

SUTTER COUNTY CLIMATE ACTION PLAN

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EXECUTIVE SUMMARY

The County of Sutter 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, we can keep dollars in our local economy, create new green jobs and improve community quality of life. These efforts toward reducing GHG emissions must be done in coordination with the County of Sutter's (County) land use decisions. The foundation of planning land use decisions are the General Plan policies and programs.

To further this commitment, Sutter County has established 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.

As a foundation in these efforts, the County has developed a baseline GHG emissions inventory, a methodology for tracking and reporting emissions in the future, and recommendations for GHG reduction strategies. An indicator of the success of these efforts will be a measured reduction in greenhouse gas (GHG) emissions using the protocols discussed herein.

Sutter County has elected to be green and sustainable. Sutter County's community of residents, workers, and visitors strive together to balance ecological, economic, and social needs to ensure a clean, healthy and safe environment for all current members of society and for generations to come.

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LIST OF ACRONYMS

AB 32	Assembly Bill 32, The California Climate Change Solutions Act of 2006
ADWF	Average Daily Wastewater Flow
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
Cal EPA	California Environmental Protection Agency
Cal Recycle	California Department of Resources Recycling and Recovery
CANHP	California New Home Program
CAO	County Administrative Officer
CAS	California Climate Adaption Strategy
CAT	Climate Action Team
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 ₂ F ₆	Hexafluoroethane
CF ₄	Carbon Tetrafluoride
CH ₄	Methane
CIWB	California Integrated Waste Board
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Equivalent Carbon dioxide
CREB	Clean Renewable Energy Bonds
CSD	Community Services District
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
ESCO	Energy Service Company

FRAQMD	Feather River Air Quality Management District
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
Lbs/year	Pounds per Year
LEED	Leadership in Energy and Environmental Design
MMBTU	Million Metric BTUs
MMT	Million Metric Tonne
MMT CO ₂ e	Million Metric Tonne Carbon Dioxide Equivalent
MT	Metric Tonne
MT CO ₂ e	Metric Tonne Carbon Dioxide Equivalent
MWh	Megawatt hours
MWh/year	Megawatt hours per year
N ₂ O	Nitrous Oxide
NSHP	New Solar Home Program
O ₃	Ozone
PFC	Tetrafluoromethane
PG&E	Pacific Gas and Electric
RCRA	Resource Conservation and Recovery Act
RIP	Regional Improvement Program
RTIP	Regional Transportation Improvement Program
SACOG	Sacramento Area Council of Governments
SIP	State Implementation Plan
SF ₆	Sulfur Hexafluoride
STEP	Septic Tank Effluent Pumping system
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
WWD No1	Water Works District Number 1

Section 1 Introduction

The County of Sutter 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, we can keep dollars in our local economy, create new green jobs and improve community quality of life. These efforts toward reducing GHG emissions must be done in coordination with the County of Sutter's (County) 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 to provide them 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; and
- Guide in the development of the community.

The Environmental Resources and Infrastructure Elements of the General Plan address a number of different natural resources within the County that must be managed properly. Among these resources are energy, air quality, and the control of GHG emissions. Goals within these elements specifically speak to energy conservation and air quality. 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 Sutter County Climate Action Plan (CAP) to ensure the impact of development on air quality is minimized, energy conserved, and that 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.

1.1 Purpose

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); the Federal Government through the actions of the Environmental Protection Agency; and the global community through the Kyoto Protocol;
- Guide the development, enhancement, and implementation of actions that aggressively reduce GHG emissions; and
- Provide a policy document with specific implementation measures meant to be considered as part of the planning process for future development projects.

1.2 Goals

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 least cost;
- To reduce emissions attributable to Sutter County to levels consistent with the target reductions of AB 32; and
- Establish a qualified reduction plan for which future development within the County can tier and thereby streamline the environmental analysis necessary under the California Environmental Quality Act (CEQA).

1.3 Relationship to the County General Plan

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 greenhouse gas emissions and to achieve the goals outlined in Section 1.2 above.

1.4 Background

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

- An analysis of GHG emissions and sources attributable to the County of Sutter;
- 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; and
- 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 Sutter, 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.

1.4.1 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. The "blanket" is a collection of atmospheric gases called "greenhouse gases," based on the idea that these gases also trap heat like the glass walls of a greenhouse. These gases, consisting mainly of water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and chlorofluorocarbons (CFCs), 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), Sutter County does not generate significant emissions of these GHGs. This also includes other synthesized gases such as hydrofluorocarbons (HFCs) and carbon tetrafluoride (CF₄) which have been banned and are no longer available on the market. Because of the ban, the County of Sutter will not generate emissions of these GHGs and therefore, they are not considered any further in this document.

Another GHG with a high global warming potential is sulfur hexafluoride (SF₆), which 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, SF₆ 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 (CO₂e) 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 potential¹, and is expressed as a function of the potency with respect to the same mass of CO₂. 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 CO₂e (MT CO₂e).

1.5 Regulatory Setting

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.

1.5.1 International and Federal

1.5.1.1 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. 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

¹ The potential of a gas or aerosol to trap heat in the atmosphere.

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. It is anticipated that the Copenhagen Accord will be finalized and signed by representatives of the participating governments by the end of 2010.

1.5.1.2 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.

1.5.1.3 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-CO₂ 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.

In *Massachusetts v. Environmental Protection Agency* (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held 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 CO₂ 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 to begin on January 1, 2010, and the first annual reports due in March of 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. This final rule sets a threshold of 75,000 tons per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit under the New Source Review Prevention of Significant Deterioration (PSD) and title V Operating Permit programs. This rule will take effect on January 2, 2011.

1.5.2 State

1.5.2.1 California Air Resources Board

The California Air Resources Board, 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.

1.5.2.2 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. 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). 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.

1.5.2.3 Assembly Bill 32, The California Global Warming Solutions Act of 2006.

In 2006, the California State Legislature adopted AB 32, the California *Global Warming Solutions Act of 2006*. AB 32 focuses 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 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 that would be implemented 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. The measures included are part of California's strategy for achieving GHG reductions under AB 32. Three new regulations are proposed to meet the definition of "discrete early action greenhouse gas reduction measures," which include 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 2007). CARB estimates that by 2020, the reductions from those three measures would be approximately 13-26 million metric tons (MMT) CO₂e.

Under AB 32, CARB has the primary responsibility for reducing GHG emissions. CARB has published a staff report titled *California 1990 GHG Emissions Level and 2020 Emissions Limit* (CARB 2007) that determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO₂e. 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.

1.5.2.4 Senate Bill 97 (SB 97)

SB 97, enacted in 2007, amends the CEQA statute 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 draft State CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" and directed the Resources Agency to certify and adopt the State CEQA Guidelines.

On April 13, 2009, OPR submitted the proposed amendments to the Secretary for Natural Resources. The Natural Resources Agency conducted formal rulemaking in 2009, certified, and adopted the amendments in December 2009. The California Office of Administrative Law codified into law the amendments in March 2010. The amendments became effective in June 2010 and provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions.

CEQA Guidelines § 15183.5, Tiering and Streamlining the Analysis of GHG Emissions, was added as part of the CEQA Guideline amendments and describes the criteria needed in a Climate Action Plan that would allow for the tiering and streamlining of CEQA analysis for subsequent development projects. The following quote is from the CEQA Guideline amendments:

"§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."

One of the goals of the CAP is to allow programmatic level review and mitigation of GHG emissions that allows for the 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.

1.5.2.5 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; 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 2009).

1.5.2.6 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; and
- To meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards.

1.5.3 Regional

The Feather River Air Quality Management District (FRAQMD) is responsible to promote and improve the air quality of Sutter and Yuba counties. This is accomplished through 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. The FRAQMD contains stationary-, area-, and mobile-source control measures designed to bring the area into compliance with the state ozone standards. Sutter County is part of the Sacramento Valley Air Basin (SVAB). The SVAB consists of the northern half of the Central Valley and approximates the drainage basin for the Sacramento River and its tributaries. The SVAB is bounded on the west by the Coast Range, on the north by the Cascade Range, on the east by the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin.

Currently the FRAQMD has not established guidance for the evaluation of GHGs or the establishment of a Climate Action Plan, opting instead to recommend the use of existing methodologies. The FRAQMD specifically cites the California Air Pollution Control Officers Association, and California Natural Resources Agency's Climate Change Portal, and the Office of the Attorney General among others for assistance in evaluating GHG emissions.

Section 2 Methodology

2.1 Overview

The methodology to prepare the GHG inventories in the CAP incorporates the protocols, methods, and emission factors found in the California Climate Action Registry (CCAR) General Reporting Protocol (version 3.1, January 2009), and the Local Government Protocol (version 1.1, May 2010). The Local Government Protocol (version 1.1, May 2010) categorizes GHG emissions into three distinct scopes that provide a way of organizing the CAP's development.

Definition of Local Government Protocol:

- **Scope 1 Emissions** includes all “direct” sources of GHG emissions from sources that are owned or controlled by the County including (but not limited to): production of electricity, heat, or steam in owned or controlled boilers, furnaces, etc; transportation (using corporate or fleet vehicles) of materials, products, waste, and community members; and fugitive emissions (from unintentional leaks of GHGs directly into the atmosphere).
- **Scope 2 Emissions** account for “indirect” sources of GHG emissions from the generation of purchased utilities consumed by the County. A purchased utility is defined as one that is bought or otherwise brought into the jurisdictional authority of the local government, but not physically generated in power plants owned and/or operated by the local government. Scope 2 emissions physically occur at locations outside of the jurisdictional boundaries and direct control of the local government and thus are separated from direct emissions reported by the utility company or local government in order to avoid double counting.
- **Scope 3 Emissions** is considered an optional reporting category that allows for the treatment of all other “indirect emissions”. Scope 3 emissions are a consequence of the activities of the local government, but occur from sources not owned or controlled by the local government.

Because Scope 3 emissions are indirect emissions that are attributable to emissions sources that are not owned or controlled by Sutter County, they are not considered in this CAP. 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 relative to the CAP employs both quantitative and qualitative components. The quantitative analysis contains an inventory of the County’s GHG emissions, while the qualitative component involves compliance with the emission reduction strategies contained in federal, State, and local legislation.

The analysis is tailored to include all historic, existing, and projected emission sources within the County while providing, to the fullest extent feasible, a comprehensive analysis of GHG impacts and mitigation measures available to reduce 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 CO₂e emissions in California to 1990 levels by 2020.

2.2 GHG Emissions in Sutter County

The first step in developing the CAP was to establish an existing inventory of Sutter County’s GHG emissions. The purpose of this inventory is to identify and categorize the major sources and quantities of GHG emissions currently being produced by the County’s residents, businesses and municipal operations. The CAP established 2008 for the determination of the existing inventory. 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.

The CAP establishes 1990 as the target year, in conformance with the AB 32 target goals. AB 32 mandates the reduction of the State's GHG emissions to 1990 levels by the year 2020 and requires that CARB implement regulations to achieve these reductions. Finally, the CAP estimates the anticipated emissions for 2020 based on expected growth in land use.

In estimating Sutter 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: the Sutter County Community Services, Sutter County Department of Public Works, and Pacific Gas & Electric Company (PG&E). Agriculture data

sources included Sutter County Department of Agriculture, CARB, and the FRAQMD. Transportation data sources included Sutter County Public Works Department (Airport), California Department of Transportation, Amtrak, CARB, and the California Department of Motor Vehicles. Solid waste data was gathered from California Integrated Waste Board (CIWB), California Department of Resources Recycling and Recovery (Cal Recycle) and Recology Ostrom Road Landfill.

In cases where specific historical or forecast data was not available, estimates were made by extrapolating from existing data based on growth in land use. General estimate calculations and assumptions are compiled in Appendices B through G. All of the contributors to greenhouse gas emissions (kilowatt-hours of electricity generated by fossil fuel combustion in power plants, natural gas in therms, vehicle travel in vehicle miles traveled, solid waste in tons) are expressed in the common unit of tons of CO₂e released into the atmosphere in a given year.

Sutter County's main contribution to GHGs is carbon dioxide. The County will directly generate emissions of CO₂ primarily in the form of vehicle exhaust, consumption of natural gas for heating and agriculture production. Sutter County will also generate emissions from methane and nitrous oxide. Methane is directly generated from agricultural production, natural gas and petroleum systems, and wastewater treatment. Nitrous oxide results predominately from agricultural production and motor vehicle use.

2.3 Calculation of GHGs

The following summarizes the basis of the GHG calculations by emission source. The emissions calculations follow the California Climate Action Registry (CCAR) General Reporting Protocol, version 3.1 (January 2009), 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 (Title 17, California Code of Regulations, Sections 95100 et seq.). These protocols are consistent with the methodology and emission factors endorsed by Feather River Air Quality Management District, the 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.

Equations used in the calculations of GHG's are included in Appendix B. Specific calculations of GHG emissions for 1990, 2008, and 2020 inventories are included in Appendices C through G.

When data was not available for 1990, estimations for this inventory were based on square footage of land use given a 15 percent reduction from existing values. 2020 data was calculated based on the anticipated development levels or as a fraction of the utility projections for 2030 build-out levels as documented in the County's General Plan Update.

In this CAP, 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 land use growth projections for the County and the naturally occurring events that might change the character of emissions. Therefore, BAU follows a fairly linear growth pattern of emissions with minor changes associated with the increasing density that is naturally occurring due to the continued urbanization of the County. There is a modest reduction in vehicle miles traveled based upon continued urbanization, but BAU does not include the programs that the Sutter County is implementing in the General Plan update and this CAP.

GHG emissions are typically segregated into direct and indirect sources as discussed above. 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 Energy, Solid Waste, Landscape Emissions, Transportation, and Agriculture as discussed below.

2.3.1 Energy

2.3.1.1 Electricity:

The County emits CO₂, CH₄, and N₂O through the use of electricity. Annual electricity usage obtained from PG&E (PG&E 2010) for the existing inventory, was used in determining electricity consumption and generation emission estimates for the 1990 inventory based on a growth of 15 percent between 1990 and 2008. For 2020, the emissions estimates were estimated as a percentage of the anticipated 2030 build-out usage. Development in 2020 is anticipated to be approximately 40 percent of the planned build-out development for 2030.

PG&E provides electricity from a variety of sources including natural gas, nuclear, Large Hydroelectric, renewable and coal. Each of these sources of electricity emits different amounts of GHGs. Therefore, emissions from electricity was determined by multiplying the annual usage in megawatt hours per year (MWh/year) by the PG&E emission factors appropriate to the inventory year for CO₂, CH₄, and N₂O.

2.3.1.2 Natural Gas Combustion:

The County emits GHGs from the combustion of natural gas. The annual natural gas usage for the County in million British Thermal Units (MMBTUs) was multiplied by the respective emissions factors for CO₂, CH₄, and N₂O to determine the emissions from natural gas combustion, typically used for heating. Existing inventory consumption levels were obtained for from PG&E and 1990 and 2020 consumption estimates were determined as described under electricity.

2.3.1.3 Potable Water:

Electricity is needed to move and treat water. Water Works District No. 1 (WWD #1) is responsible for providing water and wastewater services to the Community of Robbins (Sutter County 2010). The water system currently operates one active ground water well, one backup ground water well and one storage tank that provides the Community's residents with potable water. The active ground water well incorporates treatment for iron and manganese. The remainder of the water in the County is drawn from wells associated with the individual land uses. The amount of electricity consumed by the individual wells cannot be segregated out of the total electrical consumption from these individual land uses. In order to avoid the double counting of emissions, the electricity used to draw water from individual wells is included in the electricity consumption of these land uses and is not included in the water usage calculations. Existing inventory consumption levels were obtained from Sutter County while 1990 and 2020 consumption estimates were determined as described under electricity.

Electricity from potable water supplied by the WWD #1 is calculated by multiplying annual gallons of water purchased by a conversion factor for the amount of MWh of electricity used to treat and transport the water to the County. Emissions are then determined for electrical consumption as discussed above.

2.3.1.4 Waste Water Treatment:

Portions of Sutter County's wastewater are treated by a Septic Tank Effluent Pumping (STEP) system. The majority of the County is served by individual on-site septic systems with leach lines. The individual on-site septic systems do not result in onsite GHG emissions. However, the individual on-site septic systems require pumping every five years. The pumped contents are then treated. The combined treatment of wastewater from the STEP system and the on-site septic systems totals on average 10 million gallons of wastewater per year using primary and secondary treatment technology. The Rio Ramaza Community Services District (CSD) is responsible for providing wastewater services to the Community of Rio Ramaza. Currently, the nine homes in the Rio Ramaza Subdivision are served by 1.5 miles of sewer line, a sewer lift station and two wastewater ponds. Treatment capacity is 10,000 gallons per day (gpd), but the existing Average Daily Wastewater Flow (ADWF) is only 1,400 gpd. As a conservative estimate of wastewater generation, 100 percent of all of the potable water is assumed to be exported as wastewater. As with potable water, emissions from wastewater are determined based on the electricity needed to pump and treat the wastewater.

2.3.2 Solid Waste Management

Emissions from solid waste are determined as the sum of emissions generated by transportation from its source to the landfill, the equipment used in its disposal at the landfill, and the fugitive emissions from decomposition in landfills. Annual solid waste tonnage data for the existing inventory was provided by Cal Recycle, California Integrated Waste Board, the Yuba/Sutter JPA Solid Waste Management and Recology Ostrom Road Landfill.

Emissions from the transportation of solid waste is determined based on the annual pounds per year (lbs/year) of total waste disposed in landfills, the density of the waste, the capacity of the hauling trucks, the average number of miles traveled by each truck, and the CO₂, CH₄, and N₂O emissions generated per mile traveled.

Emissions from the equipment used at the landfills is typically calculated by determining the average hours of operation per day, the number of days of operation, and the emission factors for disposal equipment for CO₂, CH₄, and N₂O as determined from CARB off-road mobile source emission factors. However, these emissions are not included in the following inventories

because the landfills are not under the jurisdiction of the County and therefore the County has no direct control over the emissions generated from onsite operations.

Fugitive emissions of methane from the decomposition of solid waste are calculated based on the annual waste generation multiplied by the respective emission factors for waste production for CH₄. Although CO₂ is a bi-product of 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 bi-product of decomposition and therefore no fugitive emissions of nitrous oxide are anticipated from this source.

2.3.3 Landscape Emissions

Emissions of CO₂, CH₄, and N₂O are generated by the use of landscape equipment through the combustion of gasoline. CO₂ emissions were determined directly through URBEMIS2007 for the existing and 2020 inventories, and based on a 15 percent reduction from existing for 1990. URBEMIS2007 is a computer software package that is used for modeling projected emissions of air quality pollutants including carbon dioxide. From the CO₂ emissions, the approximate number of gallons of gasoline consumed through landscape equipment use was calculated. This number was then multiplied by emission factors presented in the General Reporting Protocol, version 3.1 (CCAR 2010) to determine both CH₄ and N₂O emissions.

2.3.4 Transportation:

2.3.4.1 On-Road Vehicles

Carbon dioxide emissions from vehicles were calculated utilizing EMFAC2007 emission factors for the 1990, existing and 2020 inventories. The Emission Factors (EMFAC) model was developed by the Air Resources Board and used to calculate 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. Motor vehicle emissions of CH₄, and N₂O were calculated using USEPA emission factors for on-road vehicles based on the total annual mileage driven (as obtained from URBEMIS2007) multiplied by their respective emission factors by year. Vehicle miles are determined through URBEMIS based on the number of dwelling units for residential land use types, or the square footage of commercial and industrial land use types, and trip rates provided for the General Plan Update (PBSJ 2010). URBEMIS2007 assumes 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 residence, commercial, or industrial land use will be accounted for in the electrical usage for the County. Vehicle trips for 1990 were estimated by backcasting from the existing land use and transportation data. Predicted 2020 BAU vehicle trips were estimated by using General Plan build-out conditions and interpolating back to year 2020.

2.3.4.2 Airport

The Sutter County airport accommodates approximately 77 planes for private and agricultural use. The GHG emissions from the usage of the aircraft were calculated based on the annual fuel consumption and the emission factors for airplane fuel for CO₂, CH₄, and N₂O. The consumption of fuel from an airport of this size is a minor portion of the total transportation emissions for the County. Fuel consumption for 1990 was backcasted from existing levels while the number of planes and approximate fuel usage for 2020 was assumed to be identical to the existing inventory based on an anticipated minor decrease in agricultural production between existing and 2020.

2.3.5 Agriculture

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, rice and other 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. This process produces methane that is released through belching and flatulence. Manure management is the process of gathering and disposing of manure from 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 CH₄ (USEPA 2009b).

Agricultural related emissions for 1990 and existing (2008) were based on County and state records. Agricultural related emissions for year 2020 were estimated using General Plan build-out conditions and interpolating back to year 2020. Agricultural trends over the last few years have indicated a reduction in acreage harvested with the trend continuing into future years. The 2020 inventory presents a conservative estimate of agricultural activity with the only reduction in agriculture from existing levels being associated with the known development of agricultural land within the Sutter Pointe Specific Plan Area. The growth rates were determined from anticipated General Plan Update Build-out levels for 2030

Section 3 Greenhouse Gas Emissions Inventory

The emissions inventory identifies and categorizes the major sources and quantities of GHG emissions being produced by County residents, businesses, and municipal operations using the best available data. Using historic emissions and business-as-usual (BAU) practices as a basis, the inventory includes GHG emissions as projected for the 1990 target, 2008 existing, and 2020 future years.

Land use, from an emissions inventory perspective, deals strictly with emissions as related to land use types. For example, emissions from single family homes include aspects of transportation, waste generation and energy consumption. Therefore land use, as addressed here, strictly provides an alternative breakdown of the net yearly GHG emissions by general land use types. With respect to land use, industrial processes refers to all warehouse, light industrial, and industrial uses throughout the County; residential incorporates all single, multi family and congregate care dwelling units; and commercial encompasses all other uses within the County. Details on the various land use categories and how emissions were modeled for these categories are included in Appendix B.

3.1 1990 Emissions Inventory

In 1990, the County of Sutter's total GHG annual emissions were approximately 1.3 million tons CO₂e. The following tables and figures (Table 3-1, Table 3-2, Table 3-3, Table 3-4, Table 3-5, and Table 3-6; and Figure 3-1, Figure 3-2, and Figure 3-3), summarize the 1990 emissions by emissions category.

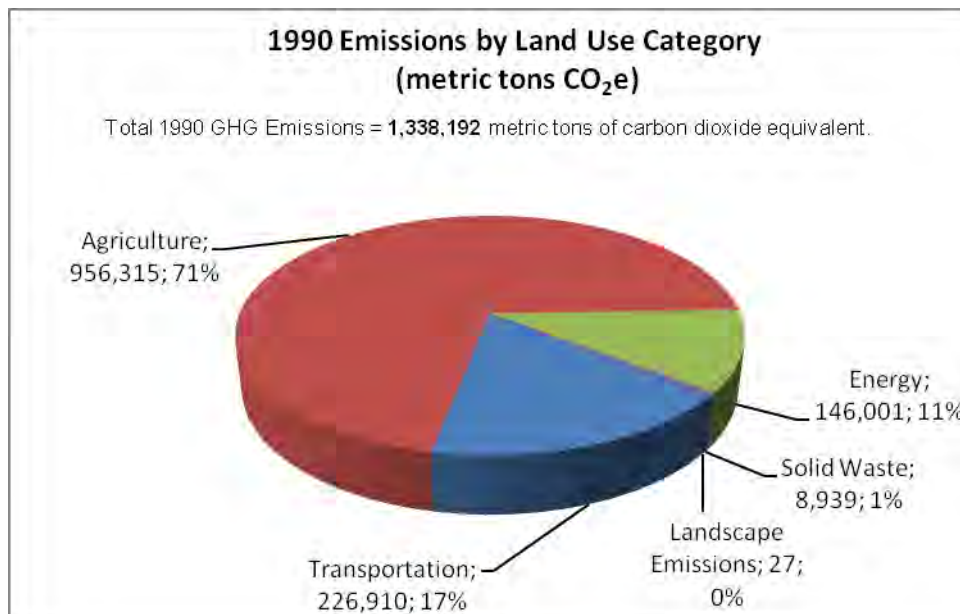
3.1.1 1990 Net Total Emissions

Table 3-1 summarizes the net 1990 County emissions of CO₂e as broken down by category. Each of these categories is further broken down in Tables 3-2 through 3-6 below. Figure 3-1 is a graphical representation of Table 3-1. A detailed breakdown of 1990 emissions by category is available in Appendix C.

Table 3-1: 1990 Net Total Emissions

Net Total Emissions	
Category	Metric tons of CO ₂ e
Energy	146,001
Solid Waste	8,938
Landscape Emissions	27
Agriculture	956,315
Transportation	226,910
Total	1,338,192

Figure 3-1: 1990 Emissions by Emissions Category (MT CO₂e)



3.1.2 1990 Energy Emissions

Emissions associated with 1990 energy were based on the emissions data and energy production collected by PG&E. Energy accounted for approximately 11 percent of the total emissions produced in 1990. This constitutes the third largest sector of emissions. Table 3-2 summarizes the emissions from energy generation and/or consumption with respect to electricity and natural gas. Electricity generation is determined based on the electricity purchased by Sutter County from PG&E used to meet the electric loads within the County. A detailed breakdown of 1990 energy emissions is available in Appendix C.

Table 3-2: 1990 Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO₂e
Electric	55,823
Natural Gas	90,178
Total	146,001

3.1.3 1990 Solid Waste Emissions

Table 3-3 summarizes the 1990 County emissions from the transportation, and decomposition of solid waste generated with the County. Solid-waste-related emissions represent approximately one percent of the total GHG emissions generated by the Sutter County in 1990. A detailed breakdown of 1990 solid waste emissions is available in Appendix C.

Table 3-3: 1990 Solid Waste Emissions

Solid Waste Emissions	
Source	Metric tons of CO₂e
Solid Waste Disposal	8,939
Total	8,939

3.1.4 1990 Landscape Emissions

Table 3-4 summarizes the 1990 County emissions from Landscape activities. Landscape-related emissions represent less than 1 percent of the total GHG emissions generated by the County in 1990. Data is not available to accurately determine the emissions with respect to planting trees or fertilizer use or carbon sink from CO₂ sequestration. A detailed breakdown of 1990 Landscape Emissions is available in Appendix C.

Table 3-4: 1990 Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	27
Total	27

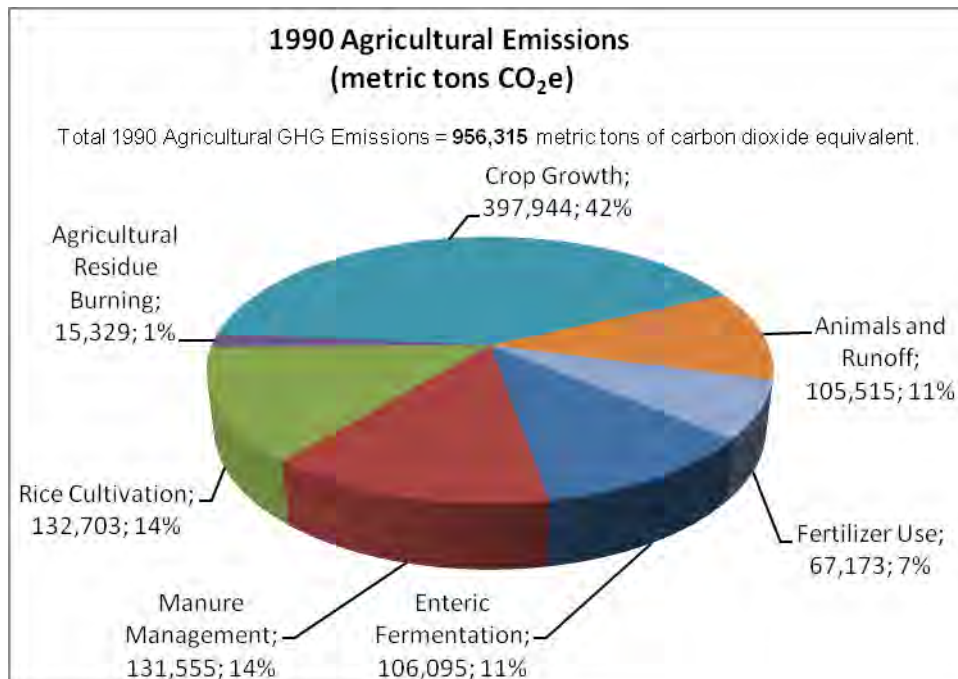
3.1.5 1990 Agricultural Emissions

Table 3-5 summarizes the 1990 County emissions with respect to agricultural activities. Agricultural emissions represent the majority of the County's emissions, accounting for 71 percent. Table 3-5 and Figure 3-2 represent the breakdown of agricultural emissions by activity. A detailed breakdown of 1990 Agricultural emissions is available in Appendix C. Note that rice is separated out from other crops because of the way rice grows. Rice requires inundation which causes anaerobic soil conditions that produces methane emissions. Other crops do not have this set of circumstances.

Table 3-5: 1990 Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	106,095
Manure Management	131,555
Rice Cultivation	132,703
Agricultural Residue Burning	15,329
Crop Growth	397,944
Animals and Runoff	105,515
Fertilizer Use	67,173
Total	956,315

Figure 3-2: 1990 Agricultural Emissions (MT CO₂e)



3.1.6 1990 Transportation Emissions

Table 3-6 summarizes the 1990 County emissions with respect to airport usage and vehicle miles traveled for all vehicles with trip origins or destinations in the County. Details on the vehicle fleet and emissions calculations can be found in Appendices B and C. Transportation emissions do not include pass-through traffic on the freeways within the County, accounting only for vehicle trips related to the County land uses as starting points or destinations. The total vehicle miles traveled (VMT) related to these trips includes the total commute whether or not the entire trip is within County boundaries. Transportation-related emissions represent approximately 17 percent of the total GHG emissions generated by the County in 1990.

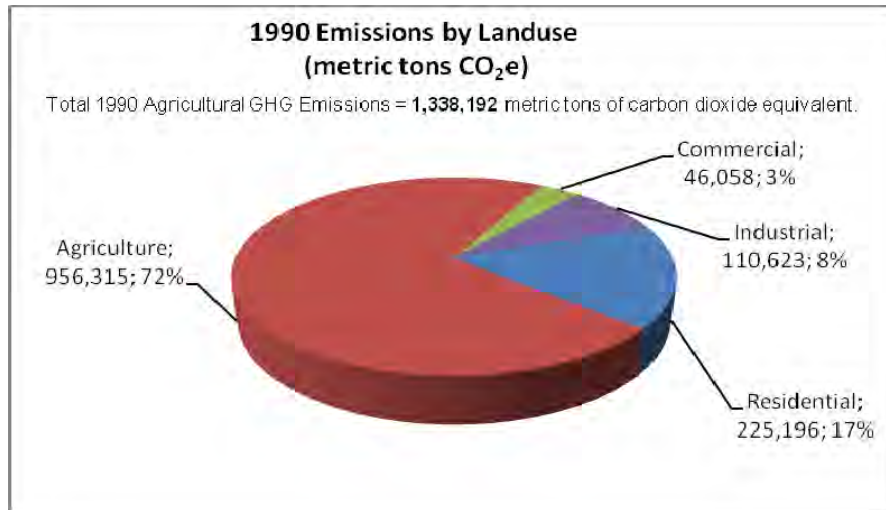
Table 3-6: 1990 Transportation Emissions

Transportation Emissions	
Source:	Metric tons of CO₂e
On-Road Vehicles	226,778
Airport Operations	132
Total	226,910

3.1.7 1990 Emissions by Land Use

This section provides a breakdown of the total 1990 GHG emissions for the County by land use categories as shown in Figure 3-3. A detailed breakdown of 1990 emissions as organized by individual land use is available in Appendix C.

Figure 3-3: 1990 Emissions by Land Use (MT CO₂e)



3.2 2008 Emissions Inventory

The County emitted approximately 1.2 MMT of CO₂e in 2008. The following tables and figures (Table 3-7, through Table 3-12; and Figures 3-4, 3-5, and 3-6) summarize the emissions by emissions category.

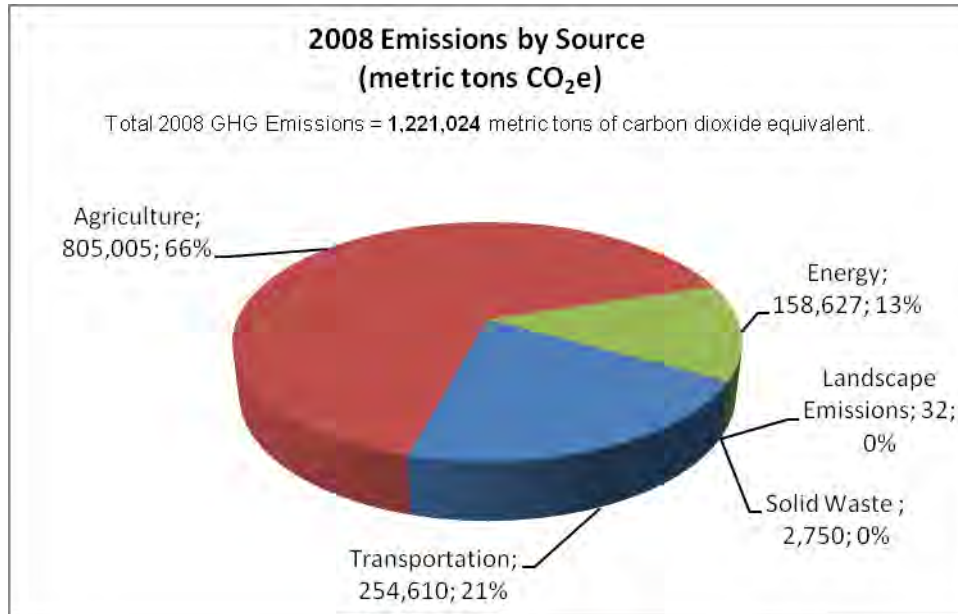
3.2.1 2008 Net Total Emissions

Table 3-7 summarizes the net 2008 County emissions of CO₂e as broken down by emissions category. Each of these categories is further broken down in Tables 3-7 through 3-10 below. Figure 3-4 is a graphical representation of Table 3-6. A detailed breakdown of 2008 emissions by category is available in Appendix D.

Table 3-7: 2008 Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO ₂ e
Energy	158,627
Solid Waste	2,750
Landscape Emissions	32
Agriculture	805,005
Transportation	254,610
Total	1,221,024

Figure 3-4: 2008 Emissions Generated by Emissions Category (MT CO₂e)



3.2.2 2008 Energy Emissions

Table 3-8 summarizes the emissions from energy generation and/or consumption with respect to electricity and natural gas. Energy related emissions represent approximately 13 percent of the total GHG emissions generated by the County in 2008. A detailed breakdown of 2008 energy emissions is available in Appendix D.

Table 3-8: 2008 Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO ₂ e
Electric	52,186
Natural Gas	106,441
Total	158,627

3.2.3 2008 Solid Waste Emissions

Table 3-9 summarizes the 2008 County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent less than one percent of the total GHG emissions generated by the County in 2008. A detailed breakdown of 2008 solid waste emissions is available in Appendix D.

Table 3-9: 2008 Solid Waste Emissions

Solid Waste	
Source	Metric tons of CO₂e
Solid Waste Disposal	2,750
Total	2,750

3.2.4 2008 Landscape Emissions

Table 3-10 summarizes the 2008 County emissions from landscaping activities. The primary source of emissions from landscaping activities results from the use of landscape equipment. Landscape related emissions represent less than 1 percent of the total GHG emissions generated by Sutter County in 2008. Data is not available to accurately determine emissions with respect to planting trees or fertilizer use. A detailed breakdown of 2008 Landscape emissions is available in Appendix D.

Table 3-10: 2008 Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	32
Total	32

3.2.5 2008 Agricultural Emissions

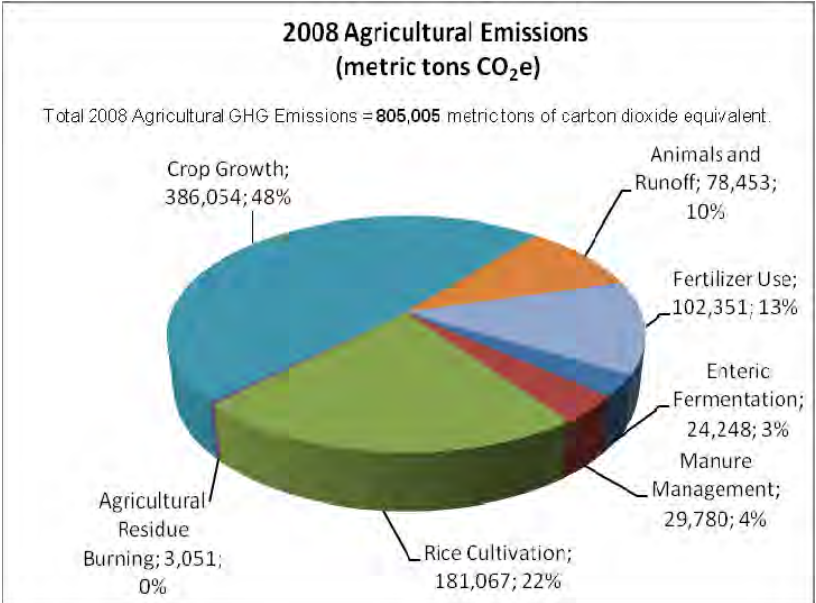
Table 3-11 summarizes the 2008 County emissions with respect to agricultural activities within the County. Agricultural emissions represent the majority of the County emissions (66%). Table 3-11 and Figure 3-5 represent the breakdown of agricultural emissions by activity. A detailed breakdown of 2008 Agricultural emissions is available in Appendix D.

Table 3-11: 2008 Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	24,248
Manure Management	29,780
Rice Cultivation	181,067
Agricultural Residue Burning	3,051
Crop Growth	386,054
Animals and Runoff	78,453
Fertilizer Use	102,351

Total	805,005
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Figure 3-5: 2008 Agricultural Emissions (MT CO₂e)



3.2.6 2008 Transportation Emissions

Table 3.12 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 Sutter County and only account for vehicle trips related to Sutter County land uses as starting points and destinations. Transportation-related emissions represent approximately 21 percent of the total GHG indirect sources of emissions generated within Sutter County. A detailed breakdown of 2008 transportation emissions is available in Appendix D.

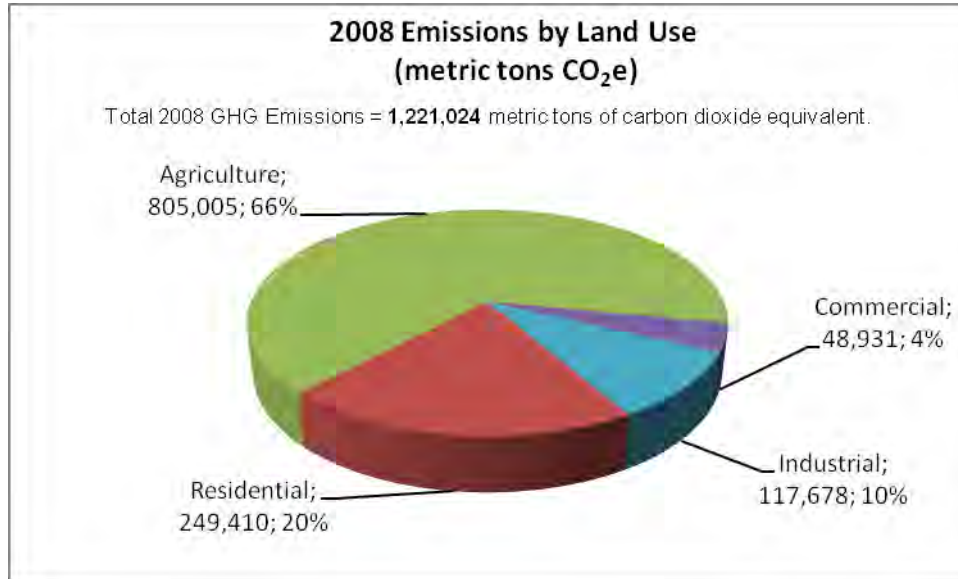
Table 3-12: 2008 Transportation Emissions

Transportation Emissions	
Sources:	Metric tons of CO₂e
On-Road Vehicles	254,455
Airport Operations	155
Total	254,610

3.2.7 2008 Emissions by Land Use

This section provides a breakdown of the total 2008 GHG emissions for the County by land use categories (Figure 3-6). A detailed breakdown of 2008 emissions by land use is available in Appendix D.

Figure 3-6: 2008 Emissions by Land Use (MT CO₂e)



3.3 2020 Business as Usual (BAU) Emissions Inventory

In 2020, Sutter County is projected to emit a total of 1.5 MMT of CO₂e from business-as-usual. 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 described in Chapter 4.

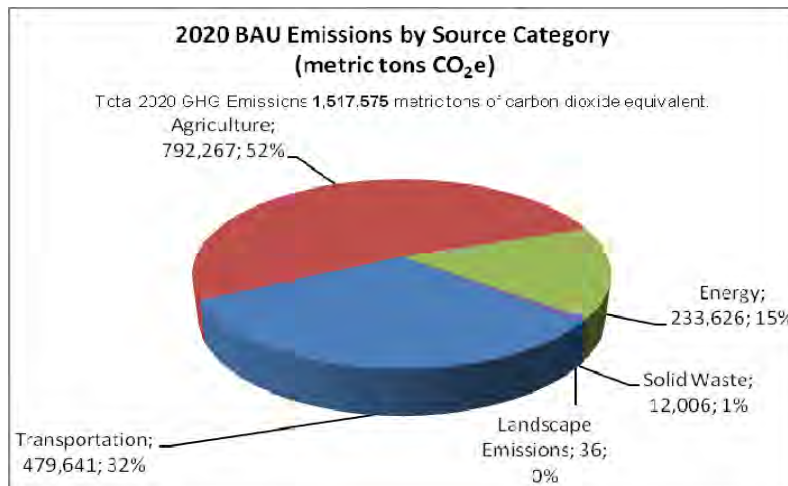
3.3.1 2020 BAU Net Total Emissions

Table 3-14 summarizes the net 2020 County emissions of CO₂e as broken down by emissions source category. Each of these categories is further broken down in Tables 3-15 through 3-19 below. Figure 3-7 is a graphical representation of Table 3-14. A detailed breakdown of 2020 emissions by category is available in Appendix E.

Table 3-14: 2020 BAU Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO ₂ e
Energy	233,626
Solid Waste	12,006
Landscape Emissions	36
Agriculture	792,267
Transportation	479,641
Total	1,517,575

Figure 3-7: 2020 BAU Emissions Generated by Source (MT CO₂e)



3.3.2 2020 BAU Energy Emissions

Table 3-15 summarizes the 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 15 percent of the total GHG emissions generated by Sutter County in 2020. A detailed breakdown of 2020 energy emissions is available in Appendix E.

Table 3-15: 2020 BAU Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO₂e
Electric	83,234
Natural Gas	150,392
Total	233,626

3.3.3 2020 BAU Solid Waste Emissions

Table 3-16 summarizes the 2020 County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent approximately one percent of the total GHG emissions generated by Sutter County in 2020. A detailed breakdown of 2020 solid waste emissions is available in Appendix E.

Table 3-16: 2020 BAU Solid Waste Emissions

Solid Waste	
Source	Metric tons of CO₂e
Solid Waste Disposal	12,006
Total	12,006

3.3.4 2020 BAU Landscape Emissions

Table 3-17 summarizes the 2020 County emissions from landscaping activities. The primary source of emissions results from the use of landscape equipment. Landscape related emissions represent less than one percent of the total GHG emissions generated by Sutter County in 2020. A detailed breakdown of 2020 Landscape emissions is available in Appendix E.

Table 3-17: 2020 BAU Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	36
Total	36

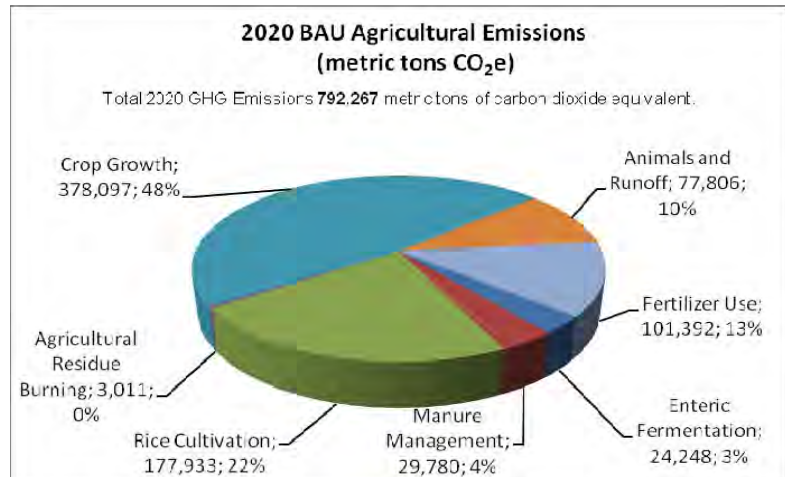
3.3.5 2020 BAU Agricultural Emissions

Table 3-18 summarizes the 2020 County emissions with respect to agricultural activities within the County. Agricultural emissions represent the majority of the County emissions accounting for 52 percent of all emissions. Table 3-18 and Figure 3-8 represent the breakdown of agricultural emissions by activity. A detailed breakdown of 2020 Agricultural emissions is available in Appendix E.

Table 3-18: 2020 BAU Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	24,248
Manure Management	29,780
Rice Cultivation	177,933
Agricultural Residue Burning	3,011
Crop Growth	378,097
Animals and Runoff	77,806
Fertilizer Use	101,392
Total	792,267

Figure 3-8: 2020 BAU Agricultural Emissions (MT CO₂e)



3.3.6 2020 BAU Transportation Emissions

Table 3-19 summarizes the 2020 County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Sutter County and only account for vehicle trips related to Sutter County land uses as starting points and destinations. Transportation-related emissions represent

approximately 32 percent of the total GHG emissions generated by Sutter County in 2020. A detailed breakdown of 2020 transportation emissions is available in Appendix E.

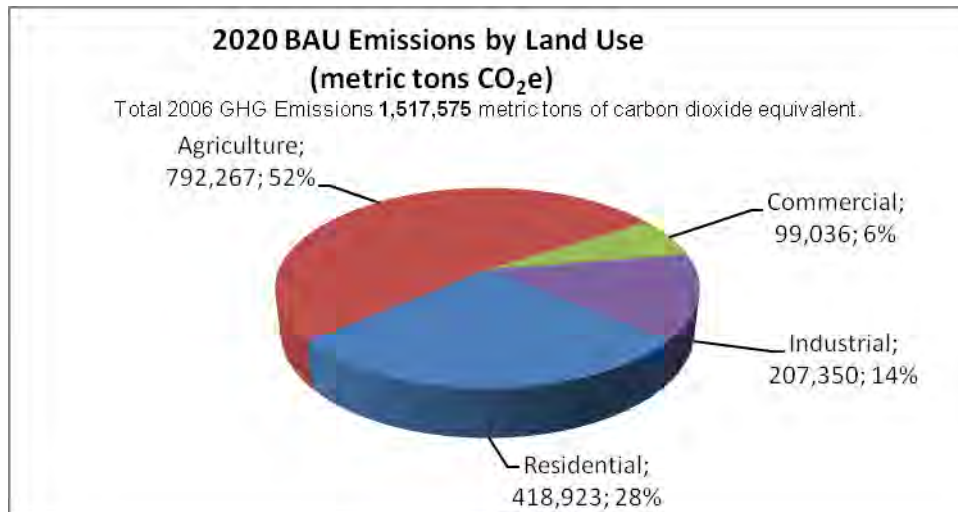
Table 3-19: 2020 BAU Transportation Emissions

Transportation Emissions	
Sources:	Metric tons of CO ₂ e
On-Road Vehicles	479,486
Airport Operations	155
Total	479,641

3.3.7 2020 BAU Emissions by Land Use

This section provides a breakdown of the total 2020 GHG emissions for Sutter County by land use categories (Figure 3-9). A detailed breakdown of 2020 emissions by land use is available in Appendix E.

Figure 3-9: 2020 BAU Emissions by Land Use (MT CO₂e)



3.4 2030 Business as Usual (BAU) Emissions Inventory

In 2030, Sutter County is projected to emit a total of 1.8 MMT of CO₂e from business-as-usual. The business-as-usual emissions are based on the projected 2030 build outs from the County’s General Plan without the inclusion of the proposed reduction measures or sustainability initiatives discussed in Chapter 4.

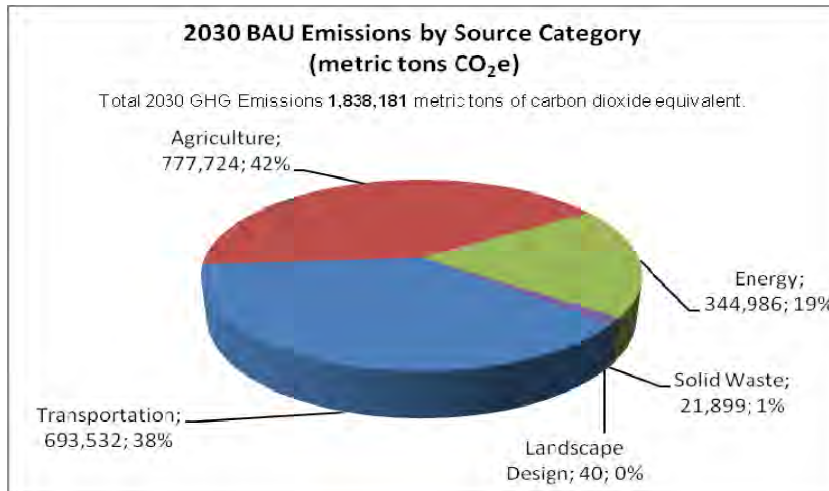
3.4.1 2030 BAU Net Total Emissions

Table 3-20 summarizes the net 2020 County emissions of CO₂e as broken down by emissions sources category. Each of these categories is further broken down in Tables 3-21 through 3-25 below. Figure 3-10 is a graphical representation of Table 3-20. A detailed breakdown of 2030 energy emissions is available in Appendix F.

Table 3-20: 2030 BAU Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO ₂ e
Energy	334,986
Solid Waste	21,899
Landscape Emissions	40
Agriculture	777,724
Transportation	693,532
Total	1,838,181

Figure 3-10: 2030 BAU Emissions Generated by Source (MT CO₂e)



3.4.2 2030 BAU Energy Emissions

Table 3-21 summarizes the 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 19 percent of the total GHG emissions generated by Sutter County in 2030. A detailed breakdown of 2030 energy emissions is available in Appendix F.

Table 3-21: 2030 BAU Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO₂e
Electric	129,434
Natural Gas	215,552
Total	344,986

3.4.3 2030 BAU Solid Waste Emissions

Table 3-22 summarizes the 2030 County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent approximately one percent of the total GHG emissions generated by Sutter County in 2030. A detailed breakdown of 2030 solid waste emissions is available in Appendix F.

Table 3-22: 2030 BAU Solid Waste Emissions

Solid Waste	
Source	Metric tons of CO₂e
Solid Waste Disposal	21,899
Total	21,899

3.4.4 2030 BAU Landscape Emissions

Table 3-23 summarizes the 2030 County emissions from landscaping activities. The primary source of emissions results from the use of landscape equipment. Landscape related emissions represent less than one percent of the total GHG emissions generated by Sutter County in 2030. A detailed breakdown of 2030 Landscape emissions is available in Appendix F.

Table 3-23: 2030 BAU Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	40
Total	40

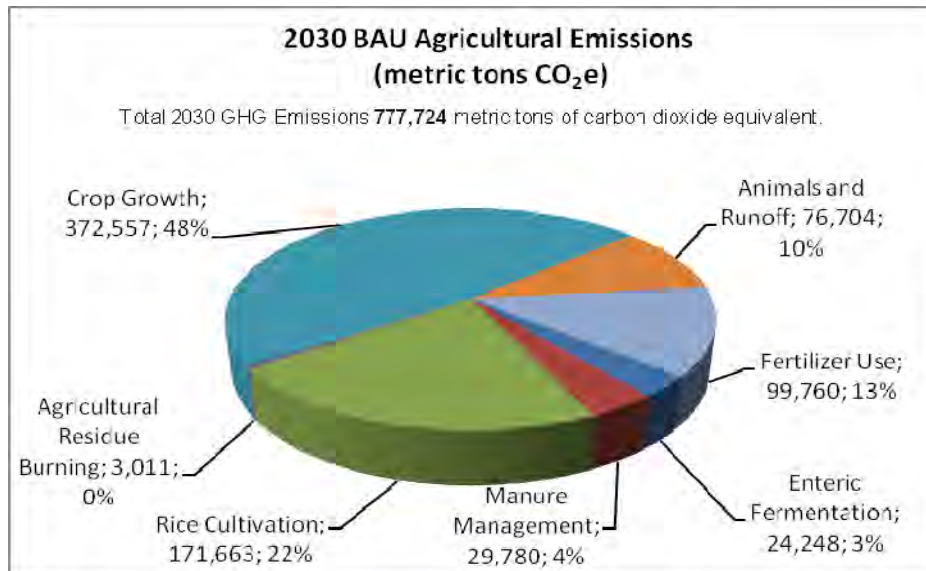
3.4.5 2030 BAU Agricultural Emissions

Table 3-24 summarizes the 2030 County emissions with respect to agricultural activities within the County. Agricultural emissions represent the majority of the County emissions accounting for 42 percent of all emissions. Table 3-24 and Figure 3-11 represent the breakdown of agricultural emissions by activity. A detailed breakdown of 2030 Agricultural emissions is available in Appendix F.

Table 3-24: 2030 BAU Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	24,248
Manure Management	29,780
Rice Cultivation	177,933
Agricultural Residue Burning	3,011
Crop Growth	372,557
Animals and Runoff	76,704
Fertilizer Use	99,760
Total	777,724

Figure 3-11: 2030 BAU Agricultural Emissions (MT CO₂e)



3.4.6 2030 BAU Transportation Emissions

Table 3-25 summarizes the 2030 County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Sutter County and only account for vehicle trips related to Sutter County land

uses as starting points and destinations. Transportation-related emissions represent approximately 38 percent of the total GHG emissions generated by Sutter County in 2030. A detailed breakdown of 2030 transportation emissions is available in Appendix F.

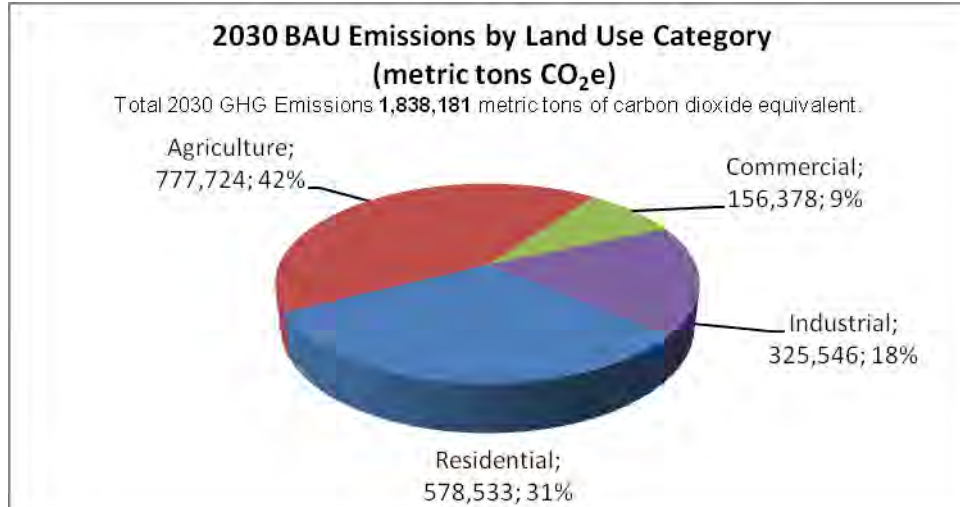
Table 3-25: 2030 BAU Transportation Emissions

Transportation Emissions	
Sources:	Metric tons of CO ₂ e
On-Road Vehicles	693,377
Airport Operations	155
Total	693,532

3.4.7 2030 BAU Emissions by Land Use

This section provides a breakdown of the total 2030 GHG emissions for Sutter County by land use categories (Figure 3-12). A detailed breakdown of 2030 emissions by land use is available in Appendix F.

Figure 3-12:2030 BAU Emissions by Land Use (MT CO₂e)



3.4.8 Net Emissions Comparison by Year

The County’s total emissions for 2008 are lower than the emissions in 1990; however, emissions per capita have increased between these two years. During this time, Sutter County experienced a decrease in population in unincorporated areas due to an expansion of Yuba City.

The population of the unincorporated areas was 32,710 in 1990 and only 24,245 in 2008. Several other factors attributed to a reduction of emissions between 1990 and 2008. One of these factors is that while solid waste generation has increased between 1990 and 2008, the marked decrease in solid waste emissions is attributed to the installation of methane gas collection systems at the land fill in 2004, which resulted in the reduction in methane released to the atmosphere. The collected gas was initially burned by flaring.

The 1.5 MMT of CO₂e of GHG emissions for 2020 is an estimated increase of 296,551 MT CO₂e above 2008 levels and 179,384 MT CO₂e above 1990 levels following business-as-usual projections. This level of increase is lower than the state average and is paired with a strong projected increase in population, resulting in a lower level of per capita emissions.. The per capita emissions for business-as-usual in 2020 are based on the projected residential growth that results in the 2020 population forecasted at 42,875.

The 2030 BAU emissions of 1.8 MMT of CO₂e is an estimated increase of 617,157 MT CO₂e above 2008 levels and nearly 500,000 MT CO₂e above 1990 levels. This level of increase paired with a doubling of population from 1990 results in a low level of per capita emissions. The per capita emissions for business-as-usual in 2030 are based on the projected residential growth which results in the 2030 population forecasted at 65,475.

The reduced per capita emissions in the 2020 and 2030 business-as-usual scenarios are due to a combination of factors including the continued increase in development density of Sutter County which results in a modest decrease in vehicle miles traveled per vehicle trip, methane from the solid waste collection systems being used as fuel for electric generation starting in 2009 through 2020, as well as a continued reduction in rice production and other agricultural operations. Table 3-26 shows a comparison of Net Emission Totals and Per Capita Emissions for 1990, 2008, 2020 BAU, and 2030 BAU emissions.

Table 3-26: Net Total Emissions by Year

Net Total Emissions and Per Capita Emissions				
Source Category	Metric tons of CO₂e			
	1990	2008	2020 BAU	2030 BAU
Energy	146,001	158,627	223,626	344,986
Solid Waste	8,939	2,750	12,006	21,899
Landscape Emissions	27	32	36	40
Agriculture	956,315	805,005	792,267	777,724
Transportation	226,910	254,610	479,641	693,532
Total	1,338,192	1,221,024	1,517,576	1,838,181
Population	32,710	24,245	42,875	65,475
Per Capita Emissions	40.9	50.4	35.4	28.1

Section 4 GHG Emissions Reduction Programs and Regulations

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. 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 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.

R2 and R3 reduction measures are measures that will be incorporated at the County level to provide additional reductions in greenhouse gas emissions. R2 measures are those measures that can be quantified to show the value of the reduction from the incorporation of those measures. 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. For example, R3-E2: Energy Efficiency Training and Public education, is a measure that provides education to inform people of the programs, technology, and potential funding available to them to be more energy efficient, thereby providing the incentives to participate in the voluntary programs detailed in R2-E1 through R2-E7. R3-E2 is supportive of measures R2-E1 through R2-E7 because it will provide more publicity, reduce the perceived challenge of being energy efficient, and provide information on potential rebates and other funding programs which will make retrofits more accessible to everyone. Therefore, although by itself R3-E2 cannot be quantified, its implementation provides a level of assurance that the reduction goals specified in the R2 measures will be achieved. A complete list of assumptions and reductions for each of the R1 and R2 measures is included in Appendix G.

The following reduction measures are organized herein by source category (energy, solid waste, landscape 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: E – energy; W – solid waste; L – landscape emissions; A – agriculture; T – transportation; and I – industrial.

4.1 Energy

4.1.1 R1 Energy Reduction 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 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 MMTCO₂e, 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 MMTCO₂e, 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 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 MMTCO₂e, 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 MMTCO₂e, 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 MMTCO₂e, representing 15.2 percent of emissions from electricity generation (in-State and imports).

4.1.2 R2 Energy Reduction Measures

The following list of R2 measures are candidate measures the County can incorporate into the County CAP related to building energy efficiency to achieve an AB 32 compliant reduction target.

R2-E1: Residential Energy Efficiency Program

This measure involves the adoption of a program that facilitates energy efficient design for all new residential buildings within the Sutter Pointe Specific Plan to be 20% beyond the current Title 24 Standards which will implement the new development requirements set forth in the Sutter Pointe Specific Plan EIR. This energy efficiency requirement for the Sutter Pointe Specific Plan is equal to that of the LEED for Homes and ENERGY STAR programs.

The 2008 Title 24 Energy Standards were adopted by the Energy Commission on April 23, 2008 with the 2008 Residential Compliance Manual adopted by the Commission on December 17, 2008. 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.

As described in the Sutter Pointe Specific Plan DEIR and to facilitate the implementation of this program, the County could provide all developers within the Sutter Pointe Specific Plan and those developments electing to participate in the voluntary reduction programs with a list of

potentially feasible GHG reduction measures that reflect the current state of the regulatory environment prior to design development. The developer will then submit to the County a mitigation report demonstrating which of the proposed reduction measures are feasible as well as why the unselected measures are infeasible. The County will develop a menu of options with points assigned to them. As long as a developer meets the required point allotment (100 points) the developer will meet the requirements of this measure. This system will 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:

- Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc
- Install 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.

Sutter Pointe is implementing a pilot solar program which will offer solar as a standard feature on a percentage of homes in the Phase 1 development stage and as an upgrade for all homes. Given the success of the program it will be continued through the additional phases of the specific plan development.

Residential developments within the unincorporated portions of Sutter County that are not within the Sutter Pointe Specific Plan are encouraged to participate in the volunteer Residential Energy Efficiency Program. This volunteer 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. The County will develop a menu of options with points assigned to them. As long as a developer meets the required point allotment (33 points, which is based upon the estimated reduction in emissions resulting from the energy efficiency improvements) the developer will meet the requirements of this measure. This system will 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 strategies outlined in the bullet points above.

R2-E2: Residential Renewable Energy Program

This measure facilitates the voluntary incorporation of renewable energy (such as photovoltaic panels) into new residential developments. For participating developments, renewable energy application should be such that the new home's projected energy use from the grid is reduced 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. 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. The incentive program should provide enough funding and other incentives as shown in the R3 measures to result in approximately fifty percent 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 can buy into a purchased energy offset program 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. See R3-E3 for further details on the financing program.

R2-E3: Residential Retrofit Implementation Program

This measure would 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%. Similar to the strategy for the new development, the County will develop a menu of options with points assigned to them for

retrofit projects. As long as a developer meets the required point allotment (100 points) the developer will meet the requirements of this measure. This system 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:

- 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 panels and/or solar water heaters;
- Replace inefficient and incandescent lighting with energy efficient lighting; and
- Weatherize the existing building to increase energy efficiency.

R2-E4: Residential Renewable Retrofit Program

This measure will 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 California Energy Commission's Solar Initiative has incentives available to home owners.

R2-E5: Commercial Energy Efficiency Program

This measure involves the adoption of a County Program that facilitates the energy efficient design for all new commercial buildings within Sutter Pointe to be 20% beyond the current Title 24 Standards which expands the new development requirements set forth in the Sutter Pointe Specific Plan EIR. This voluntary energy efficiency requirement 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.

As described in R2-E1 above, the County could provide all developers with a list of potentially feasible GHG reduction measures that reflect the current state of the regulatory environment. The County will develop a menu of options with points assigned to them. As long as a developer meets the required point allotment (100 points) the developer will meet the requirements of this measure. This system will provide 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:

- 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.

The Sutter Pointe Specific Plan requires all non-residential buildings (25,000 sq feet or more) to install Energy Star (or equivalent) cool roofing systems and energy efficient furnaces. These features are intended to reduce energy consumption for non-residential projects.

Commercial developments within the unincorporated portions of Sutter County that are not within the Sutter Pointe Specific Plan are encouraged to participate in the volunteer Commercial Energy Efficiency Program. This volunteer 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 commercial projects that achieve the minimum goal. The County will develop a menu of options with points assigned to them. As long as a developer meets the required point allotment (33 points) the developer will meet the requirements of this program. This system will 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 strategies outlined in the bullet points above.

R2-E6: Commercial/Industrial Renewable Energy Program

This measure would facilitate the voluntary incorporation of renewable (solar or other renewable) energy generation into the design and construction of new commercial, office, and industrial development. Renewable energy generation shall be incorporated such that a minimum of 20% of the 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 can buy into an offset program that will allow for the purchase of renewable energy resources offsite. Purchased energy offsets (or a combination of incorporated renewables and purchased offsets) must be equal 20% of the total projected energy consumption for the development. See R3-E3 for further details on the financing program.

R2-E7: Commercial/Industrial Retrofit Program

This measure encourages 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:

- 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; and
- Weatherize the existing building to increase energy efficiency.

R2-E8: Agricultural Alternative Energy Program

This program combines Agricultural Draft Policies AG 3.7 (Alternative Energy), and AG 4.3 (New Technologies) to support the incorporation and expansion of existing and new technologies to increase the energy efficiency and profitability of agricultural processes throughout Sutter County.

R2-E9: Water Use Reduction Initiative

This initiative would reduce emissions associated with electricity consumption for water treatment and reduction and therefore are included with the energy reductions. 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. The following represent potential programs that can be implemented to attain this reduction goal.

Water Conservation Program:

Under this program the excessive watering of landscaping, excessive fountain operation, watering during peak daylight hours, water on non-permeable surfaces, excessive water use for noncommercial washing, and water use resulting in flooding or runoff would be prohibited. In addition the program would encourage efficient water use for construction activities, the installation of low-flow toilets and showerheads for all new developments, use of drought-tolerant plants with efficient landscape watering systems for all new developments, recycling of water used for cooling systems, use of pool covers, and the posting of water conservation signage at all hotels.

Sutter Pointe Water Conservation and Efficiency Requirement

Under the provisions in the Sutter Pointe Specific Plan EIR, new developments within the Sutter Pointe Specific Plan area are required to adhere to the following water conservation and efficiency measures:

- With the exception of ornamental shade trees, use water-efficient landscapes with native, drought-resistant species in all public areas and commercial landscaping. Use water-efficient turf in parks and other turf-dependant spaces;
- Install the infrastructure to use reclaimed water for landscape irrigation and/or washing cars;
- Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls;
- Design buildings and lots to be water efficient. Only install water-efficient fixtures and appliances;
- Restrict water methods (prohibit systems that apply water to non-vegetated surfaces) and control runoff. Prohibit business from using pressure washers for cleaning driveways, parking lots, sidewalks, and street surfaces;
- Provide education about water conservation and available programs and incentives; and
- Construct driveways to single family detached residences, multi-family residences, and parking lots with pervious surfaces.

New Development Incentives:

Provide incentives for developers to comply with the California Green Building Standards Code as requirements for all new development. Under this 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.

Water Meter Program:

Encourage water providers to install water meters for all County homes not using wells. This would provide for a better accounting of County water usage and provide potential costing per usage to help offset costs of the implementation of water conservation programs.

Water Efficiency Pricing Program

Under this program, the County would encourage water suppliers to adopt a water conservation pricing schedule (i.e. tiered rate) to encourage efficient water use. Notices could be provided in each billing showing water use budgets and the relationship between the budget and the actual usage.

Water Efficiency Retrofit Program:

This program would encourage upgrades in water efficiency for renovations or additions of residential, commercial, office, and industrial properties equivalent to that of new developments. The County would work with local water purveyors to achieve consistent standards, and to develop, approve, and review procedures for implementation.

Water Efficiency Training and Education:

Under this measure the County, in coordination with local water purveyors, would implement a public information and education program that promotes water conservation. The program could include certification programs for irrigation designers, installers, and managers, as well as classes to promote the use of drought tolerant, native species and xeriscaping.

Increased Recycled Water Use:

Promote the use of municipal wastewater and graywater for agricultural, industrial and irrigation purposes. This measure would be subject to approval of the State Health Department and compliance with Title 22 provisions. This measure would facilitate the following:

- Inventory of non-potable water uses that could be substituted with recycled or graywater;
- Determination of the feasibility of producing and distributing recycled water for groundwater replenishment;

- Determine the associated energy/GHG tradeoffs for treatment/use vs. out of basin water supply usage; and
- Cooperation and coordination with responsible agencies to encourage the use of recycled water where energy tradeoffs are favorable.

4.1.3 R3 Energy Reduction 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 could include the updating of codes and zoning requirements and guidelines. 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.

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 (see R2-E2 and R2-T6) 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.

R3-E5: Alternative Energy Development Plan

The accomplishment of this measure would encourage the County to work with PG&E to explore the possibilities for producing energy by renewable means within the built environment. This would be developed to identify appropriate alternative energy facilities (i.e., photovoltaic) for use within residential and commercial developments. This could also incorporate the use of wind or additional solar installation in more remote areas. The Alternative Energy Development Plan will encourage the establishment of County policies and ordinances to address how alternative energy production would be conducted. This measure would identify the most optimal locations and the best means by which to avoid noise, aesthetics and other land use compatibility conflicts. Another provision of this Plan could be to identify possible sites for the production of renewable energy using local renewable sources such as solar, wind, small hydro, and/or biogas. This would encourage adopting measures to protect these resources and providing right-of-way easements, utility easements, or by setting aside land for future development of these potential production sites.

R3-E6: Energy Compliance Documentation

Sutter County currently requires energy compliance documentation and testing with third party certification for new developments. This program could be expanded to include certification of compliance with the R2 measures as well as providing incentives for the

completion of energy audits and certification of existing buildings. The measure enhances and supports the energy efficiency reduction programs R2-E1 through R2-E9.

4.2 Solid Waste

4.2.1 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-W1: Waste Measures

The CARB AB32 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 MMTCO₂e 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 CO₂ reduced. Capital cost is estimated to be approximately \$3,440,000 and annual operation cost is estimated to be approximately \$706,400 per landfill.

4.2.2 R2 Solid Waste Measures

The following list of R2 measures are candidate measures the County can incorporate into the County CAP related to building energy efficiency to achieve an AB 32 compliant reduction target.

R2-W1: County Diversion Program

This measure would implement a County wide waste diversion plan to further the goal of diverting 75% of all waste from landfills by 2020. The following is a potential list of waste reduction measures that will further strengthen existing waste reduction/diversion programs.

- Provide outreach and education programs for residential, commercial, and industrial land uses in order to further promote existing County diversion programs;

- Increase disposal fees and/or reduce residential pick-up frequency;
- Encourage businesses to adopt a voluntary procurement standard and prioritize those products that have less packaging, are reusable, recyclable, or compostable;
- Support State level policies that provide incentives for efficient and reduced packaging waste for commercial products;
- Expand list of recyclable materials;
- Work with Recology to develop and provide waste audits;
- Make recycling and composting opportunities mandatory at all public events;
- Establish an appliance end-of-life requirement;
- 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.

R2-W2: Construction Diversion Program

This reduction measure would encourage a diversion of 60% of construction waste by 2020. This provides a 10% increase in diversion beyond AB2176, § 42911, that requires development projects to provide adequate areas for collecting and loading recyclable materials and ensures a 50% diversion rate prior to being issued a building permit.

R2-W3: Sutter Pointe Solid Waste Reduction Measures

All development within the Sutter Pointe Specific Plan area would be required to abide by the following solid waste reduction measures:

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard);
- Provide interior and exterior storage areas for recyclables and green waste at all buildings;
- Provide adequate recycling containers in public areas, including parks, school grounds, golf courses, and pedestrian zones in areas of mixed-use development; and
- Provide education and publicity about reducing waste and available recycling services.

4.2.3 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-W1: Encourage Increased Efficiency of the Gas to Energy System at Landfills.

In 2009, the Recology Ostrom Landfill instituted a Gas to Energy System which converts 66% of the methane captured to energy. This measure would encourage Recology to keep current with upgrades in efficiencies to waste to energy systems and to upgrade as feasible when significant increases in conversion efficiencies are available.

R3-W2: Waste Education Program

This measure would build on the Sutter Pointe education program to 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, and waste prevention, and available recycling services.

4.3 Landscape Emissions

The following R3 measures are related to landscape strategies that will help reduce greenhouse gas 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 (the process by which carbon is taken from the environment and stored. In the case of trees and vegetation this happens by the conversion of carbon into biomass –leaves, wood, etc.) from different tree species, potential reductions of building energy use from shading, and GHG emissions associated with pumping water used for irrigation. Implement a forestry program if GHG emissions reductions exceed GHG emissions associated with implementation and water use. The Sutter Pointe Specific Plan EIR requires commercial and retail development to exceed shading requirements by a minimum of 10% and to plant low emission trees.

R3-L2: Heat Island Plan

The implementation of this measure would include expanding the Sutter Pointe guidelines for cool roofs, cool pavements, and strategically placed shade trees, and parking lot shading to the entire County. Further, County wide Design Guidelines could need to 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:

- Shading (within 5 years of occupancy);
- Paving materials with a Solar Reflective Index (SRI) of at least 29;
- Open grid pavement system; or
- Covered parking (with shade or cover having an SRI of at least 29).

4.4 Agriculture

4.4.1 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) MMTCO₂e, representing 7.8 percent of CH₄ and N₂O emissions from manure management and enteric fermentation at dairies in the State.

4.4.2 R2 Agriculture Measure

The following R2 measure is a candidate measure the County can incorporate into the County CAP related to agricultural practices and efficiencies to achieve an AB 32 compliant reduction target.

R2-A1: Agricultural Water Management

Encourage the agricultural community to be cognizant of the necessity of water conservation and to provide access to information on technologies to reduce potable water usage where feasible. This would encourage the County in conjunction with the local water

purveyors to explore the feasibility of and promote using recycled water while maintaining water quality and quantity necessary for agriculture purposes. Further, this would encourage the County to explore the feasibility of and promote water management. This measure enhances the Agricultural policies AG 3.1 (Efficient Water Management), 3.2 (Water Conservation and Recycling), 3.3 (Water Quality and Quantity), and 3.5 (Groundwater Resources).

4.4.3 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. In addition, encourage the use of “cover” crops during fallow periods to prevent erosion and nutrient leaching and promote carbon sequestration. This could be used to enhance Agricultural Policy AG 3.8 (Chemical Use) which supports the efforts of growers to follow state and federal regulations concerning the use of pesticides, herbicides, and manufactured fertilizers.

4.5 Transportation

4.5.1 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 (MMT_{CO₂e}), 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 MMTCO₂e, 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 MMTCO₂e, 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 approximately 0.55 MMTCO₂e, 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 MMTCO₂e, 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 MMTCO₂e, representing 1.7 percent of emissions from passenger light-duty vehicles in the State.

R1-T7: Cool Paints and Reflective Glazing

This AB32 early action measure is based on measures to reduce the solar heat gain in a vehicle parked in the sun. By 2020, this requirement will reduce emissions in California by

approximately 0.89 MMTCO₂e, representing 0.6 percent of emissions from passenger/light-duty vehicles in the State.

R1-T8: 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 MMTCO₂e, representing 1.6 percent of emissions from all mobile sources (on-road and off-road) in the State.

R1-T9: 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 MMTCO₂e, representing 1.9 percent of emissions from heavy-duty vehicles in the State.

R1-T10: 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 MMTCO₂e, 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.

4.5.2 R2 Transportation Measures

The following list of R2 measures are candidate measures the County can incorporate into the County Climate Action Plan (CAP) to achieve an AB 32 compliant reduction target.

R2-T1: Employment Based Trip and VMT Reduction

Implementation of this measure would require adopting a voluntary trip reduction ordinance that promotes commuter-choice programs, 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. This measure would require employers with more than 100 employees within the unincorporated County 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. This reduction measure adds to and enhances Mobility Policies 2.G-2 and 2.G-3.

The Sutter Pointe development, in addition to the above ordinance, and in accordance with its Master Air Quality Mitigation Plan (MAQMP), will provide the following services and programs that will enhance the reduction of VMT within this Specific Plan Area. The following elements of the Sutter Pointe MAQMP are included within R2-T1 because they will reduce GHG emissions and further the County's goal of achieving the reduction target:

- Sutter Pointe will create a Transportation Management Association (TMA) with the primary goal of providing alternative mode use programs and services to the residents, employers, and employees, as well as managing transit services.
- Employment of a Transportation Coordinator (TC) will be required for all commercial/industrial development with 500 or more employees. The primary role of the TC will be to act as a liaison between the TMA and their employer and employees to disseminate information and facilitate trip reduction programs.

R2-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. Whether neighborhoods have sidewalks or bike paths, whether homes are within walking distance of shops or transit stops will influence the type and amount of transportation that is utilized. By changing the focus of land use from automobile centered transportation, a reduction in vehicle miles traveled will occur. Implementation of Policies LU1.2 (Balanced Land Use Pattern), LU1.3 (Adequate Land Use Supply), LU 3.5 (Infill Development), LU 3.9 (Rural Hubs), LU 3.12 (Mixed Use); Mobility Policies M 3.1 (Transit Service for Residents), M 3.2 (Transit in New Development), M 3.3 (Transit Integration); and Agricultural Policies AG 4.4 (Farmworker Housing), AG 4.6 (Local Processing), AG 4.7 (Local Purchasing), and AG 4.12 (Support Uses) will all work together to provide a reduction in VMT for the County, by changing

the focus of land use away from vehicle centered transportation to the increased densities and lay-outs that foster the implementation and use of alternate modes of transportation.

R2-T3: Preferential Parking

Implementation of this reduction measure would encourage the County to adopt a comprehensive parking program for public and private parking lots that 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;
- Consider restricting the number of parking spaces within the County 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.

The development within the Sutter Pointe Specific Plan area requires, as part of the MAQMP, that developments with 100 or more employees provide the minimum required parking and develop the sites to facilitate alternate modes of transportation.

R2-T4: Roadway Improvements including Signal Synchronization and Transportation Flow Management

This reduction builds on Mobility Goals M 1 and M 2, and Agricultural Policy AG 4.1 and supports (through the policies associated with those goals) modification of arterial roadways to promote and support multimodal transportation options for automobiles, transit, and trucks. In addition, this measure results in the maintenance of existing regional transportation systems to support the local, national, and global movement of agricultural products. 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 Sutter County's industrial areas.

R2-T5: Increase the Use of Ridesharing as an Alternative to Single Occupancy Vehicle Use

Mobility Implementation Programs M 3-A, M 3-B, and M 3-C promote the use of ridesharing throughout the County by strengthening the transportation network within the Unincorporated County as well as between the Unincorporated County and the Cities within the County. Encouraging community car-sharing through employers will further enhance the use of these services and support the underlying goal of reducing congestion and providing viable alternatives to automobile use. Further reductions in VMT could be obtained through assistance provided by a Transportation Management Agency (TMA). A TMA could oversee or provide assistance with the creation of rideshare incentives for employees such as gas cards, carpool awards, educational seminars, commuter-choice programs, commuter-tax benefits, guaranteed ride-home programs, commuter assistance and outreach, parking incentives, and the encouragement of telecommuting and compressed work weeks. This reduction measure will also be enhanced by the requirements of the MAQMP as discussed in R2-T1 above.

R2-T6: Provide a Comprehensive System of facilities for Non-motorized Transportation

Mobility Goal M 5, and Land Use policies LU 1.10 (Efficient Land Use Patterns) and LU 4.8 (Quality New Development) require the County to address bicycle and pedestrian facilities. These goals and policies should: encourage the creation of bike lanes and walking paths directed to the location of schools, provide adequate bicycle parking; and encourage the development 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 requirements are intended for large residential and non-residential development as well as large employers (500 or more employees). In addition, the establishment of multi-use trails that promote off-street bicycle and pedestrian travel as well as secure bicycle racks along these pathways will encourage their use.

The development within the Sutter Pointe Specific Plan area requires, as part of the MAQMP, bicycle and pedestrian connectivity where projects will be required to support bicycling and walking through providing amenities or incorporating convenient access to/within the project sites. Amenities and site design for these developments may include:

- Proximity to bike lanes;
- Elimination of impediments to bicycle and pedestrian circulation;
- Secure bicycle storage;
- Bicycle and pedestrian incentive programs; and
- Showers and lockers.

R2-T7: Expand Renewable Fuel/Low-Emission Vehicle Use

Implementation of the following would promote the expanded use of renewable fuel and low-emission vehicles:

- Collaboration between local and regional governments and business to foster the increased use of renewable fuels. This can be accomplished by coordinating the siting of new alternative fueling/recharging locations for example.
- Providing preferential parking for ultra low-, zero- emission, and alternative fuel vehicles;
- Collaboration with energy providers to ensure the availability of necessary facilities and infrastructure to encourage the use of privately owned zero emission vehicles. This can be accomplished by having conveniently located charging and fueling stations for these vehicles.
- Provide incentives for taxicabs to use gas-electric hybrid vehicles or, at a minimum, smaller more fuel-efficient vehicles.

New developments within the Sutter Pointe Specific Plan area (as provided in the EIR for the area) will be required to provide the necessary facilities and infrastructure in all land use types to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations). In addition industrial and commercial land uses will require all forklifts, yard trucks, or vehicles that are predominantly used onsite at non-residential land uses to be electric-powered or powered by biofuels that are produced from waste products, or shall use other technologies that do not rely on direct fossil fuel consumption.

R2-T8: Transit Infrastructure Development within the Sutter Pointe Specific Plan

The Sutter Pointe Specific Plan EIR has included the following requirements regarding transportation. The inclusion of these requirements will facilitate the reduction of vehicle miles traveled and help to reduce greenhouse gas emissions throughout the County. A Conceptual Transit Plan has been developed for Sutter Pointe that includes plans for phased transit service which will begin as soon as 50 interested riders have been identified. There are four phases of transportation improvement within the Sutter Pointe development as follows:

- Phase 1 will extend past 2020 based on anticipated residential development. The primary focus of this phase is for the TMA to facilitate or develop and market rideshare initiatives including car and vanpool programs, commuter bus services, incorporation of transit stops for the Yuba-Sutter Transit system, and Airporter services to and from Sacramento International Airport.
- Phase 2 of the Sutter Pointe Transit Plan would incorporate an expansion of Sutter Pointe Transit Commuter Express Service.
- Phase 3 would increase Sacramento commuter service capacity, expand commuter service to Placer County, establish midday service to Sacramento and provide commute services to the Sutter Pointe Business Park from adjacent communities. With warranted demand, dedicated peak hour trips serving the Sutter Pointe business and industrial parks could be added from the Yuba City/Marysville area.
- Phase 4 would incorporate further expansion of the Sutter Pointe commuter bus services to Sacramento and Placer County, develop local transit services, and expand neighboring regional transit services.

4.5.3 R3 Transportation Measure

The following R3 measure enhances and/or insures 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

Mobility implementation programs M 3-A and M 3-B, in conjunction with Mobility policy M 3.3 (Transit integration), and Land use policies 4.15 (Mix of uses), 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 requirements of the MAQMP as discussed in R2-T1 above.

4.6 Industrial

The following list of R1 industrial related measures are those measures that California 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-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 CO₂e, 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 MMTCO₂e, representing 0.5 percent of combustion emissions from industrial sources (non-coal) in the State.

Section 5 Total Estimated Reductions

In 2020, Sutter County is projected to emit a total of 1.5 MMT of CO₂e without the incorporation of the reduction measures shown in Section 4. With their incorporation, the County emissions for 2020 are estimated to be reduced to 1.28 MMT CO₂e. Emission reductions estimated for year 2020 were based on the accomplishments likely to be achieved as based on the incorporation of the measures detailed in Section 4. A detailed description of the reduction calculations, including assumptions and percentage reduction, is included as Appendix H.

In 2030, the County is project to emit a total of 1.8 MMT of CO₂e following a business-as-usual scenario. With the extension of statewide reduction measures, future revision of measures to achieve the 2020 reduction goal, and inclusion of General Plan policies aimed to reduce emissions, 2030 emissions are expected to reduce to 1.34 MMT of CO₂e.

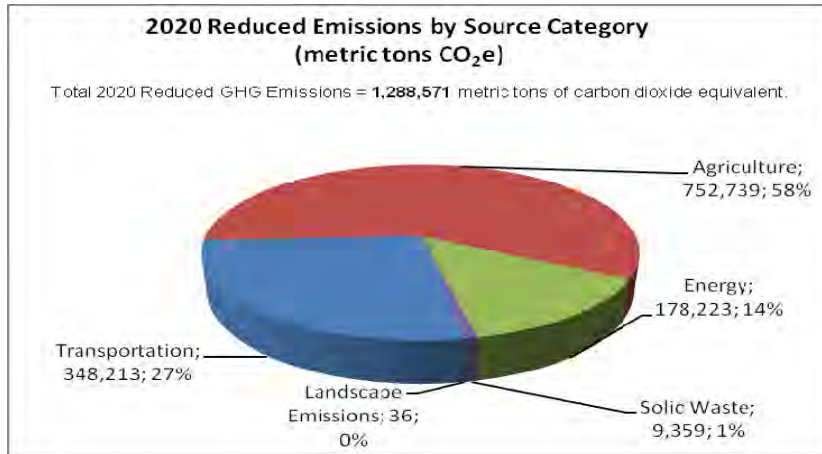
5.1 Reduced 2020 Emissions

Table 5-1 summarizes the net reduced 2020 County emissions of CO₂e as broken down by Emissions category. Each of these categories is further broken down in Tables 3-2 through 3-6. Figure 5-1 is a graphical representation of Table 5-1. A detailed breakdown of reduced 2020 emissions by category is available in Appendix H.

Table 5-1: Reduced 2020 Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO ₂ e
Energy	178,223
Solid Waste	9,359
Landscape Emissions	36
Agriculture	752,739
Transportation	348,213
Total	1,288,571

Figure 5-1: Reduced 2020 Emissions by Emissions Category (MT CO₂e)



5.1.1 Reduced 2020 Energy Emissions

Table 5-2 summarizes the emissions from energy generation and/or consumption with respect to the reduced quantities of electricity and natural gas estimated for the County in 2020. Reduced 2020 energy-related emissions represent approximately 14 percent of the total GHG emissions generated by Sutter County. A detailed breakdown of reduced 2020 energy emissions is available in Appendix H.

Table 5-2: Reduced 2020 Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO ₂ e
Electric	46,600
Natural Gas	131,623
Total	178,223

5.1.2 Reduced 2020 Solid Waste Emissions

Table 5-3 summarizes the reduced 2020 County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent approximately one percent of the total reduced GHG emissions generated by the County in 2020. A detailed breakdown of these emissions is available in Appendix H.

Table 5-3: Reduced 2020 Solid Waste Emissions

Solid Waste	
Source	Metric tons of CO₂e
Solid Waste Disposal	9,359
Total	9,359

5.1.3 Reduced 2020 Landscape Emissions

Table 5-4 summarizes the reduced 2020 emissions from Landscape activities. Landscape related emissions represent less than one percent of the total reduced GHG emissions generated by Sutter County in 2020. A detailed breakdown of 2020 Landscape Emissions is available in Appendix H.

Table 5-4: Reduced 2020 Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	36
Total	36

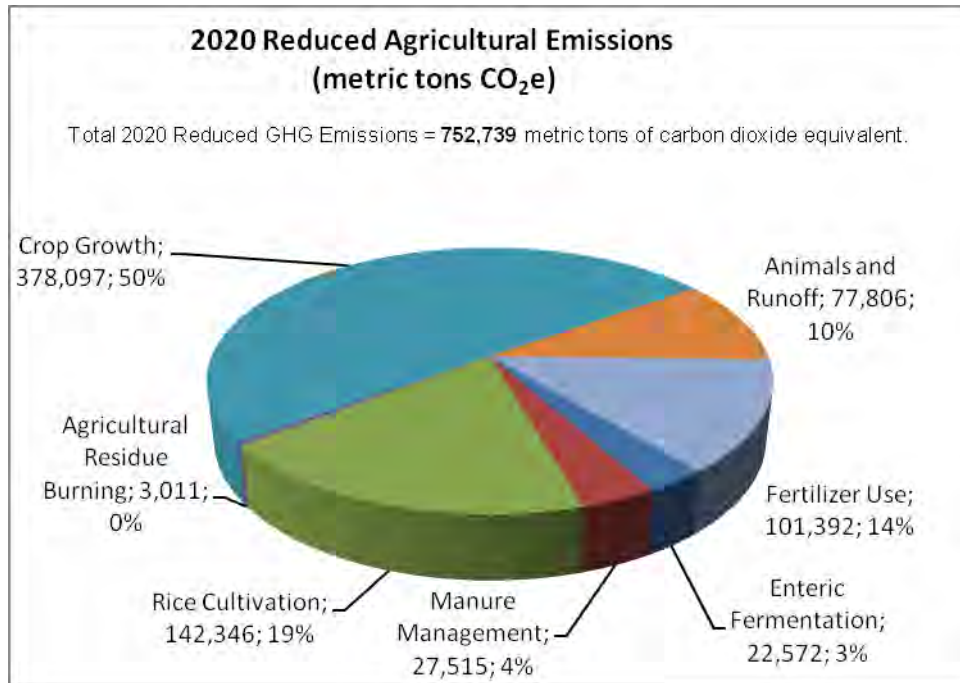
5.1.4 Reduced 2020 Agricultural Emissions

Table 5-5 summarizes the reduced 2020 County emissions with respect to agricultural activities. Reduced Agricultural emissions represent the majority of the County emissions accounting for 58 percent of all emissions. Table 5-5 and Figure 5-2 represent the breakdown of the 2020 reduced agricultural emissions by activity. A detailed breakdown of reduced 2020 Agricultural emissions is available in Appendix H.

Table 5-5: Reduced 2020 Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	22,572
Manure Management	27,515
Rice Cultivation	142,346
Agricultural Residue Burning	3,011
Crop Growth	378,097
Animals and Runoff	77,806
Fertilizer Use	101,392
Total	752,739

Figure 5-2: Reduced 2020 Agricultural Emissions (MT CO₂e)



5.1.5 Reduced 2020 Transportation Emissions

Table 5-6 summarizes the reduced 2020 County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Sutter County and only account for vehicle trips related to County land uses as starting points and destinations. Transportation-related emissions represent approximately 27 percent of the total GHG emissions generated by the County in 2020. A detailed breakdown of 2020 transportation emissions is available in Appendix H.

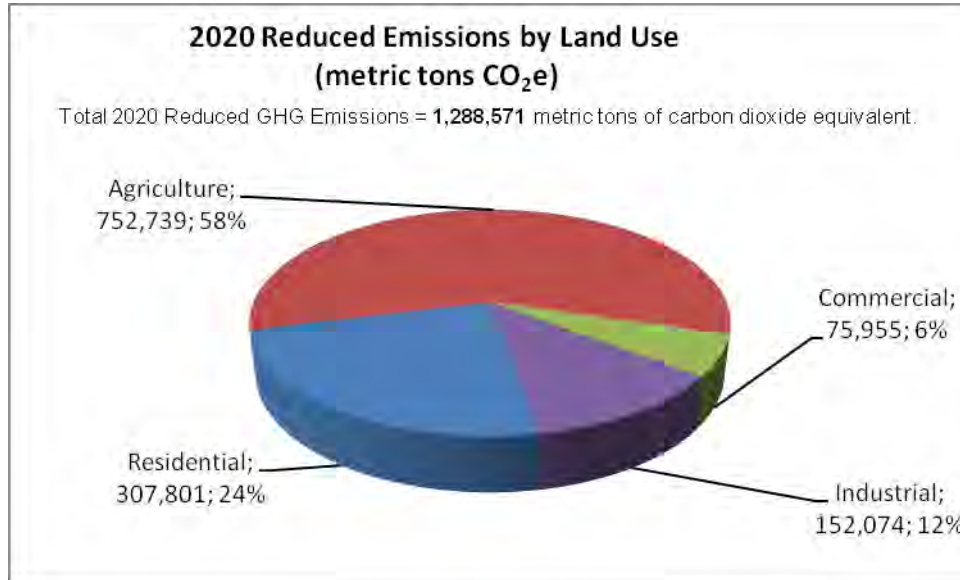
Table 5-6: Reduced 2020 Transportation Emissions

Transportation Emissions	
Sources:	Metric tons of CO ₂ e
On-Road Vehicles	348,058
Airport Operations	155
Total	348,213

5.1.6 Reduced 2020 Emissions by Land Use

This section provides a breakdown of the total reduced 2020 GHG emissions for Sutter County by land use categories (Figure 5-3). A detailed breakdown of 2020 emissions by land use is available in Appendix H.

Figure 5-3: Reduced 2020 Emissions by Land Use (MT CO₂e)



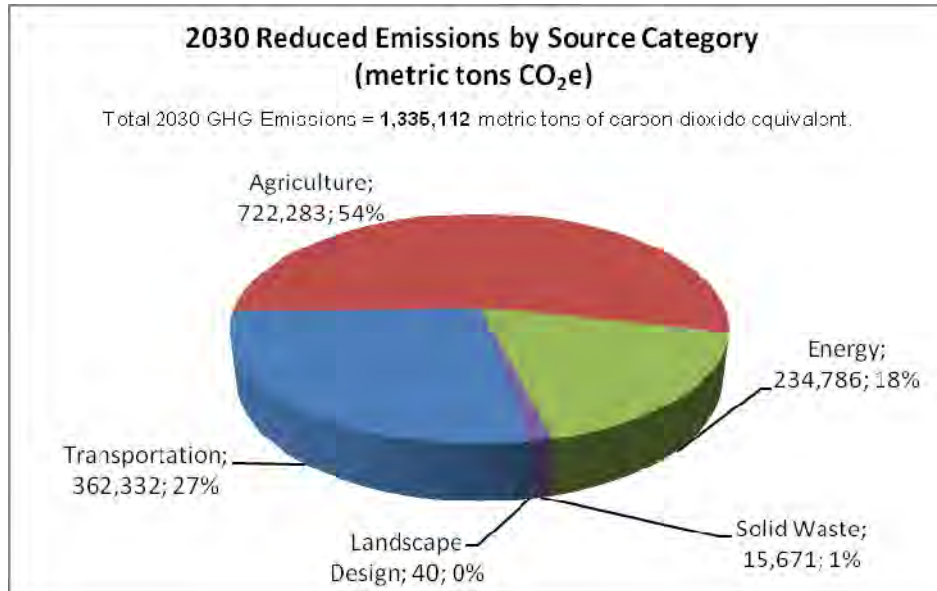
5.2 Reduced 2030 Emissions

Table 5-7 summarizes the net reduced 2030 County emissions of CO₂e as broken down by Emissions category. Each of these categories is further broken down in Tables 5-8 through 5-12. Figure 5-4 is a graphical representation of Table 5-7. A detailed breakdown of reduced 2030 emissions by category is available in Appendix H.

Table 5-7: Reduced 2030 Net Total Emissions

Net Total Emissions	
Emissions Category	Metric tons of CO ₂ e
Energy	234,786
Solid Waste	15,671
Landscape Emissions	40
Agriculture	722,283
Transportation	362,332
Total	1,335,112

Figure 5-4: Reduced 2030 Emissions by Emissions Category (MT CO₂e)



5.2.1 Reduced 2030 Energy Emissions

Table 5-8 summarizes the emissions from energy generation and/or consumption with respect to the reduced quantities of electricity and natural gas estimated for the County in 2030. Reduced 2030 energy-related emissions represent approximately 18 percent of the total GHG emissions generated by Sutter County. A detailed breakdown of reduced 2030 energy emissions is available in Appendix I.

Table 5-8: Reduced 2030 Energy Emissions

Energy Emissions	
Sources:	Metric tons of CO ₂ e
Electric	60,768
Natural Gas	174,018
Total	234,786

5.2.2 Reduced 2030 Solid Waste Emissions

Table 5-9 summarizes the reduced 2030 County emissions from the transportation, disposal, and decomposition of solid waste generated within the County. Solid-waste-related emissions represent approximately one percent of the total reduced GHG emissions generated by the County in 2030. A detailed breakdown of these emissions is available in Appendix I.

Table 5-9: Reduced 2030 Solid Waste Emissions

Solid Waste	
Source	Metric tons of CO₂e
Solid Waste Disposal	15,671
Total	15,671

5.2.3 Reduced 2030 Landscape Emissions

Table 5-10 summarizes the reduced 2030 emissions from Landscape activities. Landscape related emissions represent less than one percent of the total reduced GHG emissions generated by Sutter County in 2030. A detailed breakdown of 2030 Landscape Emissions is available in Appendix I.

Table 5-10: Reduced 2030 Landscape Emissions

Landscape Emissions	
Sources:	Metric tons of CO₂e
Landscape Emissions	40
Total	40

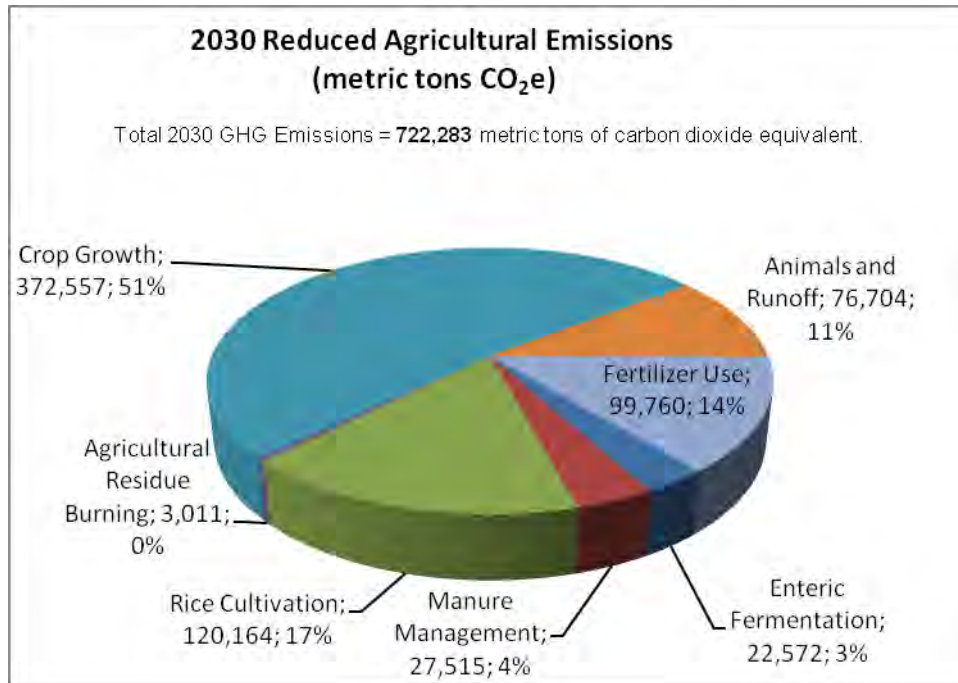
5.2.4 Reduced 2030 Agricultural Emissions

Table 5-11 summarizes the reduced 2030 County emissions with respect to agricultural activities. Reduced Agricultural emissions represent the majority of the County emissions accounting for 54 percent of all emissions. Table 5-11 and Figure 5-5 represent the breakdown of the 2030 reduced agricultural emissions by activity. A detailed breakdown of reduced 2030 Agricultural emissions is available in Appendix I.

Table 5-11: Reduced 2030 Agricultural Emissions

Agriculture	
Sources:	Metric tons of CO₂e
Enteric Fermentation	22,572
Manure Management	27,515
Rice Cultivation	120,164
Agricultural Residue Burning	3,011
Crop Growth	372,557
Animals and Runoff	76,704
Fertilizer Use	99,760
Total	722,283

Figure 5-5: Reduced 2030 Agricultural Emissions (MT CO₂e)



5.2.5 Reduced 2030 Transportation Emissions

Table 5-12 summarizes the reduced 2030 County emissions with respect to airport operations and vehicle miles traveled. Transportation emissions do not include pass-through traffic on the freeways within Sutter County and only account for vehicle trips related to County land uses as starting points and destinations. Transportation-related emissions represent approximately 27 percent of the total GHG emissions generated by the County in 2030. A detailed breakdown of 2030 transportation emissions is available in Appendix I.

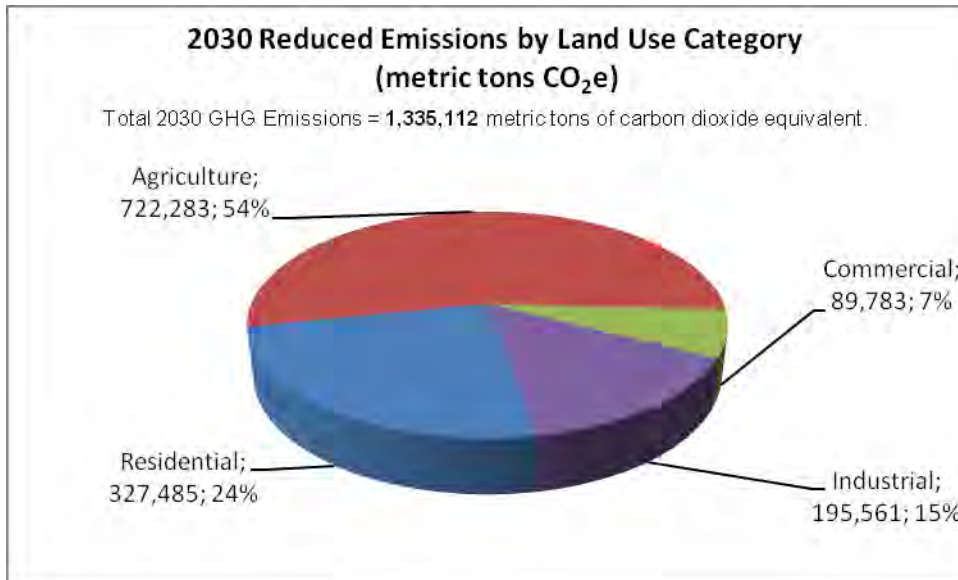
Table 5-12: Reduced 2030 Transportation Emissions

Transportation Emissions	
Sources:	Metric tons of CO ₂ e
On-Road Vehicles	362,245
Airport Operations	87
Total	362,332

5.2.6 Reduced 2030 Emissions by Land Use

This section provides a breakdown of the total reduced 2030 GHG emissions for Sutter County by land use categories (Figure 5-3). A detailed breakdown of 2030 emissions by land use is available in Appendix I.

Figure 5-6: Reduced 2030 Emissions by Land Use (MT CO₂e)



5.3 Net Emissions Comparison by Year

The 1.28 MMT of CO₂e of Reduced GHG emissions for 2020 is an estimated decrease of 229,005 MT CO₂e from 2020 BAU and a decrease of 49,621 MT CO₂e from 1990 levels. Table 5-13 shows a comparison between the 1990 and 2020 levels, including what the 2020 BAU emissions would have been without the implementation of, and what they are anticipated to be with, the inclusion of the proposed reduction measures.

Implementing the reduction measures and policies through to 2030 would put 2030 emissions at 1.34 MMT of CO₂e. This results in a 503,069 MT CO₂e decrease from the 2030 BAU emissions and puts 2030 emissions 3,080 MT CO₂e below 1990 levels. Table 5-14 shows a comparison between 1990 emissions and 2030 emissions for both the BAU scenario and the reduced scenario.

Table 5-13: Net Total 2020 Emissions Comparison

Net Total Emissions and Per Capita Emissions			
Source Category	Metric tons of CO₂e		
	1990	BAU 2020	Reduced 2020
Energy	146,001	233,626	178,223
Solid Waste	8,938	12,006	9,359
Landscape Emissions	27	36	36
Agriculture	956,315	792,267	752,739
Transportation	226,910	479,641	348,213
Total	1,338,192	1,517,576	1,288,571
Population	32,710	42,875	42,875
Per Capita Emissions	40.9	35.4	30.1
Note: Mass emissions of CO₂e shown in the table are rounded to the nearest whole number and per capita emissions are rounded to the nearest tenth. Totals shown may not add up due to rounding.			

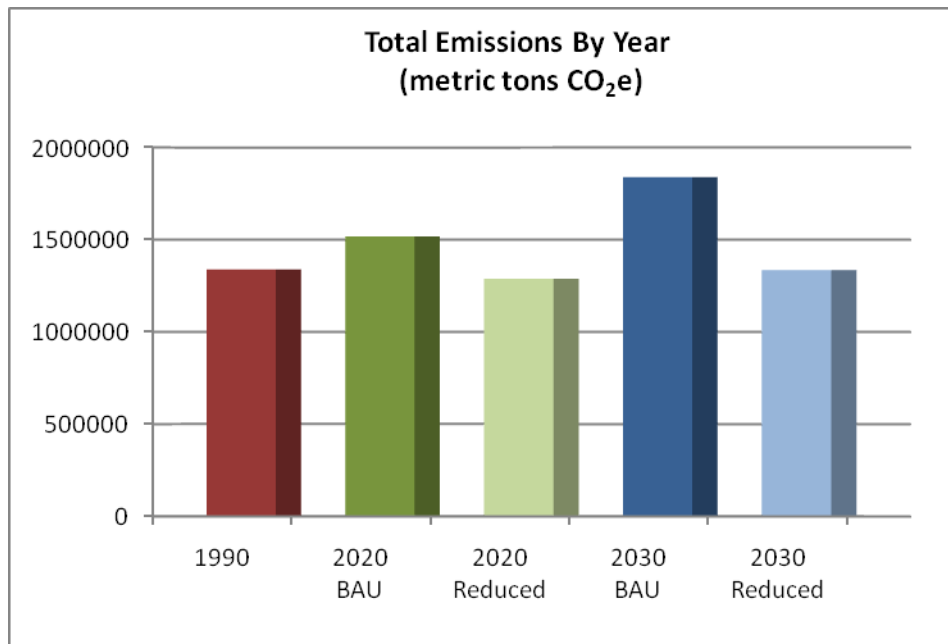
Table 5-14: Net Total 2030 Emissions Comparison

Net Total Emissions and Per Capita Emissions			
Source Category	Metric tons of CO₂e		
	1990	BAU 2030	Reduced 2030
Energy	146,001	344,986	234,786
Solid Waste	8,938	21,899	15,671
Landscape Emissions	27	40	40
Agriculture	956,315	777,724	722,283
Transportation	226,910	693,532	362,332
Total	1,338,192	1,838,181	1,335,112
Population	32,710	65,475	65,475
Per Capita Emissions	40.9	28.1	20.4
Note: Mass emissions of CO₂e shown in the table are rounded to the nearest whole number and per capita emissions are rounded to the nearest tenth. Totals shown may not add up due to rounding.			

Section 6 Conclusions

This Sutter County Climate Action Plan serves as a guide to help the County continue development with the objectives of conserving resources and reducing GHG emissions. This document also serves as a technical resource for the preparation 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 shows a comparison between Reduced 2020 and 2030 emissions and the 1990,2020 BAU, and 2030 BAU levels.

Figure 6-1: Total Emissions by Year (MT CO₂e)



A target has been set to reduce GHG emission emissions to 1990 levels by the year 2020 County-wide consistent with the State reduction goals in AB 32. The CARB Scoping Plan provides the State with reduction strategies designed to meet the reduction goal of AB 32. The County has a reduction strategy, as described in Section 4, which will allow the County to achieve the State reduction goal of reducing to 1990 level emissions by 2020. Such programs include the County's 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 CAP. Even with the anticipated growth in unincorporated Sutter County,

the slow growth rate and modernization of vehicle fleets, combined with the continued implementation of the proposed R2 and R3 measures, will ensure a reduction of County-wide GHG emissions by approximately 229,005 MT CO₂e by 2020 from the levels expected under a 2020 Business as Usual (BAU) scenario and a reduction of 49,621 MT CO₂e from 1990 levels. Additionally, with the expansion of the reduction measures outlined for the 2020 target and inclusion of GHG reduction policies in the County's General Plan, the expected reduction by 2030 is 503,069 MT CO₂e from a business as usual scenario and 3,080 MT CO₂e below 1990 levels.

Section 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.

7.1 STEP 1—Administration and Staffing

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 Administrative Office—The CAO’s office can provide economic, financial, and administrative guidance and support to the Implementation Coordinator.
- Planning Division (Community Services Dept.)—Planning can provide expertise in the project entitlement process and provide long-term planning support.

7.2 STEP 2—Financing and Budgeting

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 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 existing PG&E partnerships) exist to provide cooperation on many aspects of the CAP including energy efficiency retrofits, waste minimization, transit promotion, and education.

- Self-Funding and Revolving Fund Programs—Innovative programs to fund residential solar investments.
- Agreements with Private Investors—Energy service companies (ESCOs) 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 municipalities have used targeted finance instruments for solar, transportation, vehicle improvements, and landfill methane controls.

Given that financing is key to implementing many 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.

7.2.1 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 entities 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 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.)

PG&E Energy Efficiency / Renewable Energy Incentives

- Savings By Design (for new non-residential construction)—Design assistance, owner incentives, and design team incentives.
- Standard Performance Contract Incentives—Lighting (\$0.05/kWh), Air Conditioning and Refrigeration (\$0.14/kWh), other (\$0.08/kWh).
- California New Homes Program (CANHP)—New Residential Construction: approximately \$500–\$2,000 / home.
- Direct Install Program (business customers with less than 100 kW demand)—Free energy analysis; free lighting, refrigeration, and LED exit sign upgrades; free installation.
- Retrocommissioning Program—Free analysis, incentives for implementing energy efficiency measures, and free training.
- California Solar Initiative (CSI) and New Solar Homes Partnership (NSHP)—Solar rebate program for existing (CSI) and new (NSHP) buildings: ~\$2.50/Watt installed.
- Industrial Energy Efficiency Program.
- Various other commercial incentive/rebate programs (see <http://www.sce.com/brs/commercial/>).

Clean Renewable Energy Bonds. Clean renewable energy bonds (CREBs) can be used by certain entities—primarily in the public sector—to finance renewable energy projects. The list of qualifying technologies is generally the same as that used for the federal renewable energy production tax credit. CREBs may be issued by electric cooperatives, government entities (states, cities, counties, territories, Indian tribal governments, or any political subdivision thereof), and certain lenders. The advantage of CREBs is that they are issued—theoretically—with a zero (0) percent interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. (See http://www.irs.gov/irb/2007-14_IRB/ar17.html.)

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. The use of such a district can remove the up-front cost or up-front financing as an impediment to property owners who would like to install energy efficiency upgrades or renewable energy systems. Financing is repaid through the property tax bill and repayment obligations remain with the property when it is sold to a new owner.

7.2.2 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.

Measure I. Measure I authorizes the County Transportation Authority to impose a half cent retail transactions and use tax applicable in the incorporated and unincorporated areas of the County. By approving Measure I, County voters guaranteed that all of the funds collected would be expended in the County for certain types of transportation projects. Measure I will generate approximately \$200 million for transportation improvements in the County throughout the life of the 20-year sales tax.

Regional Improvement Program (RIP). The Regional Improvement Program (RIP) 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 Sacramento Area Council of Governments (SACOG) 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. SACOG supports or recommends the most cost-effective projects for implementation.

Regional Transportation Improvement Program. SACOG develops the Regional Transportation Improvement Program (RTIP). The RTIP is a listing of all capital transportation projects proposed over a six (6)-year period for the SACOG region. Projects include highway improvements, transit, rail and bus facilities, carpool lanes, signal synchronization, intersection improvements, freeway ramps, and other related improvements. In the SACOG region, updates are made to the RTIP every two (2) years, during even-numbered years.

7.2.3 Waste Reduction Financing

Resource Conservation Funds 2009. The USEPA Region 9 is soliciting proposals to fund projects that address solid waste reduction and management. Funds will be awarded pursuant to Section 8001 of the Resource Conservation and Recovery Act (RCRA), 42 USC §6981. Funding will be in the form of cooperative agreements and/or grants. Funds will be awarded to applicants carrying out projects that serve the following states and territories: Arizona, California, Hawaii, Nevada, the U.S. territories in the Pacific Ocean, and the lands in Indian Country belonging to over 140 federally recognized tribes which fall under USEPA Region 9's geographic area. The aim of this funding is to support innovative ideas with the goal of fostering positive change. Projects may include studies, surveys, investigations, demonstrations, training, and public education programs. All demonstration projects must demonstrate applications, technologies, methods, or approaches that are new, innovative, or experimental. A demonstration project that is carried out through a routine or established practice is not eligible for funding. Under this announcement, USEPA Region 9 anticipates awarding approximately two (2) to four (4) cooperative agreements and/or grants totaling approximately \$120,000. USEPA Region 9 anticipates that each grant or cooperative agreement will range in size from approximately \$20,000 to \$100,000. See <http://www.epa.gov/region09/funding/rcra.html> for additional details.

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.

7.2.4 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 \$63 billion, providing over 20,700 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 2.1 percent, compared to market rates that average 4.3 percent. For a CWSRF program offering this rate, a CWSRF funded project would cost 18 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 \$240 million in 2007 to control pollution from nonpoint sources and for estuary protection, more than \$2.6 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 and the Climate Finance Plan. Prioritization will be based on the following factors:

- 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 2010 through 2020.

- Phase 1 (2010–2012): Development of key ordinances (such as a green building ordinance, warehouse solar program, expansion of waste diversion goal to 60 percent, etc.), completion of key planning efforts (e.g., Climate Finance Plan, regional land use/transportation planning); implementation of most cost-effective measures (e.g.

energy efficiency retrofits, first tier landfill controls, rideshare/carpool measures, etc.); and support of voluntary efforts.

- Phase 2 (2013–2015): Continued implementation of first tier measures, implementation of second tier measures (expand waste reduction target to 70 percent, new building solar requirements, next level of landfill controls, etc.); and implementation of key planning outcomes from Phase 1 (transit-oriented development, etc.)
- Phase 3 (2015–2020): Continued implementation of first and second tier measures, implementation of third tier of measures (expand waste reduction target to 75 percent, next level of landfill controls, etc.).

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. Note that some of the reduction measures occur within all three phases. As an example, transit infrastructure has discrete early, mid-term and long-term phasing before completion. The details of transit infrastructure phasing can be found in the Sutter Pointe Conceptual Transit Plan (2008). Other reduction measures, such as energy efficiency retrofits will be staged within the three phases to allow for staggered funding of the retrofit incentives.

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

Potential Phasing for the R2 GHG Reduction Measures	
Reduction Measure:	Phase
Energy Reduction Measures	
R2-E1: Residential Energy Efficiency Program	1
R2-E2: Residential Renewable Energy Program	2
R2-E3: Residential Retrofit Implementation Program	1, 2, 3
R2-E4: Residential Renewable Retrofit Program	1, 2, 3
R2-E5: Commercial Energy Efficiency Program	1
R2-E6: Commercial/Industrial Renewable Energy Program	2
R2-E7: Commercial/Industrial Retrofit Program	1, 2, 3
R2-E8: Agricultural Alternative Energy Program	1, 2, 3
R2-E9: Water Use Reduction Initiative	1
Solid Waste	
R2-W1: County Diversion Program	1
R2-W2: Construction Diversion Program	1
R2-W3: Sutter Pointe Solid Waste Reduction Measures	1
Agriculture	
R2-A1: Agricultural Water Management	1
Transportation	
R2-T1: Employment Based Trip and VMT Reduction	1
R2-T2: Land use Based Trip and VMT Reduction Policies	1
R2-T3: Preferential Parking	1
R2-T4: Roadway Improvements including Signal Synchronization and Transportation Flow Management	1, 2, 3
R2-T5: Increase the Use of Ridesharing as an Alternative to Single Occupancy Vehicle Use	1
R2-T6: Provide a Comprehensive System of facilities for Non-motorized Transportation	1, 2, 3
R2-T7: Expand Renewable Fuel/Low-Emission Vehicle Use	1, 2, 3
R2-T8: Transit Infrastructure Development within the Sutter Pointe Specific Plan	1, 2, 3

7.4 STEP 4—Public Participation

The citizens and businesses in Sutter 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 Sutter County Board of Supervisors recognizes that prosperity and economic development cannot be achieved at the expense of our environment. The County must strike a balance between development and environmental stewardship to keep our economy strong and, at the same time, protect our 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.

7.5 STEP 5—Project Review

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, the 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 Significance Threshold document based upon the CAP. The County GHG Significance Threshold 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 such that 100 points will meet the emission reductions associated with the R2 Measures. This menu allows for maximum flexibility for projects to meet its reduction allocation.

The methodology discussed above and described in more detail in the forthcoming County GHG Significance Threshold document will be consistent with the analysis and quantification methodology used in the CAP.

Once the screening tables are completed they will 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.

7.6 STEP 6—Monitoring and Inventorying

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 Sutter 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: 2012 (to update with the Regional Transportation Plan outputs and Phase 1 progress); 2015 (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 MS Excel format emissions inventory tool. This tool will include all the emission factors and emission sources specific to Sutter County. The tool will be designed such that County staff can input, selected vehicle count provided by the California Department of Transportation, and the level of energy consumed in the County provided to them by the utilities, 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.

7.7 STEP 7—Beyond 2020

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 CO₂ at 450 parts per million (ppm). Thus, there will be a need to start planning ahead for the post-2020 period.

The General Plan Update Draft Environmental Impact Report (EIR) describes the level of emissions and how the County will continue to maintain the reduction target in the intervening period between 2020 and General Plan Buildout in 2030. That analysis anticipates that California will continue strengthening the energy efficiency requirements in Title 24 and that PG&E will realize the renewable portfolio. In addition, by 2020 it is anticipated that all transit infrastructure will be completed within the Sutter Pointe Specific Plan area. The Sutter Pointe Conceptual Transit Plan (2008) describes in detail the buildout of transit infrastructure. The CAP demonstrates achievement of the 2020 reduction target by retrofitting five percent of the residential and commercial buildings by 2020. The General Plan Update Draft EIR also anticipates that between years 2020 and 2030 the amount of residential retrofits will increase to thirty percent and commercial building retrofits will increase to thirty-five percent of the older building stock in Unincorporated County areas. Finally, the General Plan Update Draft EIR requires as mitigation that between years 2020 and 2030 that there is an eighty percent diversion rate of non-construction related solid waste and a seventy percent diversion rate for construction related solid waste. The increases in the building retrofit program and solid waste

diversion insure that the County continues to reduce emissions and exceed the 2020 reduction target in the years 2020 through 2030.

However, there are many uncertainties in predicting emissions in post-2020. Federal programs and policies for the near term are likely to be well underway; market mechanisms like a cap and trade system may 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. In addition, by 2015, the County will be 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. For all of these reasons, it is important that the County prepare and update the CAP for the post 2020 period toward the latter half of the CAP implementation period.

Therefore, it is anticipated that the County will commence planning for the post-2020 period 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, it is anticipated 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. The new plan will include a specific target for GHG reductions for 2030, 2040, and 2050. The targets will be consistent with broader state and federal reduction targets and with the scientific understanding of the needed reductions by 2050.

Section 8 Reference

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**Appendix A: The Greenhouse Effect, Greenhouse Gases, and Climate
Change Impacts**

Appendix B: Summary, Assumptions and General Formulas

Appendix C: 1990 URBEMIS Output and GHG Calculations

Appendix D:2008 URBEMIS Output and GHG Calculations

Appendix E: 2020 BAU URBEMIS Output and GHG Calculations

Appendix F: 2030 BAU URBEMIS Output and GHG Calculations

Appendix G: Reduction Measures, Assumptions and Attributed Reductions

Appendix H:2020 Reduced URBEMIS Output and GHG Calculations

Appendix I: 2030 Reduced URBEMIS Output and GHG Calculations
