

**SUBMITTAL TO THE BOARD OF SUPERVISORS  
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**



271

**FROM:** TLMA - Planning Department

**SUBMITTAL DATE:**  
June 11, 2012

**SUBJECT:** APPROVAL OF THE DRAFT CLIMATE ACTION PLAN AND ASSOCIATED APPENDECES FOR INTEGRATION IN THE COUNTY'S GENERAL PLAN

**RECOMMENDED MOTION:**

1. Approve the Draft Climate Action Plan (CAP) which has been prepared to assist the County in compliance with State Climate Action Planning Law (SB 375, SB 97, and AB 32) and with the California Air Resources Board (CARB) Scoping Plan, as amended, for Climate Action Plans, and;
2. Direct Staff to integrate the CAP into the County General Plan and develop

*[Signature]*  
Frank Coyle

---

*[Signature]*  
Carolyn Syms Luna  
Planning Director

Initials:  
CSL:ar

(Continued on next page)

<b>FINANCIAL DATA</b>	Current F.Y. Total Cost:	\$ 0	In Current Year Budget:	Yes
	Current F.Y. Net County Cost:	\$ 0	Budget Adjustment:	No
	Annual Net County Cost:	\$ 0	For Fiscal Year:	11/12

<b>SOURCE OF FUNDS: Department Budget has been reimbursed 100% by U.S Department of Energy (DOE) Grant Funding.</b>	Positions To Be Deleted Per A-30	<input type="checkbox"/>
	Requires 4/5 Vote	<input type="checkbox"/>

**C.E.O. RECOMMENDATION:**

**APPROVE**

BY: *[Signature]*  
Serena Chow

**County Executive Office Signature**

**MINUTES OF THE BOARD OF SUPERVISORS**

On motion of Supervisor Ashley, seconded by Supervisor Buster and duly carried, IT WAS ORDERED that the above matter is approved as recommended.

**Ayes:** Buster, Tavaglione, Stone and Ashley  
**Nays:** None  
**Absent:** Benoit  
**Date:** June 19, 2012  
**xc:** Planning

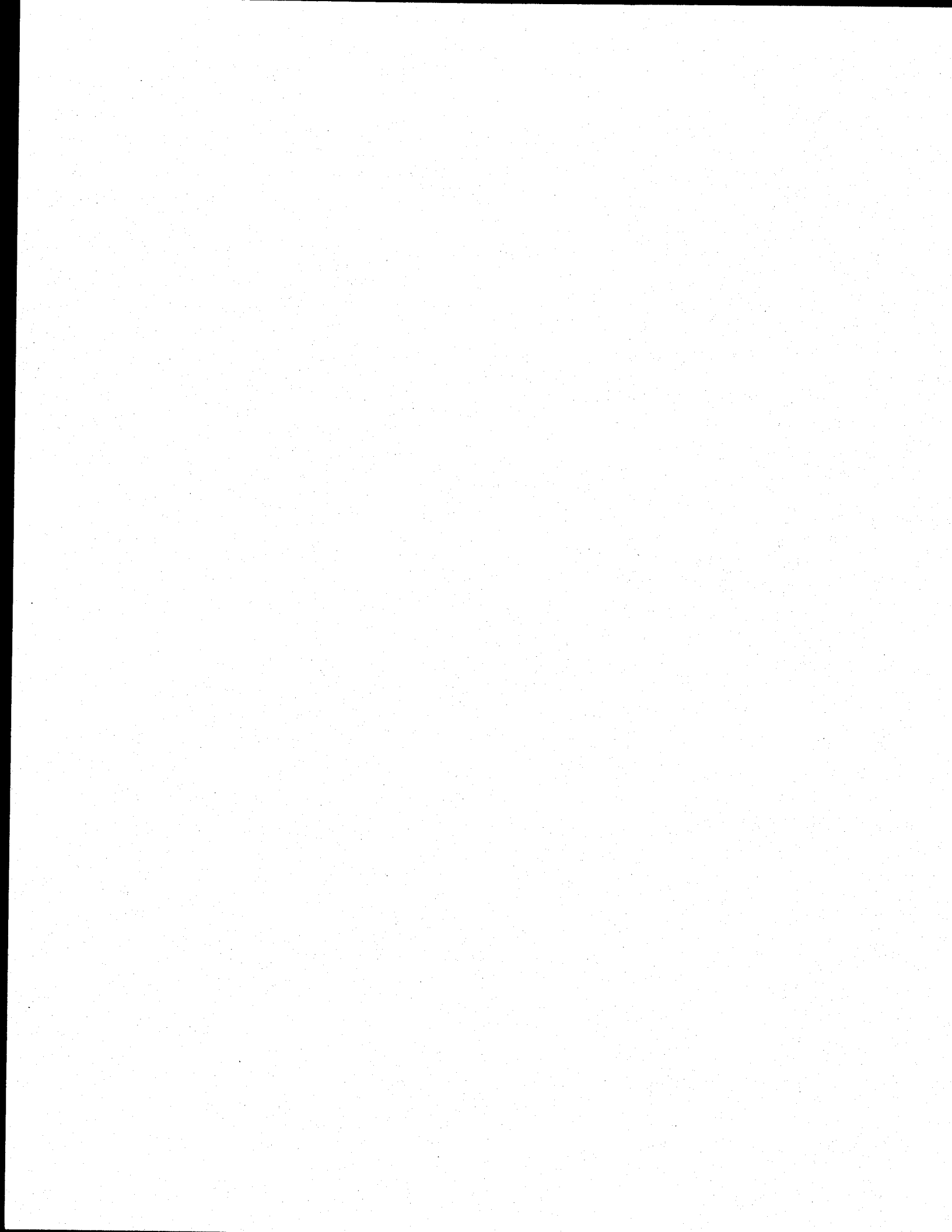
Kecia Harper-Ihem  
Clerk of the Board  
By: *[Signature]*  
Deputy

**Prev. Agn. Ref.** #3.62 on 11/24/09  
 #3.66 on 05/18/10  
 #3.42 on 7/12/11 **ATTACHMENTS FILED**  
**District:** All **Agenda Number:**

**3.45**

Departmental Concurrence

Dept Re  Policy  
 Per Exec. Ofc.:  Policy  
 Consent  
 Consent



implementation strategies to achieve compliance with AB 32.

## **BACKGROUND:**

On May 18 2010, the Board of Supervisors approved and executed a professional agreement to prepare a Climate Action Plan (CAP) that will establish a programmatic approach to reducing the Greenhouse Gas emissions associated with the continued growth of the County and set a framework for a comprehensive plan that address the GHG impacts of future development and County operations.

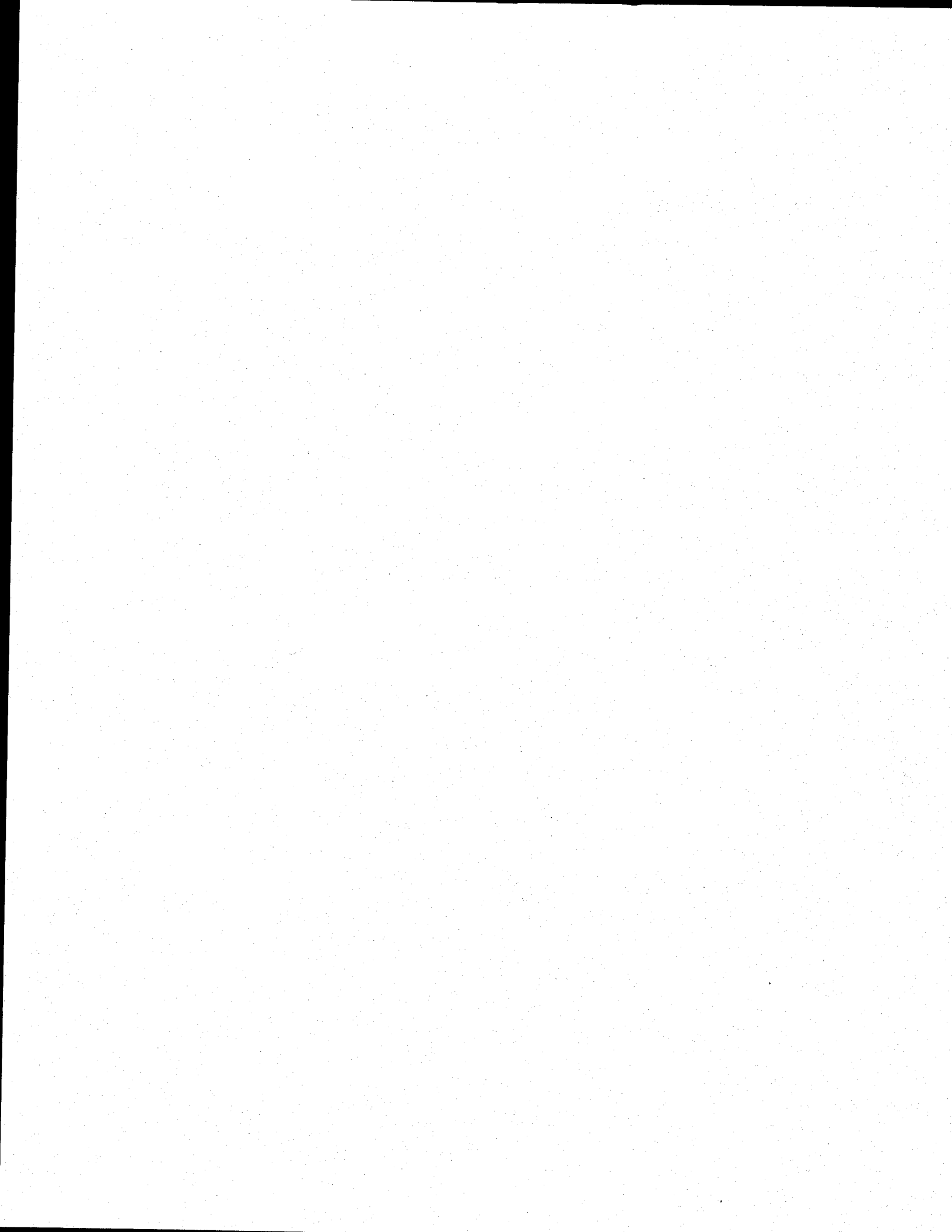
Riverside County is committed to providing a more livable, equitable, and economically vibrant community through the incorporation of sustainability features and reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, conserving and recycling water, and enhancing access to sustainable transportation modes, Riverside will keep dollars in the local economy, create new green jobs and improve community quality of life. The efforts toward reducing GHG emissions described in this report would be done in coordination with the County's land use decisions. The foundation of planning land use decisions is found in the General Plan policies and programs.

Through this Climate Action Plan (CAP), the County has established goals and policies that incorporate environmental responsibility into its daily management of residential, commercial and industrial growth, education, energy and water use, air quality, transportation, waste reduction, economic development, and open space and natural habitats to further their commitment.

The first step in completing the CAP was to complete a GHG emissions inventory. The CAP includes GHG inventories of community-wide and municipal sources based on the most recent data available for the year 2008. Sources of emissions include transportation, electricity and natural gas use, landscaping, water and wastewater pumping and treatment, and treatment and decomposition of solid waste. Riverside County's 2008 inventory amounted to 7,102,319 MT CO<sub>2</sub>e community-wide and 237,085 MT CO<sub>2</sub>e from municipal operations.

Following the state's adopted AB 32 GHG reduction target, Riverside County has set a goal to reduce emissions back to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2008 levels, as recommended in the AB 32 Scoping Plan. The estimated community-wide emissions for the year 2020, based on population and housing growth projections associated with the assumptions used in the proposed General Plan Update, are 10,268,937MT CO<sub>2</sub>e. In order to reach the reduction target, Riverside County must offset this growth in emissions and reduce community-wide emissions to 6,036,971 MT CO<sub>2</sub>e by the year 2020.

The development of this CAP coincides with the County's General Plan Update. A community-wide emissions inventory is also calculated for the horizon year of 2035. The socioeconomic growth rates from the General Plan Update were used to estimate the 2035 emissions.



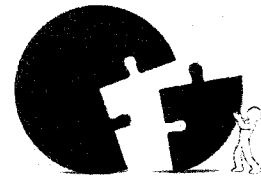
Draft

# RIVERSIDE COUNTY

## Climate Action Plan

May 2012

Prepared for:



RIVERSIDE COUNTY  
PLANNING DEPARTMENT

Riverside County  
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# ACKNOWLEDGEMENTS

This Riverside County Climate Action Plan is the outcome of work contributed by a number of individuals. We wish to thank all individuals who contributed to the success of this report, in particular:

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- Southern California Gas Company, Frank Spasaro
- Southern California Association of Governments, Arnold San Miguel
- Southern California Association of Governments, Ping Wang

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- Appendix C: Data Inputs
- Appendix D: GHG Inventory Calculations
- Appendix E: Reduction Measures, Assumptions, and Attributed Reductions
- Appendix F: Screening Tables

# ACRONYMS

AB 32	Assembly Bill 32, The California Global Warming Solutions Act of 2006
ARRA	American Recovery & Reinvestment Act
BAU	Business As Usual Scenario
BTU	British Thermal Unit
CARB	California Air Resources Board
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency
Cal Recycle	California Department of Resources Recycling and Recovery
CAS	California Climate Adaption Strategy
CCAT	California Climate Action Team
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CCTP	Climate Change Technology Program
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
C <sub>2</sub> F <sub>6</sub>	Hexafluoroethane
CF <sub>4</sub>	Carbon Tetrafluoride
CH <sub>4</sub>	Methane
CIWMB	California Integrated Waste Management Board
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
CSI	California Solar Initiative
CWSRF	Clean Water State Revolving Funds
DPM	Diesel Particulate Matter
EECGB	Energy Efficiency Community Block Grant
EMFAC2007	On-Road Emission Factors published by the CARB in 2007
GCC	Global Climate Change
GHG	Greenhouse Gas
GWh	Gigawatt Hours
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HFC-23	Trifluoromethane
HFC-134	Hydrofluorocarbon 134
HFC-152a	Difluoroethane

IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent Transportation Systems
LEED	Leadership in Energy and Environmental Design
MMT	Million Metric Tons
MT	Metric Tons
MWh	Megawatt Hours
N <sub>2</sub> O	Nitrous Oxide
NSHP	New Solar Home Program
O <sub>3</sub>	Ozone
RIP	Regional Improvement Program
RTIP	Regional Transportation Improvement Program
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCG	Southern California Gas Company
SIP	State Implementation Plan
SF <sub>6</sub>	Sulfur Hexafluoride
STIP	State Transportation Improvement Plan
URBEMIS 2007	Urban Emissions Model, version 9.2 published in June 2007
USEPA	United States Environmental Protection Agency
VMT	Vehicle miles traveled

## EXECUTIVE SUMMARY

Riverside County is committed to providing a more livable, equitable, and economically vibrant community through the incorporation of sustainability features and reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, conserving and recycling water, and enhancing access to sustainable transportation modes, Riverside will keep dollars in the local economy, create new green jobs and improve community quality of life. The efforts toward reducing GHG emissions described in this report would be done in coordination with the County's land use decisions. The foundation of planning land use decisions is found in the General Plan policies and programs.

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Following the state's adopted AB 32 GHG reduction target, Riverside County has set a goal to reduce emissions back to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2008 levels, as recommended in the AB 32 Scoping Plan. The estimated community-wide emissions for the year 2020, based on population and housing growth projections associated with the assumptions used in the proposed General Plan Update, are 10,268,937MT CO<sub>2</sub>e. In order to reach the reduction target, Riverside County must offset this growth in emissions and reduce community-wide emissions to 6,036,971 MT CO<sub>2</sub>e by the year 2020.

The development of this CAP coincides with the County's General Plan Update. A community-wide emissions inventory is also calculated for the horizon year of 2035. The socioeconomic growth rates from the General Plan Update were used to estimate the 2035 emissions.

Various state policies have enacted programs that will also contribute to reduced GHG emissions in Riverside County by the year 2020. Some of these policies include updated building codes for energy efficiency, the low carbon fuel standard, Pavley vehicle emissions standards, and the Renewables Portfolio Standard for utility companies. By supporting the state in the implementation of these measures, Riverside will experience substantial GHG emissions reductions. These GHG reductions from the State measures are accounted for in the reduced inventories.

In order to reach the reduction target, the County would also need to implement the additional local reduction measures described in this report. These measures encourage energy efficiency and

renewable energy in buildings, transit oriented planning, water conservation, and increase waste diversion. Table ES-1, below, summarizes the community wide emissions for 2008, 2020, and the reduced 2020 inventory with the inclusion of the proposed reduction measures.

<b>Table ES-1 2008 and 2020 GHG Emissions Comparison</b>				
<b>Source Category</b>	<b>Metric tons of CO<sub>2</sub>e</b>			
	<b>2008</b>	<b>2020 BAU<sup>a</sup></b>	<b>Reduced 2020</b>	<b>% Reduced</b>
Transportation	2,850,520	4,950,296	2,529,432	48.9%
Energy	1,585,565	2,837,295	1,485,129	47.7%
Area Sources	269,181	442,033	230,969	47.9%
Purchased Water	152,473	175,344	109,021	37.8%
Solid Waste	214,149	341,145	174,134	49.0%
Agriculture	2,030,431	1,522,823	1,507,220	1.0%
<b>Total</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>6,035,904</b>	<b>41.2%</b>
<b>Emission Reduction Target<sup>a</sup></b>		<b>6,036,971</b>	<b>6,036,971</b>	
Note: Mass emissions of CO <sub>2</sub> e shown in the table are rounded to the nearest whole number. Totals shown may not add up due to rounding.				
<sup>a</sup> The reduction target for 2020 is based on a 15% decrease from Riverside County's 2008 emissions inventory.				

Table ES-2 summarizes the 2035 emissions for the County based on the anticipated growth rates included in the County's General Plan update. After 2020, GHG emissions would continue to grow; however, the growth in the County's future emissions would be offset by the reductions from incorporation of the CAP measures. The reduction measures included in the CAP have been developed to meet the 2020 reduction target; however the implementation of the CAP would require periodic updates to ensure that the County is continually tracking GHG emissions and making adjustments as necessary to ensure that future targets are met. The 2035 reduced inventory represents the estimated GHG emissions from Riverside County with the continued implementation of the reduction measures outlined in the CAP as well as the assumption that the current statewide measures would be extended beyond 2020. This represents a strategy for the County to continue to reduce emissions below the 2020 reduction target through to 2035 and beyond.

EXECUTIVE SUMMARY

<b>Table ES-2 Projected 2035 GHG Emissions Comparison</b>				
<b>Source Category</b>	<b>Metric tons of CO<sub>2</sub>e</b>			
	<b>2008</b>	<b>2035 BAU</b>	<b>Reduced 2035</b>	<b>% Reduced</b>
Transportation	2,850,520	6,461,733	2,622,357	59.4%
Energy	1,585,565	3,617,816	1,326,416	63.3%
Area Sources	269,181	529,395	256,482	51.6%
Purchased Water	152,473	293,083	146,121	50.1%
Solid Waste	214,149	424,125	198,061	53.3%
Agriculture	2,030,431	1,522,823	1,485,815	2.4%
<b>Total</b>	<b>7,102,319</b>	<b>12,848,975</b>	<b>6,036,252</b>	<b>53.0%</b>
<b>2020 Reduction Target <sup>a</sup></b>		<b>6,036,971</b>	<b>6,036,971</b>	
<p>Note: Mass emissions of CO<sub>2</sub>e shown in the table are rounded to the nearest whole number. Totals shown may not add up due to rounding.</p> <p><sup>a</sup> The reduction target for 2020 is based on a 15% decrease from Riverside County's 2008 emissions inventory.</p>				

This CAP describes a baseline for the County's GHG emissions, projects how these emissions will grow, and includes strategies to reduce emissions to a level consistent with California's emissions reduction target. These strategies complement the County's General Plan policies and are consistent with Riverside County's vision for a more sustainable community.

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# CHAPTER 1 Introduction

The County of Riverside is committed to reducing GHG emissions in an effort to provide a more livable, equitable, and economically vibrant community. By using energy more efficiently, harnessing renewable energy to power our buildings, enhancing access to sustainable transportation modes, and recycling waste, dollars are kept in our local economy, new green jobs are created, and community quality of life improves. These efforts toward reducing GHG emissions must be done in coordination with the County's land use decisions. The foundation of planning land use decisions are the General Plan policies and programs.

The policies and programs of the County General Plan are intended to underlie most land use decisions. Preparing, adopting, implementing, and maintaining a general plan serves to:

- Define the community's environmental, social, and economic goals.
- Provide citizens with information about their community and with opportunities to participate in the planning and decision-making processes of their community.
- Coordinate the community and environmental protection activities among local, regional, state, and federal agencies.
- Guide in the development of the community.

In order to achieve these goals and to provide a more livable, equitable, and economically vibrant community, the County has committed to prepare and implement the Riverside County Climate Action Plan (CAP) to help ensure that the impact of development on air quality is minimized, energy is conserved, and land use decisions made by the County and all internal operations within the County are consistent with adopted state legislation.

This section describes the purpose and goals of the CAP; describes the relationship of the CAP to the County General Plan, provides background information on GHG emissions; and summarizes the regulatory framework surrounding GHG emissions and climate change.

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## 1.1 Purpose

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The CAP was designed under the premise that the County, and the community it represents, is uniquely capable of addressing emissions associated with sources under the County's jurisdiction, and that the County's emission reduction efforts should coordinate with the state strategies of reducing emissions in order to accomplish these reductions in an efficient and cost-effective manner. The County developed this document with the following purposes in mind:

- Create a GHG emissions baseline from which to benchmark GHG reductions
- Provide a plan that is consistent with and complementary to: the GHG emissions reduction efforts being conducted by the State of California through the Global Warming Solutions Act (AB 32), federal government through the actions of the Environmental Protection Agency (EPA), and the global community through the Kyoto Protocol

## 1.2 GOALS

- Guide the development, enhancement, and implementation of actions that reduce GHG emissions
- Provide a policy document with specific implementation measures meant to be considered as part of the planning process for future development projects

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## 1.2 Goals

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To fulfill the purposes of the CAP, the County identified the following goals to be achieved:

- Provide a list of specific actions that will reduce GHG emissions, giving the highest priority to actions that provide the greatest reduction in GHG emissions and benefits to the community at the least cost
- Reduce emissions attributable to Riverside County to levels consistent with the target reductions of AB 32
- Establish a qualified reduction plan for which future development within the County can tier and thereby streamline the environmental analysis necessary under CEQA

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## 1.3 Relationship to the County General Plan

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The General Plan includes a series of linked documents including technical reports, and elements containing goals, policies, and implementation programs that provide direction to the County on managing its resources and how future development will occur.

The CAP is a separately bound document that will provide another implementation tool of the General Plan to guide development in the County. The CAP focuses development on attaining the various goals and policies of the General Plan and all community plans relative to GHG emissions, and to achieve the goals outlined in Section 1.2 above.

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## 1.4 Background

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The CAP achieves the purpose and goals described above by providing:

- An analysis of GHG emissions and sources attributable to the County.
- Estimates on how those emissions are expected to increase.
- Recommended policies and actions that can reduce GHG emissions to meet state, federal and international targets.
- A timeline of implementation.
- A defined tracking and reporting mechanism that will measure progress toward the goals.

In order to understand this process, the reader needs to know a few facts about GHG emissions, the climate change impacts anticipated within the County of Riverside, and the international, federal, state, and local regulatory framework designed to address climate change. The following information provides a brief background on these topics. A more complete description of the greenhouse effect, GHG emissions, and general climate change impacts can be found in Appendix A of this document.

## Greenhouse Gases

Parts of the Earth's atmosphere act as an insulating "blanket" of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. This blanket is a collection of atmospheric gases called greenhouse gases, based on the idea that these gases also trap heat similar to the glass walls of a greenhouse. These gases, consisting mainly of water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), ozone (O<sub>3</sub>), and chlorofluorocarbons (CFC), all act as effective global insulators, reflecting back to earth infrared radiation. Human activities, such as producing electricity and driving internal combustion vehicles, emit these gases into the atmosphere.

Due to the successful global bans on chlorofluorocarbons (primarily used as refrigerants, aerosol propellants and cleaning solvents), Riverside County does not generate significant emissions of these GHGs. This also includes other synthesized gases such as hydrofluorocarbons (HFCs) and carbon tetrafluoride (CF<sub>4</sub>) which have been banned and are no longer available on the market. Because of the ban, the Riverside County will not generate emissions of these GHGs and therefore, they are not considered any further in this document. Sulfur hexafluoride (SF<sub>6</sub>) is another GHG with a high global warming potential; it is mainly used as a gaseous dielectric medium in electric switchgear of high voltage electric transmission lines and medical use in retinal detachment surgery and ultrasound imaging. In both uses, SF<sub>6</sub> is not released to the atmosphere and therefore, it is not considered further in this document.

Because GHGs have variable potencies, a common metric of carbon dioxide equivalents (CO<sub>2</sub>e) is used to report the combined potency from all of the GHGs. The potency each GHG has in the atmosphere is measured as a combination of the volume of its emissions and its global warming potential,<sup>1</sup> and is expressed as a function of the potency with respect to the same mass of CO<sub>2</sub>. Thus, by multiplying the individual gas by its global warming potential, the emissions of each individual gas can be measured in terms of metric tons of CO<sub>2</sub>e (MT CO<sub>2</sub>e).

This CAP contains two types of GHG inventories, one covering community-wide emissions and the other for the County's municipal emissions. The community-wide inventory focuses on the sources and amounts of GHG emissions generated from activities associated with land uses within the unincorporated areas under the jurisdictional control of the County, while the municipal inventory covers emissions solely from the buildings, facilities, and vehicles under the operational control of the

<sup>1</sup> The potential of a gas or aerosol to trap heat in the atmosphere.

## 1.5 REGULATORY SETTING

local government. The purpose of an the inventories is to create a clear picture of how the unincorporated communities within Riverside County and the government operations uses fossil fuels and other forms of energy, and to pinpoint the activities and sectors contributing the most GHGs.

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# 1.5 Regulatory Setting

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In an effort to stabilize GHG emissions and reduce impacts associated with climate change, international agreements as well as federal and state actions were implemented beginning as early as 1988. The international, federal, state, regional, and local government agencies discussed below work jointly, as well as individually, to address GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs.

## International and Federal



### KYOTO PROTOCOL

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC) signed on March 21, 1994. Specifically, the Kyoto Protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated 5% from 1990 levels during the first commitment period of 2008–2012 (UNFCCC 1997). It should be noted that although the United States is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments.

In December 2009, representatives from 170 countries met in Copenhagen to ratify an updated UNFCCC agreement known as the "Copenhagen Accord". This Accord is a voluntary agreement between the United States, China, India and Brazil that recognizes the need to keep global temperature rise to below 2°C and obliges signatories to establish measures to reduce greenhouse gas emissions and to prepare to provide help to poorer countries in adapting to climate change. The countries met again in Cancun in December 2010 and adopted the Cancun Agreements, which reinforce and build upon the Copenhagen Accord. The nations agreed to recognize country targets, develop low-carbon development plans and strategies, and report inventories annually. In addition, agreements were made regarding financing for developing countries, as well as for technology support and coordination among all nations. The next conference of the parties is scheduled for December 2011 in South Africa.

## CLIMATE CHANGE TECHNOLOGY PROGRAM

In lieu of the Kyoto Protocol's mandatory framework, the United States has opted for a voluntary and incentive-based approach toward emissions reductions. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort led by the Secretaries of Energy and Commerce and charged with carrying out the President's National Climate Change Technology Initiative.

## U.S. ENVIRONMENTAL PROTECTION AGENCY

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG emissions generated by the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO<sub>2</sub> gases, agricultural practices and implementation of technologies to achieve GHG reductions. The USEPA implements several voluntary programs that help substantially reduce GHG emissions. These programs include: the State Climate and Energy Partner Network, which fosters the exchange of information between federal and state agencies regarding climate and energy; the Climate Leaders program for companies, the Energy Star<sup>®</sup> labeling system for energy-efficient products; and the Green Power Partnership for organizations interested in buying green power. All of these programs play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

It should be noted that in *Massachusetts v. Environmental Protection Agency* (Docket No. 05-1120), the U.S. Supreme Court held in April of 2007 that the USEPA has authority to regulate greenhouse gases and that the USEPA's reasons for not regulating this area did not fit the statutory requirements. As such, the Court ruled that the USEPA should be required to regulate CO<sub>2</sub> and other greenhouse gases as pollutants pursuant to Section 202(a)(1) of the federal Clean Air Act (CAA).

Towards this aim, in 2009 the USEPA issued a Final Rule for mandatory reporting of GHG emissions by fossil fuel suppliers, industrial gas suppliers, direct GHG emitters and manufactures of heavy-duty and off-road vehicles and vehicle engines. It also requires annual reporting of emissions. The first annual reports required by the Rule were due in March 2011. This rule does not regulate the emission of GHGs; it only requires the monitoring and reporting of greenhouse gas emissions for those sources above certain thresholds (USEPA 2009). In addition, the USEPA adopted a Final Endangerment Finding for the six defined GHGs in December 2009. This Endangerment Finding is required for the USEPA to regulate GHG emissions under Section 202(a)(1) of the CAA.

On May 13, 2010, the USEPA issued a Final Rule that establishes a common sense approach to addressing greenhouse gas emissions from stationary sources under the CAA permitting programs. The rule is in its second phase, which continues through June 2013. In this phase, new construction projects that exceed a CO<sub>2</sub>e threshold of 100,000 tons per year and modifications of existing facilities that increase CO<sub>2</sub>e emissions by at least 75,000 tons per year are subject to permitting requirements. Additionally, operating facilities that emit at least 100,000 tons per year are subject to title V permitting requirements for GHGs (USEPA 2010a). New and existing industrial facilities that meet or exceed that

## 1.5 REGULATORY SETTING

threshold require a permit under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs.

### State

#### CALIFORNIA AIR RESOURCES BOARD

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles air emission inventories, develops suggested control measures and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints and barbecue lighter fluid) and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts. The SIP is required for the State to take over implementation of the federal Clean Air Act in California and consists of rules and technical documentation to support the State's plan for reducing emissions of criteria pollutants in areas that exceed EPA standards and are designated non-attainment.

#### EXECUTIVE ORDER S-20-04

Governor Arnold Schwarzenegger signed Executive Order S-20-04 regarding Green Buildings on December 14, 2004. It established California's priority for energy and resource-efficient high performance buildings. The Executive Order sets a goal of reducing energy use in state-owned buildings by 20 percent by 2015 (from a 2003 baseline) and encourages the private commercial sector to set the same goal. Executive Order S-20-04 also directs compliance with the Green Building Action Plan which details the measures the state will take to meet these goals. To summarize, Executive Order S-20-04 and the Green Building Action Plan assigned the California Energy Commission to develop the following measures to achieve the goals of Executive Order S-20-04:

- Building efficiency benchmarking system for all state owned and private commercial buildings.
- Develop commissioning and retro commissioning guidelines for commercial buildings.
- Develop and refine (Title 24) building energy efficiency standards applicable to commercial buildings sector to result in 20 reduction in energy use by 2015 using standards adopted in 2003 as the baseline.
- Consult and collaborate with the Department of General Services, Department of Finance and California Public Utility Commission on retrofitting all state owned buildings.

## EXECUTIVE ORDER S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels.
- By 2020, California shall reduce GHG emissions to 1990 levels.
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

The first California Climate Action Team (CCAT) Report to the Governor in 2006 contained recommendations and strategies to help meet the targets in Executive Order S 3-05. In April 2010, the Draft California Action Team (CAT) Biennial Report expanded on the policy-oriented 2006 assessment. The new information detailed in the CAT Assessment Report includes development of revised climate and sea-level projections using new information and tools that have become available in the last two years, and an evaluation of climate change within the context of broader social changes such as land-use changes and demographic shifts (CCAT 2010). Action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by Executive Order S-13-08, described later in this report.

## ASSEMBLY BILL 1493, CLEAN CAR STANDARDS

AB 1493 (also known as the Pavley Bill, in reference to its author Fran Pavley) was enacted in 2002 and requires the “maximum feasible and cost effective reduction” of GHGs from automobiles and light-duty trucks. Subsequently, in 2004, CARB approved the “Pavley I” regulations limiting the amount of GHGs that may be released from new passenger automobiles beginning with model year 2009 through 2016; these regulations would reduce emissions from new passenger automobiles by 30% from 2002 levels by 2016. The second set of regulations (“Pavley II”) is currently in development and will cover model years 2017 through 2025 in order to reduce emissions by 45% by the year 2020. The automotive industry legally challenged the bill claiming that the federal gas mileage standards preempted these state regulations. In 2005, California filed a waiver request to the U.S. EPA in order to implement the GHG standards (Pavley I and II) and in March of 2008, the U.S. EPA denied the request. However, in June 2009, the decision was reversed and the U.S. EPA granted California the authority to implement the GHG reduction standards for passenger cars, pickup trucks, and sport utility vehicles.

In September 2009, CARB adopted amendments to the “Pavley I” regulations that cemented California’s enforcement of the Pavley rule starting in 2009 while providing vehicle manufacturers with new compliance flexibility. The amendments also coordinated California’s rules with the federal rules for passenger vehicles.

## ASSEMBLY BILL 32, THE GLOBAL WARMING SOLUTIONS ACT OF 2006

In 2006, the California State Legislature adopted AB 32, *the California Global Warming Solutions Act of 2006*, focusing on reducing GHG emissions in California. GHGs as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. AB 32 required CARB to adopt rules and regulations directing





## 1.5 REGULATORY SETTING

State actions that would reduce GHG emissions to 1990 statewide levels by 2020. CARB was also required to publish a list of “discrete early action” GHG emission reduction measures that would be made enforceable by 2010. The law further required that such measures achieve the maximum technologically feasible and cost-effective reductions in GHGs from sources or categories of sources to achieve the statewide greenhouse gas emissions limit for 2020.

Towards this aim, in October 2007, CARB published its Final Report for Proposed Early Actions to Mitigate Climate Change in California. This report described recommendations for discrete early action measures to reduce GHG emissions. Resulting from this were three new regulations including: a low carbon fuel standard, reduction of HFC-134a (a refrigerant chemical) emissions from non-professional servicing of motor vehicle air conditioning systems and improved landfill methane capture. CARB estimated that by 2020, reductions from these three measures would reduce emissions by approximately 13-26 million metric tons CO<sub>2</sub>e.

In 2007, CARB released a report, *California 1990 GHG Emissions Level and 2020 Emissions Limit* establishing that statewide levels of GHG emissions in 1990 were 427 MMT CO<sub>2</sub>e. Additionally, in 2008, CARB adopted the *Climate Change Scoping Plan*, outlining the State’s strategy to achieve the 2020 GHG limit. The Scoping Plan proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs and enhance public health. The plan emphasizes a cap-and-trade program, but also includes the discrete early actions previously mentioned.

### SENATE BILL 97

SB 97, enacted in 2007, amended the California Environmental Quality Act (CEQA) to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directed the California Office of Planning and Research (OPR) to develop revisions to the *State CEQA Guidelines* “for the mitigation of GHG emissions or the effects of GHG emissions” and directed the Resources Agency to certify and adopt these revised *State CEQA Guidelines* by January 2010 (See PRC Section 21083.05). The revisions were codified into the California Code of Regulations and became fully effective by July 2010. These revisions provide regulatory guidance for the analysis and mitigation of the potential effects of GHG emissions.

Among the changes resulting from SB 97 was the addition of criteria for Climate Action Plans used in the tiering and streamlining of CEQA analysis of GHGs for subsequent development projects. Riverside County has updated the Air Quality Element of the General Plan to include specific policies to address GHG emissions. The implementation mechanisms for these GHG-related policies are the Screening Tables for New Development, included in Appendix N of the General Plan. The Screening Tables allow new development projects a streamlined option for complying with the CEQA requirements for addressing GHG emissions. Additionally, Riverside County’s Climate Action Plan details policies to reduce emissions from municipal and community-wide sources including emissions from existing buildings and new development. The addition to the *State CEQA Guidelines* reads as follows:

*15183.5. Tiering and Streamlining the Analysis of Greenhouse Gas Emissions.*

*(a) Lead agencies may analyze and mitigate the significant effects of greenhouse gas emissions at a programmatic level, such as in a general plan, a long range development plan, or a separate plan to reduce greenhouse gas emissions. Later project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review. Project-specific environmental documents may rely on an EIR containing a programmatic analysis of greenhouse gas emissions as provided in Section 15152 (tiering), 15167 (staged EIRs) 15168 (program EIRs), 15175-15179.5 (Master EIRs), 15182 (EIRs Prepared for Specific Plans), and 15183 (EIRs Prepared for General Plans, Community Plans, or Zoning).*

*(b) Plans for the Reduction of Greenhouse Gas Emissions. Public agencies may choose to analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions or similar document. A plan to reduce greenhouse gas emissions may be used in a cumulative impacts analysis as set forth below. Pursuant to Sections 15064(h)(3) and 15130(d), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously adopted plan or mitigation program under specified circumstances.*

*(1) Plan Elements. A plan for the reduction of greenhouse gas emissions should:*

*(A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;*

*(B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;*

*(C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;*

*(D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;*

*(E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;*

*(F) Be adopted in a public process following environmental review.*

*(2) Use with Later Activities. A plan for the reduction of greenhouse gas emissions, once adopted following certification of an EIR or adoption of an environmental document, may be used in the cumulative impacts analysis of later projects. An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and*

## 1.5 REGULATORY SETTING

*enforceable, incorporate those requirements as mitigation measures applicable to the project. If there is substantial evidence that the effects of a particular project may be cumulatively considerable notwithstanding the project's compliance with the specified requirements in the plan for the reduction of greenhouse gas emissions, an EIR must be prepared for the project.*

One of the goals of the CAP is to allow programmatic level review and mitigation of GHG emissions that allows for streamlining of CEQA review for subsequent development projects. To accomplish this, the CAP framework is designed to fulfill the requirements identified in CEQA Guidelines § 15183.5, above.

### SENATE BILL 375

SB 375 established mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions and was adopted by the State in September 2008. In response, in 2010, CARB adopted vehicular GHG emissions reduction targets developed in consultation with the States' metropolitan planning organizations (MPOs), which included the Southern California Association of Governments (SCAG), to which Riverside County belongs. The targets require a 7-8% reduction by 2020 and 13-16% reduction by 2035 for each MPO. The objective of these targets is to induce cities and counties to change their land use patterns and improve their transportation alternatives. Through the SB 375 process, MPOs, such as SCAG are to work with local jurisdictions in the development of "Sustainable Communities Strategies" (SCS) designed to integrate development patterns and the transportation network in a way that reduces greenhouse gas emissions while meeting housing needs and other regional planning objectives. In particular, SCAG's reduction target for per capita vehicular emissions is 8% by 2020 and 13% by 2035 (CARB 2010b). SCAG is in the process of preparing its SCS according to its 2012 regional transportation plan (RTP) update schedule. To date, no region has adopted an SCS; the earliest RTP updates with SCSs are expected in 2012.

### EXECUTIVE ORDER S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, which provides clear direction for how the State should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

- Initiate California's first statewide Climate Change Adaptation Strategy (CAS) that will assess the State's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies.
- Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform State planning and development efforts.
- Issue interim guidance to State agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects.
- Initiate studies on critical infrastructure projects and land-use policies vulnerable to sea level rise.

The resultant 2009 CAS Report summarizes the best known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency. This is the first step in an ongoing, evolving process to reduce California's vulnerability to climate impacts (California Natural Resources Agency 2009a).

## CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 6

CCR Title 24, Part 6: *California's Energy Efficiency Standards for Residential and Nonresidential Buildings* (Title 24) were first 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. Electricity production by fossil fuels results in GHG emissions, and energy-efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008, and the Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. The Energy Commission adopted the 2008 changes to the Building Energy Efficiency Standards for several reasons:

- To provide California with an adequate, reasonably priced, and environmentally sound supply of energy
- To respond to AB 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its GHG emissions to 1990 levels by 2020
- To pursue California energy policy, which states that energy efficiency is the resource of first choice for meeting California's energy needs
- To act on the findings of California's Integrated Energy Policy Report (IEPR) that concludes that the 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 GHG emissions
- To meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes
- To meet the energy efficiency goals of Executive Order S-20-04 which established California's Green Building Initiative. The Executive Order seeks to improve the energy efficiency of nonresidential buildings through aggressive standards toward the target of a 20% reduction in building energy use from a 2003 baseline by the year 2015

## CALIFORNIA GREEN BUILDING CODE

CCR Title 24, Part 11: California's Green Building Standard Code (CalGreen) was adopted in 2010 and went into effect January 1, 2011. CalGreen is the first statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California.

## 1.5 REGULATORY SETTING

The mandatory provisions in CalGreen will reduce the use of volatile organic compounds (VOC) emitting materials, strengthen water conservation, and require construction waste recycling.

### Regional

Riverside County spans three different air basins: South Coast, Salton Sea, and Mojave Desert. The portions of Riverside County within the South Coast and Salton Sea Air Basins are regulated by the South Coast Air Quality Management District (SCAQMD), which also governs Los Angeles and Orange Counties, plus a small portion of San Bernardino County. The easternmost third of the County, that within the Mojave Desert Air Basin, is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD), which also governs most of San Bernardino County. The AQMDs are responsible for promoting and improving the air quality of their jurisdiction's basins. This is accomplished through air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from motor vehicles. Both the SCAQMD and the MDAQMD have stationary, area, and mobile source<sup>2</sup> control measures designed to bring the area into compliance with the state ozone standards.

After AB 32 was passed, SCAQMD formed the Climate Change Committee along with the Greenhouse Gases CEQA Significance Thresholds Working Group and the SoCal Climate Solutions Exchange Technical Advisory Group. On September 5, 2008 the board approved the SCAQMD Climate Change Policy, which outlines actions the District will take to assist businesses and local governments in implementing climate change measures, decrease the agencies carbon emissions, and provide information to the public regarding climate change. On December 5, 2008 the SCAQMD Board approved interim CEQA GHG significance thresholds for stationary sources, rules, and plans. The district adopted a tiered approach for determining significance; projects that are exempt from CEQA or consistent with a local GHG reduction plan are determined less than significant. Tier 3, the primary tier the board will use for determining significance, has a screening significance threshold using the 90th percentile of emissions capture rate approach.

### Local

In light of State and regional efforts to reduce GHGs, there are several avenues of opportunity Riverside County faces. In preparing this CAP, the County is able to streamline its CEQA review of individual projects. By having a GHG reduction plan that adequately addresses emissions at the plan level, the County is able to determine that projects that are consistent with the plan will not have significant GHG-

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<sup>2</sup> Stationary sources emit pollutants from a fixed location, for example industrial boilers. Mobile sources are motor vehicles and other transportation sources that generate pollution through the combustion of fossil fuels. Area sources are those associated with the activities of a given area, such as from fireplaces and lawnmowers in a residential area.

related impacts. Coordination with CARB, SCAQMD, and the State Attorney General’s office ensures that the inventories and reduction strategies presented in this report adequately address the County’s emissions. The County will use screening tables for new development (described in Section 4 of this report) in order to evaluate the consistency of individual projects with the goals and reduction measures outlined in this report.

The screening tables are setup similar to a checklist with points allocated to certain elements that reduce greenhouse gas emissions; if the project garners 100 points (by including enough GHG-reducing elements), then the project is consistent with the County’s plan for reducing emissions. This streamlined process relieves the County development projects from lengthy studies or uncertainties, particularly for small development proposals. The screening tables are set up in such a way that a new development project can earn points by reducing emissions from an existing source (by making an existing building more energy efficient, for example). This is particularly beneficial for jurisdictions, such as Riverside County, that have significant housing stock built prior to the 1974 inception of Title 24 energy efficiency standards and requirements. Thus, Riverside County is able to reduce emissions from both existing sources and future development.

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## CHAPTER 2 Methodology

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## 2.1 Overview

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The first step in drafting this CAP is to prepare the GHG inventories for Riverside County. GHG inventories include all major sources of emissions attributable directly or indirectly to the County's government operations or activities within the community the County serves. GHG inventories are divided into two broad categories: government GHG inventories and community-wide GHG inventories. Government GHG Inventories include emissions resulting from County government operations. Community-wide GHG inventories include a broader range of emissions associated with both the activities within the community the County serves and the government operations. As such, the government GHG inventory is a subset of the larger community-wide GHG inventory. The methodology for preparing GHG inventories incorporates the protocols, methods, and emission factors found in the California Climate Action Registry (CCAR) *General Reporting Protocol* (version 3.1, January 2009), the *Local Government Operations Protocol* (LGOP) (version 1.1, May 2010), and the *Draft Community-wide GHG Emissions Protocol* under development by the Association of Environmental Professionals (AEP) and the International Council for Local Environmental Initiatives (ICLEI). The LGOP provides the guidance and protocols in the development of the government GHG inventory. Currently, there is not an adopted protocol for the development of community-wide GHG inventories. However, the AEP/ICLEI *Draft Community-wide GHG Emissions Protocol* provides draft guidance in the development of the Community-wide inventory.

The LGOP and the draft AEP/ICLEI *Draft Community-wide GHG Emissions Protocol* categorize GHG emissions into three distinct "scopes" as a way of organizing GHG emissions, as follows:

**Scope 1 Emissions** – All "direct" sources of community-wide GHG emissions from sources within the jurisdictional boundaries and unincorporated areas of the County. This includes fuel burned onsite in buildings and equipment such as natural gas or diesel fuel; transportation fuels burned in motor vehicles; and wood-burning emissions from household hearths. For inventories of only government operations, these emissions are limited to activities under the operational control of the County government.

**Scope 2 Emissions** – Encompasses "indirect" sources of GHG emissions resulting from the consumption of purchased electricity, which is electricity used by the residents, businesses, and County's facilities. An "indirect" source is one where the action that generates GHGs is separated from the where the GHGs are actually emitted. For example, when a building uses electricity, it necessitates the burning of fossil fuels, such as coal or natural gas (and resultant release of GHGs) to generate electricity by a utility facility located elsewhere. Thus they are distinguished from *direct* emissions (i.e., Scope 1 emissions) from electricity production, which are reported by the utility itself, in order to avoid double counting.

**Scope 3 Emissions** is an optional reporting category that encompasses all other "indirect emissions" that are a consequence of activities of the County's residents and businesses, but occur from sources out of the jurisdictional control of the local government. The key to this category of emissions is that they must be "indirect or embodied emissions over which the local government exerts significant control or influence." (CCAR 2010) For example, when considering GHG emissions from trucks

## 2.2 CALCULATION OF GHGS

hauling waste under a County contract, the County does not own the waste hauling trucks, but does have significant control over how many pickups the trucks make.

Scope 1 emissions are characterized in this report as “direct emissions” While Scope 2 emissions are characterized as “indirect source emissions.”

The analysis herein is tailored to include all existing and projected emission sources within the unincorporated areas of the County to provide, to the fullest extent feasible, a comprehensive analysis of GHG reductions. The AB 32 Scoping Plan establishes a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of GHG emissions.

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## 2.2 Calculation of GHGs

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The first step in developing the CAP was to establish an existing inventory of Riverside County’s GHG emissions. The purpose of this inventory is to create an existing inventory to align with the Riverside County General Plan Update. The CAP uses 2008 as the year on which to base the existing inventory; this is the most recent year for which reliable data concerning the County’s residential, commercial, and government operations are available. This inventory provides a framework on which to design programs and actions that specifically target reductions by emissions sources. Programs and actions already in place within the County are described in Chapter 4. The 2008 inventory serves as a reference against which to measure the County’s progress towards reducing GHG emissions into the future, and also serves as documentation for potential emission trading opportunities.

The methodology used for the calculation GHG emissions differs depending on the emission source, as described below. The emissions calculations follow the CCAR General Reporting Protocol, version 3.1; LGOP, version 1.1; and CARB’s Mandatory GHG Reporting Regulations (Title 17, California Code of Regulations, Sections 95100 et seq.). These protocols are consistent with the methodology and emission factors endorsed by CARB and USEPA. In cases where these protocols do not contain specific source emission factors, current industry standards or the USEPA’s *AP 42 Compilation of Air Pollution Emission Factors* were used.

In estimating Riverside County’s total GHG emissions in 2008, many data sources were utilized. For community energy statistics, the following agencies and County departments were consulted: Riverside County Planning Department, Southern California Edison (SCE), Imperial Irrigation District (IID) and Southern California Gas Company (SCG). Transportation data sources included Riverside County Transportation Department, Riverside County Economic Development Agency, Southern California Association of Governments (SCAG), and California Department of Transportation (CalTrans). Agricultural data sources included Riverside County Agricultural Commissioner and SCAG. Water use data was gathered from Coachella Valley Water District, Desert Water Agency, Eastern Municipal Water District, Western Municipal Water District, Palo Verde Irrigation District, San Geronio Pass Water Agency, and Metropolitan Water District of Southern California. Solid waste data was collected from Riverside County Waste Management Department, California Integrated Waste Board (CIWB) and California Department of Resources Recycling and Recovery (Cal Recycle). Appendix C includes a compilation of all data inputs. In cases where specific data for 2008 was not available, estimates were

made by extrapolating from existing data the County had that was as close to 2008 as possible. Details on the data inputs and estimates made when 2008 data was not available can be found in Appendices B and C of this CAP. The data used in the calculations for each inventory are summarized in Chapter 3. All of the contributors to GHG emissions (kilowatt-hours (kWh) of electricity generated by fossil fuel combustion in power plants, natural gas in therms, vehicle travel in VMT, and solid waste in tons) are expressed in the common unit of MT of CO<sub>2</sub>e released into the atmosphere in a given year.

In addition, the costs associated with the GHG emissions were calculated for each sector (based on availability of data). The costs were based on the consumer fees for each fuel type included in the inventory. By including the costs, the County can assess where consumers are spending the most money and utilize the information in making decisions on reduction measures. Coefficients, modeling inputs, and other assumptions, used in the calculations of GHGs are included in the Appendix of this report.

GHG emissions are typically segregated into direct and indirect sources as discussed previously. However, direct and indirect sources are not completely independent of each other and are often combined into other more encompassing categories. For example, although natural gas combustion is a direct source and electricity generation is an indirect source, they both are typically discussed under a heading of "Energy" when policies are put in place to reduce emissions. Therefore, this CAP discusses emissions with respect to the general source categories of Transportation, Energy, Area Source, Water, Wastewater, and Solid Waste.

## Energy

### ELECTRICITY

Emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O within Riverside County result from the use of electricity. Annual electricity usage in 2008, obtained from SCE and the Imperial Irrigation District (IID), the two major commercial electricity providers serving Riverside County territory, was used in determining community-wide electricity consumption and generation emission estimates for the existing inventory. For the municipal inventory, electricity use in government facilities and streetlights was included and categorized by department. For 2020, emissions estimates were based on the anticipated growth in population, housing and employment for the County. The 2020 growth projections were interpolated from the General Plan Update growth rates.

SCE and IID provide electricity generated via a variety of sources, including combustion of natural gas and coal, nuclear, large hydroelectric, and renewable sources (solar, wind, etc.). Each of these sources of electricity emits different amounts of GHGs. Therefore, emissions from electricity were determined by multiplying annual usage in megawatt hours per year (MWh/year) by the SCE emission factors appropriate to the inventory year for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O obtained from EPA's Emissions and Generation Resource Integrated Database (eGRID) (USEPA 2007).

### NATURAL GAS COMBUSTION

The residents and businesses of Riverside County emit GHGs from the combustion of natural gas, most often used for space heating. The annual natural gas usage for the unincorporated areas of the County

## 2.2 CALCULATION OF GHGS

measured in million British Thermal Units (MMBTUs) was multiplied by the respective emissions factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O to determine the emissions from natural gas combustion. Existing inventory consumption levels for municipal operations and the community as a whole were obtained from the Southern California Gas Company (SCG) and future community-wide consumption estimates were based on anticipated growth in the County.

### WATERY SUPPLY

Water-related emissions included in this section are indirectly produced as a result of electrical consumption to pump and treat water imported from outside the County. There are many water agencies that operate in Riverside County providing both potable and non-potable water to customers in the unincorporated areas. The six major water importers and wholesalers serving Riverside County are: Coachella Valley Water District (CVWD), Desert Water Agency (DWA), Eastern Municipal Water District (EMWD), Western Municipal Water District (WMWD), Palo Verde Irrigation District (PVID) and San Geronio Pass Water Agency (SGPWA). Serving EMWD and WMWD, the Metropolitan Water District of Southern California (MWD) holds the rights to a large portion of the State Water Project supply (the system of aqueducts and canals that distributes water from the Sacramento Bay-San Joaquin Delta across the State) and is the largest water wholesaler in California. The San Geronio Pass Water Agency also gets its water from the State Water Project. The water agencies in the eastern portion of Riverside County predominantly get their water from the Colorado River.

Each agency's water supply comes from a mixture of the following sources: the Bay-Delta via the State Water Project, the Colorado River, local groundwater, recycled water, and local surface water. The GHG emissions associated with water use come from the energy used to collect, treat, convey, and distribute the water. Water imported through the State Water Project and from the Colorado River have higher GHG emissions associated with them, when compared to local water sources, as these distant sources require energy intensive transport to reach Riverside County. This category, "Water Supply," addresses the GHG emissions resulting from energy used to pump/transport these imported sources of water from their sources to Riverside County. This separate category is necessary, as the energy used is accrued across a varied of providers and is not included in the data collected from SCE and IID. For local water sources, the data collected from SCE and IID include associated electricity usage and, hence GHG emissions are included under the "Electricity" category described above. Showing GHG emissions associated with local water sources in the "Electricity" category avoided double counting because the electricity used to pump local water supplies was embedded in the SCE reported electrical consumption data for unincorporated Riverside County.

### WASTE WATER TREATMENT

As with the local water supply just mentioned, GHG emissions associated with wastewater (that is, sewage, urban runoff, and, in some cases, industrial or manufacturing runoff) are based on the electricity needed to pump and treat the wastewater. Again, since wastewater treatment occurs locally within Riverside County, these emissions are also accounted for under the Electricity section of the community-wide inventory to avoid double counting of GHG emissions identical to how locally pumped water were treated.

## Solid Waste Management

Riverside County Waste Management Department is responsible for managing the County's landfills, including both active and closed landfills, with one exception—the El Sobrante landfill, which is privately owned and operated. Table 2-1, below, provides information on the closure year (either past or planned), the year the landfill gas (LFG) system was installed, the in place tonnage at the end of 2008, and the amount of waste disposed at each landfill in 2008. All of the landfills are managed by the County with the exception of El Sobrante, which is privately owned and operated.

Landfill Name (closure year)	Year LFG System Installed	In-place Tonnage (end of 2008)	Waste Disposed in 2008
Badlands (2016)	2001	8,389,807	582,404.62
Blythe (2034)	1998	609,373	15,178.80
Coachella (1997)	2001	3,237,845	-
Corona (1986)	1988	3,200,000	-
Desert Center	-	40,425	15.25
Double Butte (1994)	1997	1,977,463	-
Edom Hill (1997)	2008	7,323,778	-
Elsinore (1965)	1993	1,140,000	-
El Sobrante (2045)*	1989	22,127,558	960,363.49
Highgrove (1998)	1998	3,496,425	-
Lamb Canyon (2021)	2001	6,376,349	688,142.35
Mead Valley (1997)	1995	2,312,837	-
Mecca II	-	228,088	8.86
Oasis	-	176,410	1,479.97
W. Riverside (1993)	1988	1,260,000	-

\*El Sobrante is a privately operated landfill; all others are operated by Riverside County Waste Management.

Riverside County's municipal inventory includes the emissions associated with the landfills that are owned and managed by the County. This includes emissions from County-owned vehicles and equipment as well as fugitive methane emissions from open and closed landfills that are managed by the County. The County's emissions from vehicles and equipment associated with solid waste are included, respectively, in the vehicle fleet and off-road equipment sections of the municipal operations inventory.

Emissions from solid waste result from three different waste-related sources of emissions: transportation from its source to the landfill, operation of the equipment used at the landfill, and the fugitive emissions from waste decomposition. Emissions from the transportation of solid waste are

## 2.2 CALCULATION OF GHGS

determined based on the average number of miles traveled by each truck multiplied by the CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions generated per mile traveled. These emissions are accounted for under the "Transportation," Section 2.3.4, of the inventory, described below. The emissions from landfill equipment are dependent upon the type of equipment, fuel use, and duration of use. Emissions from waste decomposition at both active and inactive landfills located in the unincorporated areas of Riverside County are included in the inventory. The operational information used in this section was collected from the Riverside County Waste Management Department.

Emissions from the equipment used at the landfills were calculated from total fuel use by the equipment and the emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, as determined from CARB off-road mobile source emission factors. Fugitive methane emissions from the decomposition of solid waste (typically buried) are calculated based on the annual waste generation multiplied by the applicable emission factors for waste production for CH<sub>4</sub>. Many landfills now have a methane capture system in place; depending on the type of system, not all of the methane generated from the decomposition is included in the inventory. In Riverside County, all of the landfills have such systems with the exception of Desert Center, Mecca II, and Oasis landfills; these three landfills are the smallest in the County with limited waste disposal. Although CO<sub>2</sub> is also a by-product of organic waste decomposition, the USEPA considers these emissions to be natural and not anthropogenic. Therefore they are not included in the emissions inventory. Nitrous oxide is not a by-product of decomposition and therefore no fugitive emissions of nitrous oxide are anticipated or calculated from solid waste sources

## Area Source Emissions

### LANDSCAPING EMISSIONS

Emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are generated by the use of landscape equipment that runs on gasoline. CO<sub>2</sub> emissions were determined directly through URBEMIS2007 for the existing (2008) and 2020 community-wide inventories. URBEMIS2007 is a computer software package that is used for modeling projected emissions of air quality pollutants including carbon dioxide. From the CO<sub>2</sub> emissions, the approximate number of gallons of gasoline consumed by landscape equipment use was calculated (CARB 2007e). This number was then multiplied by emission factors presented in the General Reporting Protocol, version 3.1 (CCAR 2010) to derive both CH<sub>4</sub> and N<sub>2</sub>O emissions. Landscaping emissions in the municipal inventory were calculated based on the County's inventory of equipment and fuel use along with the specific CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emission factors for each equipment type.

### WOOD BURNING EMISSIONS

Direct CO<sub>2</sub> emissions are produced from the burning of wood in wood stoves and fireplaces. Natural gas-fired stoves, barbecues and other heating devices are not included in this subcategory; they have already been accounted for under "Energy". Carbon dioxide, CH<sub>4</sub>, and N<sub>2</sub>O emissions from wood stoves and fireplaces are calculated based on the percentage of residential units using each type of hearth and the California average amount of wood burned per unit provided by the EIA 2005 Residential Energy Consumption Survey (EIA 2005). The emission coefficients used are taken from the EPA's AP-42 document (USEPA 1985).

## Transportation

### ON-ROAD VEHICLES

For Riverside's municipal inventory, CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions from the County's municipal fleet were calculated based on the fuel use and annual miles traveled by each vehicle. CO<sub>2</sub> emissions were calculated using the total fuel use multiplied by the emission factor for either gasoline or diesel fuel. CH<sub>4</sub> and N<sub>2</sub>O emissions are based on the vehicle's age, model, and miles traveled. The emissions were then organized by each department.

For the community-wide inventory, emissions from on-road vehicles include all generated from trips attributable to activities taking place in the unincorporated parts of the County. Carbon dioxide emissions from vehicles were calculated utilizing EMFAC2007 emission factors for the existing and 2020 inventories. The Emission Factors (EMFAC) model was developed by the California Air Resources Board and is used to calculate CO<sub>2</sub> emission rates for on-road motor vehicles, from light-duty passenger vehicles to heavy-duty trucks that operate on highways, freeways, and local roads in California (CARB 2007b). Motor vehicle emissions of CH<sub>4</sub>, and N<sub>2</sub>O were calculated using USEPA emission factors for on-road vehicles based on the total annual mileage driven multiplied by their respective emission factors by year. Vehicle miles traveled (VMT) were provided by the County Transportation Department. VMT was derived from transportation modeling of the trips entering the County, trips leaving the County, and trips within the County. Pass-through traffic (that is, trips beginning and ending outside of the County) is not included in this analysis. Since trips entering and leaving the County have only one end in Riverside County, only half of these miles were included in the emissions analysis, in order to reflect the split jurisdiction of these trips.

The transportation modeling (RIVTAM) assumed that all vehicles are either gasoline or diesel powered. The estimates therefore do not account for electrical, biodiesel (a blend of diesel and vegetable oil), or hydrogen powered systems. Any electrically-powered vehicle which draws its power from a residential, commercial, or industrial land use within the County will be accounted for under electrical usage, i.e., "Energy". Predicted 2020 BAU vehicle trips were estimated by using Riverside County General Plan build-out (approximately Year 2060) conditions and interpolating back to year 2020.

### AVIATION EMISSIONS

Riverside County owns and operates five airports: Hemet-Ryan, French Valley, Chiriaco Summit, Desert Center and Jacqueline Cochran Regional Airport. The municipal inventory includes the emissions from the energy used to run the facilities and lights at the airports and the emissions from on-site equipment, while the community-wide inventory includes emissions from all aviation activities. The GHG emissions associated with aircraft trips within the County were calculated based on annual fuel consumption (extrapolated from airport aviation fuel sales) and emission factors for jet fuel and aviation fuel for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. Fuel services are not provided at the Chiriaco Summit or Desert Center Airport, so all fuel consumption data was obtained from the three larger airports. March Air Reserve Base is not included here as it is not under the direct jurisdiction of the County of Riverside.

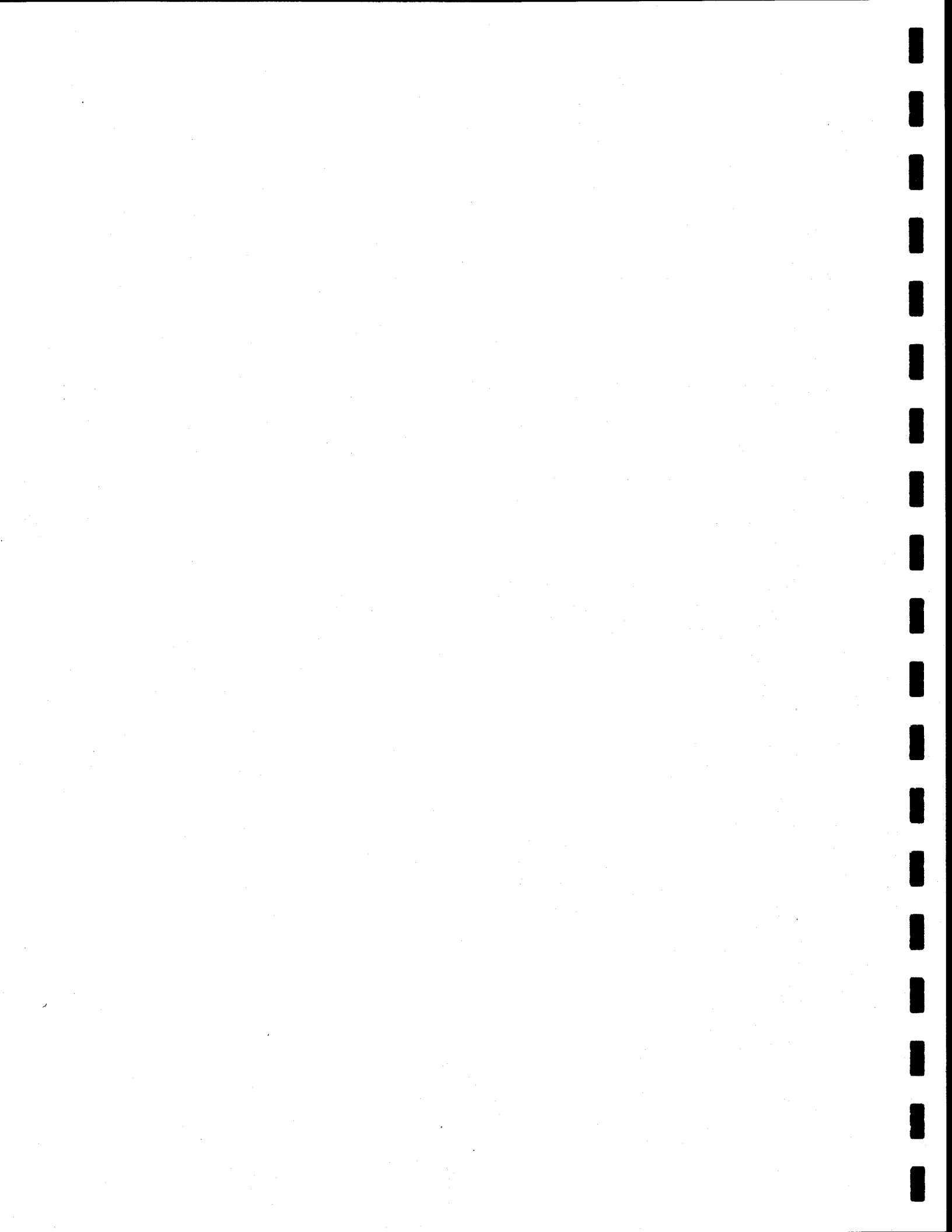


## Agriculture

Riverside County has a large amount of agricultural land with a variety of cultivation uses. The most prominent uses are field and seed crops, including primarily alfalfa and wheat, as well as irrigated pasturelands and rangelands (for grazing). Other uses include fruit trees, vineyards, vegetables, and livestock. Agricultural practices contribute directly to emissions of greenhouse gases through a variety of processes. Assessment of non-carbon-dioxide emissions are from the following source categories: enteric fermentation in domestic livestock, livestock manure management, crop cultivation, and field burning of agricultural residues.

Livestock emissions are divided into two categories based on the emissions source: enteric fermentation and manure management. Enteric fermentation is defined as a fermentation process that takes place in the stomach of ruminant animals, such as cows, sheep and goats. This process produces methane that is released through belching and flatulence. Manure management is the process of gathering and disposing of manure generated by livestock. Management practices vary by type of livestock, but in the case of dairy cows, manure is often collected and stored in lagoons. As the manure breaks down, methane is released.

Methane and nitrous oxide are the primary greenhouse gases emitted from crop cultivation and associated activities. Rice cultivation and field burning of agricultural residues are contributing sources of CH<sub>4</sub> (USEPA 2009b). Agricultural related emissions for 2008 were based on data from SCAG and the Riverside County Agricultural Commissioner.



**CHAPTER 3 GHG Emissions Inventory**

The following sections describe Riverside County’s 2008 government operations and community-wide GHG emissions inventories. The government operations inventory includes sources and quantities of GHG emissions from government owned or rented buildings, facilities, vehicles, and equipment. The community-wide emissions inventory identifies and categorizes the major sources and quantities of GHG emissions produced by residents, businesses, and municipal operations in the unincorporated areas of Riverside County using the best available data. By having the government emissions separated from the community as a whole, the local government can implement reduction strategies where it has direct control, closely monitor the changes in emissions over time, and set an example for the rest of the County.

### 3.1 2008 Government Emissions Inventory

#### Data Inputs

Data for the government inventory was gathered from various County departments. Table 3-1, below, summarizes the data inputs and sources for each of the emission categories included in the inventory.

Category	Data Input	Data Source
Electricity (kWh)	113,650,902	SCE
Natural Gas (therms)	1,622,208	SCG
Vehicle Fleet		Riverside County Fleet Manager
<i>Gasoline (gallons)</i>	3,419,635	
<i>Diesel (gallons)</i>	469,649	
Off-Road Equipment		Riverside County Fleet Manager
<i>Gasoline (gallons)</i>	982	
<i>Diesel (gallons)</i>	178,777	
<i>Propane (gallons)</i>	3,607	
<i>Jet Fuel (gallons)</i>	1,832,210	
<i>Aviation Fuel (gallons)</i>	404,686	
Solid Waste Landfill Gas Collection (MMSCF)	2,854	Riverside County Waste Management

Each data input was then multiplied by the associated emission factor to calculate the emissions inventory. Additionally, where possible, the emissions were categorized by County Department.

#### Emissions Summary

Riverside County emitted 237,085 MT CO<sub>2</sub>e through its government operations in 2008. The emissions were calculated based on the vehicle and equipment fleet fuel use, energy accounts, and waste management. The largest portion of the County’s 2008 government emissions were from solid waste (60 percent), followed by emissions from the vehicle fleet (15 percent). Table 3-2 summarizes the County’s

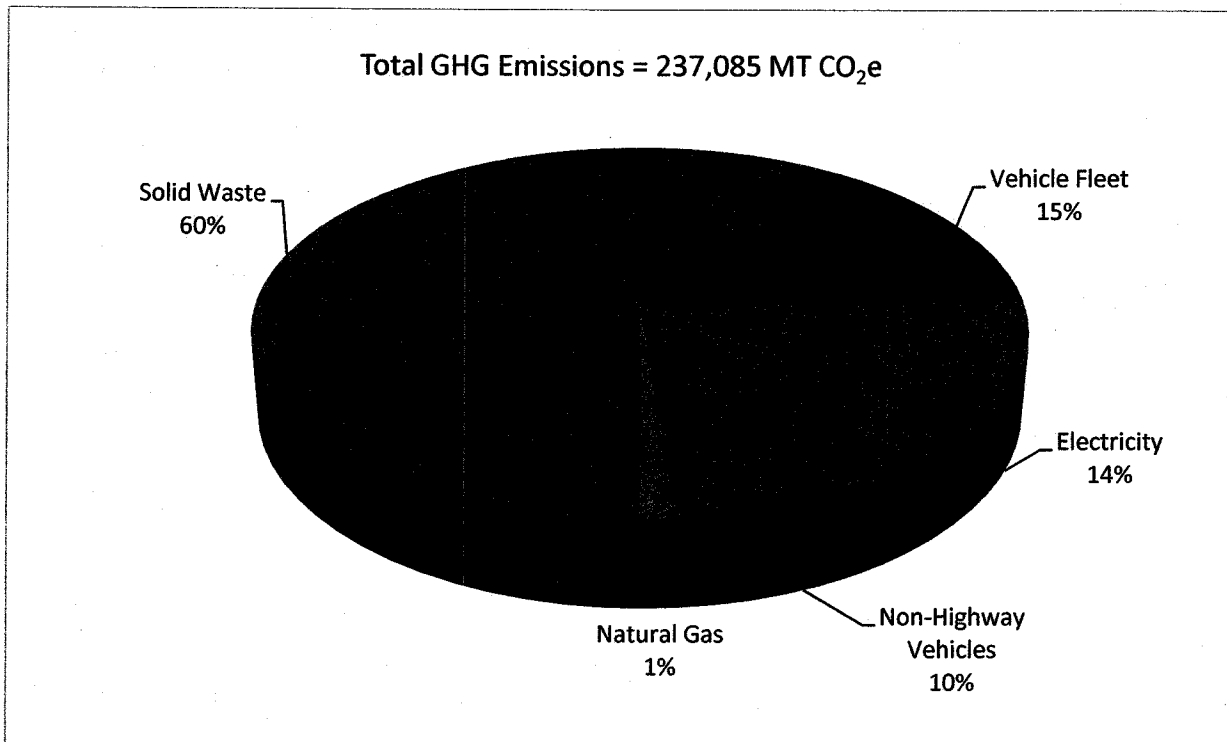
3.1 2008 GOVERNMENT EMISSIONS INVENTORY

2008 emissions of CO<sub>2</sub>e as broken down by emissions category. Figure 3-1 is a graphical representation of Table 3-2. A detailed breakdown of 2008 emissions by category is available in Appendix D of this CAP.

Table 3-2 2008 Total Government Emissions	
Category	Metric tons of CO <sub>2</sub> e
Solid Waste	141,193
Vehicle Fleet	35,331
Electricity	34,478
Off-Road Equipment*	23,018
Natural Gas	3,065
<b>Total</b>	<b>237,085</b>

\*Off-Road Equipment includes front end loaders, dozers, forklifts, etc.

Figure 3-1 2008 Government Emissions by Category (metric tons CO<sub>2</sub>e)



## 2008 GOVERNMENT DEPARTMENT EMISSIONS AND COSTS

For the government operations inventory it is helpful to see which departments are generating the most emissions. This helps to pinpoint where emissions are coming from and where the focus should be placed for targeting emissions reductions. Table 3-3 summarizes the solid waste, electricity, natural gas, and vehicle fleet emissions by department.

The solid waste management department represents the largest sources of emissions in the County due to the number of landfills managed and the associated methane emissions from the decomposing waste. The sheriff department accounts for the greatest energy costs primarily due to the numerous vehicles used by the sheriff's fleet.

<b>Table 3-3 2008 Government Emissions and Costs by Department</b>		
<b>Category</b>	<b>Metric Tons of CO<sub>2</sub>e</b>	<b>Energy Cost (\$)</b>
Waste Management	142,603	\$ 452,416
Airports	21,250	\$ 253,686
Sheriff	15,039	\$ 5,008,600
Public Safety and Justice	12,981	\$ 4,223,789
Administrative	9,259	\$ 3,033,217
Leased Buildings	8,753	\$ 2,848,502
Community Health	7,780	\$ 2,540,726
Transportation/Land Use/Environment	7,493	\$ 2,201,485
Fire	6,541	\$ 1,975,982
Social Services	5,206	\$ 1,719,473
Parks	179	\$ 59,011
<b>Total</b>	<b>237,085</b>	<b>\$ 24,316,879</b>
Note: Emission sources include electricity, natural gas, vehicle fuels, and solid waste decomposition. Costs include electricity, natural gas, and transportation fuels.		

## 2008 TOTAL GOVERNMENT COST ESTIMATES

The costs associated with the inventory represent the municipal energy and fuel use costs. These cost estimates give the County a perspective on where the County is spending the most money and help to prioritize reduction measures toward the sectors that have the potential to both reduce emissions and costs. The County's fuel purchases for the vehicle fleet made up the largest cost in 2008, followed closely by electricity costs. Table 3-4, below, summarizes the cost estimates for 2008.

## 3.2 2008 COMMUNITY-WIDE EMISSIONS INVENTORY

Source	Energy Cost
Vehicle Fleet	\$ 11,433,028
Electricity	\$ 11,211,528
Natural Gas	\$ 989,547
Off-Road Vehicles	\$ 682,775
<b>Total</b>	<b>\$ 24,316,879</b>

### 3.2 2008 Community-Wide Emissions Inventory

The community-wide inventory represents all emissions from sources located with the unincorporated areas of Riverside County. Therefore, the government operations emissions described in the previous section are a subset of the community-wide inventories presented here. In 2008, Riverside County emitted a total of 7,102,319 MT CO<sub>2</sub>e from the community as a whole. The following sections describe the data inputs, emissions by source, and emissions by land use in 2008.

#### Data Inputs

Data for the community-wide inventory was gathered from various County departments, SCE, IID, SCG, and reports. Table 3-5, below, summarizes the data inputs and sources for each of the emission categories included in the inventory. Each data input was then multiplied by the associated emission factor to calculate the emissions associated with each source.

Table 3-5 2008 Community-Wide Data Inputs		
Category	Data Input	Data Source
Electricity		
<i>SCE (kWh)</i>	2,593,455,382	SCE
<i>IID (kWh)</i>	1,034,292,942	IID
Natural Gas (therms)	95,918,639	SCG
Transportation		
<i>Annual VMT</i>	5,161,531,679	Riverside County Traffic Modeling
<i>Annual Trips</i>	862,485,528	
Area Source (based on land use)		
<i>SFR (units)</i>	112,132	Riverside County Planning
<i>MFR (units)</i>	48,854	
<i>Commercial (ksf)</i>	169,585	
<i>Industrial (ksf)</i>	33,905	
Solid Waste Landfill Gas (SCFM)	7,086	Riverside County Waste Management
Purchased Water (acre-feet)	193,802	Water Agency Reports
Agriculture (acres)		
<i>Hay</i>	29,648	Riverside County Agricultural Commissioner
<i>Corn</i>	497	
<i>Oats</i>	1,150	
<i>Sorghum</i>	3,197	
<i>Wheat</i>	14,817	
<i>Cotton</i>	6,901	
<i>Vegetable &amp; Fruit Trees</i>	43,898	
Animals (head)		SCAG
<i>Dairy Cow</i>	43,773	
<i>Poultry</i>	5,260,914	
<i>Sheep</i>	12,700	

## Emissions by Source

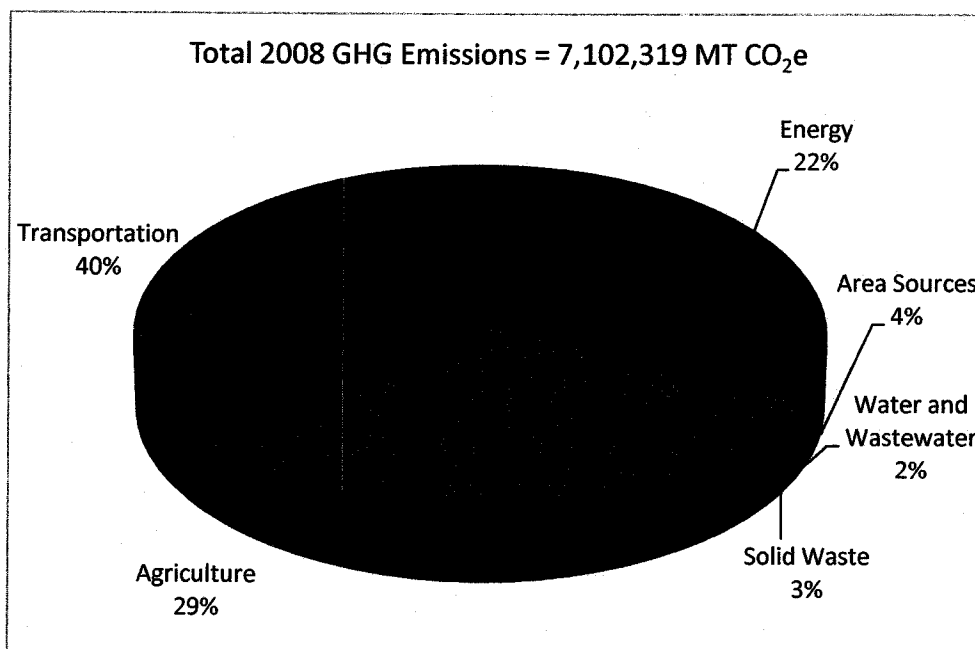
Table 3-6 summarizes net 2008 County emissions of CO<sub>2</sub>e as broken down by emissions category. The County as a whole emitted 7,102,319 MMT CO<sub>2</sub>e in 2008. The largest portion of the County's 2008 emissions were from transportation (40 percent), followed by electricity and natural gas use in buildings (22 percent). Figure 3-2 provides a comparison of GHG emissions by category.



### 3.3 2020 BUSINESS AS USUAL COMMUNITY-WIDE EMISSIONS INVENTORY

Table 3-6 2008 Community-wide GHG Emissions by Source	
Emissions Category	Metric tons of CO <sub>2</sub> e
Transportation	2,850,520
Energy	1,585,565
Area Sources	269,181
Purchased Water	152,473
Solid Waste	214,149
Agriculture	2,030,431
<b>Total</b>	<b>7,102,319</b>

Figure 3-2 2008 Emissions Generated by Emissions Category (metric tons CO<sub>2</sub>e)



## 3.3 2020 Business as Usual Community-Wide Emissions Inventory

In 2020, Riverside County is projected to emit a total of approximately 10.3 MMT of CO<sub>2</sub>e from BAU operations. BAU refers to continued operations and development of the County according to 2008 policies, without the inclusion of proposed reduction or sustainability initiatives as part of this CAP. Reduction initiatives coming from the State or other agencies are not included in the BAU scenario;

these reduction measures and their anticipated emission reductions in Riverside County are discussed in Chapter 4.

## Data Inputs

Data for the 2020 BAU community-wide GHG inventory was estimated based on the General Plan growth rates for the County. Table 3-7 below, summarizes the County's socioeconomic growth rates.

Category	Data Input	Data Source
Growth Rates (based on General Plan Update) <sup>a</sup>		Riverside County
Households	62.4%	TLMA/IT/GIS/ Demographics
Employment	96.1%	

<sup>a</sup> Note: The growth rates represent the overall growth from 2008 to 2020 and are derived from the socioeconomic and land use factors used for the proposed General Plan Update.

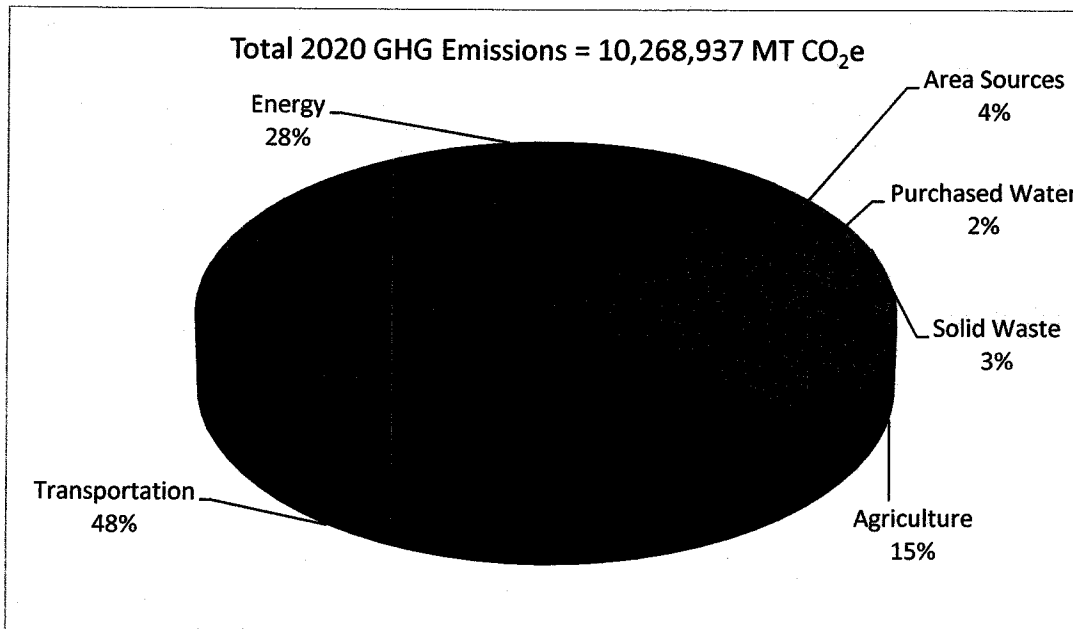
The socioeconomic growth rates were used to estimate the emissions associated with transportation, electricity, natural gas, water, area source, and solid waste.

## 2020 BAU Emissions by Source

The 2020 BAU emissions are estimated based on the projected growth in Riverside County from 2008 to 2020. These projections include a 62.4 percent increase in households and a 96.1 percent increase in employment; these growth rates were applied, respectively, to residential and non-residential 2008 emissions in order to estimate 2020 BAU emissions. Table 3-8 summarizes the net 2020 County emissions of CO<sub>2</sub>e as broken down by emissions category. Figure 3-3 is a graphical representation of Table 3-8. A detailed breakdown of 2020 emissions by category is available in Appendix D of this CAP.

Emissions Category	Metric tons of CO <sub>2</sub> e
Transportation	4,950,296
Energy	2,837,295
Area Sources	442,033
Purchased Water	175,344
Solid Waste	341,145
Agriculture	1,522,823
<b>Total</b>	<b>10,268,937</b>

**Figure 3-3 2020 BAU Emissions Generated by Source (metric tons CO<sub>2</sub>e)**



### 3.4 2035 Business As Usual Community-Wide Emissions Inventory

In 2035, Riverside County is projected to emit a total of 12.8 MMT CO<sub>2</sub>e based on the growth rates associated with the proposed General Plan Update and without the inclusion of the proposed reduction measures presented in this CAP.

#### Data Inputs

Data for the 2035 BAU community-wide GHG inventory was estimated based on the General Plan socioeconomic growth rates for the County. Table 3-9, below, summarizes the County’s growth rates.

Category	Data Input	Data Source
Growth Rates (based on General Plan Update) <sup>a</sup>		Riverside County
Households	92.6%	TLMA/IT/GIS/
Employment	165.1%	Demographics

<sup>a</sup> Note: The growth rates represent the overall growth from 2008 to 2035 and are derived from the socioeconomic and land use factors used for the proposed General Plan Update.

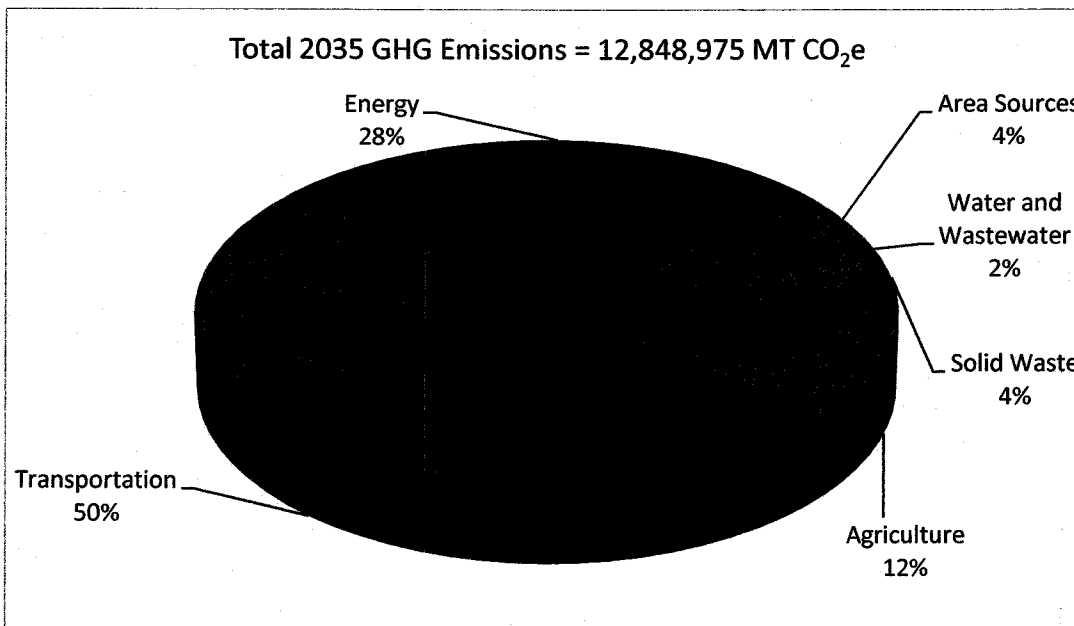
The socioeconomic growth rates were used to estimate the emissions associated with transportation, electricity, natural gas, water, area source, and solid waste.

## 2035 BAU Emissions by Source

The 2035 BAU emissions are estimated based on the projected growth in Riverside County from 2008 to 2035. These projections include a 92.6 percent increase in households and a 165.1 percent increase in employment; these growth rates were applied, respectively, to residential and non-residential 2008 emissions in order to estimate 2035 BSU emissions. Table 3-10 summarizes the net 2035 County emissions of CO<sub>2</sub>e as broken down by emissions category. Figure 3-4 is a graphical representation of Table 3-10. A detailed breakdown of 2035 emissions by category is available in Appendix D of this CAP.

Category	Metric tons of CO <sub>2</sub> e
Transportation	6,461,733
Energy	3,617,816
Areas	529,395
Purchased Water	293,083
Solid Waste	424,125
Agriculture	1,522,823
<b>Total</b>	<b>12,848,975</b>

Figure 3-4 2035 BAU GHG Emissions by Source



## 3.5 2020 Reduction Target

In order for California to meet the goals of AB 32, statewide GHG emissions will need to be reduced back to 1990 levels by 2020. To be consistent with the goals of AB 32, Riverside County would also need to achieve the same GHG emission reduction target. In the AB 32 Scoping Plan, CARB equated a return to 1990 levels to a 15 percent reduction from “current” levels. CARB states, “... ARB recommended a greenhouse gas reduction goal for local governments of 15 percent below today’s levels by 2020 to ensure that their municipal and community-wide emissions match the state’s reduction target.” (CARB 2008) The reduction target calculated in the Scoping Plan was based on an inventory of the state’s 2004 GHG emissions (then considered to be “current” levels); these emissions represent a high-point in the economy before the economic recession. The County’s reduction target is based on Riverside’s 2008 GHG emissions inventory.

Consistent with the State’s adopted AB 32 GHG reduction target, Riverside County has set a goal to reduce GHG emissions back to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2008 levels, as recommended in the AB 32 Scoping Plan. The reduction target is displayed in Table 3-11. Having one overall reduction target, as opposed to targets for each sector, allows the County the flexibility to reduce emissions from the sector with the most cost-effective reduction strategies (i.e. the greatest reduction in emissions at the least cost).

	Metric Tons CO <sub>2</sub> e
2008 Emissions	7,102,319
% Reduction	15%
<b>2020 Reduction Target</b>	<b>6,036,971</b>

## 3.6 Emissions Comparison by Year

This report analyzes GHG emissions from the most current year with data available (2008) and estimates the future emissions for Riverside County in 2020 and 2035.

The 10.3 MMT CO<sub>2</sub>e of GHG emissions for 2020 is an estimated increase of 3.2 MMT CO<sub>2</sub>e above 2008 levels. The growth from 2008 to 2020 is a 45 percent increase. Table 3-12 shows a comparison of total emissions for 2008, 2020, and 2035 emissions.

<b>Table 3-12 GHG Emissions by Source</b>			
<b>Source</b>	<b>Metric Tons CO<sub>2</sub>e</b>		
	<b>2008</b>	<b>2020 BAU</b>	<b>2035 BAU</b>
Transportation	2,850,520	4,950,296	6,461,733
Energy	1,585,565	2,837,295	3,617,816
Area Sources	269,181	442,033	529,395
Purchased Water	152,473	175,344	293,083
Solid Waste	214,149	341,145	424,125
Agriculture*	2,030,431	1,522,823	1,522,823
<b>Total</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>12,848,975</b>
*Note that Agriculture is assumed to decline between 2008 and 2020 as development of the unincorporated County area continues and then remain the same between 2020 through 2035 as the County increases density of developed areas in order to maintain the remaining open spaces and agricultural lands.			

The AB 32 Scoping Plan suggests local governments estimate a reduction target for 2020 that is 15 percent below current emissions. Table 3-13 shows the 2020 reduction target for Riverside County’s community-wide emissions, the 2020 emissions projected for the County, and the difference between the two. This difference represents the total emissions that the County will need to reduce in order to meet the target by 2020.

<b>Table 3-13 2020 GHG Emissions Reduction Target</b>	
	<b>Metric Tons CO<sub>2</sub>e</b>
2020 Emissions	10,268,937
2020 Reduction Target	6,036,971
<b>Amount to Reduce by 2020</b>	<b>4,231,965</b>

With the reduction target set at 6,036,971 MT CO<sub>2</sub>e, the County will need to reduce emissions by 4,231,965 MT CO<sub>2</sub>e from the BAU 2020 emissions. Chapter 4 describes the efforts currently underway in Riverside County and the reduction strategies that would be implemented to reduce emissions in the County in order to reach the 2020 reduction target.

**3.6 EMISSIONS COMPARISON BY YEAR**

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**CHAPTER 4      GHG Emissions Reduction  
Programs and Regulations**



The State of California has set specific targets for reducing GHG emissions from the burning of fossil fuels in both power plants and vehicles by adopting various regulations. In addition, State energy efficiency and renewable requirements provide another level of reductions. In order to provide credit to the County for regulatory actions already taken or planned by the State of California, this CAP first evaluates the greenhouse gas reductions that will occur within the County as a result of these actions. These will be identified in the CAP as R1 reduction measures. The R1 measures are included here to show all of the anticipated reduction

strategies identified in the AB 32 Scoping Plan for implementation at the State Level that will ultimately result in a reduction of GHG emissions at the County level. The R1 measures are not administered or enforced by the County, but the County - by describing them herein- substantiates the reductions applied in association with these State-wide Measures.

R2 and R3 reduction measures will be incorporated at the County level to provide additional reductions in GHG emissions. R2 measures are those measures that can be quantified to show the value of the reduction from the incorporation of those measures; the R2 measures correspond to the Implementation Measures ( IM) included in Appendix N of the General Plan. R3 measures are measures that, although they provide a vehicle through which reductions in emissions will occur, cannot be quantified at this time. The R3 measures are supportive measures or methods of implementation for the R2 measures. A complete list of assumptions and reductions for each of the R1 and R2 measures is included in Appendix E of this CAP.

The following reduction measures are organized herein by source category (energy, solid waste, area source emissions, agriculture, transportation, and industrial) then by R1, R2, and R3 measure. The method to be used for numbering the mitigation measures will be to list the R designation (R1, R2, or R3) then an abbreviation of the source category, followed by the order number. So, R1-E1 is the first R1 measure within the energy category, R1-E2 is the second measure within the energy category, and so on. The source category abbreviations are as follows: T – transportation; E – energy; S – solid waste; L – area source (landscaping) emissions; W – purchased water; A – agriculture; and I – industrial.

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## 4.1 Existing Riverside County General Plan Policies Related to GHG

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Policies to reduce GHG emissions often overlap with policies addressing energy conservation, reduced automobile use, water conservation, and many other issues. Riverside County has many General Plan policies that help to reduce GHG emissions while targeting another policy applicable to the County. Table 4-1 below summarizes these General Plan policies.

4.1 EXISTING RIVERSIDE COUNTY GENERAL PLAN POLICIES RELATED TO GHG

**Table 4-1 General Plan Policies Related to Reducing GHG Emissions**

Sector	Element	Section	Policies
Energy Efficiency in Buildings	Land Use	Project Design	LU-4.1
	Multipurpose Open Space	Energy Conservation	OS-16.1 through OS-16.10
	Air Quality	Stationary Emissions	AQ-4.1, AQ-4.1, AQ-4.4
		Energy Efficiency and Conservation	AQ-5.1, AQ-5.2, AQ-5.4
Regional Agency Coordination	Land Use	Administration	LU-1.5
	Air Quality	Multi-Jurisdictional Cooperation	AQ-1.1 through AQ-1.4, AQ-1.7
Smart Growth	Land Use	Efficient Use of Land	LU-2.1
		Economic Development	LU-7.12
		Air Quality	LU-10.1
	Air Quality	Business Development	AQ-7.1, AQ-7.3
		Job-to-Housing Ratio	AQ-8.4 through AQ-8.9
Water Conservation	Land Use	Project Design	LU-4.1
	Circulation	Transportation System Landscaping	C-5.2
	Multipurpose Open Space	Water Conservation	OS-2.1 through OS-2.5
Reduce Automobile Use	Land Use	Efficient Use of Land	LU-2.1
		Project Design	LU-4.1
		Air Quality	LU-10.3, LU-10.4
		Circulation	LU-12.1, LU-12.3, LU-12.4
	Circulation	Planned Circulation Systems	C-1.2, C-1.7
		Pedestrian Facilities	C-4.1, C-4.9
		Transportation System Landscaping	C-5.2
		Public Transportation System	C-9.2
		Fixed Route Transit Service	C-11.2, C-11.4 through C-11.7
		Transit Oasis and Transit Centers	C-12.1 through C-12.3
		Passenger Rail	C-13.1 through C-13.3
		Bikeways	C-17.3, C-17.4
		Environmental Considerations	C-20.12
		Transportation Systems Management	C-21.1, C-21.9
		Multipurpose Open Space	Energy Conservation
	Air Quality	Mobile Pollution Sources	AQ-3.2, AQ-3.4
Trip Reduction		AQ-10.1 through AQ-10.4	

Sector	Element	Section	Policies
Renewable Energy/Alternative Fuel	Multipurpose Open Space	Renewable Energy	OS-10.1, OS-11.1 through OS-11.3, OS-12.1
	Air Quality	Transportation System Management Improvements	AQ-13.1
Reduce Waste	Air Quality	Energy Efficiency and Conservation	AQ-5.1

## 4.2 Transportation

### R1 Transportation Measures

The following list of R1 transportation related measures are those measures that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County.

#### R1-T1: ASSEMBLY BILL 1493: PAVLEY I

Assembly Bill (AB) 1493 (Pavley) required the California Air Resources Board (CARB) to adopt regulations that will reduce GHG from automobiles and light-duty trucks by 30 percent below 2002 levels by the year 2016, effective with 2009 models. By 2020, this requirement will reduce emissions in California by approximately 16.4 MMT of carbon dioxide equivalents (MMTCO<sub>2e</sub>), representing 17.3 percent of emissions from passenger/light-duty vehicles in the State.

#### R1-T2: ASSEMBLY BILL 1493: PAVLEY II

California committed to further strengthening the AB1493 standards beginning in 2017 to obtain a 45 percent GHG reduction from 2020 model year vehicles. This requirement will reduce emissions in California by approximately 4.0 MMTCO<sub>2e</sub>, representing 2.5 percent of emissions from passenger/light-duty vehicles in the State.

#### R1-T3: EXECUTIVE ORDER S-1-07 (LOW CARBON FUEL STANDARD)

The Low Carbon Fuel Standard (LCFS) will require a reduction of at least ten (10) percent in the carbon intensity of California's transportation fuels by 2020. By 2020, this requirement will reduce emissions in California by approximately 15 MMTCO<sub>2e</sub>, representing 6.9 percent of emissions from passenger/light-duty vehicles in the State.

#### R1-T4: TIRE PRESSURE PROGRAM

The AB32 early action measure involves actions to ensure that vehicle tire pressure is maintained to manufacturer specifications. By 2020, this requirement will reduce emissions in California by

## 4.2 TRANSPORTATION

approximately 0.55 MMTCO<sub>2</sub>e, representing 0.3 percent of emissions from passenger/light-duty vehicles in the State.

### R1-T5: LOW ROLLING RESISTANCE TIRES

This AB32 early action measure would increase vehicle efficiency by creating an energy efficiency standard for automobile tires to reduce rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.3 MMTCO<sub>2</sub>e, representing 0.2 percent of emissions from passenger/light-duty vehicles in the State.

### R1-T6: LOW FRICTION ENGINE OILS

This AB32 early action measure would increase vehicle efficiency by mandating the use of engine oils that meet certain low friction specifications. By 2020, this requirement will reduce emissions in California by approximately 2.8 MMTCO<sub>2</sub>e, representing 1.7 percent of emissions from passenger light-duty vehicles in the State.

### R1-T7: GOODS MOVEMENT EFFICIENCY MEASURES

This AB32 early action measure targets system wide efficiency improvements in goods movement to achieve GHG reductions from reduced diesel combustion. By 2020, this requirement will reduce emissions in California by approximately 3.5 MMTCO<sub>2</sub>e, representing 1.6 percent of emissions from all mobile sources (on-road and off-road) in the State.

### R1-T8: HEAVY-DUTY VEHICLE GHG EMISSION REDUCTION (AERODYNAMIC EFFICIENCY)

This AB32 early action measure would increase heavy-duty vehicle (long-haul trucks) efficiency by requiring installation of best available technology and/or CARB approved technology to reduce aerodynamic drag and rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.93 MMTCO<sub>2</sub>e, representing 1.9 percent of emissions from heavy-duty vehicles in the State.

### R1-T9: MEDIUM AND HEAVY-DUTY VEHICLE HYBRIDIZATION

The implementation approach for this AB 32 measure is to adopt a regulation and/or incentive program that reduce the GHG emissions of new trucks (parcel delivery trucks and vans, utility trucks, garbage trucks, transit buses, and other vocational work trucks) sold in California by replacing them with hybrids. By 2020, this requirement will reduce emissions in California by approximately 0.5 MMTCO<sub>2</sub>e, representing 0.2 percent of emissions from all on-road mobile sources in the State. This reduction is also equivalent to a 1.0 percent reduction of emissions from all heavy-duty trucks in the State.

### R1-T10: REGIONAL SB 375 TARGETS

Regional transportation emission reduction targets have been established pursuant to SB 375. Statewide, this requirement is expected to reduce emissions by 5 MMTCO<sub>2</sub>e, which is equivalent to 2 percent of emissions from all mobile emission sources. These emissions will be reduced through the implementation of Sustainable Community Strategies developed by the Metropolitan Planning

Organizations (MPOs) throughout the State, SCAG for Riverside County. CARB, in conjunction with SCAG, has adopted a target of an 8% decrease in transportation emissions by 2020 for the region. The reductions from SB 375 overlap with many of the State transportation reduction measures described above. Therefore, this R1 measure is expected to reduce Riverside's transportation emissions by 6% (rather than the 8% target) beyond what the other State-level transportation measures will reduce.

## **R2 Transportation Measures**

The following list of R2 measures are measures the County can incorporate into the new development projects for the reduction of transportation related emissions to achieve an AB 32 compliant reduction target.

### **R2-T1: EMPLOYMENT BASED TRIP AND VMT REDUCTION**

This R2 measure would implement General Plan Policies AQ 3.3, AQ 10.1, AQ 10.3, and AQ 10.4 through the adoption of a voluntary trip reduction program for new commercial and industrial development that promotes commuter-choices, employer transportation management, guaranteed ride home programs and commuter assistance and outreach type programs intended to reduce commuter vehicle miles traveled. A guaranteed ride home program is a program that ensures employees that take advantage of carpooling opportunities are guaranteed a safe ride home should the employee miss the carpool pick-up time due to work-related activities. This could be as simple as the employer paying for taxi service for the employee. Surveys within California have shown that ridesharing increases by 5% when a guaranteed ride home program is available (FTA 2006). To gain points within the Screening Table, employers with more than 100 employees within the unincorporated County would need to establish a trip reduction plan that would incorporate annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information at a minimum.

### **R2-T2: INCREASED RESIDENTIAL DENSITY**

Designing proposed projects with increased densities, where allowed by the General Plan and/or County zoning, could reduce GHG emissions associated with traffic in several ways. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. The reductions in GHG emissions are quantified based on reductions to VMT; the relationship between density and VMT is described by its elasticity. If a new development project demonstrates an increase in density (and hence a corresponding decrease VMT) beyond the average value for that particular land use type, then the project can garner points in the screening tables for new development. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. New development projects earn points for residential projects that increase housing density.

### **R2-T3: MIXED USE DEVELOPMENT**

Having different types of land uses near one another can decrease VMT since trips between land use types are shorter and may be accommodated by non-motorized methods of transportation. For example when residential areas are in the same neighborhood as retail and office buildings, a resident does not

## 4.2 TRANSPORTATION

need to travel outside of the neighborhood to meet his/her trips needs. A new development project will earn points in the screening tables by including diversity of land uses within a ¼ mile. Due to the variations available in implementing a mixed use project, the reductions, and applicable points associated, will be determined on a case-by-case basis.

### R2-T4: PREFERENTIAL PARKING

This R2 measure would implement General Plan Policies AQ 3.3 and AQ 10.3 by encouraging proposed development projects to incorporate a comprehensive parking program for public and private parking lots to facilitate carpooling and alternate transportation. Incentives to encourage carpooling and the use of alternate transportation methods could include:

- Providing reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles;
- Provide larger parking spaces that can accommodate vans used for ride-sharing programs and reserve them for vanpools; and include adequate passenger waiting/loading areas;
- Restricting the number of parking spaces within the development by sharing parking among different land uses where feasible. For example in areas where there are multiple land uses provide resident restricted parking during nighttime hours (7pm to 7am) and open the parking lot for use by patrons of the surrounding commercial buildings during daytime hours; and
- Provide convenient pedestrian pathways through parking areas.

### R2-T5: ROADWAY IMPROVEMENTS INCLUDING SIGNAL SYNCHRONIZATION AND TRANSPORTATION FLOW MANAGEMENT

This R2 measure would implement General Plan Policies AQ 12.1 and AQ 12.3. Proposed development projects that pay fare-share fees toward signal synchronization improvements or construct signalized intersections within a traffic signal synchronization system, would gain points within the Screening Table through this R2 Measure. These modifications include, but are not limited to, synchronization of signals, improvement of traffic flow, the development of parallel roadways, and support for the extension of freight rail into Riverside County's industrial areas. Even when required for other reasons, such as warranted by project traffic study results, such circulation improvements may still qualify for Screening Table points under this measure.

### R2-T6: PROVIDE A COMPREHENSIVE SYSTEM OF FACILITIES FOR NON-MOTORIZED TRANSPORTATION

This measure emphasizes alternative non-motorized transportation hubs and encourages the creation of bike lanes and walking paths connecting to schools and other public facilities, provision of adequate bicycle parking; and encouragement of bicycle stations, attended parking, and other attended bicycle support facilities at intermodal hubs. Bicycle stations are full-service bicycle facilities that, in addition to providing secure, guarded bicycle parking could include other amenities such as "valet" bicycle service, showers, bicycle rentals, or repair services. These types of facilities are intended for large residential and non-residential development as well as large employers (e.g., of 500 or more employees). In addition, the establishment of multi-use trails that promote off-street bicycle and pedestrian travel, as well as provision of secure bicycle racks, along these pathways would also promote their use.

### R2-T7: EXPAND RENEWABLE FUEL/LOW-EMISSION VEHICLE USE

Implementation of the following R2 measure would promote the expanded use of renewable fuel and low-emission vehicles within proposed projects. The project will earn points in the screening table by making low-emissions or electric vehicle use more accessible by including one or both of the following project components:

- Providing preferential parking for ultra-low emission, zero-emission, and alternative- fuel vehicles;
- Provide electric vehicle charging stations within the development.

### R2-T8: ANTI-IDLING ENFORCEMENT

This R2 measure involves the adoption and enforcement of an Anti-Idling Policy for heavy-duty diesel trucks, including local delivery trucks and long-haul truck transport within the unincorporated County. This policy would prohibit idling of on and off-road heavy duty diesel vehicles for more than five minutes. This policy would be implemented by new commercial and industrial projects with loading docks or delivery trucks. Such projects would be required to post signage at all loading docks and/or delivery areas directing drivers to shut down their trucks after five minutes of idle time. Also, employers who own and operate truck fleets would be required to inform their drivers of the anti-idling policy.

### R2-T9: INCREASE PUBLIC TRANSIT

New development projects will expand the local transit network by coordinating with regional transit authorities to include bus turnouts and other transit accommodations in design plans. This will encourage the use of transit and therefore reduce VMT. Unincorporated Riverside County hosts one Metrolink transit station; expanding connections to this station as well as other Metrolink stations in the neighboring cities will increase ridership and decrease VMT.

### R2-T10: EMPLOYEE COMMUTE ALTERNATIVE SCHEDULE

Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks. Employers are encouraged to offer enough flexibility for employees to adopt these alternative schedules.

## R3 Transportation Measures

The following R3 measure enhances and ensures the reductions accounted for within the R2 measures through education programs or are measures that will reduce emissions but cannot be quantified.

### R3-T1: REGIONAL LAND USE & TRANSPORTATION COORDINATION

This R2 measures promotes the development and use of transit between the incorporated and unincorporated portions of the County as well as within the Unincorporated County. This reduction measure will also be enhanced by the implementation of SCAG's RTP and SCS.



## 4.3 ENERGY

### R3-T2: GOVERNMENT FLEET ALTERNATIVE VEHICLES

Riverside County municipal fleet consists of vehicles ranging from small passenger cars to large trucks and fire engines. As older vehicles retire, the new replacement vehicles will continue to increase the fuel efficiency of the County's fleet. The County's use of fuel efficient and alternative fuel vehicles helps to promote their use by local residents.

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## 4.3 Energy

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### R1 Energy Measures

The following list of R1 building energy efficiency related measures are those measures that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County.

#### R1-E1: RENEWABLE PORTFOLIO STANDARD FOR BUILDING ENERGY USE

Senate Bills (SBs) 1075 (2002) and 107 (2006) created the State's Renewable Portfolio Standard (RPS), with an initial goal of 20 percent renewable energy production by 2010. Executive Order (EO) S-14-08 establishes a RPS target of 33 percent by the year 2020 and requires State agencies to take all appropriate actions to ensure the target is met. The 33 percent RPS by 2020 goal is supported by the California Air Resources Board (CARB), though its feasibility is not certain due to current limitations in production and transmission of renewable energy.



#### R1-E2 AND R1-E3: AB1109 ENERGY EFFICIENCY STANDARDS FOR LIGHTING (RESIDENTIAL AND COMMERCIAL INDOOR AND OUTDOOR LIGHTING)

Assembly Bill (AB1109) mandated that the California Energy Commission (CEC) on or before December 31, 2008, adopt energy efficiency standards for general purpose lighting. These regulations, combined with other State efforts, shall be structured to reduce State-wide electricity consumption in the following ways:

- R1-E2: At least 50 percent reduction from 2007 levels for indoor residential lighting by 2018; and
- R1-E3: At least 25 percent reduction from 2007 levels for indoor commercial and outdoor lighting by 2018.

#### R1-E4: ELECTRICITY ENERGY EFFICIENCY (AB32)

This measure captures the emission reductions associated with electricity energy efficiency activities included in CARB's AB32 Scoping Plan that are not attributed to other R1 or R2 reductions as described

## CHAPTER 4 GHG EMISSIONS REDUCTION PROGRAMS AND REGULATIONS

in this report. This measure includes energy efficiency measures that CARB views as crucial to meeting the State-wide 2020 target, and will result in additional emissions reductions beyond those already accounted for in California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24, Part 6 of the California Code of Regulations; hereinafter referred to as, "Title 24 Energy Efficiency Standards"), the County's adopted Green Building ordinance (effective January 1, 2011), etc. By 2020, this requirement will reduce emissions in California by approximately 21.3 MMTCO<sub>2</sub>e, representing 17.5 percent of emissions from all electricity in the State. This measure includes the following strategies:

- "Zero Net Energy" buildings (buildings that combine energy efficiency and renewable generation so that they, based on an annual average, extract no energy from the grid);
- Broader standards for new types of appliances and for water efficiency;
- Improved compliance and enforcement of existing standards;
- Voluntary efficiency and green building targets beyond mandatory codes;
- Voluntary and mandatory whole-building retrofits for existing buildings;
- Innovative financing to overcome first-cost and split incentives for energy efficiency, on-site renewables, and high efficiency distributed generation;
- More aggressive utility programs to achieve long-term savings;
- Water system and water use efficiency and conservation measures;
- Additional industrial and agricultural efficiency initiatives; and
- Providing real time energy information technologies to help consumers conserve and optimize energy performance.

### R1-E5: NATURAL GAS ENERGY EFFICIENCY (AB32)

This measure captures the emission reductions associated with natural gas energy efficiency activities included in CARB's AB32 Scoping Plan that are not attributed to other R1 or R2 reductions, as described in this report. This measure includes energy efficiency measures that CARB views as crucial to meeting the State-wide 2020 target, and will result in additional emissions reductions beyond those already accounted for in California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24, Part 6 of the California Code of Regulations; hereinafter referred to as, "Title 24 Energy Efficiency Standards"), the County's adopted Green Building ordinance (effective January 1, 2011), etc. By 2020, this requirement will reduce emissions in California by approximately 4.3 MMTCO<sub>2</sub>e, representing 6.2 percent of emissions from all natural gas combustion in the State. This measure includes the following strategies:

- "Zero Net Energy" buildings (buildings that combine energy efficiency and renewable generation so that they, based on an annual average, extract no energy from the grid);

### 4.3 ENERGY

- Broader standards for new types of appliances and for water efficiency;
- Improved compliance and enforcement of existing standards;
- Voluntary efficiency and green building targets beyond mandatory codes;
- Voluntary and mandatory whole-building retrofits for existing buildings;
- Innovative financing to overcome first-cost and split incentives for energy efficiency, on-site renewables, and high efficiency distributed generation;
- More aggressive utility programs to achieve long-term savings;
- Water system and water use efficiency and conservation measures;
- Additional industrial and agricultural efficiency initiatives; and
- Providing real time energy information technologies to help consumers conserve and optimize energy performance.

#### R1-E6: INCREASED COMBINED HEAT AND POWER (AB32)

This measure captures the reduction in building electricity emissions associated with the increase of combined heat and power activities, as outlined in CARB's AB32 Scoping Plan. The Scoping Plan suggests that increased combined heat and power systems, which capture "waste heat" produced during power generation for local use, will offset 30,000 GWh State-wide in 2020. Approaches to lowering market barriers include utility-provided incentive payments, a possible combined heat and power portfolio standard, transmission and distribution support systems, or the use of feed-in tariffs. By 2020, this requirement will reduce emissions in California by approximately 6.7 MMTCO<sub>2</sub>e, representing 7.6 percent of emissions from all electricity in the State.

#### R1-E7: INDUSTRIAL EFFICIENCY MEASURES (AB32)

This measure captures the reduction in industrial building energy emissions associated with the energy efficiency measures for industrial sources included in CARB's AB32 Scoping Plan. By 2020, this requirement will reduce emissions in California by approximately 1.0 MMTCO<sub>2</sub>e, representing 3.9 percent of emissions from all industrial natural gas combustion in the State. CARB proposes the following possible State-wide measures:

- Oil and gas extraction;
- GHG leak reduction from oil and gas transmission;
- Refinery flare recovery process improvements; and
- Removal of methane exemption from existing refinery regulations.

## **R1-E8: RENEWABLE PORTFOLIO STANDARD (33 PERCENT BY 2020) RELATED TO WATER SUPPLY AND CONVEYANCE**

This measure would increase electricity production from eligible renewable power sources to 33 percent by 2020. A reduction in GHG emissions results from replacing natural gas-fired electricity production with zero GHG-emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for water supply and conveyance in California by approximately 21.3 MMTCO<sub>2</sub>e, representing 15.2 percent of emissions from electricity generation (in-State and imports).

## **R2 Energy Measures**

The following list of R2 measures are measures related to building energy efficiency the County can incorporate into the new development projects are to achieve an AB 32 compliant reduction target of 15% below existing emissions levels by the year 2020.

### **R2-E1: RESIDENTIAL ENERGY EFFICIENCY PROGRAM**

This R2 measure would implement General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9, and involves the adoption of a program that facilitates energy efficient design for new residential buildings such that the residential units are 5% to 20% more efficient than the current Title 24 Standards. The high end of this energy efficiency program is equal to that of the LEED for Homes and ENERGY STAR programs; aspects of these programs are included as options for new development in the screening table, but attaining LEED or ENERGY STAR certification is not an explicit requirement. The County energy efficiency program is a voluntary program with a flexible menu of options for compliance included in the screening table.

The 2008 Title 24 Energy Standards were adopted by the Energy Commission in April 2008 and compliance with the 2008 standards went into effect January 1, 2010. In an effort to meet the overall goal of the California Energy Efficiency Strategic Plan of reaching zero net energy for residential buildings by 2020, the stringency of the Title 24 Energy Standards as regulated and required by the State will continue to increase every three years. As energy efficiency standards increase the County may want to periodically re-evaluate their percentage beyond Title 24 goal to ensure it is still a feasibly achievable goal. Residential developments within the unincorporated portions of Riverside County are encouraged to participate in the volunteer Residential Energy Efficiency Program. This voluntary program would set a minimum goal of achieving energy efficiency of 5% greater than current Title 24 Standards. Incentives to participate in this volunteer program include prioritization and streamlining of the application process for residential projects that achieve the minimum goal. Towards this end, the County's screening tables for new development include a menu of options with points assigned to each option. As long as the proposed project meets the required point allotment (100 points total) the project will be deemed consistent with the County plan for reducing GHG emissions. This system will assure flexibility in the implementation of this reduction measure. This reduction goal can be achieved through the incorporation of the strategies outlined in the bullet points below, although the list is not exclusive and other actions are also feasible:

### 4.3 ENERGY

- Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;
- Install solar water heaters;
- Install energy conserving windows and insulation;
- Install energy efficient lighting;
- Optimize conditions for natural heating, cooling and lighting by building siting and orientation;
- Use features that incorporate natural ventilation;
- Install light-colored “cool” pavements, and strategically located shade trees along all bicycle and pedestrian routes; and
- Incorporate skylights; reflective surfaces, and natural shading in building design and layouts.

#### R2-E2: RESIDENTIAL RENEWABLE ENERGY PROGRAM

This R2 measure would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3, and facilitate the voluntary incorporation of renewable energy (such as photovoltaic panels) into new residential developments. For participating developments, the use of onsite renewable energy should be sufficient to reduce the new home’s projected use of grid energy by 50%.

The California Energy Commissions’ New Solar Homes Partnership is a component of the California Solar Initiative and provides rebates to developers of 6 or more units where 50% of the units include solar power. In addition this measure would encourage that all residents be equipped with “solar ready” features where feasible, to encourage future installation of solar energy systems. Such features would include the proper solar orientation (south facing roof sloped at 20° to 55° from the horizontal), clear access on south-sloped roofs, electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water tank. The incentive program should provide enough incentives to result in approximately 50% of new residential development participation in this program, thereby resulting in a 25% reduction in electrical consumption from new residential developments.

As an alternative to, or in support of, providing onsite renewable energy, the project proponent could also buy into a purchased energy offset program through the South Coast Air Quality Management District (SCAQMD), Southern California Edison (SCE), Mission Energy or others that will allow for the purchase of electricity generated from renewable energy resources offsite. Purchased energy offsets (or a combination of incorporated renewables and purchased offsets) must be equal to 25% of the total projected energy consumption for the development.

#### R2-E3: RESIDENTIAL RETROFIT IMPLEMENTATION PROGRAM

This R2 measure would implement General Plan Policies OS 16.5, OS 16.7, and OS 16.9 and initiate a County program that facilitates the incorporation of energy reduction measures for residential buildings undergoing major renovations. AB 811 is a potential funding source to the County for implementing incentive programs to encourage residences within the County to undertake energy efficiency retrofitting and reducing energy consumption in retrofitted homes by a minimum of 15%. As with the new development, residential retrofits will comply with a menu of options of points assigned to them. As long as a developer meets the required total point allotment (100 points) the developer will meet the

requirements to have the project deemed consistent with this plan. This system will be provided to assure flexibility in the implementation of all reduction measures. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following:

- Replace inefficient air conditioning and heating units with new energy efficient models
- Replace older, inefficient appliances with new energy efficient models
- Replace old windows and insulation with top quality windows and insulation
- Install solar water heaters
- Replace inefficient and incandescent lighting with energy efficient lighting
- Weatherize the existing building to increase energy efficiency.

### **R2-E4: RESIDENTIAL RENEWABLE RETROFIT PROGRAM**

This R2 measure would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3 and initiate an incentive program that encourages residents to retrofit their homes with photovoltaic panels such that 50% of all of the home's electrical usage is offset. The CEC's Solar Initiative has incentives available to homeowners.

### **R2-E5: COMMERCIAL ENERGY EFFICIENCY PROGRAM**

This R2 measure would implement General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9, and involves the adoption of a County Program that facilitates the energy efficient design for new commercial buildings so that new commercial buildings are 5% to 20% more efficient than the current Title 24 Standards. The high end of this voluntary energy efficiency program is 10% greater than the minimum requirements of the LEED and ENERGY STAR programs. As energy efficiency standards increase the County may want to periodically re-evaluate their percentage beyond Title 24 goal to ensure it is still a feasibly achievable goal.

Commercial developments within the unincorporated portions of Riverside County are encouraged to participate in the voluntary Commercial Energy Efficiency Program. This voluntary program would set a minimum goal of achieving energy efficiency of 5% greater than current Title 24 Standards. Incentives to participate in this volunteer program would include prioritization and streamlining of the application process for commercial projects that achieve the minimum goal. As described in R2-E1 above, the County screening tables provide all developers with a list of potentially feasible GHG reduction measures that reflect the current state of the regulatory environment. The menu of options have points assigned to them and as long as the proposed project meets the required point allotment (100 points) it will be deemed to be consistent with the County's GHG reduction plan. This system will provide flexibility in the implementation of all reduction measure. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following:

- Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;
- Install and solar water heaters;
- Install top quality windows and insulation;
- Install energy efficient lighting;
- Optimize conditions for natural heating, cooling and lighting by building siting and orientation;

#### 4.3 ENERGY

- Use features that incorporate natural ventilation;
- Install light-colored “cool” pavements, and strategically located shade trees along all bicycle and pedestrian routes; and
- Incorporate skylights, reflective surfaces, and natural shading in building design and layouts.

#### R2-E6: COMMERCIAL/INDUSTRIAL RENEWABLE ENERGY PROGRAM

This R2 measure would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3, and facilitate the voluntary incorporation of onsite renewable (solar or other renewable) energy generation into the design and construction of new commercial, office, and industrial development. A project can earn points in the screening table for renewable energy generation if it is incorporated such that a minimum of 20% of the proposed project’s total energy needs are offset. In addition this measure would encourage all facilities be equipped with “solar ready” features where feasible, to facilitate future installation of solar energy systems. These features should include the proper solar orientation (south-facing roof sloped at 20° to 55° from the horizontal), clear access on south sloped roofs, electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water tank.

As an alternative to, or in support of, providing onsite renewable energy, the project proponent could buy into a purchased energy offset program through the South Coast Air Quality Management District (SCAQMD), Southern California Edison (SCE) or others that will allow for the purchase of electricity generated from renewable energy resources offsite. Purchased energy offsets (or a combination of incorporated renewables and purchased offsets) should equal 20% of the total projected energy consumption for the development.

#### R2-E7: COMMERCIAL/INDUSTRIAL RETROFIT PROGRAM

This R2 measure would implement General Plan Policies AQ 5.2, AQ 5.4, OS 16.1, OS 16.7, and OS 16.9 and encourage all commercial or industrial buildings undergoing major renovations to reduce their energy consumption by a minimum of 20%. As with the new development, a menu of options will be provided to assure flexibility in the implementation of this reduction measure. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following energy efficiency and renewable energy technologies:

- Replace inefficient air conditioning and heating units with new energy efficient models
- Replace older, inefficient appliances with new energy efficient models
- Replace old windows and insulation with top-quality windows and insulation
- Install solar water heaters
- Replace inefficient and incandescent lighting with energy efficient lighting
- Weatherize the existing building to increase energy efficiency
- Install solar panels

### **R2-E8: INDUCTION STREETLIGHT RETROFITS**

New induction street lamps are estimated to last five times longer and consume 50% less energy than the traditional high pressure sodium (HPS) lamps. Changing out old lamps for new ones reduces electricity use and saves money in the long-run. Retrofitting streetlights shall be done in accordance with the County's Mt. Palomar Lighting Ordinance, which requires use of low pressure sodium vapor (LPSV) street lighting within 15 miles of Mt. Palomar Observatory and County Ordinance No. 915 regulating light pollution Countywide.

### **R2-E9: WATER USE REDUCTION INITIATIVE**

This R2 measure would implement General Plan Policies LU 4.1d and f, C 5.2, and OS 2.1 through OS 2.4 and provide incentives for all new proposed development projects to comply with the California Green Building Standards Code. Under the California Green Building Code, new developments are required to reduce indoor potable water use by 20% beyond the Energy Policy Act of 1992 fixture performance requirements, and to reduce outdoor potable water use by 50% from a mid-summer baseline average consumption through irrigation efficiency, native plant selection, the use of recycled water and/or captured rainwater, for example. The State is dependent upon local water purveyors and jurisdictions to implement these new requirements. This R2 measure is provided here to enable its implementation and ensure points are allocated from the Screening Tables in accordance with the resultant benefits.

## **R3 Energy Measures**

The following R3 measures enhance and/or insure the reductions accounted for within the R2 measures through education programs or are measures that will reduce emissions but cannot be quantified.

### **R3-E1: ENERGY EFFICIENT DEVELOPMENT, AND RENEWABLE ENERGY DEPLOYMENT FACILITATION AND STREAMLINING**

This measure would encourage the County to identify and remove regulatory and procedural barriers to the implementation of green building practices and the incorporation of renewable energy systems. This includes the General Plan Energy Element Policies. Implementation of the Energy Element Policies includes updating of codes and zoning requirements and guidelines among others to facilitate renewable energy deployment and streamlining. This measure could be further enhanced by providing incentives for energy efficient projects such as priority in the reviewing, permitting, and inspection process. Additional incentives could include permit streamlining and CEQA streamlining in exchange for incorporating green building practices or renewable energy systems.

### **R3-E2: ENERGY EFFICIENCY TRAINING & PUBLIC EDUCATION**

This measure would provide public education and publicity about energy efficiency measures and reduction programs available within the County, including rebates and incentives available for residences and businesses. In addition, this measure would provide training in green building materials, techniques, and practices for all plan review and building inspection staff.



## 4.4 AREA SOURCE EMISSIONS

### R3-E3: ENERGY EFFICIENCY AND SOLAR ENERGY FINANCING

This measure would facilitate the incorporation of innovative, grant funded or low-interest financing programs for energy efficiency and renewable energy projects for both existing and new developments. This would include financing for heating, ventilation, air conditioning, lighting, water heating equipment, insulation, weatherization, and residential and commercial renewable energy. A few potential options for funding this measure include:

- Use the money from offset purchases to provide grants to allow for the offset of some of the cost to existing residents in making energy efficiency upgrades;
- Target local funds to assist affordable housing developers to incorporate renewable energy sources and energy efficiency design features into low-income housing during development or through retrofit programs.
- Establish a Finance District, approve a bond purchase, and administer agreements to allow property owners to implement energy efficiency retrofits or designs and/or install renewable systems. Under this provision repayment could be incorporated as a special tax on the property owner's property tax bill.
- Funding of other incentives to encourage the use of renewable energy sources and energy efficient equipment and lighting.

### R3-E4: CROSS-JURISDICTIONAL COORDINATION

Under this reduction measure the County would coordinate with other local governments, special districts, nonprofit, and other organizations in order to optimize energy efficiency and renewable resource development and usage throughout the County. This would allow for economies of scale and shared resources to more effectively implement these environmental enhancements.

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## 4.4 Area Source Emissions

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Area source emissions make up a small portion of the County's total emissions, however, the following reduction measures can contribute toward reducing emissions in order to meet the AB 32 2020 reduction target. No statewide measures are related to area source emissions, however, the R2 measures are from the SCAQMD.

### R2 Area Source Measures

#### R2-L1: ELECTRIC LANDSCAPING EQUIPMENT

This measure reduces GHG emissions by substituting electric landscaping equipment for the traditional gas-powered equipment. Electric lawn equipment including lawn mowers, leaf blowers and vacuums,

shredders, trimmers, and chain saws are available. When electric landscaping equipment is used in place of conventional equipment, direct GHG emissions from natural gas combustion are replaced with indirect GHG emissions associated with the electricity used to power the equipment. In the Screening Tables for New Development, projects would be able to earn points for including accessible outdoor outlets in the project design.

### **R2-L2 & R2-L3: SCAQMD HEALTHY HEARTHS**

AQMD's Rule 445-Wood Burning Devices, adopted on March 7, 2008, apply to residents in the South Coast Air Basin and include the following key components:

- R2-L2: No permanently installed indoor or outdoor wood burning devices in new developments;
- R2-L3: Establishes a mandatory wood burning curtailment program on high pollution days during November through February, beginning November 1, 2011. Based on current air quality conditions, there may be 10 to 25 mandatory curtailment days in specific areas (AQMD 2008).

## **R3 Area Source Measures**

The following R3 measures are related to landscape strategies that will help reduce GHG emissions and can be incorporated into development projects without additional cost. These measures strategically place trees and other landscape mechanisms that create shade to reduce the heat island effect within parking lots and adjacent to buildings, which in turn, reduces the temperature of buildings and cars during the summer.

### **R3-L1: EXPAND COUNTY TREE PLANTING**

This program evaluates the feasibility of expanding tree planting within the County. This includes the evaluation of potential carbon sequestration from different tree species, potential reductions of building energy use from shading, and GHG emissions associated with pumping water used for irrigation. Commercial and retail development should be encouraged to exceed shading requirements by a minimum of 10% and to plant low emission trees. All future development would be encouraged to preserve native trees and vegetation to the furthest extent possible.

### **R3-L2: HEAT ISLAND PLAN**

The implementation of this measure would include promoting the use of cool roofs, cool pavements, and parking lot shading to the entire County by increasing the number of strategically placed shade trees. Further, County Design Guidelines should be amended to include that all new developments and major renovations (additions of 25,000 square feet or more) would be encouraged to incorporate the following strategies such that heat gain would be reduced for 50% of the non-roof impervious site landscape (including parking, roads, sidewalks, courtyards, and driveways). The strategies include:

- Strategically placed shade trees;
- Paving materials with a Solar Reflective Index (SRI) of at least 29;

#### 4.5 PURCHASED WATER

- Open grid pavement system; or
- Covered parking (with shade or cover having an SRI of at least 29).

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## 4.5 Purchased Water

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The purchased water imported from the State Water Project or from the Colorado River uses a large amount of energy for transportation. The following measures help to reduce the need for imported water and, therefore, reduce GHG emissions from the energy associated with water.

### R1 Water Measures

#### R1-W1: RENEWABLE PORTFOLIO STANDARD RELATED TO WATER SUPPLY AND CONVEYANCE

This measure would increase electricity production from eligible renewable power sources to 33 percent by 2020. A reduction in GHG emissions results from replacing natural gas-fired electricity production with zero GHG-emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for water supply and conveyance in California by approximately 21.3 MMTCO<sub>2</sub>e, representing 15.2 percent of emissions from electricity generation (in-State and imports).

### R2 Water Measures

#### R2-W1: WATER USE REDUCTION INITIATIVE

This initiative would reduce emissions associated with electricity consumption for water treatment and transportation. This measure encourages the County to adopt a per capita water use reduction goal in support of the Governors Executive Order S-14-08 which mandates the reduction of water use of 20 percent per capita. The County's adoption of a water use reduction goal would introduce requirements for new development and would provide cooperative support for water purveyors that are required to implement these reductions for existing developments. The County would also provide internal reduction measures such that County facilities will support this reduction requirement. New development projects will be able to earn points in the Screening Tables for New Development by incorporating design features that reduce water use.

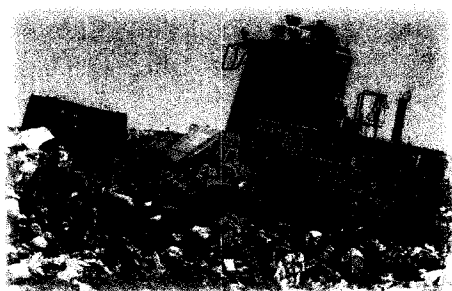
#### R2-W2: INCREASE RECLAIMED WATER USE

California water supplies come from a variety of sources including ground water, surface water, and reservoirs. For Southern California in particular, much of the water is transported over long distances, which can require a substantial amount of electricity. Recycled, or reclaimed, water is water reused after wastewater treatment for non-potable uses instead of returning the water to the environment. Since less energy is required to provide reclaimed water, fewer GHG emissions are associated with reclaimed

water use compared to the average California water supply use. The Screening Table would allow new development to achieve points by including the use of recycled water.

## 4.6 Solid Waste

### R1 Solid Waste Measure



The following R1 solid waste related measure is a measure that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County.

#### R1-S1: SOLID WASTE MEASURES

The CARB Scoping Plan recommends three measures for reducing emissions from Municipal Solid Waste at the State level, including: 1) landfill methane control; 2) increase the efficiency of landfill methane capture; and 3) high recycling/zero waste. CARB is in the process of developing a discrete early action program for methane recovery (1), which was adopted in early 2010. This measure is expected to result in a 1.0 MMTCO<sub>2</sub>e reduction by 2020. Other measures proposed by CARB include increasing efficiency of landfill methane capture (2) and instituting high recycling/zero waste policies (3). Potential reductions associated with these measures are still to be determined. CARB estimates a preliminary one-time cost for adoption of these measures to be approximately \$70 per ton of CO<sub>2</sub> reduced.

### R2 Solid Waste Measures

The following list of R2 measures are candidate measures the County can incorporate into the development review process related to solid waste to achieve an AB 32 compliant reduction target.

#### R2-S1: COUNTY DIVERSION PROGRAM

This R2 measure would implement General Plan Policy AQ 4.1 and AQ 5.1 through a County-wide waste diversion plan to further exceed the state requirements by diverting 75% of all waste from landfills by 2020. The following is a potential list of waste reduction measures that can be incorporated into development projects that will further strengthen existing waste reduction/diversion programs:

- Encourage commercial, office, and industrial development to adopt a voluntary procurement standard and prioritize those products that have less packaging, are reusable, recyclable, or compostable;
- Include recycling and green waste collection infrastructure (assigned areas with separate designated bins for each type of recycled material) within residential, commercial, and industrial development;
- Require a minimum of 15% of materials used in construction be sourced locally, as feasible; and
- Encourage the use of recycled building materials and cement substitutes for new developments.

## 4.7 AGRICULTURE

### R2-S2: CONSTRUCTION DIVERSION PROGRAM

This R2 measure also implements General Plan Policies AQ 4.1 and AQ 5.1 by giving incentives through points within the Screening Table to new development projects that provide diversion of 60% of construction waste. This provides a 10% increase in diversion beyond the AB 2176, Section 42911, requirement that dictates that development projects provide adequate areas for collecting and loading recyclable materials and requires a 50% diversion rate prior to being issued a building permit.

## R3 Solid Waste Measures

The following R3 measures enhance and/or insure the reductions accounted for within the R2 measures through education programs that help participation and compliance of the R2 measures identified above.

### R3-S1: ENCOURAGE INCREASED EFFICIENCY OF THE GAS TO ENERGY SYSTEM AT LANDFILLS.

This R3 measure would encourage the landfills operated by Riverside County Waste Management to keep current with upgrades in efficiencies to landfill gas capture and gas to energy systems and to upgrade as feasible when significant increases in conversion efficiencies are available.

### R3-S2: WASTE EDUCATION PROGRAM

This R3 measure would provide County-wide public education and increased publicity about commercial and residential recycling. This measure would educate the public about waste reduction options available at both residential and commercial levels, including composting, grass recycling, waste prevention, and available recycling services.

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## 4.7 Agriculture

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## R1 Agriculture Measure

The following R1 agriculture related measure is a measure that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County.

### R1-A1: METHANE CAPTURE AT LARGE DAIRIES

This is an AB 32 voluntary measure to encourage the installation of methane digesters to capture methane emissions at large dairies. By 2020, this requirement will reduce emissions in California by approximately one (1) MMTCO<sub>2</sub>e, representing 7.8 percent of CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management and enteric fermentation at dairies in the State.

## **R2 Agriculture Measures**

Agriculture is an important, but separate, economic sector from new development projects within the County. Because of the difference between agricultural activities and new residential, commercial and industrial development within the County, IMs for agricultural source emissions are not recommended at this time.

## **R3 Agriculture Measure**

The following R3 measure enhances and/or insures the reductions accounted for within the R2 measures through education programs that help participation and compliance of the R2 measures identified above.

### **R3-A1: PROMOTE SOIL MANAGEMENT PRACTICES**

Under this reduction measure the County would promote soil management practices that reduce nitrogen dioxide emissions through strategies such as fertilizer management, nitrification inhibitors, water management, and efficient use of fossil fuels.

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## **4.8 Industrial**

The following list of R1 industrial related measures are those measures that CARB has identified in the AB 32 Scoping Plan that will result in emission reductions within the County. This section describes GHG emission reductions for the existing and proposed national, state, or regional industrial fuel combustion measures that will result in future GHG reductions for the industrial sector and do not require significant County action.

## **R1 Industrial Measures**

### **R1-I1: OIL AND GAS EXTRACTION COMBUSTION RELATED GHG EMISSION REDUCTION**

This AB 32 measure would reduce combustion emissions from oil and gas extraction. By 2020, this requirement will reduce emissions in California by approximately 1.8 MMT CO<sub>2</sub>e, representing 13 percent of combustion emissions from oil and gas extraction in the State.

### **R1-I2: STATIONARY INTERNAL COMBUSTION ENGINE ELECTRIFICATION**

This AB 32 measure would affect owners and operators of industrial and commercial engines over 50 horsepower used as primary power sources by replacing internal combustion engines with electric motors. By 2020, this requirement will reduce emissions in California by approximately 0.3 MMTCO<sub>2</sub>e, representing 0.5 percent of combustion emissions from industrial sources (non-coal) in the State.

#### 4.8 INDUSTRIAL

## R2 Industrial Measures

Industrial point source emitters of GHGs are required to comply with Title V Permits under the federal Clean Air Act. As such, these types of emissions are not under the jurisdiction of the County and, hence, no IMs were developed or are proposed for point source emitters. Other types of industrial emissions (mobile source, energy, etc.) are reduced through R1 measures and the measures described throughout this document.

**CHAPTER 4 GHG EMISSIONS REDUCTION PROGRAMS AND REGULATIONS**

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**CHAPTER 5 Total Estimated Reductions**

In 2020, Riverside County is projected to emit a total of 10,268,937MT CO<sub>2</sub>e without the incorporation of reduction measures. With implementation of the reduction measures discussed in Chapter 4, the County emissions for 2020 would be reduced to 6,035,904 MT CO<sub>2</sub>e. The statewide reduction measures (the R1 Measures in Chapter 4) would reduce close to half of Riverside County’s emissions and make a substantial contribution toward reaching the 2020 reduction target. However, the County would need to supplement the state measures with the implementation of the local implementation measures (IM measures) discussed in Chapter 4.

## 5.1 Reductions from Statewide Measures

The following tables summarize the GHG reductions afforded to the County from the implementation of the statewide R1 reduction measures. Table 5-1 shows the annual MT CO<sub>2</sub>e and the corresponding percent of emissions reduced for each of the R1 statewide measures described in Chapter 4 during the year 2020. Note that some R1 measures are not quantifiable and are not included in Table 1.

<b>Table 5-1 Statewide Measures and Associated Emissions Reduced from the 2020 Inventory</b>		
<b>Transportation</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Transportation Emissions</b>
R1-T1 & R1-T2: Pavley Vehicle Efficiency*	265,500	9.9%
R1-T3: Low Carbon Fuel Standard	194,607	7.2%
R1-T4: Tire Pressure	10,038	0.2%
R1-T5: Low Rolling Resistance Tires	6,672	0.1%
R1-T6: Low Friction Oils	56,859	1.2%
R1-T7: Goods Movement Efficiency	25,085	0.5%
R1-T8: Aerodynamic Efficiency	29,311	0.6%
R1-T9: Medium/Heavy Duty Hybridization	21,709	0.4%
R1-T10: Regional SB 375 Targets	304,415	6.2%
<b>Transportation Total</b>	<b>915,520</b>	<b>18.5%</b>
<b>Energy</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Energy Emissions</b>
R1-E1: RPS – 33% Renewable by 2020	364,913	12.9%
R1-E2 & R1-E3: Lighting	161,263	5.7%
R1-E4: Electrical Energy Efficiency	126,896	4.5%
R1-E5: Natural Gas Energy Efficiency	24,520	0.9%
R1-E6: Increased Combined Heat and Power	96,332	3.4%
R1-E7: Industrial Efficiency	79,993	2.8%
<b>Energy Total</b>	<b>853,915</b>	<b>30.2%</b>
<b>Purchased Water</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Water Emissions</b>
R1-W1: RPS – 33% Renewable by 2020	33,172	19.0%
<b>Purchased Water Total</b>	<b>33,172</b>	<b>19.0%</b>
<b>Agriculture</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Agriculture Emissions</b>
R1-A1: Methane Capture at Dairies	15,603	1.0%
<b>Agriculture Total</b>	<b>15,603</b>	<b>1.0%</b>
<b>Total Reductions</b>	<b>1,818,210</b>	<b>17.7% of total</b>
* Because Pavely I and Pavely II work in tandem for total reductions and would not have equivalent reductions if implemented independently of one another, they are shown together in this table.		

Table 5-2 compares the 2020 inventory (without the incorporation of any reduction measures) to the community-wide emissions with the statewide reductions. As shown in the table, the statewide

## 5.1 REDUCTIONS FROM STATEWIDE MEASURES

reduction measures would reduce 17.6 percent of the County's total community wide annual emissions by the year 2020.

	2020 BAU MT CO <sub>2</sub> e	State Reductions MT CO <sub>2</sub> e	2020 Reduced MT CO <sub>2</sub> e	% Reduction
Transportation	4,950,296	915,520	4,034,776	18.4%
Energy	2,837,295	853,915	1,983,380	30.2%
Area Sources	442,033	0	442,033	0.0%
Purchased Water	175,344	33,172	142,172	19.0%
Solid Waste	341,145	0	341,145	0.0%
Agriculture	1,522,823	15,603	1,507,220	1.0%
<b>Total</b>	<b>10,268,937</b>	<b>1,818,210</b>	<b>8,450,727</b>	<b>17.7%</b>

Although the statewide measures would significantly reduce Riverside County's emissions, they would not be enough to reach the established 2020 reduction target. The County's reduction target was calculated as 15% below 2008 levels, which equates to 6,036,971 MT CO<sub>2</sub>e. The statewide reduction measures would bring the County down to 8,450,727 MT CO<sub>2</sub>e, which leaves 2,413,756 MT CO<sub>2</sub>e to be reduced by measures implemented at the community level, see Table 5-3.

	MT CO <sub>2</sub> e
2020 with State Reductions	8,450,727
2020 Reduction Target	6,036,971
<b>Amount left to Reduce</b>	<b>2,413,756</b>

The measures described in Chapter 4 would be implemented to reduce the remaining 2,413,756 MT CO<sub>2</sub>e in order to reach the 2020 reduction target for Riverside County. The 2020 Reduction Target is an estimated 41.2% below the 2020 inventory. The statewide reduction measures work to reduce the County's emissions by 17.7% from the 2020 inventory, as shown in Table 5-4.

	% from 2020 Inventory
2020 Reduction Target	41.2%
State Reduction Measures	17.7%
<b>Amount left to Reduce</b>	<b>23.5%</b>

The remaining 23.5 percent of emissions would be reduced through the implementation of the measures described in Chapter 4. Measures include several categories of reductions: the energy-efficiency measures that the County has incorporated since 2008; measures that implement policies included in the proposed General Plan Update; and additional measures that applicants could include as part of their project when filling out the Screening Tables.

## 5.2 Reductions from Implementation Measures

The IMs discussed in Chapter 4 would be implemented primarily through the Screening Tables for New Development and with General Plan policies. The measures go beyond the State measures to reduce GHG emissions in order to meet the 2020 reduction target. Table 5-5 summarizes the MT CO<sub>2</sub>e and the corresponding percentage of emissions reduced for each of the R2 measures.

<b>Table 5-5 R2 Measures and Associated Emissions Reduced from 2020 Inventory</b>		
<b>Transportation</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Transportation Emissions</b>
R2-T1: Employment Based Trip and VMT Reduction	387,095	7.9%
R2-T2: Increased Residential Density	281,934	5.7%
R2-T3: Mixed Use Development	216,284	4.4%
R2-T4: Preferential Parking	2,177	0.04%
R2-T5: Roadway Improvements – Signals, Flow	152,229	3.1%
R2-T6: Non-Motorized Transportation Facilities	33,536	0.7%
R2-T7: Expand Alternative Fuel Vehicle Use	69,429	1.4%
R2-T8: Anti-Idling Enforcement	37,315	0.8%
R2-T9: Increase Public Transit	253,313	5.1%
R2-T10: Employee Commute Alternative Schedules	73,320	1.5%
<b>Transportation Total</b>	<b>1,503,361</b>	<b>30.6%</b>
<b>Energy</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Energy Emissions</b>
R2-E1: Residential Energy Efficiency Program	72,229	2.5%
R2-E2: Residential Renewable Energy Program	83,347	3.0%
R2-E3: Residential Retrofit Implementation Program	57,941	2.1%
R2-E4: Residential Renewable Retrofit Program	55,896	2.0%
R2-E5: Commercial Energy Efficiency Program	129,901	4.6%
R2-E6: Commercial/Industrial Renewable Program	35,481	1.3%
R2-E7: Commercial/Industrial Retrofit Program	38,471	1.4%
R2-E8: Induction Streetlight Retrofits	18,696	0.7%
<b>Energy Total</b>	<b>491,962</b>	<b>17.4%</b>
<b>Area Source</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Area Source Emissions</b>
R2-L1: Electric Landscape Equipment	123,961	28.9%
R2-L2: No New Wood-burning Devices	68,559	16.0%
R2-L3: Mandatory Curtailment Days	13,730	3.2%
<b>Area Source Total</b>	<b>206,251</b>	<b>48.1%</b>
<b>Water</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Water Emissions</b>
R2-W1: Water Use Reduction Initiative	28,283	16.2%
R2-W2: Increase Reclaimed Water Use	4,582	2.6%
<b>Water Total</b>	<b>32,865</b>	<b>18.8%</b>
<b>Solid Waste</b>	<b>MT CO<sub>2</sub>e Reduced</b>	<b>% of Solid Waste Emissions</b>
R2-W1: County Diversion Program	159,133	46.6%
R2-W2: Construction Diversion Program	13,687	4.0%
<b>Solid Waste Total</b>	<b>172,821</b>	<b>50.7%</b>

With the statewide reduction measures and the implementation of the IMs, Riverside County would reduce its community-wide emissions to a level below the established 2020 reduction target. Table 5-6 summarizes the 2020 inventory emissions, the GHG reductions associated with the statewide and IMs, and the reduced 2020 emissions.

### 5.3 REDUCED 2020 COMMUNITY-WIDE EMISSIONS INVENTORY

	2020 MT CO <sub>2</sub> e	State Reductions MT CO <sub>2</sub> e	IM Reductions MT CO <sub>2</sub> e	Reduced 2020 MT CO <sub>2</sub> e	% Reduction
Transportation	4,950,296	915,520	1,503,361	2,529,432	48.9%
Energy	2,837,295	853,915	491,962	1,485,129	47.7%
Area Sources	442,033	0	211,843	230,190	47.9%
Purchased Water	175,344	33,172	32,865	109,021	37.8%
Solid Waste	341,145	0	13,687	174,134	49.0%
Agriculture	1,522,823	15,603	0	1,507,220	1.0%
<b>TOTAL</b>	<b>10,268,937</b>	<b>1,818,210</b>	<b>2,415,693</b>	<b>6,035,126</b>	<b>41.2%</b>

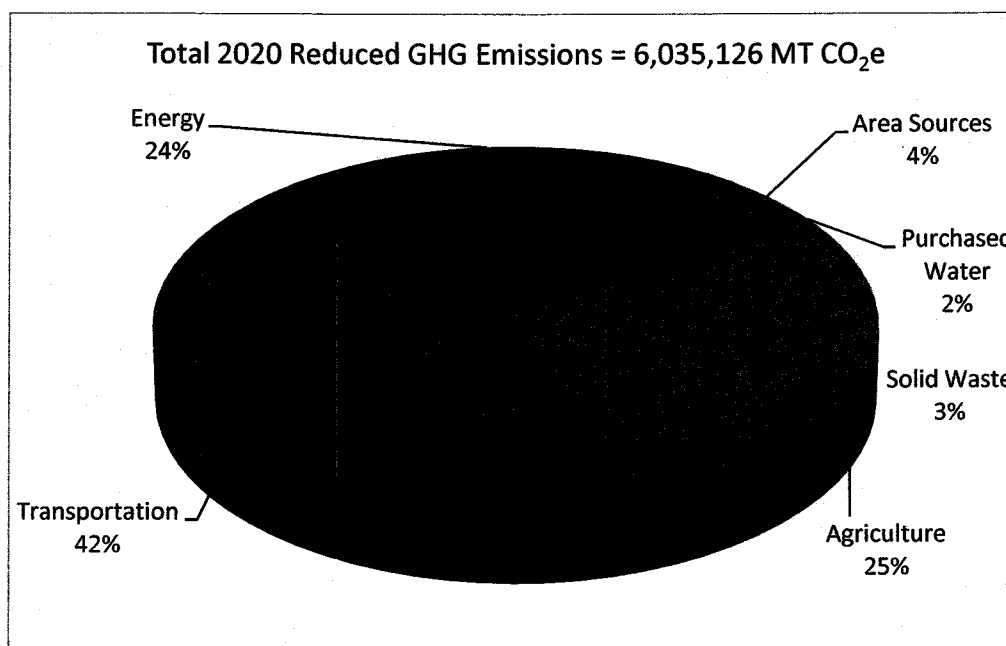
## 5.3 Reduced 2020 Community-Wide Emissions Inventory

With the implementation of GHG reduction measures, Riverside County is projected to reduce its emissions to a total of 4,233,811 MT CO<sub>2</sub>e, which is 1,846 MT CO<sub>2</sub>e below the 2020 reduction target. This is a decrease of 41.2 percent from the County's 2020 BAU emissions inventory and 15 percent from the 2008 emissions. The reduction measures reduce GHG emissions from all sources of community-wide GHG emissions including transportation, energy, area sources, water, solid waste, and agriculture. The following section describes the reduced emissions by source for the year 2020.

### Emissions by Source

The emissions by source for the reduced 2020 inventory were calculated by applying a percent reduction to the 2020 emissions for each reduction measure. Table 5-7 summarizes the reduced 2020 County emissions of CO<sub>2</sub>e as broken down by emissions category. Figure 5-1 is a graphical representation of Table 5-7. A detailed breakdown of reduced 2020 emissions by category is available in Appendix D of this CAP.

Category	Metric tons of CO <sub>2</sub> e
Transportation	2,529,432
Energy	1,485,129
Area Sources	230,190
Purchased Water	109,021
Solid Waste	174,134
Agriculture	1,507,220
<b>Total</b>	<b>6,035,126</b>

**Figure 5-1 Reduced 2020 GHG Emissions Generated by Source**

## 5.4 Reduced 2035 Community-Wide Emissions Inventory

Beyond 2035, Riverside County's GHG emissions would reduce with the continued implementation of the 2020 reduction strategies, expansion of the transit system according to the forthcoming SCAG RTP, and increased stringency of state reduction measures. In addition to the 2020 reduction measures, the following assumptions were included in the reduced 2035 GHG emissions:

- Pavley vehicle efficiency standards would continue beyond 2035 at a similar rate.
- The low carbon fuel standard would increase from 10 percent to 12 percent.
- Continued expansion of medium and heavy duty vehicle hybridization.
- Expanded SB 375 target with SCAG RTP/SCS implementation.
- 0.4% reduction in transportation emissions associated with CA High Speed Rail project.
- 30% increase in residential density post 2020.
- 10% increase in mixed use development post 2020.
- Expanded preferential parking programs.
- Expanded signal synchronization and traffic flow management programs.

## 5.4 REDUCED 2035 COMMUNITY-WIDE EMISSIONS INVENTORY

- 60% increase in facilities for bicycle and pedestrian transportation post 2020.
- Double the number of electric vehicles post 2020.
- Expanded transportation network post 2020.
- Increased percent of RPS to 39% by 2035.
- Continued regulations for energy efficient lighting.
- Increased electrical and natural gas energy efficiency post 2020.
- Expanded combined heat and power systems.
- Increased industrial efficiency by 60% post 2020.
- New homes achieve energy efficiency 25% beyond current Title 24.
- 65% participation of new home with renewable energy systems.
- 50% of existing homes undergo energy efficiency and/or renewable energy retrofits.
- 25% of new commercial development installs renewable energy systems.
- 60% of existing commercial developments undergo energy efficiency retrofits.
- Water conservation expands to 30%.
- Reclaimed water use increases to 10%
- Construction waste diversion doubles post 2020.
- Methane capture at dairies doubles post 2020.

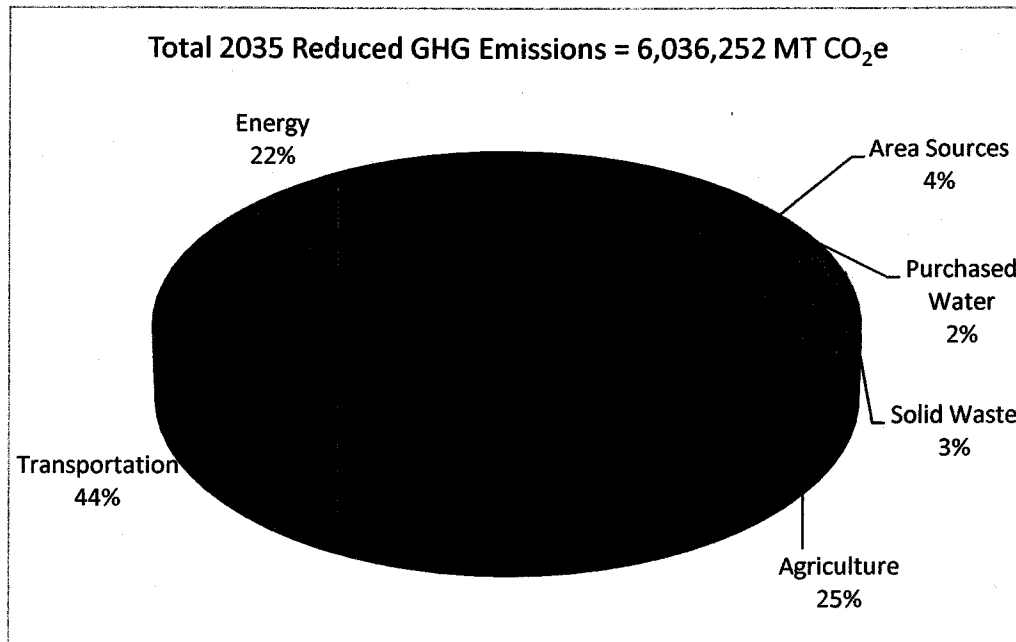
With the continued implementation of the Screening Tables for New Development and predicted future developments at the state level, Riverside County's 2035 emissions would be reduced down to a total GHG emissions inventory of approximately 6,036,252 MT CO<sub>2</sub>e, this represents a 53 percent decrease from the 2035 BAU emissions inventory and is below the 2020 reduction target. The assumptions described above represent one possible scenario for achieving reductions beyond 2020. Future inventory updates, monitoring of reduction measures, and updating policies will be necessary to create a successful post 2020 plan.

### Emissions by Source

The emissions by source for the 2035 reduced inventory were calculated by applying a percent reduction to the 2035 emissions inventory for each reduction measure. Table 5-8 summarizes the 2035 County emissions of CO<sub>2</sub>e as broken down by emissions category. Figure 5-3 is a graphical representation of Table 5-8. A detailed breakdown of the reduced 2035 emissions by category is available in Appendix D of this CAP.

Table 5-8 Reduced 2035 GHG Emissions by Source	
Category	Metric tons of CO <sub>2</sub> e
Transportation	2,622,357
Energy	1,326,416
Area Sources	256,482
Purchased Water	146,121
Solid Waste	198,061
Agriculture	1,485,815
<b>Total</b>	<b>6,036,252</b>

Figure 5-3 Reduced 2035 GHG Emissions by Source



## 5.5 Emissions Summary

With the implementation of the reduction measures outlined in Chapter 4, Riverside County would reduce its emissions to a level below the 2020 reduction target calculated in Chapter 3. This represents a 41% decrease from the 2020 BAU inventory and is consistent with the State's GHG reduction goals. Table 5-9 summarizes the existing 2008 emissions, the 2020 BAU emissions inventory, and the reduced 2020 emissions.



## 5.5 EMISSIONS SUMMARY

<b>Table 5-9 2020 GHG Emissions Comparison</b>				
Source Category	Metric tons of CO <sub>2</sub> e			
	2008	2020 BAU	Reduced 2020	% Reduced
Transportation	2,850,520	4,950,296	2,529,432	48.9%
Energy	1,585,565	2,837,295	1,485,129	47.7%
Area Sources	269,181	442,033	230,190	47.9%
Purchased Water	152,473	175,344	109,021	37.8%
Solid Waste	214,149	341,145	174,134	49.0%
Agriculture	2,030,431	1,522,823	1,507,220	1.0%
<b>Total</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>6,035,126</b>	<b>41.2%</b>
<b>Emission Reduction Target</b>		<b>6,036,971</b>	<b>6,036,971</b>	
<b>Below Reduction Target?</b>		<b>No</b>	<b>Yes</b>	
Note: Mass emissions of CO <sub>2</sub> e shown in the table are rounded to the nearest whole number. Totals shown may not add up due to rounding.				

Beyond 2020, these reduction measures would continue to reduce emissions particularly from new development projects and transportation. Without reduction measures the County's growth beyond 2020 would result in more GHG emissions, however, these emissions can be offset with the implementation of the Screening Tables for New Development and the General Plan's policies to reduce GHG emissions. Table 5-10 summarizes the County's existing 2008 emissions, anticipated 2035 emissions inventory, and reduced 2035 emissions.

<b>Table 5-10 2035 GHG Emissions Comparison</b>				
Source Category	Metric tons of CO <sub>2</sub> e			
	2008	BAU 2035	Reduced 2035	% Reduced
Transportation	2,850,520	6,461,733	2,622,357	59.4%
Energy	1,585,565	3,617,816	1,326,416	63.3%
Area Sources	269,181	529,395	256,482	51.6%
Purchased Water	152,473	293,083	146,121	50.1%
Solid Waste	214,149	424,125	198,061	53.3%
Agriculture	2,030,431	1,522,823	1,485,815	2.4%
<b>Total</b>	<b>7,102,319</b>	<b>12,848,975</b>	<b>6,036,252</b>	<b>53.0%</b>
<b>Emission Reduction Target</b>		<b>6,036,971</b>	<b>6,036,971</b>	
<b>Below Reduction Target?</b>		<b>No</b>	<b>Yes</b>	
Note: Mass emissions of CO <sub>2</sub> e shown in the table are rounded to the nearest whole number. Totals shown may not add up due to rounding.				

## CHAPTER 5 TOTAL ESTIMATED REDUCTIONS

Table 5-10 shows that the continued implementation of the reduction measures combined with the anticipated increased stringency of state reduction measures would reduce 2035 emissions by 53 percent, which is below the 2020 reduction target. The State's ambitious reduction target for the year 2050 is to reduce emissions 80% below 1990 emissions. In order to reach this target, technology must advance significantly and more stringent measures for building and vehicle efficiency must be implemented. While the measures included in this CAP would provide a plan for the County to reduce emissions enough to meet the 2020 target and experience further reductions through to 2035, the CAP would need to be updated periodically in the future in order to update these measures.

**5.5 EMISSIONS SUMMARY**

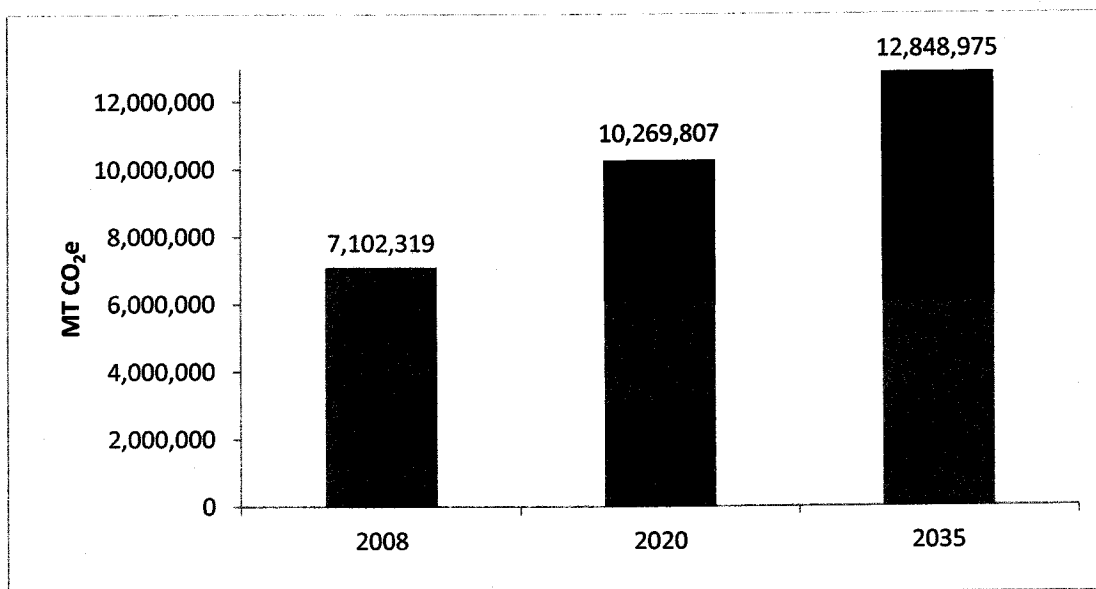
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## CHAPTER 6 Conclusions

This CAP serves as a guide to help the County implement the objectives of conserving resources and reducing GHG emissions. This document also serves as a technical resource for the proposed update of the County’s current General Plan and other land use related documents that may require evaluation and documentation of GHG emissions. Figure 6-1 show a comparison between the emission inventories, including the reduced 2020 BAU and 2035 BAU inventories. The blue bar represents the calculated GHG inventory for Riverside County for 2008. The red bars show the projected growth in GHG emissions in 2020 BAU and 2035 BAU based on the General Plan growth rates. The green bars demonstrate the reduced inventories after the implementation of the statewide and community reduction measures described in Chapter 4.

**Figure 6-1 Riverside County GHG Emissions by Year**



This CAP sets a target to reduce community-wide GHG emission emissions by 15% from 2008 levels by 2020 consistent with the State reduction goals in AB 32. The CARB Scoping Plan outlines the reduction strategies designed to meet the statewide reduction goal of AB 32. The County has a reduction strategy as described in Chapter 4 that would meet the State reduction goal. Reduction measures provided herein would ensure that Riverside County meets the AB 32 reduction target of reducing to 15% below 2008 levels (reduce down to 6,036,971 MT CO<sub>2</sub>e) by 2020. Such programs include strengthening the County’s existing programs as well as implementing the Screening Tables for New Development. In some cases, implementation will require the cooperation of other agencies, private businesses, and residents. The success of these measures will be tracked using indicators and targets such as those described in this CAP. Even with the anticipated growth, the modernization of vehicle fleets, combined with the continued implementation of the proposed measures, will reduce GHG emissions by approximately 4,233,811 MT CO<sub>2</sub>e from 2020 levels. Therefore, the implementation of the State (R1) measures combined with the County’s R2 and R3 measures will reduce GHG emissions down to 6,035,126 MT CO<sub>2</sub>e by year 2020, which is 1,846 MT CO<sub>2</sub>e below the reduction target.

## 5.5 EMISSIONS SUMMARY

Beyond 2020, Riverside County would continue implementation of the Screening Tables. During this time, the reduction measures implemented through the Screening Tables would continue to reduce GHG emissions from new development. Additionally, it is assumed that the State measures would be reinforced post-2020 to further reduce emissions. With these assumptions, the County's emissions would decrease to a level below the 2020 reduction target by 2035. Continued implementation of this CAP in post 2020 years is discussed in Chapter 7.





# CHAPTER 7 Implementation

This section describes implementation steps for the CAP to support achievement of the GHG reduction goals for the community at large. Success in meeting the County's GHG emission reduction goal will depend on cooperation, innovation, and participation by the County and residents, businesses, and government entities in the County's land use jurisdiction with regards to implementing the CAP. This section outlines key steps that the County will follow for the implementation of this CAP.

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## 7.1 STEP 1—Administration and Staffing

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The County will appoint an Implementation Coordinator to coordinate implementation of this CAP. The Implementation Coordinator will oversee and document implementation of the reduction measures and provide periodic monitoring of emissions.

The Implementation Coordinator will, at a minimum, include the following departments, but will be expanded as needed to ensure coordinated leadership in plan implementation:

- County Executive Office (EO)—the executive office can provide economic, financial, and administrative guidance and support to the Implementation Coordinator.
- Transportation Land Management Agency (TLMA)—the County's Land Use umbrella agency will provide coordination between the various land use divisions, including, but not limited to Building & Safety and Transportation and will assist in the implementation of New Development Implementation Measures.
- County Economic Development Agency-Facilities Management Division—this County division administers the energy efficiency improvements to County owned facilities being constructed as a result of the Energy Efficiency and Conservation Block Grant (EECBG) funding.
- Planning Division – Planning can provide expertise in the project entitlement process and provide long-term planning support.

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## 7.2 STEP 2—Financing and Budgeting

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The Implementation of the CAP will require creative, continuing, and committed financing in order to work. Local, regional, state, and federal public sources of funding will be needed along with the substantial involvement of the private sector. The County Implementation Plan will take into account the costs and staff resources throughout implementation of the plan as well as the financial benefits and cost savings. The following different financing options will be explored by the County:

- State and Federal Grants and Low-interest Loans —As described below there are a variety of grant and loan programs that exist in various sectoral areas.
- Support from Local Businesses, Non-Profits, and Agencies—Opportunities for public/private partnerships (like the SCE partnerships) exist to provide cooperation on many aspects of the CAP including energy efficiency retrofits, waste minimization, transit promotion, and education.

## 7.2 STEP 2—FINANCING AND BUDGETING

- **Self-Funding and Revolving Fund Programs**—Innovative programs to fund residential solar investments.
- **Agreements with Private Investors**—Energy service companies and other private companies can finance up-front investments in energy efficiency and then be reimbursed through revenues from energy savings.
- **Taxes and Bonds**—Various local governments have used targeted finance instruments for solar, transportation, vehicle improvements, and landfill methane controls.

Given that financing is vital to implementing many of the CAP measures, a review of current and potential funding sources was completed for the different sectors covered in this CAP and is presented below to help early phase implementation of the CAP. Whether at the federal, western regional or state level, it appears likely that there will be some form of a “cap and trade” system in place within several years. This system, depending on its particular character, is likely to influence energy prices (such as for electricity, natural gas, and vehicle fuels), and may make currently cost-ineffective measures more economically feasible in the medium term and allow the financing of a broader range of plan measures.

### Energy Efficiency and Renewable Energy Financing

**Federal Energy Efficiency Community Block Grants (EECBG).** As part of the stimulus package (the “American Recovery and Reinvestment Act” or ARRA), signed into law by President Obama in spring 2009, block grants are available for energy efficiency planning and improvements in the building, transportation, and other sectors. The purpose of the EECBG Program is to assist eligible jurisdictions in creating and implementing strategies to: reduce fossil fuel emissions in a manner that is environmentally sustainable and that maximizes, to the greatest extent practicable, benefits for local and regional communities; reduce the total energy use of the eligible entities; and improve energy efficiency in the building sector, the transportation sector, and other appropriate sectors. Eligible activities include: development of an energy efficiency and conservation strategy; technical consultant services; residential and commercial building energy audits; financial incentive programs; energy efficiency retrofits; energy efficiency and conservation programs for buildings and facilities; development and implementation of certain transportation programs; building codes and inspections; certain distributed energy projects; material conservation programs; reduction and capture of methane and greenhouse gases from landfills and dairies; efficiency traffic signals and street lighting; renewable energy technologies on government buildings; and other appropriate activity.

**Federal Tax Credits for Energy Efficiency.** On October 3, 2008, President Bush signed into law the “Emergency Economic Stabilization Act of 2008.” This bill extended tax credits for energy efficient home improvements (windows, doors, roofs, insulation, HVAC, and non-solar water heaters). These residential products during 2008 were not eligible for a tax credit, as previous tax credits had expired at the end of 2007. The bill also extended tax credits for solar energy systems and fuel cells to 2016. New tax credits were established for small wind energy systems and plug-in hybrid electric vehicles. Tax credits for

builders of new energy efficient homes and tax deductions for owners and designers of energy efficient commercial buildings were also extended.

See: [http://www.energystar.gov/index.cfm?c=products.pr\\_tax\\_credits](http://www.energystar.gov/index.cfm?c=products.pr_tax_credits).

#### SCE Energy Efficiency / Renewable Energy Incentives

- Online or mail-in Home Energy Efficiency Survey. This 15-minute survey gives helpful energy-saving tips that will also help the environment. The questions and tips are tailored are about residential energy usage.
- Rebate programs for residential use include; lighting, appliances, heating and cooling, multifamily housing, pool, solar leadership and customer generation.
- Energy Centers provide free information, training, and support to make important Energy Management and energy efficiency choices.
- SCE Energy Manager offers online access to usage information and detailed cost analyses business energy use.
- Financial Offerings include on-Bill Financing, Zero-interest financing towards the purchase and installation of qualifying energy efficient equipment for commercial, industrial and agricultural customers.
- Regulation & Compliance Support “The Cool Planet Project” assists customers with recent installations or efficiency projects resulting in excess of one million kWh of energy in joining the Climate Registry.
- Solar Leadership helps create a cleaner energy future with innovative solutions that make it possible for you to join the solar movement.
- Self-Generation provides financial incentives for installing self-generation equipment to meet all or a portion of facility’s energy needs.
- Specialized Services for Facilities:
- New Buildings-Receive technical assistance in the design and construction of new energy efficient buildings.
- Savings by Design: New construction builders and buyers can receive design assistance, owner incentives, and design team incentives.
- California Advanced Homes - Incentives, design assistance, and technical education and services to encourage home builders to build home that exceed California’s Title 24 code standards by at least 15%.
- Full-service solutions are available to qualifying customers to receive assistance in identifying and evaluating energy efficiency opportunities within existing buildings.
- Retro Commissioning - Receive assistance to improve the bottom line in existing building’s operations through specialized services to detect inefficiencies in complex building systems, and to determine optimum operating conditions.

## 7.2 STEP 2—FINANCING AND BUDGETING

- Heating Ventilation & Air Conditioning - Lower operating costs and increase equipment life through proper HVAC installation and regular maintenance. Future programs will focus on two key components:
  - A/C Quality Maintenance, and
  - A/Q Quality Installation.

**AB 811 Financing Districts.** AB 811 permits the creation of assessment districts to finance installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, industrial, or other real property. Riverside County's partnership with WRCOG in creation of the Energy Efficiency and Water Conservation Program allows home and business owners to utilize this type of financing program and avoid upfront costs associated with energy system installations. Financing is repaid through the property tax bill and repayment obligations remain with the property when it is sold to a new owner.

**California Energy Commission (CEC) Energy Efficiency Financing.** The CEC offers up to \$3 million per application in energy efficiency financing and low interest loans to cities and counties for installing energy-saving projects. Examples of projects include: lighting systems, pumps and motors, streetlights and LED traffic signals, automated energy management systems/controls, building insulation, energy generation including renewable and combined heat and power projects, heating and air conditioning modifications, and waste water treatment equipment.

See <http://www.energy.ca.gov/efficiency/financing/>

**California Energy Commission Bright Schools Program.** This is a collaborative project of the CEC, California Conservation Corps, local utility companies and other qualifying energy service companies to assist schools in undertaking energy efficiency projects. Project staff will guide schools through identifying and determining a project's feasibility, securing financing for the project, and purchasing and installing the new energy efficient equipment.

See <http://www.energy.ca.gov/efficiency/brightschoools/index.html>

## Transportation Financing

**Federal Energy Efficiency Community Block Grants (EECBG).** As described above, eligible activities include development and implementation of certain transportation programs and efficiency traffic signals and street lighting.

**Regional Transportation Improvement Program (RTIP).** The Regional Transportation Improvement Program (RTIP) is funded from 75 percent of the funds made available for transportation capital improvement projects under the State Transportation Improvement Program (STIP). This program targets urban projects that are needed to improve transportation within the region. The Southern California Association of Governments (SCAG) and RCTC recommends to the California Transportation Commission (CTC) the selection of these projects, which can include state highway improvements, local roads, public transit, intercity rail, grade separations, and more.

**Interregional Improvement Program (IIP).** The Interregional Improvement Program (IIP) is funded from 25 percent of the funds made available for transportation capital improvement projects under the STIP. This program targets projects that are needed to improve interregional movement of people and goods. Caltrans recommends to the CTC the selection of these projects, which can include state highway improvements, intercity passenger rail, mass transit guide ways, or grade separation projects.

## Waste Reduction Financing

**California Integrated Waste Management Board Grants and Loans.** The CIWMB offers funding opportunities authorized by legislation to assist public and private entities in the safe and effective management of the waste stream. See <http://www.ciwmb.ca.gov/grants/> for more details.

## Water Conservation and Treatment Financing

**Clean Water State Revolving Funds.** CWSRFs fund water quality protection projects for wastewater treatment, nonpoint source pollution control, and watershed and estuary management. CWSRFs have funded over \$74 billion, providing over 24,688 low-interest loans to date.

See <http://www.epa.gov/owm/cwfinance/cwsrf/index.htm> for more details.

CWSRF's offer:

- **Low Interest Rates, Flexible Terms**—Nationally, interest rates for CWSRF loans average 2.3 percent, compared to market rates that average 5 percent. For a CWSRF program offering this rate, a CWSRF funded project would cost 22 percent less than projects funded at the market rate. CWSRFs can fund 100 percent of the project cost and provide flexible repayment terms up to 20 years.
- **Funding for Nonpoint Source Pollution Control and Estuary Protection**—CWSRFs provided more than \$167 million in 2009 to control pollution from nonpoint sources and for estuary protection, more than \$3 billion to date.
- **Assistance to a Variety of Borrowers**—The CWSRF program has assisted a range of borrowers including municipalities, communities of all sizes, farmers, homeowners, small businesses, and nonprofit organizations.
- **Partnerships with Other Funding Sources**—CWSRFs partner with banks, nonprofits, local governments, and other federal and state agencies to provide the best water quality financing source for their communities.

## 7.3 STEP 3—Timeline and Prioritization

The County will develop an implementation schedule based on the completion of the full cost effectiveness analysis. Prioritization will be based on the following factors:

### 7.3 STEP 3—TIMELINE AND PRIORITIZATION

- Cost effectiveness;
- GHG reduction efficiency;
- Availability of funding;
- Level of County Control;
- Ease of implementation; and
- Time to implement.

In general consideration of these factors, the following is an outline of key priorities for three (3) phases starting in 2012 through 2020.

- Phase 1 (2012-2014): Development of key ordinances, completion of key planning efforts, implementation of most cost-effective measures, and support of voluntary efforts.
- Phase 2 (2014–2017): Continued implementation of first tier measures, implementation of second tier measures, and implementation of key planning outcomes from Phase 1.
- Phase 3 (2017–2020): Continued implementation of first and second tier measures, implementation of third tier of measures.

Because the goals of this CAP are aggressive, success in meeting the CAP goals depend on some flexibility in the GHG reduction actions. The County is committed to flexibility in implementing the reduction measures and meeting the goals of this CAP. Many of the reduction measures in this Plan may be implemented through a menu of options. The goals of each reduction measure can often be achieved through a variety of means, especially those related to building energy efficiency. For example, the County will develop energy efficient design programs (measures R2-E3 and R2-E4). Compliance with the energy efficient design programs can be achieved through many combinations of actions including (but not limited to): installing energy efficient appliances, lighting, and HVAC systems; installing solar panels and solar water heaters; siting and orienting buildings to optimize conditions for natural heating, cooling, and lighting; installing top-quality windows and insulation; and incorporating natural shading, skylights, and reflective surfaces. Table 7-1 presents the potential timeline and phasing schedule for the GHG reduction measures.

<b>Table 7-1 GHG Reduction Measure Timeline and Phasing Schedule</b>	
<b>Reduction Measure</b>	<b>Phase</b>
<b>Transportation</b>	
R2-T1: Employment Based Trip and VMT Reduction	1, 2, 3
R2-T2: Increased Residential Density	1, 2, 3
R2-T3: Mixed Use Development	1, 2, 3
R2-T4: Preferential Parking	1, 2, 3

**Table 7-1 GHG Reduction Measure Timeline and Phasing Schedule**

Reduction Measure	Phase
R2-T5: Roadway Improvements – Signals, Flow	1
R2-T6: Non-Motorized Transportation Facilities	1, 2, 3
R2-T7: Expand Alternative Fuel Vehicle Use	1, 2, 3
R2-T8: Anti-Idling Enforcement	2
R2-T9: Increase Public Transit	2
R2-T10: Employee Commute Alternative Schedules	1, 2, 3
<b>Energy</b>	
R2-E1: Residential Energy Efficiency Program	1
R2-E2: Residential Renewable Energy Program	1
R2-E3: Residential Retrofit Implementation Program	2
R2-E4: Residential Renewable Retrofit Program	2
R2-E5: Commercial Energy Efficiency Program	1
R2-E6: Commercial/Industrial Renewable Program	1
R2-E7: Commercial/Industrial Retrofit Program	2
R2-E8: Induction Streetlight Retrofits	1
<b>Area Source</b>	
R2-L1: Electric Landscape Equipment	1
R2-L2: No New Wood-burning Devices	1
R2-L3: Mandatory Curtailment Days	1
<b>Water</b>	
R2-W1: Water Use Reduction Initiative	1
R2-W2: Increase Reclaimed Water Use	2, 3
<b>Solid Waste</b>	
R2-W1: County Diversion Program	2
R2-W2: Construction Diversion Program	2

## 7.4 STEP 4—Public Participation

The citizens and businesses in Riverside County are integral to the success of GHG reduction efforts. Their involvement is essential in order to reach the reduction goals because this CAP depends on a combination of state and local government efforts, public and private sources of finance, and the voluntary commitment, creativity, and participation of the community at large. The County must strike a balance between development and environmental stewardship to keep the economy strong and, at the



## 7.5 STEP 5—PROJECT REVIEW

same time, protect the environment. The County will educate stakeholders such as businesses, business groups, residents, developers, and property owners about the CAP and encourage participation in efforts to reduce GHG emissions in all possible sectors.

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### 7.5 STEP 5—Project Review

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The CEQA guidelines support projects that lower the carbon footprint of new development, and encourage programmatic mitigation strategies that may include reliance on adopted regional blueprint plans, CAPs, and general plans that meet regional and local GHG emissions targets and that have also undergone CEQA review. The criteria needed to use adopted plans in evaluating impacts of GHG emissions from subsequent development projects is found in CEQA Guidelines § 15183.5. Once adopted, this CAP fulfills these requirements. The County is responsible for ensuring that new projects conform to these guidelines and meet the goals and requirements outlined in this CAP.

The County will implement the reduction measures for new development during the CEQA review, through the use of a County GHG Screening Table document based upon the CAP. The County GHG Screening Table document will provide guidance for the analysis of development projects and divide projects into two broad categories based upon the CEQA review they are going through. The screening table will provide a menu of reduction options. If a project can obtain 100 points from the screening table, the mitigated project will implement pertinent reduction measures such that it meets the reduction goals of the CAP and a less than significant finding can be made for the Project. The menu of options in the screening table is tied to the R2 Measures in the CAP and the IMs in the General Plan such that 100 points will meet the emission reductions associated with the R2 Measures and IMs. This menu allows for maximum flexibility for projects to meet its reduction allocation.

The methodology discussed above is described in more detail in the County GHG Screening Table document, presented in Appendix N of the General Plan and is consistent with the analysis and quantification methodology used in the CAP.

The Screening Tables also serve to document the implementation of reduction measures. Using the screening tables as a reduction measure monitoring tool is described in more detail in Section 7.6 below.

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### 7.6 STEP 6—Monitoring and Inventorizing

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The County will create a system for monitoring the implementation of this CAP and adjusting the plan as opportunities arise. As the plan is implemented and as technology changes, the CAP should be revised to take advantage of new and emerging technology. If promising new strategies emerge, the County will evaluate how to incorporate these strategies into the CAP. Further, state and federal action will also result in changes which will influence the level of Riverside County emissions.

Screening tables completed during project review, as described in Section 7.5 above, will serve as documentation of the implementation of reduction measures. The County shall retain the completed screening tables in order to maintain a record of the types and levels of implementation of each of the

R2 measures. The point values in the completed screening tables also document the estimated levels of emission reductions anticipated during implementation. By maintaining these records, the County can monitor the CAP reduction measure implementation and compare the anticipated emission reductions with the goals for the CAP over time.

The GHG inventory will be periodically updated in coordination with the three (3) phases noted above: 2013 (to update with the Regional Transportation Plan outputs and Phase 1 progress); 2017 (to review Phase 2 progress, allow for course corrections to keep progress on target for 2020, and to develop post-2020 forecasts for use in planning for after 2020); and 2020 (to establish baseline for post-2020 GHG reduction planning). The County will also implement a monitoring and reporting program to evaluate the effectiveness of reduction measures with regards to progress towards meeting the goals of the CAP.

To provide periodic updates to the CAP inventory of GHG emissions, the County will use an Microsoft (MS) Excel format emissions inventory tool developed by the CAP consultant. This tool will include all the emission factors and emission sources specific to Riverside County. The tool will be designed such that County staff can input VMT, water use, and energy consumption data and the tool will quantify emissions for the Unincorporated Areas.

The CAP Implementation Coordinator shall be responsible for maintaining records of reduction measure implementation and insuring that the periodic updates to the emissions inventory are completed using the MS Excel based emission inventory tool.

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## 7.7 STEP 7—Beyond 2020

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As described above under the discussion of Reduction Goals, 2020 is only a milestone in GHG reduction planning. Executive Order S-03-05 calls for a reduction of GHG emissions to a level 80 percent below 1990 levels by 2050, and this level is consistent with the estimated reductions needed to stabilize atmospheric levels of CO<sub>2</sub> at 450 parts per million (ppm). Thus, there will be a need to start planning ahead for the post-2020 period. The County will commence planning for the post-2020 period starting in 2017, at the approximate midway point between plan implementation and the reduction target and after development of key ordinances and implementation of cost-effective measures. At that point, the County will have implemented the first two (2) phases of this CAP and will have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches. Further, the State's regulations under AB 32 would have been fully in force since 2012; federal programs and policies for the near term are likely to be well underway; market mechanisms like a cap and trade system are likely to be in force and will be influencing energy and fuel prices; and continuing technological change in the fields of energy efficiency, alternative energy generation, vehicles, fuels, methane capture, and other areas will have occurred. The County will then be able to take the local, regional, state, and federal context into account. Further, starting in 2017 will allow for development of the post-2020 plan so that it can be ready for full implementation, including potential new policies, revisions to the General Plan (as necessary), programs, ordinances, and financing by 2020. The new plan will include a specific target for GHG reductions for 2035 and 2050. The targets will be consistent with broader state and federal

**7.7 STEP 7—BEYOND 2020**

reduction targets and with the scientific understanding of the needed reductions by 2050. The County will adopt the new plan by January 1, 2020.



## CHAPTER 8 Reference

## CHAPTER 8 REFERENCE

- Association of Environmental Professionals (AEP) White Paper: Alternative Approaches to Analyzing Greenhouse Gases and Global Climate Change Impacts in CEQA Documents, June 2007.
- Association of Environmental Professionals (AEP) White Paper: Community-wide Greenhouse Gas Emission Protocols, March 2011.
- California Air Pollution Control Officers Association (CAPCOA), Quantifying Greenhouse Gas Mitigation Measures, August 2010.
- California Air Pollution Control Officers Association (CAPCOA), White Paper: CEQA and Climate Change, January 2008.
- California Air Resources Board (CARB), Climate Change Scoping Plan, December 2008.
- California Air Resources Board (CARB), EMFAC2007, 2007. [2007b]
- California Air Resources Board (CARB), Mandatory Reporting of Greenhouse Gas Emissions, December 6, 2007. [2007c]
- California Air Resources Board (CARB), Proposed Early Actions to Mitigate Climate Change in California December 20, 2007. [2007d]
- California Air Resources Board (CARB), Proposed SB 375 Greenhouse Gas Targets: Documentation of the Resulting Emission Reductions based on MPO Data, August 9, 2010. [2010a]
- California Air Resources Board, Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375, September 23, 2010. [2010b]
- California Air Resources Board, URBEMIS2007 for Windows Version 9.2.4, 2007. [2007e]
- California Building Standards Commission (CBSC), 2010 California Green Building Standards Code, January 2010.
- California Climate Action Team (CCAT), Climate Action Biannual Report, April 2010.
- California Climate Action Team (CCAT), California Climate Action Team's Final Report to the Governor and Legislature, March 2006.
- California Climate Action Registry (CCAR), General Reporting Protocol, Version 3.1, January 2009.
- California Climate Action Registry (CCAR), Local Government Protocol, Version 1.1, May 2010.
- California Department of Finance, E-4 Population Estimates, [http://www.dof.ca.gov/research/demographic/reports/estimates/e-4\\_2001-07/](http://www.dof.ca.gov/research/demographic/reports/estimates/e-4_2001-07/), accessed August 2010.
- California Energy Commission (CEC), Refining Estimates of Water Related Energy Use in California: CEC-500-2006-118, December 2006. [2006a]
- California Energy Commission (CEC), California's Energy Efficiency Standards for Residential and Nonresidential Buildings, Title 24, Part 6, of the California Code of Regulations, 2008 Standards, April

## CHAPTER 8 REFERENCE

- 23, 2008. California Health and Safety Code Section 38505 (g), Greenhouse Gas Definitions, <http://law.onecle.com/california/health/38505.html>, accessed February 11 2011.
- California Natural Resources Agency, 2009 California Climate Adaptation Strategy, December 2, 2009. [2009a]
- California Natural Resources Agency, CEQA Guidelines Amendments, December 30, 2009. [2009b]
- Energy Information Administration (EIA), 2005 Residential Energy Consumption Survey, 2005.
- Federal Transit Administration (FTA), Guaranteed Ride Home Programs, A Study of Program Characteristics, Utilization, and Costs. May 16, 2006.
- Intergovernmental Panel on Climate Change (IPCC), Climate Change 2001: The Scientific Basis, Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate, 2001.
- South Coast Air Quality Management District (SCAQMD), Greenhouse Gas CEQA Significance Thresholds, December 5, 2008.
- United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, December 11, 1997.
- U.S. Environmental Protection Agency (EPA), AP-42, Compilation of Air Pollutant Emission Factors, Fourth Edition, September 1985.
- U.S. Environmental Protection Agency (EPA), Emissions and Generation Resource Integrated Database (eGRID2007), version 1.1, December 31 2007.
- U.S. Environmental Protection Agency, Final GHG Tailoring Rule, 40 CFR Parts 51, 52, 70, et al., May 2010. [2010a]
- U.S. Environmental Protection Agency, Mandatory Reporting of Greenhouse Gases Rule, 40 CFR Part 98, October 2009.
- U.S. Environmental Protection Agency, Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, Third Edition, September 2006.
- U.S. Environmental Protection Agency, U.S. Greenhouse Gas Inventory Report, Section 6 Agriculture, <http://www.epa.gov/climatechange/emissions/downloads09/Agriculture.pdf>, accessed February 2010. [2010b]
- U.S. Supreme Court, Massachusetts et al. v. Environmental Protection Agency et al., No. 05-1120, Decided April 2, 2007

**CHAPTER 8 REFERENCE**

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# **GREENHOUSE GAS EMISSIONS**

## **Screening Tables County of Riverside, California**

May 2012

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## Introduction

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The County of Riverside Climate Action Plan (CAP) includes reducing 4,288,863 Metric Tons of Carbon Dioxide Equivalents (MTCO<sub>2</sub>e) per year from new development by 2020 as compared to the 2020 unmitigated conditions.

Mitigation of GHG emissions impacts during the development review process of projects provides one cost effective way of implementing the GHG reduction strategies for reducing community-wide emissions associated with new development. The development review process procedures for evaluating GHG impacts and determining significance for CEQA purposes will be streamlined by (1) applying an emissions level that is determined to be less than significant for small projects, and (2) utilizing Screening Tables to mitigate project GHG emissions that exceed the threshold level. Projects will have the option of preparing a project-specific technical analysis to quantify and mitigate GHG emissions. A threshold level above 3,000 MTCO<sub>2</sub>e per year will be used to identify projects that require the use of Screening Tables or a project-specific technical analysis to quantify and mitigate project emissions.

The California Environmental Quality Act ("CEQA") requires assessment of the environmental impacts of proposed projects including the impacts of greenhouse gas emissions. The purpose of this document is to provide guidance on how to analyze greenhouse gas (GHG) emissions and determine the significance of those emissions during CEQA review of proposed development projects within the County of Riverside. The analysis, methodology, and significance determination (thresholds) are based upon the Riverside County GHG Technical Report, the GHG emission inventories within the Technical Report, and the GHG implementation measures that reduce emissions to the AB-32 compliant reduction target of the Technical Report. The screening tables can be used by the County of Riverside Planning Department for review of development projects in order to insure that the specific implementation measures in the Technical Report are applied as part of the CEQA process for development projects. The screening tables provide a menu of options that both insures implementation of the measures and flexibility on how development projects will implement the measures to achieve an overall reduction of emissions, consistent with the reduction target of the Technical Report.

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## California Environmental Quality Act

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### CEQA MANDATES FOR ANALYSIS OF IMPACTS

CEQA requires that Lead Agencies inform decision makers and the public regarding the following: potential significant environmental effects of proposed projects; feasible ways that environmental damage can be avoided or reduced through the use of feasible mitigation measures and/or project

## CEQA THRESHOLDS AND SCREENING TABLES

alternatives; and the reasons why the Lead Agency approved a project if significant environmental effects are involved (CEQA Guidelines §15002). CEQA also requires Lead Agencies to evaluate potential environmental effects based to the fullest extent possible on scientific and factual data (CEQA Guidelines §15064[b]). A determination of whether or not a particular environmental impact will be significant must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts (CEQA Guidelines §15064f[5]).

The recently amended CEQA Guidelines (CEQA Guidelines §15064.4[a] [b]) explicitly require Lead Agencies to evaluate GHG emissions during CEQA review of potential environmental impacts generated by a proposed project. To assist in this effort, two questions were added to Appendix G of the CEQA Guidelines:

- Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the Project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Finally, under the “rule of reason,” an EIR is required to evaluate impacts to the extent that is reasonably feasible ([CEQA Guideline § 15151; *San Francisco Ecology Center v. City and County of San Francisco* (1975) 48 Cal.App.3<sup>rd</sup> 584]). While CEQA does require Lead Agencies to make a good faith effort to disclose what they reasonably can, CEQA does not demand what is not realistically possible ([*Residents at Hawks Stadium Committee v. Board of Trustees* (1979) 89 Cal.App.3<sup>rd</sup> 274, 286]).

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## Greenhouse Gas Impact Determination

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### STATEWIDE OR REGIONAL THRESHOLDS OF SIGNIFICANCE

There are currently no published statewide or regional thresholds of significance for measuring the impact of GHG emissions generated by a proposed project. CEQA Guidelines §15064.7 indicates only that, “each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.” The County of Riverside CAP addresses cumulative GHG emissions, has a reduction target that reduces the cumulative GHG impacts to less than significant, has a set of reduction measures that achieves the reduction target and provides an implementation plan to implement the reduction measures. This document provides guidance in how to address GHG emissions in CEQA analysis and determine the significance of project generated GHG emissions.

# QUANTITATIVE ANALYSIS RELATIVE TO THE RIVERSIDE GHG TECHNICAL REPORT

## METHODOLOGY OVERVIEW

An individual project cannot generate enough GHG emissions to influence global climate change. The project participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together may have a significant impact on global climate change. To address the State's requirement to reduce GHG emissions, the County prepared the CAP with the target of reducing GHG emissions within the unincorporated County by 15% below 2008 levels by the year 2020. The County's target is consistent with the AB 32 target and ensures that the County is providing GHG reductions locally that will complement the State and international efforts of stabilizing climate change.

Because the County's CAP addresses GHG emissions reduction in concert with AB 32 and international efforts to address global climate change and includes specific local requirements that will substantially lessen the cumulative problem compliance with the CAP fulfills the description of mitigation found in CEQA Guidelines §15130(a)(3) and §15183.5.

No single project has the ability to generate GHG emissions in sufficient quantities to change the global climate. Rather, it is the incremental contribution of all past, present, and future projects that when combined with all other anthropogenic sources of GHG emissions globally generates climate change impacts. Because GHG emissions are only important in the context of cumulative emissions, the focus of the analysis is on answering the question of whether incremental contributions of GHGs are a cumulatively considerable contribution to climate change impacts. The CAP includes a set of mitigation measures designed to substantially lessen cumulative impacts associated with GHG emissions as described in CEQA Guidelines §15130(a)(3), in determining if a project's effects will result in significant impacts. The CAP has the following components that fulfill cumulative mitigation for GHG emissions:

1. The CAP provides a community-wide GHG emissions reduction target that will substantially lessen the cumulative impact;
2. The CAP provides measures that new development projects to follow to meet the County's reduction target and substantially lessen the cumulative impact;
3. The CAP provides a set of GHG emission inventories that provides quantitative facts and analysis of how the measures within the CAP meet the reduction target that substantially lessens the cumulative impact:

## CEQA THRESHOLDS AND SCREENING TABLES

4. The CAP provides an implementation, monitoring and update program to insure that the reduction target is met.

The CAP satisfies the first condition by adopting a target of reducing GHG emissions down to 15 percent below existing levels within the County of Riverside by 2020. This reduction target is compliant with AB 32; the AB 32 Climate Change Scoping Plan states: "In recognition of the critical role local governments will play in the successful implementation of AB 32, ARB recommended a greenhouse gas reduction goal for local governments of 15 percent below today's levels by 2020 to ensure that their municipal and community-wide emissions match the State's reduction target" (Scoping Plan page ES-5, CARB, December 2008). . In this way, the City is teaming with the State's efforts to reduce GHG emissions globally and substantially lessen the cumulative problem.

The CAP satisfies the second condition through the implementation of the reduction measures for new development. This document supplies the specific criteria that new development must follow to ensure that the reduction measures associated with new development are implemented and the reduction target is met.

The CAP satisfies the third criteria by providing a set of community-wide GHG emissions inventories for existing conditions, for future 2020 GHG emissions that are anticipated without the reduction measures (Business As Usual; BAU), and reduced levels of 2020 GHG emissions which demonstrates how the implementation of reduction measures achieves the reduction target (15 percent below existing GHG emission levels by 2020).

The CAP satisfies the fourth criteria through the implementation and monitoring program described in detail in Chapter 7 of the CAP.

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### **3,000 MT CO<sub>2</sub>e Emission Level**

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The County determined the size of development that is too small to be able to provide the level of GHG emission reductions expected from the Screening Tables or alternate emission analysis method. To do this the City determined the GHG emission amount allowed by a project such that 90 percent of the emissions on average from all projects would exceed that level and be "captured" by the Screening Table or alternate emission analysis method.

In determining this level of emissions the County used the database of projects kept by the Governor's Office of Planning and Research (OPR). That database contained 798 projects, 60 of which were

extremely large General Plan Updates, Master Plans, or Specific Plan Projects. The 60 very large projects were removed from the database in order not to skew the emissions value, leaving a net of 738 projects. In addition, 27 projects were found to be outliers that would skew the emission value to high, leaving 711 as the sample population to use in determining the 90<sup>th</sup> percentile capture rate.

The analysis of the 738 projects within the sample population combined commercial, residential, and mixed use projects. Also note that the sample of projects included warehousing and other industrial land uses but did not include industrial processes (i.e. oil refineries, heavy manufacturing, electric generating stations, mining operations, etc.). Emissions from each of these projects were calculated by SCAQMD to provide a consistent method of emissions calculations across the sample population further reducing potential errors in the statistical analysis. In calculating the emissions from projects within the sample population, construction period GHG emissions were amortized over 30-years (the average economic life of a development project).

This analysis determined that the 90<sup>th</sup> percentile ranged from 2,983 MT to 3,143 MT CO<sub>2</sub>e per year. The **3,000 MT CO<sub>2</sub>e per year** value is the low end value within that range rounded to the nearest hundred tons of emissions and is used in defining small projects that are considered less than significant and do not need to use the Screening Tables or alternative GHG mitigation analysis described below.

The **3,000 MT CO<sub>2</sub>e per year** value is used in defining small projects that, when combined with the modest efficiency measures shown in the bullet points below are considered less than significant and do not need to use the Screening Tables or alternative GHG mitigation analysis described below. The efficiency measures required of small projects are summarized below:

- Energy efficiency of at least five percent greater than 2010 Title 24 requirements, and
- Water conservation measures that matches the California Green Building Code in effect as of January 2011.

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## Projects that Exceed 3,000 MT CO<sub>2</sub>e Emission Level

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### METHODOLOGY FOR THE CALCULATION OF GHG EMISSIONS

Analysis of development projects exceeding the 3,000 MT CO<sub>2</sub>e emissions level can either be done through emissions calculations or by using the screening tables beginning on Page 7.

## CEQA THRESHOLDS AND SCREENING TABLES

Total GHG emissions are the sum of emissions from both direct and indirect sources. Direct sources include mobile sources such as construction equipment, motor vehicles, landscape equipment; and stationary sources such as cooling and heating equipment. Indirect sources are comprised of electrical and potable water use, and the generation of solid waste and waste water.

Direct GHG emissions from mobile and stationary sources are determined as the sum of the annual GHG emissions from construction equipment, motor vehicles, landscape equipment, and heating and cooling equipment.

Indirect sources are determined based on source as follows. Electrical usage is reported as annual emissions from electrical usage. Potable water usage is reported as the annual emissions from electricity used for potable water treatment and transportation. Solid waste is reported as the sum of annual emissions from solid waste disposal treatment, transportation, and fugitive emissions of methane at the solid waste facilities. Wastewater usage is reported as the annual emissions from wastewater transport and treatment.

Analysis of development projects not using the screening tables should use the emission factors found in the latest version of the California Climate Action Registry (CCAR) General Reporting Protocol. Quantification of emissions from electricity used for potable water treatment and transportation as well as wastewater transport and treatment can be found in the California Energy Commission (CEC) document titled "Refining Estimates of Water-Related Energy Use in California (CEC December 2006).

Analysis of development projects not using the screening tables should use the latest version of the California Emissions Estimator Model (CalEEMod). Two modeling runs should be completed. The first modeling run calculates GHG emissions at 2011 levels of efficiency using energy efficiency standards (Title 24) and the California Air Resources Board (CARB) on road vehicle emissions factors (EMFAC2012) set at 2011. A second modeling run is required that calculates GHG emissions at Project buildout year levels of efficiency and includes Project design features and/or mitigation measures to reduce GHG emissions such that the levels of efficiency result in a 25% reduction of GHG emissions compared to the model run using 2011 levels of efficiency.

For analysis of development projects using the screening tables, please refer to the process described on page 7.



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## Screening Tables

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The purpose of the Screening Tables is to provide guidance in measuring the reduction of greenhouse gas emissions attributable to certain design and construction measures incorporated into development projects. The analysis, methodology, and significance determination (thresholds) are based upon the Riverside County GHG Technical Report, which includes GHG emission inventories, a year 2020 emission reduction target, and the goals and policies to reach the target. The methodology for the development and application of the Screening Table is set forth in Appendix A, attached hereto.

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## Instructions for Application to Projects

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The Screening Table assigns points for each option incorporated into a project as mitigation or a project design feature (collectively referred to as “feature”). The point values correspond to the minimum emissions reduction expected from each feature. The menu of features allows maximum flexibility and options for how development projects can implement the GHG reduction measures. Projects that garner at least 100 points will be consistent with the reduction quantities anticipated in the County’s GHG Technical Report. As such, those projects that garner a total of 100 points or greater would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

Those Projects that do not garnish 100 points using the screening tables will need to provide additional analysis to determine the significance of GHG emissions. Nothing in this guidance shall be construed as limiting the County’s authority to adopt a statement of overriding consideration for projects with requiring the preparation of an EIR due to a project’s significant GHG impacts. The following tables provide a menu of performance standards/options related to GHG mitigation measures and design features that can be used to demonstrate consistency with the implementation measures and GHG reduction quantities in the GHG Technical Report.

Mixed use projects provide additional opportunities to reduce emissions by combining complimentary land uses in a manner that can reduce vehicle trips. Mixed use projects also have the potential to complement energy efficient infrastructure in a way that reduces emissions. For mixed use projects fill out both Screening Table 1 and Table 2, but proportion the points identical to the proportioning of the mix of uses. As an example, a mixed use project that is 50% commercial uses and 50% residential uses will show ½ point for each assigned point value in Table 1 and Table 2. Add the points from both tables. Mixed use projects that garner at least 100 points will be consistent with the reduction quantities in the County’s GHG Plan and are considered less than significant for GHG emissions.

CEQA THRESHOLDS AND SCREENING TABLES

**Table 1: Screening Table for GHG Implementation Measures for Residential Development**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM RE1: Energy Efficiency for New Residential</b>			
<b>E1.A Building Envelope</b>			
E1.A.1 Insulation	Title 24 standard (required)	0 points	
	Modestly Enhanced Insulation (5% > Title 24)	1 point	
	Enhanced Insulation (15%> Title 24)	3 points	
	Greatly Enhanced Insulation (20%> Title 24)	5 points	
E1.A.2 Windows	Title 24 standard (required)	0 points	
	Modestly Enhanced Window Insulation (5% > Title 24)	1 point	
	Enhanced Window Insulation (15%> Title 24)	3 points	
	Greatly Enhanced Window Insulation (20%> Title 24)	5 points	
E1.A.3 Doors	Title 24 standard (required)	0 points	
	Modestly Enhanced Insulation (5% > Title 24)	1 point	
	Enhanced Insulation (15%> Title 24)	3 points	
	Greatly Enhanced Insulation (20%> Title 24)	5 points	
E1.A.4 Air Infiltration	Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage.		
	Title 24 standard (required)	0 points	
	Modest Building Envelope Leakage (5% > Title 24)	1 point	
	Reduced Building Envelope Leakage (15%> Title 24)	3 points	
	Minimum Building Envelope Leakage (20% > Title 24)	5 points	
E1.A.5 Thermal Storage of Building	Thermal storage is a design characteristic that helps keep a constant temperature in the building. Common thermal storage devices include strategically placed water filled columns, water storage tanks, and thick masonry walls.		
	Thermal storage designed to reduce heating/cooling by 5°F within the building	3 points	
	Thermal storage to reduce heating/cooling by 10°F within the building	6 points	
	Note: Engineering details must be provided to substantiate the efficiency of the thermal storage device.		

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>E1.B Indoor Space Efficiencies</b>			
E1.B.1 Heating/ Cooling Distribution System	Title 24 standard (required) Modest Distribution Losses (5% > Title 24) Reduced Distribution Losses (15%> Title 24) Greatly Reduced Distribution Losses (15%> Title 24)	0 points 1 point 3 points 5 points	
E1.B.2 Space Heating/ Cooling Equipment	Title 24 standard (required) Efficiency HVAC (5% > Title 24) High Efficiency HBAC (15%> Title 24) Very High Efficiency HBAC (20%> Title 24)	0 points 1 point 3 points 5 points	
E1.B.3 Water Heaters	Title 24 standard (required) Efficiency Water Heater (Energy Star conventional that is 5% > Title 24) High Efficiency Water Heater (Conventional water heater that is 15%> Title 24) High Efficiency Water Heater (Conventional water heater that is 20%> Title 24) Solar Water Heating System	0 points 1 point 3 points 5 points 7 points	
E1.B.4 Daylighting	Daylighting is the ability of each room within the building to provide outside light during the day reducing the need for artificial lighting during daylight hours. All peripheral rooms within the living space have at least one window (required) All rooms within the living space have daylight (through use of windows, solar tubes, skylights, etc.) such that each room has at least 800 lumens of light during a sunny day All rooms daylighted to at least 1,000 lumens	0 points 1 points 3 points	
E1.B.5 Artificial Lighting	Title 24 standard (required) Efficient Lights (5% > Title 24) High Efficiency Lights (LED, etc. 15%> Title 24) Very High Efficiency Lights (LED, etc. 20%> Title 24)	0 points 1 point 3 points 5 points	
E1.B.6 Appliances	Title 24 standard (required) Efficient Appliances (5% > Title 24) High Efficiency Energy Star Appliances (15%> Title 24) Very High Efficiency Appliances (20%> Title 24)	0 points 1 point 3 points 5 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>E1.C Miscellaneous Residential Building Efficiencies</b>			
E1.C.1 Building Placement	North/South alignment of building or other building placement such that the orientation of the buildings optimizes natural heating, cooling, and lighting.	3 points	
E1.C.2 Independent Energy Efficiency Calculations	Provide point values based upon energy efficiency modeling of the Project. Note that engineering data will be required documenting the energy efficiency and point values based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
E1.C.3 Other	This allows innovation by the applicant to provide design features that increases the energy efficiency of the project not provided in the table. Note that engineering data will be required documenting the energy efficiency of innovative designs and point values given based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
E1.C.4 Existing Residential Retrofits	<p>The applicant may wish to provide energy efficiency retrofit projects to existing residential dwelling units to further the point value of their project. Retrofitting existing residential dwelling units within the unincorporated County is a key reduction measure that is needed to reach the reduction goal. The potential for an applicant to take advantage of this program will be decided on a case by case basis and must have the approval of the Riverside County Planning Department. The decision to allow applicants to ability to participate in this program will be evaluated based upon, but not limited to the following;</p> <p>Will the energy efficiency retrofit project benefit low income or disadvantaged residents?</p> <p>Does the energy efficiency retrofit project provide co-benefits important to the County?</p> <p>Point value will be determined based upon engineering and design criteria of the energy efficiency retrofit project.</p>	TBD	
<b>Implementation Measure IM E2: New Home Renewable Energy</b>			
E2.A.1 Photovoltaic	<p>Solar Photovoltaic panels installed on individual homes or in collective neighborhood arrangements such that the total power provided augments:</p> <p>Solar Ready Homes (sturdy roof and electric hookups)</p> <p>10 percent of the power needs of the project</p> <p>20 percent of the power needs of the project</p> <p>30 percent of the power needs of the project</p> <p>40 percent of the power needs of the project</p> <p>50 percent of the power needs of the project</p> <p>60 percent of the power needs of the project</p> <p>70 percent of the power needs of the project</p> <p>80 percent of the power needs of the project</p> <p>90 percent of the power needs of the project</p> <p>100 percent of the power needs of the project</p>	<p>2 points</p> <p>4 points</p> <p>6 points</p> <p>8 points</p> <p>10 points</p> <p>12 points</p> <p>14 points</p> <p>16 points</p> <p>18 points</p> <p>20 points</p> <p>22 points</p>	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
E2.A.2 Wind turbines	<p>Some areas of the County lend themselves to wind turbine applications. Analysis of the areas capability to support wind turbines should be evaluated prior to choosing this feature.</p> <p>Individual wind turbines at homes or collective neighborhood arrangements of wind turbines such that the total power provided augments:</p> <p>10 percent of the power needs of the project</p> <p>20 percent of the power needs of the project</p> <p>30 percent of the power needs of the project</p> <p>40 percent of the power needs of the project</p> <p>50 percent of the power needs of the project</p> <p>60 percent of the power needs of the project</p> <p>70 percent of the power needs of the project</p> <p>80 percent of the power needs of the project</p> <p>90 percent of the power needs of the project</p> <p>100 percent of the power needs of the project</p>	<p>4 points</p> <p>6 points</p> <p>8 points</p> <p>10 points</p> <p>12 points</p> <p>14 points</p> <p>16 points</p> <p>18 points</p> <p>20 points</p> <p>22 points</p>	
E2.A.3 Off-site renewable energy project	<p>The applicant may submit a proposal to supply an off-site renewable energy project such as renewable energy retrofits of existing homes.</p> <p>These off-site renewable energy retrofit project proposals will be determined on a case by case basis and must be accompanied by a detailed plan that documents the quantity of renewable energy the proposal will generate. Point values will be determined based upon the energy generated by the proposal.</p>	TBD	
E2.A.4 Other Renewable Energy Generation	<p>The applicant may have innovative designs or unique site circumstances (such as geothermal) that allow the project to generate electricity from renewable energy not provided in the table. The ability to supply other renewable energy and the point values allowed will be decided based upon engineering data documenting the ability to generate electricity.</p>	TBD	
<b>Implementation Measure IM W1: Water Use Reduction Initiative</b>			
<b>W1.A Residential Irrigation and Landscaping</b>			
W1.A.1 Water Efficient Landscaping	<p>Limit conventional turf to &lt; 20% of each lot (required)</p> <p>Eliminate conventional turf from landscaping</p> <p>Eliminate turf and only provide drought tolerant plants</p> <p>Xeroscaping that requires no irrigation</p>	<p>0 points</p> <p>3 points</p> <p>4 points</p> <p>6 points</p>	
W1.A.2 Water Efficient irrigation systems	<p>Drip irrigation</p> <p>Smart irrigation control systems combined with drip irrigation (demonstrate 20 reduced water use)</p>	<p>1 point</p> <p>3 points</p>	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
W1.A.3 Storm water Reuse Systems	Innovative on-site stormwater collection, filtration and reuse systems are being developed that provide supplemental irrigation water and provide vector control. These systems can greatly reduce the irrigation needs of a project. Point values for these types of systems will be determined based upon design and engineering data documenting the water savings.	TBD	
W1.A.4 Recycled grey water	Grey water (purple pipe) irrigation system on site	5 points	
<b>W1.B Residential Potable Water</b>			
W1.B.1 Showers	Title 24 standard (required)	0 points	
	EPA High Efficiency Showerheads (15% > Title 24)	1 points	
W1.B.2 Toilets	Title 24 standard (required)	0 points	
	EPA High Efficiency Toilets (15% > Title 24)	1 points	
W1.B.3 Faucets	Title 24 standard (required)	0 points	
	EPA High Efficiency faucets (15% > Title 24)	1 points	
<b>Implementation Measure IM W2: Increase Reclaimed Water Use</b>			
W2.A.1 Recycled Water	5% of the total project's water use comes from recycled/reclaimed water	5 points	
<b>Implementation Measure IM T2: Increase Residential Density</b>			
T2.A.1 Residential Density	Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities.  1 point is allowed for each 10% increase in density beyond 7 units/acre, up to 500% (50 points)	1-50 points	
<b>Implementation Measure IM T3: Mixed Use Development</b>			
T3.A.1 Mixed Use	Mixes of land uses that complement one another in a way that reduces the need for vehicle trips can greatly reduce GHG emissions. The point value of mixed use projects will be determined based upon a Transportation Impact Analysis (TIA) demonstrating trip reductions and/or reductions in vehicle miles traveled. Suggested ranges:  Diversity of land uses complementing each other (2-28 points)  Increased destination accessibility other than transit (1-18 points)  Infill location that reduces vehicle trips or VMT beyond the measures	TBD	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
	described above (points TBD based on traffic data).		
T3.A.2 Residential Near Local Retail (Residential only Projects)	<p>Having residential developments within walking and biking distance of local retail helps to reduce vehicle trips and/or vehicle miles traveled.</p> <p>The point value of residential projects in close proximity to local retail will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled (VMT)</p> <p>The suburban project will have at least three of the following on site and/or offsite within ¼-mile: Residential Development, Retail Development, Park, Open Space, or Office.</p> <p>The mixed-use development should encourage walking and other non-auto modes of transport from residential to office/commercial locations (and vice versa). The project should minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping.</p>	1-16 points	
<b>Implementation Measure IM T5: Traffic Flow Management Improvements</b>			
T5.A.1 Signal Synchronization	<p>Techniques for improving traffic flow include: traffic signal coordination to reduce delay, incident management to increase response time to breakdowns and collisions, Intelligent Transportation Systems (ITS) to provide real-time information regarding road conditions and directions, and speed management to reduce high free-flow speeds.</p> <p>Signal synchronization</p> <p>Traffic signals connected to existing ITS</p>	<p>1 point/signal</p> <p>3 points/signal</p>	
<b>Implementation Measure IM T6: Bicycle/Pedestrian Infrastructure</b>			
T6.A.1 Sidewalks	<p>Provide sidewalks on one side of the street (required)</p> <p>Provide sidewalks on both sides of the street</p> <p>Provide pedestrian linkage between residential and commercial uses within 1 mile</p>	<p>0 points</p> <p>1 point</p> <p>3 points</p>	
T6.A.2 Bicycle paths	<p>Provide bicycle paths within project boundaries</p> <p>Provide bicycle path linkages between residential and other land uses</p> <p>Provide bicycle path linkages between residential and transit</p>	<p>TBD</p> <p>2 points</p> <p>5 points</p>	
<b>Implementation Measure IM T7: Electric Vehicle Use</b>			
T7.A.1 Electric Vehicle Recharging	<p>Provide circuit and capacity in garages of residential units for installation of electric vehicle charging stations</p> <p>Install electric vehicle charging stations in the garages of residential units</p>	<p>1 point</p> <p>8 points</p>	

**CEQA THRESHOLDS AND SCREENING TABLES**

<b>Feature</b>	<b>Description</b>	<b>Assigned Point Values</b>	<b>Project Points</b>
<b>Implementation Measure IM T9: Increase Public Transit</b>			
T9.A.1 Public Transit Access	The point value of a projects ability to increase public transit use will be determined based upon a Transportation Impact Analysis (TIA) demonstrating decreased use of private vehicles and increased use of public transportation.  Increased transit accessibility (1-15 points)	TBD	
<b>Implementation Measure IM L1: SCAQMD No New Wood Burning Stoves</b>			
L1.A.1 Wood Burning	As part of Rule 445 and the Healthy Hearths™ initiative, the South Coast Air Quality Management District adopted a rule for no permanently installed indoor or outdoor wood burning devices in new development.  Project contains no wood burning stoves or fireplaces	10 points	
<b>Implementation Measure IM L2: Prohibit Gas Powered Equipment</b>			
L2.A.1 Landscape Equipment	Electric lawn equipment including lawn mowers, leaf blowers and vacuums, shredders, trimmers, and chain saws are available. When electric landscape equipment is used in place of conventional gas-powered equipment, direct GHG emissions from natural gas combustion are replaced with indirect GHG emissions associated with the electricity used to power the equipment.  Project provides electrical outlets on the exterior of all building walls so that electric landscaping equipment is compatible with all built facilities.	8 points	
<b>Implementation Measure IM SW1: 80 Percent Solid Waste Diversion Program</b>			
SW1.A.1 Recycling	County initiated recycling program diverting 80% of waste requires coordination in neighborhoods to realize this goal. The following recycling features will help the County fulfill this goal:  Provide green waste composing bins at each residential unit  Multi-family residential projects that provide dedicated recycling bins separated by types of recyclables combined with instructions/education program explaining how to use the bins and the importance of recycling.	4 points  3 points	
<b>Implementation Measure IM SW2: Construction and Demolition Debris Diversion Program</b>			
SW2.A.1 Recycling of Construction/ Demolition Debris	50% of construction waste recycled (required)  Recycle 55% of debris  Recycle 60% of debris  Recycle 65% of debris  Recycle 70% of debris  Recycle 75% of debris	0 points  2 points  3 points  4 points  5 points  6 points	
<b>Total Points Earned by Residential Project:</b>			



CEQA THRESHOLDS AND SCREENING TABLES

**Table 2: Screening Table for GHG Implementation Measures for Commercial Development and Public Facilities**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM E5: Energy Efficiency for Commercial/Public Development</b>			
<b>E5.A Building Envelope</b>			
E5.A.1 Insulation	Title 24 standard (required)	0 points	
	Modestly Enhanced Insulation (5% > Title 24)	4 points	
	Enhanced Insulation (15%> Title 24)	8 points	
	Greatly Enhanced Insulation (20%> Title 24)	12 points	
E5.A.2 Windows	Title 24 standard (required)	0 points	
	Modestly Enhanced Window Insulation (5% > Title 24)	4 points	
	Enhanced Window Insulation (15%> Title 24)	8 points	
	Greatly Enhanced Window Insulation (20%> Title 24)	12 points	
E5.A.3 Doors	Title 24 standard (required)	0 points	
	Modestly Enhanced Insulation (5% > Title 24)	4 points	
	Enhanced Insulation (15%> Title 24)	8 points	
	Greatly Enhanced Insulation (20%> Title 24)	12 points	
E5.A.4 Air Infiltration	Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage.		
	Title 24 standard (required)	0 points	
	Modest Building Envelope Leakage (5% > Title 24)	4 points	
	Reduced Building Envelope Leakage (15%> Title 24)	8 points	
E5.A.5 Thermal Storage of Building	Minimum Building Envelope Leakage (20% > Title 24)	12 points	
	Thermal storage is a design characteristic that helps keep a constant temperature in the building. Common thermal storage devices include strategically placed water filled columns, water storage tanks, and thick masonry walls.		
	Thermal storage designed to reduce heating/cooling by 5°F within the building	6 points	
	Thermal storage to reduce heating/cooling by 10°F within the building	12 points	
	Note: Engineering details must be provided to substantiate the efficiency of the thermal storage device.		

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>E5.B Indoor Space Efficiencies</b>			
E5.B.1 Heating/ Cooling Distribution System	Title 24 standard (required) Modest Distribution Losses (5% > Title 24) Reduced Distribution Losses (15%> Title 24) Greatly Reduced Distribution Losses (15%> Title 24)	0 points 4 points 8 points 12 points	
E5.B.2 Space Heating/ Cooling Equipment	Title 24 standard (required) Efficiency HVAC (5% > Title 24) High Efficiency HVAC (15%> Title 24) Very High Efficiency HVAC (20%> Title 24)	0 points 4 points 8 points 12 points	
E5.B.3 Commercial Heat Recovery Systems	Heat recovery strategies employed with commercial laundry, cooking equipment, and other commercial heat sources for reuse in HVAC air intake or other appropriate heat recovery technology. Point values for these types of systems will be determined based upon design and engineering data documenting the energy savings.	TBD	
E5.B.4 Water Heaters	Title 24 standard (required) Efficiency Water Heater (Energy Star conventional that is 5% > Title 24) High Efficiency Water Heater (Conventional water heater that is 15%> Title 24) High Efficiency Water Heater (Conventional water heater that is 20%> Title 24) Solar Water Heating System	0 points 4 points 8 points 12 points 14 points	
E5.B.5 Daylighting	Daylighting is the ability of each room within the building to provide outside light during the day reducing the need for artificial lighting during daylight hours. All peripheral rooms within building have at least one window or skylight All rooms within building have daylight (through use of windows, solar tubes, skylights, etc.) such that each room has at least 800 lumens of light during a sunny day All rooms daylighted to at least 1,000 lumens	1 point 5 points 7 points	
E5.B.6 Artificial Lighting	Title 24 standard (required) Efficient Lights (5% > Title 24) High Efficiency Lights (LED, etc. 15%> Title 24) Very High Efficiency Lights (LED, etc. 20%> Title 24)	0 points 4 points 6 points 8 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
E5.B.7 Appliances	Title 24 standard (required)	0 points	
	Efficient Appliances (5% > Title 24)	4 points	
	High Efficiency Energy Star Appliances (15%> Title 24)	8 points	
	Very High Efficiency Appliances (20%> Title 24)	12 points	
<b>E5.C Miscellaneous Commercial Building Efficiencies</b>			
E5.C.1 Building Placement	North/South alignment of building or other building placement such that the orientation of the buildings optimizes conditions for natural heating, cooling, and lighting.	4 points	
E5.C.2 Other	This allows innovation by the applicant to provide design features that increases the energy efficiency of the project not provided in the table. Note that engineering data will be required documenting the energy efficiency of innovative designs and point values given based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
E5.C.3 Existing Commercial building Retrofits	<p>The applicant may wish to provide energy efficiency retrofit projects to existing residential dwelling units to further the point value of their project. Retrofitting existing commercial buildings within the unincorporated County is a key reduction measure that is needed to reach the reduction goal. The potential for an applicant to take advantage of this program will be decided on a case by case basis and must have the approval of the Riverside County Planning Department. The decision to allow applicants to participate in this program will be evaluated based upon, but not limited to the following:</p> <p>Will the energy efficiency retrofit project benefit low income or disadvantaged communities?</p> <p>Does the energy efficiency retrofit project provide co-benefits important to the County?</p> <p>Point value will be determined based upon engineering and design criteria of the energy efficiency retrofit project.</p>	TBD	
<b>Implementation Measure IM E6: New Commercial/Industrial Renewable Energy</b>			
E6.A.1 Photovoltaic	Solar Photovoltaic panels installed on commercial buildings or in collective arrangements within a commercial development such that the total power provided augments:		
	Solar Ready Roofs (sturdy roof and electric hookups)	2 points	
	10 percent of the power needs of the project	8 points	
	20 percent of the power needs of the project	14 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	26 points	
	50 percent of the power needs of the project	32 points	
	60 percent of the power needs of the project	38 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
	70 percent of the power needs of the project	44 points	
	80 percent of the power needs of the project	50 points	
	90 percent of the power needs of the project	56 points	
	100 percent of the power needs of the project	62 points	
E6.A.2 Wind turbines	<p>Some areas of the County lend themselves to wind turbine applications. Analysis of the areas capability to support wind turbines should be evaluated prior to choosing this feature.</p> <p>Wind turbines as part of the commercial development such that the total power provided augments:</p> <p>10 percent of the power needs of the project</p> <p>20 percent of the power needs of the project</p> <p>30 percent of the power needs of the project</p> <p>40 percent of the power needs of the project</p> <p>50 percent of the power needs of the project</p> <p>60 percent of the power needs of the project</p> <p>70 percent of the power needs of the project</p> <p>80 percent of the power needs of the project</p> <p>90 percent of the power needs of the project</p> <p>100 percent of the power needs of the project</p>	<p>8 points</p> <p>14 points</p> <p>20 points</p> <p>26 points</p> <p>32 points</p> <p>38 points</p> <p>44 points</p> <p>50 points</p> <p>56 points</p> <p>62 points</p>	
E6.A.3 Off-site renewable energy project	The applicant may submit a proposal to supply an off-site renewable energy project such as renewable energy retrofits of existing residential or existing commercial/industrial. These off-site renewable energy retrofit project proposals will be determined on a case by case basis accompanied by a detailed plan documenting the quantity of renewable energy the proposal will generate. Point values will be based upon the energy generated by the proposal.	TBD	
E6.A.4 Other Renewable Energy Generation	The applicant may have innovative designs or unique site circumstances (such as geothermal) that allow the project to generate electricity from renewable energy not provided in the table. The ability to supply other renewable energy and the point values allowed will be decided based upon engineering data documenting the ability to generate electricity.	TBD	
<b>Implementation Measure IM W1: Water Use Reduction Initiative</b>			
<b>W1.C Irrigation and Landscaping</b>			
W1.C.1 Water Efficient Landscaping	Limit conventional turf to < 20% of each lot (required)	0 points	
	Eliminate conventional turf from landscaping	3 points	
	Eliminate turf and only provide drought tolerant plants	4 points	
	Xeroscaping that requires no irrigation	6 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
W1.C.2 Water Efficient irrigation systems	Drip irrigation	1 point	
	Smart irrigation control systems combined with drip irrigation (demonstrate 20 reduced water use)	5 points	
W1.C.3 Storm water Reuse Systems	Innovative on-site stormwater collection, filtration and reuse systems are being developed that provide supplemental irrigation water and provide vector control. These systems can greatly reduce the irrigation needs of a project. Point values for these types of systems will be determined based upon design and engineering data documenting the water savings.	TBD	
<b>W1.D Potable Water</b>			
W1.D.1 Showers	Title 24 standard (required)	0 points	
	EPA High Efficiency Showerheads (15% > Title 24)	3 points	
W1.D.2 Toilets	Title 24 standard (required)	0 points	
	EPA High Efficiency Toilets/Urinals (15% > Title 24)	3 points	
	Waterless Urinals (note that commercial buildings having both waterless urinals and high efficiency toilets will have a combined point value of 6 points)	3 points	
W1.D.3 Faucets	Title 24 standard (required)	0 points	
	EPA High Efficiency faucets (15% > Title 24)	3 points	
W1.D.4 Commercial Dishwashers	Title 24 standard (required)	0 points	
	EPA High Efficiency dishwashers (20% water savings)	4 points	
W1.D.5 Commercial Laundry Washers	Title 24 standard (required)	0 points	
	EPA High Efficiency laundry (15% water savings)	3 points	
	EPA High Efficiency laundry Equipment that captures and reuses rinse water (30% water savings)	6 points	
W1.D.6 Commercial Water Operations Program	Establish an operational program to reduce water loss from pools, water features, etc., by covering pools, adjusting fountain operational hours, and using water treatment to reduce draw down and replacement of water. Point values for these types of plans will be determined based upon design and engineering data documenting the water savings.	TBD	
<b>Implementation Measure IM W2: Increase Reclaimed Water Use</b>			
W2.A.1 Recycled Water	Graywater (purple pipe) irrigation system on site	5 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM T1: Employment Based Trip and VMT Reduction Policy</b>			
T1.A.1 Alternative Scheduling	<p>Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.</p> <p>Provide flexibility in scheduling such that at least 30% of employees participate in 9/80 work week, 4-day/40-hour work week, or telecommuting 1.5 days/week.</p>	5 points	
T1.A.2 Car/Vanpools	<p>Car/vanpool program</p> <p>Car/vanpool program with preferred parking</p> <p>Car/vanpool with guaranteed ride home program</p> <p>Subsidized employee incentive car/vanpool program</p> <p>Combination of all the above</p>	<p>1 point</p> <p>2 points</p> <p>3 points</p> <p>5 points</p> <p>6 points</p>	
T1.A.3 Employee Bicycle/ Pedestrian Programs	<p>Complete sidewalk to residential within ½ mile</p> <p>Complete bike path to residential within 3 miles</p> <p>Bike lockers and secure racks</p> <p>Showers and changing facilities</p> <p>Subsidized employee walk/bike program</p> <p>Note: combine all applicable points for total value</p>	<p>1 point</p> <p>1 point</p> <p>1 point</p> <p>2 points</p> <p>3 points</p>	
T1.A.4 Shuttle/Transit Programs	<p>Local transit within ¼ mile</p> <p>Light rail transit within ½ mile</p> <p>Shuttle service to light rail transit station</p> <p>Guaranteed ride home program</p> <p>Subsidized Transit passes</p> <p>Note: combine all applicable points for total value</p>	<p>1 point</p> <p>3 points</p> <p>5 points</p> <p>1 points</p> <p>2 points</p>	
T1.A.5 CTR	<p>Employer based Commute Trip Reduction (CTR). CTRs apply to commercial, offices, or industrial projects that include a reduction of vehicle trip or VMT goal using a variety of employee commutes trip reduction methods. The point value will be determined based upon a TIA that demonstrates the trip/VMT reductions. Suggested point ranges:</p> <p>Incentive based CTR Programs (1-8 points)</p> <p>Mandatory CTR programs (5-20 points)</p>	TBD	
T1.A.6 Other Trip Reduction Measures	<p>Point values for other trip or VMT reduction measures not listed above may be calculated based on a TIA and/or other traffic data supporting the trip and/or VMT reductions.</p>	TBD	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM T3: Mixed Use Development</b>			
T3.B.1 Mixed Use	Mixes of land uses that complement one another in a way that reduces the need for vehicle trips can greatly reduce GHG emissions. The point value of mixed use projects will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled	TBD	
T3.B.2 Local Retail Near Residential (Commercial only Projects)	Having residential developments within walking and biking distance of local retail helps to reduce vehicle trips and/or vehicle miles traveled.  The point value of residential projects in close proximity to local retail will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled.	TBD	
<b>Implementation Measure IM T4: Preferential Parking</b>			
T4.A.1 Parking	Provide reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles.  Provide larger parking spaces that can accommodate vans used for ride-sharing programs and reserve them for vanpools and include adequate passenger waiting/loading areas.	1 point  1 point	
<b>Implementation Measure IM T5: Signal Synchronization and Intelligent Traffic Systems</b>			
T5.B.1 Signal improvements	Techniques for improving traffic flow include: traffic signal coordination to reduce delay, incident management to increase response time to breakdowns and collisions, Intelligent Transportation Systems (ITS) to provide real-time information regarding road conditions and directions, and speed management to reduce high free-flow speeds.  Synchronize signals along arterials used by project.  Connect signals along arterials to existing ITS.	1 point/signal  3 points/signal	
<b>Implementation Measure IM T6: Bicycle and Pedestrian Infrastructure</b>			
T6.B.1 Sidewalks	Provide sidewalks on one side of the street (required)  Provide sidewalks on both sides of the street  Provide pedestrian linkage between commercial and residential land uses within 1 mile	0 points  1 point  3 points	
T6.B.2 Bicycle paths	Provide bicycle paths within project boundaries  Provide bicycle path linkages between commercial and other land uses  Provide bicycle path linkages between commercial and transit	TBD  2 points  5 points	

**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM T7: Electric Vehicle Use</b>			
T7.B.1 Electric Vehicle Recharging	Provide circuit and capacity in garages/parking areas for installation of electric vehicle charging stations.	2 points/area	
	Install electric vehicle charging stations in garages/parking areas	8 pts/station	
<b>Implementation Measure IM T8: Anti-Idling Enforcement</b>			
T8.A.1 Commercial Vehicle Idling Restriction	All commercial vehicles are restricted to 5-minutes or less per trip on site and at loading docks.	2 points Required of all Commercial	
<b>Implementation Measure IM T9: Increase Public Transit</b>			
T9.B.1 Public Transit	The point value of a projects ability to increase public transit use will be determined based upon a Transportation Impact Analysis (TIA) demonstrating decreased use of private vehicles and increased use of public transportation.  Increased transit accessibility (1-15 points)	TBD	
<b>Implementation Measure IM L2: Prohibit Gas-Powered Landscaping Equipment</b>			
L2.B.1 Landscaping Equipment	Electric lawn equipment including lawn mowers, leaf blowers and vacuums, shredders, trimmers, and chain saws are available. When electric landscape equipment is used in place of conventional gas-powered equipment, direct GHG emissions from natural gas combustion are replaced with indirect GHG emissions associated with the electricity used to power the equipment.  Project provides electrical outlets on the exterior of all buildings so that electric landscaping equipment is compatible with all built facilities.	2 points	
<b>Implementation Measure IM SW1: 80 Percent Solid Waste Diversion Program</b>			
SW1.B.1 Recycling	County initiated recycling program diverting 80% of waste requires coordination with commercial development to realize this goal. The following recycling features will help the County fulfill this goal:		
	Provide separated recycling bins within each commercial building/floor and provide large external recycling collection bins at central location for collection truck pick-up	2 points	
	Provide commercial/industrial recycling programs that fulfills an on-site goal of 80% diversion of solid waste	5 points	



**CEQA THRESHOLDS AND SCREENING TABLES**

Feature	Description	Assigned Point Values	Project Points
<b>Implementation Measure IM SW2: Construction and Demolition Debris Diversion Program</b>			
SW2.B.1 Recycling of Construction/ Demolition Debris	Recycle 2% of debris (required)	0 points	
	Recycle 5% of debris	1 point	
	Recycle 8 % of debris	2 points	
	Recycle 10% of debris	3 points	
	Recycle 12% of debris	4 points	
	Recycle 15% of debris	5 points	
	Recycle 20% of debris	6 points	
<b>Total Points Earned by Commercial/Industrial Project:</b>			

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## References

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- Association of Environmental Professionals (AEP) White Paper: Alternative Approaches to Analyzing Greenhouse Gases and Global Climate Change Impacts in CEQA Documents, June 2007.
- Association of Environmental Professionals (AEP) White Paper: Community-wide Greenhouse Gas Emission Inventory Protocols, March 2011.
- Association of Environmental Professionals (AEP) White Paper: Forecasting Community-wide Greenhouse Gas Emission and Setting Reduction Targets, May 2012.
- Association of Environmental Professionals (AEP) California Environmental Quality Act 2010 Statute & Guidelines, January 2012.
- California Air Pollution Control Officers Association (CAPCOA), White Paper: CEQA and Climate Change, January 2008
- California Air Pollution Control Officers Association (CAPCOA), Quantifying Greenhouse Gas Mitigation Measures, August 2010
- California Air Resources Board, AB 32 Scoping Plan, December 2009
- California Air Resources Board, Final Supplement to the AB 32 Scoping Plan, August 2011
- California Climate Action Team's Final Report to the Governor and Legislature, March 2007
- California Climate Action Registry, General Reporting Protocol, Version 3.1, January 2009
- Riverside County, Draft Greenhouse Gas Technical Report, November 2010
- South Coast Air Quality Management District, Rules and Regulations, 2012
- U.S. Environmental Protection Agency, AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, September 1995
- U.S. Environmental Protection Agency, AP-42, Final Rule on Update to the Compilation of Air Pollutant Emission Factors, October 2009

**APPENDIX A:  
METHDOLOGY FOR THE DEVELOPMENT  
AND APPLICATION OF THE SCREENING TABLES**

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## METHODS SUMMARY

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The point values in the Screening Tables were derived from the projected emissions reductions that each of the Implementation Measures (IM) within the Riverside County GHG Technical Report would achieve. The total emission reductions offered by each measure is based on both changes in existing land use activities as well as how new development is designed and built. In order to correctly allocate the emission reductions within the Screening Table, the amount of emission reductions afforded new development had to be segregated out of the aggregate total in a manner that is described below. Once the process of segregating new development out of the aggregate reduction totals was completed, the points were then proportioned by residential unit or square feet of commercial/industrial uses. This was accomplished by taking the predicted growth in households and commercial/industrial uses by the year 2020 and proportioning the appropriate IM reduction quantities for new development to the residential and commercial/industrial land use sectors within the Screening Table. These calculations result in point values that are allocated by residential unit or commercial/industrial square footage (measured in 1000 sq.ft.). Because of this, the size of the project is not relevant to the Screening Table. Regardless of size, each project needs to garnish 100 points to demonstrate consistency with the Technical Report. Efficiency, not size of the Project is critical. The following emission factor can be used in determining the amount of emissions reduced per point in the Screening Table:

The respective calculated emission values are in metric tons of carbon dioxide equivalents (MTCO<sub>2</sub>e)

For Residential Projects:

**0.069 MTCO<sub>2</sub>e per Point per Residential Unit**

For Commercial and Industrial Projects:

**0.031 MTCO<sub>2</sub>e per Point per 1,000 Square Feet of gross Commercial/Industrial building area**

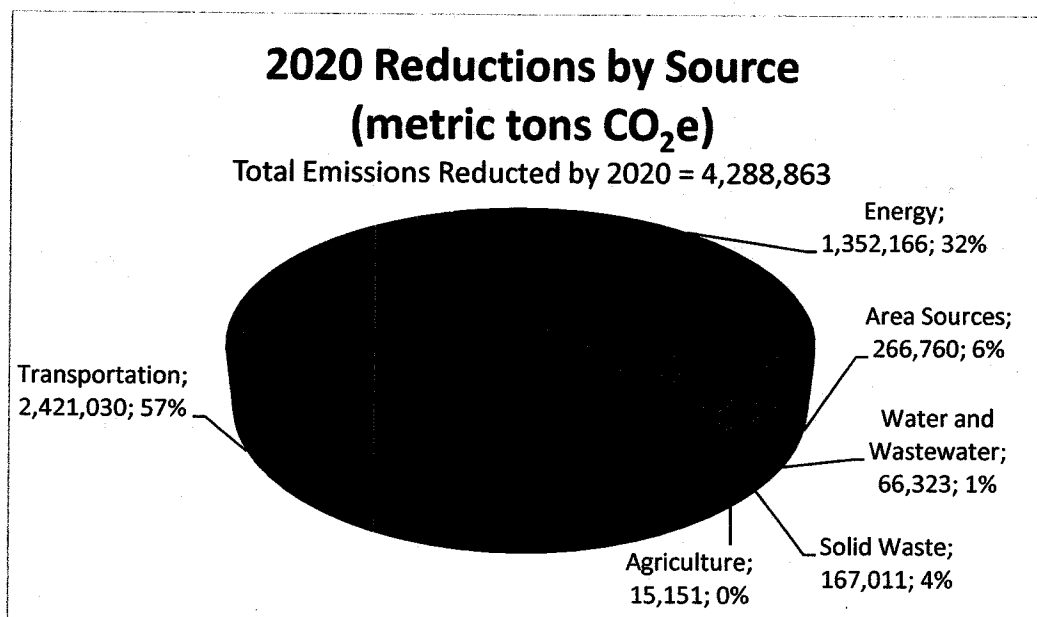
Note that the Screening Table and point values are best used for typical development projects processed by the County. Examples of typical development projects include residential subdivisions, multi-family residential apartments, condominiums and townhouses, retail commercial, big box retail, office buildings, business parks, and typical warehousing. Mixed use projects can use the Screening Tables following the instructions. Transit oriented development (TOD), and infill projects are able to use the Screening Tables, but the Screening Table points are likely to underestimate total emission reductions afforded these types of projects. Note that the Screening Tables include the opportunity to custom develop points (using the formula above) in order to account for the predicted reductions in vehicle trips and vehicle miles traveled within a project specific traffic study and GHG analysis. TOD and infill projects can be more accurately assessed and allocated points using this method.

However, more unusual types of industrial projects such as cement manufacturing, metal foundries, refrigerant manufacturing, electric generating stations, and oil refineries cannot use the Screening Tables because the emission sources for those types of uses were not contemplated in the table.

## DEVELOPMENT OF THE POINT VALUES

The first step in developing the point system was the need to determine the total reductions afforded the GHG Plan. Figure 1 below shows the total emission reductions achieved by the GHG Plan. In total 4,288,863 MTCO<sub>2</sub>e will be reduced as a result of the GHG Plan.

Figure 1



The next step in developing the point system is to segregate out the State efforts in reducing GHG emissions within the County. Table 1 shows the reductions allocated to State measures and County strategies.

Table 1

Sector	2020 Reduction (MTCO <sub>2</sub> e)		Total
	State Strategies	County Strategies	
Transportation and Land Use	914,490	1,506,540	2,421,030
Building Energy -Energy Efficiency and Alternative Energy	860,205	491,962	1,352,166
Area Sources	0	266,760	266,760
Water Conservation	33,172	33,151	66,323
Solid Waste/Landfills	0	167,011	167,011
Agriculture	0	15,573	15,573
<b>Total</b>	<b>1,807,866</b>	<b>2,448,997</b>	<b>4,288,863</b>

## CEQA THRESHOLDS AND SCREENING TABLES

As shown in Table 1, 2,448,997 MTCO<sub>2</sub>e are reduced by the County's Implementation Measure. This amount includes reductions afforded existing building retrofits, other changes to activities associated with existing land uses, as well as reductions associated with new development.

The next step is to segregate out of the County strategies total the amount of emissions that will be reduced within new development.

Table 2 on the next page summarizes the reduction in emissions afforded new development from the Implementation measures. Table 2 shows 1,302,569 MTCO<sub>2</sub>e being reduced from new development as a result of the County strategies. Within the 1,302,569 MTCO<sub>2</sub>e of new development reductions afforded County strategies, 619,336 MTCO<sub>2</sub>e of emissions reduced is accomplished through new Commercial and Industrial Projects, and 683,233 MTCO<sub>2</sub>e of emissions reduced is accomplished through new residential projects.

The next step in allocating point values is to determine the number of new homes and commercial buildings that are anticipated by year 2020. The County predicts that 100,477 new residential units will be needed by 2020 to accommodate the population growth by 2020. A total of approximately 195,547,000 square feet of new commercial and industrial buildings within the unincorporated County area is needed to accommodate anticipated job growth. This estimate is based on the relationship between past growth in employment to the average growth in commercial/industrial building area for Riverside County.

Dividing the 683,233 MTCO<sub>2</sub>e reductions of emissions afforded the Implementation Measures for new residential development by the anticipated 100,477 new residential units that will be built yields 6.80 MTCO<sub>2</sub>e per residential unit that needs to be reduced to fulfill the anticipated reductions of the GHG Technical Report. That amount equals 100 points, producing the following for the point values:

**0.0680 MTCO<sub>2</sub>e per Point per Residential Unit**

A similar process was used to derive the point value for new commercial/Industrial development. Because commercial/industrial land uses are typically described in thousand square feet of building space, the point value was calculated as follows: **0.031 MTCO<sub>2</sub>e per 1,000 Sq. Ft. of gross Commercial/Industrial building area.**

The final step was to allocate points to each of the reduction measures in order to provide the menu of point values. The spreadsheet on the next page shows emission reductions afforded each measure. Note that emissions associated with new development are reduced by the State's measures, as well as the County's Implementation measures. The Screening Tables focus on those measures the County is implementing associated with new development within the unincorporated County area. For this reason, the menu of options pertains to all of the Implementation Measures pertaining to new development.

CEQA THRESHOLDS AND SCREENING TABLES

Table 2

Reduction Number	Reduction Measure Name	Reduced Emissions(MTCO <sub>2</sub> e)	
		Commercial/Industrial	Residential
IM-E1	New Residential Energy Efficiency		72,228.9
IM-E2	New Residential Renewable Energy		83,347.0
IM-E5	New Commercial Energy Efficiency	126,589.3	
IM-E6	New Commercial/Industrial Renewable Energy	34,576.5	
IM-T1	Employer VMT Reduction	150,960.2	
IM-T2	Increased Residential Density		109,947.0
IM-T3	Mixed Use Development	108,134.7	108,134.7
IM-T4	Preferential Parking	848.9	
IM-T5	Road Imp/Sig.Sync/TFM	18,718.0	40,647.4
IM-T6	Bicycle/Ped Infrastructure	4,123.5	8,954.5
IM-T7	Electric Vehicle Use	8,537.0	18,538.7
IM-T8	Anti-Idling Enforcement	14,552.0	
IM-T9	Increase Public Transit	31,147.2	67,638.3
IM-T10	Employee Commute Alt. Schedule	28,592.8	
IM-L1	SCAQMD No New Woodburning Stoves		68,559.3
IM-L2	Prohibit Gas-Powered Equipment	6,483.1	41,861.6
IM-W1	Water Use Reduction Initiative	6,118.6	4,911.8
IM-W2	Increase Reclaimed Water Use	991.2	795.7
IM-SW1	County Diversion Program	46,140.0	24,844.6
IM-SW2	Construction Diversion Program	32,823.3	32,823.3
<b>Total IM Reductions for New Development</b>		<b>619,336.4</b>	<b>683,233.0</b>





**RIVERSIDE COUNTY  
GREENHOUSE GAS TECHNICAL  
REPORT**

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## **ACKNOWLEDGEMENTS**

This Riverside County Greenhouse Gas Technical Report is the outcome of work contributed by a number of individuals. We wish to thank all individuals who contributed to the success of this report, in particular:

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Appendix C:	Data Inputs

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AB 32	Assembly Bill 32, The California Global Warming Solutions Act of 2006
ARRA	American Recovery & Reinvestment Act
BAU	Business As Usual Scenario
BTU	British Thermal Unit
CARB	California Air Resources Board
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal EPA	California Environmental Protection Agency
Cal Recycle	California Department of Resources Recycling and Recovery
CANHP	California New Home Program
CAS	California Climate Adaption Strategy
CCAT	California Climate Action Team
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CCTP	Climate Change Technology Program
CEC	California Energy Commission
CEO	County Executive Officer
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
C <sub>2</sub> F <sub>6</sub>	Hexafluoroethane
CF <sub>4</sub>	Carbon Tetrafluoride
CH <sub>4</sub>	Methane
CIWMB	California Integrated Waste Management Board
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Equivalent Carbon Dioxide
CREB	Clean Renewable Energy Bonds
CSI	California Solar Initiative
CTC	California Transportation Commission
CWSRF	Clean Water State Revolving Funds
DKM	Dekatherm
DPM	Diesel Particulate Matter
EECGB	Energy Efficiency Community Block Grant
EMFAC2007	On-Road Emission Factors published by the CARB in 2007
GCC	Global Climate Change
GHG	Greenhouse Gas
GRT	GHG Reduction Team

GWhs	Gigawatt Hours
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HFC-23	Trifluoromethane
HFC-134	Hydrofluorocarbon 134
HFC-152a	Difluoroethane
IIP	Interregional Improvement Program (IIP)
IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent Transportation Systems
LEED	Leadership in Energy and Environmental Design
MMBTU	Million BTUs (British Thermal Units)
MMT	Million Metric Tons
MMT CO <sub>2</sub> e	Million Metric Tons Carbon Dioxide Equivalent
MT	Metric Tons
MT CO <sub>2</sub> e	Metric Tons Carbon Dioxide Equivalent
MWh	Megawatt Hours
MWh/year	Megawatt Hours per Year
N <sub>2</sub> O	Nitrous Oxide
NHTSA	National Highway Transportation Safety Administration
NSHP	New Solar Home Program
O <sub>3</sub>	Ozone
RCRA	Resource Conservation and Recovery Act
RIP	Regional Improvement Program
RTIP	Regional Transportation Improvement Program
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCG	Southern California Gas Company
SIP	State Implementation Plan
SF <sub>6</sub>	Sulfur Hexafluoride
STIP	State Transportation Improvement Plan
URBEMIS 2007	Urban Emissions Model, version 9.2 published in June 2007
USEPA	United States Environmental Protection Agency
VMT	Vehicle miles traveled



## Section 1 Introduction

---

The County of Riverside is committed to reducing greenhouse gas (GHG) emissions in an effort to provide a more livable, equitable and economically vibrant community. By using energy more efficiently, harnessing renewable energy to power our buildings, enhancing access to sustainable transportation modes, and recycling our waste, Riverside County can keep dollars in the local economy, create new green jobs and improve community quality of life.

GHGs trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities, primarily through the combustion of fossil fuels. The State of California has been at the forefront of developing solutions to address global climate change and reduce anthropogenic GHG emissions.

State law defines GHG to include the following compounds: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) (Health and Safety Code, section 38505(g)). The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide. Because GHGs have variable potencies, a common metric of carbon dioxide equivalents (CO<sub>2</sub>e) is used to report their combined potency. The potency each GHG has in the atmosphere is measured as a combination of the volume of its emissions and its global warming potential (GWP)<sup>1</sup>, and is expressed as a function of the potency with respect to the same mass of CO<sub>2</sub>. Methane, for example has a GWP of 21, while nitrous oxide has a GWP of 310. Thus, by multiplying the amount in metric tons of each individual gas by their respective GWP, all GHGs can be reported in the common unit of metric tons<sup>2</sup> of CO<sub>2</sub>e (MT CO<sub>2</sub>e).

Due to the successful global bans on chlorofluorocarbons (primarily used as refrigerants, aerosol propellants and cleaning solvents), Riverside County does not generate significant emissions of these GHGs. The same has occurred for other synthesized gases such as hydrofluorocarbons (HFCs) and carbon tetrafluoride (CF<sub>4</sub>) which have been banned and are no longer available on the market. Because of the ban, the Riverside County will not generate emissions of

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<sup>1</sup> The potential of a gas or aerosol to trap heat in the atmosphere.

<sup>2</sup> One metric ton (MT) equals 1,000 kilograms or 2,204 pounds. Note, one 'short ton' is 2,000 pounds.

these GHGs and therefore, they are not considered any further in this document. Sulfur hexafluoride (SF<sub>6</sub>) is another GHG with a high GWP (23,900 times that of CO<sub>2</sub>); it is mainly used as a gaseous dielectric medium in electric switchgear of high voltage electric transmission lines and medical use in retinal detachment surgery and ultrasound imaging. In both uses, SF<sub>6</sub> is not released to the atmosphere and therefore, it is not considered further in this document.

The GHG inventory focuses on the sources and amounts of GHG emissions generated from activities associated with land uses and related activities within the unincorporated areas under the jurisdictional control of the County. The purpose of the inventory is to create a clear picture of how these unincorporated communities use fossil fuels and other forms of energy, and how these communities generate GHG pollutants and waste. The inventory also helps to pinpoint the activities and sectors generating the most GHGs.

## **1.1 Regulatory Setting**

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In an effort to stabilize GHG emissions and reduce impacts associated with climate change, international agreements, as well as federal and state actions were implemented beginning as early as 1988. The international, federal, state, regional, and local government agencies discussed below work jointly, as well as individually, to address GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs.

### **1.1.1 International and Federal**

#### *1.1.1.1 Kyoto Protocol*

The United States participated in the United Nations Framework Convention on Climate Change (UNFCCC) (signed on March 21, 1994). The Kyoto Protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008–2012 (UNFCCC 1997). It should be noted that although the United States is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments.

In anticipation of providing an updated international treaty for the reduction of GHG emissions, representatives from 170 countries met in Copenhagen in December 2009 to ratify

an updated UNFCCC agreement (Copenhagen Accord). The Copenhagen Accord, a voluntary agreement between the United States, China, India, and Brazil, recognizes the need to keep global temperature rise to below 2°C and obliges signatories to establish measures to reduce greenhouse gas emissions and to prepare to provide help to poorer countries in adapting to climate change. The countries met again in Cancun in December 2010 and adopted the Cancun Agreements, which reinforces and builds upon the Copenhagen Accord. The nations agreed to recognize country targets, develop low-carbon development plans and strategies, and report inventories annually. In addition, agreements were made regarding financing for developing countries and technology support and coordination among all nations. The next conference of the parties is scheduled for December 2011 in South Africa.

#### *1.1.1.2 Climate Change Technology Program*

The United States has opted for a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (which is led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative.

#### *1.1.1.3 United States Environmental Protection Agency*

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO<sub>2</sub> gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions. Programs include: the State Climate and Energy Partner Network that allows for the exchange of information between federal and state agencies regarding climate and energy, the Climate Leaders program for companies, the Energy Star labeling system for energy-efficient products, and the Green Power Partnership for organizations interested in buying green power. All of these programs play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In *Massachusetts v. Environmental Protection Agency* (Docket No. 05-1120), the U.S. Supreme Court held in April of 2007 that the USEPA has authority to regulate greenhouse gases, and the USEPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the USEPA should be required to regulate CO<sub>2</sub> and other greenhouse gases as pollutants under Section 202(a)(1) of the federal Clean Air Act (CAA).

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October of 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The Final Rule was effective December 29, 2009, with data collection beginning January 1, 2010, and the first annual reports due in March 2011. This rule does not regulate the emission of GHGs; it only requires the monitoring and reporting of greenhouse gas emissions for those sources above certain thresholds (USEPA 2009). USEPA adopted a Final Endangerment Finding for the six defined GHGs on December 7, 2009. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA in fulfillment of the U.S. Supreme Court decision.

On May 13, 2010, the USEPA issued a Final Rule that establishes a common sense approach to addressing greenhouse gas emissions from stationary sources under the CAA permitting programs. In the first phase of the Rule (January 2011-June 2011), only sources currently subject to the New Source Review Prevention of Significant Deterioration (PSD) permitting program (i.e., those that are newly-constructed or modified in a way that significantly increases emissions of a pollutant other than GHGs) are subject to permitting requirements for their GHG emissions under PSD. For these projects, only GHG increases of 75,000 tons<sup>3</sup> per year (tpy) CO<sub>2</sub>e or more need to determine the Best Available Control Technology (BACT) for their GHG emissions. Similarly for the operating permit program, only sources currently subject to the program are subject to title V requirements for GHG. In the second phase of the rule (July 2011-June 2013) new construction projects that exceed a threshold of 100,000 tpy and modifications of existing facilities that increase emissions by at least 75,000 tpy will be subject to permitting requirements. Additionally, operating facilities that emit at least 100,000 tpy will be subject to title V permitting requirements (USEPA 2010a). This rule took effect January 2, 2011.

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<sup>3</sup> EPA thresholds are presented in tons (or short tons), not metric tons. 1 short ton is equivalent to approximately 0.907 metric tons.

## 1.1.2 State

### 1.1.2.1 California Air Resources Board

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards (CAAQS)), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts. The SIP is required for the State to take over implementation of the Clean Air Act.

### 1.1.2.2 Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

The first California Climate Action Team (CCAT) Report to the Governor in 2006 contained recommendations and strategies to help meet the targets in Executive Order S-3-05. The 2010 CCAT Biennial Report, finalized in December 2010, expands on the policy oriented 2006 assessment. The new information detailed in the CCAT Biennial Report includes development of revised climate and sea-level projections using new information and tools that have become available in the last two years; and an evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts (CCAT 2010). The action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by Executive Order S-13-08, described below.

*1.1.2.3 Assembly Bill 32, The Global Warming Solutions Act of 2006.*

In 2006, the California State Legislature adopted AB 32, the *Global Warming Solutions Act of 2006*, focusing on reducing GHG in California. GHGs as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 required CARB to adopt rules and regulations directing State actions that would achieve greenhouse gas emissions equivalent to 1990 statewide levels by 2020. On or before June 30, 2007, CARB was required to publish a list of discrete early action GHG emission reduction measures to be made enforceable by 2010. The law further required that such measures achieve the maximum technologically feasible and cost effective reductions in GHGs from sources or categories of sources to achieve the statewide greenhouse gas emissions limit for 2020.

CARB published its Final Report for Proposed Early Actions to Mitigate Climate Change in California in October 2007. This report described recommendations for discrete early action measures to reduce GHG emissions as part of California's AB 32 GHG reduction strategy. Resulting from this are three new regulations proposed to meet the definition of "discrete early action greenhouse gas reduction measures," including the following: a low carbon fuel standard; reduction of HFC-134a emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill methane capture (CARB 2007d). CARB estimates that by 2020, the reductions from those three measures would be approximately 13-26 million metric tons (MMT) CO<sub>2</sub>e.

Under AB 32, CARB has the primary responsibility for reducing GHG emissions. In 2007, CARB released a report, *California 1990 GHG Emissions Level and 2020 Emissions Limit* (CARB 2007a), that determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO<sub>2</sub>e. Additionally, in December 2008, CARB adopted the *Climate Change Scoping Plan*, which outlines the State's strategy to achieve the 2020 GHG limit. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health. The plan emphasizes a cap-and-trade program, but also includes the discrete early actions (CARB 2008).

#### 1.1.2.4 Senate Bill 97 (SB 97)

SB 97, enacted in 2007, amended the California Environmental Quality Act (CEQA) to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directed the California Office of Planning and Research (OPR) to develop revisions to the State CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" and directed the Resources Agency to certify and adopt these revised State CEQA Guidelines by January 2010. The revisions were completed March 2010 and codified into the California Code of Regulations and became effective within 120 days pursuant to CEQA. The amendments provide regulatory guidance for the analysis and mitigation of the potential effects of GHG emissions.

Among the changes resulting from SB 97, CEQA Guidelines Section 15183.5 (Tiering and Streamlining the Analysis of GHG Emissions), was added to describe the criteria needed in a Climate Action Plan to allow for the tiering and streamlining of CEQA analysis of GHGs for subsequent development projects. Specifically, the section reads:

*§15183.5. Tiering and Streamlining the Analysis of Greenhouse Gas Emissions.*

*(a) Lead agencies may analyze and mitigate the significant effects of greenhouse gas emissions at a programmatic level, such as in a general plan, a long range development plan, or a separate plan to reduce greenhouse gas emissions. Later project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review. Project-specific environmental documents may rely on an EIR containing a programmatic analysis of greenhouse gas emissions as provided in section 15152 (tiering), 15167 (staged EIRs) 15168 (program EIRs), 15175-15179.5 (Master EIRs), 15182 (EIRs Prepared for Specific Plans), and 15183 (EIRs Prepared for General Plans, Community Plans, or Zoning).*

*(b) Plans for the Reduction of Greenhouse Gas Emissions. Public agencies may choose to analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions or similar document. A plan to reduce greenhouse gas emissions may be used in a cumulative impacts analysis as set forth below. Pursuant to sections 15064(h)(3) and 15130(d), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously adopted plan or mitigation program under specified circumstances.*

*(1) Plan Elements. A plan for the reduction of greenhouse gas emissions should:*

*(A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;*

*(B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;*

*(C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;*

*(D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;*

*(E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;*

*(F) Be adopted in a public process following environmental review.*

*(2) Use with Later Activities. A plan for the reduction of greenhouse gas emissions, once adopted following certification of an EIR or adoption of an environmental document, may be used in the cumulative impacts analysis of later projects. An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. If there is substantial evidence that the effects of a particular project may be cumulatively considerable notwithstanding the project's compliance with the specified requirements in the plan for the reduction of greenhouse gas emissions, an EIR must be prepared for the project.*

#### *1.1.2.5 Senate Bill 375*

Senate Bill 375 (SB 375), which establishes mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions, was adopted by the State on September 30, 2008. On September 23, 2010, CARB adopted the vehicular greenhouse gas emissions reduction targets that had been developed in consultation with the metropolitan planning organizations (MPOs); the targets require a 7 to 8 percent reduction by 2020 and between 13 to 16 percent reduction by 2035 for each MPO. SB 375 recognizes the importance of achieving significant greenhouse gas reductions by working with cities and counties to change land use patterns and improve transportation alternatives. Through the SB 375 process, MPOs, such as the Southern California Council of Governments (SCAG), which includes Riverside



County, will work with local jurisdictions in the development of sustainable communities strategies (SCS) designed to integrate development patterns and the transportation network in a way that reduces greenhouse gas emissions while meeting housing needs and other regional planning objectives. SCAG's reduction target for per capita vehicular emissions is 8 percent by 2020 and 13 percent by 2035 (CARB 2010). The MPOs will prepare their first SCS according to their respective regional transportation plan (RTP) update schedule; to date, no region has adopted an SCS. The first of the RTP updates with SCS strategies are expected in 2012.

#### *1.1.2.6 Executive Order S-13-08*

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, to provide clear direction on how the State should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

- Initiate California's first statewide Climate Change Adaptation Strategy (CAS) that will assess the State's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies;
- Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform State planning and development efforts;
- Issue interim guidance to State agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects; and
- Initiate studies on critical infrastructure projects and land-use policies vulnerable to sea level rise.

The 2009 CAS Report summarizes the best known science on climate change impacts in the state to assess vulnerability, and outlines possible solutions that can be implemented within and across state agencies to promote resiliency. This is the first step in an ongoing, evolving process to reduce California's vulnerability to climate impacts (California Natural Resources Agency 2009a).

#### *1.1.2.7 California Code of Regulations (CCR) Title 24, Part 6*

CCR Title 24, Part 6: *California's Energy Efficiency Standards for Residential and Non-residential Buildings* (Title 24) were first 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.

Since use of fossil fuels to produce energy results in GHG emissions, energy efficient buildings that use less energy result in less GHG emissions as well.

The California Energy Commission (CEC) adopted Updated Title 24 Standards in 2008 and they went into effect on August 1, 2009. These changes affect Building Energy Efficiency Standards, in order to:

- Provide California with an adequate, reasonably priced, and environmentally sound supply of energy;
- Respond to AB 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its GHG emissions to 1990 levels by 2020;
- Pursue California energy policy, which states that energy efficiency is the resource of first choice for meeting California's energy needs;
- Act on the findings of California's Integrated Energy Policy Report (IEPR) that concludes that the 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 GHG emissions;
- Meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes; and
- Meet the energy efficiency goals of Executive Order S-20-04, which established California's Green Building Initiative. The Executive Order seeks to improve the energy efficiency of nonresidential buildings through aggressive standards toward the target of a 20% reduction in building energy use from a 2003 baseline by the year 2015.

### 1.1.3 Regional

Riverside County spans three different air basins: South Coast, Salton Sea, and Mojave Desert. The portions of Riverside County within the South Coast and Salton Sea Air Basins are regulated by the South Coast Air Quality Management District (SCAQMD), which also governs Los Angeles and Orange Counties, plus a small portion of San Bernardino County. The easternmost third of the County, that within the Mojave Desert Air Basin, is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD), which also governs most of San Bernardino County. The AQMDs are responsible for promoting and improving the air quality of their jurisdiction's basins. This is accomplished through air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from

motor vehicles. Both the SCAQMD and the MDAQMD have stationary, area, and mobile source<sup>4</sup> control measures designed to bring the area into compliance with the state ozone standards.

After AB 32 was passed, SCAQMD formed a Climate Change Committee along with a Greenhouse Gases CEQA Significance Thresholds Working Group and the SoCal Climate Solutions Exchange Technical Advisory Group. On September 5, 2008, the SCAQMD Board approved the SCAQMD Climate Change Policy, which outlines actions the District will take to assist businesses and local governments in implementing climate change measures, decrease the agency's carbon emissions, and provide information to the public regarding climate change. On December 5, 2008, the Board approved interim CEQA GHG significance thresholds for stationary sources, and related rules, and plans. The District also adopted a tiered approach for determining significance. Projects that are exempt from CEQA or consistent with an approved local GHG reduction plan can be found to be less than significant. Tier 3, the primary tier the Board will use for determining significance, has a screening significance threshold designed to capture 90 percent of sector GHG emissions (SCAQMD 2008).

#### 1.1.4 Local

In light of State and regional efforts to reduce GHGs, there are several avenues of opportunity Riverside County faces. In preparing this technical report and the forthcoming CAP, the County is able to streamline its CEQA review of individual projects. By having a GHG reduction plan that adequately addresses emissions at the plan level, the County is able to determine that projects that are consistent with the plan will not have significant GHG-related impacts. Coordination with CARB, SCAQMD, and the State Attorney General's office ensures that the inventories and reduction strategies presented in this report adequately address the County's emissions. The County will use screening tables for new development (described in Section 4 of this report) in order to evaluate the consistency of individual projects with the goals and reduction measures outlined in this report.

The screening tables are setup similar to a checklist with points allocated to certain elements that reduce greenhouse gas emissions; if the project garners 100 points (by including

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<sup>4</sup> Stationary sources emit pollutants from a fixed location, for example industrial boilers. Mobile sources are motor vehicles and other transportation sources that generate pollution through the combustion of fossil fuels. Area sources are those associated with the activities of a given area, such as from fireplaces and lawnmowers in a residential area.

enough GHG-reducing elements), then the project is consistent with the County's plan for reducing emissions. This streamlined process relieves the County from lengthy studies or uncertainties, particularly for small development proposals. The screening tables are set up in such a way that a new development project can earn points by reducing emissions from an existing source (by making an existing building more energy efficient, for example). This is particularly beneficial for jurisdictions, such as Riverside County, that have significant housing stock built prior to the 1974 inception of Title 24 energy efficiency standards and requirements. Thus, Riverside County is able to reduce emissions from both existing sources and future development.

## **Section 2 Methodology**

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### **2.1 Overview**

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The methodology for preparing GHG inventories incorporates the protocols, methods, and emission factors found in the California Climate Action Registry (CCAR) General Reporting Protocol (version 3.1, January 2009), the Local Government Operations Protocol (LGOP) (version 1.1, May 2010), and the Draft Community-wide GHG Emissions Protocol under development by the Association of Environmental Professionals (AEP) and the International Council for Local Environmental Initiatives (ICLEI).

The LGOP and the Draft Community-wide GHG Emissions Protocols categorize GHG emissions into three distinct "scopes" as a way of organizing GHG emissions, as follows:

- **Scope 1 Emissions** - All "direct" sources of community-wide GHG emissions<sup>5</sup> from sources within the jurisdictional boundaries of the County. This includes fuel burned onsite in buildings and equipment such as natural gas or diesel fuel; transportation fuels burned in motor vehicles and airplanes; and wood-burning emissions from household hearths. For inventories of only municipal operations, these emissions are limited to activities under the operational control of the local government.

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<sup>5</sup> A direct source is one where the action and the associated emissions are in the same location. For example, when a homeowner burns wood in his fireplace, he releases GHGs directly from his fireplace. An "indirect" source is one where the action that generates GHGs is separated from the where the GHGs are actually emitted. For example, when a building uses electricity, it necessitates the burning of coal (and resultant release of GHGs) by a coal-fired electricity generating station located elsewhere.

- Scope 2 Emissions – Encompasses “indirect” sources of GHG emissions resulting from the consumption of purchased electricity, which is electricity used by the residents, businesses, and County’s facilities in the unincorporated areas. These emissions are “indirect” as the GHG emissions arise distantly, for example at an electric generating station in another county or even state. Thus they are distinguished from *direct* emissions (i.e., Scope 1 emissions), which are reported by the utility itself, in order to avoid double counting.
- Scope 3 Emissions is an optional reporting category that encompasses all other “indirect emissions” that are a consequence of activities of the County’s residents and businesses, but occur from sources out of the jurisdictional control of the local government. For example, emissions from trucks hauling waste under a County contract. The key to this category of emissions is that they must be “indirect or embodied emissions over which the local government exerts significant control or influence.” (CCAR 2010)

Because Scope 3 emissions are indirect emissions that are attributable to emissions sources that are not owned or controlled by Riverside County, they are not considered in this report. Scope 1 emissions are characterized and named in this report as “direct emissions.” Scope 2 emissions are characterized and named as “indirect source emissions.”

The analysis herein is tailored to include all existing and projected emission sources within the County to provide, to the fullest extent feasible, a comprehensive analysis of GHG impacts. The Global Warming Solutions Act of 2006 (AB 32) established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law mandates the reduction of CO<sub>2</sub>e emissions in California to 1990 levels by 2020.

## **2.2 GHG Emissions in Riverside County**

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The purpose of this inventory is to identify and categorize the major sources and quantities of GHG emissions currently being produced by the unincorporated County’s residents, businesses and municipal (i.e., County) operations (referred to collectively as “Riverside County,” herein). The existing emissions are based on 2008 activities since that is the most recent year for which complete and up-to-date data are available. The inventory provides a framework on which to design programs and actions that specifically target reductions by

emissions sources. The inventory also serves as a reference against which to measure the County's progress towards reducing GHG emissions over time, and documentation for potential emission trading opportunities.

In estimating Riverside County's total greenhouse gas emissions, data from County, regional, and State agencies were used. For community energy statistics, the following agencies and County departments were consulted: Riverside County Planning Department, Southern California Edison (SCE), Imperial Irrigation District (IID) and Southern California Gas Company (SCG). Transportation data sources included Riverside County Transportation Department, Riverside County Economic Development Agency, Southern California Association of Governments (SCAG), and California Department of Transportation (CalTrans). Agricultural data sources included Riverside County Agricultural Commissioner and SCAG. Water use data was gathered from Coachella Valley Water District, Desert Water Agency, Eastern Municipal Water District, Western Municipal Water District, Palo Verde Irrigation District, San Geronio Pass Water Agency, and Metropolitan Water District of Southern California. Solid waste data was collected from Riverside County Waste Management Department, California Integrated Waste Board (CIWB) and California Department of Resources Recycling and Recovery (Cal Recycle). Appendix C includes a compilation of all data inputs.

In cases where specific forecast data was not available, estimates were made by extrapolating from existing land use data based on growth assumptions. General estimate calculations and assumptions are compiled in Appendix B. All of the greenhouse gas emission contributions (such as, kilowatt-hours of electricity generated by fossil fuel combustion in power plants, therms of natural gas combusted, vehicle miles traveled, and tons of solid waste) have been converted through various factors into the common unit of metric tons of CO<sub>2</sub>e released into the atmosphere (MTCO<sub>2</sub>e) in a given year.

The main GHG generated by Riverside County's activities is carbon dioxide. In particular, the County directly generates CO<sub>2</sub> in the form of vehicle exhaust, consumption of natural gas for heating, and agriculture production. Riverside County also generates emissions of methane and nitrous oxide. Methane is directly generated from agricultural production, combustion of fossil fuels, and solid waste decomposition. Nitrous oxide results predominately from agricultural production and motor vehicle use.

### **2.3 Calculation of GHGs**

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The following summarizes the methodology used for GHG calculations for each category of emission source. The emissions calculations follow the California Climate Action Registry (CCAR) General Reporting Protocol, version 3.1 (January 2009); the Local Government Protocol, version 1.1 (May 2010); the Urban Forestry Protocol, version 1.1 (Climate Action Reserve, March 2010) and CARB's Mandatory GHG Reporting Regulations (CARB 2007c). These protocols are consistent with the methodology and emission factors endorsed by South Coast Air Quality Management District, CARB, and USEPA. In cases where the various protocols do not contain specific source emission factors, current industry standards or "AP 42," emission factors published by USEPA were used (USEPA 1985). Equations and modeling assumption used in the calculations of GHGs are included in Appendix B.

In this report, "Business As Usual" (BAU) refers to the continued operations and development of the County without the inclusion of recently-adopted sustainability initiatives. The BAU scenario describes how emissions would be in year 2020, if the emissions inventory continued to grow strictly based upon the socioeconomic and land use growth projections for the County and the naturally-occurring events that might change the character of emissions. Therefore, the BAU scenario follows a fairly linear growth pattern of emissions, with minor changes, as expected to result from the normally-occurring process of urbanization within the County. Because urbanization tends to result in the provision of more commercial and job opportunities near homes, compared to undeveloped areas, continued urbanization also yields a modest reduction in vehicle miles traveled (VMT) outside the influence of any programs or focused VMT reduction policies. As defined, the BAU does not include any specific programs to reduce VMT.

GHG emissions are typically segregated into direct and indirect sources as discussed earlier. However, direct and indirect sources are not completely independent of each other and may often be combined into other more encompassing categories or "sectors." For example, although natural gas combustion is a direct source and electricity generation is an indirect source, they both are typically discussed under the "Energy" sector when policies are put in place to reduce emissions. Thus, each sector represents a variety of emissions that generally result from activities that may all be influenced through similar measures, despite their varying sources. Accordingly, this inventory presents and discusses emissions as associated with five

key sectors: Energy, Solid Waste, Landscape Emissions, Transportation, and Agriculture. Each is discussed individually below.

### 2.3.1 Energy

#### 2.3.1.1 Electricity:

Emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O within Riverside County result from the use of electricity. Annual electricity usage in 2008, obtained from SCE and the Imperial Irrigation District (IID), the two major commercial electricity providers serving Riverside County territory, was used in determining community-wide electricity consumption and generation emission estimates for the existing inventory. For 2020, emissions estimates were based on the anticipated growth in population, housing and employment for the County. The 2020 growth projections were interpolated from the General Plan Update build-out conditions.

SCE and IID provide electricity generated via a variety of sources, including combustion of natural gas and coal, nuclear, large hydroelectric, and renewable sources (solar, wind, etc.). Each of these sources of electricity emits different amounts of GHGs. Therefore, emissions from electricity were determined by multiplying annual usage in megawatt hours per year (MWh/year) by the SCE emission factors appropriate to the inventory year for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O obtained from EPA's Emissions and Generation Resource Integrated Database (eGRID) (USEPA 2007).

#### 2.3.1.2 Natural Gas Combustion:

The residents and businesses of Riverside County emit GHGs from the combustion of natural gas, most often used for space heating. The annual natural gas usage for the unincorporated areas of the County in million British Thermal Units (MMBTUs) was multiplied by the respective emissions factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O to determine the emissions from natural gas combustion. Existing inventory consumption levels were obtained from the Southern California Gas Company (SCG) and future consumption estimates were based on anticipated growth in the County.

#### 2.3.1.3 Water Supply:

Electricity is needed to move and treat water. There are many water agencies that operate in Riverside County, providing both potable and non-potable water to customers in the



unincorporated areas. The six major water importers/wholesalers serving Riverside County are: Coachella Valley Water District, Desert Water Agency, Eastern Municipal Water District, Western Municipal Water District, Palo Verde Irrigation District, and San Geronio Pass Water Agency. Serving EMWD and WMWD, the Metropolitan Water District of Southern California (MWD) holds the rights to a large portion of the State Water Project supply (the system of aqueducts and canals that distributes water from the Sacramento Bay-San Joaquin Delta across the State) and is the largest water wholesaler in California.

Each agency's water supply comes from a mixture of the following sources: the Bay-Delta via the State Water Project, the Colorado River, local groundwater, recycled water, and local surface water. The GHG emissions associated with water use come from the energy used to collect, treat, convey, and distribute the water. Water imported through the State Water Project and from the Colorado River have higher GHG emissions associated with them, when compared to local water sources, as these distant sources require energy intensive transport to reach Riverside County. This category, "Water Supply," addresses the GHG emissions resulting from energy used to pump/transport these imported sources of water from their sources to Riverside County. This separate category is necessary, as the energy used is accrued across a varied of providers and is not included in the data collected from SCE and IID. For local water sources, the data collected from SCE and IID include associated electricity usage and, hence GHG emissions, are included under the "Electricity" category (Section 2.3.1.1.) described above.

#### *2.3.1.4 Wastewater Treatment:*

As with the local water supply just mentioned, GHG emissions associated with wastewater (that is, sewage, urban runoff, and, in some cases, industrial or manufacturing runoff) are based on the electricity needed to pump and treat the wastewater. Again, since wastewater treatment occurs locally within Riverside County, these emissions are also accounted for under "Electricity," Section 2.3.1.1.

#### **2.3.2 Solid Waste Management**

Riverside County Waste Management Department is responsible for managing the County's landfills, including both active and closed landfills. Table 2-1, below, provides information on the closure year (either past or planned), the year the landfill gas (LFG) system was installed, the in place tonnage at the end of 2008, and the amount of waste disposed at each landfill in 2008. All

of the landfills are managed by the County with the exception of El Sobrante, which is privately owned and operated.

**Table 2-1: Riverside County Landfills**

Landfill Name (closure year)	Year LFG System Installed	In-place Tonnage (end of 2008)	Waste Disposed in 2008
Badlands (2016)	2001	8,389,807	582,404.62
Blythe (2034)	1998	609,373	15,178.80
Coachella (1997)	2001	3,237,845	-
Corona (1986)	1988	3,200,000	-
Desert Center	-	40,425	15.25
Double Butte (1994)	1997	1,977,463	-
Edom Hill (1997)	2008	7,323,778	-
Elsinore (1965)	1993	1,140,000	-
El Sobrante (2045)	1989	22,127,558	960,363.49
Highgrove (1998)	1998	3,496,425	-
Lamb Canyon (2021)	2001	6,376,349	688,142.35
Mead Valley (1997)	1995	2,312,837	-
Mecca II	-	228,088	8.86
Oasis	-	176,410	1,479.97
W. Riverside (1993)	1988	1,260,000	-

Emissions from solid waste result from three different waste-related sources of emissions: transportation from its source to the landfill, operation of the equipment used at the landfill, and the fugitive emissions from waste decomposition. Emissions from the transportation of solid waste is determined based on the average number of miles traveled by each truck and the CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions generated per mile traveled. These emissions are accounted for under "Transportation," Section 2.3.4, of the inventory, described below. The emissions from landfill equipment are dependent upon the type of equipment, fuel use, and duration of use. Emissions from waste decomposition at both active and inactive landfills located in the unincorporated areas of Riverside County are included in the inventory. The operational information used in this section was collected from the Riverside County Waste Management Department.

Emissions from the equipment used at the landfills were calculated from total fuel use by the equipment and the emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, as determined from CARB off-road mobile source emission factors. Fugitive methane emissions from the decomposition of solid waste (typically buried) are calculated based on the annual waste generation multiplied by

the applicable emission factors for waste production for CH<sub>4</sub>. Many landfills now have a methane capture system in place; depending on the type of system, not all of the methane generated from the decomposition is included in the inventory. In Riverside County, all of the landfills have such systems with the exception of Desert Center, Mecca II, and Oasis landfills; these three landfills are the smallest in the County with limited waste disposal. Although CO<sub>2</sub> is also a by-product of organic waste decomposition, the USEPA considers these emissions to be natural and not anthropogenic. Therefore they are not included in the emissions inventory. Nitrous oxide is not a by-product of decomposition and therefore no fugitive emissions of nitrous oxide are anticipated or calculated from solid waste sources.

### 2.3.3 Area Source Emissions

#### 2.3.3.1 Landscaping Emissions

Emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are generated by the use of landscape equipment that runs on gasoline. CO<sub>2</sub> emissions were determined directly through URBEMIS2007 for the existing (2008) and 2020 inventories. URBEMIS2007 is a computer software package that is used for modeling projected emissions of air quality pollutants including carbon dioxide. From the CO<sub>2</sub> emissions, the approximate number of gallons of gasoline consumed by landscape equipment use was calculated (CARB 2007e). This number was then multiplied by emission factors presented in the General Reporting Protocol, version 3.1 (CCAR 2010) to derive both CH<sub>4</sub> and N<sub>2</sub>O emissions.

#### 2.3.3.2 Wood Burning Emissions

Direct CO<sub>2</sub> emissions are produced from the burning of wood in wood stoves and fireplaces. Natural gas-fired stoves, barbecues and other heating devices are not included in this sub-category; they have already been accounted for under "Energy," Section 2.3.1.1. Carbon dioxide, CH<sub>4</sub>, and N<sub>2</sub>O emissions from wood stoves and fireplaces are calculated based on the percentage of residential units using each type of hearth and the California average amount of wood burned per unit provided by the EIA 2005 Residential Energy Consumption Survey (EIA 2005). The emission coefficients used are taken from the EPA's AP-42 document (USEPA 1985).

## 2.3.4 Transportation

### 2.3.4.1 On-Road Vehicles

Emissions from on-road vehicles include all generated from trips attributable to activities taking place in the unincorporated parts of the County. Carbon dioxide emissions from vehicles were calculated utilizing EMFAC2007 emission factors for the existing and 2020 inventories. The Emission Factors (EMFAC) model was developed by the California Air Resources Board and is used to calculate CO<sub>2</sub> emission rates for on-road motor vehicles, from light-duty passenger vehicles to heavy-duty trucks that operate on highways, freeways, and local roads in California (CARB 2007b). Motor vehicle emissions of CH<sub>4</sub> and N<sub>2</sub>O were calculated using USEPA emission factors for on-road vehicles based on the total annual mileage driven multiplied by their respective emission factors by year. Vehicle miles traveled (VMT) were provided by the County Transportation Department. VMTs were derived from a transportation model count of the trips entering the County, trips leaving the County, and trips within the County. Pass-through traffic (that is, trips beginning and ending outside of the County) is not included in this analysis. Since trips entering and leaving the County have only one end in Riverside County, only half of these miles were included in the emissions analysis, in order to reflect the split jurisdiction of these trips.

The transportation modeling (RIVTAM) assumed that all vehicles are either gasoline or diesel powered. The estimates therefore do not account for electrical, biodiesel (a blend of diesel and vegetable oil), or hydrogen powered systems. Any electrically-powered vehicle which draws its power from a residential, commercial, or industrial land use within the County will be accounted for under electrical usage, i.e., "Energy," Section 2.3.1.1. Predicted 2020 BAU vehicle trips were estimated by using Riverside County General Plan build-out (approximately Year 2060) conditions and interpolating back to year 2020.

### 2.3.4.2 Aviation Emissions

Riverside County owns and operates five airports: Hemet-Ryan, French Valley, Chiriaco Summit, Desert Center and Jacqueline Cochran Regional Airport. The GHG emissions associated with aircraft trips within the County were calculated based on annual fuel consumption (extrapolated from airport aviation fuel sales) and emission factors for jet fuel and aviation fuel for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. Fuel services are not provided at the Chiriaco Summit or Desert Center

Airport, so all fuel consumption data was obtained from the three larger airports. March Air Reserve Base is not included here as it is not under the direct jurisdiction of the County of Riverside.

### 2.3.5 Agriculture

Riverside County has a large amount of agricultural land with a variety of cultivation uses. The most prominent uses are field and seed crops, including primarily alfalfa and wheat, as well as irrigated pasturelands and rangelands (for grazing). Other uses include fruit trees, vineyards, vegetables, and livestock. Agricultural procedures contribute directly to emissions of greenhouse gases through a variety of processes. Assessment of non-carbon-dioxide emissions are from the following source categories: enteric fermentation in domestic livestock, livestock manure management, crop cultivation, and field burning of agricultural residues.

Livestock emissions are divided into two categories based on the emissions source: enteric fermentation and manure management. Enteric fermentation is defined as a fermentation process that takes place in the stomach of ruminant animals, such as cows, sheep and goats. This process produces methane that is released through belching and flatulence. Manure management is the process of gathering and disposing of manure generated by livestock. Management practices vary by type of livestock, but in the case of dairy cows, manure is often collected and stored in lagoons. As the manure breaks down, methane is released.

Methane and nitrous oxide are the primary greenhouse gases emitted from crop cultivation and associated activities. Rice cultivation and field burning of agricultural residues are contributing sources of CH<sub>4</sub> (USEPA 2009b). Agricultural related emissions for 2008 were based on data from SCAG and the Riverside County Agricultural Commissioner.

### 2.3.6 Municipal Operations

In addition to the community-wide emissions presented in this report, Riverside County's forthcoming Climate Action Plan will include an inventory of the County's municipal operations. This inventory will only include emissions from fuel used in buildings, vehicles, and facilities that are under the operational control of the local government. Although most of the emissions from the municipal operations are included in the community-wide inventory, the two emissions inventories are developed differently and cannot simply be subtracted from or added to one another. The government operations inventory will provide Riverside County the opportunity to

evaluate its progress in implementing emission reduction strategies on a municipal level and set an example for the implementation of reduction strategies throughout the County.

### Section 3 Greenhouse Gas Emissions Inventory

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The emissions inventory identifies and categorizes the major sources and quantities of GHG emissions being produced by County residents, businesses, and municipal (County) operations based on the best available data. Using historic emissions and business-as-usual (BAU) practices as a basis, the inventory includes GHG emissions from 2008 (baseline) and projected for 2020. In terms of land use, GHG emissions are predicted based on the types of activities associated with the given use and may span a number of sectors. For example, a single-family home would be associated with GHG emissions from transportation (commuting to work, say), waste generation (trash and lawn clippings) and energy consumption (used to run appliances, heat and light the house).

#### 3.1 2008 Emissions Inventory

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For 2008, activities within unincorporated Riverside County resulted in the emission of approximately 1.2 MMT of CO<sub>2</sub>e. Table 3-1 through Table 3-7 and Figure 3-1, below, summarize the 2008 emissions by emissions category, as follows:

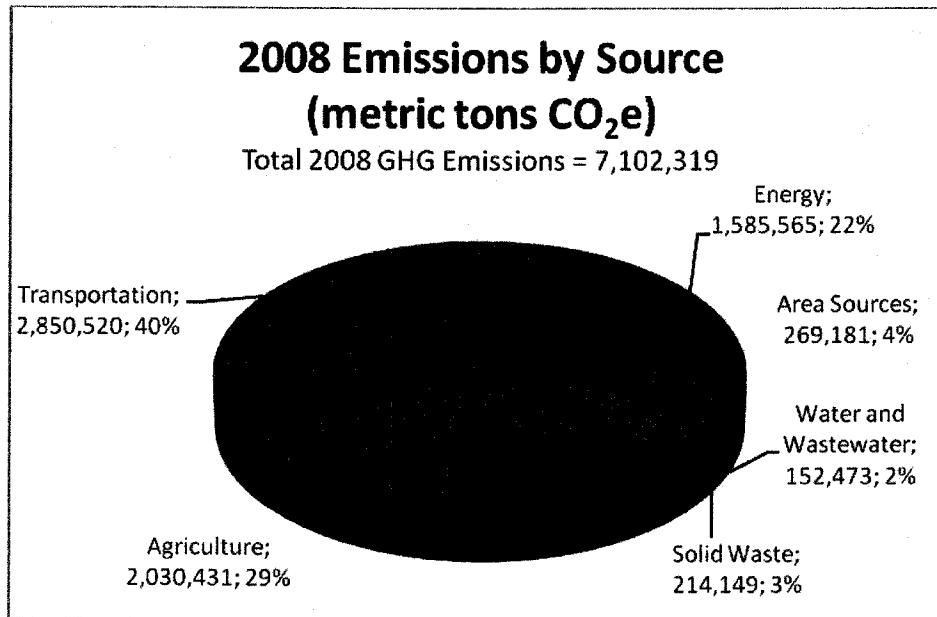
##### 3.1.1 2008 Net Total Emissions

Table 3-1 summarizes net 2008 County emissions of CO<sub>2</sub>e as broken down by emissions category. Each of these categories is further broken down in Tables 3-2 through 3-7, below. Figure 3-1 is a graphical representation of Table 3-1. A detailed breakdown of 2008 emissions by category is available in Appendix A.

Table 3-1: 2008 Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO <sub>2</sub> e
Transportation	2,850,520
Energy	1,585,565
Area Source Emissions	269,181
Purchased Water	152,473
Solid Waste	214,149
Agriculture	2,030,431
<b>Total</b>	<b>7,102,319</b>

Figure 3-1: 2008 Emissions Generated by Emissions Category (MT CO<sub>2</sub>e)



### 3.1.2 2008 Energy Emissions

Table 3-2 summarizes the emissions from energy generation and/or consumption with respect to electricity and natural gas used within the County. Energy-related emissions represent approximately twenty-two percent of the total GHG emissions generated by the County in 2008. A detailed breakdown of 2008 energy emissions is available in Appendix A.

Table 3-2: 2008 Energy Emissions

Energy Emissions	
Sources	Metric tons of CO <sub>2</sub> e
Electric	1,075,316
Natural Gas	510,249
<b>Total</b>	<b>1,585,565</b>

### 3.1.3 2008 Solid Waste Emissions

Table 3-3 summarizes the 2008 County emissions from the disposal and decomposition of solid waste generated within the County. Solid waste-related emissions represent approximately



three percent of the total GHG emissions generated by the County in 2008. A detailed breakdown of 2008 solid waste emissions is available in Appendix A.

**Table 3-3: 2008 Solid Waste Emissions**

<b>Solid Waste</b>	
<b>Source</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Landfill Offgasing	209,097
Onsite Equipment	5,052
<b>Total</b>	<b>214,149</b>

### 3.1.4 2008 Area Source Emissions

Table 3-4 summarizes the 2008 County area source emissions from landscaping and wood-burning activities. Landscape and wood-burning related area source emissions represent approximately five percent of the total GHG emissions generated by Riverside County in 2008. A detailed breakdown of 2008 Landscape emissions is available in Appendix A.

**Table 3-4: 2008 Area Source Emissions**

<b>Area Source Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Landscape Emissions	150,639
Wood burning	118,543
<b>Total</b>	<b>269,181</b>

### 3.1.5 2008 Purchased Water Emissions

Table 3-5 summarizes the 2008 County indirect emissions from purchased water. Water-related emissions included in this section are indirectly produced as a result of electrical consumption to pump and treat water imported from outside the County. Indirect emissions from the purchasing of water from the State Water Project and the Colorado River represent approximately two percent of the total GHG emissions generated by Riverside County in 2008. A detailed breakdown of 2008 purchased water emissions is available in Appendix A.

**Table 3-5: 2008 Purchased Water Emissions**

<b>Purchased Water Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Purchased Water	152,473
<b>Total</b>	<b>152,473</b>

**3.1.6 2008 Agricultural Emissions**

Table 3-6 summarizes the 2008 County emissions with respect to agricultural activities within the County. Agricultural emissions represent approximately twenty-eight percent of the total GHG emissions generated by the County in 2008. Table 3-6 shows the breakdown of agricultural emissions by activity. A detailed breakdown of 2008 Agricultural emissions is available in Appendix A.

**Table 3-6: 2008 Agricultural Emissions**

<b>Agriculture</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Enteric Fermentation	115,584
Manure Management	199,873
Agricultural Residue Burning	166
Crop Growth	1,233,081
Animals and Runoff	235,565
Fertilizer Use	246,162
<b>Total</b>	<b>2,030,431</b>

**3.1.7 2008 Transportation Emissions**

Table 3.7 summarizes the 2008 County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Riverside County and only account for vehicle trips with starting points and/or destinations related to land uses within unincorporated areas that are within the jurisdictional control of the County. Transportation-related emissions represent the largest emission source at approximately forty percent of the total GHG emissions generated within Riverside County. A detailed breakdown of 2008 transportation emissions is available in Appendix A.

**Table 3-7: 2008 Transportation Emissions**

<b>Transportation Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
On-Road Vehicles	2,819,456
Airport Operations	21,162
<b>Total</b>	<b>2,850,520</b>

### 3.2 2020 Business as Usual (BAU) Emissions Inventory

In 2020, Riverside County is projected to emit a total of 10.9 MMT of CO<sub>2</sub>e from business-as-usual operations. Business-as-usual refers to continued operations and development of the County according to 2008 policies, without the inclusion of proposed reduction or sustainability initiatives as part of the forthcoming Climate Action Plan. Reduction initiatives coming from the State or other agencies are not included in the BAU scenario; these reduction measures and their anticipated emission reductions in Riverside County are discussed in Section 4. The following tables and figures (Table 3-8 through Table 3-12; and Figure 3-2) summarize the 2020 BAU emissions by emissions category.

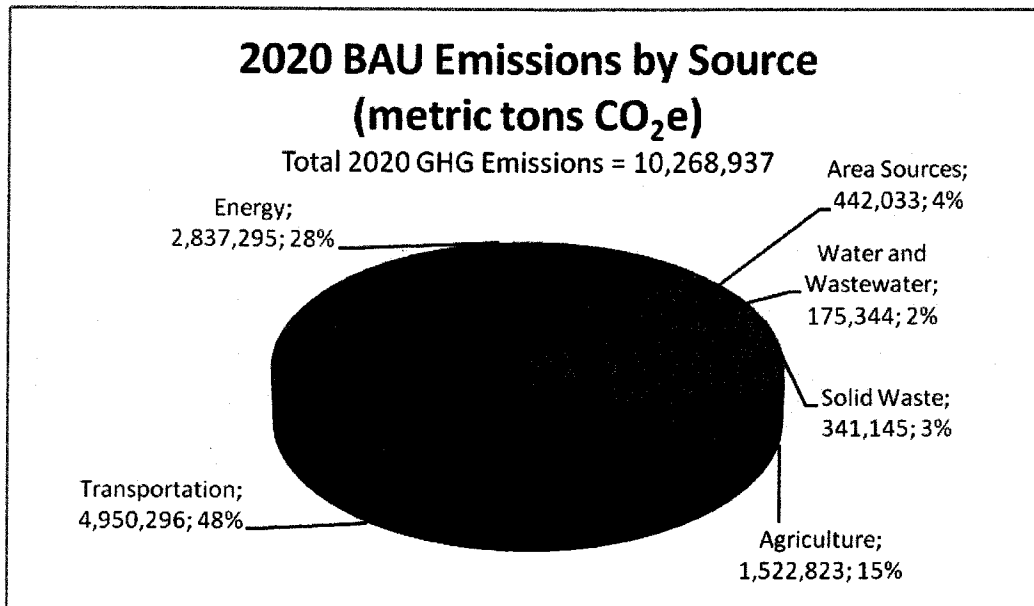
#### 3.2.1 2020 BAU Net Total Emissions

Table 3-8 summarizes the net 2020 County emissions of CO<sub>2</sub>e as broken down by emissions source category. Each of these categories is further broken down in Tables 3-9 through 3-14 below. Figure 3-2 is a graphical representation of Table 3-8. A detailed breakdown of 2020 emissions by category is available in Appendix A.

**Table 3-8: 2020 BAU Net Total Emissions**

<b>Net Total Emissions</b>	
<b>Emissions Category</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Transportation	4,950,296
Energy	2,837,295
Area Source Emissions	442,033
Purchased Water	175,344
Solid Waste	341,145
Agriculture	1,522,823
<b>Total</b>	<b>10,268,937</b>

Figure 3-2: 2020 BAU Emissions Generated by Source (MT CO<sub>2</sub>e)



### 3.2.2 2020 BAU Energy Emissions

Table 3-9 summarizes the forecasted emissions from energy generation and/or consumption with respect to electricity and natural gas. The total also includes indirect energy emissions associated with local pumping and treating potable water and wastewater. Energy related emissions represent approximately twenty-seven percent of the total BAU GHG emissions generated by Riverside County in 2020. A detailed breakdown of 2020 BAU energy emissions is available in Appendix A.

Table 3-9: 2020 BAU Energy Emissions

Energy Emissions	
Sources	Metric tons of CO <sub>2</sub> e
Electric	1,930,555
Natural Gas	906,740
<b>Total</b>	<b>2,837,295</b>

### 3.2.3 2020 BAU Solid Waste Emissions

Table 3-10 summarizes the forecasted 2020 BAU County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent approximately three percent of the total GHG emissions generated by

Riverside County in 2020. A detailed breakdown of 2020 BAU solid waste emissions is available in Appendix A.

**Table 3-10: 2020 BAU Solid Waste Emissions**

<b>Solid Waste</b>	
<b>Source</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Landfill Offgasing	335,336
Onsite Equipment	5,810
<b>Total</b>	<b>341,145</b>

### 3.2.4 2020 BAU Area Source Emissions

Table 3-11 summarizes the 2020 BAU County emissions from area source activities. The primary source of emissions results from wood burning and the use of landscape equipment. Area Source emissions represent approximately five percent of the total GHG emissions generated by Riverside County in 2020. A detailed breakdown of 2020 BAU landscape emissions is available in Appendix A.

**Table 3-11: 2020 BAU Area Source Emissions**

<b>Area Source Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Landscape Emissions	250,426
Wood Burning	191,607
<b>Total</b>	<b>442,033</b>

### 3.2.5 2020 Purchased Water

Table 3-12 summarizes the 2020 BAU County indirect emissions from purchased water. Water-related emissions included in this section are indirectly produced as a result of electrical consumption to pump and treat water imported from outside the County. Indirect emissions from the purchasing of water from the State Water Project and the Colorado River represent approximately two percent of the total GHG emissions generated by Riverside County in 2020. A detailed breakdown of forecasted 2020 BAU purchased water emissions is available in Appendix A.

**Table 3-12: 2020 Purchased Water Emissions**

<b>Purchased Water Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Purchased Water	175,344
<b>Total</b>	<b>175,344</b>

**3.2.6 2020 BAU Agricultural Emissions**

Table 3-13 summarizes the forecasted 2020 BAU County emissions with respect to agricultural activities within the County. Agricultural emissions represent approximately nineteen percent of the total County emissions. Table 3-13 represent the breakdown of agricultural emissions by activity. A detailed breakdown of 2020 BAU agricultural emissions is available in Appendix A.

**Table 3-13: 2020 BAU Agricultural Emissions**

<b>Agriculture</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Enteric Fermentation	86,688
Manure Management	149,905
Agricultural Residue Burning	124
Crop Growth	924,811
Animals and Runoff	176,674
Fertilizer Use	184,621
<b>Total</b>	<b>1,522,823</b>

**3.2.7 2020 BAU Transportation Emissions**

Table 3-14 summarizes the forecasted 2020 BAU County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Riverside County and only account for vehicle trips related to Riverside County land uses as starting points and destinations. Transportation-related emissions represent approximately forty-eight percent of the total GHG emissions generated by Riverside County in 2020 under the BAU scenario. Transportation emissions are anticipated to be both the largest source of emissions and have the highest growth of emissions within the County. A detailed breakdown of 2020 BAU transportation emissions is available in Appendix A.

**Table 3-14: 2020 BAU Transportation Emissions**

<b>Transportation Emissions</b>	
<b>Sources:</b>	<b>Metric tons of CO<sub>2</sub>e</b>
On-Road Vehicles	4,929,135
Airport Operations	21,162
<b>Total</b>	<b>4,950,296</b>

## **Section 4 GHG Emissions Regulations and Implementation Measures**

The State of California has set specific targets for reducing greenhouse gas emissions from the burning of fossil fuels in both power plants and vehicles by adopting various regulations, however, these State strategies will complement the local initiatives in Riverside County as they work to reach their 2020 reduction target. This technical report evaluates the greenhouse gas reductions that will occur within the County as a result of the State actions; then, reductions from additional County implementation measures are analyzed. The State measures are identified as R1 reduction measures in this report. The R1 measures are included here to show all of the anticipated reduction strategies identified in the AB 32 Scoping Plan for implementation at the State Level that will ultimately result in a reduction of greenhouse gas emissions at the County level. The R1 measures are not administered or enforced by the County, but the County - by describing them herein- substantiates the reductions applied in association with these State Measures. New development in the County offers an opportunity to incorporate GHG reduction measures into the planning of projects; thus, the IMs described in this section are targeted toward new development.

The Riverside County General Plan has policies that will reduce GHG emissions. The following section describes Riverside County's General Plan policies that will reduce GHG emissions that are currently in place. Subsequent sections are organized by GHG emissions sector and describe both the R1 reduction measures and County IMs that reduce emissions from that specific sector.

### **4.1 Existing Riverside County General Plan Policies Related to GHG**

Policies to reduce GHG emissions often overlap with policies addressing energy conservation, reduced automobile use, water conservation, and many other issues. Riverside County has many General Plan policies that help to reduce GHG emissions while targeting another issue. Table 4-1 below summarizes these General Plan policies.



**Table 4-1: 2020 BAU Transportation Emissions**

Sector	Element	Section	Policies
Energy Efficiency in Buildings	Land Use	Project Design	LU-4.1
	Multipurpose Open Space	Energy Conservation	OS-16.1 through OS-16.10
	Air Quality	Stationary Emissions	AQ-4.1, AQ-4.1, AQ-4.4
		Energy Efficiency and Conservation	AQ-5.1, AQ-5.2, AQ-5.4
Regional Agency Coordination	Land Use	Administration	LU-1.5
	Air Quality	Multi-Jurisdictional Cooperation	AQ-1.1 through AQ-1.4, AQ-1.7
Smart Growth	Land Use	Efficient Use of Land	LU-2.1
		Economic Development	LU-7.12
		Air Quality	LU-10.1
	Air Quality	Business Development	AQ-7.1, AQ-7.3
		Job-to-Housing Ratio	AQ-8.4 through AQ-8.9
Water Conservation	Land Use	Project Design	LU-4.1
	Circulation	Transportation System Landscaping	C-5.2
	Multipurpose Open Space	Water Conservation	OS-2.1 through OS-2.5
Reduce Automobile Use	Land Use	Efficient Use of Land	LU-2.1
		Project Design	LU-4.1
		Air Quality	LU-10.3, LU-10.4
		Circulation	LU-12.1, LU-12.3, LU-12.4
	Circulation	Planned Circulation Systems	C-1.2, C-1.7
		Pedestrian Facilities	C-4.1, C-4.9
		Transportation System Landscaping	C-5.2
		Public Transportation System	C-9.2
		Fixed Route Transit Service	C-11.2, C-11.4 through C-11.7
		Transit Oasis and Transit Centers	C-12.1 through C-12.3
		Passenger Rail	C-13.1 through C-13.3
		Bikeways	C-17.3, C-17.4
		Environmental Considerations	C-20.12
		Transportation Systems Management	C-21.1, C-21.9
	Multipurpose Open Space	Energy Conservation	OS-16.3, OS-16.8
	Air Quality	Mobile Pollution Sources	AQ-3.2, AQ-3.4

		Trip Reduction	AQ-10.1 through AQ-10.4
Renewable Energy/Alternative Fuel	Multipurpose Open Space	Renewable Energy	OS-10.1, OS-11.1 through OS-11.3, OS-12.1
	Air Quality	Transportation System Management Improvements	AQ-13.1
Reduce Waste	Air Quality	Energy Efficiency and Conservation	AQ-5.1

The following sections are divided by emissions sectors (energy, solid waste, agriculture, transportation, area sources, and industrial point sources). For each emission sector, the section starts with the R1 State Measures that will reduce emissions within that sector. The R1 measures are followed by recommended County Implementation Measures (IMs) relevant to that emission sector. The IMs include measures for both new development and existing development in the County and include a list of General Plan Policies that each IM will implement. Note that the IMs are not prescriptive and heavily rely upon the Screening Table menu of options concept. The Screening Tables have point values assigned to each menu option. As long as a development project meets the required point allotment (100 points) as a whole the development will meet the requirements of the IM process. This system will assure flexibility in the implementation of the measures.

## 4.2 Energy

### 4.2.1 R1 Energy Reduction Measures

The following list of R1 building energy efficiency related measures are those measures that California has identified in the CARB Scoping Plan that will result in emission reductions within the County.

#### R1-E1: Renewable Portfolio Standard for Building Energy Use

Senate Bills (SBs) 1075 (2002) and 107 (2006) created the State's Renewable Portfolio Standard (RPS), with an initial goal of 20 percent renewable energy production by 2010. Executive Order (EO) S-14-08 establishes a RPS target of 33 percent by the year 2020 and requires State agencies to take all appropriate actions to ensure the target is met. The 33 percent RPS by

2020 goal is supported by CARB, though its feasibility is not certain due to current limitations in production and transmission of renewable energy.

#### R1-E2 and R1-E3: AB1109 Energy Efficiency Standards for Lighting (Residential and Commercial Indoor and Outdoor Lighting)

Assembly Bill 1109 mandated that the California Energy Commission (CEC) adopt energy efficiency standards for general purpose lighting by the end of 2008. These regulations, combined with other State efforts, are structured to reduce State-wide electricity consumption in the following ways:

- R1-E2: At least 50 percent reduction from 2007 levels for indoor residential lighting by 2018; and
- R1-E3: At least 25 percent reduction from 2007 levels for indoor commercial and outdoor lighting by 2018.

#### R1-E4: Electricity Energy Efficiency (AB32)

This measure captures the emission reductions associated with electricity energy efficiency activities included in CARB's Scoping Plan that are not attributed to other R1 or R2 reductions as described in this report. This includes energy efficiency measures that CARB views as crucial to meeting the State-wide 2020 target, and that will result in additional emissions reductions beyond those already accounted for in California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24, Part 6 of the California Code of Regulations; hereinafter referred to as, "Title 24 Energy Efficiency Standards"), the California Green Building Standards Code (Title 24, Part 11 of the California Code of Regulations; hereinafter referred to as, "CALGreen Building Standards")(effective January 1, 2011), etc. By 2020, this requirement will reduce emissions in California by approximately 21.3 MMTCO<sub>2</sub>e, representing 17.5 percent of emissions from all electricity in the State. This measure includes the following strategies:

- "Zero Net Energy" buildings (buildings that combine energy efficiency and renewable generation so that they, based on an annual average, extract no energy from the grid);
- Broader standards for new types of appliances and for water efficiency;
- Improved compliance and enforcement of existing standards;
- Voluntary efficiency and green building targets beyond mandatory codes;
- Voluntary and mandatory whole-building retrofits for existing buildings;
- Innovative financing to overcome the high upfront cost and split incentives for energy efficiency, on-site renewables, and high efficiency distributed generation. Split incentives happen particularly in rental properties where the owner has no interest in energy improvements because they don't pay the energy bills and tenants have no interest because they do not own the property;

- More aggressive utility programs to achieve long-term savings;
- Water system and water use efficiency and conservation measures;
- Additional industrial and agricultural efficiency initiatives; and
- Providing real time energy information technologies to help consumers conserve and optimize energy performance.

#### R1-E5: Natural Gas Energy Efficiency (AB32)

This measure captures the emission reductions associated with natural gas energy efficiency activities included in CARB's AB32 Scoping Plan that are not attributed to other R1 or R2 reductions, as described in this report. This measure includes energy efficiency measures that CARB views as crucial to meeting the State-wide 2020 target, and will result in additional emissions reductions beyond those already accounted for in the Title 24 Energy Efficiency Standards, CALGreen Building Standards (effective January 1, 2011), etc. By 2020, this requirement will reduce emissions in California by approximately 4.3 MMTCO<sub>2e</sub>, representing 6.2 percent of emissions from all natural gas combustion in the State. This measure includes the following strategies:

- "Zero Net Energy" buildings (buildings that combine energy efficiency and renewable generation so that they, based on an annual average, extract no energy from the grid);
- Broader standards for new types of appliances and for water efficiency;
- Improved compliance and enforcement of existing standards;
- Voluntary efficiency and green building targets beyond mandatory codes;
- Voluntary and mandatory whole-building retrofits for existing buildings;
- Innovative financing to overcome first-cost and split incentives for energy efficiency, on-site renewables, and high efficiency distributed generation;
- More aggressive utility programs to achieve long-term savings;
- Water system and water use efficiency and conservation measures;
- Additional industrial and agricultural efficiency initiatives; and
- Providing real time energy information technologies to help consumers conserve and optimize energy performance.

#### R1-E6: Increased Combined Heat and Power (AB32)

This measure captures the reduction in building electricity emissions associated with the increase of combined heat and power activities, as outlined in CARB's Scoping Plan. The Scoping Plan suggests that increased combined heat and power systems, which capture "waste heat" produced during power generation for local use, will offset 30,000 GWh State-wide in 2020. Approaches to lowering market barriers include utility-provided incentive payments, a possible combined heat and power portfolio standard, transmission and distribution support systems, or

the use of feed-in tariffs. By 2020, this requirement will reduce emissions in California by approximately 6.7 MMTCO<sub>2</sub>e, representing 7.6 percent of emissions from all electricity in the State.

#### **R1-E7: Industrial Efficiency Measures (AB32)**

This measure captures the reduction in industrial building energy emissions associated with the energy efficiency measures for industrial sources included in CARB's AB32 Scoping Plan. By 2020, this requirement will reduce emissions in California by approximately 1.0 MMTCO<sub>2</sub>e, representing 3.9 percent of emissions from all industrial natural gas combustion in the State.

CARB proposes the following possible State-wide measures:

- Oil and gas extraction;
- GHG leak reduction from oil and gas transmission;
- Refinery flare recovery process improvements; and
- Removal of methane exemption from existing refinery regulations.

#### **R1-E8: Renewable Portfolio Standard (33 percent by 2020) Related to Water Supply and Conveyance**

This measure would increase electricity production from eligible renewable power sources to 33 percent by 2020. A reduction in GHG emissions results from replacing natural gas-fired electricity production with zero GHG-emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for water supply and conveyance in California (including the "purchased water" in this inventory) by approximately 21.3 MMTCO<sub>2</sub>e, representing 15.2 percent of emissions from electricity generation (in-State and imports).

#### **4.2.2 Energy Reduction Implementation Measures**

The following list of implementation measures (IM) are candidate measures related to building energy efficiency the County can incorporate into the new development projects are to achieve an AB 32 compliant reduction target of 15% below existing emissions levels by the year 2020.

#### **IM-E1: Residential Energy Efficiency Program**

This IM would implement General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9, and involves the adoption of a program that facilitates energy efficient design for new residential buildings such that the residential units are 5% to 20% more efficient than the current Title 24 Standards. The high end of this energy efficiency program is equal to that of the

LEED for Homes and ENERGY STAR programs; aspects of these programs are included as options for new development in the screening table, but attaining LEED or ENERGY STAR certification is not an explicit requirement. The County energy efficiency program is a voluntary program with a flexible menu of options for compliance included in the screening table.

The 2008 Title 24 Energy Standards were adopted by the Energy Commission in April 2008 and compliance with the 2008 standards went into effect January 1, 2010. In an effort to meet the overall goal of the California Energy Efficiency Strategic Plan of reaching zero net energy for residential buildings by 2020, the stringency of the Title 24 Energy Standards as regulated and required by the State will continue to increase every three years. As energy efficiency standards increase the County may want to periodically re-evaluate their percentage beyond Title 24 goal to ensure it is still a feasibly achievable goal. Residential developments within the unincorporated portions of Riverside County are encouraged to participate in the volunteer Residential Energy Efficiency Program. This voluntary program would set a minimum goal of achieving energy efficiency of 5% greater than current Title 24 Standards. Incentives to participate in this volunteer program include prioritization and streamlining of the application process for residential projects that achieve the minimum goal. Towards this end, the County's screening tables for new development include a menu of options with points assigned to each option. As long as the proposed project meets the required point allotment (100 points total) the project will be deemed consistent with the County plan for reducing GHG emissions. This system will assure flexibility in the implementation of this reduction measure. This reduction goal can be achieved through the incorporation of the strategies outlined in the bullet points below, although the list is not exclusive and other actions are also feasible::

- Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;
- Install solar water heaters;
- Install energy conserving windows and insulation;
- Install energy efficient lighting;
- Optimize conditions for natural heating, cooling and lighting by building siting and orientation;
- Use features that incorporate natural ventilation;
- Install light-colored "cool" pavements, and strategically located shade trees along all bicycle and pedestrian routes; and

- Incorporate skylights; reflective surfaces, and natural shading in building design and layouts.

#### **IM-E2: Residential Renewable Energy Program**

This IM would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3, and facilitate the voluntary incorporation of renewable energy (such as photovoltaic panels) into new residential developments. For participating developments, the use of onsite renewable energy should be sufficient to reduce the new home's projected use of grid energy by 50%.

The California Energy Commissions' New Solar Homes Partnership is a component of the California Solar Initiative and provides rebates to developers of 6 or more units where 50% of the units include solar power. In addition this measure would encourage that all residents be equipped with "solar ready" features where feasible, to encourage future installation of solar energy systems. Such features would include the proper solar orientation (south facing roof sloped at 20° to 55° from the horizontal), clear access on south-sloped roofs, electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water tank. The incentive program should provide enough incentives to result in approximately 50% of new residential development participation in this program, thereby resulting in a 25% reduction in electrical consumption from new residential developments.

As an alternative to, or in support of, providing onsite renewable energy, the project proponent could also buy into a purchased energy offset program through the South Coast Air Quality Management District (SCAQMD), Southern California Edison (SCE), Mission Energy or others that will allow for the purchase of electricity generated from renewable energy resources offsite. Purchased energy offsets (or a combination of incorporated renewables and purchased offsets) must be equal to 25% of the total projected energy consumption for the development.

#### **IM-E3: Residential Retrofit Implementation Program**

This IM would implement General Plan Policies OS 16.5, OS 16.7, and OS 16.9 and initiate a County program that facilitates the incorporation of energy reduction measures for residential buildings undergoing major renovations. AB 811 is a potential funding source to the County for implementing incentive programs to encourage residences within the County to undertake energy efficiency retrofitting and reducing energy consumption in retrofitted homes by a

minimum of 15%. As with the new development, the County will develop a menu of options with points assigned to them. As long as a developer meets the required total point allotment (100 points) the developer will meet the requirements to have the project deemed consistent with this plan. This system will be provided to assure flexibility in the implementation of all reduction measures. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following:

- Replace inefficient air conditioning and heating units with new energy efficient models
- Replace older, inefficient appliances with new energy efficient models
- Replace old windows and insulation with top quality windows and insulation
- Install solar water heaters
- Replace inefficient and incandescent lighting with energy efficient lighting
- Weatherize the existing building to increase energy efficiency.

#### **IM-E4: Residential Renewable Retrofit Program**

This IM would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3 and initiate an incentive program that encourages residents to retrofit their homes with photovoltaic panels such that 50% of all of the home's electrical usage is offset. The CEC's Solar Initiative has incentives available to homeowners.

#### **IM-E5: Commercial Energy Efficiency Program**

This IM would implement General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9, and involves the adoption of a County Program that facilitates the energy efficient design for new commercial buildings so that new commercial buildings are 5% to 20% more efficient than the current Title 24 Standards. The high end of this voluntary energy efficiency program is 10% greater than the minimum requirements of the LEED and ENERGY STAR programs. As energy efficiency standards increase the County may want to periodically re-evaluate their percentage beyond Title 24 goal to ensure it is still a feasibly achievable goal.

Commercial developments within the unincorporated portions of Riverside County are encouraged to participate in the voluntary Commercial Energy Efficiency Program. This voluntary program would set a minimum goal of achieving energy efficiency of 5% greater than current Title 24 Standards. Incentives to participate in this volunteer program would include



prioritization and streamlining of the application process for commercial projects that achieve the minimum goal. As described in IM-E1 above, the County screening tables provide all developers with a list of potentially feasible GHG reduction measures that reflect the current state of the regulatory environment. The menu of options have points assigned to them and as long as the proposed project meets the required point allotment (100 points) it will be deemed to be consistent with the County's GHG reduction plan. This system will provide flexibility in the implementation of all reduction measure. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following:

- Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;
- Install and solar water heaters;
- Install top quality windows and insulation;
- Install energy efficient lighting;
- Optimize conditions for natural heating, cooling and lighting by building siting and orientation;
- Use features that incorporate natural ventilation;
- Install light-colored "cool" pavements, and strategically located shade trees along all bicycle and pedestrian routes; and
- Incorporate skylights, reflective surfaces, and natural shading in building design and layouts.

#### **IM-E6: Commercial/Industrial Renewable Energy Program**

This IM would implement General Plan Policies OS 10.1, OS 11.2, and OS 11.3, and facilitate the voluntary incorporation of onsite renewable (solar or other renewable) energy generation into the design and construction of new commercial, office, and industrial development. A project can earn points in the screening table for renewable energy generation if it is incorporated such that a minimum of 20% of the proposed project's total energy needs are offset. In addition this measure would encourage all facilities be equipped with "solar ready" features where feasible, to facilitate future installation of solar energy systems. These features should include the proper solar orientation (south-facing roof sloped at 20° to 55° from the horizontal), clear access on south sloped roofs, electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water tank.

As an alternative to, or in support of, providing onsite renewable energy, the project proponent could buy into a purchased energy offset program through the South Coast Air

Quality Management District (SCAQMD), Southern California Edison (SCE) or others that will allow for the purchase of electricity generated from renewable energy resources offsite. Purchased energy offsets (or a combination of incorporated renewables and purchased offsets) should equal 20% of the total projected energy consumption for the development.

#### **IM-E7: Commercial/Industrial Retrofit Program**

This IM would implement General Plan Policies AQ 5.2, AQ 5.4, OS 16.1, OS 16.7, and OS 16.9 and encourage all commercial or industrial buildings undergoing major renovations to reduce their energy consumption by a minimum of 20%. As with the new development, a menu of options will be provided to assure flexibility in the implementation of this reduction measure. Although not limited to these actions, this reduction goal can be achieved through the incorporation of the following energy efficiency and renewable energy technologies:

- Replace inefficient air conditioning and heating units with new energy efficient models
- Replace older, inefficient appliances with new energy efficient models
- Replace old windows and insulation with top-quality windows and insulation
- Install solar water heaters
- Replace inefficient and incandescent lighting with energy efficient lighting
- Weatherize the existing building to increase energy efficiency
- Install solar panels

#### **IM-E8: Induction Streetlight Retrofits**

New induction street lamps are estimated to last five times longer and consume 50% less energy than the traditional high pressure sodium (HPS) lamps. Changing out old lamps for new ones reduces electricity use and saves money in the long-run. Retrofitting streetlights shall be done in accordance with the County's Mt. Palomar Lighting Ordinance, which requires use of LPSV street lighting within 15 miles of Mt. Palomar Observatory.

#### **IM-E9: Water Use Reduction Initiative**

This IM would implement General Plan Policies LU 4.1d and f, C 5.2, and OS 2.1 through OS 2.4 and provide incentives for all new proposed development projects to comply with the California Green Building Standards Code. Under the California Green Building Code, new developments are required to reduce indoor potable water use by 20% beyond the Energy Policy Act of 1992 fixture performance requirements, and to reduce outdoor potable water use

by 50% from a mid-summer baseline average consumption through irrigation efficiency, native plant selection, the use of recycled water and/or captured rainwater, for example. The State is dependent upon local water purveyors and jurisdictions to implement these new requirements. This IM is provided here to enable its implementation and ensure points are allocated from the Screening Tables in accordance with the resultant benefits.

### **4.3 Solid Waste**

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#### **4.3.1 R1 Solid Waste Measure**

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As described below, the following R1 solid waste-related measure is a measure that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County:

##### **R1-W1: Solid Waste Measures**

The CARB Scoping Plan recommends three measures for reducing emissions from Municipal Solid Waste at the State level, including: 1) landfill methane control; 2) increase the efficiency of landfill methane capture; and 3) high recycling/zero waste. CARB is in the process of developing a discrete early action program for methane recovery (1), which was adopted in early 2010. This measure is expected to result in a 1.0 MMTCO<sub>2</sub>e reduction by 2020. Other measures proposed by CARB include increasing efficiency of landfill methane capture (2) and instituting high recycling/zero waste policies (3). Potential reductions associated with these measures are still to be determined. CARB estimates a preliminary one-time cost for adoption of these measures to be approximately \$70 per ton of CO<sub>2</sub> reduced.

#### **4.3.2 Implementation Measures to Reduce Solid Waste**

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The following list of IM measures are candidate measures the County can incorporate into the development review process related to solid waste to achieve an AB 32 compliant reduction target.

##### **IM-W1: County Diversion Program**

This IM would implement General Plan Policy AQ 4.1 and AQ 5.1 through a County-wide waste diversion plan to further exceed the state requirements by diverting 75% of all waste from landfills by 2020. The following is a potential list of waste reduction measures that can be

incorporated into development projects that will further strengthen existing waste reduction/diversion programs:

- Encourage commercial, office, and industrial development to adopt a voluntary procurement standard and prioritize those products that have less packaging, are reusable, recyclable, or compostable;
- Include recycling and green waste collection infrastructure (assigned areas with separate designated bins for each type of recycled material) within residential, commercial, and industrial development;
- For new developments, require the use of recycled-content materials, or recycled materials;
- Require a minimum of 15% of materials used in construction be sourced locally, as feasible; and
- Encourage the use of recycled building materials and cement substitutes for new developments.

#### **IM-W2: Construction Diversion Program**

This IM also implements General Plan Policies AQ 4.1 and AQ 5.1 by giving incentives through points within the Screening Table to new development projects that provide diversion of 60% of construction waste. This provides a 10% increase in diversion beyond the AB 2176, Section 42911, requirement that dictates that development projects provide adequate areas for collecting and loading recyclable materials and requires a 50% diversion rate prior to being issued a building permit.

## **4.4 Agriculture**

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### **4.4.1 R1 Agriculture Measure**

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The following R1 agriculture related measure identified by the State in the AB 32 Scoping Plan would serve to help reduce emissions within Riverside County.

#### **R1-A1: Methane Capture at Large Dairies**

This is an AB 32 voluntary measure to encourage the installation of methane digesters to capture methane emissions at large dairies. By 2020, this requirement will reduce emissions in California by approximately 1.0 MMTCO<sub>2</sub>e, representing 7.8 percent of the CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management and enteric fermentation at dairies across the State.

### **4.4.2 Implementation Measures to Reduce Agricultural Source Emissions**

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Agriculture is an important, but separate, economic sector from new development projects within the County. Because of the difference between agricultural activities and new resi-

dential, commercial and industrial development within the County, IMs for agricultural source emissions are not recommended at this time.

## **4.5 Transportation**

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### **4.5.1 R1 Transportation Measures**

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The following list of R1 transportation related measures are those measures that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the County.

#### **R1-T1: Assembly Bill 1493: Pavley I**

Assembly Bill 1493 (Pavley) required CARB to adopt regulations that will reduce GHG emissions from automobiles and light-duty trucks by 30 percent below 2002 levels by the year 2016, effective with 2009 models. By 2020, this requirement will reduce emissions in California by approximately 16.4 MMTCO<sub>2</sub>e, representing 17.3 percent of emissions from passenger/light-duty vehicles in the State.

#### **R1-T2: Assembly Bill 1493: Pavley II**

California committed to further strengthening the AB 1493 standards beginning in 2017 to achieve a 45 percent GHG reduction from 2020 model year vehicles. This requirement will reduce emissions in California by approximately 4.0 MMTCO<sub>2</sub>e, representing 2.5 percent of emissions from passenger/light-duty vehicles in the State.

#### **R1-T3: Executive Order S-1-07 (Low Carbon Fuel Standard)**

The Low Carbon Fuel Standard (LCFS) will require a reduction of at least ten percent in the carbon intensity of California's transportation fuels by 2020. By 2020, this requirement will reduce emissions in California by approximately 15 MMTCO<sub>2</sub>e, representing 6.9 percent of emissions from passenger/light-duty vehicles in the State.

#### **R1-T4: Tire Pressure Program**

The AB 32 early action measure involves actions to ensure that vehicle tire pressure is maintained to manufacturer specifications. By 2020, this requirement will reduce emissions in California by approximately 0.55 MMTCO<sub>2</sub>e, representing 0.3 percent of emissions from passenger/light-duty vehicles in the State.

#### **R1-T5: Low Rolling Resistance Tires**

This AB 32 early action measure would increase vehicle efficiency by creating an energy efficiency standard for automobile tires to reduce rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.3 MMTCO<sub>2</sub>e, representing 0.2 percent of emissions from passenger/light-duty vehicles in the State.

#### **R1-T6: Low Friction Engine Oils**

This AB 32 early action measure would increase vehicle efficiency by mandating the use of engine oils that meet certain low friction specifications. By 2020, this requirement will reduce emissions in California by approximately 2.8 MMTCO<sub>2</sub>e, representing 1.7 percent of emissions from passenger light-duty vehicles in the State.

#### **R1-T7: Goods Movement Efficiency Measures**

This AB 32 early action measure targets system wide efficiency improvements in goods movement to achieve GHG reductions from reduced diesel combustion. By 2020, this requirement will reduce emissions in California by approximately 3.5 MMTCO<sub>2</sub>e, representing 1.6 percent of emissions from all mobile sources (on-road and off-road) in the State.

#### **R1-T8: Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)**

This AB 32 early action measure would increase heavy-duty vehicle (long-haul trucks) efficiency by requiring installation of best available technology and/or CARB approved technology to reduce aerodynamic drag and rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.93 MMTCO<sub>2</sub>e, representing 1.9 percent of emissions from heavy-duty vehicles in the State.

#### **R1-T9: Medium and Heavy-Duty Vehicle Hybridization**

The implementation approach for this AB 32 measure is to adopt a regulation and/or incentive program that reduce the GHG emissions of new trucks (parcel delivery trucks and vans, utility trucks, garbage trucks, transit buses, and other vocational work trucks) sold in California by replacing them with hybrids. By 2020, this requirement will reduce emissions in California by approximately 0.5 MMTCO<sub>2</sub>e, representing 0.2 percent of emissions from all on-road mobile sources in the State; and equivalent to a 1.0 percent reduction of emissions from all heavy-duty trucks in the State.

#### **R1-T10: Regional SB 375 Targets**

Regional transportation emission reduction targets have been established pursuant to SB 375. Statewide, this requirement is expected to reduce emissions by 5 MMTCO<sub>2</sub>e, which is equivalent to 2 percent of emissions from all mobile emission sources. These emissions will be reduced through the implementation of Sustainable Community Strategies developed by the Metropolitan Planning Organizations (MPOs) throughout the State, SCAG for Riverside County. CARB, in conjunction with SCAG, has adopted a target of an 8% decrease in transportation emissions by 2020 for the region. The reductions from SB 375 overlap with many of the State transportation reduction measures described above. Therefore, this R1 measure is expected to reduce Riverside's transportation emissions by 6% (rather than the 8% target) beyond what the other State-level transportation measures will reduce.

#### **4.5.2 Implementation Measures to Reduce Transportation Related Emissions**

The following list of Implementation Measures (IM) are candidate measures the County can incorporate into the new development projects for the reduction of transportation related emissions to achieve an AB 32 compliant reduction target.

##### **IM-T1: Employment Based Trip and VMT Reduction**

This IM would implement General Plan Policies AQ 3.3, AQ 10.1, AQ 10.3, and AQ 10.4 through the adoption of a voluntary trip reduction program for new commercial and industrial development that promotes commuter-choices, employer transportation management, guaranteed ride home programs and commuter assistance and outreach type programs intended to reduce commuter vehicle miles traveled. A guaranteed ride home program is a program that ensures employees that take advantage of carpooling opportunities are guaranteed a safe ride home should the employee miss the carpool pick-up time due to work-related activities. This could be as simple as the employer paying for taxi service for the employee. Surveys within California have shown that ridesharing increases by 5% when a guaranteed ride home program is available. To gain points within the Screening Table, employers with more than 100 employees within the unincorporated County would need to establish a trip reduction plan that would incorporate annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information at a minimum.

### IM-T2: Land Use-Based Trip and VMT Reduction Policies

The demand for transportation is influenced by the density and geographic distribution of people and places. Factors like, whether or not neighborhoods have sidewalks or bike paths, and whether or not homes are within walking distance of shops or transit stops, will influence the type and amount of transportation that is utilized. Hence, changing the focus of land use from automobile-centered transportation can result in a reduction in vehicle miles traveled. This IM would implement General Plan Policies LU 4.1p and t, LU 10.4, LU 12.1, LU 12.3, LU 12.4, C 1.2, C 1.7, C 4.1 through C 4.7, C 4.9, C 11.13, C 15.1, C 15.3, C 17.1 through C 17.4, C 18.1, and C 20.12. Although not limited to the below actions, this reduction goal can be achieved through the incorporation of the following into new development proposals:

- Sidewalks on both sides of the streets;
- Pases or other types of pedestrian pathways connecting residential development with pocket parks, neighborhood parks and local community centers;
- Dedicated multipurpose pedestrian and bicycle trails linking land uses;
- Pedestrian and bicycle pathways with linkages to transit stops and other complementary land uses within walking and biking distance of the project;
- Secure bicycle parking areas within development; and
- Transit stop infrastructure (benches, bus stop canopies, bus turnouts).

### IM-T2: Increased Residential Density

Designing proposed projects with increased densities, where allowed by the General Plan and/or County zoning, could reduce GHG emissions associated with traffic in several ways. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. The reductions in GHG emissions are quantified based on reductions to VMT; the relationship between density and VMT is described by its elasticity. If a new development project demonstrates an increase in density (and hence VMT) beyond the average value for that particular land use type, then the project can garner points in the screening tables for new development. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. New development projects earn points for residential projects that increase housing density.

### IM-T3: Mixed Use Development

Having different types of land uses near one another can decrease VMT since trips between land use types are shorter and may be accommodated by non-auto modes of transport. For example when residential areas are in the same neighborhood as retail and office buildings, a



resident does not need to travel outside of the neighborhood to meet his/her trips needs. A new development project will earn points in the screening tables by including a diversity of land uses within a ¼ mile. Due to the variations available in implementing a mixed use project, the reductions associated will be determined on a case-by-case basis.

#### **IM-T4: Preferential Parking**

This IM would implement General Plan Policies AQ 3.3 and AQ 10.3 by encouraging proposed development projects to incorporate a comprehensive parking program for public and private parking lots to facilitate carpooling and alternate transportation. Incentives to encourage carpooling and the use of alternate transportation methods could include:

- Providing reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles;
- Provide larger parking spaces that can accommodate vans used for ride-sharing programs and reserve them for vanpools; and include adequate passenger waiting/loading areas;
- Restricting the number of parking spaces within the development by sharing parking among different land uses where feasible. For example in areas where there are multiple land uses provide resident restricted parking during nighttime hours (7pm to 7am) and open the parking lot for use by patrons of the surrounding commercial buildings during daytime hours; and
- Provide convenient pedestrian pathways through parking areas.

#### **IM-T5: Roadway Improvements including Signal Synchronization and Transportation Flow Management**

This IM would implement General Plan Policies AQ 12.1 and AQ 12.3. Proposed development projects that pay fare-share fees toward signal synchronization improvements or construct signalized intersections within a traffic signal synchronization system, would gain points within the Screening Table through this IM. These modifications include, but are not limited to, synchronization of signals, improvement of traffic flow, the development of parallel roadways, and support for the extension of freight rail into Riverside County's industrial areas. Even when required for other reasons, such as warranted by project traffic study results, such circulation improvements may still qualify for Screening Table points under this IM.

#### **IM-T6: Provide a Comprehensive System of facilities for Non-motorized Transportation**

This IM is similar to IM-T2 in that it implements the same General Plan Policies, but this IM emphasizes alternative non-motorized transportation hubs. This IM encourages the creation of

bike lanes and walking paths connecting to schools and other public facilities, provision of adequate bicycle parking; and encouragement of bicycle stations, attended parking, and other attended bicycle support facilities at intermodal hubs. Bicycle stations are full-service bicycle facilities that, in addition to providing secure, guarded bicycle parking could include other amenities such as "valet" bicycle service, showers, bicycle rentals, or repair services. These types of facilities are intended for large residential and non-residential development as well as large employers (e.g., of 500 or more employees). In addition, the establishment of multi-use trails that promote off-street bicycle and pedestrian travel, as well as provision of secure bicycle racks, along these pathways would also promote their use.

#### **IM-T7: Expand Renewable Fuel/Low-Emission Vehicle Use**

Implementation of the following IM would promote the expanded use of renewable fuel and low-emission vehicles within proposed projects. The project will earn points in the screening table by making low-emissions or electric vehicle use more accessible by including one or both of the following project components:

- Providing preferential parking for ultra-low emission, zero-emission, and alternative-fuel vehicles;
- Provide electric vehicle charging stations within the development.

#### **IM-T8: Anti-Idling Enforcement**

This IM involves the adoption and enforcement of an Anti-Idling Policy for heavy-duty diesel trucks, including local delivery trucks and long-haul truck transport within the unincorporated County. This policy would prohibit idling of on and off-road heavy duty diesel vehicles for more than five minutes. This policy would be implemented by new commercial and industrial projects with loading docks or delivery trucks. Such projects would be required to post signage at all loading docks and/or delivery areas directing drivers to shut down their trucks after five minutes of idle time. Also, employers who own and operate truck fleets would be required to inform their drivers of the anti-idling policy.

#### **IM-T9: Increase Public Transit**

New development projects will expand the local transit network by coordinating with regional transit authorities to include bus turnouts and other transit accommodations in design plans. This will encourage the use of transit and therefore reduce VMT. Unincorporated Riverside County hosts one Metrolink transit station; expanding connections to this station as

well as other Metrolink stations in the neighboring cities will increase ridership and decrease VMT.

#### **IM-T10: Employee Commute Alternative Schedule**

Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks. Employers are encouraged to offer enough flexibility for employees to adopt these alternative schedules.

### **4.6 Industrial**

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#### **4.6.1 R1 Industrial Measures**

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The following list of R1 industrial related measures are those from the CARB Scoping Plan that will result in emission reductions within Riverside County. This section describes GHG emission reductions for the existing and proposed national, state, or regional industrial fuel combustion measures that will result in future GHG reductions for the industrial sector and do not require County action.

##### **R1-I1: Oil and Gas Extraction Combustion Related GHG Emission Reduction**

This AB 32 measure would reduce combustion emissions from oil and gas extraction. By 2020, this requirement will reduce emissions in California by approximately 1.8 MMT CO<sub>2</sub>e, representing 13 percent of combustion emissions from oil and gas extraction in the State.

##### **R1-I2: Stationary Internal Combustion Engine Electrification**

This AB 32 measure would affect owners and operators of industrial and commercial engines over 50 horsepower used as primary power sources by replacing internal combustion engines with electric motors. By 2020, this requirement will reduce emissions in California by approximately 0.3 MMTCO<sub>2</sub>e, representing 0.5 percent of combustion emissions from non-coal burning industrial sources in the State.

#### **4.6.2 Implementation Measures for Point Source Emissions**

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Industrial point source emitters of GHGs are required to comply with Title V Permits under the federal Clean Air Act. As such, these types of emissions are not under the jurisdiction of the County and, hence, no IMs were developed or are proposed for point source emitters. Other

types of industrial emissions (mobile source, energy, etc.) are reduced through R1 measures and the IMs described throughout this document.

## Section 5 Total Estimated Reductions

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In 2020, total emissions from Riverside County are projected to total 10.4 MMT CO<sub>2</sub>e, without the incorporation of any reduction measures. With the incorporation of both the State reduction measures and the County's implementation measures, County emissions for 2020 are estimated to be reduced to 6.1 MMT CO<sub>2</sub>e. Emission reductions estimated for year 2020 were based on the accomplishments likely to be achieved as indicated in the measures detailed in Section 4. A detailed description of the reduction calculations associated with the various measures is included as Appendix I.

### 5.1 2020 Reduced Emissions Inventory

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With the incorporation of the reduction strategies described in this report, Riverside County is predicted to reduce emissions by 4.3 MMT CO<sub>2</sub>e from the projected BAU 2020 emissions. This brings the County's 2020 emissions below their reduction target, a 15 percent reduction from 2008 emissions. The following sections describe the predicted 2020 reduced inventory as a whole and for each sector.

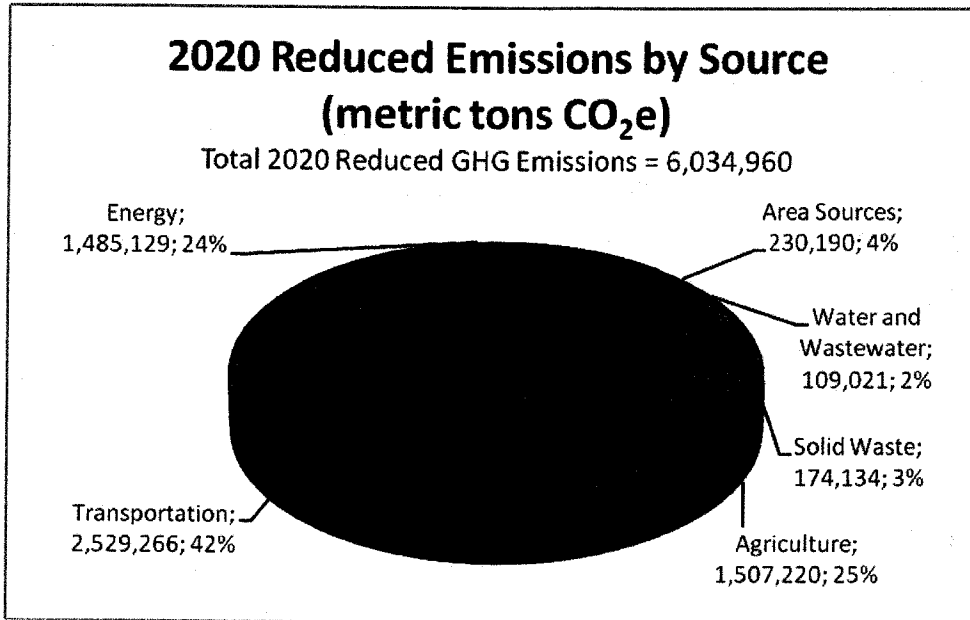
#### 5.1.1 2020 Total Reduced Emissions

Table 5-1 summarizes the net 2020 County emissions of CO<sub>2</sub>e as broken down by emissions source category. Each of these categories is further broken down in Tables 5-2 through 5-7 below. Figure 5-1 is a graphical representation of Table 5-1.

**Table 5-1: 2020 Reduced Total Emissions**

Net Total Emissions	
Emissions Category	Metric tons of CO <sub>2</sub> e
Transportation	2,529,266
Energy	1,485,129
Area Source Emissions	230,190
Water/Wastewater	109,021
Solid Waste	174,134
Agriculture	1,507,220
<b>Total</b>	<b>6,034,960</b>

Figure 3-2: 2020 Reduced Emissions Generated by Source (MT CO<sub>2</sub>e)



A detailed breakdown of 2020 reduced emissions by category is available in Appendix A.

### 5.1.2 2020 Reduced Energy Emissions

Table 5-2 summarizes the reduced 2020 emissions from energy generation and/or consumption with respect to electricity and natural gas. The total also includes indirect energy emissions associated with pumping and treating potable water and wastewater. Energy-related emissions represent approximately twenty-four percent of the emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. A detailed breakdown of 2020 reduced energy emissions is available in Appendix A.

Table 5-2: 2020 Reduced Energy Emissions

Energy Emissions	
Sources	Metric tons of CO <sub>2</sub> e
Electric	842,728
Natural Gas	642,400
<b>Total</b>	<b>1,485,129</b>

### 5.1.3 2020 Reduced Solid Waste Emissions

Table 5-3 summarizes the 2020 reduced County emissions from the transportation, disposal, and decomposition of solid waste generated within the unincorporated areas of the County. Solid waste-related emissions represent approximately three percent of the total emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. A detailed breakdown of 2020 reduced solid waste emissions is available in Appendix A.

**Table 5-3: 2020 Reduced Solid Waste Emissions**

Solid Waste	
Source	Metric tons of CO <sub>2</sub> e
Landfill Offgasing	168,325
Onsite Equipment	5,810
<b>Total</b>	<b>174,134</b>

### 5.1.4 2020 Reduced Area Source Emissions

Table 5-4 summarizes the reduced 2020 County emissions from area source activities. The primary source of emissions results from wood burning and the use of combustion-powered landscape equipment. Area Source emissions represent approximately four percent of the total emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. A detailed breakdown of 2020 reduced Landscape emissions is available in Appendix A.

**Table 5-4: 2020 Reduced Area Source Emissions**

Area Source Emissions	
Sources	Metric tons of CO <sub>2</sub> e
Landscape Emissions	126,465
Wood Burning	103,725
<b>Total</b>	<b>230,190</b>

### 5.1.5 2020 Reduced Water and Wastewater Emissions

Table 5-5 summarizes the reduced 2020 County indirect emissions from purchased water. Purchased water related emissions are indirectly (i.e., outside of the County and any of its direct

water providers) produced as a result of electrical consumption to pump and treat water. Indirect emissions from the water represent approximately two percent of the total GHG emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. A detailed breakdown of reduced 2020 water emissions is available in Appendix A.

**Table 5-5: 2020 Reduced Purchased Water Emissions**

<b>Purchased Water Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Purchased Water	109,021
<b>Total</b>	<b>109,021</b>

#### 5.1.6 2020 Reduced Agricultural Emissions

Table 5-5 summarizes the 2020 reduced emissions with respect to agricultural activities within the unincorporated areas of the County. Agricultural emissions represent approximately twenty-five percent of the emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. Table 5-6 represents the breakdown of agricultural emissions by activity. A detailed breakdown of 2020 reduced agricultural emissions is available in Appendix A.

**Table 5-6: 2020 Reduced Agricultural Emissions**

<b>Agriculture</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
Enteric Fermentation	80,051
Manure Management	140,938
Agricultural Residue Burning	124
Crop Growth	924,811
Animals and Runoff	176,674
Fertilizer Use	184,621
<b>Total</b>	<b>1,507,220</b>

#### 5.1.7 2020 Reduced Transportation Emissions

Table 5-7 summarizes the 2020 reduced County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways in Riverside County and only account for vehicle trips related to Riverside County land



uses as starting points and destinations. Transportation-related emissions represent approximately forty-two percent of the emissions associated with the 2020 scenario achieved when reduction measures are applied to the BAU scenario. A detailed breakdown of 2020 transportation emissions is available in Appendix A.

**Table 5-7: 2020 Reduced Transportation Emissions**

<b>Transportation Emissions</b>	
<b>Sources</b>	<b>Metric tons of CO<sub>2</sub>e</b>
On-Road Vehicles	2,508,105
Airport Operations	21,162
<b>Total</b>	<b>2,529,266</b>

## **5.2 Net Emissions Comparison by Year**

Table 5-8, below, shows the results of the three GHG emission scenarios examined in this document. The 2008 County total, 7,102,319 MT CO<sub>2</sub>e, is the total “baseline” value for GHG emissions within unincorporated Riverside County. The ‘BAU 2020’ Scenario in Table 5-8 represents those same County emissions projected forward by 12 years without the application of any regulatory controls for GHGs. The resultant 2020 BAU value, 10,268,937 MT CO<sub>2</sub>e, reflects an increase of roughly 44.5% over the 2008 ‘baseline’ value. Lastly, the ‘Reduced 2020’ Scenario represents the anticipated 2020 levels within the County as achieved *with* the incorporation of the various measures outlined herein (including R1 and IM measures). The resultant value, 6,034,960 MT CO<sub>2</sub>e, is a 41.2% reduction (4,233,977 MT less) from the 2020 BAU scenario and a 15.0% reduction (1,067,359 MT CO<sub>2</sub>e) below that of the 2008 ‘baseline’ scenario.

**Table 5-8: Net Total Emissions by Year**

<b>Net Total Emissions</b>			
<b>Source Category</b>	<b>Metric tons of CO<sub>2</sub>e</b>		
	<b>2008</b>	<b>BAU 2020</b>	<b>Reduced 2020</b>
Transportation	2,850,520	4,950,296	2,529,266
Energy	1,585,565	2,837,295	1,485,129
Area Sources	269,181	442,033	230,190
Water and Wastewater	152,473	175,344	109,021
Solid Waste	214,149	341,145	174,134
Agriculture	2,030,431	1,522,823	1,507,220
<b>Total</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>6,034,960</b>

**5.2.1 2035 and 2060 Forecasts**

In order to estimate compliance with SB 375 and anticipated emissions at General Plan build-out, two other emissions inventories were completed for 2035 and 2060. These inventories were estimated using growth in housing and jobs provided by the County. EMFAC transportation emissions coefficients only exist through the year 2040, so coefficients specific to 2035 were used for the 2035 analysis, while the 2060 analysis used the 2040 emission coefficients.

**5.2.1.1 SB 375**

In accordance with SB 375, CARB and SCAG have collaboratively established a reduction target for passenger car emissions. This target consists of two goals: a reduction of 8% per capita reduction for the year 2020, and a conditional target of 13% for the year 2035. SCAG is currently in the process of updating the Regional Transportation Plan (RTP) and including the Sustainable Communities Strategy (SCS) as part of the update. Because the RTP and SCS are not yet complete, consistency with the forthcoming plan is analyzed based on Riverside's consistency with the reduction goals for the SCAG region. Table 5-9, below, summarizes the per capita emissions from automobiles and light-duty trucks for the existing conditions, forecasted emissions for 2020 and 2035 based on General Plan Build out (2020, 2035 BAU) and the reduced emissions for 2020 and 2035 with the incorporation of the proposed General Plan policies and mitigation measures for new development described above. The target for per capita emissions from passenger vehicles is 8% below existing emissions for 2020 and 13% below existing

emissions for 2035; these were calculated to be 3.07 MTCO<sub>2</sub>e/person/year and 2.90 MTCO<sub>2</sub>e/person/year, respectively, for the SCAG region (CARB 2010a). Without the incorporation of the mitigation measures described above, the unincorporated County's per capita emissions from passenger vehicles would be 3.86 MTCO<sub>2</sub>e/person in 2020 and 4.47 MTCO<sub>2</sub>e/person in 2035.

With the incorporation of the mitigation measures, the per capita emissions are reduced to 2.46 MTCO<sub>2</sub>e/person in 2020, which is below the SB 375 target, and 2.98 MTCO<sub>2</sub>e/person in 2035, which is not below the target for 2035. Therefore, the updated general plan would have a less than significant impact on the implementation of SB 375 through 2020, however, with only the mitigation included in this report, the updated general plan would have a significant impact on the implementation of SB 375 through to 2035. Most of the mitigation measures enforced at the state level (the Pavley fuel efficiency standards, for example) have implementation plans only through 2020; future fuel efficiency legislation at the state or federal level will likely contribute to further reductions in GHG emissions from passenger vehicles by 2035.

**Table 5-9: SB 375 Per Capita Emissions**

<b>Per Capita Passenger Vehicle Emissions</b>					
	<b>2008</b>	<b>BAU 2020</b>	<b>Reduced 2020</b>	<b>BAU 2035</b>	<b>Reduced 2035</b>
Autos and Light Duty Emissions (MT CO <sub>2</sub> e)	2,512,787	3,395,910	2,167,232	4,335,453	2,886,001
Population	553,461	880,557	880,557	969,071	969,071
<b>Per Capita Emissions</b>	<b>4.54</b>	<b>3.86</b>	<b>2.46</b>	<b>4.47</b>	<b>2.98</b>
<b>SCAG SB 375 Target</b>	-	<b>3.07</b>	<b>3.07</b>	<b>2.90</b>	<b>2.90</b>
<b>Significant?</b>	-	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>

*5.2.1.2 2060 Build-Out BAU GHG Emissions*

The following table (Table 4.7.M) summarizes the County Existing 2008, BAU 2060, and Reduced 2060 GHG Emissions Inventories. The BAU 2060 inventory represents the County's forecasted emissions for the year 2060, the General Plan build-out year under GPA 960, without the addition of any of the emissions-reducing strategies or mitigation measures described in this report. The Reduced 2060 inventory includes the measures presented in this report that reduce the 2020 emissions to below the AB 32 target. Given the level of growth and the current

limitations on technology to further reduce emissions, impacts from the full build-out scenario in 2060 would not meet the 1990 reduction threshold, even including the mitigation described under the 2020 analysis. Future planning efforts, including revisions to the forthcoming Climate Action Plan, further advances in technology, and environmental analysis would address this additional growth and the potential implications of this growth.

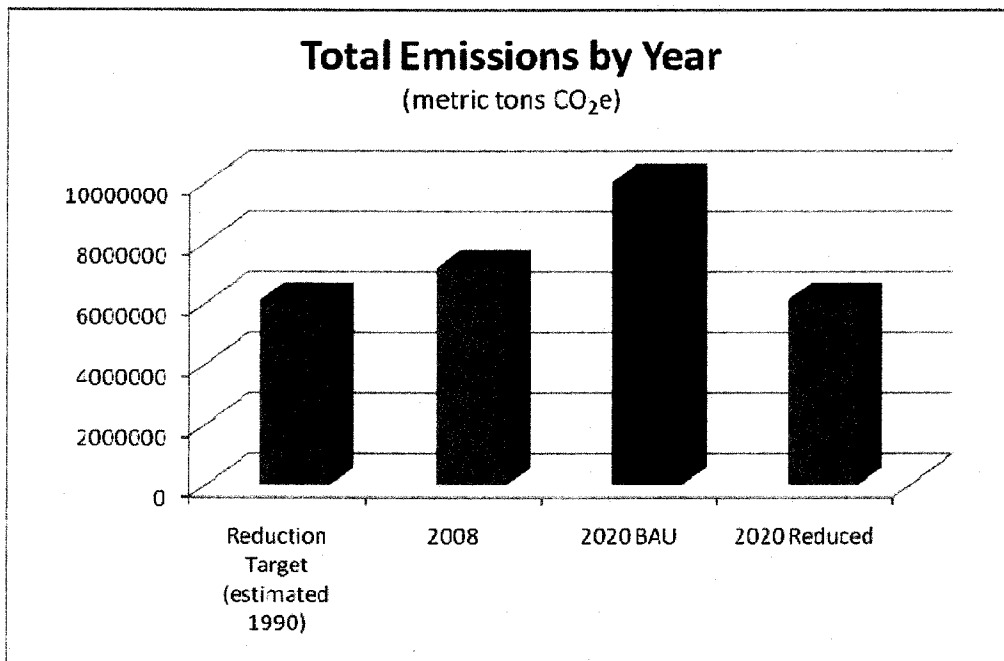
**Table 5-10: 2060 BAU Emissions**

<b>Net Total Emissions</b>			
<b>Source Category</b>	<b>Metric tons of CO<sub>2</sub>e</b>		
	<b>2008</b>	<b>BAU 2060</b>	<b>Reduced 2060</b>
Transportation	2,850,520	10,338,872	5,443,323
Energy	1,585,565	6,084,365	2,958,328
Area Sources	269,181	721,397	318,463
Water and Wastewater	152,473	382,871	238,612
Solid Waste	214,149	703,887	353,115
Agriculture	2,030,431	1,522,823	1,507,220
<b>Total</b>	<b>7,102,319</b>	<b>19,754,215</b>	<b>10,819,060</b>
<b>AB 32 Target (1990 emissions)</b>	<b>6,036,971</b>	<b>6,036,971</b>	<b>6,036,971</b>

## Section 6 Conclusion

This Riverside County GHG Technical Report serves as a guide to help the County pursue work plans with the objectives of conserving resources and reducing GHG emissions. This document also serves as a technical resource for the update of the County's General Plan and other land use related documents that may require evaluation and documentation of GHG emissions. Figure 6-1 shows a comparison between the emission inventories and the reduction target.

Figure 6-1: Total Emissions by Year (MT CO<sub>2</sub>e)



A target has been set to reduce County-wide GHG emission emissions by 15% from 2008 levels by 2020 consistent with the State AB 32 reduction goals. The CARB Scoping Plan provides the State with reduction strategies designed to meet the reduction goal of AB 32. The County's reduction strategy, as described in Section 4 herein, is predicted to meet the State reduction goal. Table 5-8, presented and discussed previously, gives evidence that the County's proposed can achieve its stated goals. Reduction measures provided herein will ensure that Riverside County meets the AB 32 reduction target of reducing to 15% below 2008 levels (reduced down to 6,091,732 MT CO<sub>2</sub>e) by 2020. Such programs include strengthening the County's existing ordinances, as well as implementing energy efficiency programs, solar rebates, conservation

programs, incentives and ordinances. In some cases, implementation will require the cooperation of other agencies, private businesses, and residents. The success of these measures will be tracked using indicators and targets such as those described in this report. Even with the continued growth expected in Riverside County, the reduction measures outlined in this report are anticipated to reduce the County's 2020 emissions by 4,288,894 MT CO<sub>2</sub>e compared to 2020 BAU. Therefore, the implementation of the State (R1) measures, combined with the County's implementation measures, will reduce annual GHG emissions to 6,091,732 MT CO<sub>2</sub>e by year 2020. This reduces emissions below the AB 32 reduction target (6,091,940 MT CO<sub>2</sub>e) by 208 MT CO<sub>2</sub>e.

## Section 7    References

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- Association of Environmental Professionals (AEP) White Paper: Alternative Approaches to Analyzing Greenhouse Gases and Global Climate Change Impacts in CEQA Documents, June 2007.
- Association of Environmental Professionals (AEP) White Paper: Community-wide Greenhouse Gas Emission Protocols, November 2010.
- California Air Pollution Control Officers Association (CAPCOA), Quantifying Greenhouse Gas Mitigation Measures, August 2010.
- California Air Pollution Control Officers Association (CAPCOA), White Paper: CEQA and Climate Change, January 2008.
- California Air Resources Board (CARB), California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, November 2007. [2007a]
- California Air Resources Board (CARB), Climate Change Scoping Plan, December 2008.
- California Air Resources Board (CARB), EMFAC2007, 2007. [2007b]
- California Air Resources Board (CARB), Mandatory Reporting of Greenhouse Gas Emissions, December 6, 2007. [2007c]
- California Air Resources Board (CARB), Proposed Early Actions to Mitigate Climate Change in California December 20, 2007. [2007d]
- California Air Resources Board, Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375, September 23, 2010.
- California Air Resources Board, URBEMIS2007 for Windows Version 9.2.4, 2007. [2007e]
- California Building Standards Commission (CBSC), 2010 California Green Building Standards Code, January 2010.
- California Climate Action Team (CCAT), Climate Action Biannual Report, April 2010.
- California Climate Action Team (CCAT), California Climate Action Team's Final Report to the Governor and Legislature, March 2006.
- California Climate Action Registry (CCAR), General Reporting Protocol, Version 3.1, January 2009.
- California Climate Action Registry (CCAR), Local Government Protocol, Version 1.1, May 2010.
- California Department of Finance, E-4 Population Estimates, [http://www.dof.ca.gov/research/demographic/reports/estimates/e-4\\_2001-07/](http://www.dof.ca.gov/research/demographic/reports/estimates/e-4_2001-07/), accessed August 2010.

- California Department of Transportation (Caltrans) Headquarters Divisions of Transportation Planning and Research & Innovation, Trip-Generation Rates for Urban Infill, June 15, 2009.
- California Department of Water Resources (DWR), Managing an Uncertain Future Climate Change Adaptation Strategies for California's Water, October 2008.
- California Energy Commission (CEC), Refining Estimates of Water Related Energy Use in California: CEC-500-2006-118, December 2006. [2006a]
- California Energy Commission (CEC), Climate Change And Electricity - Demand In California, February 2006. [2006b]
- California Energy Commission (CEC), California's Energy Efficiency Standards for Residential and Nonresidential Buildings, Title 24, Part 6, of the California Code of Regulations, 2008 Standards, April 23, 2008. California Health and Safety Code Section 38505 (g), Greenhouse Gas Definitions, <http://law.onecle.com/california/health/38505.html>, accessed February 11 2011.
- California Natural Resources Agency, 2009 California Climate Adaptation Strategy, December 2, 2009. [2009a]
- California Natural Resources Agency, CEQA Guidelines Amendments, December 30, 2009. [2009b]
- Climate Action Reserve, Urban Forestry Protocol, Version 1.1, March 2010.
- Energy Information Administration (EIA), 2005 Residential Energy Consumption Survey, 2005.
- Intergovernmental Panel on Climate Change (IPCC), Climate Change 2001: The Scientific Basis, Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate, 2001.
- Southern California Air Quality Management District (SCAQMD), Greenhouse Gas CEQA Significance Thresholds, December 5, 2008.
- United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, December 11, 1997.
- U.S. Environmental Protection Agency (EPA), AP-42, Compilation of Air Pollutant Emission Factors, Fourth Edition, September 1985.
- U.S. Environmental Protection Agency (EPA), Emissions and Generation Resource Integrated Database (eGRID2007), version 1.1, December 31 2007.
- U.S. Environmental Protection Agency, Final GHG Tailoring Rule, 40 CFR Parts 51, 52, 70, et al., May 2010. [2010a]
- U.S. Environmental Protection Agency, Mandatory Reporting of Greenhouse Gases Rule, 40 CFR Part 98, October 2009.



U.S. Environmental Protection Agency, Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, Third Edition, September 2006.

U.S. Environmental Protection Agency, U.S. Greenhouse Gas Inventory Report, Section 6 Agriculture, <http://www.epa.gov/climatechange/emissions/downloads09/Agriculture.pdf>, accessed February 2010. [2010b]

U.S. Supreme Court, Massachusetts et al. v. Environmental Protection Agency et al., No. 05-1120, Decided April 2, 2007.

**Appendix A: Greenhouse Gas Emissions Inventories**

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**RIVERSIDE COUNTY**  
**Greenhouse Gas Emission Inventory**  
**Climate Action Plan Comparison Summary**

	2008	2020	Reduced 2020
<b>Transportation</b>			
Mobile Source Emissions	2,829,359	4,929,135	2,508,105
Jet Fuel	17,721	17,721	17,721
Aviation Fuel	3,441	3,441	3,441
<b>Sub Total</b>	<b>2,850,520</b>	<b>4,950,296</b>	<b>2,529,266</b>
<b>Energy</b>			
Electrical Consumption	1,075,316	1,930,555	842,728
Natural Gas	510,249	906,740	642,400
<b>Sub Total</b>	<b>1,585,565</b>	<b>2,837,295</b>	<b>1,485,129</b>
<b>Area Sources</b>			
Landscaping	150,639	250,426	126,465
Woodburning	118,543	191,607	103,725
<b>Sub Total</b>	<b>269,181</b>	<b>442,033</b>	<b>230,190</b>
<b>Water and Wastewater</b>			
Water consumption	152,473	175,344	109,021
<b>Sub Total</b>	<b>152,473</b>	<b>175,344</b>	<b>109,021</b>
<b>Solid Waste</b>			
Landfill Offgasing	209,097	335,336	168,325
Onsite Equipment	5,052	5,810	5,810
<b>Sub Total</b>	<b>214,149</b>	<b>341,145</b>	<b>174,134</b>
<b>Agriculture</b>			
Enteric Fermentation	115,584	86,688	80,051
Manure Management	199,873	149,905	140,938
Rice Cultivation	0	0	0
Agriculture Residue Burning	166	124	124
Annimals and Runoff	235,565	176,674	176,674
Fertilizer Use	246,162	184,621	184,621
Crop Growth	1,233,081	924,811	924,811
<b>Sub Total</b>	<b>2,030,431</b>	<b>1,522,823</b>	<b>1,507,220</b>
<b>TOTAL</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>6,034,960</b>

Source	2008	2020	Reduced 2020
Transportation	2,850,520	4,950,296	2,529,266
Energy	1,585,565	2,837,295	1,485,129
Area Sources	269,181	442,033	230,190
Water and Wastewater	152,473	175,344	109,021
Solid Waste	214,149	341,145	174,134
Agriculture	2,030,431	1,522,823	1,507,220
<b>Total</b>	<b>7,102,319</b>	<b>10,268,937</b>	<b>6,034,960</b>
<b>2020 Reduction Target</b>	<b>6,036,971</b>	<b>6,036,971</b>	<b>6,036,971</b>

**RIVERSIDE COUNTY**  
**Greenhouse Gas Emission Inventory**  
**Climate Action Plan Comparison Summary**

	2008	2035	Reduced 2035
<b>Transportation</b>			
Mobile Source Emissions	2,829,359	6,440,572	3,352,570
Jet Fuel	17,721	17,721	17,721
Aviation Fuel	3,441	3,441	3,441
<b>Sub Total</b>	<b>2,850,520</b>	<b>6,461,733</b>	<b>3,373,731</b>
<b>Energy</b>			
Electrical Consumption	1,075,316	2,467,202	1,037,785
Natural Gas	510,249	1,150,615	796,543
<b>Sub Total</b>	<b>1,585,565</b>	<b>3,617,816</b>	<b>1,834,327</b>
<b>Area Sources</b>			
Landscaping	150,639	302,489	152,757
Woodburning	118,543	226,906	103,725
<b>Sub Total</b>	<b>269,181</b>	<b>529,395</b>	<b>256,482</b>
<b>Water and Wastewater</b>			
Water consumption	152,473	293,083	182,543
<b>Sub Total</b>	<b>152,473</b>	<b>293,083</b>	<b>182,543</b>
<b>Solid Waste</b>			
Landfill Offgasing	209,097	418,315	209,268
Onsite Equipment	5,052	5,810	5,810
<b>Sub Total</b>	<b>214,149</b>	<b>424,125</b>	<b>215,077</b>
<b>Agriculture</b>			
Enteric Fermentation	115,584	86,688	80,051
Manure Management	199,873	149,905	140,938
Rice Cultivation	0	0	0
Agriculture Residue Burning	166	124	124
Animals and Runoff	235,565	176,674	176,674
Fertilizer Use	246,162	184,621	184,621
Crop Growth	1,233,081	924,811	924,811
<b>Sub Total</b>	<b>2,030,431</b>	<b>1,522,823</b>	<b>1,507,220</b>
<b>TOTAL</b>	<b>7,102,319</b>	<b>12,848,975</b>	<b>7,369,381</b>

Source	2008	2060	Reduced 2060
Transportation	2,850,520	6,461,733	3,373,731
Energy	1,585,565	3,617,816	1,834,327
Area Sources	269,181	529,395	256,482
Water and Wastewater	152,473	293,083	182,543
Solid Waste	214,149	424,125	215,077
Agriculture	2,030,431	1,522,823	1,507,220
<b>Total</b>	<b>7,102,319</b>	<b>12,848,975</b>	<b>7,369,381</b>
<b>2020 Reduction Target</b>	<b>6,036,971</b>	<b>6,036,971</b>	<b>6,036,971</b>

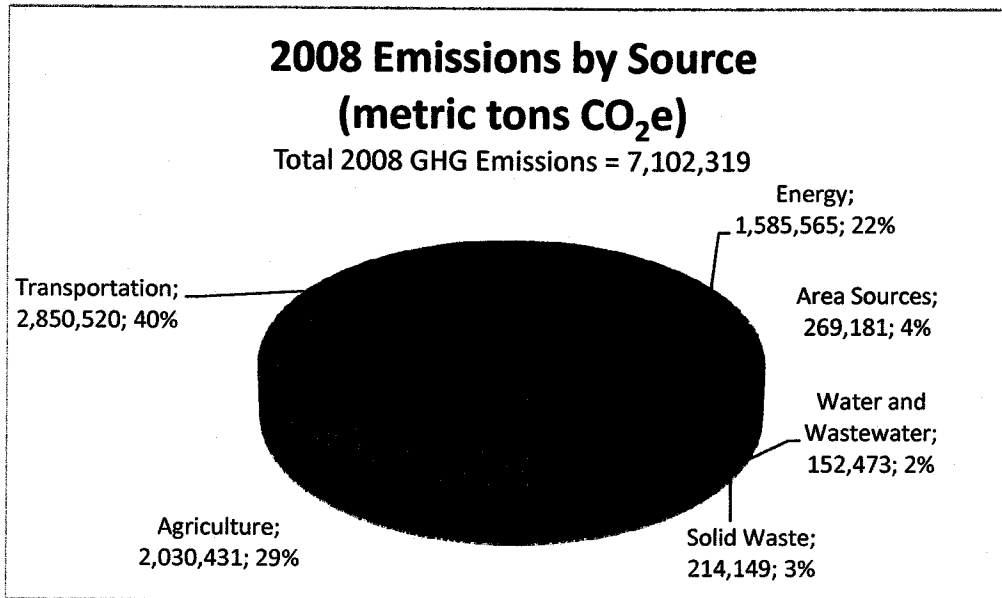
**RIVERSIDE COUNTY**  
**Greenhouse Gas Emission Inventory**  
**Climate Action Plan Comparison Summary**

	2008	2060	Reduced 2060
<b>Transportation</b>			
Mobile Source Emissions	2,829,359	10,317,711	5,422,162
Jet Fuel	17,721	17,721	17,721
Aviation Fuel	3,441	3,441	3,441
<b>Sub Total</b>	<b>2,850,520</b>	<b>10,338,872</b>	<b>5,443,323</b>
<b>Energy</b>			
Electrical Consumption	1,075,316	4,176,892	1,671,654
Natural Gas	510,249	1,907,473	1,286,674
<b>Sub Total</b>	<b>1,585,565</b>	<b>6,084,365</b>	<b>2,958,328</b>
<b>Area Sources</b>			
Landscaping	150,639	425,224	214,738
Woodburning	118,543	296,172	103,725
<b>Sub Total</b>	<b>269,181</b>	<b>721,397</b>	<b>318,463</b>
<b>Water and Wastewater</b>			
Water consumption	152,473	382,871	238,612
<b>Sub Total</b>	<b>152,473</b>	<b>382,871</b>	<b>238,612</b>
<b>Solid Waste</b>			
Landfill Offgasing	209,097	698,077	347,305
Onsite Equipment	5,052	5,810	5,810
<b>Sub Total</b>	<b>214,149</b>	<b>703,887</b>	<b>353,115</b>
<b>Agriculture</b>			
Enteric Fermentation	115,584	86,688	80,051
Manure Management	199,873	149,905	140,938
Rice Cultivation	0	0	0
Agriculture Residue Burning	166	124	124
Animals and Runoff	235,565	176,674	176,674
Fertilizer Use	246,162	184,621	184,621
Crop Growth	1,233,081	924,811	924,811
<b>Sub Total</b>	<b>2,030,431</b>	<b>1,522,823</b>	<b>1,507,220</b>
<b>TOTAL</b>	<b>7,102,319</b>	<b>19,754,215</b>	<b>10,819,060</b>

Source	2008	2060	Reduced 2060
Transportation	2,850,520	10,338,872	5,443,323
Energy	1,585,565	6,084,365	2,958,328
Area Sources	269,181	721,397	318,463
Water and Wastewater	152,473	382,871	238,612
Solid Waste	214,149	703,887	353,115
Agriculture	2,030,431	1,522,823	1,507,220
<b>Total</b>	<b>7,102,319</b>	<b>19,754,215</b>	<b>10,819,060</b>
<b>2020 Reduction Target</b>	<b>6,036,971</b>	<b>6,036,971</b>	<b>6,036,971</b>

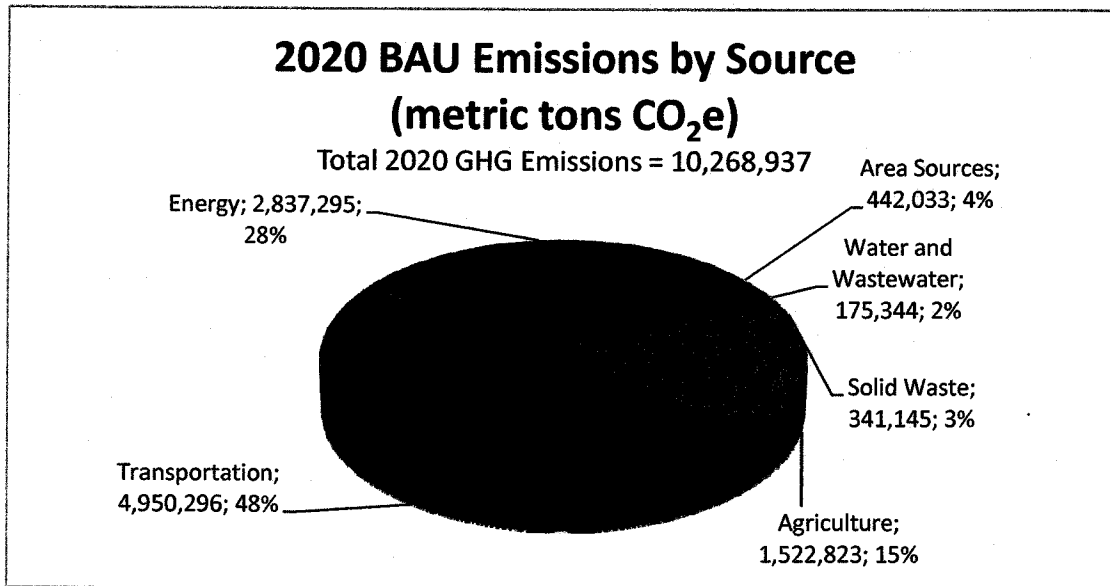
2008

Net Total Emissions	
Category	Metric Tons of CO <sub>2</sub> e
Transportation	2,850,520
Energy	1,585,565
Area Sources	269,181
Water and Wastewater	152,473
Solid Waste	214,149
Agriculture	2,030,431
<b>Total</b>	<b>7,102,319</b>



2020 BAU

Net Total Emissions	
Category	Metric tons of CO <sub>2</sub> e
Transportation	4,950,296
Energy	2,837,295
Area Sources	442,033
Water and Wastewater	175,344
Solid Waste	341,145
Agriculture	1,522,823
<b>Total</b>	<b>10,268,937</b>

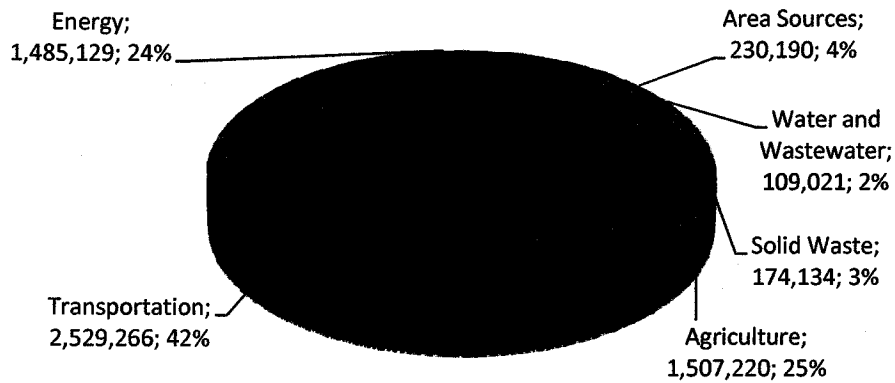


2020 Reduced

Net Total Emissions	
Category	Metric tons of CO <sub>2</sub> e
Transportation	2,529,266
Energy	1,485,129
Area Sources	230,190
Water and Wastewater	109,021
Solid Waste	174,134
Agriculture	1,507,220
<b>Total</b>	<b>6,034,960</b>

### 2020 Reduced Emissions by Source (metric tons CO<sub>2</sub>e)

Total 2020 Reduced GHG Emissions = 6,034,960





**Appendix B:      Modeling Assumptions**

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**RIVERSIDE COUNTY**  
**Greenhouse Gas Emissions Inventory**  
**Modeling Assumptions**

**Assumptions**

- <sup>1</sup> Electricity providers for Riverside County unincorporated are Southern California Edison and Imperial Irrigation District. Both companies provided electricity usage organized by rate code for accounts within the unincorporated areas.
- <sup>2</sup> Natural gas is serviced to Riverside County by the Southern California Gas Company. The Gas Company provided annual totals of residential, commercial, and industrial natural gas use for the unincorporated areas of Riverside County for the year 2008.
- <sup>3-11</sup> Riverside County receives water from a number of agencies and water districts, however, all of the water comes from either local sources (groundwater, surface water, or recycled water) or imported sources (The State Water Project or Colorado River Water). The energy associated with local sources is already included in the electricity data provided by the utilities. Imported water data was collected from Coachella Valley Water District, Desert Water Agency, Eastern Municipal Water District, Western Municipal Water District, Rancho California Water District, Palo Verde Irrigation District, Elsinore Valley Municipal Water District, and San Geronio Pass Water Agency.
- <sup>12</sup> Riverside County Waste Management operates six active landfills: Badlands, Blythe, Desert Center, Lamb Canyon, Mecca II, and Oasis. El Sobrante Landfill is privately operated in the County. There are also closed landfills that continue to off gas methane as the waste decomposes. Waste Management provided fugitive methane emissions and onsite equipment fuel usage data for each active and closed landfill.
- <sup>13</sup> Annual VMT for Riverside County accounts for miles traveled on trips with at least one end point in the unincorporated areas of the County. For this analysis, the total miles traveled for trips with both end points in the County was added to half of the miles traveled for trips with one end point in the County since those miles are shared with another jurisdiction.
- <sup>14</sup> Emissions from aviation activities were based on aviation and jet fuel consumption from airport fueling stations in the unincorporated areas of Riverside County.
- <sup>15</sup> Population, housing, and land use data was used to estimate landscaping and woodburning emissions, project future business as usual emissions, and categorize emissions as residential vs. non-residential.
- <sup>16</sup> Emissions from agricultural activities vary depending on the type of crop or animal managed on the land. Southern California Association of Governments prepared CA GIS data detailing the acreage of each type of agricultural land use for the unincorporated areas of Riverside County.

**Data Sources**

- <sup>1</sup> Source: Southern California Edison, *Electricity Use Report for the Unincorporated Area of Riverside County, July 2009-June 2010*.
- <sup>2</sup> Source: Imperial Irrigation District, *kWh Billing Summary, 2008*.
- <sup>3</sup> Source: Southern California Gas Company, *Riverside County Summary Data, 2008*.
- <sup>4</sup> Source: Coachella Valley Water District, *Urban Water Management Plan, 2005 (Appendix E)*.
- <sup>5</sup> Source: Desert Water Agency, *Urban Water Management Plan, 2005*.
- <sup>6</sup> Source: Eastern Municipal Water District, *Urban Water Management Plan, 2005*.
- <sup>7</sup> Source: Western Municipal Water District, *Integrated Regional Water Management Plan, May 2008 (Section 4.1.2.2)*.
- <sup>8</sup> Source: Western Municipal Water District, *Comprehensive Annual Financial Report, 2009*.
- <sup>9</sup> Source: Western Municipal Water District, *Urban Water Management Plan, 2005*.
- <sup>10</sup> Source: Rancho California Water District, *Urban Water Management Plan, 2005*.
- <sup>11</sup> Source: Elsinore Valley Municipal Water District, *Financial Report 2007-2008*.
- <sup>12</sup> Source: San Geronio Pass Water Agency, *Supplemental Water Supply Planning Study, October 2009*.
- <sup>13</sup> Source: Riverside County Waste Management, 2008.
- <sup>14</sup> Source: Riverside County Transportation and Land Management Agency, *RivTAM Base Year Model for 2007 Socio-Economic Data*.
- <sup>15</sup> Source: Riverside County Economic Development Agency, *airport fuel records, 2008*.
- <sup>16</sup> Source: CA Department of Finance, *Population and Housing Estimates, 2008*.
- <sup>17</sup> Source: CA Department of Conservation, Division of Land Resource Protection, 2008 farmland GIS data. Prepared by Southern California Association of Governments (SCAG).

**RIVERSIDE COUNTY**  
**Greenhouse Gas Emissions Inventory**  
**Modeling Assumptions**

**Mobile Source  
Emissions**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Not Gas Dependent
<i>Onroad Emission Factors (g/mile)</i>				
Non Cat passenger Car <sup>18</sup>	469.64	-	-	
Cat passenger Car <sup>18</sup>	340.71	-	-	
Diesel Passenger Car <sup>18</sup>	359.47	-	-	
Non cat light-duty truck <sup>18</sup>	470.04	-	-	
Cat light duty truck <sup>18</sup>	424.04	-	-	
Diesel Light duty Truck <sup>18</sup>	346.44	-	-	
Non Cat light-duty truck 2 <sup>18</sup>	470.42	-	-	
Cat light duty truck 2 <sup>18</sup>	424.09	-	-	
Diesel Light duty truck 2 <sup>18</sup>	351.88	-	-	
Non Cat Medium duty Truck <sup>18</sup>	580.07	-	-	
Cat med duty truck <sup>18</sup>	580.46	-	-	
Diesel Med duty truck <sup>18</sup>	346.44	-	-	
Non Cat lite-heavy duty truck <sup>18</sup>	567.9	-	-	
Cat Light-heavy duty truck <sup>18</sup>	567.9	-	-	
Diesel Lite-heavy duty truck <sup>18</sup>	519.7	-	-	
Non Cat lite-heavy duty truck 2 <sup>18</sup>	567.9	-	-	
Cat Light-heavy duty truck 2 <sup>18</sup>	567.9	-	-	
Diesel Lite-heavy duty truck 2 <sup>18</sup>	528.63	-	-	
Non Cat med-heavy duty truck <sup>18</sup>	567.9	-	-	
Cat med-heavy duty truck <sup>18</sup>	567.9	-	-	
Diesel med-heavy duty truck <sup>18</sup>	1505	-	-	
Non cat Heavy Duty truck <sup>18</sup>	567.9	-	-	
Cat heavy duty truck <sup>18</sup>	567.9	-	-	
Diesel heavy duty truck <sup>18</sup>	1924.2	-	-	
Non Cat Other Bus <sup>18</sup>	567.9	-	-	
Cat other bus <sup>18</sup>	567.9	-	-	
Diesel Other Bus <sup>18</sup>	1505	-	-	
Non Cat Urban Bus <sup>18</sup>	567.9	-	-	
Cat Urban Bus <sup>18</sup>	567.9	-	-	
Diesel Urban Bus <sup>18</sup>	2779.2	-	-	
Non cat motorcycle <sup>18</sup>	121.23	-	-	
Cat motorcycle <sup>18</sup>	138.33	-	-	
Diesel Motorcycle <sup>18</sup>	0	-	-	
Non Cat School Bus <sup>18</sup>	567.9	-	-	
Cat School Bus <sup>18</sup>	567.9	-	-	
Diesel School Bus <sup>18</sup>	1505	-	-	
Non Cat Motor home <sup>18</sup>	567.9	-	-	
Cat Motor home <sup>18</sup>	567.9	-	-	
Diesel Motor home <sup>18</sup>	1505	-	-	
CO <sub>2</sub> to CO <sub>2</sub> e multiplier <sup>19</sup>	-	-	-	1.0526
Aviation Gasoline (kg/gal) <sup>20</sup>	8.32	-	-	
Aviation Gasoline (gr/gal) <sup>21</sup>	-	7.04	0.11	
Jet Fuel (kg/gal)	9.57			
Jet Fuel (gr/gal)		0.27	0.31	

<sup>18</sup> Source: Emissions Factors Software (EMFAC2007), California Air Resources Board, Version 2.3, November 2006.

<sup>19</sup> Source: Bay Area Air Quality Management District Greenhouse Gas Model (BGM) version 1.1.9 Beta. April 29, 2010.

<sup>20</sup> Source: California Climate Action Registry General Reporting Protocol, Version 3.1 January 2009 (Table C.3)

<sup>21</sup> Source: California Climate Action Registry General Reporting Protocol, Version 3.1 January 2009 (Table C.6)

**RIVERSIDE COUNTY  
Greenhouse Gas Emissions Inventory  
Modeling Assumptions**

**Landscape and Wood Burning Hearth Emissions**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Not Gas Dependent
Multifamily acres/property <sup>22</sup>				24.55
Multifamily landscaping tons/property/day <sup>22</sup>	0.25			
Multifamily average units/acre <sup>22</sup>				24.44
Single family tons/acre/day <sup>22</sup>	0.0193			
Single family average units/acre <sup>22</sup>				3.00
Non-Residential acres-to-building sq ft ratio <sup>22</sup>				1/2
Non-Residential tons/acre/day <sup>22</sup>	0.0102			
Woodburning emissions (lbs/ton of wood) <sup>23</sup>	3400			
Woodburning emissions (g/MMBTU) <sup>23</sup>		316.000	4.2000	
lbs/cord of wood <sup>23</sup>				2458
Energy Intensity of wood (MMBTU/ton) <sup>23</sup>				15.38

<sup>22</sup> Source: URBEMIS2007 Emissions Estimation for Land Use Development Projects, Version 9.2

<sup>23</sup> Source: EPA AP-42 Emission Coefficients, Fifth Edition, Volume I October 1996 (Section 1.10)

**Natural Gas**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Natural Gas Emissions (kg/MMBtu) <sup>24</sup>	53.06	0.005	0.0001

<sup>24</sup> Source: California Climate Action Registry General Reporting Protocol, Version 3.1 January 2009 (Table C.7) - Kg/MMBtu

**Electricity**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Southern California Edison 2005 (lbs/MWh) <sup>25</sup>	665.26	0.0076	0.0113
California Average 2005 (lbs/MWh) <sup>25</sup>	724.12	0.003	0.0081
Imperial Irrigation District 2005 (lbs/MWh) <sup>25</sup>	612.12	0.0314	0.0064

<sup>25</sup> Source: Source: EPA Emission & Generation Resource Integrated Database (eGRID) Version 1.1

**Solid Waste**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Density (g/cubic meter) <sup>26</sup>		662	

<sup>26</sup> Source: USEPA (2007). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. United States Environmental Protection Agency. EPA 430-R-07-002. and Annex 3.10: Methodology for Estimating CH<sub>4</sub> and N<sub>2</sub>O Emissions from Manure Management. April 15, 2007. Washington DC. [http://www.epa.gov/climatechange/emissions/usgginv\\_archive.html](http://www.epa.gov/climatechange/emissions/usgginv_archive.html)

**RIVERSIDE COUNTY  
Greenhouse Gas Emissions Inventory  
Modeling Assumptions**

**Imported Water**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Not Gas Dependent
<i>Energy Intensity of Water Use (kWh/MG)</i>				
Water Treatment <sup>27</sup>				111
Water Distribution <sup>27</sup>				1272
Wastewater Treatment <sup>27</sup>				1911
CA State Water Project Supply and Conveyance <sup>27</sup>				8325
Colorado River Water Supply and Conveyance <sup>27</sup>				6140

<sup>27</sup> Source: CAPCOA Quantifying Greenhouse Gas Emissions, August 2010. Energy Intensity of Water Use to LA Basin (TableWSW-3.1)

**Standard Conversion Rates**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Not Gas Dependent
gr/lb <sup>28</sup>				453.59291
lbs/short ton <sup>28</sup>				2000
metric tons/short ton <sup>28</sup>				0.907185
kg/short ton <sup>28</sup>				907.18474
kg/metric ton <sup>28</sup>				1000
g/metric ton <sup>28</sup>				1,000,000
lbs/metric ton <sup>28</sup>				2204.62
therms per MMBTU <sup>28</sup>				0.10
kWh/MWh <sup>28</sup>				1000
kWh/GWh <sup>28</sup>				1,000,000
scf/Mcf <sup>28</sup>				1,000
Mcf/MMBTU <sup>28</sup>				0.9649
Gallons/Acre foot <sup>29</sup>				325,851.43
Gallons/ccf <sup>29</sup>				748.00

<sup>28</sup> Source: California Climate Action Registry General Reporting Protocol, Version 3.1 January 2009 (Appendix B)

<sup>29</sup> Source: <http://onlineconversion.com/volume.htm>

**RIVERSIDE COUNTY**  
**Greenhouse Gas Emissions Inventory**  
**Modeling Assumptions**

**Agricultural**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Not Gas Dependent
# of hectares/acre <sup>30</sup>				0.4046945
Ratio CH <sub>4</sub> -C <sup>30</sup>				0.005
Conversion CH <sub>4</sub> -C to Full Mol. Wt. <sup>30</sup>				1.33
Emission factor for liquid systems (kg N <sub>2</sub> O-N/kg N) <sup>30</sup>				0.001
Emission factor for solid systems (kg N <sub>2</sub> O-N/kg N) <sup>30</sup>				0.02
Ratio N <sub>2</sub> O:N <sub>2</sub> [C <sub>10</sub> ] <sup>30</sup>				1.5714286
Volitazition percent for all non-PRP ag soils <sup>30</sup>				0.2
Volitazition percent for manure management <sup>30</sup>				0
Rate NH <sub>3</sub> -NO <sub>x</sub> <sup>30</sup>				0.01
Emission Factor for pastures, ranges, and paddocks <sup>30</sup>				0.02
Emission factor for ground application <sup>30</sup>				0.0125
Cwt (hundred weight) <sup>30</sup>				100 lbs
Volitazition of synthetic fertilizers <sup>30</sup>				0.1
Volitazition of organic fertilizers <sup>30</sup>				0.2
% leached from soils <sup>30</sup>				0.3
Leaching Factor (kg N <sub>2</sub> O-N / kg N) <sup>30</sup>				0.025
Nitrogen Content of Non-manure Organics <sup>30</sup>				0.041
Emission factor for soils (kg N <sub>2</sub> O-N/kgN) <sup>30</sup>				0.01
N <sub>2</sub> O Emissions from Volitazition <sup>30</sup>				0.01
N content of aboveground biomass for N-fixing crop production <sup>30</sup>				0.03
Emission Factor for Temperate zone Histols (kg N <sub>2</sub> O-N / ha_yr) <sup>30</sup>				8
Emission Factor for Subtropic zone Histols (kg N <sub>2</sub> O-N / ha_yr) <sup>30</sup>				12
N <sub>2</sub> O-N Emissions Ratio [R <sub>N<sub>2</sub>O_N</sub> ] <sup>30</sup>				0.007
% of target year applied <sup>30</sup>				0.65
% of following year applied <sup>30</sup>				0.35

<sup>30</sup> Source: EPA State Inventory Tool for Agriculture, July 2008.

**Appendix C: Data Inputs**

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**RIVERSIDE COUNTY  
Greenhouse Gas Emission Inventory  
Annual Usage and Generation**

Inventory Year: 2008

Growth Rates	to 2020	to 2035	to 2060
Residential	62.41%	92.55%	151.70%
Non-Residential	96.10%	165.12%	420.72%

**Transportation**

**On-road Transportation**

Annual Vehicle Miles Traveled	5,161,531,679
Annual Residential Trips	590,542,591
Annual Non-Residential Trips	271,942,936
Average \$/gallon Gasoline:	\$3.56
Average \$/gallon Diesel:	\$3.93

**Aviation**

	Annual Gallons	\$/gallon
Jet Fuel	1,832,210	\$0.10
Aviation Fuel	404,676	\$0.10

**Electricity and Natural Gas**

**Electricity**

**SoCal Edison Electricity**

Rate Code	Annual kWh	\$/kWh	\$
AG TOU	112,208,191	\$0.09875	\$11,080,513.98
Domestic	1,256,041,296	\$0.11795	\$148,144,544.28
GS-1	82,884,759	\$0.17841	\$14,787,469.85
GS-2	262,676,044	\$0.08121	\$21,332,341.81
PA-1	16,947,950	\$0.13312	\$2,256,145.00
PA-2	12,945,067	\$0.11644	\$1,507,266.64
Street Lighting	98,026,610	\$0.07921	\$7,764,923.04
TOU-8	596,794,701	\$0.08680	\$51,800,825.18
TOU-GS	154,930,764	\$0.18348	\$28,426,510.66
<b>TOTAL</b>	<b>2,593,455,382</b>		<b>\$287,100,540.45</b>

SoCal Edison Emission Factors	
Default (2005)	Units
665.2607	lbs CO2/MWh
7.5986	lbs CH4/GWh
11.3094	lbs N2O/GWh

2005 California Emission Factors	
Default (2005)	Units
724.12	lbs CO2/MWh
30.24	lbs CH4/GWh
8.08	lbs N2O/GWh

**Imperial Irrigation District**

Rate Code	Annual kWh	\$/kWh	\$
Residential	450,673,960	\$0.0784	\$35,332,838.46
Energy Assistance	41,236,677	\$0.0549	\$2,263,068.83
Mobile Home	37,606,910	\$0.0676	\$2,542,227.12
Agricultural	62,987,028	\$0.0618	\$3,892,598.33
Small Commercial	101,736,856	\$0.0820	\$8,342,422.19
Large Commercial	321,462,730	\$0.0659	\$21,184,393.91
Industrial	266,000	\$0.0628	\$16,704.80
Street Lights	4,298,352		\$0.00
Area Lighting	83,496		\$0.00
Public Authority	12,398,373	\$0.0732	\$907,560.90
Interdepartmental	1,542,560		\$0.00
<b>TOTAL</b>	<b>1,034,292,942</b>		<b>\$74,481,814.55</b>

Imperial Irrigation District Emission Factors	
Default (2005)	Units
612.12	lbs CO2/MWh
31.41	lbs CH4/GWh
6.37	lbs N2O/GWh

**Natural Gas**

	therms	\$/therms
Residential	52,372,096	\$0.80
Commercial/Industrial	43,546,543	\$0.61
<b>TOTAL</b>	<b>95,918,639</b>	<b>\$68,461,068.03</b>



### Landscaping Emissions

#### Land use:

Single Family Residential Units:	112,132	units
Multi-family Residential Units:	48,854	units
Commercial Building Space:	169,585	1000 square feet
Industrial Building Space:	33,905	1000 square feet

### Woodburning Emissions

Homes with wood stoves:	35%	% of residential homes
Amount of wood burned:	0.80	cords/unit
Homes with fireplaces:	10%	% of residential homes
Price of wood:	\$3.50	\$/cord of wood

## Water

### Imported Water

	Treated (acre-feet)		Untreated (acre-feet)	
	State Water Project	Colorado River Water	State Water Project	Colorado River Water
Coachella Valley Water District		14,338.01		
Desert Water Agency		18,347.58		
Eastern Municipal Water District	38,396.92	33,412.70	313.27	272.60
Elisnore Valley Municipal Water District	7,055.06	6,139.26		
Rancho California Water District	12,311.55	10,713.41	6,484.35	5,642.63
San Geronio Water Agency	2,175.10			
Western Municipal Water District	28,650.00	9,550.00		
<b>Total Imported Water</b>	<b>88,588.63</b>	<b>92,500.96</b>	<b>6,797.62</b>	<b>5,915.24</b>

## Solid Waste

### Onsite Equipment

Total Diesel Use (gal)

### Waste Sources

% Residential   
 % Non-Residential

### Fugitive Methane Emissions

	Measured LFG Flow		Destruction Efficiency	Methane Capture in 1990?
	(SCFM)	% LFG as CH4		
BADLANDS (flare alone)	639	43.7%	99.999629%	
BADLANDS (flare w/engine)	189	43.7%	99.999629%	
BADLANDS (engine)	450	44.0%	99.700000%	
BLYTHE	20	8.0%	0.000000%	
COACHELLA (1997)	346	36.8%	99.999644%	
CORONA (1986)	225	37.6%	99.900000%	Y
DOUBLE BUTTE (1994)	190	31.8%	99.999708%	
EDOM HILL (1997)	700	49.7%	99.999785%	
ELSINORE (1965)	70	19.3%	99.900060%	
EL SOBRANTE (Total)	3014	45.0%	99.900000%	Y
HIGHGROVE (1998)	310	46.7%	99.999781%	
LAMB CANYON	642	37.8%	99.999697%	
MEAD VALLEY (1997)	225	28.7%	99.999513%	
W. RIVERSIDE (1993)	66	26.2%	99.999149%	Y

## Agriculture

### Annual Crop Growth

	Acres Harvested	Annual Yield (tons)
Hay (including Alfalfa)	29648	257608
Corn	497	24827
Oats	1150	3329
Sorghum	3197	22942
Wheat	14817	55589
Cotton	6901	7073
Vegetable Crops & Fruit Trees	43898	289710

### Annual Animal head

	#
Dairy Cow	43,773
Poultry	5,260,914
Sheep	12,700



# Air Quality Appendix

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# **Air Quality Appendix**

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## **Modeling Assumptions**

## Riverside County GPA 960 Assumptions

### Assumptions used in the URBEMIS modeling

County Designation	URBEMIS Category	Acerage	# dwelling Units	square feet	KFS	Existing Baseline			
						Acerage SCAQMD	Land Use SCAQMD	Acerage MDAQMD	Land Use MDAQMD
<b>Residential</b>						61.82%		38.18%	
AG, RR, RM, RD, OS-RUR, EDR, VLDR, LDR, MDR, MHDR	SFR	73,436	112,132	-	-	45,398.14	69,320	28,037.86	42,812
	SFR/urbemis Run <sup>1</sup>	-	-	-	-	-	-	-	-
Mobile Home	Mobile Home	30,668	36,955	-	-	18,958.96	22,846	11,709.04	14,109
HDR, VHDR, HHDR, CC, MUPA	Multi Family Residential	4,024	11,899	-	-	2,487.64	7,356	1,536.36	4,543
<b>Total Residential</b>		<b>108,128</b>	<b>160,986</b>	<b>-</b>	<b>-</b>	<b>66,845</b>	<b>99,522</b>	<b>41,283</b>	<b>61,464</b>
<b>Non-Residential</b>						57.29%		42.71%	
CR	CR	10,987	-	54,732,000	54,732	6,294	31,356.0	4,692.5	23,376
CT	CT	10,957	-	5,055,500	5,056	6,277	2,896.3	4,679.7	2,159
CO	CO	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
CC & MUPA	CC & MUPA	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
Other Pub. Fac.	Other Pub. Fac.	5,648.00	-	73,808,064	73,808	3,236	42,284.6	2,412.3	31,523
School	Junior High	2,754.00	-	35,989,272	35,989	1,578	20,618.3	1,176.2	15,371
LI	Light Industrial	13,434	-	14,956,630	14,957	7,696	8,568.7	5,737.7	6,388
	LI/urbemis Run <sup>1</sup>	-	-	-	-	-	-	-	-
HI	Heavy Industrial	1,826	-	13,366,500	13,367	1,046	7,657.7	779.9	5,709
BP	Industrial Park	0	-	0	0	0	0	0.0	0
Warehouse	Warehouse	4,200	-	5,581,570	5,582	2,406	3,197.7	1,793.8	2,384
<b>Total non-residential</b>		<b>49,806</b>	<b>-</b>	<b>203,489,536</b>	<b>203,490</b>	<b>28,534</b>	<b>116,579</b>	<b>21,272</b>	<b>86,910</b>

\*Dwelling units and square footages taken from County provided data

File: EXISTING COW DATA to PBSJ 5-4-11 REVISED THIRD (2)  
(Used data on "Revised 3 Tab")

5/4/2011

\*Percentages attributed to SCAQMD and MDAQMD Jurisdiction was taken from the current General Plan

<sup>1</sup> Because of the limitation of URBEMIS field lengths, SFR and LI for Urbemis runs had to be divided across two or three fields as follows:

SFR: Two Urbemis runs were required to account for all dwelling units in the SCAQMD jurisdiction. These were accounted for as SFR or Retirement community.

LI Light Industrial was accounted for in totally by modeling as Light industrial or Manufacturing land use types.

		Existing Baseline			
		% Land Use SCAQMD		% Land Use MDAQMD	
		61.82%	Trip Rate	38.18%	Trip Rate
Average daily trips	1,421,987	879,072	4.07	542,915	3.66
Vehicle miles traveled	23,111,848	14,287,744		8,824,104	
Average Trip length (miles)	16.25				

Average daily trips, vehicle miles traveled, and average trip lengths were provided by the County of Riverside.

\*Due to rounding errors in URBEMIS, Trip rates, and trip lengths as shown in the modeling run may differ from the values presented here. This was done to more closely match the URBEMIS output to the average daily trips and vehicle miles traveled presented in the traffic study.

## Riverside County GPA 960 Assumptions

County Designation	URBEMIS Category	Acerage	Buildout under GPA 960						
			# dwelling Units	square feet	KFS	Acerage SCAQMD	Land Use SCAQMD	Acerage MDAQMD	Land Use MDAQMD
<b>Residential</b>							60.64%	39.36%	
AG, RR, RM, RD, OS-RUR, EDR, VLDR, LDR, MDR, MHDR	SFR	215,902	442,015	-	-	130,923	268,037.90	84,979	173,977.10
	SFR/urbemis Run <sup>1</sup>	-	-	-	-	43,641	89,345.97	42,489	86,988.55
Mobile Home	Mobile Home	0	0	-	-	0	0.00	0.00	0.00
HDR, VHDR, HHDR, CC, MUPA	Multi Family Residential	22,615	78,723	-	-	13,714	47,737.63	8,901	30,985.37
<b>Total Residential</b>		<b>238,517</b>	<b>520,738</b>	<b>-</b>	<b>-</b>	<b>144,636.54</b>	<b>315,775.52</b>	<b>93,880.18</b>	<b>204,962.48</b>
<b>Non-Residential</b>							54.95%	45.05%	
CR	CR	3,808	-	29,965,000	29,965	2,092	16,465.77	1,716	13,499.23
CT	CT	2,801	-	13,021,143	13,021	1,539	7,155.12	1,262	5,866.02
CO	CO	485	-	11,176,286	11,176	267	6,141.37	218	5,034.92
CC & MUPA	CC & MUPA	1,203	-	14,322,528	14,323	661	7,870.23	542	6,452.30
Other Pub. Fac.	Other Pub. Fac.	5,006	-	65,416,678	65,417	2,751	35,946.46	2,255	29,470.21
School	Junior High	2,441	-	31,897,580	31,898	1,341	17,527.72	1,100	14,369.86
LI	Light Industrial	20,010	-	264,977,800	264,978	5,498	145,605.30	4,507	119,372.50
	LI/urbemis Run <sup>1</sup>	-	-	-	-	-	72,802.65	-	59,686.25
HI	Heavy Industrial	1,697	-	22,183,500	22,184	466	12,189.83	382	9,993.67
BP	Industrial Park	5,371	-	52,636,800	52,637	1,476	28,923.92	1,210	23,712.88
Warehouse	Warehouse	0	-	0	0	0	0.00	0	0.00
<b>Total non-residential</b>		<b>42,822</b>	<b>-</b>	<b>505,597,315</b>	<b>505,597</b>	<b>16,091</b>	<b>277,825.72</b>	<b>13,191.99</b>	<b>227,771.59</b>

\*Dwelling units and square footages taken from County provided data

File: EXISTING COW DATA to PBSJ 5-4-11 REVISED THIRD (2)  
(Used data on "Revised 3 Tab" )

5/4/2011

\*Percentages attributed to SCAQMD and MDAQMD Jurisdiction was taken from the current General Plan

<sup>1</sup> Because of the limitation of URBEMIS field lengths, SFR and LI for Urbemis runs had to be divided across two or three fields as follows:

SFR: Two Urbemis runs were required to account for all dwelling units in the SCAQMD jurisdiction. These were accounted for as SFR or Retirement community.

LI Light Industrial was accounted for in totally by modeling as Light industrial or Manufacturing land use types.

Note the for the URBEMIS runs a buildout year of 2040 was used as that is the latest year available in the model.

	Buildout Under GPA 960			
	% Land Use SCAQMD		% Land Use MDAQMD	
	60.64%	Trip Rate	39.36%	Trip Rate
Average daily trips	4,924,604	2,986,280	5.03	1,938,324
Vehicle miles traveled	104,386,963	63,300,254		41,086,709
Average Trip length (miles)	21.20			

Average daily trips, vehicle miles traveled, and average trip lengths were provided by the County of Riverside.

\*Due to rounding errors in URBEMIS, Trip rates, and trip lengths as shown in the modeling run may differ from the values presented here. This was done to more closely match the URBEMIS output to the average daily trips and vehicle miles traveled presented in the traffic study.

# **Air Quality Appendix**

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## **Calculation Summary**

**Riverside County GPA 960  
SCAQMD Mitigated Summary**

Source	CO (lbs/day)	NO <sub>x</sub> (lbs/day)	ROG (lbs/day)	SO <sub>x</sub> (lbs/day)	PM <sub>10</sub> (lbs/day)	PM <sub>2.5</sub> (lbs/day)
<b>Reductions Associated with Mitigation</b>						
Mobile Source	4,069	3,639	153	195	30,177	5,801
Area Source	93,691	2,227	33,944	255	14,467	13,923
<b>Net Mitigated Plan Emissions (Net Plan Emissions - Reduction)</b>						
Mobile Source	-15,458	-13,825	275	351	54,283	10,436
Area source	9,120	4,162	13,950	9	139	139
NG SFR	835	2,127	208	0.03	4.09	4.05
NG MFR	90	230	22	0.00	0.44	0.44
NG Non-Res	223	288	25	0.00	0.52	0.52
Total Natural Gas	1,149	2,645	256	0	5	5
Hearth	603	1,423	83	9	115	114
Landscaping	7,368	94	1,333	0	19	19
Consumer Products	0	0	11,094	0	0	0
Architectural Coatings	0	0	1,185	0	0	0
<b>Total Net Mitigated Plan Emissions</b>	<b>-6,338</b>	<b>-9,663</b>	<b>14,225</b>	<b>360</b>	<b>54,422</b>	<b>10,574</b>
<b>SCAQMD SCAB</b>						
<b>Thresholds</b>	550	55	55	150	150	55
<b>Significant Impact?</b>	no	no	YES	YES	YES	YES
<b>SCAQMD SSAB</b>						
<b>Thresholds</b>	550	100	75	150	150	55
<b>Significant Impact?</b>	no	no	YES	YES	YES	YES



## Riverside County GPA 960 SCAQMD Unmitigated Summary

Source	CO (lbs/day)	NO <sub>x</sub> (lbs/day)	ROG (lbs/day)	SO <sub>x</sub> (lbs/day)	PM <sub>10</sub> (lbs/day)	PM <sub>2.5</sub> (lbs/day)
<b>Existing Emissions (Baseline)</b>						
Mobile Source	196,876	31,668	18,318	155	25,023	5,103
Area source	44,369	3,476	22,128	122	6,716	6,466
Natural Gas	1,092	2,076	158	0	4	4
Hearth	43,277	1,400	15,601	122	6,712	6,462
Landscaping	4,616	41	831	0	12	12
Consumer Products	0	0	5,105	0	0	0
Architectural Coatings	0	0	1,263	0	0	0
<b>Total Existing Emissions</b>	<b>241,245</b>	<b>35,143</b>	<b>40,445</b>	<b>277</b>	<b>31,739</b>	<b>11,568</b>
<b>Proposed GPA No. 960 Emissions</b>						
Mobile Source	185,488	21,482	18,745	701	109,483	21,340
Area source	139,811	9,771	68,689	386	21,302	42
NG SFR	1,858	4,366	337	0	8	8
NG MFR	199	468	36	0	1	1
NG Non-Res	465	553	40	0	1	1
Natural Gas	2,522	5,388	414	0	10	10
Hearth	137,289	4,384	49,496	386	21,292	20,498
Landscaping	11,984	135	2,164	1	32	31
Consumer Products	0	0	16,199	0	0	0
Architectural Coatings	0	0	2,580	0	0	0
<b>Total GPA 960 Emissions</b>	<b>325,299</b>	<b>31,253</b>	<b>87,434</b>	<b>1,087</b>	<b>130,786</b>	<b>21,381</b>
<b>Net Plan Emissions</b>						
Mobile Source	-11,388	-10,186	428	546	84,460	16,237
Area source	102,810	6,389	47,894	265	14,606	14,062
NG SFR	1,053	2,683	208	0	5	5
NG MFR	113	288	22	0	1	1
NG Non-Res	264	340	25	0	1	1
Natural Gas	1,430	3,311	256	0	6	6
Hearth	94,013	2,984	33,896	264	14,580	14,036
Landscaping	7,368	94	1,333	0	19	19
Consumer Products	0	0	11,094	0	0	0
Architectural Coatings	0	0	1,316	0	0	0
<b>Total Net Plan Emissions</b>	<b>91,422</b>	<b>-3,797</b>	<b>48,322</b>	<b>811</b>	<b>99,066</b>	<b>30,299</b>
<b>SCAQMD SCAB</b>						
Thresholds	550	55	55	150	150	55
Significant Impact?	YES	no	YES	YES	YES	YES
<b>SCAQMD SSAB</b>						
Thresholds	550	100	75	150	150	55
Significant Impact?	YES	no	YES	YES	YES	YES

**Riverside County GPA 960  
SCAQMD Summer Summary**

Source	CO (lbs/day)	NO <sub>x</sub> (lbs/day)	ROG (lbs/day)	SO <sub>x</sub> (lbs/day)	PM <sub>10</sub> (lbs/day)	PM <sub>2.5</sub> (lbs/day)
<b>Existing Emissions (Baseline)</b>						
Mobile Source	196,876	26,649	16,458	155	25,023	5,103
Area source	5,708	2,117	7,358	0.24	16.30	16.14
Natural Gas	1,092	2,076	158	0.03	3.92	3.88
Hearth	0	0	0	0.00	0.00	0.00
Landscaping	4,616	41	831	0.21	12.38	12.26
Consumer Products	0	0	5,105	0.00	0.00	0.00
Architectural Coatings	0	0	1,263	0.00	0.00	0.00
<b>Total Existing Emissions</b>	<b>202,584</b>	<b>28,766</b>	<b>23,817</b>	<b>155</b>	<b>25,039</b>	<b>5,119</b>
<b>Proposed GPA No. 960 Emissions</b>						
Mobile Source	185,488	18,037	15,985	701	109,483	21,340
Area source	14,506	5,523	21,356	0.61	41.96	41.58
NG SFR	1,858	4,366	337	0.06	8.36	8.27
NG MFR	199	468	36	0.00	0.90	0.89
NG Non-Res	465	553	40	0.01	1.00	0.99
Natural Gas	2,522	5,388	414	0.07	10.26	10.15
Hearth	0	0	0	0.00	0.00	0.00
Landscaping	11,984	135	2,164	0.54	31.70	31.43
Consumer Products	0	0	16,199	0.00	0.00	0.00
Architectural Coatings	0	0	2,580	0.00	0.00	0.00
<b>Total GPA 960 Emissions</b>	<b>199,993</b>	<b>23,559</b>	<b>37,341</b>	<b>701</b>	<b>109,525</b>	<b>21,381</b>
<b>Net Plan Emissions (Proposed - Existing)</b>						
Mobile Source	-11,388	-8,612	-474	546	84,460	16,237
Area source	8,798	3,405	13,998	0	26	25
Natural Gas	1,430	3,311	256	0	6	6
Hearth	0	0	0	0	0	0
Landscaping	7,368	94	1,333	0	19	19
Consumer Products	0	0	11,094	0	0	0
Architectural Coatings	0	0	1,316	0	0	0
<b>Total Net Plan Emissions</b>	<b>-2,591</b>	<b>-5,207</b>	<b>13,524</b>	<b>546</b>	<b>84,486</b>	<b>16,262</b>

**Riverside County GPA 960  
SCAQMD Winter Summary**

Source	CO (lbs/day)	NO <sub>x</sub> (lbs/day)	ROG (lbs/day)	SO <sub>x</sub> (lbs/day)	PM <sub>10</sub> (lbs/day)	PM <sub>2.5</sub> (lbs/day)
<b>Existing Emissions (Baseline)</b>						
Mobile Source	190,273	31,668	18,318	131	25,023	5,103
Area source	44,369	3,476	22,128	121.82	6,715.99	6,465.60
Natural Gas	1,092	2,076	158	0.03	3.92	3.88
Hearth	43,277	1,400	15,601	121.79	6,712.07	6,461.72
Landscaping	0	0	0	0.00	0.00	0.00
Consumer Products	0	0	5,105	0.00	0.00	0.00
Architectural Coatings	0	0	1,263	0.00	0.00	0.00
<b>Total Existing Emissions</b>	<b>234,642</b>	<b>35,143</b>	<b>40,445</b>	<b>253</b>	<b>31,739</b>	<b>11,568</b>
<b>Proposed GPA No. 960 Emissions</b>						
Mobile Source	171,108	21,482	18,745	595	109,483	21,340
Area source	139,811	9,771	68,689	386.12	21,302.49	20,508.11
NG SFR	1,858	4,366	337	0	8	8
NG MFR	199	468	36	0	1	1
NG Non-Res	465	553	40	0	1	1
Natural Gas	2,522	5,388	414	0.07	10.26	10.15
Hearth	137,289	4,384	49,496	386.05	21,292.23	20,497.96
Landscaping	0	0	0	0.00	0.00	0.00
Consumer Products	0	0	16,199	0.00	0.00	0.00
Architectural Coatings	0	0	2,580	0.00	0.00	0.00
<b>Total GPA 960 Emissions</b>	<b>310,919</b>	<b>31,253</b>	<b>87,434</b>	<b>981</b>	<b>130,786</b>	<b>41,848</b>
<b>Net Plan Emissions (Proposed - Existing)</b>						
Mobile Source	-19,166	-10,186	428	464	84,460	16,237
Area source	95,443	6,295	46,561	264	14,587	14,043
Natural Gas	1,430	3,311	256	0	6	6
Hearth	94,013	2,984	33,896	264	14,580	14,036
Landscaping	0	0	0	0	0	0
Consumer Products	0	0	11,094	0	0	0
Architectural Coatings	0	0	1,316	0	0	0
<b>Total Net Plan Emissions</b>	<b>76,277</b>	<b>-3,891</b>	<b>46,989</b>	<b>728</b>	<b>99,047</b>	<b>30,279</b>

**Riverside County GPA 960**  
**MDAQMD Mitigated Summary**

Source	CO (tons/year)	NO <sub>x</sub> (tons/year)	ROG (tons/year)	SO <sub>x</sub> (tons/year)	PM <sub>10</sub> (tons/year)	PM <sub>2.5</sub> (tons/year)
<b>Reductions Associated with Mitigation</b>						
Mobile Source	190	329	28	22	3,626	698
Area Source	805	89	339	2	119	115
<b>Net Mitigated Plan Emissions (Net Plan Emissions - Reduction)</b>						
Mobile Source	-721	-1,249	51	40	6,522	1,255
Area source	1,050	346	1,718	0	4	4
NG SFR	100	256	25	0.01	0.50	0.49
NG MFR	11	28	3	0.00	0.06	0.05
NG Non-Res	34	44	4	0.00	0.08	0.08
Natural Gas	145	328	32	0	1	1
Hearth	5	6	1	0	1	1
Landscaping	899	11	163	0	2	2
Consumer Products	0	0	1,343	0	0	0
Architectural Coatings	0	0	179	0	0	0
<b>Total Net Mitigated Plan Emissions</b>	<b>328</b>	<b>-904</b>	<b>1,769</b>	<b>40</b>	<b>6,526</b>	<b>1,259</b>
<b>MDAQMD Thresholds</b>	100	25	25	25	15	15
<b>Significant Impact?</b>	YES	no	YES	YES	YES	YES

**Riverside County GPA 960  
MDAQMD Unmitigated Summary**

Source	CO (tons/year)	NO <sub>x</sub> (tons/year)	ROG (tons/year)	SO <sub>x</sub> (tons/year)	PM <sub>10</sub> (tons/year)	PM <sub>2.5</sub> (tons/year)
<b>Existing Emissions (Baseline)</b>						
Mobile Source	21,949	3,193	1,942	17	2,821	575
Area source	986	256	966	0.93	53.27	51.33
Natural Gas	133	246	19	0.00	0.46	0.46
Hearth	332	6	124	0.91	51.41	49.48
Landscaping	521	5	94	0.02	1.40	1.39
Consumer Products	0	0	575	0.00	0.00	0.00
Architectural Coatings	0	0	154	0.00	0.00	0.00
<b>Total Existing Emissions</b>	<b>22,935</b>	<b>3,449</b>	<b>2,908</b>	<b>18</b>	<b>2,874</b>	<b>627</b>
<b>Proposed GPA No. 960 Emissions</b>						
Mobile Source	21,417	2,273	2,022	79	12,969	2,528
Area source	2,841	691	3,023	3	176	170
NG SFR	220	517	40	0.01	0.99	0.98
NG MFR	24	55	4	0.00	0.11	0.10
NG Non-Res	70	83	6	0.00	0.15	0.15
Natural Gas	313	656	50	0.01	1.25	1.23
Hearth	1,107	19	445	3.03	171.42	164.99
Landscaping	1,421	16	256	0.06	3.76	3.73
Consumer Products	0	0	1,919	0.00	0.00	0.00
Architectural Coatings	0	0	353	0.00	0.00	0.00
<b>Total GPA 960 Emissions</b>	<b>24,258</b>	<b>2,963</b>	<b>5,045</b>	<b>82</b>	<b>13,145</b>	<b>2,698</b>
<b>Net Plan Emissions (Proposed - Existing)</b>						
Mobile Source	-531	-920	79	62	10,147	1,953
Area source	1,855	434	2,057	2	123	119
NG SFR	127	323	25	0.01	0.63	0.61
NG MFR	14	35	3	0.00	0.07	0.06
NG Non-Res	40	52	4	0.00	0.09	0.09
Natural Gas	180	410	32	0.01	0.79	0.77
Hearth	775	13	320	2.12	120.01	115.51
Landscaping	899	11	163	0.04	2.36	2.34
Consumer Products	0	0	1,343	0.00	0.00	0.00
Architectural Coatings	0	0	199	0.00	0.00	0.00
<b>Total Net Plan Emissions</b>	<b>1,323</b>	<b>-486</b>	<b>2,136</b>	<b>64</b>	<b>10,271</b>	<b>2,071</b>
<b>MDAQMD Thresholds</b>	100	25	25	25	15	15
<b>Significant Impact?</b>	YES	no	YES	YES	YES	YES

# **Air Quality Appendix**

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## **Reduction Calculations**

## Riverside County GPA 960 Mobile Source Reductions

### Countywide Transportation Reductions

Transportation Reductions are taken directly from GHG Modeling (Appendix EIR-6): CO<sub>2</sub>e reductions are directly related to a reduction in VMT.

	<b>2020 BAU CO2</b>	<b>CO2e</b>	<b>R1-T9 0.06</b>	<b>R1-T10 0.004</b>	<b>IM-T1 0.126</b>	<b>IM-T2 0.105</b>
Autos and Light Trucks	3,178,748	3,346,050	3,145,287	3,132,706	2,737,985	2,450,497
Medium and Heavy Duty	1,489,405	1,567,795	1,567,795	1,567,795	1,567,795	1,567,795
MotorCycles	14,525	15,290	14,372	14,315	12,511	11,198
<b>Total</b>	<b>4,682,678</b>	<b>4,929,135</b>	<b>4,727,455</b>	<b>4,714,816</b>	<b>4,318,291</b>	<b>4,029,489</b>

	<b>IM-T3 0.09</b>	<b>IM-T4 0.001</b>	<b>IM-T5 0.07</b>	<b>IM-T6 0.0165</b>	<b>IM-T7 0.034905</b>	<b>IM-T8 0.0266</b>
Autos and Light Trucks	2,229,952	2,227,722	2,071,781	2,037,597	1,966,475	1,966,475
Medium and Heavy Duty	1,567,795	1,567,795	1,567,795	1,567,795	1,567,795	1,526,092
MotorCycles	10,190	10,190	10,190	10,022	10,022	10,022
<b>Total</b>	<b>3,807,937</b>	<b>3,805,707</b>	<b>3,649,766</b>	<b>3,615,414</b>	<b>3,544,291</b>	<b>3,502,588</b>

	<b>IM-T9 0.1319565</b>	<b>IM-T9 0.044</b>
Autos and Light Trucks	1,706,986	1,631,878
Medium and Heavy Duty	1,526,092	1,526,092
MotorCycles	10,022	10,022
<b>Total</b>	<b>3,243,099</b>	<b>3,167,992</b>

**Total Mobile Source Reduction                      35.73% reduction in VMT**

## Riverside County GPA 960 SCAQMD Area Source Reductions

### SCAQMD Reductions

	CO	NO <sub>x</sub>	ROG 10%	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Architectural Reduction</b>						
Architectural reduction for using a low VOC paint is based on the default ROG emissions reduction in URBEMIS.						
<b>Natural Gas Hearth Only</b>						
Res - Reg Hearth	98,430.96	3,111.54	35,489.87	276.62	15,265.21	14,695.70
Res - NG Hearth Only	631.55	1,484.15	86.84	9.47	119.99	119.73
Res % Reduction	99.36%	52.30%	99.76%	96.58%	99.21%	99.19%

SCAQMD requires that no wood burning stoves or hearths are installed. The reduction is based on the percentage reduction replied in URBEMIS for showing 15% no hearts and 85% natural gas only hearts compared to the default wood and natural gas usage assumptions in the model. Default assumptions were applied for existing conditions.

### Natural Gas - Non-Hearth

% beyond Title 24	25.00%	25.00%	-	25.00%	25.00%	25.00%
% reduction per % beyond T24						
SFR	0.83%	0.83%	-	0.83%	0.83%	0.83%
MFR	0.80%	0.80%	-	0.80%	0.80%	0.80%
Commercial	0.61%	0.61%	-	0.61%	0.61%	0.61%
% reduction for 25% beyond T24						
SFR	20.75%	20.75%	-	20.75%	20.75%	20.75%
MFR	20.00%	20.00%	-	20.00%	20.00%	20.00%
Commercial	15.25%	15.25%	-	15.25%	15.25%	15.25%

Reduction Percentages from CAPCOA 25% above 2005 Title 24 (assumes an average of 10% beyond 2010 Title 24)



## Riverside County GPA 960 MDAQMD Area Source Reductions

### MDAQMD Reductions

	CO	NO <sub>x</sub>	ROG	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Architectural Reduction</b>			10%			
Architectural reduction for using a low VOC paint is based on the default ROG emissions reduction in URBEMIS.						
<b>Natural Gas Hearth Only</b>						
Res - Reg Hearth	1,106.88	19.10	444.53	3.03	171.42	164.99
Res - NG Hearth Only	0.29	0.69	43.95	0.00	0.06	0.05
Res % Reduction	99.97%	96.39%	90.11%	100.00%	99.96%	99.97%

Mitigation measure based on SCAQMD requirement that no wood burning stoves or hearths are installed. The reduction is based on the percentage reduction replied in URBEMIS for showing 15% no hearts and 85% natural gas only hearts compared to the default wood and natural gas usage assumptions in the model. Default assumptions were applied for existing conditions.

### Natural Gas - Non-Hearth

% beyond Title 24	25.00%	25.00%	-	25.00%	25.00%	25.00%
% reduction per % beyond T24						
SFR	0.83%	0.83%	-	0.83%	0.83%	0.83%
MFR	0.80%	0.80%	-	0.80%	0.80%	0.80%
Commercial	0.61%	0.61%	-	0.61%	0.61%	0.61%
Total % reduction						
SFR	20.75%	20.75%	-	20.75%	20.75%	20.75%
MFR	20.00%	20.00%	-	20.00%	20.00%	20.00%
Commercial	15.25%	15.25%	-	15.25%	15.25%	15.25%

Reduction Percentages from CAPCOA 25% above 2005 Title 24 (assumes an average of 10% beyond 2010 Title 24)

# **URBEMIS Model Output**

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**SCAQMD Existing**

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Mobile Source.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	16,458.46	26,648.91	196,876.26	154.85	25,022.76	5,102.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	16,458.46	26,648.91	196,876.26	154.85	25,022.76	5,102.88

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	5,347.74	8,541.64	63,838.64	49.70	8,005.40	1,633.39
Apartments mid rise	567.48	906.41	6,774.34	5.27	849.51	173.33
Mobile home park	1,762.47	2,815.09	21,039.49	16.38	2,638.37	538.32
Junior high school	1,558.91	2,547.99	18,693.53	14.80	2,395.22	488.30
Warehouse	239.21	393.66	2,863.22	2.28	370.52	75.51
General light industry	656.97	1,061.32	7,897.95	6.17	995.60	203.09
General heavy industry	594.33	950.05	7,158.16	5.53	889.89	181.63
CR	2,350.78	3,869.67	28,145.27	22.45	3,642.23	742.25
CT	217.45	357.52	2,604.10	2.07	336.43	68.57
Other Public Facilities	3,163.12	5,205.56	37,861.56	30.20	4,899.59	998.49
TOTALS (lbs/day, unmitigated)	16,458.46	26,648.91	196,876.26	154.85	25,022.76	5,102.88

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2007 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	45,398.14	4.07	dwelling units	69,320.00	282,132.41	4,570,545.20

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	2,487.64	4.07	dwelling units	7,356.00	29,938.92	485,010.54
Mobile home park	18,985.96	4.07	dwelling units	22,846.00	92,983.22	1,506,328.27
Junior high school		4.07	1000 sq ft	20,618.30	83,916.49	1,367,838.69
Warehouse		4.06	1000 sq ft	3,197.70	12,982.66	211,617.37
General light industry		4.07	1000 sq ft	8,568.70	34,874.61	568,456.14
General heavy industry		4.07	1000 sq ft	7,657.70	31,166.84	508,019.49
CR		4.07	unknown	31,356.00	127,618.93	2,080,188.39
CT		4.07	1000 sq ft	2,896.30	11,787.94	192,143.44
Other Public Facilities		4.06	1000 sq ft	42,284.60	171,675.48	2,798,310.19
					879,077.50	14,288,457.72

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.6	2.2	97.4	0.4
Light Truck < 3750 lbs	9.7	4.1	88.7	7.2
Light Truck 3751-5750 lbs	21.7	0.9	98.6	0.5
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Life-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Life-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	1.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	82.2	17.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Home-Other	Commuter	Non-Work	Customer
Urban Trip Length (miles)	16.2	16.2	16.2	16.2	16.3	16.3	16.3
Rural Trip Length (miles)	17.6	12.1	14.9	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	28.9	10.0	61.1				

% of Trips - Commercial (by land use)

Junior high school	20.0	10.0	70.0
Warehouse	2.0	1.0	97.0
General light industry	50.0	25.0	25.0
General heavy industry	90.0	5.0	5.0
CR	2.0	1.0	97.0
CT	5.0	2.5	92.5
Other Public Facilities	2.0	1.0	97.0

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Mobile Source.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	18,317.50	31,667.50	190,273.45	131.27	25,022.76	5,102.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	18,317.50	31,667.50	190,273.45	131.27	25,022.76	5,102.88

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	5,895.80	10,151.26	61,675.80	42.15	8,005.40	1,633.39
Apartments mid rise	625.64	1,077.22	6,544.82	4.47	849.51	173.33
Mobile home park	1,943.10	3,345.58	20,326.68	13.89	2,638.37	538.32
Junior high school	1,747.92	3,027.69	18,084.26	12.54	2,395.22	488.30
Warehouse	268.80	467.72	2,770.26	1.93	370.52	75.51
General light industry	733.77	1,261.36	7,616.72	5.23	995.60	203.09
General heavy industry	661.67	1,129.30	6,891.90	4.70	889.89	181.63
CR	2,642.04	4,597.69	27,231.56	19.02	3,642.23	742.25
CT	244.29	424.78	2,519.03	1.76	336.43	68.57
Other Public Facilities	3,554.47	6,184.90	36,632.42	25.58	4,899.59	998.49
TOTALS (lbs/day, unmitigated)	18,317.50	31,667.50	190,273.45	131.27	25,022.76	5,102.88

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2007 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	45,398.14	4.07 dwelling units		69,320.00	282,132.41	4,570,545.20



Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	2,487.64	4.07	dwelling units	7,356.00	29,938.92	485,010.54
Mobile home park	18,985.96	4.07	dwelling units	22,846.00	92,983.22	1,506,328.27
Junior high school		4.07	1000 sq ft	20,618.30	83,916.49	1,367,838.69
Warehouse		4.06	1000 sq ft	3,197.70	12,982.66	211,617.37
General light industry		4.07	1000 sq ft	8,568.70	34,874.61	568,456.14
General heavy industry		4.07	1000 sq ft	7,657.70	31,166.84	508,019.49
CR		4.07	unknown	31,356.00	127,618.93	2,080,188.39
CT		4.07	1000 sq ft	2,896.30	11,787.94	192,143.44
Other Public Facilities		4.06	1000 sq ft	42,284.60	171,675.48	2,798,310.19
					879,077.50	14,288,457.72

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.6	2.2	97.4	0.4
Light Truck < 3750 lbs	9.7	4.1	88.7	7.2
Light Truck 3751-5750 lbs	21.7	0.9	98.6	0.5
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Life-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Life-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	1.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0

Vehicle Type	Vehicle Fleet Mix			Diesel
	Percent Type	Non-Catalyst	Catalyst	
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	82.2	17.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Urban Trip Length (miles)	16.2	16.2	16.2	16.3	16.3	16.3	
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6	
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0	
% of Trips - Residential	28.9	10.0	61.1				

% of Trips - Commercial (by land use)

Junior high school	20.0	10.0	70.0
Warehouse	2.0	1.0	97.0
General light industry	50.0	25.0	25.0
General heavy industry	90.0	5.0	5.0
CR	2.0	1.0	97.0
CT	5.0	2.5	92.5
Other Public Facilities	2.0	1.0	97.0

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Residential.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	6,821.93	1,614.34	5,273.53	0.23	15.36	15.21

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>
TOTALS (lbs/day, unmitigated)	6,821.93	1,614.34	5,273.53	0.23	15.36	15.21

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	121.52	1,573.43	669.55	0.02	3.01	2.98
Hearth - No Summer Emissions						
Landscape	830.27	40.91	4,603.98	0.21	12.35	12.23
Consumer Products	5,105.48					
Architectural Coatings	764.66					
TOTALS (lbs/day, unmitigated)	6,821.93	1,614.34	5,273.53	0.23	15.36	15.21

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Residential.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	21,592.30	2,973.06	43,946.28	121.81	6,715.08	6,464.70

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>
TOTALS (lbs/day, unmitigated)	21,592.30	2,973.06	43,946.28	121.81	6,715.08	6,464.70

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	121.52	1,573.43	669.55	0.02	3.01	2.98
Hearth	15,600.64	1,399.63	43,276.73	121.79	6,712.07	6,461.72
Landscaping - No Winter Emissions						
Consumer Products	5,105.48					
Architectural Coatings	764.66					
TOTALS (lbs/day, unmitigated)	21,592.30	2,973.06	43,946.28	121.81	6,715.08	6,464.70

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Non-Res.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	536.33	503.06	434.50	0.01	0.94	0.93

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	536.33	503.06	434.50	0.01	0.94	0.93

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	36.51	502.93	422.46	0.01	0.91	0.90
Hearth - No Summer Emissions						
Landscape	1.02	0.13	12.04	0.00	0.03	0.03
Consumer Products	0.00					
Architectural Coatings	498.80					
TOTALS (lbs/day, unmitigated)	536.33	503.06	434.50	0.01	0.94	0.93

Area Source Changes to Defaults



Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Existing - SCAQMD - Non-Res.urb924

Project Name: Riverside County GPA 960 County-Existing - SCAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	535.31	502.93	422.46	0.01	0.91	0.90

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>
TOTALS (lbs/day, unmitigated)	535.31	502.93	422.46	0.01	0.91	0.90

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	36.51	502.93	422.46	0.01	0.91	0.90
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	498.80					
TOTALS (lbs/day, unmitigated)	535.31	502.93	422.46	0.01	0.91	0.90

Area Source Changes to Defaults

# **URBEMIS Model Output**

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**SCAQMD Buildout**

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Mobile Sources.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	15,984.72	18,036.53	185,487.77	700.82	109,483.10	21,339.77

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	15,984.72	18,036.53	185,487.77	700.82	109,483.10	21,339.77

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Operational Unmitigated Detail Report:

## OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	2,413.10	2,715.61	28,050.30	105.57	16,477.17	3,212.45
Apartments mid rise	1,289.32	1,450.95	14,987.30	56.41	8,803.77	1,716.42
Mobile home park	2,413.10	2,715.61	28,050.30	105.57	16,477.17	3,212.45
Retirement community	2,413.10	2,715.61	28,050.30	105.57	16,477.17	3,212.45
Junior high school	468.24	531.79	5,405.87	20.84	3,231.67	629.48
General light industry	1,960.51	2,212.05	22,765.54	85.95	13,425.50	2,616.93
General heavy industry	330.61	370.76	3,856.88	14.43	2,248.29	438.51
Industrial park	777.13	878.47	9,009.46	34.12	5,333.56	1,039.42
Manufacturing	1,959.46	2,211.84	22,744.75	85.93	13,425.33	2,616.77
CR	438.53	500.13	5,046.03	19.39	3,041.56	592.19
CT	191.06	217.79	2,200.16	8.45	1,324.34	257.87
CO	165.31	187.21	1,914.85	7.27	1,136.92	221.53
CC & MUPA	209.61	239.05	2,411.88	9.27	1,453.79	283.05
Other Public Facilities	955.64	1,099.66	10,994.15	42.25	6,626.86	1,290.25
TOTALS (lbs/day, unmitigated)	15,984.72	18,036.53	185,487.77	700.82	109,483.10	21,339.77

## Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2040 Temperature (F): 80 Season: Summer

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Apartments mid rise	13,714.00	5.03	dwelling units	47,737.63	240,120.28	5,090,550.09
Mobile home park	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Retirement community	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Junior high school		5.03	1000 sq ft	17,527.72	88,164.44	1,869,086.17
General light industry		5.03	1000 sq ft	72,802.65	366,197.34	7,763,383.82
General heavy industry		5.03	1000 sq ft	12,189.83	61,314.85	1,299,874.82
Industrial park		5.03	1000 sq ft	28,923.92	145,487.32	3,084,331.36
Manufacturing		5.03	1000 sq ft	72,802.65	366,197.34	7,763,383.82
CR		5.04	unknown	16,465.77	82,987.48	1,759,334.59
CT		5.05	1000 sq ft	7,155.12	36,133.36	766,027.22
CO		5.05	1000 sq ft	6,141.37	31,013.92	657,495.13
CC & MUPA		5.04	1000 sq ft	7,870.23	39,665.96	840,918.36
Other Public Facilities		5.03	1000 sq ft	35,946.46	180,810.71	3,833,187.11
					2,986,323.72	63,310,064.33

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	42.0	0.0	100.0	0.0
Light Truck < 3750 lbs	9.6	0.0	100.0	0.0
Light Truck 3751-5750 lbs	24.3	0.0	100.0	0.0

Vehicle Type	Vehicle Fleet Mix				Diesel
	Percent Type	Non-Catalyst	Catalyst		
Med Truck 5751-8500 lbs	13.8	0.0	100.0		0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4		17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0		40.0
Med-Heavy Truck 14,001-33,000 lbs	0.6	0.0	16.7		83.3
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0		100.0
Other Bus	0.0	0.0	0.0		0.0
Urban Bus	0.0	0.0	0.0		0.0
Motorcycle	2.7	33.3	66.7		0.0
School Bus	0.1	0.0	0.0		100.0
Motor Home	2.6	0.0	92.3		7.7

Travel Conditions

	Residential				Commercial	
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	21.2	21.2	21.2	21.2	21.2	21.2
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	28.9	10.0	61.1			
% of Trips - Commercial (by land use)						
Junior high school				20.0	10.0	70.0
General light industry				50.0	25.0	25.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General heavy industry				90.0	5.0	5.0
Industrial park				41.5	20.8	37.8
Manufacturing				48.0	24.0	28.0
CR				2.0	1.0	97.0
CT				5.0	2.5	92.5
CO				35.0	17.5	47.5
CC & MUPA				2.0	1.0	97.0
Other Public Facilities				2.0	1.0	97.0



Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Mobile Sources.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	18,745.34	21,481.70	171,107.93	595.01	109,483.10	21,339.77

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	18,745.34	21,481.70	171,107.93	595.01	109,483.10	21,339.77

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	2,828.79	3,234.32	25,890.37	89.65	16,477.17	3,212.45
Apartments mid rise	1,511.43	1,728.10	13,833.25	47.90	8,803.77	1,716.42
Mobile home park	2,828.79	3,234.32	25,890.37	89.65	16,477.17	3,212.45
Retirement community	2,828.79	3,234.32	25,890.37	89.65	16,477.17	3,212.45
Junior high school	549.88	633.35	4,985.45	17.51	3,231.67	629.48
General light industry	2,298.01	2,634.64	20,979.96	72.97	13,425.50	2,616.93
General heavy industry	386.89	441.61	3,552.25	12.25	2,248.29	438.51
Industrial park	911.40	1,046.28	8,304.50	28.97	5,333.56	1,039.42
Manufacturing	2,297.07	2,634.37	20,961.79	72.96	13,425.33	2,616.77
CR	515.64	595.63	4,655.65	16.45	3,041.56	592.19
CT	224.63	259.38	2,029.79	7.17	1,324.34	257.87
CO	194.00	222.96	1,765.29	6.17	1,136.92	221.53
CC & MUPA	246.46	284.69	2,225.29	7.86	1,453.79	283.05
Other Public Facilities	1,123.56	1,297.73	10,143.60	35.85	6,626.86	1,290.25
TOTALS (lbs/day, unmitigated)	18,745.34	21,481.70	171,107.93	595.01	109,483.10	21,339.77

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2040 Temperature (F): 60 Season: Winter

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Apartments mid rise	13,714.00	5.03	dwelling units	47,737.63	240,120.28	5,090,550.09
Mobile home park	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Retirement community	43,641.00	5.03	dwelling units	89,345.97	449,410.24	9,527,497.28
Junior high school		5.03	1000 sq ft	17,527.72	88,164.44	1,869,086.17
General light industry		5.03	1000 sq ft	72,802.65	366,197.34	7,763,383.82
General heavy industry		5.03	1000 sq ft	12,189.83	61,314.85	1,299,874.82
Industrial park		5.03	1000 sq ft	28,923.92	145,487.32	3,084,331.36
Manufacturing		5.03	1000 sq ft	72,802.65	366,197.34	7,763,383.82
CR		5.04	unknown	16,465.77	82,987.48	1,759,334.59
CT		5.05	1000 sq ft	7,155.12	36,133.36	766,027.22
CO		5.05	1000 sq ft	6,141.37	31,013.92	657,495.13
CC & MUPA		5.04	1000 sq ft	7,870.23	39,665.96	840,918.36
Other Public Facilities		5.03	1000 sq ft	35,946.46	180,810.71	3,833,187.11
					2,986,323.72	63,310,064.33

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	42.0	0.0	100.0	0.0
Light Truck < 3750 lbs	9.6	0.0	100.0	0.0
Light Truck 3751-6750 lbs	24.3	0.0	100.0	0.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med Truck 5751-8500 lbs	13.8	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Life-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.6	0.0	16.7	83.3
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	2.6	0.0	92.3	7.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	21.2	21.2	21.2	21.2	21.2	21.2
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	28.9	10.0	61.1			
% of Trips - Commercial (by land use)						
Junior high school				20.0	10.0	70.0
General light industry				50.0	25.0	25.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General heavy industry				90.0	5.0	5.0
Industrial park				41.5	20.8	37.8
Manufacturing				48.0	24.0	28.0
CR				2.0	1.0	97.0
CT				5.0	2.5	92.5
CO				35.0	17.5	47.5
CC & MUPA				2.0	1.0	97.0
Other Public Facilities				2.0	1.0	97.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\123849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Residential Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	14,045.85	3,468.70	9,417.68	0.40	27.57	27.32

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	14,045.85	3,468.70	9,417.68	0.40	27.57	27.32

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	260.96	3,378.78	1,437.78	0.04	6.47	6.40
Hearth - No Summer Emissions						
Landscape	1,441.93	89.92	7,979.90	0.36	21.10	20.92
Consumer Products	11,615.84					
Architectural Coatings	727.12					
<b>TOTALS (lbs/day, unmitigated)</b>	<b>14,045.85</b>	<b>3,468.70</b>	<b>9,417.68</b>	<b>0.40</b>	<b>27.57</b>	<b>27.32</b>

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Residential Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	48,093.79	6,490.32	99,868.74	276.66	15,271.68	14,702.10

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	48,093.79	6,490.32	99,868.74	276.66	15,271.68	14,702.10



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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	260.96	3,378.78	1,437.78	0.04	6.47	6.40
Hearth	35,489.87	3,111.54	98,430.96	276.62	15,265.21	14,695.70
Landscaping - No Winter Emissions						
Consumer Products	11,615.84					
Architectural Coatings	727.12					
TOTALS (lbs/day, unmitigated)	48,093.79	6,490.32	99,868.74	276.66	15,271.68	14,702.10

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - SFR Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - SFR part Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	5,739.52	1,500.32	4,607.71	0.20	13.33	13.21

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	5,739.52	1,500.32	4,607.71	0.20	13.33	13.21

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	112.40	1,455.38	619.31	0.02	2.79	2.76
Health - No Summer Emissions						
Landscape	720.84	44.94	3,988.40	0.18	10.54	10.45
Consumer Products	4,583.45					
Architectural Coatings	322.83					
TOTALS (lbs/day, unmitigated)	5,739.52	1,500.32	4,607.71	0.20	13.33	13.21

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - SFR Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - SFR part Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	19,025.08	2,727.42	39,477.64	109.45	6,029.81	5,805.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	19,025.08	2,727.42	39,477.64	109.45	6,029.81	5,805.02

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	112.40	1,455.38	619.31	0.02	2.79	2.76
Hearth	14,006.40	1,272.04	38,858.33	109.43	6,027.02	5,802.26
Landscaping - No Winter Emissions						
Consumer Products	4,583.45					
Architectural Coatings	322.83					
TOTALS (lbs/day, unmitigated)	19,025.08	2,727.42	39,477.64	109.45	6,029.81	5,805.02

Area Source Changes to Defaults

Combined Summer Emissions Reports (Pounds/Day)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\SCAQMD Buildout - 5-2011\Buildout - SCAQMD - MFR only.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - MFR Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2,566.66	468.04	200.71	0.00	0.91	0.90

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2,566.66	468.04	200.71	0.00	0.91	0.90

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	36.15	468.02	199.16	0.00	0.90	0.89
Hearth - No Summer Emissions						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	2,448.94					
Architectural Coatings	81.45					
<b>TOTALS (lbs/day, unmitigated)</b>	<b>2,566.66</b>	<b>468.04</b>	<b>200.71</b>	<b>0.00</b>	<b>0.91</b>	<b>0.90</b>

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Commercial Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	1,571.11	553.62	480.31	0.01	1.06	1.05

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	1,571.11	553.62	480.31	0.01	1.06	1.05



Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	40.18	553.41	464.86	0.01	1.00	0.99
Hearth - No Summer Emissions						
Landscape	1.23	0.21	15.45	0.00	0.06	0.06
Consumer Products	0.00					
Architectural Coatings	1,529.70					
TOTALS (lbs/day, unmitigated)	1,571.11	553.62	480.31	0.01	1.06	1.05

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\23849\Application Data\Urbemis\Version9a\Projects\Temp\Buildout - SCAQMD - Commercial Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	1,569.88	553.41	464.86	0.01	1.00	0.99

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	1,569.88	553.41	464.86	0.01	1.00	0.99

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	40.18	553.41	464.86	0.01	1.00	0.99
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	1,529.70					
TOTALS (lbs/day, unmitigated)	1,569.88	553.41	464.86	0.01	1.00	0.99

Area Source Changes to Defaults

# **URBEMIS Model Output**

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**MDAQMD Existing**

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\MDAQMD Existing - 5-2011\Existing - MDAQMD - Mobile Source.urb924

Project Name: Riverside County GPA 960 County-wide Existing - MDAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	1,942.22	3,193.01	21,948.52	16.59	2,821.22	575.32

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	1,942.22	3,193.01	21,948.52	16.59	2,821.22	575.32

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	566.70	920.43	6,415.15	4.79	811.43	165.58
Apartments mid rise	60.14	97.67	680.74	0.51	86.11	17.57
Mobile home park	186.76	303.34	2,114.16	1.58	267.41	54.57
Junior high school	200.21	331.31	2,261.46	1.72	293.05	59.74
Warehouse	30.82	51.31	347.39	0.27	45.45	9.26
General light industry	84.04	137.63	952.23	0.71	121.48	24.78
General heavy industry	75.93	123.21	862.59	0.64	108.58	22.16
CR	302.18	503.14	3,406.27	2.61	445.62	90.81
CT	27.94	46.48	315.11	0.24	41.16	8.39
Other Pub Fac	407.50	678.49	4,593.42	3.52	600.93	122.46
TOTALS (tons/year, unmitigated)	1,942.22	3,193.01	21,948.52	16.59	2,921.22	575.32

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2007 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	28,037.86	3.66	dwelling units	42,812.00	156,691.92	2,538,409.28

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	1,536.36	3.66	dwelling units	4,543.00	16,627.38	269,363.58
Mobile home park	11,709.04	3.66	dwelling units	14,109.00	51,638.94	836,550.89
Junior high school		3.66	1000 sq ft	15,371.00	56,257.86	917,003.10
Warehouse		3.66	1000 sq ft	2,384.00	8,725.44	142,224.67
General light industry		3.65	1000 sq ft	6,388.00	23,316.20	380,054.05
General heavy industry		3.65	1000 sq ft	5,709.00	20,837.85	339,656.95
CR		3.66	unknown	23,376.00	85,556.16	1,394,565.38
CT		3.66	1000 sq ft	2,159.00	7,901.94	128,801.62
Other Pub Fac		3.66	1000 sq ft	31,523.00	115,374.18	1,880,599.09
					542,927.87	8,827,228.61

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.6	2.2	97.4	0.4
Light Truck < 3750 lbs	9.7	4.1	88.7	7.2
Light Truck 3751-5750 lbs	21.7	0.9	98.6	0.5
Med Truck 5751-8500 lbs	12.0	0.8	98.4	0.8
Lite-Heavy Truck 8501-10,000 lbs	1.9	0.0	73.7	26.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	1.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	82.2	17.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.5	6.7	80.0	13.3

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Urban Trip Length (miles)	16.2	16.2	16.2	16.3	16.3	16.3	
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6	
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0	
% of Trips - Residential	35.9	8.5	55.6				

% of Trips - Commercial (by land use)

Junior high school	20.0	10.0	70.0
Warehouse	2.0	1.0	97.0
General light industry	50.0	25.0	25.0
General heavy industry	90.0	5.0	5.0
CR	2.0	1.0	97.0
CT	5.0	2.5	92.5
Other Pub Fac	2.0	1.0	97.0



Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\MDAQMD Existing - 5-2011\Existing - MDAQMD - Residential.urb924

Project Name: Riverside County GPA 960 County-wide Existing - MDAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	893.23	187.68	926.55	0.93	53.14	51.20

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	893.23	187.68	926.55	0.93	53.14	51.20

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	13.70	177.34	75.46	0.00	0.34	0.34
Hearth	124.30	5.73	331.93	0.91	51.41	49.48
Landscape	93.60	4.61	519.16	0.02	1.39	1.38
Consumer Products	575.44					
Architectural Coatings	86.19					
TOTALS (tons/year, unmitigated)	893.23	187.68	926.55	0.93	53.14	51.20

Area Source Changes to Defaults

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\MDAQMD Existing - 5-2011\Existing - MDAQMD - Non-Res.urb924

Project Name: Riverside County GPA 960 County-wide Existing - MDAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	73.03	68.56	59.77	0.00	0.13	0.13

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	73.03	68.56	59.77	0.00	0.13	0.13

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	4.98	68.54	57.57	0.00	0.12	0.12
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.19	0.02	2.20	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	67.86					
TOTALS (tons/year, unmitigated)	73.03	68.56	59.77	0.00	0.13	0.13

Area Source Changes to Defaults

# **URBEMIS Model Output**

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**MDAQMD Buildout**

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\MDAQMD Buildout - 5-2011\Buildout - MDAQMD - Mobile Sources.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - MDAQMD - Mobile Source Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (tons/year, unmitigated)	2,021.54	2,272.63	21,417.14	78.86	12,968.61	2,527.85

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>
TOTALS (tons/year, unmitigated)	2,021.54	2,272.63	21,417.14	78.86	12,968.61	2,527.85

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	407.90	457.04	4,333.77	15.87	2,606.65	508.27
Apartments mid rise	145.29	162.80	1,543.69	5.65	928.49	181.05
Retirement community	407.90	457.04	4,333.77	15.87	2,606.65	508.27
Junior high school	66.64	75.38	701.71	2.61	430.65	83.88
General light industry	278.79	313.55	2,954.42	10.88	1,789.08	348.73
General heavy industry	46.98	52.55	500.44	1.83	299.61	58.44
Industrial park	110.54	124.52	1,169.29	4.32	710.75	138.51
Manufacturing	278.79	313.55	2,954.42	10.88	1,789.08	348.73
CR	62.33	70.75	653.79	2.45	404.51	78.76
CT	27.10	30.75	284.49	1.06	175.78	34.23
CO	23.43	26.43	247.55	0.92	150.91	29.40
CC & MUPA	29.79	33.82	312.50	1.17	193.35	37.64
Other Pub Fac	136.06	154.45	1,427.30	5.35	883.10	171.94
TOTALS (tons/year, unmitigated)	2,021.54	2,272.63	21,417.14	78.86	12,968.61	2,527.85

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2040 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	42,489.00	4.48	dwelling units	86,988.55	389,708.69	8,258,512.02
Apartments mid rise	8,901.00	4.48	dwelling units	30,985.37	138,814.45	2,941,686.61
Retirement community	42,489.00	4.48	dwelling units	86,988.55	389,708.69	8,258,512.02
Junior high school		4.48	1000 sq ft	14,369.86	64,376.97	1,364,791.91
General light industry		4.48	1000 sq ft	59,686.25	267,394.40	5,668,761.51
General heavy industry		4.48	1000 sq ft	9,993.67	44,771.64	949,158.83
Industrial park		4.48	1000 sq ft	23,712.88	106,233.71	2,252,154.66
Manufacturing		4.48	1000 sq ft	59,686.25	267,394.40	5,668,761.51
CR		4.48	unknown	13,499.23	60,476.55	1,282,102.96
CT		4.48	1000 sq ft	5,866.02	26,279.77	557,131.14
CO		4.48	1000 sq ft	5,034.92	22,556.44	478,196.57
CC & MUPA		4.48	1000 sq ft	6,452.30	28,906.30	612,813.65
Other Pub Fac		4.48	1000 sq ft	29,470.21	132,026.55	2,798,962.87
					1,938,648.56	41,091,546.26

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	42.0	0.0	100.0	0.0
Light Truck < 3750 lbs	9.6	0.0	100.0	0.0
Light Truck 3751-5750 lbs	24.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	13.8	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6



Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.6	0.0	16.7	83.3
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	2.7	33.3	66.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	2.6	0.0	92.3	7.7

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Urban Trip Length (miles)	21.2	21.1	21.2	21.2	21.2	21.2	
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6	
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0	
% of Trips - Residential	35.9	8.5	55.6				

% of Trips - Commercial (by land use)

Junior high school	20.0	10.0	70.0
General light industry	50.0	25.0	25.0
General heavy industry	90.0	5.0	5.0
Industrial park	41.5	20.8	37.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Manufacturing				50.0	25.0	25.0
CR				2.0	1.0	97.0
CT				5.0	2.5	92.5
CO				35.0	17.5	47.5
CC & MUPA				2.0	1.0	97.0
Other Pub Fac				2.0	1.0	97.0

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\MDAQMD Buildout - 5-2011\Buildout - MDAQMD - Area - Residential.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - MDAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	2,788.25	607.72	2,768.48	3.10	176.27	169.79

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	2,788.25	607.72	2,768.48	3.10	176.27	169.79

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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
Natural Gas	44.23	572.64	243.68	0.01	1.10	1.08
Hearth	444.53	19.10	1,106.88	3.03	171.42	164.99
Landscape	256.21	15.98	1,417.92	0.06	3.75	3.72
Consumer Products	1,918.91					
Architectural Coatings	124.37					
TOTALS (tons/year, unmitigated)	2,788.25	607.72	2,768.48	3.10	176.27	169.79

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\MDAQMD Buildout - 5-2011\Buildout - MDAQMD - Area - MFR.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - MDAQMD - Area - MFR Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	365.09	58.30	191.19	0.46	26.02	25.04

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	365.09	58.30	191.19	0.46	26.02	25.04

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	4.28	55.44	23.59	0.00	0.11	0.10
Hearth	61.05	2.86	167.32	0.46	25.91	24.94
Landscape	0.02	0.00	0.28	0.00	0.00	0.00
Consumer Products	290.09					
Architectural Coatings	9.65					
TOTALS (tons/year, unmitigated)	365.09	58.30	191.19	0.46	26.02	25.04

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\MDAQMD Buildout - 5-2011\Buildout - MDAQMD - Area - Non-Res.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - MDAQMD - Area - Non-Res Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	235.11	82.95	72.46	0.00	0.16	0.16

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	235.11	82.95	72.46	0.00	0.16	0.16

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM2.5
Natural Gas	6.02	82.91	69.64	0.00	0.15	0.15
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.22	0.04	2.82	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	228.87					
TOTALS (tons/year, unmitigated)	235.11	82.95	72.46	0.00	0.16	0.16

Area Source Changes to Defaults



# **Air Quality Appendix**

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## **Reduction URBEMIS Output**

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\Modeling\Urbemis\SCAQMD Buildout - 5-2011\Buildout - SCAQMD - Residential Area Source.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - SCAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	86.84	1,484.15	631.55	9.47	119.99	118.73

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>
TOTALS (lbs/day, unmitigated)	86.84	1,484.15	631.55	9.47	119.99	118.73

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM2.5
Natural Gas						
Hearth	86.84	1,484.15	631.55	9.47	119.99	118.73
Landscaping						
Consumer Products						
Architectural Coatings						
<b>TOTALS (lbs/day, unmitigated)</b>	<b>86.84</b>	<b>1,484.15</b>	<b>631.55</b>	<b>9.47</b>	<b>119.99</b>	<b>118.73</b>

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: R:\General Air Quality Info\Projects\100015640 - County of Riverside\MDAQMD Buildout - 5-2011\Buildout - MDAQMD - Area - Residential.urb924

Project Name: Riverside County GPA 960 County-wide Buildout - MDAQMD - Area - Residential Only

Project Location: Riverside County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (tons/year, unmitigated)	43.95	0.69	0.29	0.00	0.06	0.05

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>
TOTALS (tons/year, unmitigated)	43.95	0.69	0.29	0.00	0.06	0.05

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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
Natural Gas						
Hearth	43.95	0.69	0.29	0.00	0.06	0.05
Landscapes						
Consumer Products						
Architectural Coatings						
TOTALS (tons/year, unmitigated)	43.95	0.69	0.29	0.00	0.06	0.05

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

