

MEMORANDUM

DATE: December 29, 2011

TO: Mohammad Javanbakht

FROM: Amy E. Fischer, LSA Associates, Inc.

SUBJECT: Aetna Springs Greenhouse Gas Analysis

This memorandum describes the greenhouse gas emissions associated with the proposed Aetna Springs Resort (Retreat) project which would result in modification to its existing Use Permit in order to facilitate the restoration and operation of the Retreat. As supplemental documentation to the Napa County Checklist of Greenhouse Gas Emissions and Emission Reduction form, this memorandum also documents the Aetna Springs Resort GHG emissions under the existing permitted use and GHG emissions reductions that would be achieved as part of the project.

INTRODUCTION

California's major initiative for reducing greenhouse gas (GHG) emissions is outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act". AB 32 calls for an ambitious reduction in California's carbon footprint by requiring, on a statewide basis, the reduction of GHG emissions to 1990 levels from business-as-usual (BAU) emission levels projected for 2020. AB 32 requires the Air Resources Board (ARB) to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. In December 2008, ARB approved a Scoping Plan which includes estimates of the State's projected BAU 2020 emissions of 596 million metric tons (MMT) of CO₂ equivalent (MMT CO₂eq¹), compared with estimated 1990 emissions of 427 MMT CO₂eq; this equates to approximately a 28 percent reduction in emissions.²

In October 2011, Napa County released a revised Draft Climate Action Plan (CAP) to document the County's baseline emissions and measures the County necessary for implementation to reduce GHG emissions within the County. The Napa County CAP commits to the reduction of greenhouse gas emissions and describes feasible measures to address the goals of AB 32.³

The Napa County CAP identifies project level GHG mitigation for new development and vineyard conversions. The CAP indicates that new development projects should reduce their annual BAU emissions by 39 percent. According to the CAP, the planning effort associated with this mitigation will commence following adoption of the CAP.

¹ GHG emissions are typically measured in terms of pounds or tons of "CO₂ equivalents" (CO₂eq).

² California Air Resources Board, 2008. *Climate Change Scoping Plan: a framework for change*. December.

³ Napa County, 2011. *Revised Napa County Climate Action Plan*. October.

The project site is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD Air Quality CEQA Guidelines identify a significance criterion of 1,100 metric tons CO₂eq for new development projects. The guidelines also provide screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts.⁴ The screening criterion for hotel GHG emissions is 83 rooms. The proposed project would include no more than 70 rooms; therefore, based on the BAAQMD's guidelines, the project would not be expected to have significant GHG emissions.

GREENHOUSE GAS EMISSIONS UNDER PERMITTED CONDITIONS

The project would implement modifications to its existing use permit in order to facilitate the full restoration and operation of the Retreat. The changes involve the relocation of buildings and all operations would remain within the existing operating permit. Therefore, permitted condition emissions would be those associated with operation of the Retreat under the existing use permit and as such is considered the BAU scenario for purposes of this analysis.

Operation of the Retreat would generate GHG emissions, predominantly carbon dioxide (CO₂). While emissions of other GHGs, such as methane (CH₄), are important with respect to global climate change, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the project than are levels of CO₂.

URBEMIS v.9.2.4 with the Bay Area Greenhouse Gas Emissions Model (BGM) was used to estimate the total project GHG emissions related to vehicle trips; CH₄ and N₂O emissions were estimated using trip generation data and EPA emission factors.

Water-related energy use consumes 19 percent of California's electricity every year. Nearly 70 percent of the state's total stream runoff is north of Sacramento, but 80 percent of the water demand is south of Sacramento.⁵ Energy use and related GHG emissions are based on water supply and conveyance, water treatment, water distribution, and wastewater treatment. Each element of the water use cycle has unique energy intensities (kilowatt hours [kWh]/million gallons). Recognizing that the actual energy intensity in each component of the water use cycle will vary by utility, the CEC assumes that approximately 4,000 kWh per million gallons are consumed for water that is supplied, treated, consumed, treated again, and disposed of in Northern California.

To determine the net GHG emissions from landfilling of solid waste, total CO₂eq emissions from CH₄ generation, carbon storage (treated as negative emissions), and transportation CO₂ emissions were estimated using emission rates from the BGM. BGM was also used to estimate CO₂ emissions related to other area sources, including hearth emissions and landscape equipment emissions. GHG emissions for permitted conditions were estimated for the project under the existing use permit and are presented in Table 1.

The un-renovated historic buildings on the project site use more electricity due to conductive losses from lack of insulation and convective losses from things such as leaky air seals in windows and air

⁴ Bay Area Air Quality Management District, 2011. *Air Quality CEQA Guidelines*. May.

⁵ California Energy Commission. 2005. California's Water – Energy Relationship. Final Staff Report. Prepared in Support of the 2005 Integrated Energy Policy Report Proceeding. November. CEC-700-2005-011-CF.

ducts. Without a professionally documented energy audit, a precise estimate for energy efficiency is not possible for this analysis. Therefore, to account for the inefficient energy use associated with the project, electrical and natural gas consumption for the permitted condition is expected to result in 30 percent higher emissions than would be expected for existing building code standards. This inefficiency is accounted for in the emission results shown in Table 1.

As shown in Table 1, the permitted use project would generate up to 1,398.93 metric tons of CO₂eq per year of emissions in 2020. Motor vehicle emissions are the largest source of GHG emissions at approximately 39 percent of the total project emissions. Energy use, including electricity and natural gas, are the next largest category at a combined 31 percent of CO₂eq emissions. Solid waste generation and disposal comprises 28 percent of the total. Water and wastewater conveyance and treatment account for 2 percent of the emissions. Other area sources, such as landscape equipment emissions, are the remaining source of GHG emissions comprising of less than 1 percent of the total.

Table 1: Aetna Springs GHG Emissions for Permitted Conditions (BAU)

Emission Source	Emissions (Metric Tons Per Year)			
	CO ₂ eq per BGM	Percent of Total	Adjustments (MT CO ₂ e) ^a	BAU Emissions
Vehicles	486.66	39	+156.43	643.09
Electricity Production	221.75	18		221.75
Water & Wastewater	23.81	2		23.81
Natural Gas Combustion	162.04	13		162.04
Solid Waste	348.01	28		348.01
Other Area Sources	0.23	0		0.23
Total Annual Emissions		100		1398.93

Notes: Column totals may vary slightly due to independent rounding of input data.

^a Per Napa County guidance, transportation adjustments back-out the State measures assumed in the BGM (Pavely and the Low Carbon Fuel Rule) per BAAQMD's BGM User Manual, April 9, 2010. See BGM output in attachment.

Source: LSA Associates, Inc., November 2011.

PROJECT-RELATED GREENHOUSE GAS EMISSIONS

Emission Reduction Goal

According to the Draft Napa County CAP, new development projects should reduce their calculated BAU emissions by 39 percent using any combination of measures including project-specific design features planned as part of the project. Additionally, a project can account for Pavely emission reductions and reductions associated with the Low Carbon Fuel Rule when determining operational GHG emissions.

For the Aetna Springs project, a 39 percent reduction target equates to approximately 545.22 metric tons of CO₂eq. However, it should be noted that the proposed project is not considered a new development project in that the project only seeks a modification to its existing Use Permit in order to facilitate the restoration and reuse of the Retreat.

Project Construction Emissions

Implementation of the project would generate GHG emissions in the short term from construction activities, consisting primarily of emissions from equipment exhaust. Construction activities, such as

site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew will produce combustion emissions from various sources. During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO₂, CH₄, and nitrous oxide (N₂O). Furthermore, CH₄ is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The BAAQMD encourages the incorporation of best management practices to reduce GHG emissions during construction, as feasible and applicable. Construction emissions have been estimated using the URBEMIS model. Results indicate the project would generate a total of approximately 246.4 metric tons of CO₂ during construction.

Project-Related Greenhouse Gas Reduction Measures

As described in the Checklist of Voluntary Greenhouse Gas Emission Reduction Measures completed by the project proponent, the project would implement measures that would result in a reduction of greenhouse gas emissions. A summary of the measures and emission benefits is provided below.

1. LEED and Build It Green Standards

The project would primarily involve the renovation of historic structures and therefore, any renovations will be conducted following the National Historical Preservation guidance. All new buildings plan to incorporate the USGBC LEED design features (although the project is not seeking LEED Certification). The New Buildings Institute and the U.S. Green Building Council have conducted a study to evaluate the Energy Performance of LEED-constructed new buildings. While results vary, measured performance shows an energy savings and an estimated saving in energy intensity of approximately 25 percent for medium energy buildings (e.g., offices and commercial uses).⁶ This measure is estimated to reduce energy usage by 25 percent over projected consumption rates for new buildings of the Aetna Springs Retreat.

2. Building Renovations

The project would utilize building insulation that exceeds Title 24 standards. The renovations would include high-performance windows that employ advanced technologies, such as protective coatings and improved frames, to retain heat during winter and prevent heat during summer. GHG reductions associated with this measure equal the amount that insulation exceeds the existing conditions, which has not been determined at this time. The existing buildings were constructed prior to the year 1920, when typical insulation was minimal. In the absence of a project specific energy audit, specific emission benefits associated with this measure can not be precisely calculated at this time. However, the retrofitting of the existing buildings would result in increased energy efficiency through improved insulation and updated appliances and fixtures resulting in an estimated 30 percent in additional reductions in energy usage associated with the project.

⁶ New Buildings Institute, 2008. *Energy Performance of LEED for New Construction Buildings*. March 4.

3. Energy Star Appliances

The project will utilize efficient building products with standards that meet EnergyStar™ criteria. While the use of EnergyStar™ rated products is beneficial for reduction in GHG emissions, the California Air Pollution Control Officers Association (CAPCOA) estimates that the overall benefits are low compared to other possible measures. Therefore, specific calculations were not performed for this measure. However, this measure would be anticipated to result in additional reductions from BAU emissions detailed in Table 1.

4. Water Conservation

The project proposes high-efficiency irrigation and the use of reclaimed water for the golf course. The use of reclaimed or non-potable water reduces the energy demand related to supplying the Aetna Springs Retreat, as potable water requires higher electricity demand for conveyance and treatment. The use of high-efficiency irrigation, water meters, ultra water efficient fixtures and appliances would contribute to a reduction in water usage of approximately 10 percent when compared to the BAU conditions. Additionally, the project will use 8.75 acre/foot/year of reclaimed water for outdoor use, further reducing the water demand. This reduction has been accounted for in the BGM analysis.

5. Materials Recycling and Natural Resources for Construction

The project intends to use reclaimed materials when feasible for construction of the project. Recycled construction materials including: finishing materials, aggregate/concrete road surfaces and fly ash/slag in foundations; will be used. Additionally, the project will use regional building materials and rapidly renewable materials, such as bamboo when feasible.

Use of Green Building Materials, as well as the reuse and reduction of construction waste can reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials. CAPCOA estimates improved efficiencies of up to 25 percent through the use of Green Building Materials. However, specific emission benefits associated with this measure were not estimated, but would be anticipated to result in additional reductions from the construction emissions for the Aetna Springs Retreat Project

6. On-Site Recycling

The proposed project would also provide access to recycling including: waste receptacles, green waste composting and recycling options for special on-site events. The project's recycling waste efforts would be expected to reduce solid waste by a minimum of 10 percent as incorporated in the BGM analysis.

Project Emissions

Table 2 indicates the project would generate 986 metric tons of CO₂eq per year. These emissions account for a 30 percent reduction in energy use and 20 percent reduction in water use over the permitted conditions. Results indicate the proposed project would generate 29.5 percent lower emissions than BAU conditions.

Table 2: Aetna Springs Project GHG Emissions

Emission Source	Metric Tons CO₂eq
Vehicles ^a	486.66
Electricity Production	119.18
Water-Related Electricity	17.03
Natural Gas Combustion	87.24
Solid Waste	278.41
Other Area Sources	.23
Annual Carbon Sequestration ^b	-2.12
Total Project Annual Emissions	986.82
BAAQMD Threshold	1,100
Exceed? (Yes/No)	No
BAU Emissions	1,398.90
Total CO₂eq Reduction	412.08

Note: Column totals may vary slightly due to independent rounding of input data.

^a Includes reductions for Pavley and Low Carbon Fuel Standard accounted for in the BGM.

^b The project includes a 5 acre oak woodlands creek restoration project. Per the Revised Napa County Climate Action Plan Table A-13, a factor of .425 MTC/acre/year was applied for annual carbon sequestration.

Source: LSA Associates, Inc., November 2011.

RESULTS SUMMARY

The proposed Aetna Springs Retreat project has been designed in an effort to promote sustainability, preserve existing historical areas, and generally improve land uses. Based on the analysis completed for the proposed project, the Retreat would reduce GHG emissions to the extent feasible for a restoration project of this type. By incorporating project design features, the Retreat would reduce GHG emissions by 412.08 metric tons per year CO₂eq resulting in a 29.5 percent reduction in GHG emissions. The project would result in total emissions of 986.82 metric tons of CO₂eq per year which is below the BAAQMD significance criterion of 1,100.

As noted previously, the project is not a new development as the resort is currently permitted to operate under its existing use permit. However, the project, which would facilitate the restoration of the site, would result in a net decrease in GHG emissions associated with the operation of the Retreat compared to existing permitted conditions as shown in Table 3 below. In short, the project would result in GHG emissions that are less than the BAAQMD threshold.

The project would result in short-term emissions due to construction equipment, which for comparison to the BAAQMD standard was annualized over a 30 year period and added to the project emissions. With the addition of annualized construction emissions, the project would result in total emissions of 995.0 metric tons CO₂eq per year which is below the BAAQMD's significance criterion of 1,100.

Table 3: Annual GHG Emissions

Emission Source	Metric Tons CO₂eq
Annual Emissions for Operations Under Existing Use Permit	1,398.9
Annual Project Emissions (with annualized construction emissions)	995.0
BAAQMD Threshold	1,100
Exceed? (Yes/No)	No
Net Annual CO₂eq Reduction	403.9

Source: LSA Associates, Inc., December 2011

All BGM and URBEMIS input and output files are attached.

ATTACHMENT

**BGM AND URBEMIS
INPUT AND OUTPUT FILES**

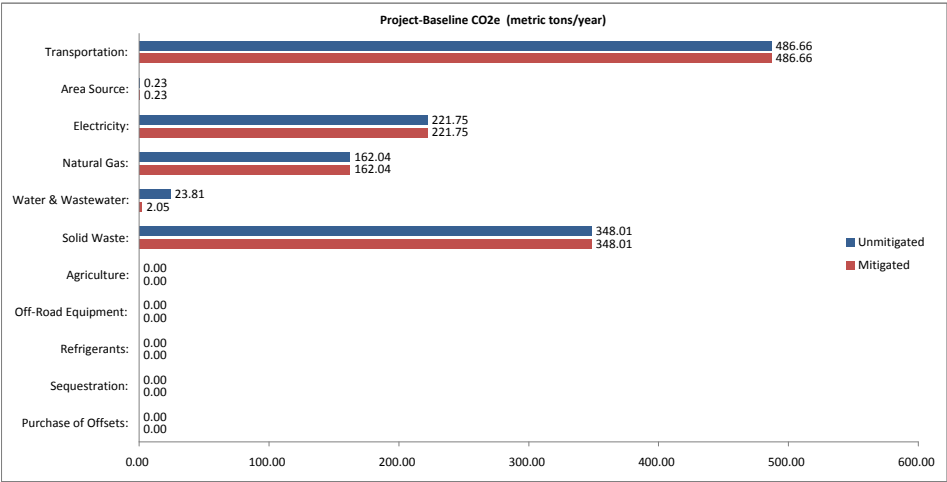
PERMITTED USE MODEL

Summary Results

Project Name: Aetna Springs Resort
Project and Baseline Years: 2020 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	486.66	486.66
Area Source:	0.23	0.23
Electricity:	221.75	221.75
Natural Gas:	162.04	162.04
Water & Wastewater:	23.81	2.05
Solid Waste:	348.01	348.01
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	1,242.50	1,220.74

Baseline is currently: OFF
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				486.66	39.17%
Area Source:	0.23	0.00	0.00	0.23	0.02%
Electricity:	221.39	0.00	0.00	221.75	17.85%
Natural Gas:	161.63	0.02	0.00	162.04	13.04%
Water & Wastewater:	23.77	0.00	0.00	23.81	1.92%
Solid Waste:	2.41	16.46	N/A	348.01	28.01%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				1,242.50	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS. After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]). Finally, CO2e is adjusted to account for th low carbon fuels rule.

Transportation

Baseline is Currently: OFF

Target Year: 2020 2011			
Unmitigated Transportation			
	Project	Baseline	Project-Baseline
Operational Emissions from URBEMIS (CO2 tons/year)	643.09	0.00	
Metric Ton Adjustment (CO2 metric tons/year)	583.57	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	498.20	0.00	
US EPA Adjustment (CO2e metric tons/year):	524.42	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year)	486.66	0.00	
Total (CO2e metric tons/year):			486.66

Target Year: 2020 2011			
Mitigated Transportation			
	Project	Baseline	Project-Baseline
Operational Vehicles from URBEMIS (CO2 tons/year):	643.09	0.00	
Metric Ton Adjustment (CO2 metric tons/year):	583.57	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	498.20	0.00	
US EPA Adjustment (CO2e metric tons/year):	524.42	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year):	486.66	0.00	
Total (CO2e metric tons/year):			486.66

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e. These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N2O, and hydrofluorocarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:

[Transportation Detail for Operational Mitigation](#)

[Land Use Detail](#)

Area Source

Baseline is currently: OFF

Unmitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

Mitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

Unmitigated Electricity			Project-Baseline
Project	Baseline		
CO2 metric tons/year CO2:	221.395	0.000	
CH4 metric tons/year CH4:	0.002	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	221.749	0.000	
CO2e metric tons/year:			221.75

Unmitigated Natural Gas			Project-Baseline
Project	Baseline		
CO2 metric tons/year:	161.63	0.000	
CH4 metric tons/year:	0.02	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	162.04	0.000	
CO2e metric tons/year:			162.04

Mitigated Electricity			Project-Baseline
Project	Baseline		
CO2 metric tons/year CO2:	221.395	0.000	
CH4 metric tons/year CH4:	0.002	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	221.749	0.000	
CO2e metric tons/year:			221.75

Mitigated Natural Gas			Project-Baseline
Project	Baseline		
CO2 metric tons/year:	161.629	0.000	
CH4 metric tons/year:	0.015	0.000	
N2O metric tons/year:	0.000	0.000	
CO2e metric tons/year:	162.044	0.000	
CO2e metric tons/year:			162.04



For detailed climate zone map see:
<http://capabilities.itron.com/CeusWeb/ECZMap.aspx>

Project Climate Zone Location: ☒ Zone 4 ☐ Zone 5

*** Select Mitigation Measures on the Mitigation Tab ***

[Mitigation](#)

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/residence)	Total Residential Electricity Use (mwh/year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elec Use	Gas Use	Residential Energy Use from Califo
Single Family Residential	0.000	7,415,000	0.000		0.000	0.0000	0.0000	49.600	0.000		0.000	0.000	0.000	0.00	0.00	See also Executive Summary for N:
Multi Family Residential	0.000	4,434,000	0.000		0.000	0.0000	0.0000	22.500	0.000		0.000	0.000	0.000	0.00	0.00	

PROJECT Nonresidential:

	Square Footage (1,000) from URBEMIS	Estimated Electricity Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elect Use	Gas Use		
Land Use Type															User Provided Blank Land Use Dat
Day-Care Center	0.00	0.00		0.00	0.00000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		Land Use Name
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Hotel	50.00	466.54	606.50	221.39	0.0018	0.0010	2,347.67	3,051.70	161.63	0.01523	0.00030	606.50	3,051.70		
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00		

BASELINE Residential:

606.50	3,051.70	Unmitigated
606.50	3,051.70	Mitigated
606.50	3,051.70	Mitigated %

Water and Wastewater

Baseline is currently: OFF

Unmitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	23.7735	0.0000	
CH4 metric tons/year:	0.0002	0.0000	
N2O metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	23.8116	0.0000	
CO2e metric tons/year:			23.81

Clear All User Overrides

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand	42.65	0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand	42.65	3.68	1,198,110	743,241.39	454,868.69	743,241.39	454,868.69	
Net Increase in Water Demand		3.68	1,198,110	743,241.39	454,868.69			
						4021.68	1592.04	5,613.72

Household Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee
1 Warehouse	1,700.00
2 Public Assembly	1,300.00
3 Lodging	1,300.00
4 Food Sales	1,000.00
5 Retail and Service	900.00
6 Education	766.00
7 Public Order and Safety	750.00
8 Food Service	600.00
9 Other	550.00
10 Health Care	500.00
11 Office	400.00

Energy Information Administration Special Topics 1995 Building Activities Other, Square feet per employee.
http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbaweb site/office/office_howmanyempl.htm

PROJECT	
% indoor water use	0.620
% outdoor water use	0.380
Total	1.00

Project Water Demand - Indoor	46656.71	kwh/year
Project Water Demand - Outdoor	18469.74	kwh/year
Total	65126.45	kwh/year

BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Mitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	2.0492	0.0000	
CH4 metric tons/year:	0.0000	0.0000	
N2O metric tons/year:	0.0000	0.0000	
CO2e metric tons/year:	2.0525	0.0000	
CO2e metric tons/year:			2.05

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

Solid Waste

Baseline is currently: OFF

Unmitigated Solid Waste		
	Project	Baseline
Truck Haul CO2 (metric tons/year):	2.41	0.00
Truck Haul CH4 (metric tons/year):	0.0000	0.0000
Truck Haul CO2e (metric tons/year):	2.41	0.00
Landfill Offgassing (CO2e metric tons/year):	345.60	0.00
Total Solid Waste (CO2e metric tons/year):	348.01	0.00
Total Solid Waste (CO2e metric tons/year):		348.01

		Mitigated Solid Waste	
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	2.41	0.00	
Truck Haul CH4 (metric tons/year):	0.0000	0.0000	
Truck Haul CO2e (metric tons/year):	2.41	0.00	
Landfill Offgassing (CO2e metric tons/year):	345.60	0.00	
Total Solid Waste (CO2e metric tons/year):	348.01	0.00	
Total Solid Waste (CO2e metric tons/year):			348.01

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

Project Landfill disposal option: Select 1 of 3 options
☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

☐ Landfilling with Energy Recovery

Clear All User Overrides

Baseline Landfill disposal option: Select 1 of 3 options

Select 1 of 3 options

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

☐ Landfilling with Energy Recovery

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	36.00	
Miles per Year:	1,440.00	

Baseline	Defaults	User Override
Avg Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	0.00	
Miles per Year:	0.00	

		Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
PROJECT Residential Land Use (From URBEMIS)	Units	2.23	0.00		0.00	0.00
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
PROJECT Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	50.00	0.0108	540.00		345.60	540.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00

[illegible]

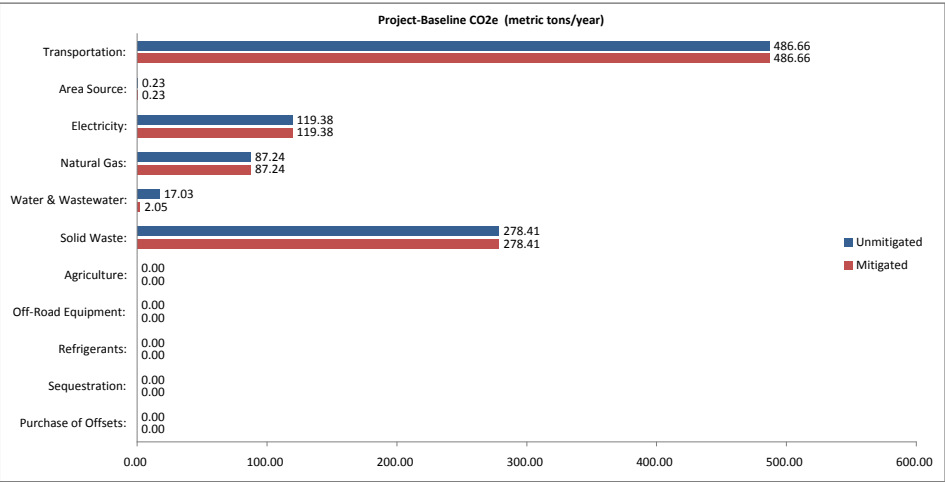
PROPOSED PROJECT MODEL

Summary Results

Project Name: Aetna Springs Resort
Project and Baseline Years: 2020 N/A

Results	Unmitigated Project- Baseline CO2e (metric tons/year)	Mitigated Project- Baseline CO2e (metric tons/year)
Transportation:	486.66	486.66
Area Source:	0.23	0.23
Electricity:	119.38	119.38
Natural Gas:	87.24	87.24
Water & Wastewater:	17.03	2.05
Solid Waste:	278.41	278.41
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	988.94	973.96

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				486.66	49.21%
Area Source:	0.23	0.00	0.00	0.23	0.02%
Electricity:	119.18	0.00	0.00	119.38	12.07%
Natural Gas:	87.02	0.01	0.00	87.24	8.82%
Water & Wastewater:	17.01	0.00	0.00	17.03	1.72%
Solid Waste:	1.93	13.17	N/A	278.41	28.15%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				988.94	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS. After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]). Finally, CO2e is adjusted to account for th low carbon fuels rule.

Transportation

Baseline is Currently: OFF

Target Year: 2020 2011			
Unmitigated Transportation			
	Project	Baseline	Project-Baseline
Operational Emissions from URBEMIS (CO2 tons/year)	643.09	0.00	
Metric Ton Adjustment (CO2 metric tons/year)	583.57	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	498.20	0.00	
US EPA Adjustment (CO2e metric tons/year):	524.42	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year)	486.66	0.00	
Total (CO2e metric tons/year):			486.66

Target Year: 2020 2011			
Mitigated Transportation			
	Project	Baseline	Project-Baseline
Operational Vehicles from URBEMIS (CO2 tons/year):	643.09	0.00	
Metric Ton Adjustment (CO2 metric tons/year):	583.57	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	498.20	0.00	
US EPA Adjustment (CO2e metric tons/year):	524.42	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year):	486.66	0.00	
Total (CO2e metric tons/year):			486.66

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e. These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N2O, and hydrofluorocarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:

[Transportation Detail for Operational Mitigation](#)

[Land Use Detail](#)

Area Source

Baseline is currently: OFF

Unmitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

Mitigated Area Source			Project-Baseline
	Project	Baseline	
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			0.227

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

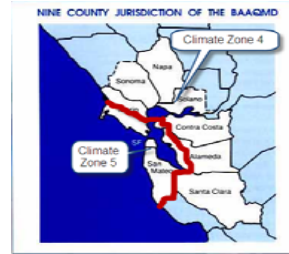
Baseline is currently: OFF

Unmitigated Electricity			Project-Baseline
Project	Baseline		
CO2 metric tons/year CO2:	119.184	0.000	
CH4 metric tons/year CH4:	0.001	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	119.375	0.000	
CO2e metric tons/year:			119.38

Unmitigated Natural Gas			Project-Baseline
Project	Baseline		
CO2 metric tons/year:	87.02	0.000	
CH4 metric tons/year:	0.01	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	87.24	0.000	
CO2e metric tons/year:			87.24

Mitigated Electricity			Project-Baseline
Project	Baseline		
CO2 metric tons/year CO2:	119.184	0.000	
CH4 metric tons/year CH4:	0.001	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	119.375	0.000	
CO2e metric tons/year:			119.38

Mitigated Natural Gas			Project-Baseline
Project	Baseline		
CO2 metric tons/year:	87.019	0.000	
CH4 metric tons/year:	0.008	0.000	
N2O metric tons/year:	0.000	0.000	
CO2e metric tons/year:	87.242	0.000	
CO2e metric tons/year:			87.24



For detailed climate zone map see:
<http://capabilities.itron.com/CeusWeb/ECZMap.aspx>

Project Climate Zone Location: ☒ Zone 4 ☐ Zone 5

*** Select Mitigation Measures on the Mitigation Tab ***>

[Mitigation](#)

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/residence)	Total Residential Electricity Use (mwh/year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elec Use	Gas Use	Residential Energy Use from Califo
Single Family Residential	0.000	7,415,000	0.000		0.000	0.0000	0.0000	49.600	0.000		0.000	0.000	0.000	0.00	0.00	See also Executive Summary for N:
Multi Family Residential	0.000	4,434,000	0.000		0.000	0.0000	0.0000	22.500	0.000		0.000	0.000	0.000	0.00	0.00	

PROJECT Nonresidential:

	Square Footage (1,000) from URBEMIS	Estimated Electricity Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elect Use	Gas Use	
Land Use Type														User Provided Blank Land Use Dat
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	Land Use Name
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Hotel	50.00	466.54	326.50	119.18	0.0010	0.0005	2,347.67	1,643.00	87.02	0.00820	0.00016	326.50	1,643.00	
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00	

BASELINE Residential:

326.50	1,643.00	Unmitigated
326.50	1,643.00	Mitigated
326.50	1,643.00	Mitigated %

Water and Wastewater

Baseline is currently: OFF

Unmitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	17.0066	0.0000	
CH4 metric tons/year:	0.0001	0.0000	
N2O metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	17.0338	0.0000	
CO2e metric tons/year:			17.03

Clear All User Overrides

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand	30.51	0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand	30.51	3.68	1,198,110	743,241.39	454,868.69	743,241.39	454,868.69	
Net Increase in Water Demand		3.68	1,198,110	743,241.39	454,868.69			
						4021.68	1592.04	5,613.72

Household Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee
1 Warehouse	1,700.00
2 Public Assembly	1,300.00
3 Lodging	1,300.00
4 Food Sales	1,000.00
5 Retail and Service	900.00
6 Education	766.00
7 Public Order and Safety	750.00
8 Food Service	600.00
9 Other	550.00
10 Health Care	500.00
11 Office	400.00

Energy Information Administration Special Topics 1995 Building Activities Other, Square feet per employee.
http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebbsite/office/office_howmanyempl.htm

PROJECT	
% indoor water use	0.620
% outdoor water use	0.380
Total	1.00

Project Water Demand - Indoor	33376.23	kwh/year
Project Water Demand - Outdoor	13212.47	kwh/year
Total	46588.70	kwh/year

BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Mitigated Water and Wastewater			
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	2.0492	0.0000	
CH4 metric tons/year:	0.0000	0.0000	
N2O metric tons/year:	0.0000	0.0000	
CO2e metric tons/year:	2.0525	0.0000	
CO2e metric tons/year:			2.05

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

Solid Waste

Baseline is currently: OFF

Unmitigated Solid Waste			
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	1.93	0.00	
Truck Haul CH4 (metric tons/year):	0.0000	0.0000	
Truck Haul CO2e (metric tons/year):	1.93	0.00	
Landfill Offgassing (CO2e metric tons/year):	276.48	0.00	
Total Solid Waste (CO2e metric tons/year):	278.41	0.00	
Total Solid Waste (CO2e metric tons/year):			278.41

Mitigated Solid Waste		
	Project	Baseline
Truck Haul CO2 (metric tons/year):	1.93	0.00
Truck Haul CH4 (metric tons/year):	0.0000	0.0000
Truck Haul CO2e (metric tons/year):	1.93	0.00
Landfill Offgassing (CO2e metric tons/year):	276.48	0.00
Total Solid Waste (CO2e metric tons/year):	278.41	0.00
Total Solid Waste (CO2e metric tons/year):		278.41

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

*** Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

Project Landfill disposal option: Select 1 of 3 options
☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

Project Landfill disposal option:

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

☐ Landfilling with Energy Recovery

Clear All User Overrides

Baseline Landfill disposal option: Select 1 of 3 options

Baseline Landfill disposal option:

Select 1 of 3 options

☐ Landfilling only ☒ Landfilling with Flaring to Burn Methane

☐ Landfilling with Energy Recovery

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	28.80	
Miles per Year:	1,152.00	

Baseline	Defaults	User Override
Avg Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	0.00	
Miles per Year:	0.00	

		Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)		Solid Waste Generated/Year (tons)
PROJECT Residential Land Use (From URBEMIS)	Units				CO2e (metric tons/year)	
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
PROJECT Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	50.00	0.0108	540.00	432.00	276.48	432.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00

[illegible]

Urbemis 2007 Version 9.2.4
Summary Report for Annual Emissions (Tons/Year)

File Name: P:\CRS1101 Aetna Springs\BACKGROUND\Aetna Springs urb.urb924
Project Name: Aetna Springs Resort
Project Location: Napa County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	0.35	2.12	1.59	0.00	2.18	0.13	2.31	0.45	0.12	0.58	246.65
2013 TOTALS (tons/year unmitigated)	0.57	0.17	0.17	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.97

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.07	0.15	0.26	0.00	0.00	0.00	175.45

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.66	0.69	6.90	0.01	1.91	0.36	1,032.23

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.73	0.84	7.16	0.01	1.91	0.36	1,207.68