higher efficiency street lights.

T-1.1: Pedestrian Enhancements

Target

191 MT CO₂e/yr

The City will complete the City of Burbank Pedestrian Master Plan, which includes policies, programs, and design guidelines that will enable the City to foster a safer, more attractive, and usable pedestrian environment for residents and visitors. The Master Plan should identify priority improvements and available funding to support implementation. The City will also continue to include pedestrian enhancements as part of its infrastructure projects.

2020 Measure Status

Achieved/Exceeded

508 MT CO₂e/yr¹

2020 Performance Metric: 5% of existing street intersections are improved from medium ease of street crossing to high (a qualitative assessment).

Methodology: Street intersections will be upgraded as part of several planned development conditions of approval including all street intersections around First Street Village, Talaria, the new Ikea, and Avion Burbank developments. The City adopted the continental high visibility crosswalk as the standard pedestrian treatment marking and applies this safety improvement as part of all street resurfacing projects. The City has implemented traffic signal leading pedestrian intervals at 12 locations. As part of the Citywide Safe Routes to School project, 18 new all-way stops were installed, 54 continental crosswalks were installed, and 15 mile per hour speed zones were implemented on 97 streets surrounding 28 schools. As part of the Downtown Burbank minor pedestrian improvement project, high-visibility crosswalks were installed at 6 intersections in Downtown Burbank in 2019. At this time the Pedestrian Master Plan has not yet been completed but is anticipated to be completed by mid-2020.

In total 175 out of 1,316 intersections were improved equaling a 13% improvement and exceedance of the 2020 established goal. The GGRP calculated GHG emission reduction based on a qualitative evaluation of existing street crossings and an estimated 0.02% reduction in vehicle miles travelled as a result. Due to the qualitative nature of the initial estimation of this measure, a GHG emission reduction factor per intersection was developed based on the goal of intersection improvement and total intersections considered (i.e. 1,316). The GHG emission reduction factor was multiplied by the actual number of intersections improved to provide an estimation of total GHG emissions reduced beyond the initial goal.

Improvement Opportunity

GGRP development of this goal is ultimately based on the reduction in Vehicle Miles Traveled (VMT). Therefore, changes in VMT or traffic pattern should be utilized as the performance metric rather than qualitative intersection improvement for improved quantification of this measure. Alternatively, development of an updated GHG inventory would inherently capture any reduction in VMT and associated GHG emission reductions achieved through this measure through future traffic analysis. Additionally, an updated GGRP should support the completion of the Complete Streets Plan and Complete Pedestrian Master Plan.

<i>T-1.2: Safe Routes to School</i>		<i>Target</i>
		<i>Supporting Measure</i>
<p><i>The City will aggressively pursue grant funding to prepare a comprehensive Safe Routes to School (SRTS) plan. The City will also continue to pursue funding for additional SRTS projects.</i></p> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Secure funding to prepare a Safe Routes to School plan to prioritize safety improvements and investments for pedestrians and cyclists 2) Identify funding sources for implementation of the Safe Routes to School plan. 		<p>2020 Measure Status</p> <p style="text-align: center;">Achieved</p>

City Comments on Measure Implementation

On November 13, 2018, the City approved the implementation of a short-term infrastructure improvements project through the 2013 Safe Routes to School grant for Washington, Jefferson, and Muris School; amended the Burbank Municipal Code for 15 per hour school speed zones and amended the Burbank Municipal Code for all-way stop signs on all roadways adjacent to schools.

On June 25, 2013, the City accepted grant funding in the sum of \$487,500.00, including a 10% local match (\$48,800.00), through the State of California Department of Transportation (Caltrans) Safe Routes to School Cycle 10 for development and implementation of the Safe Routes to School plan.

Improvement Opportunity

An updated GGRP should support the completion and implementation of the Safe Routes to School Plan. Additionally, the achievement of this measure and its impact on GHG emission reductions is ultimately based on the reduction in VMT. Therefore, to improve tracking of the progress of such a measure, VMT reductions should be quantified allowing for the quantification of reduced GHG emissions.

T-1.3: Bicycle Education Program

Target

Supporting Measure

The City will continue to include safety components in any bicycle infrastructure grant application that allows for it. The City will also partner with local bicycle advocacy groups to share bicycle safety information and solicit input on high-frequency accident locations.

2020 Measure Status

2020 Actions:

- 1) Partner with local bicycle advocacy groups and clubs and the Burbank Police Department to identify high-frequency accident locations
- 2) Continue to pursue grant funding for implementation of the Bicycle Master Plan that also allows for bicycle safety components

Achieved

City Comments on Measure Implementation

The City has identified high-frequency accident locations as part of analysis for the Complete Streets Plan in cooperation's with the Burbank Police Department.

The City secured \$3 million in Metro Measure M sub regional equity funding to complete the Burbank Channel Bikeway project, \$850,000 to complete a bike/pedestrian bridge over the LA River, \$2.64 million for the Chandler Bikeway Extension, and \$900,000 safety improvements on San Fernando Boulevard including Class II lanes.

Improvement Opportunity

Additional effort should be made to partner with local bicycle advocacy groups and clubs outside the Burbank Police Department. An updated GGRP should continue to support this program as well as develop a trackable performance metric such as reduced VMT from the shift in bicycle mode share.

<h2 style="margin: 0;">T-1.4: Bicycle Infrastructure Expansion</h2>		Target 355 MT CO ₂ e/yr
<p><i>The City will continue to expand bicycle infrastructure within public rights-of-way, including on-street bicycle lanes and routes, bicycle parking, and directional signage.</i></p> <p><i>The City will identify north-south roads that can accommodate bicycle boulevard facilities to connect the Chandler bicycle path with the new bicycle parking installed along Burbank and Magnolia Boulevards.</i></p> <p><i>The City will work with local bicycle advocacy groups to evaluate designated Class III bike routes for bike comfort and safety, re-evaluate Class III routes periodically, and identify Class III routes that are frequently used by cyclists and should be considered for improvement to a Class II facility.</i></p> <p><i>The City will continue to assess the need for additional bicycle parking, particularly in the Burbank Center and Media District plan areas as reuse and development activity increases in this area.</i></p> <p><i>As a catalyst project to implement this measure, BWP has committed to providing bicycles for shared use by all City employees. Facilities to accommodate the shared bicycles would be located at both the BWP campus and at the Burbank Civic Center. Should this program prove successful, the City could expand it to accommodate public use in Downtown Burbank, the Media District, and the Golden State area as part of expanding the TDM program, as described in Measure T-2.1.</i></p>	2020 Measure Status Achieved/Exceeded 399 MT CO ₂ e/yr ¹	
2020 Performance Metric: Construct 12.0 miles of Class I and II facilities.		

Methodology: In 2013 the City had 11.9 miles of Class I and Class II facilities. In 2020, the City will have 20.5 miles of Class I and Class II facilities. The GGRP used the CAPCOA guidance to quantify the VMT reductions anticipated with the proposed bicycle infrastructure improvements. Specifically, the methodology utilized the assumptions proposed in the study conducted by Dill and Carr on the ratio of additional bicycle land mileage per community area that correlates with increased bicycle mode share.²² A GHG emission reduction factor per bicycle lane mile was developed from the GGRP calculations and applied to the total new bike lane mileage anticipated to be completed by 2020 (i.e., 13.5 miles).

Improvement Opportunity

Quantification of this measure is ultimately based on the assumption that increased bike lanes will increase bicycle mode share and reduce VMT. However, numerous variables can influence the actual decrease in VMT from a measure such as this potentially resulting in an over or underestimation of the actual GHG reductions achieved. The development of an updated GHG inventory would inherently capture any reduction in VMT and associated GHG emission reductions achieved through this measure

²² Incorporate Bike Lane Street Design Reduction: CAPCOA. 2010 (August). Quantifying Greenhouse Gas Mitigation Measures. Available: <<http://www.capcoa.org/wpcontent/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>>

through future traffic analysis. Additionally, an updated GGRP should focus on identify the most effective way of tracking VMT reduction from these types of programs to better quantify GHG emission reductions and include the addition of more bike lanes in locations best suited to improve bicycle mode share.

<h2 style="margin: 0;">T-2.1: Transportation Management Organization Expansion</h2>		<i>Target</i>	
		16,687 MT CO ₂ e/yr	
<p><i>The City will work with the Transit Management Organization (TMO) to expand the geographic reach of its programs and the extent of services it currently provides; first expanding into the Golden State and Empire areas (by 2020), and then expanding citywide at a later date. In each case, the City will require that all new businesses with 25 or more employees located within the TMO boundary become TMO members and fulfill reporting requirements.</i></p> <p><i>TMO expansion to existing businesses will include an aggressive outreach campaign to advertise the full range of services provided through the TMO. To that end, the City will work with the TMO to update the TMO webpage, so that interested employers can research current programs, incentives, membership opportunities, and requirements. The TMO will work with partners to expand its ridesharing program through adoption of current technologies that make participation easier for members. The TMO will develop and/or upgrade its ride-matching systems to use current technologies (e.g., cell phone-enabled ride-match applications), and develop a ride-match social networking website and online electronic payment options. The City will evaluate its guaranteed ride home policy to ensure it is applicable to small businesses. The City will also evaluate its existing carpool parking preference requirements, and study the impacts of lowering the thresholds to apply to more businesses.</i></p> <p>2020 Performance Metric: 46% of total employees working within Burbank participate in a voluntary transportation demand management (TDM) program that offers rideshare promotion, telecommuting/alternative schedules, and parking cash-out options</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">2020 Measure Status</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px; text-align: center;"> <p>In progress</p> <p>8,807 MT CO₂e/yr¹</p> </td> </tr> </tbody> </table>	2020 Measure Status	<p>In progress</p> <p>8,807 MT CO₂e/yr¹</p>
2020 Measure Status			
<p>In progress</p> <p>8,807 MT CO₂e/yr¹</p>			

Methodology: The City is currently working with the Burbank Transportation Management Organization (TMO) to collaborate with agencies, business, and individuals to reduce VMT within the City. The TMO website was most recently update in November of 2018 to include information current and potential members. The TMO has established an outreach strategy to focus on new member recruit and expanding existing programs. Currently, there are over 70 company members. The TMO geographic boundary has not yet expanded but is anticipated to expand with the Golden State Specific Plan, planning area by the end of 2020. Additionally, the City has required that three most recently approved Planned Developments in the Golden State Specific Plan, planning area to join the TMO including the Avion Burbank Project, Media Studios North Project, and Hollywood-Burbank Airport (once the relocated airport terminal is constructed). The existing Burbank Municipal Code currently requires all new businesses of 25 or more to join the TMO and fulfill the required reporting procedures. The City's Rideshare Program was put on the City's shared network in Fall 2015 and was modified in July 2017 to further encourage lower emission transportation modes. In 2019, the City increased the subsidies for all the non-carpool and non-EV modes to increase the most greenhouse gas and air pollution friendly modes of transit. The City has preferential parking available for vanpools in select City lots.

Based on the City's current evaluation of participation in currently available TDM programs, 15,224 out of 62,707 employees in Burbank participate in a TDM, which is equivalent to 24.3%. The estimation reductions in the GGRP were calculated using VMT projections and assumed participation rates in the City's TMO. Based on the GGRP estimated emissions and VMT projections, a GHG reduction factor by employee (0.58 MT CO₂e/employee) was developed and applied to the actual number of employees that participated in a TDM.

Improvement Opportunity

Quantification of this measure is ultimately based on the assumption that increased participation in TDM programs will reduce VMT within the City. Participation data collected for this measure is indirectly related to the reduction in VMT limiting the accuracy of the quantification of this measure. The development of an updated GHG inventory would inherently capture any reduction in VMT and associated GHG emission reductions achieved through the current participation in this measure.

To improve implementation of this measure, the TMO should focus on working with partners to expand its ridesharing program through adoption of current technologies that make participation easier for members such as ride-matching systems. Additionally, the City should evaluate its guaranteed ride home policy to ensure it is applicable to small businesses, evaluate existing carpool parking preference requirements, and study the impacts of lowering the thresholds to apply to more businesses and to continue to require larger planned developments to participate. An updated GGRP should focus on implementing actions and feasibility studies for this measure that have not yet been completed as well as focus on obtaining additional funding to facilitate implementation.

Projects expanding traffic signal synchronization monitoring to reduce incident delay due to accidents include Metro projects 310.06, 310.08, 310.09, 310.31, 310.33, 310.38, 310.46, and 310.5. Projects to expand the communication system to improve/prevent redundancy include Metro projects 310.06, 310.08, 310.09, 310.31, 310.33, 310.38, 310.46, and 310.5. Projects deploying adaptive control along major corridors include Caltrans project 5200(047), and Metro projects F3313, F5306, and 310.51.

Improvement Opportunity

Traffic signal coordination will ideally improve traffic and reduce emissions from idling. An updated GGRP should focus on developing quantifiable performance metrics for this measure. Further an updated GGRP inventory would encompass GHG reductions from traffic pattern changes that are not currently able to be quantified through this measure.

W-1.1: Water Conservation Programs		Target 20 MT CO ₂ e/yr
<i>The City will implement water conservation programs described in the Urban Water Management Plan (UWMP) in support of BWP's goal to reduce water consumption by 1% annually.</i>		2020 Measure Status
2020 Performance Metric: Reduce water use by 110 million gallons annually		Achieved/Exceeded 20.2 MT CO ₂ e/yr

Methodology: BWP's 2015 Urban Water Management Plan (UWMP) includes a revised calculation of a 2020 water use target of 157 gallons per capita per day (gpcd) and an interim (2015) target of 177 gpcd. Burbank's 2015 calendar year water use was less than the 2015 and 2020 targets at 127 gpcd due to mandatory conservation requirements imposed by the Governor's Executive Order. Since 2012 water use has been reduced by a total of 1,036 million gallons, resulting in an average reduction of 148 million gallons per year, thus, exceeding BWP's 2020 target. Energy savings associated with the reduction in water use was calculated using the BWP estimation of net energy savings of 0.36 kWh for every 748 gallons estimated for reduced water pumping.²³ The BWP 2020 projected emission factor for energy was applied to the calculated annual energy savings to determine the reduction in GHG emissions.

Improvement Opportunity

This measure has been achieved annually since FY 2021-2013 and is the same goal for 2035. Given the success of the measure, an updated GGRP should consider increasing the target of water conservation for future years as well as expanding the program to include water conservation programs not included in the UWMP.

²³ City of Burbank. 2013. Burbank 2035 Greenhouse Gas Reduction Plan (GGRP): Appendix B.

W-1.2: Recycled Water Use Master Plan		Target 178 MT CO ₂ e/yr
<i>The City will implement water conservation programs described in the Urban Water Management Plan (UWMP) in support of BWP's goal to reduce water consumption by 1% annually.</i>		2020 Measure Status
2020 Performance Metric: Use 1.0 billion gallons of recycled water annually.		In progress 126 MT CO ₂ e/yr

Methodology: Since 2012, 5.88 billion gallons of recycled water have been used with an average of 0.85 billion gallons used annually. Energy savings associated with the use of recycled water is based on the assumed reduction of water pumping. Like measure W-1.1, BWP estimation of net energy savings of 0.36 kWh for every 748 gallons estimated for reduced water pumping was used to estimate the average annual energy savings of 403,999 kWh.²⁴ The BWP 2020 projected emission factor for energy was applied to the calculated annual energy savings to determine the reduction in GHG emissions.

Improvement Opportunity

An updated GGRP should consider expanding the programs utilized to achieve the goal of this measure as well as to identify funding opportunities for increased recycled water infrastructure. Consistent with this approach, the City continues to require larger planned development projects to include the use of recycled water and building out of the necessary infrastructure whenever technically feasible to address such things as water for cooling towers and/or plant/tree irrigation.

²⁴ City of Burbank. 2013. Burbank 2035 Greenhouse Gas Reduction Plan (GGRP): Appendix B.

<h2 style="margin: 0;">W-1.3: Stormwater Management Plan</h2>	
<i>Target</i>	
<i>Supporting Measure</i>	
<p><i>The City will prepare a Stormwater Management Plan that seeks to apply best management practices, including LID features, into future system upgrades or extensions.</i></p>	<p>2020 Measure Status</p> <hr/> <p>In progress</p>
<p>2020 Actions:</p> <p>1) Prepare and adopt a Stormwater Management Plan</p>	

City Comments on Measure Implementation

A draft Stormwater Master Plan (January 2014) has been prepared by the City. Please note that the draft plan gives the City a general idea of potential stormwater capture and infiltration opportunities, but in no way evaluated specific sites to determine whether they are or are not feasible for capturing stormwater and recharging groundwater. The City has adopted a Low Impact Development (LID) ordinance, which requires certain development and redevelopment projects to infiltrate or reuse stormwater on private property. Additionally, the City is a member of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) group. The group has developed an EWMP plan in which each agency, including Burbank, has identified local-scale Best Management Practices (BMPs) on public parcels, regional-scale BMPs on public parcels, LID projects on private property parcels, green street BMPs (through the City's Green Streets policy) in the public right-of-way, and regional-scale BMPs on private property. The ongoing implementation of the EWMP plan will require a sustainable, long-term funding source to develop conceptual plans, obtain California Environmental Quality Act (CEQA) clearance(s), prepare final construction plans/specifications/estimates, and advertise/award and construct the projects.

On November 6, 2018, voters approved Measure "W", which is intended to capture and infiltrate stormwater runoff for water supply resiliency and a reduction of stormwater pollutants entering local waterways. As the fiduciary, the Los Angeles County Flood Control District (LACFCD) expects to issue each city, including Burbank, its share of the measure funds beginning in 2020. Burbank expects \$1.5 million annually. More details on the measure will continue to be provided by the LACFCD.

Improvement Opportunity

To improve quantifying the GHG emission reductions associated with this measure, a performance measure that tracks water savings from this program should be incorporated. Additionally, an updated GGRP should revise the measure to include actions that the LACFD will be implementing. The updated GGRP should also focus on the revision and adoption of the Storm Water Management Plan.

<h1 style="margin: 0;">SW-1.1: Food Scrap and Compostable Paper Diversion Ordinance</h1>	
<p>Target 2,032 MT CO₂e/yr</p>	
<p><i>The City will adopt a food scraps and compostable paper diversion ordinance, requiring all food waste and compostable paper to be diverted from the waste stream to composting facilities. As part of this ordinance, the City will update its yard waste collection program to allow customers to include food scraps and compostable paper in their yard waste bins. The program will allow collection of:</i></p> <ul style="list-style-type: none"> ▪ <i>all food products: fruits, vegetables, breads, cereals, dairy, meat and fish (including bones);</i> ▪ <i>coffee grounds, filters, and tea bags; and</i> ▪ <i>food soiled paper: paper towels, plates, napkins, and pizza boxes</i> <p><i>The City will develop an outreach campaign to inform solid waste customers about the change to the yard waste collection program, identify what can and cannot be included in the yard waste bins, and provide helpful tips to minimize pest and odor problems. The City will also perform spot checks on multi-family and commercial properties to ensure compliance with the ordinance.</i></p> <p>2020 Performance Metric: 1) 100% of residential units divert 75% of food scraps and compostable paper; 2) 100% of commercial businesses divert 90% of food scraps and compostable paper</p>	<p>2020 Measure Status</p> <hr/> <p>In progress</p> <p>1,080 MT CO₂e/yr</p>

Methodology: The City is in the conceptual stages of a residential composting program; therefore, no data was available to quantify progress towards the residential goal. In the City's Zero Waste Plan, the goal is 90% diversion of food scraps and compostable paper by 2040. Private haulers that deal with commercial businesses are also required to meet State requirements. Based on the GGRP, 40% of the total GHG emission reduction would be achieved by the residential diversion, and 60% achieved by commercial diversion for food scraps and compostable paper. Based on information provided by the City's Public Works Department, approximately 89% of commercial waste is collected and processed by private haulers, while 11% is collected and processed by the City of Burbank.²⁵ Quarterly information reported by private haulers on commercial data showed that food scraps and compostable paper landfilled had been reduced by approximately 91% in comparison to the baseline commercial data utilized in the GGRP for 2010. City of Burbank waste data did not provide a waste breakdown allowing for an estimation of food scrap and compostable paper diversion for commercial waste collected by the City of Burbank. Therefore, GHG emission reductions quantified here only account for food scrap and

²⁵ The City of Burbank 2018 report provided by the city reports the tons of waste collected and processed from residential versus commercial sources. The City also provided 2018 quarterly reports on commercial waste from private haulers.

compostable paper diversion from commercial business reported through private haulers and is based on the percentage of diversion achieved.

Improvement Opportunity

Implementation of this measure is based the data provided by the City of Burbank's Public Works Department and private waste haulers, but differs from the type of data used during measure quantification in the GGRP. Therefore, the current quantification is conservative and may underestimate the total GHG emission reductions actually achieved with this measure. To improve tracking of this measure, collected data should be specific to the performance metric and the methodology described in the GGRP such that mass of food waste and compostable paper diverted is in the following units: Degradable Organic Carbon Disposed (DDOC) in maximum daily tonnage (mdt). Further, additional details from the waste management should include specifics to the type of waste and delineation of the wastes fate. Alternatively, development of an updated GHG inventory would inherently capture the overall GHG emission reductions achieved through measures addressing waste diversion. An updated GGRP should focus on implementing this measure with residences as well as identify funding for additional educational outreach programs and for the actual implementation of waste diversion (e.g., waste separating bins).

<h2 style="margin: 0;">SW-1.2: Yard Waste Diversion Ordinance</h2>		Target 244 MT CO ₂ e/yr
<i>The City will adopt an ordinance banning disposal of yard waste in trash bins. Multi-family residential and non-residential properties that are not currently served by the City's solid waste collection program would need to contract with a yard waste collection service provider.</i>	2020 Measure Status	
2020 Performance Metric: 1) 100% of residential units divert yard waste from landfills; 2) 100% of commercial businesses divert yard waste from landfills	In progress 212 MT CO ₂ e/yr	

Methodology: The GGRP estimated that 29% of the total GHG emission reduction would be achieved by residential yard waste diversion and 61% achieved by commercial yard waste diversion. Residential yard waste diversion was achieved through single family homes through Burbank Municipal Code 4-2-110 through 4-2-110.2, which requires garbage, solid waste, green waste and recyclable material to be placed in proper containers for collection. According to the City of Burbank's Public Works Department provided waste data for 2018, 100% of residential and commercial "Green Waste" processed by the City was composted.²⁶ Based on information provided by the City approximately 89% of commercial waste is collected and processed by private haulers, while 11% is collected and processed by the City of Burbank. All private hauler contractors in Burbank must submit quarterly reports and fees pursuant to Burbank Municipal Code Section 4-2-111. Quarterly information reported by private haulers on commercial data showed that "Green Waste", assumed to be yard waste, had been reduced by approximately 79% in comparison to the baseline commercial data utilized in the GGRP for 2010. Given the provided data it was assumed that 100% of residential yard waste was diverted from landfills, 100% of City of Burbank commercial yard waste was diverted, and 79% of private hauler commercial yard waste was diverted. The estimated GHG reductions from this measure is based on the weighted percentage of diversion achieved.

Improvement Opportunity

Implementation of this measure is based on the data provided by the City of Burbank's Public Works Department and private waste haulers, but differs from the type of data used during measure quantification in the GGRP. Therefore, the current quantification is conservative and may underestimate the total GHG emission reductions actually achieved with this measure. To improve tracking of this measure, collected data should be specific to the performance metric and the methodology described in the GGRP such that mass of yard waste diverted is in the following units: Degradable Organic Carbon Disposed (DDOC) in maximum daily tonnage (mdt). Further, additional details from the waste management should include specifics to type of waste and delineation of the waste's fate. Alternatively, development of an updated GHG inventory would inherently capture the overall GHG emission reductions achieved through measures addressing waste diversion. An updated GGRP should focus on

²⁶ "Green Waste" was defined by the city as yard waste including street sweeping, leaves, tree trimmings, and basin/debris cleanup.

implementing this measure through private haulers as well as identify funding for the actual implementation of such waste diversion (e.g., waste separating bins).

SW-1.3: Lumber Diversion Ordinance		Target
		1,012 MT CO₂e/yr
<i>The City will amend its existing ordinance to explicitly require the diversion of 75% of waste from construction and demolition debris generated by new construction and renovations, including scrap lumber.</i>	2020 Measure Status	
2020 Performance Metric: 75% of all construction and demolition lumber waste is diverted from landfills	In progress	
		877 MT CO₂e/yr

Methodology: The Burbank Municipal Code requires 65% of diversion. Additionally, CalGreen standards have been adopted by the City. Currently, Public Works requires all concrete and asphalt from construction/demolition projects to be recycled. Quarterly information reported by private haulers on commercial data to the Public Works Department showed that lumber and construction/demolition waste landfilled has been reduced by approximately 80% in comparison to the baseline commercial data utilized in the GGRP for 2010. However, the City of Burbank waste data did not provide a waste breakdown allowing for an estimation of lumber and construction/demolition waste diversion for commercial waste collected by the City of Burbank. In the absence of a complete data set, GHG emission reductions quantified here are based on the municipal code requiring 65% of lumber diversion compared with the 75% diversion rate used in the GGRP emission reduction calculation. As such, it was assumed that approximately 87% of the diversion goal was achieved resulting in 87% of the 2020 emissions goal being achieved.

Improvement Opportunity

Implementation of this measure is based the data provided by the City of Burbank and private waste haulers but differs from the type of data used during measure quantification in the GGRP. Therefore, the current quantification based on the established ordinance is conservative and may underestimate the total GHG emission reductions achieved with this measure. To improve tracking of this measure, collected data should be specific to the performance metric and the methodology described in the GGRP such that mass of yard waste diverted is in the following units: Degradable Organic Carbon Disposed (DDOC) in maximum daily tonnage (mdt). Alternatively, development of an updated GHG inventory would inherently capture the overall GHG emission reductions achieved through measures addressing waste diversion. An updated GGRP should focus on the development of supporting measures that would cover the remaining 10% of lumber diversion needed to achieve this goal.

SW-1.4: Reusable Bags	
Target	Supporting Measure
<p><i>Reusable shopping bags can help offset the use of single-use plastic and paper bags. The City has distributed 2,000 reusable Burbank2035 Chico bags in the community to promote resource conservation and reduce the occurrence of plastic bag pollution in the community.</i></p> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Promote the environmental benefits of reusable shopping bags on the City website 	<p>2020 Measure Status</p> <p style="text-align: center;">Achieved</p>

City Comments on Measure Implementation

On July 1, 2015, California became the first state to enact legislation imposing a statewide ban on single-use plastic bags at large retail stores. It also required a 10-cent minimum charge for recycled paper bags, reusable plastic bags, and compostable bags at certain locations. The State's mandated plastic bag ban is currently in place, and the City promotes reusable shopping bags. BWP distributes an estimated 1,800 reusable bags a year. BWP bags have been distributed at the following events:

- City Community Events (National Night Out, Parks and Rec Easter Eggstravaganza, Starlight Bowl)
- Key Accounts Events (Disney, Warner, Nickelodeon)
- EcoCampus Tours
- BWP Hosted Events (Southern California Public Power Authority (SCPPA), California Municipal Utilities Association (CMUA), American Water Works Association (AWWA), RISE Burbank, Leadership Burbank, Electric Vehicle Ride and Drive Events)
- Community Organizations (Boys and Girls Club, Kiwanis, Burbank Coordinating Council Holiday Baskets)

Improvement Opportunity

A performance metric allowing for the calculation of the GHG emission reductions achieved through this measure should be tracked and calculated. A GGRP updated should focus on identifying funding to expand this program.

SW-1.5: Recycling Ordinance		Target
<i>Supporting Measure</i>		2020 Measure Status
<p><i>The City will adopt an ordinance requiring the provision of recycling bins and/or recycling areas in all residential and non-residential buildings. Multi-family residential and non-residential properties that are not currently served by the City’s solid waste collection program would need to contract with a recycling collection service provider. The City will perform random spot-checks of multi-family residential and commercial buildings to ensure provision of recycling bins.</i></p> <p>2020 Actions:</p> <ul style="list-style-type: none"> 1) Adopt an ordinance requiring recycling bins or recycling areas in all buildings 	<p>Achieved</p>	

City Comments on Measure Implementation

Since the inception of the California Green Building Standards Code (CALGreen Code) on August 1, 2009, new commercial buildings are required to comply with recycling by building occupants. As of January 1, 2017, new multi-family dwellings of five (5) units or more must also have areas for recycling by occupants. The 2019 update of the CALGreen Code will go into effect January 1, 2020.

Additionally, staff has been conducting extensive outreach to have the community recycle and compost. There are composting workshops every month, annual educational outreach events during Burbank Arts Festival, Fixit Clinics, and more. In 2013-2014, the City also provided all City employees with recycling bins in offices, breakrooms, and other locations. Staff will investigate this action step and incorporate this information when implementing the State's regulations AB 1826 (Mandatory Commercial Organics Collection), AB 876 (Organics Capacity Plan for 15 years), and SB 1383 (75% diversion of organics from landfill by 2025).

Improvement Opportunity

A performance metric allowing for the calculation of the GHG emission reductions achieved through this measure should be tracked and calculated. A GGRP updated should focus on identifying funding to track and ensure compliance of this measure.

SW-2.1: Enhanced Methane Recovery		Target 10,600 MT CO ₂ e/yr
<i>The City will comply with all applicable ARB regulations regarding the installation or upgrading of methane capture systems at the Burbank Landfill.</i>		2020 Measure Status
2020 Performance Metric: Burbank Landfill methane capture system operates with a 75% methane capture rate.		Achieved 10,600 MT CO ₂ e/yr

Methodology: Burbank Landfill’s methane capture rate is an average of 75% per year based on the annual reports submitted by the City’s Public Works Department to the South Coast Air Quality Management District. Therefore, it was assumed that the GGRP calculated reduction was achieved.²⁷

Improvement Opportunity

An updated GGRP should revise this measure to use landfill gas (LFG) composition as a performance metric, which includes methane and carbon dioxide concentrations. The total volume of LFG extracted is burned in the enclosed ground flare owned by the City and operated by a third party. The volume of LFG consumed by the flare is monitored and recorded.

²⁷ Rule 1150.1 – Annual Report for 2018 City of Burbank Landfill No.3.

<h1 style="margin: 0;">CG-1.1: Sustainability Coordinator</h1>		Target
		<i>Supporting Measure</i>
<p><i>The City will establish a sustainability coordinator position to oversee and monitor implementation of the GGRP. Roles and responsibilities would include:</i></p> <ul style="list-style-type: none"> ▪ <i>Updating the communitywide emissions inventory every 3-5 years,</i> ▪ <i>Maintaining contact with BWP to ensure energy and water consumption data is readily available for future inventory updates,</i> ▪ <i>Identifying new statewide efficiency legislation or regulations that can be quantified for inclusion in future GGPR updates, and</i> ▪ <i>Promoting sustainability messaging throughout all City departments.</i> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Identify funding sources to support full-time sustainability coordinator position 	<p>2020 Measure Status</p> <p>In progress</p>	

City Comments on Measure Implementation

Staff is considering other alternatives that will assist efforts in sustainability and the Greenhouse Gas Reduction Plan. For example, staff is looking into creating a salary differential for designated job classifications in the Burbank Management Association (BMA) to help coordinate sustainability efforts on an ongoing basis.

Improvement Opportunity

An updated GGRP should focus on identifying funding for this position such as the CivicSpark program.²⁸

²⁸ The CivicSpark program is a Governor’s Initiation Americorps program dedicated to building the capacity for local governments to address emerging environmental and social equity resilience challenges such as climate change.

<h1>CG-1.2: Sustainability Element</h1>	
<i>Target</i>	<i>Supporting Measure</i>
<p><i>The City will prepare a Sustainability Element for adoption as an amendment to Burbank2035. The element will present policy language supported by justification from state legislation and public input, together with illustrative diagrams, photos, and maps. It will consist of the following sections:</i></p> <ul style="list-style-type: none"> ▪ <i>Introduction</i> ▪ <i>Relationship to other Burbank2035 elements and the GGRP</i> ▪ <i>Citywide goals and policies</i> ▪ <i>Sustainability plan</i> ▪ <i>Healthy community plan</i> ▪ <i>Program summary</i> <p><i>In addition, the Element will: describe what sustainability means in the context of Burbank, establish GHG reduction targets, and provide policies and programs to promote communitywide sustainability, primarily through voluntary participation.</i></p> <p>2020 Actions:</p> <ol style="list-style-type: none"> 1) Prepare Sustainability Element for Burbank2035 	<p>2020 Measure Status</p> <p>Not Achieved</p>

City Comments on Measure Implementation

Staff is searching for grants and funding opportunities to support the implementation of a Sustainability Element.

Improvement Opportunity

An updated GGRP should focus on identifying funding opportunities for expanding sustainability programs and facilitate the preparation of a Sustainability Element.

Conclusion

As shown through this GGRP Scorecard, the City of Burbank has several successful measures including numerous successful energy conservation programs that are helping to reduce the City's GHG emissions. Key findings in the report are:

- The City has achieved 95% of its 2020 Measure GHG reduction goal falling only 2,375 MT CO₂e short.
- An updated GHG inventory would be necessary to quantify the level of GHG reductions achieved through community initiative that was not tracked through one of the above discussed measures.
- The City has been successful at implementing measures and actions and in the overall tracking of the measure implementation.
- The City has exceeded the 2020 Measure GHG reduction targets for numerous measures making substantial progress towards the 2035 goal.
- Quantified GHG reductions are likely an underestimation of actual GHG reductions associated with the GGRP measures due to limitations in data collection. There is an opportunity for increased reductions through improved data collection and measure revisions.
- The City should consider completing an updated GHG inventory to better quantify actual GHG reductions in the City and consider completing an updated GGRP to incorporate current best practices and any necessary changes to existing measures.

Next Steps

According to the CEQA Guidelines Section 15183.5, projects can tier off a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. The AEP considers this approach in its white paper, "Beyond Newhall and 2020," to be the most defensible approach presently available to determine the significance of a project's GHG emissions (AEP 2016).

The City's current GGRP (Burbank2035) aligns with AB 32 (2020 emission target), but it does not specifically address the SB 32 2030 emission target. As such, projects that become operational post-2020 would not be able to tier off the Burbank 2035 GGRP.

Updating the GGRP to specifically address SB 32 2030 goals based off an updated emissions inventory in a manner that is consistent with CEQA Guidelines Section 15183.5 would provide a qualified GGRP and allow for CEQA streamlining for projects operational post-2020. Additionally, developing an updated GGRP would allow the City to incorporate the best practices in GHG reduction measures that have been adopted since the adoption of the 2012 GGRP as well as improve the established data tracking for future quantification.

Updating the GHG community inventory will also allow an all-encompassing assessment of GHG reductions that have occurred through local and state actions, some of which have been quantified as well as those that have not. Estimating GHG emissions regularly enables local governments to track emissions trends, identify the greatest sources of GHG emissions within their jurisdiction, and establish emission baselines necessary for setting targets for future reductions that incorporate reductions from state measures. For the City of Burbank, an updated GHG emission inventory would allow for a better and more accurate quantification of their progress towards the 2020 goal that are only partially captured in the current Scorecard due to data limitations.