

MEMORANDUM

To: Mark Slovick, County of San Diego
From: Jennifer Reed, Dudek
Subject: Newland Sierra Existing General Plan Alternative Greenhouse Gas Emissions Analysis
Date: June 8, 2018
cc: Brian Grover, Dudek; Rose Kelly, Dudek; Jennifer Sucha, Dudek
Attachment A: CalEEMod Output

1 INTRODUCTION

The purpose of this memorandum is to compare estimated operational greenhouse gas (GHG) emissions generated by the Newland Sierra Project (project) and the Existing General Plan Alternative (General Plan Alternative). The General Plan Alternative represents development that was assumed by San Diego County (County) in its 2011 General Plan, and by the San Diego Association of Governments (SANDAG) in its Sustainable Communities Strategy (SCS) contained in San Diego Forward: The Regional Plan.

GHGs – specifically carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) – were estimated for both the project and General Plan Alternative using Version 2016.3.1 of the California Emissions Estimator Model (CalEEMod). GHG emission sources considered in the analysis include motor vehicles, electricity and natural gas consumption, area sources, water treatment and conveyance, and solid waste generation. GHG emissions are measured herein as metric tons (MT) of CO₂ equivalent (CO₂e).¹

2 NEWLAND SIERRA PROJECT

GHG emissions generated by operation of the project were estimated in the Greenhouse Gas Emissions Technical Report for the Newland Sierra Project (Dudek 2017a). As presented therein,

¹ The CO₂e for a gas is derived by multiplying the mass of the gas by the associated global warming potential (GWP), such that metric tons (MT) of CO₂e = (MT of a GHG) × (GWP of the GHG). CalEEMod Version 2016.3.1 assumes that the GWP for CH₄ is 25, which means that emissions of 1 MT of CH₄ are equivalent to emissions of 25 MT of CO₂, and the GWP for N₂O is 298, based on the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (IPCC 2007).

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prior to implementation of Mitigation Measure M-GHG-2, the project is estimated to generate a total of 43,498 MT CO₂e per year with project design features. This estimate conservatively uses emission factors specific to year 2021, even though the project is not estimated to reach build-out until the year 2028; this serves to over-estimate emissions from electricity and natural gas consumption, and motor vehicles, because existing regulatory standards (e.g., Renewable Portfolio Standard (REG-GHG-11) and Advanced Clean Cars Program (REG-GHG-2)) will further reduce emissions associated with these sources over time. A breakdown of the estimated project-generated GHG emissions is presented in Table 1.

Table 1
Estimated Proposed Project Emissions with GHG Reduction Features (2021)

Emissions Source	Annual Emissions (Metric Tons per Year)			
	CO ₂	CH ₄	N ₂ O	CO ₂ E
Motor Vehicles	37,766	1.94	0.00	37,814
Electricity Consumption	296	0.01	0.00	298
Natural Gas Consumption	2,452	0.05	0.04	2,467
Area Sources	1,539	0.04	0.02	1,549
Water Demand	675	0.17	0.09	711
Solid Waste Generation	266	15.86	0.00	659
Total	42,995	18.07	0.15	43,498

Source: Dudek 2017a.

Notes: Numbers may not add exactly due to rounding.

3 GENERAL PLAN ALTERNATIVE

Alternative Overview

Buildout of the project Site in accordance with the General Plan’s land use designations, which include Semi-Rural 10, Rural Lands 20, General Commercial (C-1) and Office Professional (C-2), would result in 4.64 acres of general commercial uses, 53.64 acres of office professional uses, and estate residential uses (Dudek 2017b). As more particularly described in Section 4.0, Project Alternatives, of the project’s Draft EIR, the existing General Plan land use designations would allow approximately 99 single-family residential units and 2,008,116 square feet of office profession and commercial space.

GHG Emissions Modeling

As explained further below, buildout of the General Plan Alternative was modeled with the same or similar assumptions used for the project to provide for an objective comparison. Where

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comparable assumptions were not available, CalEEMod default values were used. Key assumptions used in the modeling of the General Plan Alternative scenario are detailed below.

Mobile Sources

GHG emissions from mobile sources (motor vehicles) are estimated based on the vehicle miles traveled (VMT) generated, the vehicle emission factors, and the mix of vehicles. CalEEMod Version 2016.3.1 provides default values for vehicle emission factors and vehicle fleet mix, by year, based on the California Air Resources Board's mobile source emissions inventory program known as EMFAC 2014. As assumed for the project, the default CalEEMod vehicle emission factors and fleet mix were used to model buildout of the General Plan Alternative scenario (Dudek 2017a; CAPCOA 2016). Weekday VMT for the General Plan Alternative scenario was determined by SANDAG (SANDAG 2017b). The Saturday and Sunday VMT was estimated using the average trip length calculated for the weekday VMT as provided by SANDAG, trip rates from SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG 2002), and the weekend trip rate ratios provided in CalEEMod.²

To provide the most comparable scenario, an 11.1% reduction in VMT was applied for residential trips consistent with the anticipated VMT reductions associated with implementation of the project's Transportation Demand Management (TDM) Program. It is important to note that the assumed 11.1% reduction in VMT does not represent regulatory compliance for the General Plan Alternative; instead, the 11.1% VMT reduction was conservatively assumed to be potentially attainable provided that the General Plan Alternative would also implement a TDM Program with feasible strategies to reduce VMT.³ Additionally, a 15% reduction in VMT for non-residential trips was applied to reflect compliance with the County's Climate Action Plan (CAP) Consistency Review Checklist.

² For example, for single-family homes, the CalEEMod default trip rates for weekday, Saturday, Sunday are 9.52, 9.91 (104.1% of weekday), and 8.62 (90.5% of weekday) respectively (CAPCOA 2016). The SANDAG weekday trip rate is 10; therefore, the adjusted Saturday and Sunday rates are 10.41 and 9.05, respectively.

³ Given the nature of the General Plan Alternative's land use assumptions, use of the project's 11.1% VMT reduction likely serves to unjustifiably reduce the GHG emissions of the General Plan Alternative's mobile sources. As shown in Section 2.7, Greenhouse Gas Emissions, of the Draft EIR, 7% of the TDM Program's total reductions are attributable to the project's land use diversity (5%) and comprehensive pedestrian and bicycle network (2%). The General Plan Alternative allows for just 99 estate residential units, making the feasibility of an extensive, interconnected network unlikely. Additionally, the General Plan Alternative calls for office and commercial uses at high intensity levels that likely will not provide the resident-serving uses proposed by the project.

Energy Demand

Energy emissions are broken into electrical consumption and natural gas consumption. CalEEMod determines the total energy demand based on land use type and square feet. As with the project, CalEEMod default values, established to be consistent with the 2013 California Building Code (Title 24, Part 6, of the California Code of Regulations), were utilized for non-residential uses (Dudek 2017a; CAPCOA 2016).⁴ As also assumed for the project (see PDF-22), the General Plan Alternative's residential uses were assumed to have no demand for off-site generated electricity due to the provision of rooftop solar that would provide all of the residential electricity needs using onsite renewable energy (Dudek 2017a). As with the project, the natural gas consumption from the General Plan Alternative's residential uses was estimated using CalEEMod default values (CAPCOA 2016).

Area Sources

The major area sources included in CalEEMod are hearths, consumer products, architectural coatings, and landscape equipment. Neither consumer products nor architectural coatings result in GHG emissions; rather, those sources are included in CalEEMod for purposes of the model's estimation of criteria air pollutants, which are not at issue in this memorandum. Hearths are broken into two categories, both of which are only applicable to the residential use of fireplaces and woodstoves. As with the project, all fireplaces were assumed to be natural gas and no woodstoves were assumed (Dudek 2017a). Landscape equipment is determined by the acreage of each land use. As with the project, CalEEMod default values were utilized for the landscape equipment for the General Plan Alternative (Dudek 2017a; CAPCOA 2016).

Water/Wastewater Demands

CalEEMod calculates the GHG emissions associated with supplying, conveying, treating, and distributing water. GHG emissions from water consumption are calculated based on the amount of water supplied and treated, as well as the energy intensity factor per gallon as determined by the project's location. Since both the project and General Plan Alternative would be located on the same Site, the local energy intensity default factors were used for the General Plan Alternative as assumed for the project (Dudek 2017a; CAPCOA 2016). In addition, it was assumed that 100% of the General Plan Alternative's wastewater would be treated using an aerobic wastewater treatment

⁴ CalEEMod Version 2016.3.1 includes energy factors consistent with the 2013 California Building Code; however, both the project and the General Plan Alternative would meet the 2016 California Building Code, at a minimum. The analysis conservatively uses emission factors specific to the 2013 California Building Code, which serves to over-estimate emissions for both the project and the General Plan Alternative relative to energy demand.

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system as assumed for the project (Dudek 2017a). The General Plan Alternative water demand was estimated based on the water use rates in the project for the residential and commercial components (GSI 2016). Water demand for the General Plan Alternative office component, which is not included as a land use for the project, was determined using the default CalEEMod water use rates for office park land uses (CAPCOA 2016).

Solid Waste Generation

CalEEMod calculates the GHG emissions associated with solid waste generation primarily based on local California Department of Resources Recycling and Recovery disposal rates. CalEEMod default solid waste generation rates were used for the General Plan Alternative as assumed for the project (Dudek 2017a; CAPCOA 2016). A 25% solid waste diversion rate of project-generated solid waste was assumed for the General Plan Alternative consistent with project assumptions (Dudek 2017a).

Estimated GHG Emissions

GHG emissions generated by operation of the General Plan Alternative were estimated per the methodology presented above. The General Plan Alternative is estimated to generate a total of 42,146 MT CO₂e per year with project design features. As with the project, this estimate conservatively uses emission factors specific to year 2021, even though it is likely that the General Plan Alternative would not reach build-out by that time. A breakdown of the estimated General Plan Alternative-generated emissions is presented in Table 2.

Table 2
Estimated Annual General Plan Alternative GHG Emissions with Reduction Features (2021)

Emissions Source	Annual Emissions (Metric Tons per Year)			
	CO ₂	CH ₄	N ₂ O	CO ₂ E
Motor Vehicles	28,228	1.61	0.00	28,268
Electricity Consumption	7,768	0.32	0.07	7,798
Natural Gas Consumption	3,372	0.06	0.06	3,392
Area Sources	71	0.00	0.00	72
Water Demand	1,767	0.48	0.28	1,861
Solid Waste Generation	305	18.02	0.00	755
Total	41,511	20.49	0.41	42,146

Source: See Attachment A.

Notes: Numbers may not add exactly due to rounding.

4 GHG EMISSIONS COMPARISON

As presented in Table 3, prior to implementation of Mitigation Measure M-GHG-2, the Newland Sierra project would result in an increase of approximately 1,352 MT CO₂e per year when compared to the General Plan Alternative. An increase in 1,352 MT CO₂e per year with the project represents a 3.2% increase from the General Plan Alternative.

**Table 3
Estimated Annual GHG Emissions Comparison
Newland Sierra Project and General Plan Alternative (2021)**

Emissions Source	Annual Emissions (Metric Tons per Year)		
	<i>Newland Sierra Project</i>	<i>General Plan Alternative</i>	<i>Change</i>
Motor Vehicles	37,814	28,268	9,546
Electricity Consumption	298	7,798	(7,500)
Natural Gas Consumption	2,467	3,392	(925)
Area Sources	1,549	72	1,477
Water Demand	711	1,861	(1,150)
Solid Waste Generation	659	755	(96)
Total	43,498	42,146	1,352

Notes: Numbers may not add exactly due to rounding. Numbers in parenthesis represent a negative number.

On the one hand, the project would result in greater area GHG emissions, when compared to the General Plan Alternative, because of its increase in residential landscape area. The project would also result in greater mobile GHG emissions compared to the General Plan Alternative as a result of increased development and residential uses; however, the project would result in a less VMT per trip because the project consists of more diverse land uses when compared to the General Plan Alternative (SANDAG 2017b). On the other hand, the General Plan Alternative would result in greater GHG emissions related to energy (electricity and natural gas) consumption because, while both the project and the General Plan Alternative were assumed to meet 100% of the residential electricity needs using onsite solar, the General Plan Alternative would include a greater amount of commercial/office development. In addition, the General Plan Alternative would result in greater GHG emissions from water demand and solid waste compared to the project because the

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type of land uses and the amount of land use development is anticipated to generate a greater demand for water and would generate more solid waste when compared to the project.^{5,6}

Through Mitigation Measure M-GHG-2, the project would offset 100 percent of its annual operational GHG emissions, for a 30-year period, to achieve carbon neutrality (i.e., net zero emissions level). The General Plan Alternative would *not* be held to this standard;⁷ therefore, the General Plan Alternative would result in a net increase in GHG emissions as compared to the project.

5 REFERENCES

- CAPCOA. 2016. California Emissions Estimator Model User's Guide, Version 2016.3.1
September 2016.
- County of San Diego. 2018a. Final Climate Action Plan Consistency Review Checklist. Accessed March 2018. <https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/FinalPublicReviewDocs/FinalBoardDocs/B%20CAP%20Consistency%20Review%20Checklist.pdf>
- County of San Diego 2018b. County Of San Diego Guidelines for Determining Significance Climate Change. Accessed March 2018. <https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/FinalPublicReviewDocs/CAPWebAttachments/dfinalguidelinesweb.pdf>

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- ⁵ The variables for estimating water use GHG emissions for the project and the General Plan Alternative include the type of land use, the amount of land use developed, and the water use rate; all other emission calculation variables were held constant. As explained in Section 3, the water use rate for the General Plan Alternative office land use was based on CalEEMod default rates for office park indoor and outdoor water use, while the residential and retail water use rates were the same for the project and General Plan Alternative. Accordingly, the General Plan Alternative would generate greater GHG emissions than the project primarily as a result of the land use type and amount of development; however, the use of CalEEMod default water use rates for the office component is another factor to consider.
- ⁶ As discussed in Section 3, CalEEMod default values were used to estimate solid waste generation rates for both the project and the General Plan Alternative, and the same diversion rate was applied to both scenarios to estimate GHG emissions. Because the solid waste generation rates and all other GHG emission calculation variables remain constant between the project and General Plan Alternative GHG emissions analysis, the General Plan Alternative would generate greater GHG emissions than the project as a result of the land use type and amount of development.
- ⁷ Under the County's CAP Consistency Review Checklist, General Plan-compliant projects that do not increase density or intensity beyond what is allowed by existing land use designations are eligible for CEQA streamlining under the CAP and are not required to reduce their emissions to net zero. As such, when compared to the project, the General Plan Alternative would result in a net increase in GHG emissions, as allowed by the CAP framework.

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Dudek. 2017a. Greenhouse Gas Emissions Technical Report for the Newland Sierra Project. June 2017.

Dudek. 2017b. Newland Sierra Project Draft Environmental Impact Report. Chapter 4 Project Alternatives. June 2017.

GSI Water Solutions Inc. 2016. Water Conservation Demand Study for Newland Sierra. September 8, 2016.

San Diego Association of Governments (SANDAG). 2002. (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region. Accessed March 2018. http://sandiegohealth.org/sandag/sandag_pubs_2009-7-25/publicationid_1140_5044.pdf

SANDAG. 2017a. *2050 Regional Transportation Plan*. Accessed February 2018. http://www.sandag.org/uploads/2050RTP/F2050rtp_all.pdf

SANDAG. 2017b. *Transportation Modeling for the Newland Sierra Development*. Memorandum from Mike Calandra (Senior Transportation Modeler, SANDAG) to Naraimha Prasad (Linscott, Law & Greenspan, Engineers). March 1, 2017.

ATTACHMENT A
CalEEMod Output

**Newland Sierra General Plan Alternative
San Diego County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	1,848.24	1000sqft	53.64	1,848,239.00	0
Single Family Housing	99.00	Dwelling Unit	1,927.40	178,200.00	283
Strip Mall	159.88	1000sqft	4.64	159,877.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2021
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	536.36	CH4 Intensity (lb/MW hr)	0.022	N2O Intensity (lb/MW hr)	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Updated to match Proposed Project

Land Use - Traffic Report

Construction Phase - operational only

Off-road Equipment - operational only

Trips and VMT - operational only

Vehicle Trips - VMT - 15% reduction for commercial per CAP; 11.1% reduction for residential per proposed project

Woodstoves - no woodstoves

Energy Use - modified to match project

Water And Wastewater - Project rates used for SFR and commercial. CalEEMod default indoor/outdoor ratios used for office park.

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Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	10,000.00	0.00
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,680.41	0.00
tblEnergyUse	T24E	374.93	0.00
tblLandUse	BuildingSpaceSquareFeet	1,848,240.00	1,848,239.00
tblLandUse	BuildingSpaceSquareFeet	159,880.00	159,877.00
tblLandUse	LandUseSquareFeet	1,848,240.00	1,848,239.00
tblLandUse	LandUseSquareFeet	159,880.00	159,877.00
tblLandUse	LotAcreage	42.43	53.64
tblLandUse	LotAcreage	32.14	1,927.40
tblLandUse	LotAcreage	3.67	4.64
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	720.49	536.36
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2018	2021
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	5.04
tblVehicleTrips	CC_TL	6.60	5.04
tblVehicleTrips	CC_TTP	48.00	100.00
tblVehicleTrips	CC_TTP	64.40	100.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00

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tblVehicleTrips	CW_TL	14.70	0.00
tblVehicleTrips	CW_TL	14.70	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	16.60	0.00
tblVehicleTrips	DV_TP	15.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	HO_TL	7.90	0.00
tblVehicleTrips	HO_TTP	39.60	0.00
tblVehicleTrips	HS_TL	7.10	0.00
tblVehicleTrips	HS_TTP	18.80	0.00
tblVehicleTrips	HW_TL	16.80	5.27
tblVehicleTrips	HW_TTP	41.60	100.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	82.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	1.64	10.41
tblVehicleTrips	ST_TR	9.91	1.72
tblVehicleTrips	ST_TR	42.04	113.83
tblVehicleTrips	SU_TR	0.76	9.05
tblVehicleTrips	SU_TR	8.62	0.80
tblVehicleTrips	SU_TR	20.43	55.32
tblVehicleTrips	WD_TR	11.42	10.00
tblVehicleTrips	WD_TR	9.52	12.00
tblVehicleTrips	WD_TR	44.32	120.00
tblWater	AerobicPercent	87.46	100.00

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tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	6,450,248.54	9,273,262.00
tblWater	IndoorWaterUseRate	11,842,714.73	3,309,709.00
tblWater	OutdoorWaterUseRate	4,066,461.03	2,028,531.00
tblWater	OutdoorWaterUseRate	7,258,438.06	5,846,187.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	4.95	0.00
tblWoodstoves	NumberNoncatalytic	4.95	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

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2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	17.2794	0.1150	7.5070	0.0109		0.9298	0.9298		0.9298	0.9298	82.2513	44.1242	126.3755	2.0800e-003	8.0400e-003	128.8246
Energy	0.3407	3.0893	2.5412	0.0186		0.2354	0.2354		0.2354	0.2354	0.0000	11,139.9352	11,139.9352	0.3833	0.1342	11,189.5183
Mobile	9.5123	39.2854	98.6463	0.3061	25.4648	0.2673	25.7321	6.8194	0.2498	7.0691	0.0000	28,227.7567	28,227.7567	1.6110	0.0000	28,268.0319
Waste						0.0000	0.0000		0.0000	0.0000	406.5422	0.0000	406.5422	24.0260	0.0000	1,007.1911
Water						0.0000	0.0000		0.0000	0.0000	120.6738	1,645.9694	1,766.6432	0.4829	0.2778	1,861.4901
Total	27.1324	42.4898	108.6944	0.3356	25.4648	1.4325	26.8973	6.8194	1.4150	8.2343	609.4673	41,057.7854	41,667.2527	26.5052	0.4200	42,455.0559

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	11.1755	0.0693	0.7810	4.3000e-004		9.0300e-003	9.0300e-003		9.0300e-003	9.0300e-003	0.0000	71.4162	71.4162	2.6000e-003	1.2900e-003	71.8648
Energy	0.3407	3.0893	2.5412	0.0186		0.2354	0.2354		0.2354	0.2354	0.0000	11,139.9352	11,139.9352	0.3833	0.1342	11,189.5183
Mobile	9.5123	39.2854	98.6463	0.3061	25.4648	0.2673	25.7321	6.8194	0.2498	7.0691	0.0000	28,227.7567	28,227.7567	1.6110	0.0000	28,268.0319
Waste						0.0000	0.0000		0.0000	0.0000	304.9066	0.0000	304.9066	18.0195	0.0000	755.3933
Water						0.0000	0.0000		0.0000	0.0000	120.6738	1,645.9694	1,766.6432	0.4829	0.2778	1,861.4901
Total	21.0285	42.4440	101.9684	0.3251	25.4648	0.5118	25.9765	6.8194	0.4942	7.3136	425.5804	41,085.0775	41,510.6579	20.4992	0.4133	42,146.2983

	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	22.50	0.11	6.19	3.13	0.00	64.28	3.42	0.00	65.07	11.18	30.17	-0.07	0.38	22.66	1.61	0.73

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.5123	39.2854	98.6463	0.3061	25.4648	0.2673	25.7321	6.8194	0.2498	7.0691	0.0000	28,227.75 67	28,227.75 67	1.6110	0.0000	28,268.03 19
Unmitigated	9.5123	39.2854	98.6463	0.3061	25.4648	0.2673	25.7321	6.8194	0.2498	7.0691	0.0000	28,227.75 67	28,227.75 67	1.6110	0.0000	28,268.03 19

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Office Park	18,482.40	19,240.18	16726.57	33,645,503	33,645,503
Single Family Housing	1,188.00	170.28	79.20	1,696,165	1,696,165
Strip Mall	19,185.60	18,199.14	8844.56	32,228,424	32,228,424
Total	38,856.00	37,609.60	25,650.33	67,570,092	67,570,092

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Office Park	0.00	5.04	0.00	0.00	100.00	0.00	100	0	0
Single Family Housing	5.27	0.00	0.00	100.00	0.00	0.00	100	0	0
Strip Mall	0.00	5.04	0.00	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Office Park	0.593936	0.041843	0.182569	0.108325	0.016436	0.005513	0.015940	0.023523	0.001912	0.001972	0.006090	0.000748	0.001193
Single Family Housing	0.593936	0.041843	0.182569	0.108325	0.016436	0.005513	0.015940	0.023523	0.001912	0.001972	0.006090	0.000748	0.001193
Strip Mall	0.593936	0.041843	0.182569	0.108325	0.016436	0.005513	0.015940	0.023523	0.001912	0.001972	0.006090	0.000748	0.001193

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated							0.0000	0.0000		0.0000	0.0000	7,767.8117	7,767.8117	0.3186	0.0724	7,797.3559
Electricity Unmitigated							0.0000	0.0000		0.0000	0.0000	7,767.8117	7,767.8117	0.3186	0.0724	7,797.3559
NaturalGas Mitigated	0.3407	3.0893	2.5412	0.0186			0.2354	0.2354		0.2354	0.0000	3,372.1235	3,372.1235	0.0646	0.0618	3,392.1623
NaturalGas Unmitigated	0.3407	3.0893	2.5412	0.0186			0.2354	0.2354		0.2354	0.0000	3,372.1235	3,372.1235	0.0646	0.0618	3,392.1623

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Office Park	6.00123e+007	0.3236	2.9418	2.4711	0.0177		0.2236	0.2236		0.2236	0.2236	0.0000	3,202.4860	3,202.4860	0.0614	0.0587	3,221.5167
Single Family Housing	2.82076e+006	0.0152	0.1300	0.0553	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.5266	150.5266	2.8900e-003	2.7600e-003	151.4211
Strip Mall	358124	1.9300e-003	0.0176	0.0148	1.1000e-004		1.3300e-003	1.3300e-003		1.3300e-003	1.3300e-003	0.0000	19.1109	19.1109	3.7000e-004	3.5000e-004	19.2245
Total		0.3407	3.0893	2.5412	0.0186		0.2354	0.2354		0.2354	0.2354	0.0000	3,372.1235	3,372.1235	0.0646	0.0618	3,392.1623

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Office Park	6.00123e+007	0.3236	2.9418	2.4711	0.0177		0.2236	0.2236		0.2236	0.2236	0.0000	3,202.4860	3,202.4860	0.0614	0.0587	3,221.5167
Single Family Housing	2.82076e+006	0.0152	0.1300	0.0553	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.5266	150.5266	2.8900e-003	2.7600e-003	151.4211
Strip Mall	358124	1.9300e-003	0.0176	0.0148	1.1000e-004		1.3300e-003	1.3300e-003		1.3300e-003	1.3300e-003	0.0000	19.1109	19.1109	3.7000e-004	3.5000e-004	19.2245
Total		0.3407	3.0893	2.5412	0.0186		0.2354	0.2354		0.2354	0.2354	0.0000	3,372.1235	3,372.1235	0.0646	0.0618	3,392.1623

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Office Park	2.98675e+007	7,266.4386	0.2981	0.0677	7,294.0759
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.06081e+006	501.3731	0.0206	4.6700e-003	503.2800
Total		7,767.8117	0.3186	0.0724	7,797.3559

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Office Park	2.98675e+007	7,266.4386	0.2981	0.0677	7,294.0759
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.06081e+006	501.3731	0.0206	4.6700e-003	503.2800
Total		7,767.8117	0.3186	0.0724	7,797.3559

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	11.1755	0.0693	0.7810	4.3000e-004		9.0300e-003	9.0300e-003		9.0300e-003	9.0300e-003	0.0000	71.4162	71.4162	2.6000e-003	1.2900e-003	71.8648
Unmitigated	17.2794	0.1150	7.5070	0.0109		0.9298	0.9298		0.9298	0.9298	82.2513	44.1242	126.3755	2.0800e-003	8.0400e-003	128.8246

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.6057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.5387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.1110	0.1064	6.7518	0.0109		0.9257	0.9257		0.9257	0.9257	82.2513	42.8875	125.1389	8.2000e-004	8.0400e-003	127.5565
Landscaping	0.0241	8.6700e-003	0.7552	4.0000e-005		4.1300e-003	4.1300e-003		4.1300e-003	4.1300e-003	0.0000	1.2366	1.2366	1.2600e-003	0.0000	1.2681
Total	17.2794	0.1150	7.5070	0.0109		0.9298	0.9298		0.9298	0.9298	82.2513	44.1242	126.3755	2.0800e-003	8.0400e-003	128.8246

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.6057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.5387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.0900e-003	0.0606	0.0258	3.9000e-004		4.9000e-003	4.9000e-003		4.9000e-003	4.9000e-003	0.0000	70.1796	70.1796	1.3500e-003	1.2900e-003	70.5966
Landscaping	0.0241	8.6700e-003	0.7552	4.0000e-005		4.1300e-003	4.1300e-003		4.1300e-003	4.1300e-003	0.0000	1.2366	1.2366	1.2600e-003	0.0000	1.2681
Total	11.1755	0.0693	0.7810	4.3000e-004		9.0300e-003	9.0300e-003		9.0300e-003	9.0300e-003	0.0000	71.4162	71.4162	2.6100e-003	1.2900e-003	71.8648

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1,766.6432	0.4829	0.2778	1,861.4901
Unmitigated	1,766.6432	0.4829	0.2778	1,861.4901

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Office Park	328.495 / 201.335	1,701.0453	0.4650	0.2675	1,792.3916
Single Family Housing	9.27326 / 2.02853	38.1403	0.0127	7.4600e-003	40.6814
Strip Mall	3.30971 / 5.84619	27.4576	5.1100e-003	2.7900e-003	28.4172
Total		1,766.6432	0.4829	0.2778	1,861.4901

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Office Park	328.495 / 201.335	1,701.0453	0.4650	0.2675	1,792.3916
Single Family Housing	9.27326 / 2.02853	38.1403	0.0127	7.4600e-003	40.6814
Strip Mall	3.30971 / 5.84619	27.4576	5.1100e-003	2.7900e-003	28.4172
Total		1,766.6432	0.4829	0.2778	1,861.4901

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	304.9066	18.0195	0.0000	755.3933
Unmitigated	406.5422	24.0260	0.0000	1,007.1911

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Office Park	1718.86	348.9131	20.6202	0.0000	864.4173
Single Family Housing	116.03	23.5530	1.3919	0.0000	58.3517
Strip Mall	167.87	34.0761	2.0138	0.0000	84.4221
Total		406.5422	24.0260	0.0000	1,007.1910

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Office Park	1289.15	261.6848	15.4651	0.0000	648.3130
Single Family Housing	87.0225	17.6648	1.0440	0.0000	43.7638
Strip Mall	125.903	25.5571	1.5104	0.0000	63.3166
Total		304.9066	18.0195	0.0000	755.3933

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation
