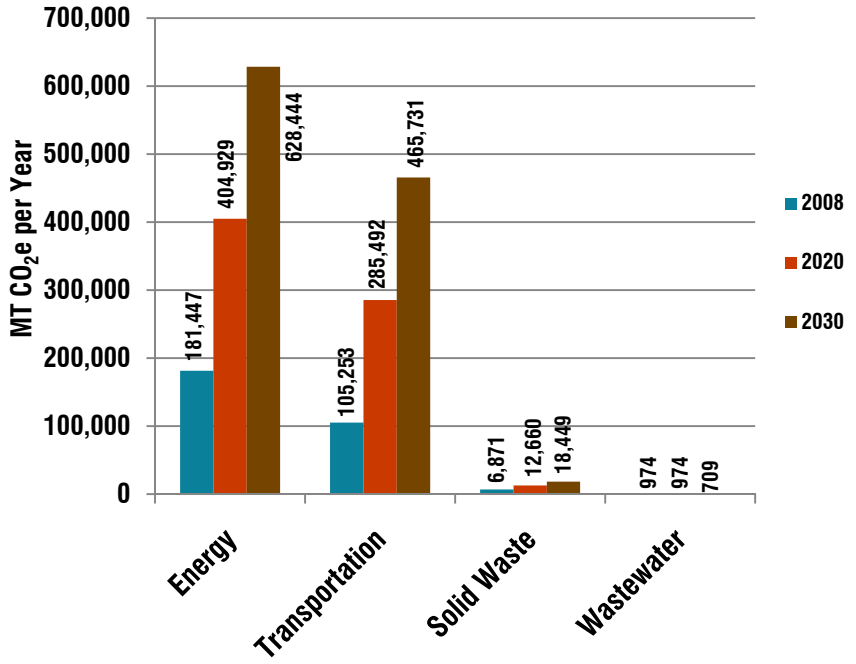
Appendix C

GHG Emissions in Future Development

The 2020 and 2030 projections indicate that over the next two decades, energy, transportation, and solid waste-related GHG emissions are expected to increase considerably in the unincorporated portions of Yolo County due primarily to planned residential, commercial, and industrial growth. This appendix describes the level of emissions projected to occur within the County's predicted growth areas and describes the emissions reduction potential for each. The methods used in this analysis are described at the end of the appendix.

Figure C-1: Energy, Transportation, Solid Waste, and Wastewater GHG Emissions 2008-2030



Growth Projections

Yolo County projects that by 2020, new planned development may accommodate 12,596 additional residents and 7,383 new employees. The General Plan focuses this new growth within the existing unincorporated communities, particularly in Dunnigan.

The proposed Dunnigan Specific Plan area will accommodate approximately 43% of the planned total growth within unincorporated Yolo County. The community of Elkhorn will accommodate 16% of new growth and Esparto, Knights Landing, and Madison will accommodate 6%, 4%, and 7% respectively. Other areas of unincorporated Yolo County, outside existing or planned communities will receive 23% of the projected development.

Table C-1: Growth Projections by Area

	2020		2030	
Area	New Population	New Jobs	Population	New Jobs
Dunnigan	5,595	2,939	11,189	5,877
Elkhorn	2,232	1,056	4,463	2,112
Esparto	1,063	212	2,125	424
Knights Landing	627	208	1,253	416
Madison	955	525	1,909	1,050
Other Unincorporated	2,127	2,444	4,253	4,887
Total	12,596	7,383	25,192	14,766

Source: Yolo County Planning, 2010

The County anticipates that the relative allocation of the growth in 2030 will remain the same as in 2020. By 2030, a total of 25,192 new residents and 14,766 new employees are expected to live and/or work within Yolo County.

Methodology for Growth Area Analysis

The 2020 and 2030 projections include emissions from existing development and future planned development. To examine the level of GHG emissions that future development alone will generate in 2020, the 2008 baseline emissions were subtracted from the 2020 projections. This calculation was done for each emissions sector related to development (i.e., energy, transportation, solid waste, and wastewater). The process was repeated with 2030 projections in order to determine the amount of emissions new development would create in 2030.

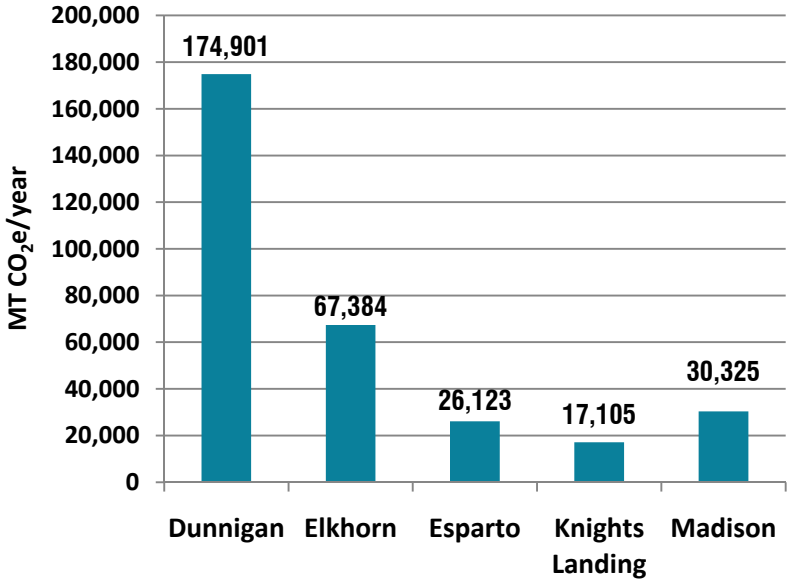
Once the emissions from new development were identified per sector, emissions were allocated to the different growth areas based on the percentage of growth expected to occur in each area. To determine the percentage of growth per area, the projected number of new residents and new employees per growth area were added and then divided this by the sum total for the unincorporated County.

After the emissions per sector for each growth area were established, the same methods as described in Appendix B were used to calculate the potential for reducing GHG emissions in new development. Reductions from Measures E-1, E-3, E-4, and W-1 and the Transportation and Land Use policies of the General Plan were applied.

GHG Emissions per Growth Area

For CAP planning purposes, increases in energy, transportation, solid waste and wastewater GHG emissions were attributed to new growth areas in proportion to the amount of population and employment growth anticipated for each location (see methodology section below). Figure C-2 demonstrates the GHG emissions associated with new development in each growth area. The Dunnigan Specific Plan area is expected to generate the most emissions (174,901 MT CO_2e/year in 2020) and represents an important opportunity for CAP reduction efforts. Development in the existing communities is expected to generate 67,384 MT CO_2e/year in Elkhorn, 26,123 MT CO_2e/year in Esparto, 17,105 MT CO_2e/year in Knights Landing, and 30,325 MT CO_2e/year in Madison.

Figure C-2: 2020 GHG Emissions from New Development by Growth Area



CAP Measures and New Development

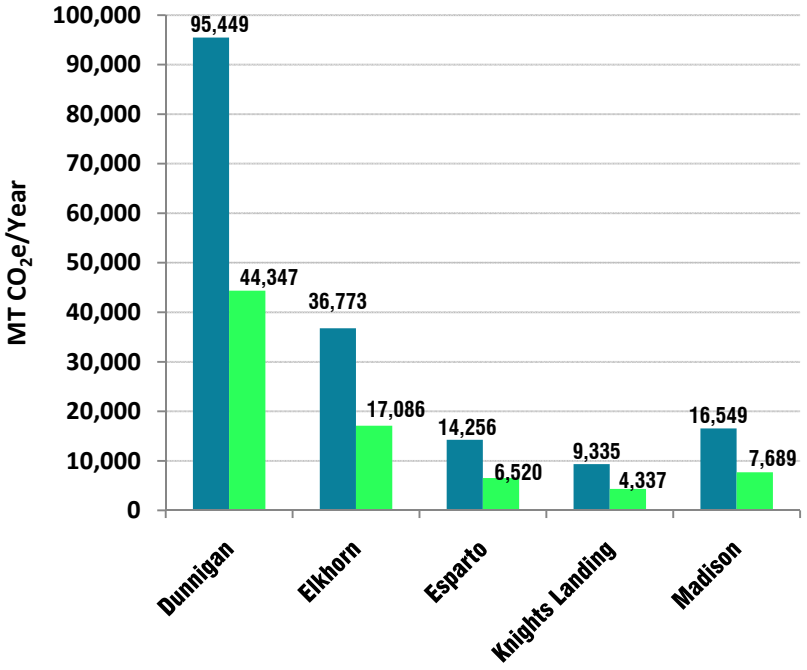
In order to achieve its adopted reduction target, the County will need to ensure that the new development minimizes GHG emissions. The General Plan contains a variety of policies and actions that will help reduce the emissions associated with new development, and this CAP provides specific measures that implement those policies and actions.

Energy

The CAP contains three measures aimed at reducing building energy-related GHG emissions in new development. Measure E-1 will allow new residents and businesses to participate in the County's proposed community choice aggregation program. Participation in the "light green program will allow customers to purchase 50% of their electricity from renewable sources. Participation in the "deep green" program will allow customers to purchase 100% renewable electricity. Measure E-3 requires all new residential (excluding affordable housing) and non-residential (after 2013) development to exceed existing California Enegy Code (Title-24) by 15%. Measure E-4 requires all new residential subdivisions (excluding affordable housing) and non-residential buildings (after 2013) to install solar water heaters. The measure also requires all residential subdivisions (excluding affordable housing) and non-residential development (after 2013) to install solar photovoltaic systems capable of producing 10% of the development's anticipated electricity demand.

Figure C-3 demonstrates the level of energy-related GHG emisisons within each growth area in 2020. The blue bars indicate the business-as-usual projected levels and the green bars indicate the mitigated emissions level resulting from implementation of the CAP measures. The measures result in a 54% reduction in energy-related GHG emissions in each growth area.

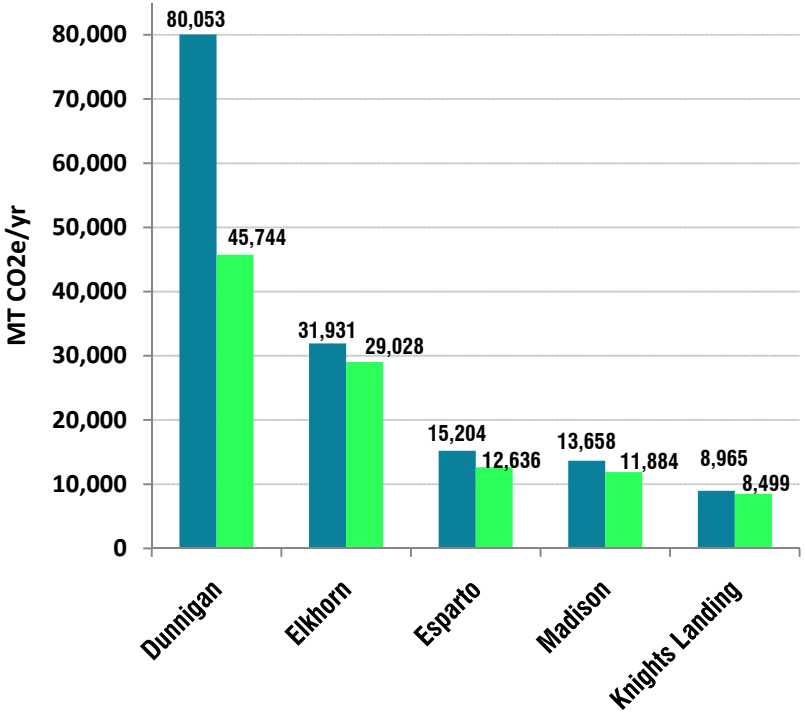
Figure C-3: Energy-Related GHG Emisisons by Growth Area 2020



Transportation and Land Use

General Plan Policy CI-3.19 requires all new development in the Dunnigan Specific Plan area to achieve 44 vehicle miles traveled per day per household. The fact that the Dunnigan Specific Plan area will be a new community offers an opportunity to develop land use patterns, urban design, and transportation infrastructure in such a way so as to reduce transportation-related emissions. General Plan Policy CI-3.21 directs new growth in other towns within the unincorporated area to strive to achieve 44 VMT per day per household to the extent feasible. Unlike the Dunnigan Specific Plan requirement, this is an objective rather than a performance standard. These policies are discussed in more detail on Pages 40 to 48. Figure C-4 demonstrates that while the Dunnigan Specific Plan Area will generate the most transportation-related emissions, the plan is also capable of significant emission reductions (approximately 34,308 MT CO_2e/year or 43%). New growth in the existing communities of Elkhorn, Esparto, Madison, Knights Landing will be able to achieve reductions of 2,902 MT CO_2e/year (9%), 2,566 MT CO_2e/year (17%), 1,774 MT CO_2e/year (13%), and 466 MT CO_2e/year (5%) respectively.

Figure C-4: Transportation-Related GHG Emissions by Growth Area 2020



Solid Waste

Measure WR-1 will expand methane capture and control systems at the County landfill and reduce methane emissions associated with waste disposal. While new development will not directly implement this measure, the waste-related GHG emissions from new development will be reduced as a result. The measure will reduce solid waste emissions by 51% in all growth areas.

Overall Reductions

Combined, the CAP measures have the potential to reduce GHG emissions considerably in Yolo County's new growth areas.

Implementation of the CAP energy and solid waste measures and the General Plan transportation and land use policies within the Dunnigan Specific Plan will result in a reduction of 89,042 MT CO_2e/year or 51% below projected levels. New growth in the existing communities of Elkhorn, Esparto, Knights Landing, and Madison will be able to achieve reductions of 23,074 MT CO_2e/year (34%), 10,490 MT CO_2e/year (40%), 6,894 MT CO_2e/year (40%), and 9,543 MT CO_2e/year (31%) respectively.

Figure C-5: Solid Waste-Related GHG Emissions by Growth Area 2020

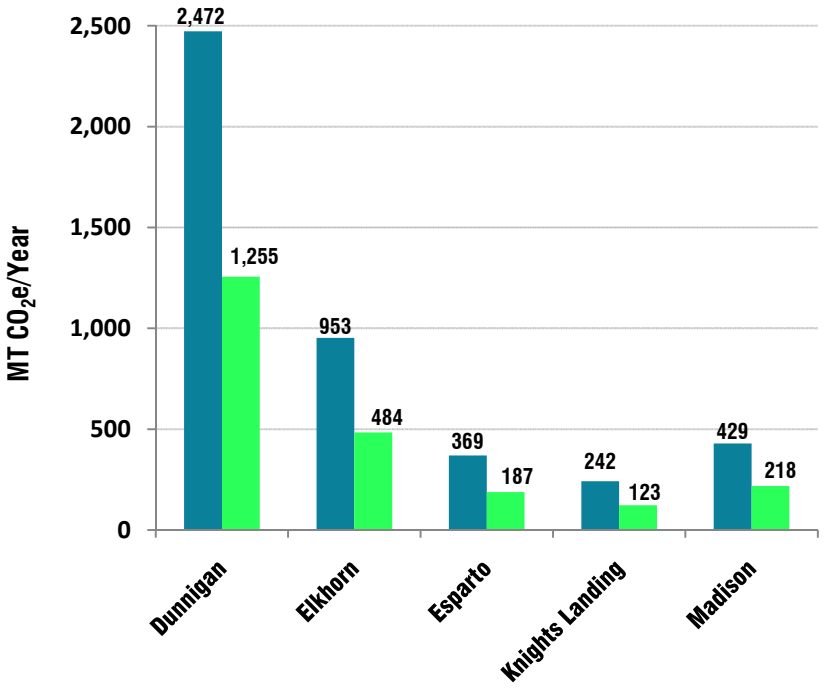
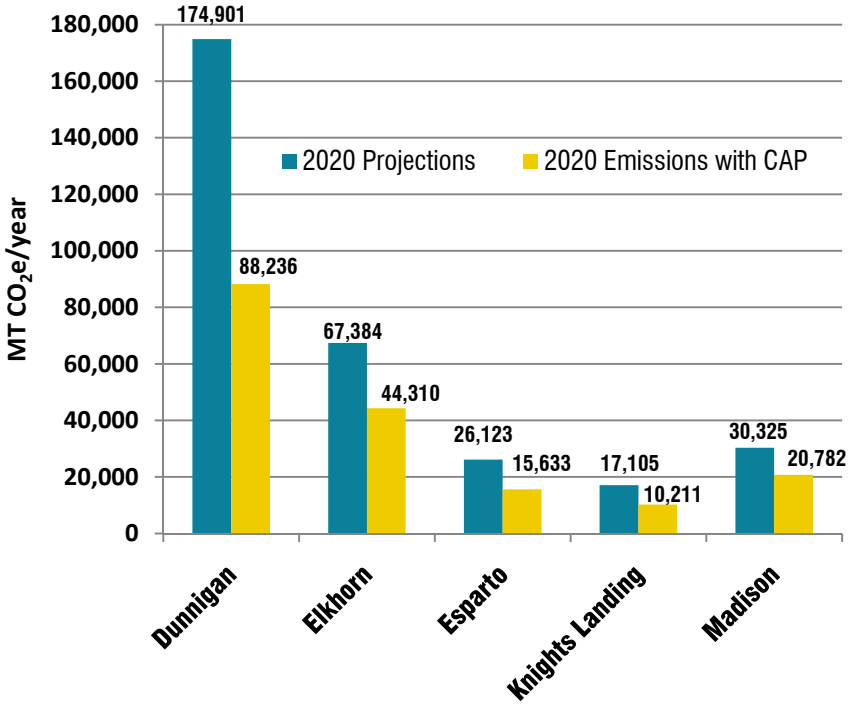


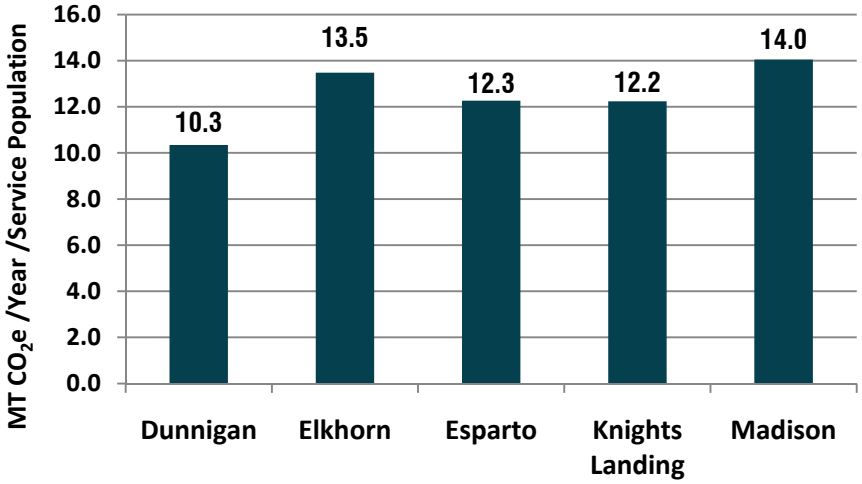
Figure C-6: 2020 GHG Emissions from New Development by Growth Area



Efficiency of New Development

The efficiency of new development can be evaluated by examining the GHG emissions that will be generated in a growth area and dividing this by the number of new residents and employees that the growth area will accommodate. The sum of residents and employees is often referred to as the service population. These efficiency levels can be compared between growth areas. Figure C-7 demonstrates that the Dunnigan Specific Plan is likely to be the most efficient growth area. The reduction in transportation related emissions are the primary factor behind the Dunnigan Specific Plan's high level of GHG reduction compared to the other communities. Locating new growth in this comparatively efficient location will serve to reduce the County's future GHG emissions.

Figure C-7: 2020 GHG Emissions with CAP Reductions per Service Population by Growth Area



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