CALIFORNIA CROSSPOINT MIDDLE/HIGH SCHOOL GHG EMISSIONS ASSESSMENT

22500 Industrial Boulevard Hayward, California

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Prepared for:

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Project: 16-008

INTRODUCTION

This report summarizes the assessment of greenhouse gas emisisons resulting from this school project, to be located at 25500 Industrial Boulevard in Hayward, California. The project proposes to convert the former Heald College campus into a middle and high school in three phases over a period of about five years. Phase 1 will utilize the existing facility, which contains more than 32 move-in ready classrooms, to host California Crosspoint's existing 200 high school students plus an additional 50 middle school students anticipated to attend in the fall of 2016. No major upgrades or renovation will be necessary to open the school for junior high school and high school students. Minor upgrades will include renovation of the former dental and medical tech labs to become laboratory classrooms and the construction of a perimeter fence. Phase 2 will construct a 42,000 square foot (sf) community center with gymnasium, fitness center, multipurpose assembly hall, commercial kitchen, and multi-use classrooms. Phase 3 will construct a student residence hall, dining hall, recreation room, and lounge area. A fourth phase (Phase 4) would potentially acquire adjacent land for the construction of outdoor athletic facilities and additional parking. Phase 4 is not assessed in this document. Full build-out of the project is anticipated to include 400 high school, 150 middle school and 50 pre school students (600 students) total along with 70 staff or workers. After moving on to the site and establishing the middle school and high school, California Crosspoint will then research and poll the surrounding businesses and area to see if there is an interest and support in having a preschool in the area. If there is, then California Crosspoint will assess whether it can accommodate a preschool. A figure of 50 children was used in this analysis.

Greenhouse Gases Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger with a GWP of 23,900. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of equivalent CO_2 (CO_2e).

An expanding body of scientific research supports the theory that global warming is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California could be adversely affected by the global warming trend. Increased precipitation and sea level rise could increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

Table 1. Air Quality Significance Thresholds

Pollutant	Operational Thresholds
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons or 4.6 metric tons per capita
Note: GHG = greenhouse gas.	

Source: BAAQMD CEQA Air Quality Guidelines, May 2011

Greenhouse Gas Emisisons

The BAAQMD CEQA Air Quality Guidelines contain methodology and thresholds of significance for evaluating GHG emissions from land use type projects. The BAAQMD thresholds were developed specifically for the Bay Area after considering the latest Bay Area GHG inventory and the effects of Assembly Bill 32 (AB 32) scoping plan measures that would reduce regional emissions. BAAQMD intends to achieve GHG reductions from new land use developments to close the gap between projected regional emissions with AB 32 scoping plan measures and the AB 32 targets. The BAAQMD has developed different thresholds for evaluating GHG emissions from projects:

1. Compliance with a qualified greenhouse gas reduction strategy
2. Annual emissions of less than 1,100 metric tons or 4.6 metric tons per capita per year.

Emissions of GHG are computed as CO_2e that considers the global warming potential of other gases emitted from typical land use projects such as methane and nitrous oxide.[1] In this analysis, project emissions are computed and then the project's consistency with the City's GHG reduction strategy is assessed.

GHG Emissions Modeling Methodology

GHG emissions were computed for the construction period and the build out (or operational) scenario of the proposed project. Specifically, emissions were computed for both construction and operation of the project using the CalEEMod model in the same manner as used to predict criteria air pollutants. The CalEEMod modeling for this project was only conducted for operation of the project. Inputs to the model, other than default settings, are described below:

Land Use
The project site is 5.5 acres and was modeled to include two different land uses:

"High School" with 600 students to represent the middle and high school and
"Congregate Care (Assisted Living)" with 100 residents to represent the dormitory.

Note that a "Congregate Care" facility is the most similar residential land use included in CalEEMod, and therefore, was used for this modeling assessment.

Traffic
For the school, a trip generation rate of 2.48 trips per student calculated from the traffic data provided by Fehr & Peers was used for weekday trip generation[2]. The traffic analysis assumed that of the 600 students, 150 would live at the school site and 150 would arrive by bus or shuttle. Default CalEEMod rates rates for the residential use were used. This is likely an overestimate, as students would not need to drive, but there would be associated staff and other trips. In addition, the traffic estimates are likely too high, as many of the students would either be bussed to the site or live on the site.

Energy Use
Default energy usage rates were used for the school since the building has been constructed and would be recoccupied. The new building is aniticipated to meet the latest 2013 Title 24 code requirements, which would make it at least 25-percent more energy efficient than the default energy usage rates assumed in CalEEMod. This reduction was applied to Title 24 electricity and natural gas usage categories. PG&E's most recent certified CO2 intenisty rate of 429 pounds per megawatt of energy produced was used.

[1] BAAQMD. 2009. California Environmental Quality Act Guidelines Update Proposed Thresholds of Significance. December.
[2] Fehr & Peers. 2016. California Crosspoint School Transportation Assessment. April 20.

Construction GHG Emissions

Construction phases included rennovations, minor demolition and some construciton. These emisisons are anticipated to be small on an annual basisand certainly below 1,100 metric tons (MT) of CO_2e. Neither the City of Hayward nor BAAQMD have quantified thresholds for construction activities. However, the annual emissions would be below the lowest project emission threshold considered by BAAQMD.

Operational GHG Emissions

Table 2 presents the results of the CalEEMod model analysis in terms of annual MT of CO_2e/yr. These emissions are based on the output of CalEEMod for the proposed project. The project site was assumed to have no existing emissions since it is unoccupied. As shown in Table 8 below, operation of the project would generate 1,313 MT of CO_2e/yr. Attachment 1 includes the CalEEMod modeling output.

Table 2. Annual Project GHG Emissions in Metric Tons

Source Category	Proposed Project 2017 CO_2e Emissions In Metric Tons (MT)
Area	6
Energy Consumption	219
Mobile	968
Solid Waste Generation	91
Water Usage	29
Total	1,313
Per capita emissions*	2.2

* Assuming 600 students

Consistency with Adopted Climate Action Plan

Hayward's Climate Action Plan (CAP) was adopted by the City Council on July 28, 2009. The 2009 CAP was designed to reduce communitywide emissions 12.5 percent below 2005 levels by the year 2020, and to set the City on a course to achieve a long-term emission reduction goal of 82.5 percent below 2005 levels by the year 2050.

Operational emissions from existing development in Hayward in the years 2005 and 2010, as well as projected "Business As Usual" GHG emissions associated with forecasted growth in the City's population and employment in 2020, 2040, and 2050, were forecasted and summaries in Table 3, as provided in the Hayward 2040 Draft EIR.[3] The 2020, 2040, and 2050 projections reflect both existing and proposed land uses and population and employment growth assumed in the proposed General Plan, but did not take into account any specific GHG reduction measures associated with State or federal legislative actions or the City's 2009 CAP. Projected future emissions with the General Plan are also shown in Table 3.

[3] Note that the 2005 projections were contained in the 2009 CAP, but were updated for 2010 for the 2040 General Plan.

Table 3. Hayward Communitywide GHG Emissions Baseline Inventories and Projections

Sector	GHG Emissions (MT CO2e/year)				
	Inventories		Projections ("Business As Usual")		
	2005	2010	2020	2040	2050
Residential Energy	158,528	154,424	169,696	200,241	215,514
Commercial/Industrial Energy	238,226	231,719	254,969	301,469	324,720
Transportation	734,087	702,552	748,550	982,017	1,086,054
Solid Waste	52,438	24,048	26,235	30,610	32,798
Water/Wastewater Treatment[1]	-	8,061	8,794	10,261	10,994
Total	**1,183,279**	**1,120,803**	**1,208,245**	**1,670,080**	**1,524,599**
Projected Emissions with 2040 General Plan			**934,845**	**1,087,601**	**1,185,781**

[1] Water and Wastewater Treatment GHG emissions were not accounted for in the 2005 baseline GHG inventory as part of the 2009 Climate Action Plan.

Source: City of Hayward 2009; StopWaste.org 2013; Data adjusted and modeled by Ascent Environmental, Inc. in 2013, as reported in the Hayward 2040 General Plan Draft EIR.

The recently adopted General Plan integrates and updates the comprehensive, communitywide GHG emission reduction strategy contained in the City's 2009 CAP to achieve a GHG emission reduction target of 20 percent below 2005 levels by the year 2020. The General Plan also recommends longer-term goals for GHG reductions of 61.7 percent below 2005 levels by the year 2040 and 82.5 percent below 2005 levels by the year 2050.

The Hayward 2040 General Plan Draft EIR contains a comprehensive list of specific General Plan policies and programs that constitute the City's updated GHG emission reduction strategy.[4] These policies and programs contain GHG emission reduction measures that apply to both existing and new development. Implementation of these measures would reduce GHG emissions by more than 20 percent below 2005 levels by the year 2020 when combined with State and federal programs. The City of Hayward considers the City's 2009 CA combined with the Hayward 2040 General Plan to be a Qualified Greenhouse Gas Reduction Strategy.[5]

One purpose of the Qualified Greenhouse Gas Reduction Strategy is to streamline the decision-making process regarding a proposed project's impact on GHG emissions within the City. The proposed project would not require a General Plan Amendment that would alter GHG emissions in the city, and thus the project's consistency with relevant CAP measures and actions has been used to evaluate the significance of this impact. As part of the evaluation of the project's consistency with the CAP, the project's incorporation of applicable strategies and measures from the plan as binding and enforceable components of the project. The consistency of the project is shown in Table 4. Projects that show consistency with the plan forecasts and implement applicable strategies included in the plan are considered to have less-than-significant GHG emissions.

[4] See Table 10.4 (pp 10-10 through 10-42) of the Hayward 2040 General Plan Draft EIR.

[5] Telephone conversation between James Reyff of Illingworth & Rodkin, Inc. and Sara Buizer of the City of Hayward, August 27, 2015.

Table 4. City of Hayward GHG Reduction Strategies Applicable to Proposed Project

Applicable Policy or Implementing Program	Goal/Policy/Implementation Program	Project Applicability
Policy NR-2.10 Zero-Emission and Low-Emission Vehicle Use	The City shall encourage the use of zero-emission vehicles, low-emission vehicles, bicycles and other non-motorized vehicles, and car-sharing programs by requiring sufficient and convenient infrastructure and parking facilities throughout the City.	Project would provide parking spaces with electric charging stations, bicycle parking and pedestrian access
Policy NR-4.1 Energy Efficiency Measures	The City shall promote the efficient use of energy in the design, construction, maintenance, and operation of public and private facilities, infrastructure, and equipment.	City Green Building Ordinance for Private Development would apply to new construciton
Policy NR-4.11 Green Building Standards	The City shall require newly constructed or renovated public and private buildings and structures to meet energy efficiency design and operations standards with the intent of meeting or exceeding the State's zero net energy goals by 2020.	City Green Building Ordinance for Private Development would apply The project would be subject to local and state building codes that regulate energy efficiency
Policy NR-4.13 Energy Use Data	The City shall consider requiring disclosure of energy use and/or an energy rating for single family homes, multifamily properties, and commercial buildings at certain points or thresholds.	The project would make energy consumption data available upon request
Policy NR-6.9 Water Conservation	The City shall require water customers to actively conserve water year-round, and especially during drought years.	The project would utilize drought resistant landscaping and efficient drip irrigation systems
Policy M-1.6 Bicycling, Walking, and Transit Amenities	The City shall encourage the development of facilities and services, (e.g., secure term bicycle parking, street lights, street furniture and trees, transit stop benches and shelters, and street sweeping of bike lanes) that enable bicycling, walking, and transit use to become more widely used modes of transportation and recreation.	The project would include bicycle and pedestrian amenities to encourage these modes of transportation.
Goal M-5 Pedestrian Facilities	Provide a universally accessible, safe, convenient, and integrated pedestrian system that promotes walking.	The project would serve students and include amenities to encourage bicycling and walking.
Policy M-6.5 Connections between New Development and Bikeways	The City shall ensure that new commercial and residential development projects provide frequent and direct connections to the nearest bikeways and do not interfere with existing and proposed bicycle facilities.	The project would implement bicycle access and amenities per City requirements
Policy M-8.3 Employer-Based Strategies	The City shall encourage employers to participate in TDM programs (e.g., guaranteed ride home, subsidized transit passes, carpool and vanpool programs) and to participate in or create Transportation Management Associations to reduce parking needs and vehicular travel.	The project would include measures required by the City and also those implemented as part of the the project.
Policy M-8.5 Commuter Benefits Program	The City shall assist businesses in developing and implementing commuter benefits programs (e.g., offers to provide discounted or subsidized transit passes, emergency ride home programs, participation in commuter rideshare programs, parking cash-out or parking pricing programs, or tax credits for bike	Many of the students would either be bussed to the site or live on the site. In addition, the project will implement prgrams required by the City

Applicable Policy or Implementing Program	Goal/Policy/Implementation Program	Project Applicability
	commuters).	
Policy M-9.9 Alternative Fuel Vehicle Parking	The City shall require new private parking lots to grant low-carbon vehicles access to preferred parking spaces, and shall require new private parking lots to provide electric vehicle charging facilities.	The project would provide electric vehicle parking stations as required by the City or to meet project needs/demand. This would apply to both the school and residence hall
Policy PFS-7.12 Construction and Demolition Waste Recycling	The City shall require demolition, remodeling and major new development projects to salvage or recycle asphalt and concrete and all other non-hazardous construction and demolition materials to the maximum extent practicable.	The project proposes to divert 50 percent of construction waste from landfills
Policy PFS-7.14 Commercial Recycling	The City shall encourage increased participation in commercial and industrial recycling programs, and strive to comply with the recycling provisions approved by the Alameda County Waste Management Authority Board.	The project will have recycling programs that are consistent with ACWMA programs.

Conclusion

Project GHG emissions were conservatively predicted and reported in Table 2. The City of Hayward has a Qualified Greenhouse Gas Reduction Strategy that the project would be consistent in terms of land use and would implement the applicable policies and programs of that plan. Therefore, the project would not result in significant GHG emisisons.

Impact: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The project would be subject to new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and be subject to local policies, such as the City Climate Action Plan, that may affect emissions of greenhouse gases.

Attachment 1: CalEEMod Operational Output

CA Crosspoint Middle/High School

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	600.00	Student	5.50	59,012.00	0
Congregate Care (Assisted Living)	100.00	Dwelling Unit	0.00	56,100.00	286

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using PG&E current rate

Land Use - Acreage assigned to school

Construction Phase - Operation only

Off-road Equipment - Operation only

Vehicle Trips - Used F&P rate of 2.48 trips/student (145%)

Woodstoves - no woodstoves or any fireplaces

Energy Use - Reduced energy usage for new constructed uses by 25% for 2013 Title 24

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	T24E	312.05	234.00
tblEnergyUse	T24NG	7,191.67	5,394.00
tblLandUse	LandUseSquareFeet	79,596.59	59,012.00
tblLandUse	LandUseSquareFeet	100,000.00	56,100.00
tblLandUse	LotAcreage	1.83	5.50
tblLandUse	LotAcreage	6.25	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	429
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	WD_TR	1.71	1.24

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

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

Area	0.6213	0.0101	0.8666	1.4000e-004		0.0202	0.0202		0.0202	0.0202	1.6367	3.8678	5.5045	4.2900e-003	1.4000e-004	5.6368
Energy	9.2900e-003	0.0824	0.0558	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	217.8799	217.8799	0.0103	3.4500e-003	219.1642
Mobile	0.5806	1.7476	6.3378	0.0124	0.8113	0.0226	0.8339	0.2180	0.0208	0.2388	0.0000	967.6408	967.6408	0.0373	0.0000	968.4238
Waste						0.0000	0.0000		0.0000	0.0000	40.7504	0.0000	40.7504	2.4083	0.0000	91.3244
Water						0.0000	0.0000		0.0000	0.0000	2.9055	17.0694	19.9749	0.2996	7.2900e-003	28.5245
Total	**1.2111**	**1.8401**	**7.2601**	**0.0130**	**0.8113**	**0.0493**	**0.8606**	**0.2180**	**0.0475**	**0.2655**	**45.2927**	**1,206.4578**	**1,251.7505**	**2.7597**	**0.0109**	**1,313.0737**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6213	0.0101	0.8666	1.4000e-004		0.0202	0.0202		0.0202	0.0202	1.6367	3.8678	5.5045	4.2900e-003	1.4000e-004	5.6368
Energy	9.2900e-003	0.0824	0.0558	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	217.8799	217.8799	0.0103	3.4500e-003	219.1642
Mobile	0.5806	1.7476	6.3378	0.0124	0.8113	0.0226	0.8339	0.2180	0.0208	0.2388	0.0000	967.6408	967.6408	0.0373	0.0000	968.4238
Waste						0.0000	0.0000		0.0000	0.0000	40.7504	0.0000	40.7504	2.4083	0.0000	91.3244
Water						0.0000	0.0000		0.0000	0.0000	2.9055	17.0694	19.9749	0.2995	7.2700e-003	28.5199
Total	**1.2111**	**1.8401**	**7.2601**	**0.0130**	**0.8113**	**0.0493**	**0.8606**	**0.2180**	**0.0475**	**0.2655**	**45.2927**	**1,206.4578**	**1,251.7505**	**2.7597**	**0.0109**	**1,313.0691**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**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**	**0.18**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5806	1.7476	6.3378	0.0124	0.8113	0.0226	0.8339	0.2180	0.0208	0.2388	0.0000	967.6408	967.6408	0.0373	0.0000	968.4238
Unmitigated	0.5806	1.7476	6.3378	0.0124	0.8113	0.0226	0.8339	0.2180	0.0208	0.2388	0.0000	967.6408	967.6408	0.0373	0.0000	968.4238

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Congregate Care (Assisted Living)	274.00	220.00	244.00	584,880	584,880
High School	744.00	366.00	150.00	1,584,362	1,584,362
Total	1,018.00	586.00	394.00	2,169,242	2,169,242

4.3 Trip Type Information

	Miles	Trip %	Trip Purpose %

Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Congregate Care (Assisted	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
High School	9.50	7.30	7.30	77.80	17.20	5.00	75	19	6

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.541334	0.061893	0.168156	0.111955	0.031019	0.004607	0.019268	0.049011	0.001782	0.003693	0.005649	0.000207	0.001427

5.0 Energy Detail

4.4 Fleet Mix

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	0.0000	125.9043	125.9043	8.5100e-003	1.7600e-003	126.6289
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	125.9043	125.9043	8.5100e-003	1.7600e-003	126.6289
NaturalGas Mitigated	9.2900e-003	0.0824	0.0558	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.9756	91.9756	1.7600e-003	1.6900e-003	92.5353
NaturalGas Unmitigated	9.2900e-003	0.0824	0.0558	5.1000e-004		6.4200e-003	6.4200e-003		6.4200e-003	6.4200e-003	0.0000	91.9756	91.9756	1.7600e-003	1.6900e-003	92.5353

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					
Congregate Care (Assisted Living)	705600	3.8000e-003	0.0325	0.0138	2.1000e-004		2.6300e-003	2.6300e-003		2.6300e-003	2.6300e-003	0.0000	37.6535	37.6535	7.2000e-004	6.9000e-004	37.8827
High School	1.01796e+006	5.4900e-003	0.0499	0.0419	3.0000e-004		3.7900e-003	3.7900e-003		3.7900e-003	3.7900e-003	0.0000	54.3221	54.3221	1.0400e-003	1.0000e-003	54.6527
Total		**9.2900e-003**	**0.0824**	**0.0558**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.9756**	**91.9756**	**1.7600e-003**	**1.6900e-003**	**92.5353**

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					
High School	1.01796e+006	5.4900e-003	0.0499	0.0419	3.0000e-004		3.7900e-003	3.7900e-003		3.7900e-003	3.7900e-003	0.0000	54.3221	54.3221	1.0400e-003	1.0000e-003	54.6527
Congregate Care (Assisted Living)	705600	3.8000e-003	0.0325	0.0138	2.1000e-004		2.6300e-003	2.6300e-003		2.6300e-003	2.6300e-003	0.0000	37.6535	37.6535	7.2000e-004	6.9000e-004	37.8827
Total		**9.2900e-003**	**0.0824**	**0.0558**	**5.1000e-004**		**6.4200e-003**	**6.4200e-003**		**6.4200e-003**	**6.4200e-003**	**0.0000**	**91.9756**	**91.9756**	**1.7600e-003**	**1.6900e-003**	**92.5353**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	353730	68.8327	4.6500e-003	9.6000e-004	69.2289
High School	293290	57.0716	3.8600e-003	8.0000e-004	57.4000
Total		**125.9043**	**8.5100e-003**	**1.7600e-003**	**126.6289**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	353730	68.8327	4.6500e-003	9.6000e-004	69.2289
High School	293290	57.0716	3.8600e-003	8.0000e-004	57.4000
Total		**125.9043**	**8.5100e-003**	**1.7600e-003**	**126.6289**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6213	0.0101	0.8666	1.4000e-004		0.0202	0.0202		0.0202	0.0202	1.6367	3.8678	5.5045	4.2900e-003	1.4000e-004	5.6368
Unmitigated	0.6213	0.0101	0.8666	1.4000e-004		0.0202	0.0202		0.0202	0.0202	1.6367	3.8678	5.5045	4.2900e-003	1.4000e-004	5.6368

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4496					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0776	1.3200e-003	0.1110	1.0000e-004		0.0162	0.0162		0.0162	0.0162	1.6367	2.6442	4.2809	3.0400e-003	1.4000e-004	4.3870
Landscaping	0.0239	8.8000e-003	0.7556	4.0000e-005		4.0900e-003	4.0900e-003		4.0900e-003	4.0900e-003	0.0000	1.2236	1.2236	1.2500e-003	0.0000	1.2498
Total	**0.6213**	**0.0101**	**0.8666**	**1.4000e-004**		**0.0202**	**0.0202**		**0.0202**	**0.0202**	**1.6367**	**3.8678**	**5.5045**	**4.2900e-003**	**1.4000e-004**	**5.6368**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4496					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0776	1.3200e-003	0.1110	1.0000e-004		0.0162	0.0162		0.0162	0.0162	1.6367	2.6442	4.2809	3.0400e-003	1.4000e-004	4.3870
Landscaping	0.0239	8.8000e-003	0.7556	4.0000e-005		4.0900e-003	4.0900e-003		4.0900e-003	4.0900e-003	0.0000	1.2236	1.2236	1.2500e-003	0.0000	1.2498
Total	**0.6213**	**0.0101**	**0.8666**	**1.4000e-004**		**0.0202**	**0.0202**		**0.0202**	**0.0202**	**1.6367**	**3.8678**	**5.5045**	**4.2900e-003**	**1.4000e-004**	**5.6368**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	19.9749	0.2995	7.2700e-003	28.5199
Unmitigated	19.9749	0.2996	7.2900e-003	28.5245

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	6.5154 / 4.10754	11.7248	0.2130	5.1500e-003	17.7928
High School	2.64298 / 6.79622	8.2501	0.0866	2.1400e-003	10.7317
Total		**19.9749**	**0.2996**	**7.2900e-003**	**28.5245**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	6.5154 / 4.10754	11.7248	0.2129	5.1400e-003	17.7895
High School	2.64298 / 6.79622	8.2501	0.0866	2.1300e-003	10.7303
Total		**19.9749**	**0.2995**	**7.2700e-003**	**28.5199**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	40.7504	2.4083	0.0000	91.3244
Mitigated	40.7504	2.4083	0.0000	91.3244

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	91.25	18.5229	1.0947	0.0000	41.5111
High School	109.5	22.2275	1.3136	0.0000	49.8133
Total		**40.7504**	**2.4083**	**0.0000**	**91.3244**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	91.25	18.5229	1.0947	0.0000	41.5111
High School	109.5	22.2275	1.3136	0.0000	49.8133
Total		**40.7504**	**2.4083**	**0.0000**	**91.3244**

9.0 Operational Offroad

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

10.0 Vegetation