
11 GLOBAL CLIMATE CHANGE

This chapter evaluates how implementation of the proposed 2030 Merced County General Plan (2030 General Plan) would change existing levels of greenhouse gas (GHG) emissions. As established in the Notice of Preparation (see Appendix A, *Notice of Preparation*), urban development and other activities subject to the updated 2030 General Plan may affect GHG emissions within Merced County.

The following environmental assessment includes a review of GHG emissions potentially affected by the implementation of the 2030 General Plan, including a description of the existing GHG emissions in Merced County and statewide. Also assessed are the effects that could result from development that would be allowed under the proposed 2030 General Plan.

This analysis also includes a review of applicable regulations, requirements, plans, and policies from the following federal, state, and regional sources:

- Federal Clean Air Act, Section 202(a)
- Global Warming Solutions Act of 2006 (Health and Safety Code Sections 38500 to 38599)
- San Joaquin Valley Air Pollution Control District, Rule 2301, Emissions Reduction Credit Banking (January 19, 2012)
- San Joaquin Valley Air Pollution Control District, Best Performance Standards (May 10, 2010)
- San Joaquin Valley Air Pollution Control District, Addressing GHG Under CEQA (April 30, 2010)
- California Attorney General, Guidance Addressing Climate Change at the Project Level (January 6, 2010)
- San Joaquin Valley Air Pollution Control District Guidance for Valley Land-Use Agencies in Addressing GHG Emissions for New Projects (December 17, 2009)
- California Attorney General, Climate Change, CEQA and General Plan Updates (Rev. September 1, 2009)
- State Air Resources Control Board, Climate Change Scoping Plan (December 2008)
- San Joaquin Valley Air Pollution Control District, Guide for Assessing and Mitigating Air Quality Impacts (2002)
- SB 375 Regional Planning, Climate Change, Sustainable Communities Strategy (2009)

The existing condition of GHG emissions was determined by a review of statewide emissions from a variety of source categories, and the calculation of estimated Merced County emissions. Rules and regulations influencing GHG emissions were identified by a review of federal and state regulations. As recommended by the SJVAPCD, GHG emission impacts were evaluated by comparing business-as-usual (BAU) emissions to mitigated emissions.

11.1 SETTING

The environmental and regulatory setting of Merced County with respect to GHG emissions is described in detail in the GHG section of the General Plan Background Report (Merced County

2007; updated 2012). That document is incorporated by reference into this Draft PEIR pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15150 as though fully set forth herein. The updated Background Report is available for download from the Merced County General Plan website at:

<http://www.co.merced.ca.us/index.aspx?NID=1926>.

Copies of the Background Report may be viewed during standard business hours (8:30 a.m. to 4:30 p.m.), Monday through Friday, at the Merced County Planning and Community Development Department, 2222 M Street, Merced, California 95340, and at the Main Branch of the Merced County Library located at 2100 O Street, Merced California 95340.

11.1.1 ENVIRONMENTAL SETTING

The Background Report's discussion of the GHG setting describes the statewide and Merced County GHG estimated emission quantities and sources, reductions of GHG emission sources, and the effects of climate change and adaptation. The GHG setting discussion in the Background Report includes:

- **GHG Emission Components.** GHGs are produced from: electricity generation, road transportation, and other energy sources; industrial processes; agriculture, forestry, and other land uses; solid waste disposal; and wastewater treatment and discharge. GHGs include water vapor, carbon dioxide, methane, nitrous oxide (N₂O), Chlorofluorocarbons (CFC), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and black carbon.
- **California GHG Emissions.** California GHG emissions contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility (i.e., electricity production and consumption), transportation, residential, commercial, institutional, and agricultural sectors (ARB 2007 and 2009b). The 1990, 2004, and 2005 estimated California GHG emissions were 426.6, 482.36, and 475.7 million metric tons of CO₂e, respectively (ARB 2007 and 2009b). Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions, accounting for 35, 38, and 39 percent of total GHG emissions in 1990, 2004, and 2005 respectively (ARB 2007 and 2009b).
- **Merced County Baseline GHG Emissions.** Baseline GHG emissions in the unincorporated and total areas of Merced County were developed for 2010 and 2005. These inventories were generally divided into six GHG emission sectors: transportation, natural gas consumption, electricity consumption, urban water and wastewater, solid waste, and agriculture. The 2010 GHG emission inventory includes an additional sector, Area Source, which summarizes emissions from hearths and landscape maintenance equipment. Based on this inventory, in 2010 there were 3.651 million metric tons of CO₂e emitted within Merced County's unincorporated areas, and 6.036 million metric tons of CO₂e emitted within all of Merced County. The 2005 GHG emissions inventory shows there were 3.777 million metric tons of CO₂e emitted in the unincorporated area, and 5.611 million metric tons of CO₂e emitted within all of Merced County. For 2005 and 2010, the greatest contributor to Merced County's unincorporated and total GHG emissions was agriculture. Transportation emissions were the second greatest contributor for both unincorporated area and total GHG emissions in Merced County.

- **Merced County 1990 GHG Emissions.** Merced County’s 1990 emissions levels were estimated from the 2005 countywide inventory to establish the GHG emission reduction targets set by California’s regulations (i.e., Assembly Bill [AB] 32 and Executive Order S-3-05). The estimated 1990 GHG emission levels were 2.26 million metric tons of CO₂e in unincorporated Merced County, and 3.50 million metric tons of CO₂e in all of Merced County.
- **Effects of Climate Change and Adaptation on Merced County.** The potential effects of climate change on Merced County are related to temperature, precipitation, snowpack storage and water supply, extreme weather events, sea level rise, water supply, water quality, and agriculture. There is significant uncertainty associated with predicting county-specific changes for these various climate change-related effects.

The major findings of the Background Report with respect to global climate change are set forth below.

REGULATION OF GREENHOUSE GASES AND CLIMATE CHANGE

- Legislation on the subject of climate change encourages California to become more efficient at how it accommodates growth rather than limit population or economic growth to meet the goals mandated in AB 32.
- The regulatory environment with respect to climate change is dynamic and fast-evolving. Projects evaluated pursuant to CEQA (e.g., General Plans) must now disclose, evaluate, and mitigate climate change impacts.

GREENHOUSE GAS EMISSIONS INVENTORY

- Agricultural activities are the dominant source of GHG emissions within Merced County (69 percent of total 2010 emissions in unincorporated Merced County, and 42 percent of total 2010 countywide emissions, including the incorporated cities).
- Transportation activities are the second leading source of GHG emissions (during 2010, 23 percent in unincorporated Merced County and 39 percent in total Merced County).
- The unincorporated area produces a majority of Merced County’s total emissions (3.6 of 6.0 million tonnes¹ in 2010), as almost all of the agricultural activities are located in unincorporated Merced County. Agricultural emissions represent 2.5 million of the total 6.0 million tonnes of countywide 2010 GHG emissions.
- Combustion of fossil fuel in the transportation sector was the single largest source of California’s GHG emissions averaged over the years 1990 - 2005, accounting for 35 to 39 percent of total GHG emissions in the state (ARB 2007 and 2009b). This sector was followed by the other energy sectors (including both in-state and out-of-state sources) (27 to 23 percent for electricity and heat production) (ARB 2009b).

¹ A metric ton (also known as a “tonne”) is a measurement equal to 1,000,000 grams (or 1,000 kilograms). One tonne converts to 2,204 pounds. By comparison, the standard ton used in the United States (a short ton) is equal to 2,000 pounds. For consistency with international and State of California reporting and regulation of GHG emissions, this Draft PEIR uses “tonnes” in its discussion of greenhouse gases.

- Under 2005 conditions, the county's GHG emissions represented approximately 0.79 and 1.18 percent of total statewide GHG emissions for the unincorporated area and the total county area, respectively. Based on a simplified emissions projection calculation, the county would need to reduce its 2010 emissions by approximately 42.1 percent to achieve the goal of AB 32 (i.e., reduce 2020 emissions to 1990 levels). However, this percent reduction should not be used as an absolute emissions reduction as the simplified calculation does not account for factors such as increased per capita activity (e.g., energy consumption, vehicle activity, waste generation) that would increase Merced County's 2020 GHG emissions, or statewide regulations (e.g., SB 375, SB 107, AB 1493) that would help reduce the county's 2020 GHG emissions.
- Based on changes in levels of human and animal populations, the unincorporated county needs to reduce its 2010 GHG emission levels by 38.1 percent to achieve 1990 levels (Background Report Table 12-7). The substantial increase in 2010 GHG emissions in Merced County from 1990 can be attributed to: (1) the large increase in the cattle and milk cows livestock herds; and (2) the growth in population levels. This approach also does not account for factors such as increased per capita activity (e.g., energy consumption, vehicle activity, waste generation) that would increase Merced County's 2020 GHG emissions.

EFFECTS OF CLIMATE CHANGE AND ADAPTATION

- The California Department of Water Resources (DWR) projects that approximately 50 percent of the statewide snowpack will be lost by the end of the century. Although current forecasts are uncertain, it is evident that this phenomenon could lead to significant challenges in securing an adequate water supply for a growing population.
- Average runoff from melting snowpack is usually about 20 percent of the total annual natural runoff and roughly 35 percent of the total usable annual surface water supply in California. The snowpack is estimated to contribute an average of about 15 million acre-feet (MAF) of runoff each year, about 14 MAF of which is estimated to flow into the Central Valley.
- Based on the results of a variety of regional climate models, it is reasonably foreseeable that some increase in annual average temperatures, in the range of 2 to 5°C (3.6 to 9.0°F), will occur in California, and in Merced County, during the next 100 years.
- Effects of sea level rise, projected to be 50 inches by 2100, could include increased coastal flooding, saltwater intrusion, and disruption of wetlands. Water delivery to the county from sources in the Delta could be adversely affected.
- An increase in annual average temperature could affect the elderly and populations with respiratory conditions within the county.
- Snow is expected to be a smaller part of overall precipitation but will also melt and runoff earlier in the year. This change will occur as overall precipitation will likely increase slightly. These two trends will most likely cause reduced summer flows, reduced summer soil moisture, and increased winter flows and flood potential.
- Flood potential will probably increase if water management strategies remain the same.
- A 15 percent increase in land fallowing is expected to occur under a dry and warm climate scenario. Land fallowing would reduce agricultural productivity and affect the agricultural economy as well as the rural support economies.

11.1.2 REGULATORY SETTING

The Background Report's discussion of GHG regulatory setting includes the following federal, state, and regional regulations:

FEDERAL

- U.S. EPA Final Prevention of Significant Deterioration (PSD)/Title V GHG Tailoring Rule.** The final "GHG Tailoring Rule," released in May 2010, raised the GHG emission thresholds that define when permits are required for new and existing industrial facilities, and created a phased implementation approach. Specifically, facilities must also include GHG requirements in their Clean Air Act permits if they meet the determined emission thresholds.
- Final Mandatory Reporting of GHG Rule.** The Final Mandatory Reporting of GHG Rule administered by the EPA requires large emitters and suppliers of GHGs to collect data, and submit annual reports to EPA. In Merced County, large agricultural operations with manure management systems and other industrial sources will be affected by the new EPA rule.
- N₂O from Bioenergy and Other Biogenic Sources under the PSD and Title V Programs.** In August 2010, the National Alliance of Forest Owners filed a Petition for Reconsideration related to the PSD and Title V GHG Tailoring Rule. On July 20, 2011, the EPA deferred for a period of three years the application of the PSD and Title V permitting requirements to biogenic carbon dioxide (CO₂) emissions from bioenergy and other biogenic stationary sources. Biogenic CO₂ emissions are defined as emissions of CO₂ from a stationary source directly resulting from the combustion or decomposition of biologically-based materials other than fossil fuels and mineral sources of carbon. Examples of biogenic CO₂ emission sources include, but are not limited to: CO₂ generated from the biological decomposition of waste in landfills, wastewater treatment or manure management processes or CO₂ from the combustion of biogas collected from the landfill, wastewater treatment, or manure management sources.

STATE

- Assembly Bill 1493 (2002).** In 2002, the signing of AB 1493 required that ARB develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation. Legal challenges delayed the implementation of AB 1493 by ARB. On June 30, 2009, the EPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles. The federal government will also be adopting California's "Pavley" auto emission standards nationwide, thereby establishing the country's first national auto emissions standard targeting GHGs. In exchange for cooperation from the auto industry, however, both California and President Obama's administration will be implementing the standards on a slower time frame than that originally established by California.
- Assembly Bill 32 (2006), the California Global Warming Solutions Act of 2006.** In September 2006, Governor Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions.

The goal of the legislation is to reduce California's GHG emissions to 2000 levels by 2010 and to 1990 levels by 2020. California's Executive Order S-3-05 creates a long-range goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. Reducing GHG emissions to 1990 levels means cutting approximately 16 percent from business-as-usual emission levels projected for 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. As required under AB 32, ARB approved the 1990 GHG emissions inventory on December 6, 2007, establishing the emissions limit for 2020 as 427 million metric tons CO₂e. ARB also adopted regulations requiring mandatory reporting of GHGs for large facilities on December 6, 2007. All industrial facilities emitting over 25,000 metric tons of CO₂e and any power generation facilities greater than or equal to 1 MW will need to report their GHG emission to ARB, the lead air pollution control agency for the state.

- **Climate Change Scoping Plan.** As required by AB 32, ARB adopted a scoping plan in December 2008 showing how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. In response to litigation and comments on the scoping plan, the ARB Board revised an attachment of the scoping plan and reapproved the scoping plan. The Climate Change Scoping Plan contains the main strategies California will implement to achieve a reduction of 80 million metric tons (MMT) of carbon dioxide equivalent (CO₂e) emissions, or approximately 16 percent, from the state's projected 2020 emission level of 507 MMT of CO₂e under a business-as-usual scenario. The Climate Change Scoping Plan also includes a breakdown of the amount of GHG reductions ARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan includes several strategies to reduce GHG emissions, including the Low Carbon Fuels Standard (LCFS), the Pavley Rule, the Renewable Portfolio Standard, and the Sustainable Communities Strategy. These strategies are discussed more fully in the GHG Technical Appendix.
- **Senate Bill SB 375. Sustainable Communities Strategy.** The Sustainable Communities and Climate Protection Act of 2008 requires that ARB develop regional greenhouse gas emission reduction targets for passenger vehicles. Each of California's Metropolitan Planning Organizations (MPO) then prepare a "sustainable communities strategy" (SCS) that demonstrates how the region will meet its greenhouse gas reduction target through integrated land use, housing, and transportation planning. Once adopted by the MPO, the SCS will be incorporated into that region's federally enforceable Regional Transportation Plan (RTP). ARB's SCS goals for the eight San Joaquin MPOs include a five percent GHG reduction by 2020, and a 10 percent reduction by 2035 (ARB, 2011).
- **Senate Bill SB X1-2.** Signed into law April 12, 2011, SB X1-2 increases California's electricity utility Renewable Portfolio Standard (RPS) from 20 percent by 2010 to 33 percent (of total retail sales) by 2020. It also extends the RPS to public utilities (25 percent of the state's retail load).
- **Senate Bill 97 (2007).** SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. It required the Governor's Office of Planning and Research (OPR) to prepare Amendments to the CEQA Guidelines for GHG emissions. The Amendments became effective on March 18, 2010. The adopted CEQA Guideline Amendments require lead agencies to:

- ✓ Calculate or estimate the amount of GHGs produced by a project using either a quantitative modeling approach or a qualitative approach that includes performance standards,
- ✓ Use one or more of several approaches to determine the significance of emissions, including:
 - ⇒ the amount of the project’s emissions increase over existing conditions,
 - ⇒ the level of emissions compared to a significance threshold, and/or
 - ⇒ project compliance with an existing statewide, regional, or local plan to mitigate GHG emissions.

CALIFORNIA AIR POLLUTION CONTROL OFFICERS ASSOCIATION GUIDANCE

- **California Air Pollution Control Officers Association.** The California Air Pollution Control Officers Association (CAPCOA) has prepared three guidance documents that together describe methods for quantifying GHG emissions and mitigation measures. The first document, “CEQA and Climate Change,” was released in 2008 and describes methods to estimate and mitigate GHG emissions from projects subject to CEQA. This CAPCOA report evaluates several GHG thresholds that could be used to evaluate the significance of a project’s GHG emissions. The second document, “Model Policies for Greenhouse Gases in General Plans,” provides background information, examples, references, links, and a systematic worksheet to help local governments in moving toward GHG considerations in General Plan updates, or in the development of specific Climate Action Plans. In cooperation with the Northeast States for Coordinated Air Use Management and the National Association of Clean Air Agencies, CAPCOA released a third document, “Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures,” in August 2010. The document provides methodologies to quantify project-level mitigation of GHG emissions associated with land use, transportation, energy use, and other related project areas. The mitigation measures quantified in this document generally correspond to measures previously discussed in CAPCOA’s earlier reports.

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

- **San Joaquin Valley Air Pollution Control District (SJVAPCD).** The SJVAPCD is the regional air quality management agency in the Central Valley, and the agency with air permitting authority in Merced County. On December 17, 2009, the SJVAPCD adopted guidance for assessing and reducing the impacts of project-specific GHG emissions on global climate change: *Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*. It also adopted the policy: *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project-specific GHG emissions on global climate change during the environmental review process, as required by CEQA. The use of BPS is a method of streamlining the CEQA process of determining significance, and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less-than-cumulatively-significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions from business-as-usual is required to determine that a project would have a less-than-cumulatively-significant impact. The guidance does not

limit a lead agency's authority in establishing its own process and guidance for determining significance of project-related impacts on global climate change. (SJVAPCD 2009)

11.2 ENVIRONMENTAL EFFECTS

The analysis examines whether the proposed 2030 General Plan would result in a significant increase in GHG emissions.

11.2.1 SIGNIFICANCE CRITERIA

State CEQA Guidelines Section 15064.4 addresses the approach for evaluating the significance of a project's GHG emissions. Those guidelines recommend that a lead agency use a model or models to estimate a project's GHG emissions, and then determine whether those emissions exceed a threshold that the lead agency determines to be significant. State CEQA Guidelines §15064.7(c) states that when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts.

The determination as to whether the 2030 General Plan's GHG emissions are significant is based on significance thresholds adopted by the SJVAPCD. SJVAPCD has developed its thresholds using GHG emission reduction goals included in the ARB's GHG Scoping Plan (California Air Resources Board, 2008). The foundation of ARB's Scoping Plan is a set of measures that will cut GHG emissions by 29 percent by 2020 as compared to business as usual (BAU).

To identify whether a significant GHG impact would occur, SJVAPCD has developed an approach for individual projects that mirrors ARB's Scoping Plan. SJVAPCD requires that two emission scenarios be compared for the year 2020. These scenarios include a BAU scenario and a project scenario. If the project scenario reduces GHG emissions by at least 29 percent, then GHG impacts are considered less than significant (SJVAPCD, undated). If the project scenario does not achieve at least a 29 percent reduction when compared to the BAU scenario, then GHG emissions are considered significant.

SJVAPCD defines BAU as the 2020 emissions that would occur without the GHG reduction measures included in ARB's Scoping Plan, and without GHG reductions that would result as part of the project. For this analysis, the project includes policies in the 2030 General Plan that would encourage or require GHG reductions.

11.2.2 ANALYSIS METHODOLOGY

A detailed description of the GHG emission estimation methodologies is available in Appendix E, *Merced County 2005, 2020, and 2030 GHG Technical Methods Appendix*, of this Draft PEIR. Separate methodologies were used to estimate GHG emissions for each emission category: transportation, area sources, electricity, natural gas, water and wastewater, solid waste, and agriculture. The methodologies are based on emission factors and mitigation efficiencies developed by the U.S. Environmental Protection Agency, the California Air Resources Board, the California Climate Action Registry, the San Joaquin Valley Air Pollution Control District, and the California Air Pollution Control Officers Association.

The first step involved estimating 2005 GHG baseline emissions for unincorporated Merced County. Estimates were made using 2005 activity data and GHG emission factors per unit of activity data.

The second step involved estimating 2020 BAU and 2030 BAU GHG emissions. These emissions were estimated using 2020 and 2030 activity data, but using the same emission factors per unit of activity data that were used for the 2005 baseline emissions.

The third step involved estimating 2020 and 2030 project GHG emissions for unincorporated Merced County. These emissions were estimated using 2020 and 2030 activity data, but using emission factors specific to the respective years. Unlike the 2020 and 2030 BAU estimates, the project 2020 and 2030 GHG emissions account for emission reduction programs included in or resulting from ARB's Climate Change Scoping Plan (ARB, 2008). These include ARB's Low Carbon Fuels Standard (LCFS), the Pavley Rule, the Sustainable Communities Strategy, and the Renewable Energy Portfolio Standards (ARB, 2010; PG&E, 2011). In addition, GHG emission reductions attributable to the 2030 General Plan were included in the project emission estimates.

Calculations of the effectiveness of state requirements and mitigation measures identified in this Draft PEIR in reducing GHG emissions are documented in Appendix E, *Merced County 2005, 2020, and 2030 Greenhouse Gas Emissions Technical Methods Appendix*, of this Draft PEIR. Please refer to this appendix for an in-depth discussion of the assumptions used and the resulting reductions in emissions.

11.2.3 ENVIRONMENTAL IMPACTS

The following discussion examines the potential impacts of the proposed 2030 General Plan based on the impact threshold criterion described above.

Impact GHG-1: Increase in GHG emissions associated with 2030 General Plan buildout.

Implementation of the 2030 General Plan would increase urban development, and increase the number or amount of scattered rural residential uses, confined animal facilities, agricultural industrial uses, and surface mining activities. All of these uses would generate increased amounts of GHG emissions. This would be a potentially significant impact.

Table 11-1 shows unincorporated Merced County's 2005 emissions, and compares them to 2020 and 2030 emissions under business as usual (BAU) conditions. In all three years, agricultural emissions constitute the largest GHG category, while transportation represents the second largest category.

The 2020 BAU emissions of 5,710,459 metric tons of CO₂e would need to be reduced by 29 percent, which equals 1.66 million metric tons. This amount exceeds the combined 2020 BAU GHG emissions from area sources, electricity, natural gas, water and wastewater, and solid waste. Consequently, the bulk of Merced County's GHG emission reductions must come from its two largest emission categories: transportation and agriculture.

Table 11-1 Comparison of Unincorporated Merced County’s GHG Emissions for Baseline Conditions (2005) and Business as Usual 2020 and 2030 Conditions

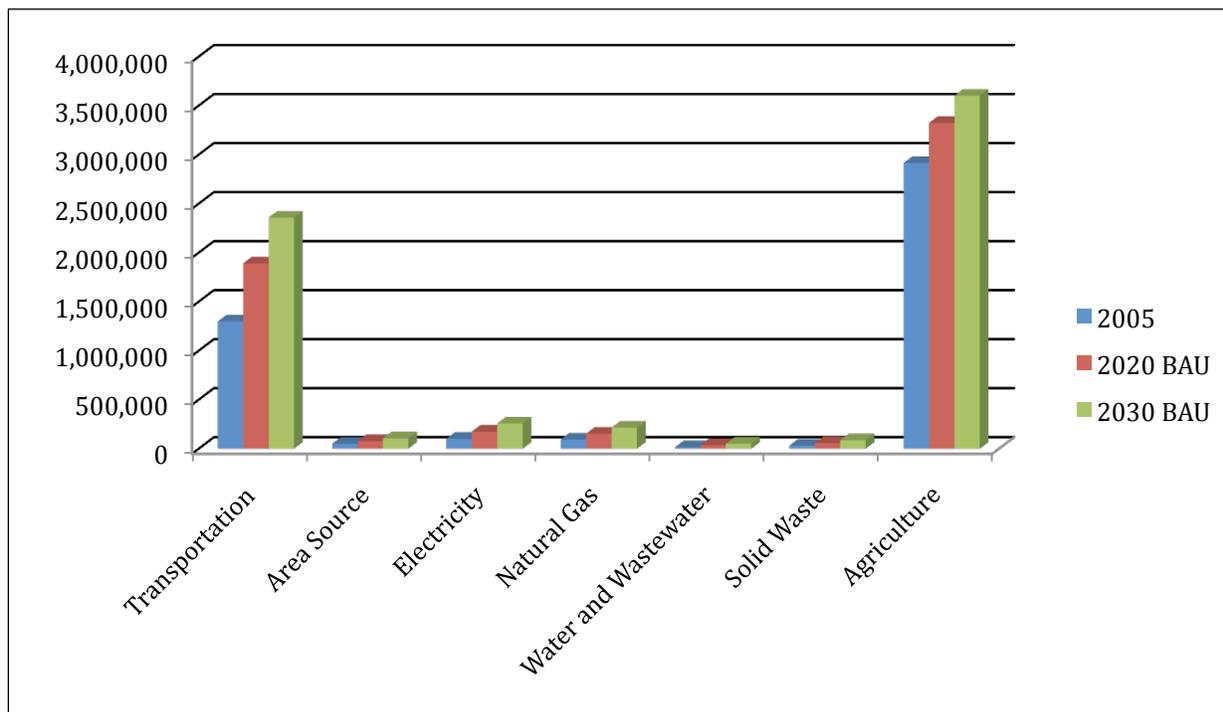
Emission Category	2005 CO ₂ e (metric tpy)	2020 BAU CO ₂ e (metric tpy)	2030 BAU CO ₂ e (metric tpy)
Transportation	1,297,634	1,891,148	2,356,991
Area Source	49,345	76,396	105,270
Electricity	100,978	174,234	256,869
Natural Gas	93,534	152,317	214,322
Water and Wastewater	15,601	36,359	50,059
Solid Waste	30,151	56,754	86,721
Agriculture	2,913,941	3,323,252	3,601,216
Total	4,501,184	5,710,459	6,671,448

Source: URS Corporation, 2012.

Figure 11-1 compares 2005 baseline GHG emissions in unincorporated Merced County to 2020 BAU and 2030 BAU emissions. As Figure 11-1 shows, the transportation and agricultural categories constitute the majority of Merced County’s GHG emissions.

Figure 11-1

Comparison of Unincorporated Merced County GHG Emissions for 2005, 2020 BAU, and 2030 BAU



Source: URS Corporation, 2012.

Table 11-2 compares 2020 BAU CO₂e emissions to 2020 project CO₂e emissions, while Table 11-3 compares 2030 BAU CO₂e emissions to 2030 project emissions. Both the 2020 and 2030 project emissions include the state-mandated transportation and electricity mitigation measures that have

been programmed into or that support the ARB's GHG Scoping Plan. These include the Low Carbon Fuels Standard (LCFS), the Pavley Rule, the Sustainable Communities Strategy, and the California Renewables Portfolio Standard (SB X1-2). The project emissions shown in Tables 11-2 and 11-3 also include emission reductions that would result from policies included in 2030 General Plan. Those policies are summarized in Table 11-4.

In 2020, Merced County's project GHG emissions would be 10.6 percent lower than 2020 BAU emissions (see Table 11-2). In 2030, project GHG emissions would be 15.7 percent lower than 2030 BAU emissions (see Table 11-3).

Table 11-2 Comparison of Unincorporated Merced County 2020 BAU GHG Emissions to Project Emissions

Emission Category	2020 BAU CO ₂ e (metric tons/year)	2020 Project CO ₂ e (metric tons/year)	Percent Reduction from 2020 BAU
Transportation	1,891,148	1,465,102	22.5%
Area Source	76,396	76,396	0.0%
Electricity	174,234	92,957	46.6%
Natural Gas	152,317	136,780	10.2%
Water and Wastewater	36,359	21,601	40.6%
Solid Waste	56,754	56,754	0.0%
Agriculture	3,323,252	3,256,160	2.0%
Total	5,710,459	5,105,750	10.6%

Source: URS Corporation, 2012.

Table 11-3 Comparison of 2030 Operational BAU GHG Emissions to Project Emissions

Emission Category	2030 BAU CO ₂ e (metric tons/year)	2030 Project CO ₂ e (metric tons/year)	Percent Reduction from 2030 BAU
Transportation	2,356,991	1,633,445	30.7%
Area Source	105,270	105,270	0.0%
Electricity	256,869	131,092	49.0%
Natural Gas	214,322	184,102	14.1%
Water and Wastewater	50,059	29,741	40.6%
Solid Waste	86,721	86,721	0.0%
Agriculture	3,601,216	3,452,992	4.1%
Total	6,671,448	5,623,364	15.7%

Source: URS Corporation, 2012.

Table 11-4 lists the 2030 General Plan policies that would encourage GHG emission reductions. The goals and policies listed in Table 11-4 are an important part of reducing GHG emissions in unincorporated Merced County. The emission reduction potential of the policies listed in Table 11-4 was evaluated by reviewing several sources. These sources included reports and planning documents issued by the California Air Pollution Control Officers Association, and by several counties (CAPCOA, 2009a; CAPCOA, 2009b; Yolo County, 2010; Sutter County, 2010; Tulare

County, 2010; Solano County, 2008; Kings County, 2010, Madera County, 2010; San Bernardino County, 2011).

Table 11-4 Merced County 2030 General Plan Goals and Policies Relating to GHG Emissions		
Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Agricultural Element		
Policy AG-4.7 Methane Sequestration	Support efforts of local dairies and the SJVAPCD to develop standards and programs for the sequestration of methane gas to reduce GHG emissions, and odors, and to provide a source of clean, efficient, and cheap electricity and natural gas.)	States the County’s support of methane sequestration (including digesters) to reduce GHG emissions and to adapt to climate change.
Air Quality Element		
Goal AQ-1	Reduce air pollutants and GHG emissions and anticipate adaptation to future consequences of global and local climate change	States the County’s goal to reduce GHG emissions and to adapt to climate change.
Policy AQ-1.1: Energy Consumption Reduction	Encourage new residential, commercial, and industrial development to reduce air quality impacts from energy consumption	Encourages GHG reductions through reduced energy use in land use development.
Policy AQ-1.2: Business Energy Reduction Strategies	Encourage all businesses to: replace high mileage vehicles with more efficient and/or alternative fuel vehicles; increase the energy efficiency of facilities; transition toward the use of renewable energy instead of non-renewable energy sources; adopt purchasing practices that promote emission reductions and reusable materials; and increase recycling.	Would reduce GHG emissions by encouraging energy efficiency and reuse and recycle.
Policy AQ-1.3: Agricultural Operations Emission Reduction Strategies	Promote GHG emission reductions by encouraging agricultural operators to use carbon efficient farming methods (e.g., no-till farming, crop rotation, cover cropping); install renewable energy technologies; protect grasslands; open space, oak woodlands, riparian forest and farmlands from conversion to other uses; and develop energy-efficient structures.	Would reduce GHG emissions by promoting carbon efficient agricultural practices.
Policy AQ-1.4: Methane Digestors	Encourage large dairies to capture methane through the use of manure digester systems to generate an alternative source of energy, reduce GHG emissions, and serve as a source of profit for agricultural operations.	Would reduce GHG emissions by encouraging methane digesters for agricultural operations.
Policy AQ-1.5: Climate Action Plan	Prepare a Climate Action Plan that includes an inventory of 1990 and 2010 GHG emissions, determines project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD, and identify strategies to achieve State emission reduction targets.	Encourages GHG reductions through preparation of a comprehensive Climate Action Plan.

Table 11-4 Merced County 2030 General Plan Goals and Policies Relating to GHG Emissions

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy AQ-1.6: Air Quality Improvement	Support and implement programs to improve air quality throughout the County by reducing emissions related to vehicular travel and agricultural practices.	Encourages and supports programs that would reduce GHGs associated with vehicle travel and agriculture.
Policy AQ-1.7: Heat Island Effect Reduction	Require tree canopy and reflective surface materials in order to reduce the heat island effect (i.e., increased temperatures due to heat radiation off paved surfaces and rooftops.) This includes: a) Preserving agricultural lands, wildlife habitat and corridors, wetlands, watersheds, groundwater recharge areas, and other open space that provide carbon sequestration benefits; b) Establishing a mitigation program for development of those types of open space that provide carbon sequestration benefits; c) Requiring like-kind replacement for, or impose mitigation fees on, land development that results in the loss of carbon sequestering open space; and d) Using mitigation funds generated to protect existing open space.	Encourages carbon sequestration.
Policy AQ-1.8: Climate Change Adaptation	Prepare appropriate strategies to adapt to climate change based on peer-reviewed scientific findings of the potential impacts.	Encourages climate change adaptation strategies.
Policy AQ-1.9: Interagency Coordination	Coordinate with cities, regional, State, and Federal agencies and organizations to collaborate on a comprehensive approach to planning for climate change.	Encourages cooperation on climate change with other agencies.
Policy AQ-1.10: Public Awareness	Increase public awareness about climate change and encourage county residences and businesses to become involved in activities and lifestyle changes that will aid in reduction of GHG emissions.	Encourages increased public awareness and participation in issues associated with climate change
Land Use Element		
Goal LU-5.A	Preserve and enhance the character of Merced County by focusing future unincorporated development towards Urban Communities.	Smart growth and jobs/housing balance policies work to reduce vehicle miles traveled and thereby reduce GHG emissions.

Table 11-4 Merced County 2030 General Plan Goals and Policies Relating to GHG Emissions		
Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy LU-5.A.5 Smart Growth	Promote the principles of smart growth in Community Plans for each Urban Community, including: a) creating walkable neighborhoods, b) providing a mix of residential densities, c) creating a strong sense of place, d) mixing land uses, e) directing growth toward existing communities, f) building compactly, g) discouraging sprawl, h) encouraging infill, i) preserving open space, and j) creating a range of housing opportunities and choices.	Encourages smart growth principles that will reduce vehicle trips and associated GHG emissions.
Policy LU-5.A.6 Jobs/Housing Balance	Promote a jobs/housing balance by encouraging residential development near employment centers when preparing new or updating existing Community Plans and providing adequate land for employment generating land use.	Encourages jobs/housing balance that reduces trips and associated GHG emissions.
Goal LU-9	Support and promote energy efficiency through innovative building design and land use patterns.	Several energy efficiency policies will help reduce the consumption of natural gas and electricity from new and existing structures.
Policy LU-9.1: Solar Access	Require new residential subdivision lots and new commercial, office, industrial, and public buildings to be oriented and landscaped to enhance natural lighting and solar access in order to maximize energy efficiency.	Requires solar orientation of buildings, which will reduce GHG emissions.
Policy LU-9.2: Sustainable Building Practices	Promote sustainable building practices, including the requirements of Title 24 of the California Administrative Code.	Encourages sustainable building practices and Title 24 compliance.
Policy LU-9.3: Energy Retrofits	Promote the retrofitting of existing buildings with new and innovative energy and water efficiency technologies.	Encourages building retrofits that will reduce GHG emissions.
Policy LU-9.4: Green Building Standard	Require all new County buildings be constructed to green building standards and all existing County buildings to be retrofitted with energy efficiency technologies.	Requires that new County buildings meet Green building standards, which will reduce GHG emissions.
Policy LU-9.5: Energy Conservation Standards for New Construction	Cooperate with the local building industry, utilities, and air district to promote enhanced energy conservation standards for new construction.	Requires cooperation to encourage building energy conservation, which will reduce GHG emissions.
Natural Resources Element		
Goal NR-2	Provide adequate and efficient energy supplies by increasing renewable energy production and energy conservation.	Several policies will encourage energy efficiency and thereby reduce GHG emissions.
Policy NR-2.1: Renewable Energy Use	Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.	Encourages use of renewable energy, which will reduce GHG emissions.
Policy NR-2.2: Clean Alternative Energy Requirement	Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).	Encourages electricity providers to use alternative energy, which will reduce GHG emissions.

Table 11-4 Merced County 2030 General Plan Goals and Policies Relating to GHG Emissions

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy NR-2.3: Biomass-to-Energy Production	Encourage the use of biomass facilities to capture untapped local energy sources from dairies, farmland, and other industrial sources.	Encourages use of biomass facilities, which will reduce GHG emissions.
Policy NR-2.4: Solar Power	Encourage on-site solar power use in residential, commercial, and industrial buildings, and utility-scale solar power projects in rural locations that do not harm long-term agricultural productivity and habitat values consistent with Policy AG-3.11.	Encourages on-site solar power, which will reduce GHG emissions.
Policy NR-2.5: Legislative Advocacy	Actively monitor, review, comment, and advocate for the purposes of furthering alternative energy sources on pending major State and federal legislation, executive orders, and SJVAPCD rulemaking that may have an impact on the development of alternative energy sources in Merced County.	Encourages alternative energy advocacy to promote alternative energy, which could reduce GHG emissions.
Policy NR-2.7: Residential Rehabilitation and Improvement.	Encourage the rehabilitation and improvement of existing single-family and multi-family units to achieve greater energy efficiency.	Encourages residential rehab to increase energy efficiency and reduce GHG emissions.
Policy NR-2.8: Energy Efficient County Facilities	Replace existing traffic lights, street lights, and other electrical uses with energy efficient bulbs and appliances in the course of ongoing maintenance/replacement as funding permits.	Encourages energy efficient lighting, which will reduce GHG emissions.
Policy NR-2.9: Energy Conservation	Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind and solar).	Encourages energy conservation and use of alternative energy sources, both of which will reduce GHG emissions.
Policy NR-2.10: Efficiency Education	Work with energy providers to educate the public about energy efficiency, water conservation, and other GHG reduction measures.	Encourages energy efficiency education, which will lead to GHG emission reductions.
Policy NR-2.11: Energy-Efficiency Focused Design	Encourage the use of energy-efficiency design features such as site orientation, light colored building materials, and tree canopies.	Encourages energy efficient design, which will reduce energy use and GHG emissions.
Policy NR-2.12: Green Practices Education	Encourage recycling, composting, source reduction, and education efforts throughout the County for residents, businesses, industries, institutions, and construction.	Encourages a number of green building principles, which will reduce energy use and GHG emissions.
Circulation Element		
Goal CIR-1	Maintain an efficient roadway system for the movement of people and goods that enhances the physical, economic, and social environment while being safe, efficient, and cost-effective.	These policies encourage a more efficiency circulation system that will reduce GHGs from mobile sources.

Table 11-4 Merced County 2030 General Plan Goals and Policies Relating to GHG Emissions

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy CIR-1.2: Efficient Transportation Network	Encourage land use patterns that promote shorter travel distances between residences and employments centers within Merced County, allow for non-auto travel, prove traffic-calming on local roadways, and promote the efficient expansion and maintenance of transportation-related infrastructure.	Encourages land use development that reduces the number of trips and trip lengths, which will reduce GHG emissions.
Policy CIR-1.3: Transportation Efficiency	Encourage transportation programs that result in more efficient energy use, reduce GHG emissions and noise levels, and improve air quality.	Encourages transportation programs that reduce GHG emissions.

Source: Merced County, 2011; Planning Partners 2012.

Transportation emissions would be reduced by 22.5 percent in 2020 and 30.7 percent in 2030 when compared to BAU conditions. Two of the policies listed in the 2030 General Plan's circulation element, CIR-1.2 and CIR-1.3, would reduce vehicle miles traveled (VMT) and resulting GHG emissions. The transportation study conducted for this program estimated VMT reductions of 0.2 percent in 2020 and 0.3 percent in 2030 (KD Anderson, 2011). These percentages were used to calculate project transportation GHG emissions associated with the 2030 General Plan policies. These reductions were taken on top of the transportation emission reductions that would result from the ARB's Low Carbon Fuel Standard, Pavley Rule, and the Sustainable Communities Strategy.

Electricity emissions would be reduced by 46.6 percent in 2020 and 49 percent by 2030 when compared to BAU conditions. These reductions are the result of California's Renewable Portfolio Standard, which requires that by 2020, all electric utilities generate 33 percent of their electricity using renewable resources. The project electricity emissions also assume that there would be a 10.2 percent reduction in average building electricity use by 2020, and a 14.1 percent reduction in building energy use by 2030 (see Appendix E, *GHG Technical Methods Appendix* for additional details). These percentages are based on assumptions used to support several of the 2030 General Plan policies, including Policies LU-9.1 through LU-9.5, NR-2.4, and NR-2.9 (see Table 11-4).

Natural gas emissions would be reduced by 10.2 percent in 2020 and by 14.1 percent in 2030. These reductions are associated with reduced average energy use in buildings, and are based on the assumptions used to support several of 2030 General Plan policies, including policies LU-9.1 through LU-9.5, NR-2.4, and NR-2.9 (see Table 11-4).

Water and wastewater related energy use would be reduced by 40.6 percent in 2020 and 2030. These reductions are the result of California's Renewable Portfolio Standard, which requires that by 2020, all electric utilities generate 33 percent of their electricity using renewable resources.

Agricultural emissions include four categories: livestock, agricultural equipment, fertilizers, and water pumping. For 2020 and 2030 project livestock emissions, the estimates assume a five percent reduction in emissions associated with dairy cattle manure emissions by 2020, and a 10 percent reduction by 2030. These reductions would not apply to non-dairy GHG emissions generated by

beef cattle, steers, poultry, goats, hogs, sheep, or lambs. The mitigated emission percentages are based on an estimate of the maximum percentage of methane capture likely to be achieved as a result of 2030 General Plan Policy AQ-1.4 (see Table 11-4) and Mitigation Measures GHG-1d through GHG-1g. For agricultural equipment, fertilizers, and water pumping, no GHG reductions are assumed to result from the 2030 General Plan policies.

A significant impact is defined as one where the 2020 project emissions are not at least 29 percent lower than 2020 BAU emissions. As shown in Table 11-2, GHG reductions resulting from the combination of 2030 General Plan policies and the regulations resulting from ARB's Scoping Plan will not reduce Merced County's emissions enough to meet the 29 percent reduction significance threshold. Therefore, unincorporated Merced County's project GHG emissions in 2020 would represent a significant GHG emissions impact.

Table 11-5 summarizes 2020 and 2030 BAU and mitigated emissions. The mitigated emission scenarios include reductions associated with state GHG reduction programs, 2030 General Plan policies, and the new policies described in Mitigation Measures GHG-1a through GHG-1g.

The mitigation measures described below, combined with the mitigation measures included in ARB's Scoping Plan, would reduce 2020 GHG emissions by 12.4 percent as compared to 2020 BAU emissions. This reduction is less than the SJVAPCD's 29 percent significance threshold. Similarly, the mitigation measures would reduce 2030 GHG emissions by 17.6 percent as compared to 2030 BAU emissions, which also is less than the 29 percent threshold.

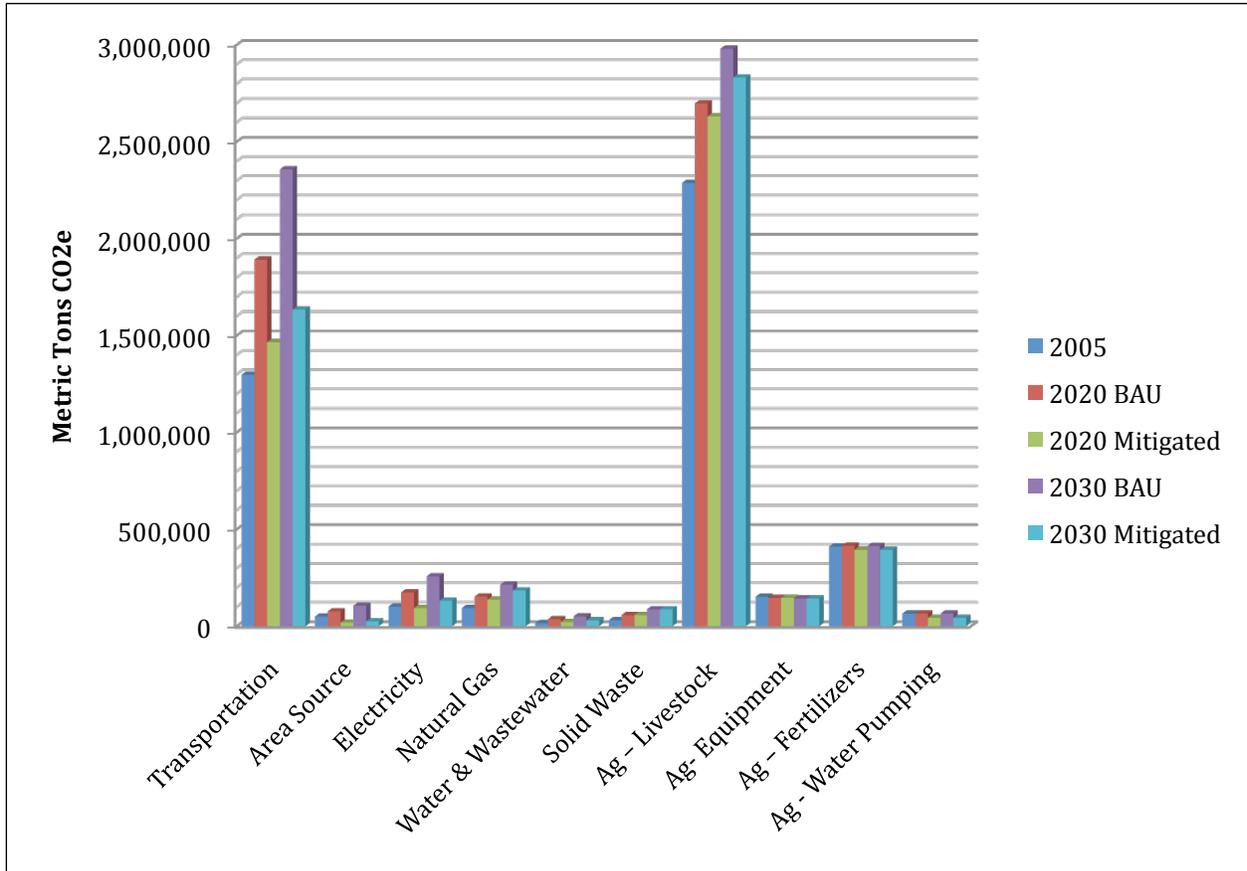
Emission Source Category	2005	2020 BAU	2020 Mitigated	2030 BAU	2030 Mitigated
Transportation	1,297,634	1,891,148	1,465,102	2,356,991	1,633,445
Area Source	49,345	76,396	17,892	105,270	24,658
Electricity	100,978	174,234	92,957	256,869	131,092
Natural Gas	93,534	152,317	136,780	214,322	184,102
Water & Wastewater	15,601	36,359	21,601	50,059	29,741
Solid Waste	30,151	56,754	56,754	86,721	86,721
Ag – Livestock	2,287,166	2,697,604	2,630,511	2,979,833	2,831,609
Ag- Equipment	151,214	145,651	145,651	142,148	142,148
Ag – Fertilizers	410,699	414,532	393,805	413,873	393,179
Ag - Water Pumping	64,861	65,466	42,814	65,362	42,745
Total	4,501,184	5,710,459	5,003,867	6,671,448	5,499,442
Percent Reduction from BAU			12.4%		17.6%

Source: URS Corporation, 2012.

Figure 11-2 illustrates the emissions itemized by category while Figure 11-3 compares the total emissions for each scenario.

Figure 11-2

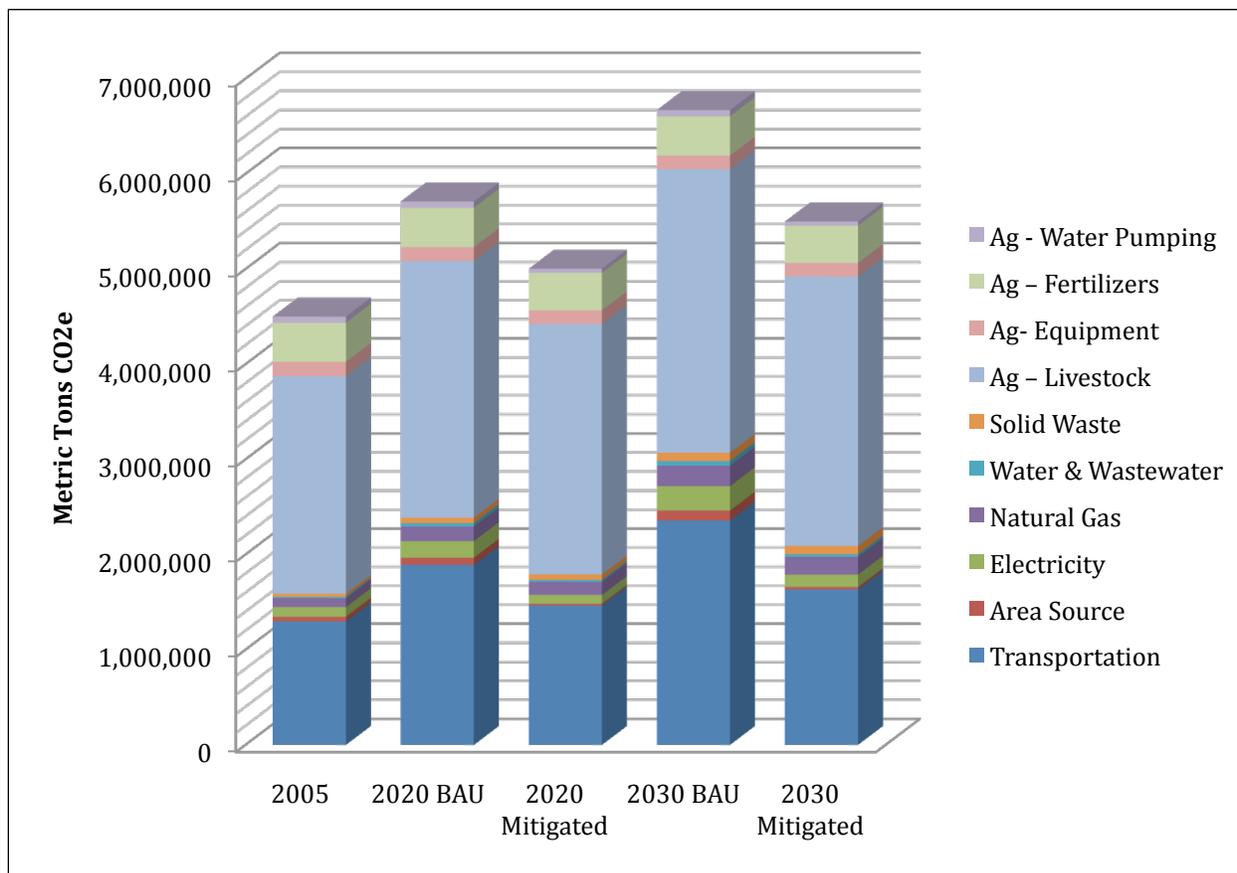
Comparison of Unincorporated Merced County GHG Emissions by Emission Category



Source: URS Corporation, 2012.

Figure 11-3

Comparison of Unincorporated Merced County Emissions by Scenario



Source: URS Corporation, 2012.

Significance of Impact: Potentially significant.

Calculations of the effectiveness of the following mitigation measures in reducing GHG emissions are documented in Appendix E, *Merced County 2005, 2020, and 2030 Greenhouse Gas Emissions Technical Methods Appendix*, of this EIR. Please refer to this appendix for a discussion of the assumptions used and the resulting reductions in emissions.

Mitigation Measure GHG-1a:

Implement Mitigation Measure AQ-3b: Add Policy AQ-6.6: Prohibition on Wood Stoves.

Mitigation Measure GHG-1b:

Implement Mitigation Measure AQ-3c: Add Policy AQ-6-7: Stove Replacement.

For Mitigation Measures GHG-1a and GHG-1b, the emission estimates assume that 50 percent of existing wood stove owners would switch to natural gas stoves by 2020 and that 75 percent of wood stove owners would switch to natural gas by 2030. In addition, the mitigated area source estimates assume that 90 percent of new residences in 2020 would use natural gas stoves in lieu of wood stoves and that 100 percent of new residences in 2030 would use natural gas stoves.

Mitigation Measure GHG-1c:

Add the following policy:

Policy AG-5.5: Fertilizer Application

Work with agricultural organizations to provide an outreach program to inform Merced County farmers about ways to reduce nitrogen fertilizer while minimizing effects on crop yield.

Implementation of Mitigation Measure GHG-1c assumes that fertilizer application would reduce N₂O emissions by five percent from 2005 levels by 2020 and 2030.

Mitigation Measure GHG-1d:

Add the following policy:

Policy AG-5.6: Agricultural Pump Energy Use

Work with Merced County agricultural organizations to develop an outreach program to encourage farmers to improve the efficiency of their irrigation pumps.

In Merced County, diesel and electric irrigation pumps are used to pump groundwater from agricultural wells and to return irrigation tail water for reuse in fields. This measure is assumed to reduce agricultural pumping emissions by 10 percent by 2020 and 2030.

Mitigation Measure GHG-1e:

Add the following policy:

Policy AQ-1.12: Dairy Digester Permit Streamlining

For existing dairy operations that are consistent with all permit requirements, including those issued by Merced County, the Central Valley Regional Water Quality Control Board, and the San Joaquin Valley Air Pollution Control District, amend the Zoning Ordinance and Animal Confinement Ordinance to permit digesters using on-farm feedstocks via Plot Plan Review. Proponents of digester projects using this process shall demonstrate that the digester is consistent with the RWQCB General Order for On-Farm Digesters (or any successor regulation) process, and that all needed SJVAPCD approvals necessary to construct and operate the digester have been obtained. No feature of this policy shall permit the expansion of any dairy herd or construction of other dairy facilities without compliance with all Zoning Code and Animal Confinement Ordinance requirements governing such uses.

Mitigation Measure GHG-1f:

Add the following policy:

Policy AQ-1.13: Methane Digester Policy

Cooperate with federal, state, and regional agencies to establish programs to encourage and provide incentives for the installation and operation of methane digesters.

Mitigation Measure GHG-1g:

Add the following policy:

Policy AQ-1.14: Methane Digester Funding

Use a wide range of funding mechanisms to establish a revolving low-interest loan program to provide funding for the construction of methane digesters, including obtaining available state and federal energy efficiency grants.

For 2020 and 2030 project livestock emissions, the estimates assume a five percent reduction in emissions associated with dairy cattle manure emissions by 2020, and a 10 percent reduction by 2030. The mitigated emission percentages are based on an estimate of the maximum percentage of methane capture likely to be achieved as a result of 2030 General Plan Policy AQ-1.4 (see Table 11.4) and Mitigation Measures GHG-1e – GHG-1g.

Environmental Effects of Measures: Because this mitigation measure would apply only to developed uses and activities, including existing agricultural activities, there would be no additional impacts beyond those identified in Chapters 5 through 22 of this Draft PEIR.

Level of Significance After Mitigation: Significant and unavoidable.

The mitigation measures described above combined with the mitigation measures included in ARB's Scoping Plan would reduce 2020 GHG emissions by 12.4 percent as compared to 2020 BAU emissions. This reduction is less than the SJVAPCD's 29 percent significance threshold. Similarly, the mitigation measures would reduce 2030 GHG emissions by 17.6 percent as compared to 2030 BAU emissions, which also is less than the 29 percent threshold. Because mitigated project emissions would not reduce emissions below the SJVAPCD significance standard, even with mitigation the project's GHG emissions would be significant and unavoidable.

Impact GHG-2: Increase in GHG emissions that would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Implementation of the 2030 General Plan may be inconsistent with ARB's Climate Change Scoping Plan. This would be a potentially significant impact.

ARB's Climate Change Scoping Plan represents the primary plan to reduce GHG emissions throughout California. This Plan is designed to reduce California's statewide 2020 GHG emissions by 29 percent as compared to the 2020 BAU scenario (California Air Resources Board, 2008).

Sources of potential GHG emissions reductions programs include model policies described by CAPCOA (*Model Policies for Greenhouse Gases in General Plans*) and reductions measures set forth by the SJVAPCD (*Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* and *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*). These sources of policy have been used in the development of the 2030 General Plan policies presented in Table 11-4. Additionally, Mitigation Measures GHG-1a through GHG-1g expand upon the proposed policies of the 2030 General Plan.

However, these policies and measures are directed primarily to reducing the emissions of urban development and transportation by improving the efficiency of land use and transportation systems, and reducing the energy requirements of structures and necessary to provide urban services. As set forth under Impact GHG-1, GHG emissions from urban sources, including those generated by the utilities necessary to serve such development make up a relatively small portion of the emissions inventories for 2005, 2020, and 2030. Within Merced County, the agricultural sector is the largest source of GHG emissions, accounting for over 64 percent of emissions within the unincorporated county in 2005 and 54 percent in 2030 under business-as-usual conditions. As shown in Table 11-5, even the major reductions in GHG emissions mandated by the State of California for transportation and electricity generation sources, coupled with the policies of the 2030 General Plan and mitigation measures identified in this Draft PEIR, would be insufficient to reduce 2020 and 2030 Merced County GHG emissions below Scoping Plan standards.

As described under Impact GHG-1, the General Plan's 2020 and 2030 mitigated emissions (described above under the Impact GHG-1 discussion) would be less than 29 percent below 2020 and 2030 BAU emission scenarios. Since emission reductions would be less than the 29 percent emissions reduction goal within unincorporated Merced County, the 2030 General Plan would not be consistent with California's Climate Change Scoping Plan. This would be a potentially significant impact.

Impact: Potentially significant.

Mitigation Measure GHG-2:

Implement Mitigation Measures GHG-1a through GHG-1g.

Significance After Mitigation: Significant and unavoidable.

No mitigation is available beyond implementation of 2030 General Plan policies and Mitigation Measures GHG-1a through GHG-1g. Because GHG emissions, even with implementation of policies and the identified mitigation measures, would fail to meet reductions goals, this impact would be significant and unavoidable.