GLOBAL CLIMATE CHANGE

Shadow Run Ranch Residential Development
TM 5223 RPL^3, ER 00-02-035, P00-030
County of San Diego, CA

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EXECUTIVE SUMMARY

This analysis has been completed in order to quantify Greenhouse Gas (GHG) emissions from the project and was prepared according to guidelines established within the California Global Warming Solutions Act of 2006 – Assembly Bill 32 (AB32), Senate Bill 97 (SB97), California Environmental Quality Act (CEQA) and the County of San Diego's Guidelines. Greenhouse Gasses analyzed in this study are Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O). To simplify greenhouse gas calculations, both CH_4 and N_2O are converted to equivalent amounts of CO_2 and are identified as CO_2e. The Project proposes the subdivision of 248.2 acres into 44 residential lots on 105.1 acres, a biological open space lot of 91.3 acres, a recreation lot containing an existing man-made pond on 8 acres, and an agricultural lot of 39.2 acres on which existing agricultural groves will be maintained by the Project's Homeowner's Association (HOA). Additionally, existing agricultural groves outside of the pads and roads on each lot will be retained. The maintenance of these residential lot groves will also be covered by the HOA. Existing structures, consisting of a manager's residence, sheds, and a barn, will be demolished to make way for the development. All phases (i.e. grading, trenching, paving and construction) of the proposed Project are anticipated to start in 2014 with construction and full Buildout sometime in mid to late 2015.

During construction of the project it's expected that approximately 599.31 Metric Tons (MT) of GHGs will be generated during construction in 2014 and only 213.75 MT would be generated in 2015.

GHG emissions will also be generated during operations of the project, which will include burning carbon-based fuels such as gasoline and natural gas as well as from indirect sources (i.e. offsite facilities) as necessary to provide electricity, water, and solid waste disposal.

Based on our operational analysis, the proposed project would generate approximately 1,008.35 Metric Tons of CO_2e each year, which is below the County's established Bright Line standard of 2,500 Metric Tons per year. Based on this, the project would not create any significant GHG impacts.

Per the requirements of the County, since the project does not exceed the bright line threshold, the County of San Diego will require implementing at least one of the County of San Diego's Climate Action Plan (CAP) mitigation measures. It was found that adding smart meters consistent with CAP measure E4 would meet this requirement. The project applicant will install smart electrical meters on all residential units.

1.0 INTRODUCTION

1.1 Purpose of this Study

The purpose of this Green House Gas Assessment (GHG) is to show conformance to the California Global Warming Solutions Act of 2006 – Assembly Bill 32 (AB32) and Senate Bill 97 (SB97). AB32 requires that by 2020 the state's greenhouse gas emissions be reduced to 1990 levels and SB97 a "companion" bill directed amendments to the California Environmental Quality Act (CEQA) statute to specifically establish that GHG emissions and their impacts are appropriate subjects for CEQA analysis. Should impacts be determined, the intent of this study would be to recommend suitable design measures to bring the project to a level considered less than significant.

1.2 Project Location

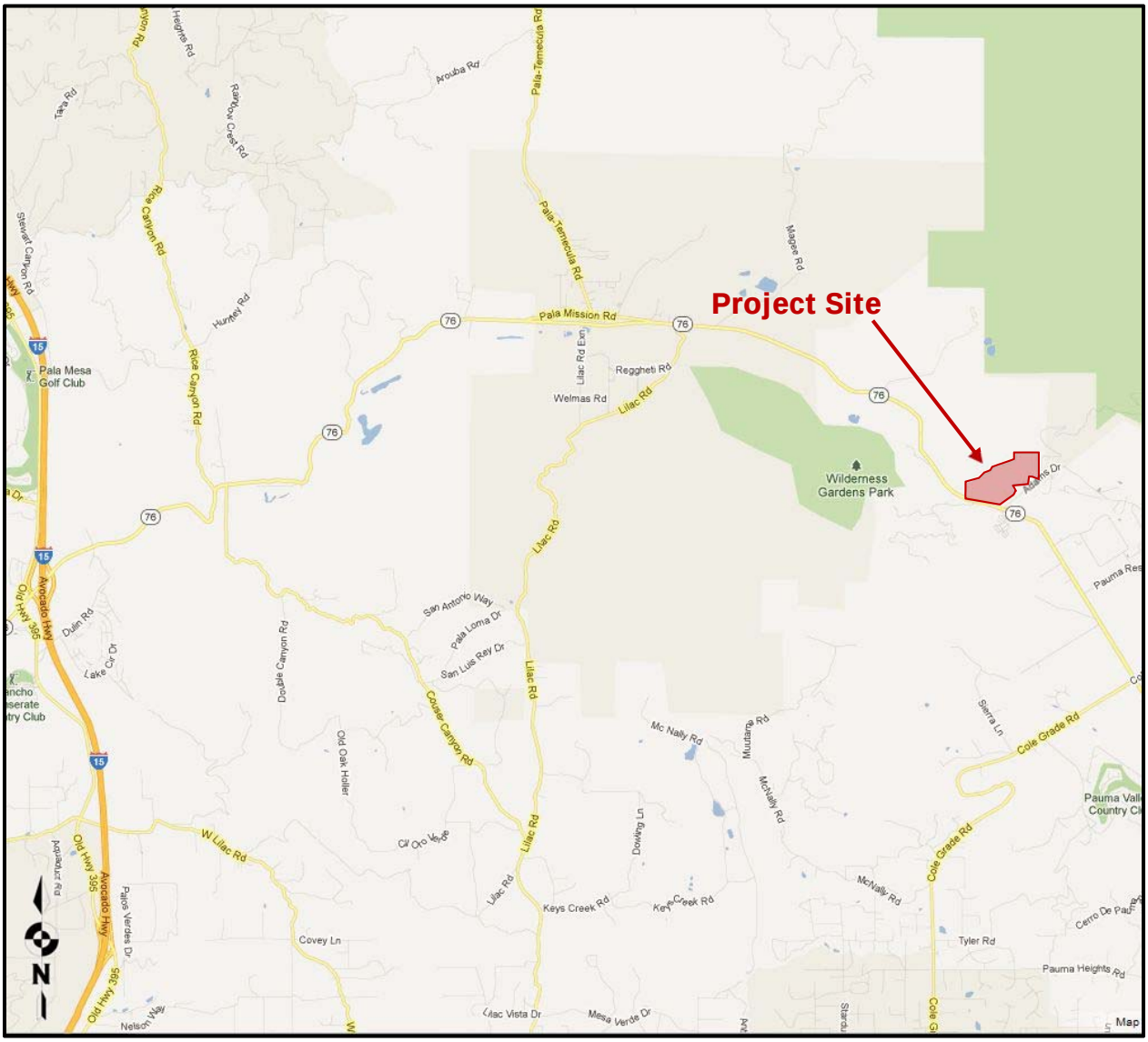
The proposed development is located in the unincorporated County of San Diego, approximately ten miles east of Interstate 15. The Project is adjacent to State Route 76 (SR 76) just north of Adams Drive. Access to the Project site is provided by SR 76. State Route 76 and Pala Temecula Road are arterials that connect the Project to other arterials. Interstate 15 provides regional access to the Project site. A general project vicinity map is shown in Figure 1–A on the following page.

1.3 Project Description

The proposed project seeks the development of 47 lots consisting of 44 residential uses and 3 open space areas over a 248.26 acre project site in the Pala/Pauma Subregional Area. Out of the 248.26 acres only approximately 110 acres will be graded for residential lots and the rest will be used as open space. Grading will include a total of 63,660 cubic yards (cu yd.) of earthwork and is expected to balance. Grading would start sometime in the middle of 2014 and full Buildout could be as soon as 14-months later or in August of 2015.

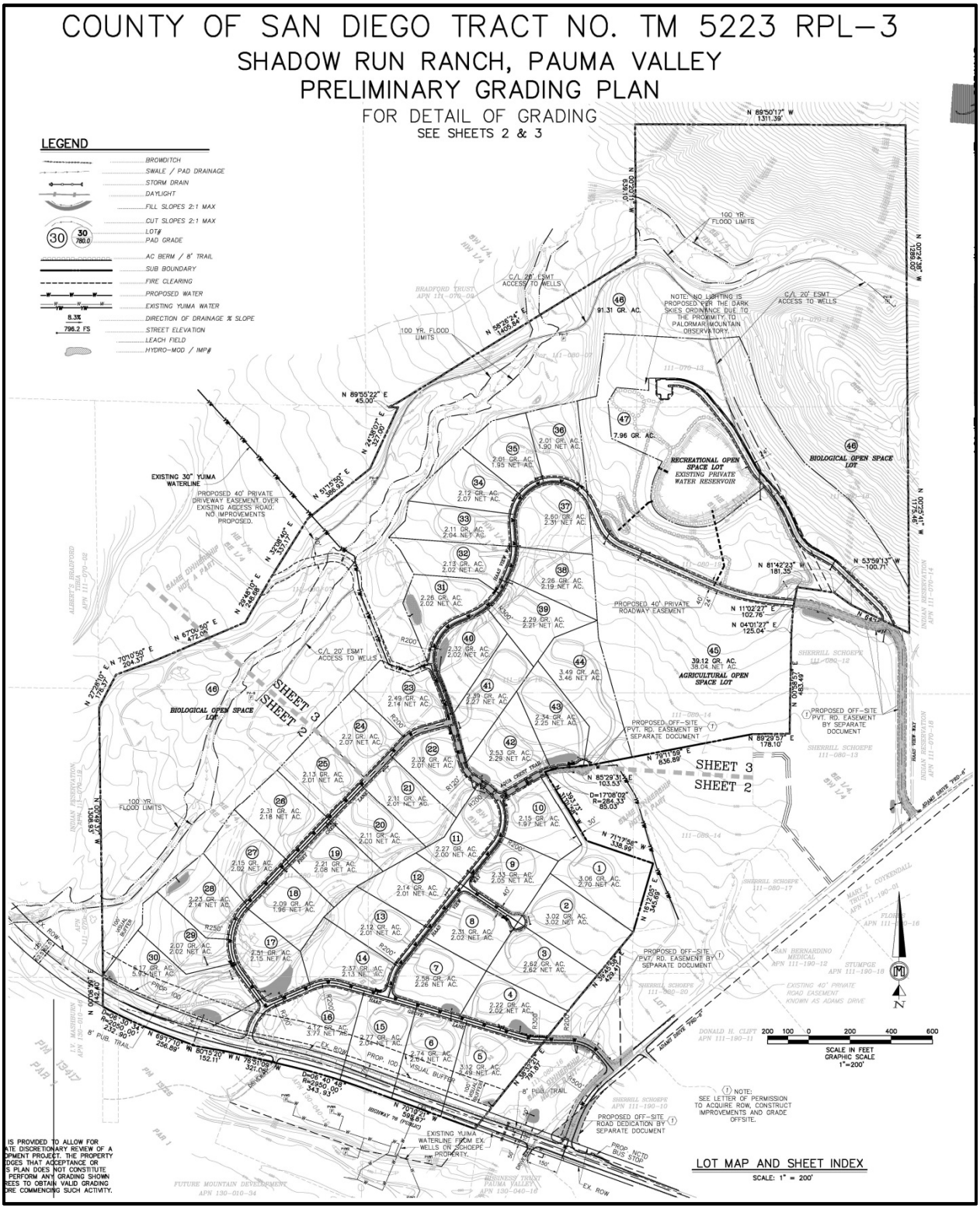
Also, as part of this project, existing agricultural groves outside of the pads and roads on each lot will be retained while maintenance of these groves will be covered by the HOA. Existing structures, consisting of a manager's residence, sheds, and a barn, will be demolished to make way for the development. A site development plan is shown in Figure 1-B on Page 3 of this report.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 5/12

Figure 1-B: Proposed Project Site Plan



2.0 EXISTING ENVIRONMENTAL SETTING

2.1 Understanding Greenhouse Gasses

Greenhouse gases such as water vapor and carbon dioxide are abundant in the earth's atmosphere. These gases are called "Greenhouse Gases" because they absorb and emit thermal infrared radiation which acts like an insulator to the planet. Without these gases, the earth's ambient temperature would either be extremely hot during the day or blistering cold at night. However, because these gases can both absorb and emit heat, the earth's temperature does not sway too far in either direction.

Over the years as human activities require the use of burning fossil fuels stored carbon is released into the air in the form of CO_2 and to a much lesser extent CO. Additionally, over the years scientist have measured this rise in Carbon Dioxide and fear that it may be heating the planet too. Additionally, it is thought that other greenhouse gases such as Methane and Nitrous Oxide are to blame.

Greenhouse Gasses of concern as analyzed in this study are Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O). To simply greenhouse gas calculations, both CH_4 and N_2O can be converted to an equivalent amount of CO_2 or CO_2e. CO_2e is calculated by multiplying the calculated levels of CH_4 and N_2O by a Global Warming Potential (GWP). The U.S. Environmental Protection Agency publishes GWPs for various GHGs and reports that the GWP for CH_4 and N_2O is 21 and 310, respectively.

2.2 Existing Setting

The Project site lies in the northern portion of San Diego County 10 miles east of Interstate 15, approximately 40 miles north of the City of San Diego, north of Pala Road (State Route 76) and northwest of Adams Drive. The Pala Band of Mission Indians Reservation lies west of the proposed Shadow Run development. Current uses onsite consist of the active agricultural operations with associated caretaker residence, offices, and other buildings related to the farming enterprise. The buildings will be demolished to make way for the project. Existing emissions are already part of existing baseline inventories and would not be considered within the proposed project since operations for existing uses pre-date any GHG laws. The increase in GHG emissions associated with developed proposed under the project is analyzed in this Study.

The Shadow Run plan area is generally represented by a diverse topography with elevations ranging from 720 feet to 1,620 feet above mean sea level. The northern portion of the site

is generally steep sloped generally transitioning into a moderately sloped topography to the south. Land uses directly surrounding the project is agricultural and undeveloped lands
The Pala Casino Resort and Spa is located west of the Project site and contains on-site facilities for numerous amenities such as shopping, a day spa, golfing, dining, entertainment, a resort hotel, and a small commercial center. The Pala Casino Resort and Spa facilities have recently undergone a major renovation and expansion, which created parking structures further to the west, towards the SPA.

2.3 Climate and Meteorology

Climate within the San Diego Air Basin (SDAB) area often varies dramatically over short geographical distances with cooler temperatures on the western coast gradually warming to the east as prevailing winds from the west heat up. Most of southern California is dominated by high-pressure systems for much of the year, which keeps San Diego mostly sunny and warm. Typically, during the winter months, the high pressure system drops to the south and brings cooler, moister weather from the north. It is common for inversion layers to develop within high-pressure areas, which mostly define pressure patterns over the SDAB. These inversions are caused when a thin layer of the atmosphere increases in temperature with height. An inversion acts like a lid preventing vertical mixing of air through convective overturning.

Meteorological trends within the Pala area generally are very similar to that of nearby Bonsall where daytime highs typically range between 68ºF in the winter to approximately 83ºF in the summer with August usually being the hottest month. Median temperatures range from approximately 56ºF in the winter to approximately 73ºF in the summer. The average humidity is approximately 65% in the winter and about 73% in the summer (Source: http://www.city-data.com/city/Bonsall-California.htm). Bonsall usually receives approximately 13.69 inches of rain per year with March usually being the wettest month (Source: http://www.weather.com /weather/wxclimatology/monthly/graph/USCA0116).

3.0 Climate Change Regulatory Environment

3.1 Regulatory Standards (Assembly Bill 32)

The Global Warming Solutions Act of 2006 (AB 32), requires that by 2020 the state's greenhouse gas emissions be reduced to 1990 levels or roughly a 16% reduction. Significance thresholds have not been adopted but are currently being discussed. AB 32 is specific as to when thresholds shall be defined. The pertinent sections are referenced within Part 4 of AB 32 Titled *Greenhouse Gas Emissions Reductions* are shown below:

Section 38560.5 (b) states:

On or before January 1, 2010, the state board shall adopt regulations to implement the measures identified on the list published pursuant to subdivision (a).

Section 38562 states:

(A) On or before January 1, 2011, the state board shall adopt greenhouse gas emission limits and emission reduction measures by regulation to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit, to become operative beginning on January 1, 2012.

(B) In adopting regulations pursuant to this section and Part 5 (commencing with Section (38570), to the extent feasible and in furtherance of achieving the statewide greenhouse gas emissions limit, the state board shall do all of the following:

1. *Design the regulations, including distribution of emissions allowances where appropriate, in a manner that is equitable, seeks to minimize costs and maximize the total benefits to California, and encourages early action to reduce greenhouse gas emissions.*
2. *Ensure that activities undertaken to comply with the regulations do not disproportionately impact low-income communities.*
3. *Ensure that entities that have voluntarily reduced their greenhouse gas emissions prior to the implementation of this section receive appropriate credit for early voluntary reductions.*
4. *Ensure that activities undertaken pursuant to the regulations complement, and do not interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions.*
5. *Consider cost-effectiveness of these regulations.*
6. *Consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health.*
7. *Minimize the administrative burden of implementing and complying with these regulations.*
8. *Minimize leakage.*

9. Consider the significance of the contribution of each source or category of sources to statewide emissions of greenhouse gases.

(C) In furtherance of achieving the statewide greenhouse gas emissions limit, by January 1, 2011, the state board may adopt a regulation that establishes a system of market-based declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions, applicable from January 1, 2012, to December 31, 2020, inclusive, that the state board determines will achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions, in the aggregate, from those sources or categories of sources.

(D) Any regulation adopted by the state board pursuant to this part or Part 5 (commencing with Section 38570) shall ensure all of the following:

1. The greenhouse gas emission reductions achieved are real, permanent, quantifiable, verifiable, and enforceable by the state board.
2. For regulations pursuant to Part 5 (commencing with Section 38570), the reduction is in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur.
3. If applicable, the greenhouse gas emission reduction occurs over the same time period and is equivalent in amount to any direct emission reduction required pursuant to this division.

3.2 Regulatory Standards (Assembly Bill 341)

This bill makes a legislative declaration that it is the policy goal of the state that no less than 75% of solid waste generated be source reduced, recycled, or composted by the year 2020, and would require CalRecycle, by January 1, 2014, to provide a report to the Legislature that provides strategies to achieve that policy goal and also includes other specified information and recommendations.

This bill will increase diversion requirements by an additional 25% over Business as Usual as was defined under AB 939 and SB 1322 which were signed into law as the Integrated Waste Management Act of 1989, which as of the year 2000 only required 50 percent diversion.

3.3 Regulatory Standards (Senate Bill 97)

SB 97 requires the Office of Planning and Research to prepare and transmit to the Resources Agency, guidelines and directed amendments to the CEQA statute specifically for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions.

3.4 Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (P.L. 110-140, H.R. 6) is an energy policy law adopted by congress which consists mainly of provisions designed to increase energy efficiency and the availability of renewable energy. The law will require automakers to boost fleet wide gas mileage averages from the current 25 mpg to 35 mpg by 2020, which will reduce energy needs by 28.5%. This fleet wide average is known as the Corporate Average Fuel Economy (CAFE) standard.

3.5 AB 1493 (Pavley Standards)

AB 1493 regulations are similar to CAFE Standards however are expected to produce a Greenhouse Gas Benefit greater to that of the CAFE Standard and would be expected to double the amount of GHGs saved under CAFE. The Pavley rules or also referred to as California Standards are designed to regulate GHG emissions while the federal standards are aimed at reducing the nation's fuel consumption.

Under Pavley starting with vehicles produced in 2009, manufactures have the flexibility in meeting California standards through a combination of reducing tailpipe emissions of Carbon Dioxide, Nitrous Oxide, Methane and hydrofluorocarbons from vehicle air conditioning systems. Furthermore, the California standards are estimated to increase fuel efficiency to 43 miles per gallon by 2020. The 2020 reductions are based on a more stringent emission limit than the current California Standards, Called the Pavley 2 Rule, as set forth in the California Climate Action Plan and committed to by the CARB in its Early Action Measures under AB32.

CARB staff recommends through example the use of more stringent emission reduction beginning in 2017 as well as applying more stringent standards through 2020. The percent reductions will be further discussed in the methodology section of this report. *(Source: Comparison of Greenhouse Gas Reduction for the United States and Canada under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations – 2/2008)* otherwise referred to as CARB's Enhanced Technical Assessment on the relationship between CAFE standards and Pavley Standards.

The CARB report utilized a baseline year of 2002 and calculated cumulative baseline equivalent GHG Reductions based on Pavley standards. One conclusion of the study finds that Pavley reductions are as high as 20% from 2002 levels. Also, it should be noted that reductions under Pavley were not assumed from 2002 through 2008. In 2009 Pavley regulations went into effect and become more stringent with time which will require automobile companies to produce vehicles that generate less GHG emissions each year. The

20% reduction is calculated based on the fact that the overall baseline emissions over the 18 years averages out to 496,200 tons per day and cumulative reductions under Pavley reduce up to 100,500 tons per day or a 20% reduction. Table 3.1 on the following page is a general duplicate of Table 11 within the CARB Enhanced Technical Assessment.

Table 3.1: Equivalent Emission Reductions from Adopted Pavley 1 and 2 Regulations in 2020

	PC/LDT1 (1000 tons per day)			LDT2 (1000 tons per day)		
Model Year	**Baseline**	**%GHG Reduction**	**Tons Reduced**	**Baseline**	**%GHG Reduction**	**Tons Reduced**
2008 and Older	80.19	0.0%	0.00	72.4	0.0%	0.00
2009	10.09	0.0%	0.00	7.49	0.9%	0.07
2010	11.17	3.5%	0.39	7.71	5.2%	0.40
2011	12.25	14.4%	1.76	7.98	12.0%	0.96
2012	13.46	25.3%	3.41	8.52	18.5%	1.58
2013	14.79	27.2%	4.02	9.35	19.9%	1.86
2014	15.95	28.8%	4.59	9.91	21.0%	2.08
2015	17.33	31.7%	5.49	10.89	23.0%	2.50
2016	18.25	34.3%	6.26	11.27	25.1%	2.83
2017	20.05	37.5%	7.52	12.43	30.0%	3.73
2018	22.12	40.7%	9.00	13.84	35.7%	4.94
2019	25.25	42.3%	10.68	15.76	39.1%	6.16
2020	29.37	43.9%	12.89	18.36	40.2%	7.38
Total	290.27		66.03	205.91		34.49
Grand Total	Baseline			496.2		
	Total Reduction			100.5		

3.6 Executive Order S-01-07

Executive Order S-01-07 was signed by Governor Arnold Schwarzenegger in January 2007 and is effectively known as the Low Carbon Fuel Standard (LCFS). The executive order seeks to reduce the carbon intensity of California's passenger vehicle fuels by at least 10% by 2020. The LCFS will require fuel providers in California to ensure that the mix of fuel they sell into the California market meet, on average, a declining standard for GHG emissions measured in CO_2e grams per unit of fuel energy sold.

3.7 Title 24 Standards (2008)

The California Energy Code, or Title 24, Part 6 of the California Code of Regulations, also titled The Energy Efficiency Standards for Residential and Nonresidential Buildings, were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods (Source: http://en.wikipedia.org/wiki/California_Energy_Code).

The Energy Commission adopted the 2008 changes to the Building Energy Efficiency Standards for some of the following reasons and is expected to reduce both Natural Gas and Electrical need by up to 4.9% which is generally accepted by the County of San Diego:

1. *To provide California with an adequate, reasonably-priced, and environmentally-sound supply of energy.*
2. *To respond to Assembly Bill 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its greenhouse gas emissions to 1990 levels by 2020.*
3. *To pursue California energy policy that energy efficiency is the resource of first choice for meeting California's energy needs.*
4. *To act on the findings of California's Integrated Energy Policy Report (IEPR) that Standards are the most cost effective means to achieve energy efficiency, expects the Building Energy Efficiency Standards to continue to be upgraded over time to reduce electricity and peak demand, and recognizes the role of the Standards in reducing energy related to meeting California's water needs and in reducing greenhouse gas emissions.*
5. *To meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes.*
6. *To meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards.*

3.8 California Environmental Quality Act (CEQA) Significance Thresholds

As directed by SB 97, the Natural Resources Agency adopted Amendments to Title 14 Division 6 Chapter 3 CEQA Guidelines for greenhouse gas emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010. The pertinent sections are shown below:
Section 15064.4 - Determining the Significance of Impacts from Greenhouse Gas

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

1. *Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model*

or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or

2. *Rely on a qualitative analysis or performance-based standards.*

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

1. *The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
2. *Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.*
3. *The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.*

General Questions recommended within the environmental checklist are:

(a) Will the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

(b) Will the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

3.9 AB-32 Climate Change Scoping Plan

Per the requirements of AB 32, discrete early action greenhouse gas emission reduction measures are enforceable as of January 1, 2010 (Climate Change Scoping Plan – California Air Resource Board – December 2008). The Board adopted nine discrete early action items, which identified within the Scoping plan however, none of the discretionary measures relate to the project at hand. The nine measures are identified in Table 3.2 on the following page.

Additionally, as stated in section 38562-A of AB 32, the state board adopted greenhouse gas emission limits and emission reduction measures on January 1, 2011 and will enforce them starting January 1, 2012. Currently, greenhouse gas emission limits for residential project such as the proposed project have not been adopted, however, Section 38562-B-3 encourages projects producing large quantities of GHGs to voluntarily identify greenhouse gas reductions and receive appropriate credit for early voluntary reductions.

Table 3.2: Adopted Discretionary Measures

Row #	Scoping Plan Measure	Measure #	Page #
1	Ship Electrification at Ports	T-5	C-66
2	Limit High GWP Use in Consumer Products	H-4	C-179
3	Heavy-Duty Vehicle GHG Emission Reduction	T-7	C-73
4	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	C-175
5	SF6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	C-176
6	Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	C-177
7	Tire Pressure Program	T-4	C-63
8	Low Carbon Fuel Standard	T-2	C-64
9	Landfill Methane Control Measure	RW-1	C-160

Furthermore, ARB is working on approving the first update to the scoping plan to Scoping Plan Update (Update) builds upon the initial Scoping Plan with new strategies and recommendations. The Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. It will also evaluate how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

The proposed update dated February 10, 2014 identified key areas (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, green buildings, and the Cap-and-Trade Program but is not yet adopted. On May 22, 2014, ARB will hold a Board Hearing to consider the Proposed First Update to the Scoping Plan and Environmental Analysis.

3.10 County of San Diego Thresholds of Significance

In response to meeting the requirements of AB 32, the County of San Diego developed a Climate Action Plan (CAP) to address the issues of growth and climate change in the County. The CAP incorporates already-established County goals described in the recently adopted General Plan and in the County Strategic Energy Plan (SEP), which identifies measures to develop strategy that addresses climate change. The CAP is considered a “living” document and was written to be updated as-needed when new information, technology, or legislation requires.

The County's GHG significance thresholds are intended to provide flexibility to individual projects which considers the fact that all projects are different and require different approaches and significance thresholds. Also, the CAP provides a range of feasible measures and quantifies their effectiveness to demonstrate that the County's reduction target can be met.

As a supplement to the measures outlined in the CAP, the County of San Diego Department of Planning and Land Use (DPLU) have developed an approach to addressing climate change and have established significance thresholds for CEQA Documents. This document is identifies four implementing threshold options for determining significance (Source: Draft Guidelines for Determining Significance – Climate Change June-2012). These guidelines along with the County's CAP meet the requirements of AB 32 and address the potential cumulative impacts that a project's GHG emissions could have on GCC. Table 3.3 below identifies the adopted significance thresholds.

Table 3.3: Adopted Significance thresholds.

Title	Level For Determining Significance
Bright Line Threshold	2,500 MT CO_2e per year
Efficiency Threshold	4.32 MT CO2e per year per service population (residents + employees)
Performance Threshold	16% GHG emissions reductions below unmitigated project in 2020
Stationary Source Threshold	10,000 MT CO2e per year

Projects are first compared to the Bright Line threshold of 2,500 MT CO2e. If the project complies with the Bright Line screening criteria, the impacts would be considered less than cumulatively considerable as long as at least one CAP measure is incorporated into the project. Please refer to the "*County of San Diego CAP Compliance Checklist for Greenhouse Gas Analysis*," which clearly illustrates how to comply with the CAP. Projects exceeding the Bright Line threshold would be required to comply with all applicable CAP measures or additional feasible mitigation measures which would reduce project impacts to a level below significance as compared to any adopted threshold (i.e. Bright Line, Efficiency, Performance, or Stationary Source Thresholds).

Demonstrating compliance with the CAP is determined through the use of the County CAP Compliance Checklist (Appendix G) during project review. The Project would install Smart

Meters on each residential unit consistent with measure E4 in the CAP. The CAP mitigation measures are identified on the following page of this report.

Through the County's discretionary review process and completion of the CAP Compliance Checklist, the design features or mitigation measures applied to individual development projects are considered binding and enforceable, including those applied to projects with GHG emissions that are either above or below the Bright Line Threshold. The CAP measures are specific to water, energy, land use, transportation and agriculture reductions and are identified in ***Attachment C*** to this report.

4.0 METHODOLOGY

4.1 Construction CO_2e Emissions Calculation Methodology

The Project construction would be expected to take approximately 14 months to complete. Existing onsite structures will be demolished within roughly nine days. The grading operations are expected to take up to six months. After grading is complete trenching and paving operations would take an additional two months and then the residential buildings will be built out over the following 6-months. The entire build out of the Project would be expected no sooner than August 2015. Table 4.1 below shows the expected timeframes for the construction processes for all the project infrastructure, facilities, improvements and residential structures at the proposed project location.

Table 4.1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Completion	Quantity
Demolition	5/20/2014	5/31/2014	
Excavators			1
Mass Site Grading	6/1/2014	12/15/2014	
Scrapers			3
Tractors/Loaders/Backhoes			3
Excavators			1
Graders			1
Rubber Tired Dozers			1
Water Trucks			1
Trenching	12/16/2014	1/16/2015	
Excavators			2
Other General Industrial Equipment			1
Tractors/Loaders/Backhoes			1
Paving	1/17/2015	2/10/2015	
Paving Equipment			2
Rollers			2
Pavers			1
Building Construction	2/11/2015	7/31/2015	
Forklift			3
Tractor/loader/backhoe			3
Crane			1
Generator			1
Welders			1
Architectural Coating (Phase II)	5/15/2015	7/31/2015	

This equipment list is based upon equipment inventory within URBEMIS2007. The quantity and types are based upon assumptions from Projects of similar size and scope in the County of San Diego.

GHG impacts related to construction will be calculated using the latest URBEMIS2007 air quality model, which was developed by the California Air Resource Board (CARB). URBEMIS2007 has been approved by the San Diego Air Pollution Control District (SDAPCD) and the County for construction emission calculations. Additionally, NOX emissions will be added to the URBEMIS output. URBEMIS incorporates emission factors from the EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions.

URBEMIS 2007 calculates CO_2 but does not provide calculations for CH_4 and N_2O. Section III.7.3 within the California Climate Action Registry General Reporting Protocol Version 3.1- January 2009 (CCARGRPV3.1) recommends utilizing fuel consumption to calculate these values. However, since consumption isn't known, the consumption was derived using CO2 outputs directly calculated by URBEMIS 2007. Equation III.7C, shown below, identifies how CO_2 is calculated:

$$CO_2 = Fuel\ Consumed * 10.15\ \frac{kg\ CO_2}{gallon} * 0.001\ \frac{Metric\ Tons}{kg}$$

4.2 Operational Vehicular Emissions Calculation Methodology

Operational Emissions from daily trips will be quantified utilizing emission levels reported in grams/mile from the EMFAC2007 emission model for the year 2020. These estimates will then be tabulated to show the yearly emission levels generated by the project. Utilizing the 347 day correction factor recommended by CARB to account for lower vehicle emissions over weekends from reduced daily trips, all emission levels will then be multiplied by the daily mileage and then converted to metric tons for typical reporting consistency. Equation 1 below was utilized to determine GHG levels in Metric tons:

$$GHG(Metric\ Tons) = Emission\ Factor\left(\frac{g}{mile}\right) \times Annual\ Mileage \times .000001\left(\frac{Metric\ ton}{g}\right)$$

4.3 Electricity Usage Calculation Methodology

Utilizing methodologies within the California Climate Action Registry General Reporting Protocol Version 3.1- January 2009 (CCARGRPV3.1) CO_2, CH_4, and N_2O from electricity use can be calculated utilizing equations III.6b which is shown below:

Equation III.6b (GHG = CO_2, or CH_4, or N_2O)

$$GHG(Metric\ Tons) = \frac{Electricity\ Use\ (kWh) \times Electricity\ Emission\ Factor\ \left(\frac{lbs\ GHG}{kWh}\right)}{2{,}204\ \frac{lbs}{metric\ ton}}$$

The electricity emission factors are published within Table C.2 within the CCARGRPV3.1 document and are broken out into sub region. The proposed project is located within California and for CO_2, CH_4, and N_2O the Electricity Emission Factors are 0.72412, 0.0000302 and 0.0000081, respectively. Electricity generation rates per residential dwelling unit were obtained from the California Statewide Residential Appliance Saturation Study (2004).

4.4 Natural Gas Usage Calculation Methodology

CO_2e generated from stationary combustion such as water heaters, stoves, pool heaters, hearths and clothing dryers can be calculated for CO_2, CH_4, and N_2O utilizing equations III.8b within the CCARGRPV3.1 document as shown below:

Equation III.8b (GHG= CO_2, or CH_4, or N_2O)

$$GHG(Metric\ Tons) = \frac{Natrual\ Gas\ Emission\ Factor\ \left(\frac{kg\ GHG}{MMBtu}\right) \times Fuel\ Consumed\ (MMBTu)}{1{,}000\ \frac{kg}{metric\ ton}}$$

The natural gas emission factors are published within Table C.7 and C.8 within the CCARGRPV3.1 natural gas emission factors for CO_2, CH_4, and N_2O are 53.06, 0.005 and 0.0001, respectively. These natural gas emission factors are inserted into equation III.8B and were published by CCARGRPV3.1.

Natural Gas generation rates per residential dwelling unit were obtained from the South Coast Air Quality Management District's CEQA Air Quality Handbook dated 1993.

4.5 Solid Waste Emissions Calculation Methodology

Solid waste generated from the proposed project will ultimately be discarded as trash and then deposited into a landfill. The decomposition of organic matter such as food, paper, yard trimmings and wood are anaerobicly digested by bacteria which primarily produces GHG's as a by-product. However, organic decomposition occurs at different rates and is a

function of the material content. The Environmental Protection Agency (EPA) published various emission rates with units of Metric Tons of Carbon Dioxide Equivalent per Ton (Source: Solid Waste management and Greenhouse Gases; A Life-Cycle Assessment of Emissions and Sinks).

Average waste generation mixes vary between land use however, California's Department of Resources Recycling and Recovery (CalRecycle) estimates that the average waste generation for single-family residential could be up to 2.04 tons/unit/year (Source: http:// www.calrecycle.ca.gov/wastechar /WasteGenRates/Residential.htm) and generally consist of paper, plastic and other organics. Therefore, the project is expected to generate 89.76 tons per year.

Table 4.2 identifies the typical mix ratio of waste by land use (Source: California 2008 Statewide Waste Characterization Study – Cascadia Consulting Group, 2009). Also, given that the project is primarily residential in nature; all waste sources would be expected to be broken down by percentage as residential waste.

Table 4.2: Average Waste Breakdown and Emission Rates

Waste Type	Residential Waste Breakdown	Landfill Emission Factors ($MTCO_2e$ per Ton)
Special Waste	1.5%	0.42
Mixed Residue	2.5%	0.04
Paper	19.6%	0.35
Glass	2.4%	0.04
Metal	4.0%	0.04
Electronics	0.7%	0.04
Plastic	9.2%	0.04
Other Organics	48.6%	0.24
Inert and Other	11.2%	0.04
Household Hazardous Waste (HHW)	0.3%	0.40

4.6 Water Use Emission Calculation Methodology

Water used from the proposed project will indirectly utilize energy for treatment and conveyance of clean water to the project site. It is estimated that it takes 13,022 kWh/Million Gallons (MG) of energy to deliver treated potable water which also includes the energy required to treat that water within a treatment facility (Source: CAPCOA – Quantifying Greenhouse Gas Mitigation Measures-8/10). Similarly it is estimated that water

delivered for outdoor uses would only use 11,111 kWh/MG. Energy consumption for outdoor purposes is lower due to the fact that further treatment of the water is not required. Total energy consumption for all the land uses is then summed up to further calculate total emissions through the use of Equation III.6b as discussed in section 4.3 above.

Water demand per capita is 119 Gallons per Day (GPD) for California (Source: Estimated Use of Water in the United States in 2005, USGS). The US Census estimates there are approximately 2.58 individuals per household and estimates that each dwelling unit would require 307 gallons per day (Source: http://quickfacts.census.gov/qfd/states/00000.html). Therefore, the 44 units would require 4,930,741 gallons per year which could require as much as 62,620.20 kWh of electricity per year.

4.7 Area Source Emission Calculation Methodology (Landscaping)

Landscaping equipment is expected at each residential unit which would typically consist of lawn mowers, weed whackers and blowers. For purposes of this analysis, it is assumed that bi weekly landscaping would occur for the entire year or 26 occurrences at two hours per occurrence. Baseline emissions are calculated using CAPCOA's methodology for landscaping equipment (Source: CAPCOA – Quantifying Greenhouse Gas Mitigation Measures-8/10). The equation for these calculations is shown below and includes the assumption that the total horsepower during the two hour period is less than 25 and each occurrence has a two hour duration:

$$GHG(Metric\ Tons)\ per\ home = EF\ x\ Hp\ x\ LF\ x\ Hr\ x\ 10^{-6}$$

Where: EF = 429.44 (g/hp-hr)
HP = Horsepower of Landscaping Equipment
LF = Load factor (Worst Case 1)
Hr = Hours of Operation
10^{-6}=Unit conversion from grams to metric tons

$$GHG(Metric\ Tons)\ per\ home = 429.44\ \frac{grams}{HP-hr} \times 10 * 52hr\ X\ 10^{-6} = 0.223\ MT\ per\ Home$$

5.0 FINDINGS

5.1 Project Related Construction Emissions

Utilizing the URBEMIS 2007 inputs for the model as shown in Table 4.1 above, we find that grading and construction of the project will produce approximately 654.56 tons of CO_2 during the worst-case year and only 233.46 tons the following year. For purposes of analysis and comparison to the County's thresholds, LDN consulting converted the emissions to Metric Tons (MT). The URBEMIS model outputs are provided as ***Attachment A*** to this report. A summary of the total construction emissions is shown in Table 5.1 below.

Table 5.1: Expected Construction Emissions Summary

Year	CO_2 (Tons)	CO_2 (Metric Tons)	N_2O	CH_4	Total CO_2e (Metric Tons)
2013	654.56	593.88	4.72	0.71	599.31
2014	233.46	211.82	1.68	0.25	213.75
Expected Construction emissions are based upon URBEMIS modeling assumptions identified in Chapter 4 of this report. Metric Tons = 0.9073*Tons					

Estimation of N_2O and CH_4 emissions based on Table C.6 of the CCARGRPV3.1 document. Emission factors for N_2O and CH_4 for diesel construction equipment is 0.26 and 0.58 grams per gallon. Since the equation for CO_2 emissions is provided in section 4.1 of this report and we know about how much CO_2 the construction project will produce we can estimate the fuel consumption per the equation below:

$$Fuel\ Consumed\ (Gallons) = \frac{CO_2\ Emission\ (Metric\ Tons\ CO_2)}{10.15\ \frac{kg\ CO_2}{gallon} * .001\ \frac{Metric\ Tons}{kg}}$$

Or,

$$Gals = 593.88\ Metric\ Tons\ CO2/(10.15\ kg\ CO2 gallon * .001\ Metric\ Tons kg) = 58{,}510.57\ Gals$$

Based on this, we estimate that the project would generate 15,212.74 grams of N_2O and 33,936.13 grams of CH_4 or 33.54 and 74.83 pounds. Multiplying them by 310 and 21 converts them to CO_2E which works out to 10,398.67 lbs and 1,571.41 lbs which converts to 4.72 and 0.71 $MTCO_2e$ or 5.43 $MTCO_2e$. Combined with Emissions calculated with URBMEIS 2007 for 2013 the total would be 599.31 $MTCO_2e$. Similar calculations were conducted for the remaining years and the worst-case year as well and are shown in Table 5.1 above.

5.2 Project Related Operation Vehicular Emissions

The project was assumed to be rural in nature however through the development of mixed use projects such as the nearby casino and nearby residential areas a somewhat urbanization effect is realized within the region. For purposes of this project individually, LDN Consulting utilized the rural setting within URBEMIS as a worst-case analysis. The model estimates typical one-way average trip lengths for home-work trips is 16.8 miles, home-shop trips is 7.3 miles, home-other trips is 7.9 miles. The percentages estimated in the modeling assume 32.9% home-work, 18.0% home-shop, and 49.1% home-other (URBEMIS 2007). Therefore, the average trip distance would be approximately 10.68 miles.

According to the project traffic study, the project would create approximately 528 daily trips Source: Shadow Run Ranch Traffic Impact Study, KOA Corporation 2012). With an average trip distance of 10.68 miles, the project would be expected to add 5,639.04 Vehicle Miles Traveled (VMT) per day or 1,956,746.88 miles per year (based on 347 days to correct for weekend driving – CARB 2008). In order to obtain a realistic approximation of the BAU baseline emissions, the EMFAC 2007 model for 2020 was run which could be assumed to be BAU and is shown ***Attachment B*** at the end of this report. Utilizing both emission levels from the EMFAC2007 model and Equation 1 from Section 4.2 of this report the BAU GHG emission levels was calculated and found to be 686.06 $MTCO_2E$.

5.3 Project Related Electricity Use

Based upon the California Statewide Residential Appliance Saturation Study (2004) prepared for the California Energy Commission (CEC) the average electricity usage for a dwelling unit per year is 5,941 KWh annually. Therefore, the project would be expected to use 261,404 kWh per year. The equivalent CO_2 emissions are calculated in Table 5.2 below.

Table 5.2: Total GHG Emissions Factors (Electricity Usage)

GHG	Emission Factor eGRID Subregion WECC California (lbs/KWh)	Energy Usage (KWh)	Conversion lbs/metric ton	Total (Metric Tons)	GWP	CO_2e (Metric Tons)
CO_2	0.72412	261,404.0	2,204.62	85.860	1	85.86
CH_4	0.000030	261,404.0	2,204.62	0.004	21	0.08
N_2O	0.0000081	261,404.0	2,204.62	0.001	310	0.30
Total						**86.23**
Note: Data is presented in decimal format and may have rounding errors.						

5.4 Project Related Natural Gas Usage

Based upon South Coast Air Quality Management District's CEQA Air Quality Handbook (1993) the average natural gas usage for a single-family residential unit is 6,665 Cubic Feet/Unit/Month. The average natural gas usage includes fireplaces, heating and major appliances. Therefore, the 44 single family units would be expected to use 3,519,100 Cubic Feet per year. Additionally, because 1MMBtu is equivalent to 1,000 Cubic Feet of gas the project would consume 3,519.1 MMBtu of natural gas annually. The equivalent CO_2 emissions are expected to be 187.203 Metric Tons per year as calculated in Table 5.3 below.

Table 5.3: Total GHG Emissions Factors (Natural Gas Usage)

GHG	Emission Factor kg/MMBtu	Natural Gas Usage (MMBtu)	Conversion metric ton/kg	Total (Metric Tons)	GWP	CO_2e (Metric Tons)
CO_2	53.060	3,519.1	0.001	186.72451	1	186.725
CH_4	0.0050	3,519.1	0.001	0.01760	21	0.370
N_2O	0.00010	3,519.1	0.001	0.00035	310	0.109
Total						**187.203**
Note: Data is presented in decimal format and may have rounding errors.						

5.5 Project Related Solid Waste Emissions

Based upon methods discussed in Section 4.7 of this report, it was determined that the project would generate 89.76 tons of solid waste each year. Utilizing the EPA's waste breakdown emission factors for the proposed use and multiplying those factors with the projected waste generation, the proposed project is estimated to produce an equivalent CO_2 of 18.38 Metric Tons for as shown in Table 5.4 on the following page.

Table 5.4: Total GHG Emissions Factors (Solid Waste)

Waste Type	Residential Waste Breakdown	Landfill Emission Factors (MTCO2e per Ton)	Residential Waste (Tons)	Residential MTCO2e after breakdown each year (Metric Tons)
Special Waste	1.5%	0.42	1.35	0.57
Mixed Residue	2.5%	0.04	2.24	0.09
Paper	19.6%	0.35	17.59	6.16
Glass	2.4%	0.04	2.15	0.09
Metal	4.0%	0.04	3.59	0.14
Electronics	0.7%	0.04	0.63	0.03
Plastic	9.2%	0.04	8.26	0.33
Other Organics	48.6%	0.24	43.62	10.47
Inert and Other	11.2%	0.04	10.05	0.40
HHW	0.3%	0.40	0.27	0.11
Total CO_2E			**89.76**	**18.38**
Note: Data is presented in decimal format and may have rounding errors.				

5.6 Project Related Water Usage

Based on methods identified within Section 4.6, the Project would most likely require 4,930,741.2 gallons per year which could require as much as 62,620.413 kWh of energy usage. Given this, the project is expected to create approximately 20.65 Metric Tons of CO_2e per year as shown in Table 5.5 below and this also includes energy required to process the waste given the rates from CAPCOA.

Table 5.5: Total GHG Emissions Factors (Electricity from Water Usage)

GHG	Emission Factor eGRID Subregion WECC California (lbs/KWh)	Energy Usage (KWh)	Conversion lbs/metric ton	Total (Metric Tons)	GWP	CO_2e (Metric Tons)
CO_2	0.72412	62,620.413	2,204.62	20.56803	1	20.56803
CH_4	0.000030	62,620.413	2,204.62	0.00086	21	0.01801
N_2O	0.0000081	62,620.413	2,204.62	0.00023	310	0.07132
Total						**20.657**
Note: Data is presented in decimal format and may have rounding errors.						

5.7 Area Use Emission Calculation Methodology (Landscaping)

Based on methods identified within Section 4.7, the each residential unit would produce approximately 0.223 MT of CO_2e per year. The proposed project consisting of 44 units would generate 0.223 MT x 44-units or 9.825 MT from landscaping.

5.8 Wood Burning Fireplaces

It should be noted some of the projects hearth options will be open fireplaces or wood burning stoves. Generally, the burning of wood will not release more carbon dioxide than the eventual biodegradation of that wood would otherwise create if it was not burned. Therefore burning wood is considered to be biogenic. However, inefficient burning will create other forms of GHGs such as CH_4 and N_2O which would have otherwise not been released.

The non-biogenic GHG emission factors for burning wood are published within Table C.8 within the CCARGRPV3.1 CH_4, and N_2O are, 0.316 and 0.004 Kg/MMBtu. These emission factors are inserted into equation III.8B and were published by CCARGRPV3.1.

$$GHG(Metric\ Tons) = \frac{Wood\ \left(\frac{kg\ GHG}{MMBTU}\right) \times Fuel\ Consumed\ (MMBTU)}{1{,}000\frac{kg}{metric\ ton}}$$

Based on estimates provided in the project Air Quality model, it's assumed that .28 cords of wood per year per fireplace is used and 1.48 cords per year per wood stove is used. It is assumed that each cord of wood weighs 2,458 lbs. Given the project assumes 35% or 15 units will use wood stoves and 10% or 4 units will use standard wood fireplaces, the project would consume (15*1.48 cords + 4*0.28 cords)*2,458 lb/cord = 57,321 lbs of wood each year or 25.66 tons.

$$GHG(Metric\ Tons) = \frac{Wood\ \left(\frac{kg\ GHG}{MMBTU}\right) \times Fuel\ Consumed\ (MMBTU)}{1{,}000\frac{kg}{metric\ ton}}$$

Each ton of wood (2,000 lb) has a heat content of 15.38 MMBTU. Given that the project would use roughly 28.66 tons of wood, the total heat content would be 400.80 MMBTU. Given this, as shown in Table 5.6 on the following page, the project would produce an additional 3.472 MT per year from non-biogenic GHGs

Table 5.6: Total GHG Emissions Factors (Wood Burning)

GHG	Emission Factor kg/MMBTU	Wood (MMBTU/Year)	Conversion metric ton/kg	Total (Metric Tons)	GWP	CO_2e (Metric Tons)
CH_4	0.316	440.80	0.001	0.1393	21	2.9251
N_2O	0.004	440.80	0.001	0.0018	310	0.5466
Total						**3.4717**
Note: Data is presented in decimal format and may have rounding errors.						

5.9 Project Emissions and Conclusion Totals

The proposed project will emit a maximum of approximately 599.31 Metric Tons of CO_2e per year during construction. Operational emissions would not exceed the County's Bright Line Screening thresholds of 2,500 Metric Tons per Year. The Cumulative CO_2e emissions are identified in Table 5.7 below.

Table 5.7: Expected CO_2e Emissions Summary (Operations)

Construction Emissions	CO_2e (Metric Tons)
2014	599.31
2015	213.75
Bright Line Threshold (2,500 MT) Exceedance?	**No**
Operations Emissions	**CO_2e (Metric Tons)**
Vehicular Usage	686.06
Electricity Usage	86.23
Natural Gas Usage	187.20
Solid Waste Emissions	18.38
Water Usage Emissions	20.66
Area emissions - Landscaping	9.825
Area emissions – Wood Burning Stoves	3.472
Project Totals (Business as Usual)	**1,011.83**
Bright Line Threshold (2,500 MT) Exceedance?	**No**
Expected Construction emissions are based upon URBEMIS modeling assumptions identified in Chapter 4 of this report. * Total Construction related CO_2 averaged over a 30-year span. Data is presented in decimal format and may have rounding errors.	

Based on the fact the proposed Project would not create emissions higher than the Bright Line threshold, the project would be required to implement at least one CAP measure within the County CAP Compliance Checklist (Appendix G) during project review. The Appendix G forms are provided as ***Attachment C*** at the end of this report. The project applicant will install smart meters as per E4 of the CAP list.

It should also be noted that emissions generated by this project would further be reduced through indirect measures such as LCFS, Pavley and renewable requirements placed on utility providers within California.

6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the projected CO_2e emissions from the project development based upon the best available information at the time of preparation. The report was prepared by Jeremy Louden; a County approved CEQA Consultant for Air Quality and Greenhouse Gas.

Jeremy Louden, Principal — Date May 13, 2014

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jlouden@ldnconsulting.net

ATTACHMENT A

URBEMIS 2007

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\RST\Google Drive\Shadow Run\5-4-14\Shadow Run 5-14.urb924

Project Name: Shadow Run Ranch

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.64	5.19	2.90	0.00	9.45	0.23	9.68	1.97	0.21	2.19	654.56
2014 TOTALS (tons/year mitigated)	0.64	5.19	2.90	0.00	4.25	0.23	4.49	0.89	0.21	1.10	654.56
Percent Reduction	0.00	0.00	0.00	0.00	54.98	0.00	53.65	54.97	0.00	49.58	0.00
2015 TOTALS (tons/year unmitigated)	1.37	1.27	1.32	0.00	0.00	0.08	0.08	0.00	0.07	0.08	233.46
2015 TOTALS (tons/year mitigated)	1.37	1.27	1.32	0.00	0.00	0.08	0.08	0.00	0.07	0.08	233.46
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.90	0.14	2.13	0.01	0.31	0.29	179.05

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.62	1.02	7.17	0.01	1.77	0.34	905.94

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.52	1.16	9.30	0.02	2.08	0.63	1,084.99

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.64	5.19	2.90	0.00	9.45	0.23	9.68	1.97	0.21	2.19	654.56
Demolition 05/20/2014-05/31/2014	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
Mass Grading 06/01/2014-12/15/2014	0.63	5.08	2.82	0.00	9.44	0.23	9.67	1.97	0.21	2.18	638.60
Mass Grading Dust	0.00	0.00	0.00	0.00	9.44	0.00	9.44	1.97	0.00	1.97	0.00
Mass Grading Off Road Diesel	0.62	5.07	2.66	0.00	0.00	0.23	0.23	0.00	0.21	0.21	614.76
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.84
Trenching 12/16/2014-01/16/2015	0.01	0.09	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.06
Trenching Off Road Diesel	0.01	0.09	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.25
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81

2015	1.37	1.27	1.32	0.00	0.00	0.08	0.08	0.00	0.07	0.08	233.46
Trenching 12/16/2014-01/16/2015	0.01	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.06
Trenching Off Road Diesel	0.01	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.25
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Asphalt 01/17/2015-02/10/2015	0.04	0.14	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	18.33
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.02	0.11	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.82
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.07
Paving Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44
Building 02/11/2015-07/31/2015	0.18	1.05	1.15	0.00	0.00	0.07	0.07	0.00	0.06	0.06	200.27
Building Off Road Diesel	0.17	0.99	0.79	0.00	0.00	0.06	0.06	0.00	0.06	0.06	138.95
Building Vendor Trips	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.64
Building Worker Trips	0.01	0.03	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.69
Coating 05/15/2015-07/31/2015	1.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81
Architectural Coating	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81

Phase Assumptions

Phase: Demolition 5/20/2014 - 5/31/2014 - Demo of onsite buildings

Building Volume Total (cubic feet): 10000

Building Volume Daily (cubic feet): 1113.94

On Road Truck Travel (VMT): 15.47

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

Phase: Mass Grading 6/1/2014 - 12/15/2014 - Mass Grading

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Total Acres Disturbed: 110

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 457 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 12/16/2014 - 1/16/2015 - Trenching

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Paving 1/17/2015 - 2/10/2015 - Paving

Acres to be Paved: 12

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 2/11/2015 - 7/31/2015 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

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1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 5/15/2015 - 7/31/2015 - Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2014	0.64	5.19	2.90	0.00	4.25	0.23	4.49	0.89	0.21	1.10	654.56
Demolition 05/20/2014-05/31/2014	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
Mass Grading 06/01/2014-12/15/2014	0.63	5.08	2.82	0.00	4.25	0.23	4.48	0.89	0.21	1.10	638.60
Mass Grading Dust	0.00	0.00	0.00	0.00	4.25	0.00	4.25	0.89	0.00	0.89	0.00
Mass Grading Off Road Diesel	0.62	5.07	2.66	0.00	0.00	0.23	0.23	0.00	0.21	0.21	614.76
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.84
Trenching 12/16/2014-01/16/2015	0.01	0.09	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.06
Trenching Off Road Diesel	0.01	0.09	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.25
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81

2015	1.37	1.27	1.32	0.00	0.00	0.08	0.08	0.00	0.07	0.08	233.46
Trenching 12/16/2014-01/16/2015	0.01	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.06
Trenching Off Road Diesel	0.01	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.25
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Asphalt 01/17/2015-02/10/2015	0.04	0.14	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	18.33
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.02	0.11	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.82
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.07
Paving Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44
Building 02/11/2015-07/31/2015	0.18	1.05	1.15	0.00	0.00	0.07	0.07	0.00	0.06	0.06	200.27
Building Off Road Diesel	0.17	0.99	0.79	0.00	0.00	0.06	0.06	0.00	0.06	0.06	138.95
Building Vendor Trips	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.64
Building Worker Trips	0.01	0.03	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.69
Coating 05/15/2015-07/31/2015	1.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81
Architectural Coating	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/1/2014 - 12/15/2014 - Mass Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.10	0.04	0.00	0.00	0.00	128.45
Hearth	0.36	0.04	1.91	0.01	0.31	0.29	50.32
Landscape	0.03	0.00	0.18	0.00	0.00	0.00	0.28
Consumer Products	0.39						
Architectural Coatings	0.11						
TOTALS (tons/year, unmitigated)	0.90	0.14	2.13	0.01	0.31	0.29	179.05

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	0.62	1.02	7.17	0.01	1.77	0.34	905.94
TOTALS (tons/year, unmitigated)	0.62	1.02	7.17	0.01	1.77	0.34	905.94

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	110.00	12.00	dwelling units	44.00	528.00	5,641.20
					528.00	5,641.20

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	48.5	0.2	99.6	0.2
Light Truck < 3750 lbs	10.8	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	9.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	76.5	23.5
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.5	48.6	51.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Ambient summer temperature changed from 85 degrees F to 70 degrees F

Ambient winter temperature changed from 40 degrees F to 50 degrees F

ATTACHMENT B

EMFAC2007 2020 input/output

state average 2020

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Methane Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.010	0.013	0.000	0.000	0.000	0.000	0.011

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	1.042	1.316	0.000	0.000	0.000	0.000	1.151

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.112	0.146	0.000	0.000	0.000	0.000	0.125

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	281.289	357.045	0.000	0.000	0.000	0.000	311.331

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

state average 2020

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.003	0.003	0.000	0.000	0.000	0.000	0.003

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.008	0.018	0.000	0.000	0.000	0.000	0.012

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.008	0.008	0.000	0.000	0.000	0.000	0.008

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	0.013	0.013	0.000	0.000	0.000	0.000	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	31.312	24.667	0.000	0.000	0.000	0.000	28.683

Pollutant Name: Diesel - mi/gal Temperature: 65F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
45	28.569	29.080	0.000	0.000	0.000	0.000	28.998

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual

Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Methane Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.000	0.000	0.000	0.000	0.002
10	0.003	0.003	0.000	0.000	0.000	0.000	0.003
20	0.007	0.006	0.000	0.000	0.000	0.000	0.006
30	0.009	0.008	0.000	0.000	0.000	0.000	0.009
40	0.012	0.011	0.000	0.000	0.000	0.000	0.011
50	0.014	0.013	0.000	0.000	0.000	0.000	0.014
60	0.016	0.014	0.000	0.000	0.000	0.000	0.015
120	0.021	0.020	0.000	0.000	0.000	0.000	0.021
180	0.018	0.018	0.000	0.000	0.000	0.000	0.018
240	0.019	0.019	0.000	0.000	0.000	0.000	0.019
300	0.020	0.020	0.000	0.000	0.000	0.000	0.020
360	0.021	0.021	0.000	0.000	0.000	0.000	0.021
420	0.022	0.022	0.000	0.000	0.000	0.000	0.022
480	0.023	0.023	0.000	0.000	0.000	0.000	0.023
540	0.024	0.024	0.000	0.000	0.000	0.000	0.024
600	0.025	0.025	0.000	0.000	0.000	0.000	0.025
660	0.026	0.026	0.000	0.000	0.000	0.000	0.026
720	0.027	0.027	0.000	0.000	0.000	0.000	0.027

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.359	0.379	0.000	0.000	0.000	0.000	0.367
10	0.705	0.746	0.000	0.000	0.000	0.000	0.721
20	1.362	1.447	0.000	0.000	0.000	0.000	1.394
30	1.969	2.103	0.000	0.000	0.000	0.000	2.021
40	2.529	2.715	0.000	0.000	0.000	0.000	2.601
50	3.040	3.284	0.000	0.000	0.000	0.000	3.134
60	3.502	3.808	0.000	0.000	0.000	0.000	3.620
120	5.025	5.587	0.000	0.000	0.000	0.000	5.242
180	3.977	4.589	0.000	0.000	0.000	0.000	4.213
240	4.204	4.918	0.000	0.000	0.000	0.000	4.479
300	4.413	5.212	0.000	0.000	0.000	0.000	4.721
360	4.604	5.473	0.000	0.000	0.000	0.000	4.939
420	4.777	5.701	0.000	0.000	0.000	0.000	5.134
480	4.932	5.895	0.000	0.000	0.000	0.000	5.304
540	5.070	6.055	0.000	0.000	0.000	0.000	5.450
600	5.190	6.182	0.000	0.000	0.000	0.000	5.573
660	5.292	6.275	0.000	0.000	0.000	0.000	5.672
720	5.376	6.335	0.000	0.000	0.000	0.000	5.746

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.099	0.208	0.000	0.000	0.000	0.000	0.141
10	0.115	0.227	0.000	0.000	0.000	0.000	0.158
20	0.144	0.261	0.000	0.000	0.000	0.000	0.189
30	0.168	0.290	0.000	0.000	0.000	0.000	0.215
40	0.186	0.313	0.000	0.000	0.000	0.000	0.235
50	0.200	0.331	0.000	0.000	0.000	0.000	0.250
60	0.209	0.343	0.000	0.000	0.000	0.000	0.261
120	0.219	0.367	0.000	0.000	0.000	0.000	0.276
180	0.223	0.374	0.000	0.000	0.000	0.000	0.281
240	0.221	0.371	0.000	0.000	0.000	0.000	0.279
300	0.219	0.367	0.000	0.000	0.000	0.000	0.276
360	0.216	0.361	0.000	0.000	0.000	0.000	0.272
420	0.212	0.354	0.000	0.000	0.000	0.000	0.267
480	0.208	0.345	0.000	0.000	0.000	0.000	0.260
540	0.202	0.334	0.000	0.000	0.000	0.000	0.253
600	0.196	0.322	0.000	0.000	0.000	0.000	0.244
660	0.189	0.308	0.000	0.000	0.000	0.000	0.235
720	0.181	0.292	0.000	0.000	0.000	0.000	0.224

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.569	14.677	0.000	0.000	0.000	0.000	12.769
10	13.259	16.776	0.000	0.000	0.000	0.000	14.617
20	17.095	21.555	0.000	0.000	0.000	0.000	18.817
30	21.538	27.109	0.000	0.000	0.000	0.000	23.688
40	26.588	33.437	0.000	0.000	0.000	0.000	29.232
50	32.247	40.540	0.000	0.000	0.000	0.000	35.448
60	38.512	48.418	0.000	0.000	0.000	0.000	42.336
120	87.451	110.293	0.000	0.000	0.000	0.000	96.269
180	99.548	125.505	0.000	0.000	0.000	0.000	109.569
240	111.561	140.621	0.000	0.000	0.000	0.000	122.780
300	123.492	155.642	0.000	0.000	0.000	0.000	135.903
360	135.338	170.569	0.000	0.000	0.000	0.000	148.939
420	147.101	185.400	0.000	0.000	0.000	0.000	161.887
480	158.781	200.136	0.000	0.000	0.000	0.000	174.746
540	170.377	214.777	0.000	0.000	0.000	0.000	187.518
600	181.890	229.323	0.000	0.000	0.000	0.000	200.202
660	193.319	243.775	0.000	0.000	0.000	0.000	212.798
720	204.665	258.131	0.000	0.000	0.000	0.000	225.305

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

state average 2020

5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.001	0.000	0.000	0.000	0.000	0.000
120	0.001	0.001	0.000	0.000	0.000	0.000	0.001
180	0.001	0.001	0.000	0.000	0.000	0.000	0.001
240	0.001	0.001	0.000	0.000	0.000	0.000	0.001
300	0.001	0.002	0.000	0.000	0.000	0.000	0.001
360	0.001	0.002	0.000	0.000	0.000	0.000	0.002
420	0.001	0.002	0.000	0.000	0.000	0.000	0.002
480	0.002	0.002	0.000	0.000	0.000	0.000	0.002
540	0.002	0.002	0.000	0.000	0.000	0.000	0.002
600	0.002	0.002	0.000	0.000	0.000	0.000	0.002
660	0.002	0.002	0.000	0.000	0.000	0.000	0.002
720	0.002	0.003	0.000	0.000	0.000	0.000	0.002

Pollutant Name: PM10 Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.000	0.000	0.000	0.000	0.001
10	0.001	0.003	0.000	0.000	0.000	0.000	0.002
20	0.002	0.005	0.000	0.000	0.000	0.000	0.003
30	0.003	0.007	0.000	0.000	0.000	0.000	0.005
40	0.005	0.010	0.000	0.000	0.000	0.000	0.007
50	0.006	0.012	0.000	0.000	0.000	0.000	0.008
60	0.006	0.014	0.000	0.000	0.000	0.000	0.009
120	0.010	0.022	0.000	0.000	0.000	0.000	0.015
180	0.011	0.025	0.000	0.000	0.000	0.000	0.016
240	0.012	0.027	0.000	0.000	0.000	0.000	0.018
300	0.013	0.029	0.000	0.000	0.000	0.000	0.019
360	0.014	0.030	0.000	0.000	0.000	0.000	0.020
420	0.015	0.032	0.000	0.000	0.000	0.000	0.021
480	0.015	0.033	0.000	0.000	0.000	0.000	0.022
540	0.015	0.034	0.000	0.000	0.000	0.000	0.022
600	0.016	0.034	0.000	0.000	0.000	0.000	0.023
660	0.016	0.035	0.000	0.000	0.000	0.000	0.023
720	0.016	0.035	0.000	0.000	0.000	0.000	0.023

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego
****
*****
Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Methane Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego

****

Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Methane Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
65	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual

Area : San Diego
****
*****
Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Methane Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
65	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego
****
*****
Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Methane Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
65	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego

****

Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Methane Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
65	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : San Diego

****

Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.603	0.397	0.000	0.000	0.000	0.000	1.000
%TRIP	0.614	0.386	0.000	0.000	0.000	0.000	1.000
%VEH	0.612	0.388	0.000	0.000	0.000	0.000	1.000

Title : 2020 BAU
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2012/05/22 00:17:12
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual

Area : San Diego

****

Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Methane Temperature: 65F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000	0.000	0.000	0.000
45	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000

ATTACHMENT C

Appendix G CAP Reduction Measures and Checklist

APPENDIX G:

County of San Diego CAP Compliance Checklist for Greenhouse Gas Analysis

PROJECT INFORMATION

Date: _____

Project Number: _____

Project Name: _____

Project Applicant: _____

GHG Specialist: _____

Project Owner: _____

Does this project meet the screening criteria listed in Table 3 of the County of San Diego's Guidelines for Determining Significance for Climate Change, or has the project demonstrated that it is below the Bright Line Threshold, as described in the Guidelines for Determining Significance?

☐ **Yes** ☐ **No**

If Yes, project must complete the following checklist and comply with one or more (or equivalent combination[1]) of the applicable Climate Action Plan (CAP) measures beyond any applicable County of San Diego (County) standards. Specify the measure(s) below.

If No, project must complete the following checklist and should comply with applicable measures listed below for the relevant project type. The project proponent must conduct a technical analysis to demonstrate that the project's design features, along with CAP measures, and, if necessary, additional measures, are incorporated to reduce emissions below the Bright Line Threshold, the Efficiency Threshold, or the Performance Threshold. The Applicability Table may be used as guidance for CAP measures, but any GHG-reducing measures may be included that achieve the Bright Line, Efficiency, or Performance Threshold.

Through the County's discretionary review process and completion of the CAP Compliance Checklist, the design features or mitigation measures applied to individual development projects are considered binding and enforceable, including those applied to projects with GHG emissions that are either above or below the Bright Line Threshold.

[1] A project must demonstrate compliance with a single CAP measure beyond any applicable County standards and requirements. If the project demonstrates one-half of one CAP measure and one-half of another CAP measure, or similar compliance with multiple CAP measures, the project may be determined to be equivalent to complying with one full measure. In these instances, the measure(s) will be subject to approval by the project reviewer. Construction-only projects that meet the Construction Screening Criteria do not need to implement a CAP measure.

General Guidance for Use in Determining Applicability of CAP Measures for Projects Under the Bright Line Threshold[1]

Project Type	CAP Measures														
	E1: Energy Efficiency for New Development	E2: Building Energy Retrofits	E3: Energy Star Appliances	E4: Smart Meters	R1: Solar Water Heating	R2: Alternative Energy Systems	LU1: Mixed-Use Development	T1:Increase Transit Use	T2: Increase Walking and Biking	T3: Increase Ridesharing	T4: Alternative Fuel Vehicles	LS1:Tree Planting	A1: Nitrogen Optimization	A2: Field Equipment Fuel Efficiency	A3: Agricultural Irrigation Pump Efficiency
New Residential	●		●		●	●									
New Commercial	●				●	●									
Industrial	●				●	●									
Mixed-Use	●		●		●	●									
Agriculture + Residential	●[2]	●[2]	●		●	●									
Other[3]	●	●	●		●	●									

[1] The determination of applicability will be made by the County Department of Planning and Land Use (DPLU) with the project applicant at the time of scoping/review; however, for most projects under the Bright Line Threshold, unchecked measures (e.g., as LU1, T1-4) will not result in measurable GHG emissions reductions and, therefore, will likely not be applicable at the project level.

[2] Depending on whether residential is new or existing, this measure may not apply.

[3] For other project types, project reviewer will determine which measures are applicable to the project.

CHECKLIST

Instructions: All projects must complete this checklist for the relevant project type and fill in "Details of Compliance." For projects below the Bright Line Threshold, a description of how the project will achieve conformance with the CAP measure is provided in "Description"; for projects above the Bright Line Threshold, the applicant may comply with each measure at any performance level, but must demonstrate achievement of the Bright Line Threshold, Efficiency Threshold, or Performance Threshold.

Type of Project _____ Project Number _____

CAP #	Measure	Description[2]	Details of Compliance	% Reduction (for Projects Exceeding the Bright Line Threshold)	Percentage of Measure Compliance (for Projects under the Bright Line Threshold)
E1	Energy Efficiency for New Development	10% of square footage (commercial/industrial) or 10% of units (residential) exceeds Title 24 (2008) standards by 15% for projects scoped through Dec. 31, 2014; 100% of square feet per unit exceeding Title 24 (2008) standards by 15% for projects scoped after Dec. 31, 2014	Number of units Exceeding Title 24 _____		

[2] Description details compliance with the CAP measure. Projects must meet an equivalent of one CAP measure as described here; for projects over the Bright Line Threshold, any level of compliance is acceptable that results in meeting the threshold, and the applicant must provide substantial evidence to support reduction.

CAP #	Measure	Description[2]	Details of Compliance	% Reduction (for Projects Exceeding the Bright Line Threshold)	Percentage of Measure Compliance (for Projects under the Bright Line Threshold)
E2	Building Energy Retrofits (only for existing structures)	RESIDENTIAL: Achieve overall (across all units) 5% energy efficiency[3] COMMERCIAL: Achieve 12% overall lighting efficiency [4]	Efficiency achieved and type of retrofits _____		
E3	Appliance Upgrades	Energy Star appliances in 95% of new residential units and 40% of existing residential units; appliances include light bulbs, clothes washers, dishwashers, and refrigerators	Number of Energy Star appliances _____		
E4	Smart Meters	Detail to be provided by applicant	Number of residences joining online program _____		

[3] CAP measure includes 15% participation among existing buildings achieving 35% efficiency. At the project level, this translates to (0.15 x 0.35) approximately a 5% overall efficiency goal.
[4] CAP measure includes 30% participation among existing buildings achieving 40% efficiency. At the project level, this translates to (0.30 x 0.40) a 12% overall efficiency goal.

CAP #	Measure	Description[2]	Details of Compliance	% Reduction (for Projects Exceeding the Bright Line Threshold)	Percentage of Measure Compliance (for Projects under the Bright Line Threshold)
R1	Solar Water Heating	19% of overall water heating needs derived from solar	Number of units with solar water heaters _____		
R2	Alternative Energy Systems	30% of residential electricity and 20% of commercial electricity generated from alternative energy systems	Kilowatts (KW) of solar panels installed _____		
LU1	Mixed-Use Development	Detail to be provided by applicant			
T1	Increase Transit Use	Detail to be provided by applicant			
T2	Increase Walking and Biking	Detail to be provided by applicant	Additional feet of sidewalk installed _____		
T3	Increase Ridesharing	Detail to be provided by applicant			

CAP #	Measure	Description[2]	Details of Compliance	% Reduction (for Projects Exceeding the Bright Line Threshold)	Percentage of Measure Compliance (for Projects under the Bright Line Threshold)
T4	Alternative-Fuel Vehicles	Detail to be provided by applicant			
LS1	Tree Planting	Detail to be provided by applicant	New trees and types planted _____		
A1	Nitrogen Optimization	Detail to be provided by applicant			
A2	Field Equipment Fuel Efficiency	Detail to be provided by applicant			
A3	Agriculture Irrigation Pump Efficiency	Detail to be provided by applicant			

Other measures, not described in the CAP, which would achieve GHG reductions in the proposed project (for projects over the Bright Line Threshold). This includes reductions taken for statewide regulations[5]					
	Measure	**Description**	**Details of Compliance**	**% Reduction**	

Total Reduction % **(for Projects Exceeding the Bright Line Threshold)** **Must Equal 16% or More**	**Compliance (for Projects Under the Bright Line Threshold)** **Must Equal 100% or More**

[5] Refer to the County of San Diego Guidelines for Determining Significance for Climate Change for methodology in applying statewide measures. The Performance Threshold includes 20% Renewable Portfolio Standard (RPS) and Pavley I as pre-mitigation; therefore, no additional credit may be taken for these measures by the project. The Bright Line and Efficiency Thresholds do not include statewide measures and, therefore, can be calculated for credit by the project.