3 STRATEGIES AND MEASURES

FIVE STRATEGIES

This chapter defines the strategies and measures to be implemented by Yolo County to achieve its climate protection goals over the next two decades.

The Climate Action Plan (CAP) builds upon Yolo County's strong tradition of stewardship and sustainable planning. The 2030 Countywide General Plan contains numerous policies that provide direction to achieve sustainable development, reduce vehicle emissions, use energy and water more efficiently, reduce waste, and protect and improve agriculture and natural landscapes. The measures and actions within the CAP define the specific steps necessary to implement the General Plan's vision.

The measures and actions also reflect existing greenhouse gas (GHG) reduction programs and activities within the county. The CAP aims to support these successes and, when appropriate, expand upon them.

The measures and actions are grouped into the following five strategies:

Agriculture

Transportation and Land Use

Building Energy

Solid Waste and Wastewater

Adaptation

Agriculture: Agriculture measures aim to reduce GHG emissions associated with nitrogen fertilizer application and the use of fossil fuels in field equipment and irrigation pumping. The agriculture strategy also presents measures and actions to "sequester" or store carbon in agricultural and natural landscapes.

Transportation and Land Use: The transportation and land use measures implement General Plan Land Use and Circulation policies. These measures promote sustainable development patterns and investments in alternative transportation to reduce vehicle travel and associated emissions.

Building Energy: Building energy measures are designed to increase energy and water efficiency in existing buildings, enhance energy and water performance in new construction, and encourage installation of building-scale renewable energy systems. This strategy also proposes a community choice aggregation program that would increase the ability for residents and businesses to purchase low and carbon-free electricity from a variety of energy providers.

Solid Waste and Wastewater: This strategy presents one measure related to the reduction of solid waste emissions. The

measure calls for increasing the efficiency of the methane control system at the County landfill. Supporting measures include increasing or expanding the diversion of organic wastes, and construction and demolition wastes from disposal, as well as increased recycling services in the county.

The strategy also provides supporting measures that address emissions resulting from the treatment and conveyance of sewage and storm water. Methane control systems and low-impact development techniques that treat storm water on-site are the primary approaches.

Adaptation: Adaptation describes how the County plans to address the potential effects of climate change on the existing and planned environment. These measures direct the County to incorporate strategies into existing plans, and to develop new documents where appropriate, to ensure that Yolo County remains responsive to the challenges created by climate change. Specific attention is given to impacts related to agriculture, water resources, sea level rise, wildfires, and public health.

Reduction Measures

The CAP contains 15 primary measures that will help the community achieve GHG reductions and successfully adapt to climate change. To ensure implementation of these measures, specific action steps, performance targets, responsible parties, timeframes, and estimates of emission reduction potential are provided (see page 24 for more detail regarding measure content).

The measures are not meant to be an exhaustive list of all possible ways to reduce GHG emissions and respond to climate change, but are instead a coordinated plan of those actions determined to be most effective and appropriate within the community. These measures were selected based on four criteria: (1) feasibility, (2) emission reduction potential, (3) potential costs and savings, and (4) community co-benefits. These criteria are further described below:

Primary and Supporting Reduction Measures

Primary Measures: The CAP contains 15 primary measures that the County will rely on to achieve GHG reduction and adaptation goals. The CAP defines specific action steps and other performance indicators to help ensure successful implementation of these measures.

Supporting Measures: The CAP also contains 19 supporting measures, which provide important climate protection benefits, but at the time of plan preparation, could not be counted toward reduction targets.

Feasibility – For Yolo County to achieve climate protection goals, recommended measures must be scientifically, economically, and reasonably feasible.

Implementation of the Yolo County Climate Action Plan is expected to reduce communitywide GHG emissions to 610,914 MT CO_2e per year by 2020, or about 0.4% below 1990 levels. These reductions would achieve the County's 2020 target and assist the State in achieving its climate protection goals.

Feasibility was assessed by reviewing measures with stakeholder groups, County staff, university researchers, and other experts.

Emission Reduction Potential – To achieve the County's 2020 and 2030 reduction targets, considerable emission reductions are needed. Throughout the plan's development, the County limited its selection of measures to those expected to provide reliable and significant emission reductions. Rigorous quantification methods were used to analyze each measure's reduction potential (see Appendix D for descriptions of the methods used).

Costs and Savings – Climate protection often costs money in the short term, but can also save money in the long term. Certain measures have the potential to result in long-term savings to government and/or to residents and businesses. The County analyzed the costs and savings for those proposed measures that resulted in the highest potential reductions (see Appendix D for detailed estimates).

Community Co-Benefits – Most CAP measures and actions will do more than reduce emissions. Many also have the potential to deliver numerous combined benefits to the community, including improving air quality and public health, and restoring habitat. The CAP gives additional priority to measures with such co-benefits.

Supporting Measures
While the CAP emphasizes implementation of the primary measures, the County recognizes that other measures may play an important role in the County's overall commitment to climate protection. Supporting measures include those for which (1) GHG reduction potential could not be estimated due to a lack of data, (2) no defensible quantification method existed at the time of plan preparation to calculate the reductions, and/or (3) the emission reductions attributable to the measure do not address emissions contained within the inventory, and thus cannot be counted toward emission reduction targets. Supporting measures are presented within the CAP because they would reduce global emissions, have other

Community Co-Benefits of CAP Measures

Many measures that reduce GHG emissions also have the potential to improve the community in other ways.

- **Improve Air Quality**
- **Protect Water Quality**
- **Reduce Energy Bills**
- **Enhance Public Health**
- **Support Agriculture**
- **Restore Habitat**

important community benefits, and may become primary measures in the future as the science and policy of climate change evolve.

Supporting measures are listed at the end of each strategy. The County will work to further develop these and other measures throughout CAP implementation.

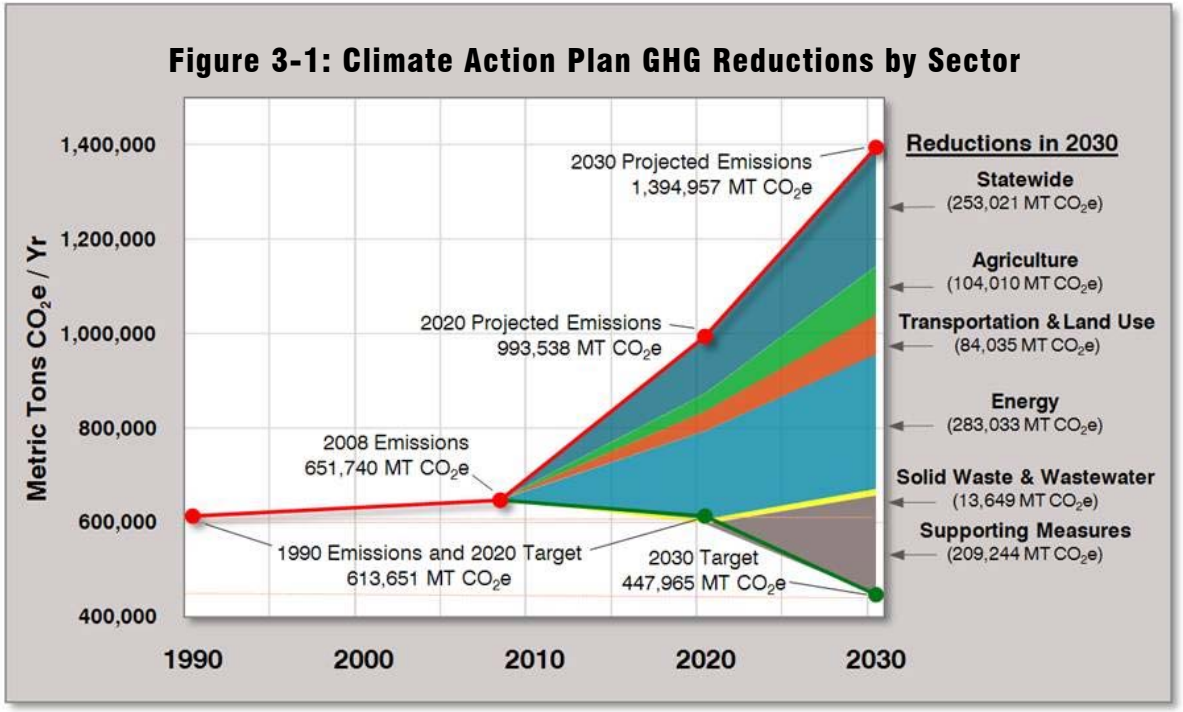
GHG Reduction Potential

Chapter 2 defines a mandatory 2020 reduction target, and 2030, 2040, and 2050 GHG reduction goals for unincorporated Yolo County. The GHG reduction potential of the CAP and its component measures were calculated for the years 2020 and 2030. Estimates of GHG reduction potential in 2020 are important to demonstrate the County's contribution to California's AB 32 climate protection goals. The 2030 target provides a goal for development allowed within the General Plan timeframe. Estimating the GHG reduction potential of the CAP in 2040 and 2050 was not attempted, as such future predictions are speculative, and extend beyond the life of the 2030 General Plan.

2020 Reduction Potential

In 2020, implementation of the primary agriculture, transportation, building energy, and solid waste measures have the potential to reduce GHG emissions by an estimated 261,412 metric tons of carbon dioxide equivalent emissions per year (MT CO_2e/yr). Emission reductions attributed to state and federal legislation have the potential to reduce an additional 121,212 MT CO_2e/yr. Together, State and federal legislation and County actions have the potential to reduce communitywide emissions by about 382,624 MT CO_2e/yr,

Figure 3-1: Climate Action Plan GHG Reductions by Sector



or 0.4% below 1990 emission levels. This level of reduction meets the County's established 2020 target and complies with California's recommended reduction levels for local governments. These reductions do not include anticipated reductions from permanent crops, as accepted sequestration protocols do not yet allow for consideration of carbon storage in permanent crops. However reductions from permanent crops have been quantified in the CAP to provide information about the potential benefits of expanding orchards and/or vineyards. As climate change science continues to emerge, these reductions may be applied in future updates to the CAP.

2030 Reduction Potential

In 2030, the primary CAP measures have the potential to reduce GHG emissions by 484,727 MT CO_2e/yr (See Figure 3-1). The CAP's supporting measures have the potential to reduce an additional 10% to 20% of anticipated 2030 emissions. If these measures achieve a 15% reduction, this would result in an additional 209,244 MT CO_2e/yr. Emission reductions attributed to state and federal legislation have the potential to reduce emissions by an additional 253,021 MT CO_2e/yr. Combined, State and federal legislation, and County actions have the potential to

Table 3-1: GHG Reduction Strategies and Associated Reductions

Strategy	2020	% of Total	2030	% of Total
AGRICULTURE STRATEGY	29,603 MT CO_2e/yr	7.7%	104,010 MT CO_2e/yr	11.0%
TRANSPORTATION AND LAND USE STRATEGY	42,018 MT CO_2e/yr	11.0%	84,035 MT CO_2e/yr	8.9%
BUILDING ENERGY STRATEGY	180,425 MT CO_2e/yr	47.2%	283,033 MT CO_2e/yr	29.9%
SOLID WASTE AND WASTEWATER STRATEGY	9,366 MT CO_2e/yr	2.4%	13,649 MT CO_2e/yr	1.4%
SUPPORTING MEASURES	Not Included in 2020 Target		209,244 MT CO_2e/yr	22.1%
STATE LEVEL REDUCTIONS	121,212 MT CO_2e/yr	31.7%	253,021 MT CO_2e/yr	26.7%
TOTAL GHG REDUCTIONS	382,624 MT CO_2e/yr		946,992 MT CO_2e/yr	
	0.4% below 1990 levels		27.0% below 1990 levels	
TARGET/GOAL	1990 levels		27% below 1990 levels	

Building energy measures achieve most of the anticipated reductions in both 2020 (47%) and 2030 (30%). The Community Choice Aggregation program is the single most important measure in the CAP, accounting by itself for 31% of GHG reductions in 2020 and 15% in 2030.

reduce communitywide emissions by 946,992 MT CO_2e/yr. This level is 27.0% below 1990 levels, which meets the County's 2030 reduction goal and puts the County on a successful trajectory toward the 2050 goal.

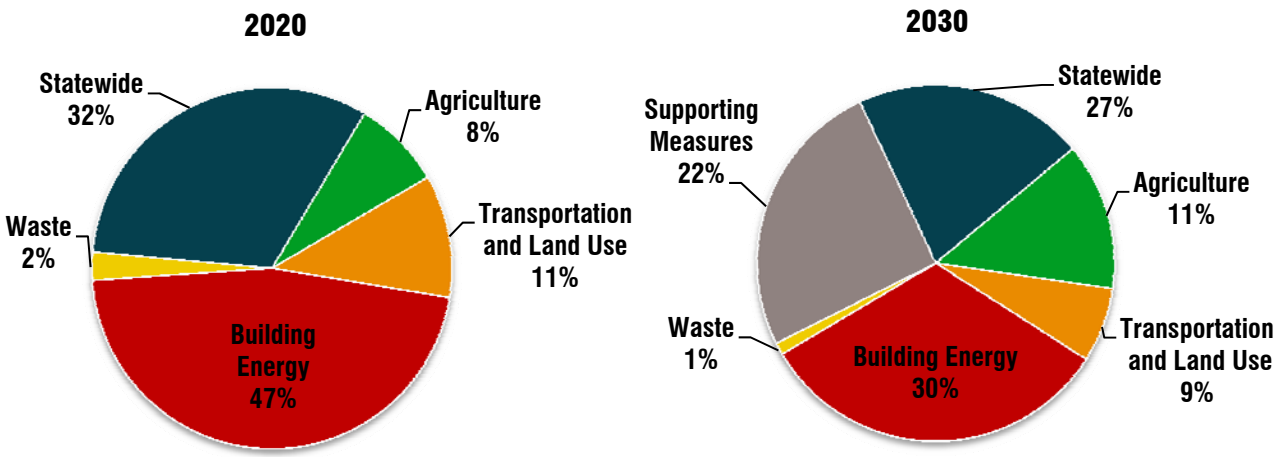
New residential and commercial growth anticipated by the General Plan in the designated Specific Plan Areas (e.g., Dunnigan, Knights Landing, Madison) is the primary challenge for the 2030 goal. However, it is unclear at this time whether the level of assumed growth in Yolo County between 2020 and 2030 will occur. Also, technological improvements are anticipated to provide new and innovative ways to achieve GHG reductions. New methods to quantify emission reductions may be developed to enable Yolo County to take credit for what are currently categorized as supporting measures. Regardless, Yolo County is committed to achieving the 2030 reduction goal through proactive monitoring and reassessment of the CAP's GHG reduction program.

Distribution of GHG Reductions

Table 3-1 and Figure 3-2 demonstrate that measures that address energy conservation and non-fossil fuel sources achieve most of the anticipated reductions in both 2020 (47%) and 2030 (30%). In particular, the Community Choice Aggregation (CCA) program is the single most important measure in the CAP. Among the reduction measures, CCA accounts by itself for 45% of GHG reductions in 2020 and 30% in 2030. If State/federal efforts, as well as stationary sources are included, the percentage of reductions represented by CCA would be 31% for 2020 and 15% for 2030. While the projections anticipate increases in both building energy and transportation emissions, the County has greater ability to reduce emissions related to energy use in buildings.

The smart growth policies contained throughout the General Plan, including the VMT policy in the Circulation Element, are

Figure 3-2: Greenhouse Gas Reductions by Strategy



State and federal actions will provide almost one-third of overall reductions in 2020 more than one-quarter in 2030. Supporting measures provide about 22% of total reductions in 2030.

expected to reduce vehicle emissions and provide approximately 11% of total reductions in 2020 and 9% in 2030.

The third largest source of GHG reductions (approximately 8% in 2020 and 11% in 2030) will occur within the agriculture sector. Measures that reduce use of nitrogen fertilizer, field equipment fuel consumption, and irrigation-related energy use provide the primary reductions. The solid waste measure provides 2% of reductions in 2020 and approximately 1% in 2030 by increasing landfill methane capture within the County landfill.

State and federal actions will provide almost one-third of overall reductions in 2020 and more than one-quarter in 2030. Improving light and medium duty vehicle fuel efficiency, increasing use of lower carbon fuels, and implementing the renewable energy portfolio standard for utility electricity generation will provide most of these statewide reductions.

Supporting measures provide about 22% of total reductions in 2030. As noted earlier, supporting measures are not included in the calculations supporting achievement of the mandatory 2020 target because the GHG reduction potential of these measures has not been verified through existing accepted methods.

Chapter Structure

The remainder of this chapter is structured as follows. A section is devoted to each strategy (e.g., agriculture; transportation; building energy; waste; wastewater; and adaptation). These five strategies represent the primary ways to reduce GHG emissions in unincorporated Yolo County. Each section begins with an introduction to the strategy, including the GHG inventory of the relevant sector and potential reductions. The introduction is followed by discussion of the primary measures that will translate the County's emission reduction and adaptation objectives into on-the-ground implementation. Each section concludes with a list of supporting measures.

Primary GHG Reduction and Adaptation Measures

Primary measures define the programs, policies, and projects that the County will undertake to accomplish its climate protection goals. The discussion of each primary measure contains the following content:

Measure Description

The description provides important background information about the County's intent and policy direction. Additionally, some descriptions provide guidance to be used in implementation.

Action and Progress Indicator Tables

Detailed action steps and progress indicators are provided in a table following each measure description. Actions identify specific steps that the County will take to implement the measure. These tables also identify responsible departments and establish an implementation timeframe for each action. Progress indicators provided in the table will enable staff, the Board of Supervisors, and the public to track implementation and monitor overall progress. The progress indicators represent the level of change necessary to achieve the GHG reduction in the target year.

Greenhouse Gas Reduction Potential

Values within the GHG Reduction Potential column of the measure summary identify the estimated annual emission reductions anticipated in 2020 and 2030, measured in MT CO_2e/yr. Additional information pertaining to the reduction calculations is provided in Appendix B.

Community Co-benefits

Beyond reducing emissions, many measures have the potential to provide other important benefits to the communities that improve the quality of life in Yolo County. These benefits are identified within each measure summary, where applicable.