

Section 18

Energy

This section describes how development associated with the *City of Modesto Urban Area General Plan* (UAGP) would result in an increase in energy usage. Certain UAGP policies related to traffic, air quality, and climate change in Sections V-1, V-2, and V-21 in this document also would help to mitigate energy impacts by reducing the consumption of fossil fuels.

A. ENVIRONMENTAL SETTING

The following information is provided in accordance with Section 15125 of the California Environmental Quality Act (CEQA) Guidelines. This environmental setting is the baseline for determining whether any energy-related impact(s) associated with implementation of the UAGP amendment would occur and if so, whether they would be significant or not.

1. Study Area for Direct Impacts

The study area for direct impacts related to energy is the UAGP planning area.

2. Study Area for Cumulative Impacts

This analysis will be based on the plan or projection approach to examining cumulative effects, as provided under Section 15130(b)(1)(B) of the State CEQA Guidelines. The relevant plans used for this purpose are the UAGP and the *Stanislaus County General Plan* (County General Plan). The study area for cumulative impacts on energy use is defined by the boundaries of Stanislaus County and the state.

3. Existing Physical Conditions in the Study Areas

a. Overview

Energy, in the form of electricity and natural gas, is used in Modesto for lighting, heating, cooling, and various industrial applications. Electricity is generated through renewable sources (hydroelectricity and solar power) and also from burning natural gas (methane) and diesel fuel. Petroleum (gasoline and diesel) is utilized as a fuel for motor vehicles.

b. Gas and Electricity Supply and Delivery

Electricity is provided by the Modesto and Turlock Irrigation Districts, and natural gas is provided by Pacific Gas & Electric Company. Gasoline and diesel are provided by various private businesses.

4. Existing Policies Applying to the Study Areas

Below is a comprehensive list of major federal, state, and local (Stanislaus County [County] and City of Modesto [City]) policies or summaries of policies in effect that apply to the study area. This list provides the full range of applicable policies that a project within the study area potentially would need to comply with, including policies beyond the jurisdiction of the City. This list of laws, regulations, and programs also serves to describe the circumstances under which the master environmental impact report (Master EIR) analyzed this environmental topic.

A discrete reference number, following the initials of the resource topic, is assigned to each policy or policy summary listed to facilitate, where appropriate, its incorporation as a mitigation measure into subsequent projects analyzed under this Master EIR (e.g., Energy policies are designated as E-*X*, where *X* is the discrete number).

a. Federal Regulations

- E-1:** The Clean Air Act requires compliance with national clean air standards, which require a reduction in energy usage (see Section V-2 of this Master EIR, *Degradation of Air Quality*, for further discussion).

b. State Regulations

- E-2:** The Warren-Alquist State Energy Resources Conservation and Development Act created the California Energy Resources Conservation and Development Commission (California Energy Commission or CEC) in 1974. The CEC prepared a state Energy Conservation Action Plan. The CEC adopted energy conservation standards for new residential building in June 1977 and revised them in 1985. Energy conservation measures for structures fall under the jurisdiction of Title 24, Division 20, Article 2 of the California Code of Regulations (CCR).
- E-3:** Title 24 CCR Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) reduces California's energy consumption. Title 24 requires the design of building shells and building components to conserve energy. The standards are required to apply to new construction and reconstruction and are implemented through mandatory conformance with the California Building Code at the time that building permits are issued by the City.
- E-4:** The 2014 Appliance Efficiency Regulations (20 CCR, Sections 1601–1608) include standards for both federally regulated appliances and non-federally regulated appliances. These energy standards apply to and are required of all qualifying appliances sold in California. The standards are met during manufacturing by the appliance manufacturer.
- E-5:** Senate Bill X1-2 (2011) requires that 33 percent of energy sold at retail come from renewable sources by 2020.
- E-6:** Senate Bill 350 (2015) requires that 50 percent of energy sold at retail come from renewable sources by 2030.

c. San Joaquin Valley Unified Air Pollution Control District Programs

- E-7: The air pollution control district has programs to improve air quality that require reducing energy use (see Section V-2 of this Master EIR, *Degradation of Air Quality*, for further discussion).

d. City of Modesto Policies

The UAGP establishes policies identified in Section 2, Air Quality and Greenhouse Gas Emissions, as AQ-1 through AQ-31, which relate to stationary and mobile source emission reductions from the combustion of fossil fuels.

5. Policies That Avoid Impacts

The following City policies are in effect and have been determined to reduce, avoid, or mitigate environmental impacts within the existing city limits and within the Planned Urbanizing Area. The policy reference numbers are listed, and the full text of these policies is found in Section A-4, *Existing Policies Applying to the Study Areas*, above.

General Plan policies that reduce, avoid, or mitigate impacts on the use of and demand for energy include all of the policies identified in Section V-2 as AQ-1 through AQ-30. The City of Modesto must also comply with federal, state, and regional policies above, identified as E-1 through E-7. The General Plan also contains additional policies related to energy use, such as those referenced in Section V-1 that would result in reduced transportation-based energy use (particularly that associated with the automobile mode). The relevant transportation policies include TC-17 through TC-26, which indirectly facilitate transportation via alternative modes, and TC-45 through TC-76, which directly facilitate non-motorized transportation modes plus train and bus transit. Implementation of all of these policies would reduce the need for new power plants and other electrical energy generators and the development of new sources of liquid or gaseous energy for transportation.

B. CONSIDERATION AND DISCUSSION OF SIGNIFICANT IMPACTS

The following information is provided in accordance with State CEQA Guidelines Section 15126.2.

1. Thresholds of Significance

Consistent with CEQA Guidelines appendix G, the proposed General Plan amendment project would have a significant impact if it would result in wasteful, inefficient, and unnecessary consumption of energy during the project construction, operation, maintenance or removal.

2. Significant Direct Impacts

Energy use in California is dominated by transportation. California has more registered vehicles of any state and commute times are among the highest in the country (U.S. Energy

Information Administration, 2016). Energy is also used to heat and cool buildings and for lighting, cooking, and distributing water, yet California ranks 49th in residential energy use due the state's moderate climate (U.S. Energy Information Administration 2016). Another major source of energy consumption in California is manufacturing.

Wherever new development occurs in Modesto, it must comply with federal, state, air district, and local regulations and policies in effect at the time of development. As with building and appliance standards, some transportation energy efficiency measures are beyond the control of states and local agencies, such as Corporate Average Fuel Economy (CAFÉ) standards, which are established by the federal government to increase fuel efficiency of new vehicles.

In 2014, Californians used 7316 kiloWatt hours (kWh) of electricity per capita. This figure aggregates electricity used for all purposes, including water pumping, commercial and manufacturing uses, street lights, and residential use. The impact analysis will compare total electricity use locally and at the state level because the California Energy Commission collects data in a manner that makes it difficult to identify energy used solely for residential, commercial, and industrial purposes.

The Modesto Irrigation District (MID) serves most of Modesto, as well as much of unincorporated Stanislaus County, Waterford, Oakdale, Riverbank Escalon, part of Ripon, and Mountain House. Estimated per capita electricity use for Modesto alone is based on data submitted to the California Energy Commission by MID.

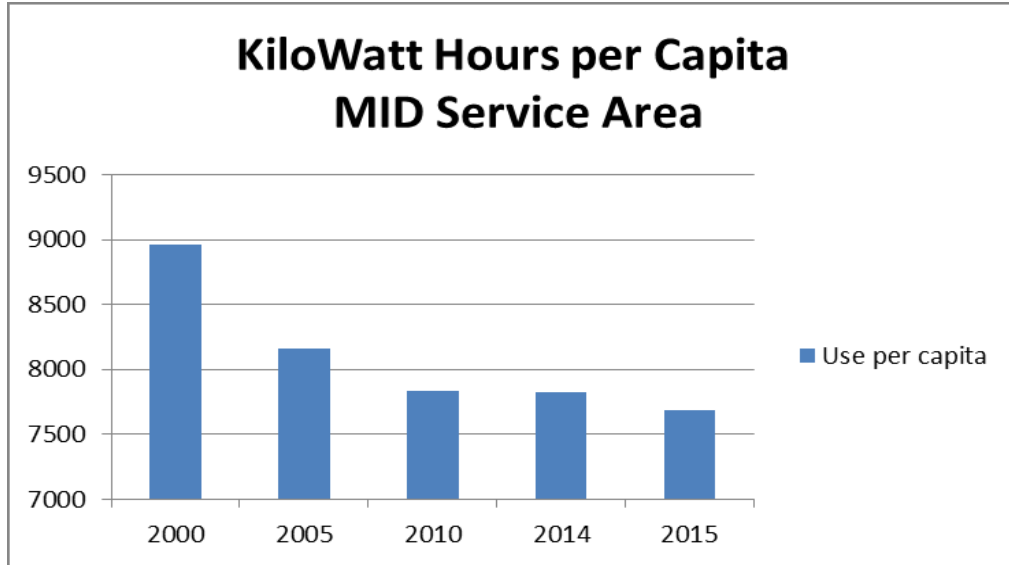
In 2014, Modesto is estimated to have used 5556 kWh per capita. While this figure is significantly lower than the 7316 kWh per capita used statewide, it does not include electricity used for mining and manufacturing, most of which occurs outside city limits. Electricity used for all purposes in the MID service area to the service area population yields an estimated per capita use of 8,121 kWh.

MID's service area currently uses more electricity per capita than the statewide average. There are many possible reasons for the disparity, such as severity of weather in Stanislaus County compared to the more populous coastal areas of the state increasing energy used in summer and winter for heating and cooling or there may be more industrial use in Stanislaus County, as compared to other regions of the state. The available data does not permit a meaningful comparison of electricity use.

California imports from out of state 90 percent of the natural gas it uses. Of the natural gas used in the state, 45 percent was burned in power plants to generate electricity and residential used consumed another 21 percent, with the remaining 34 percent used for industrial and commercial purposes (California Energy Commission, Supply and Demand of Natural Gas in California, 2-27-2017).As of early 2016, MID generated 30 percent of all electricity sold from renewable sources, including 23 percent from wind, four percent from water, and three percent from solar, just three percent short of the state's required portfolio of 33 percent renewable energy sources. Nineteen percent of the electricity sold by the Modesto Irrigation District came from natural gas-fired plants. Due to the drought, MID has sold less hydroelectric energy than it does during non-drought years; the renewable portfolio is expected to improve when there is more water to release from Don Pedro reservoir.

Figure V-18-1, below, shows the recent trend in electricity sold to MID customers.

Figure V-18-1



Sources: CEC 2017; US Dept. of Commerce 2010; California Dept. of Finance 2017

The data do not indicate why there is a downward trend in electricity sales. The trend toward larger houses suggests an increase in energy use, although California’s energy efficiency standards for new construction support reduced energy use. The recent drought and attendant reduction in water use would result in slightly lower electricity use because less water would be pumped from its source to customers. Additionally, home solar systems would reduce the amount of electricity sold by MID.

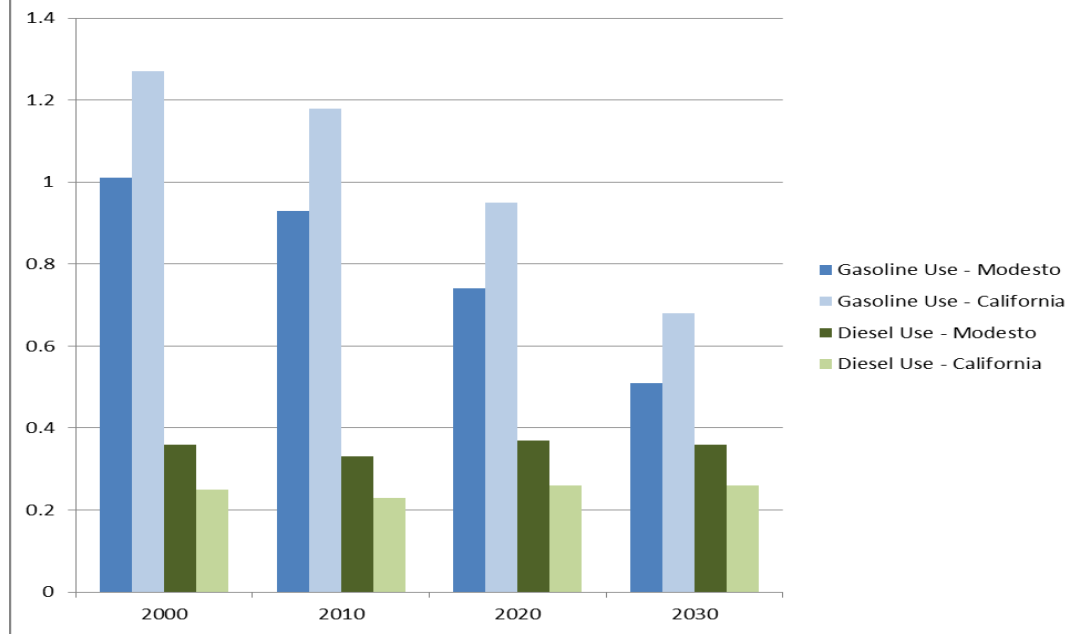
Regardless of per capita consumption levels, development proposed by the General Plan amendment could result in an increase in Modesto’s population, from 207,000 in 2014 to an estimated 280,000 by 2040 and up to the estimated general plan population capacity of 390,000 after that. The current trend in electricity use appears to demonstrate greater energy efficiency, so on a per-capita basis, electrical energy use would decline. Therefore, the resulting impact(s) would be less than significant.

As noted in “*Long Term Crude Oil Supply and Prices*,” prepared for the CEC, crude oil supplies currently are sufficient to serve continued development throughout the state. Nonetheless, California’s demand for petroleum products has increased during the last decade and will continue to grow, reflecting population increases and the increased demand for transportation fuels. Furthermore, the CEC indicates that world oil resources are finite and that world production is likely to peak in this century because of increasing global demand (ICF Consulting 2005). Such a change in production could affect California communities.

Figure V-18-2, below, compares the daily per-capita use of liquid fuel for transportation purposes for California and Modesto. The data were developed using the California Air Resources Board’s EMFAC program to determine fuel use and the Census Bureau and California Department of Finance population counts and projections. As indicated, Modesto uses less gasoline and diesel fuel per capita than do Californians, as a whole. Many reasons probably underlie this data, such as the average commute distance and the typical distance

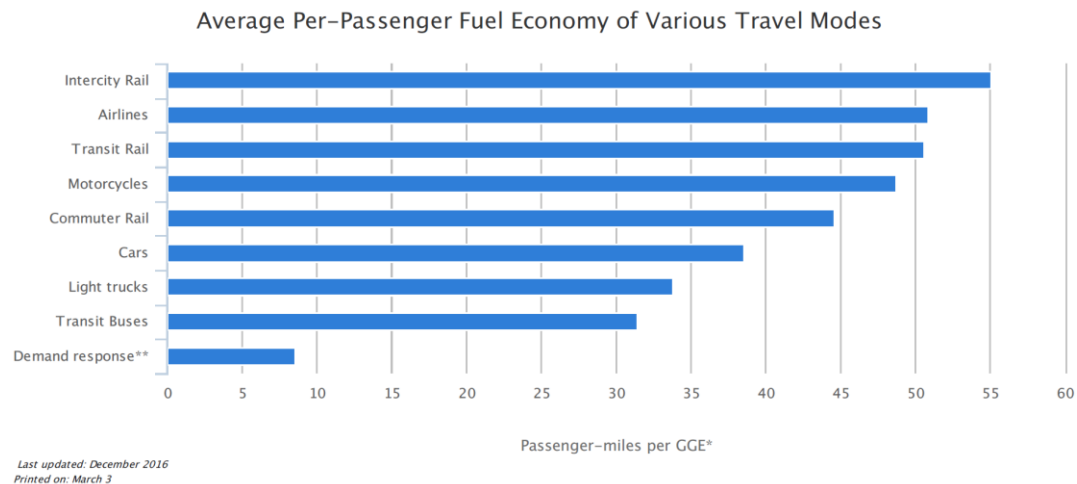
traveled for other purposes. Farm equipment and trucking may account for the greater use of diesel fuel per capita than California as a whole.

Figure V-18-2: Daily Per Capita Use of Liquid Fuel in Modesto and California (gallons)



Source: California Air Resources Board – EMFAC 2014 database, 2017

As motor vehicles have become more efficient, gasoline and diesel fuel consumption has declined, as shown on Figure V-18-2, above. Nevertheless, travel by private automobiles and light duty trucks remain one of the most inefficient means of travel by motor vehicle. The chart below from the U.S. Department of Energy illustrates the average passenger miles per gallon of gasoline equivalent. (This measure is the quantity of fuel with equivalent energy to a gallon of gasoline.) Transit buses perform relatively poorly due to the average number of riders in each bus throughout the country. In 2009, the federal government increased Corporate Average Fuel Economy (CAFE) standards from 27.1 to 30.2 miles per gallon for passenger cars (model year 2011) By 2025, efficiency is planned to increase to 60 miles per gallon for small passenger vehicles, 46 miles per hour for larger passenger vehicles, 50 miles per gallon for small light-duty trucks, and 30 miles per gallon for larger trucks.



Although Modesto uses less gasoline per capita than the state average, use could be further reduced by increasing the use of passenger rail, which would initially reduce the amount of gasoline used to travel to and from work. Increasing the use of freight rail by shifting the transport of products from truck to rail would help reduce the use of diesel fuel for transportation.

Energy Used in Buildings Proposed General Plan amendment policies E-1 through E-6, AQ-1 and AQ-2 would reduce the use of non-renewable sources of energy and would reduce energy used to heat and cool buildings, run appliances, and transport water.

Energy Used for Transportation Proposed General Plan amendment policies E-1, E-7, and AQ-3 through AQ-30 would reduce the use of non-renewable sources of energy for transportation.

These policies address efforts to increase the number of passengers riding transit buses, which would also increase the fuel efficiency of transit buses, by reducing the fuel used per passenger trip. Measures intended to extend passenger rail to and through Modesto and to increase the use of freight rail would reduce gasoline used for work trips and diesel used to transport goods, respectively.

Energy efficiency is increasing over time, largely due to efforts by California and the federal government. While energy used for all purposes might be used more efficiently, by some measures, Modesto is using certain energy resources both more (diesel fuel, for example) and less (gasoline) efficiently than the average Californian. Efficiency can reasonably be improved compared to current usage in excess of the efficiency resulting from federal and state regulations, thus there could be a significant direct impact on energy use if efficiencies suggested in the proposed General Plan amendment are not implemented. However, assuming growth and development consistent with the proposed Project, any impact(s) relative to energy use would be less than significant.

3. Significant Cumulative Impacts

CEQA and the State CEQA Guidelines require the disclosure of the significant cumulative environmental effects, of whether the project would make a cumulatively considerable contribution to any such effects, and, if so, mitigation measures intended to reduce the project's contribution (Section 15130 of the State CEQA Guidelines). A cumulative effect is one that results from past, present, and probable future projects. A project that has a less than significant direct effect on the environment may make a considerable contribution to a cumulative effect nonetheless.

A cumulative impact analysis first identifies whether a cumulatively significant impact exists in the given resource area. If one does, the analysis determines whether the project would make a considerable contribution to that impact. Where a cumulative impact is severe, even a small contribution may be considerable. Where a project is required to implement or fund its fair share of a mitigation measure designed to alleviate the cumulative impact, its contribution would be considered less than significant. (Section 15130(a) of the State CEQA Guidelines.)

Increased urban development within California has a cumulative impact on available energy supplies. The U.S. Energy Information Administration's Annual Energy Outlook 2017 (January 5, 2017) projects energy use through 2040 – for all sources / fuels on average – to remain flat at 2017 levels. Furthermore, the City's adherence to applicable federal and state regulations described above, including the California Building Code, in addition to the other relevant policies contained within the proposed General Plan amendment would ensure that the Project does not result in wasteful, inefficient or unnecessary energy consumption. The project would therefore have a less than significant cumulative impact(s) relative to energy use.

C. POLICIES ADOPTED TO MINIMIZE SIGNIFICANT EFFECTS

The following information is provided in accordance with State CEQA Guidelines Section 15126.4.

1. Policies That Reduce Direct Impacts

Proposed General Plan policies, and policies from other agencies (described as policies E-1 through E-7 and AQ-1 through AQ-30), would reduce direct impacts to a less than significant level, by promoting: pedestrian-oriented development and bicycle facilities; shade trees; reduced residential and business emissions; voluntary incentive-based programs for energy providers and developers; enhanced energy conservation standards for new construction; reduced air quality impacts from area sources and from energy consumption; the use of solar energy systems for residential, agricultural, park, public building, and business purposes; the use of passive solar design; the use of small wind energy systems; grid circulation systems in new development; traffic signal coordination; easier access to transit facilities; extension of passenger rail to Modesto; and, increased use of freight rail.

The General Plan also contains additional policies related to energy use, such as those referenced in Section V-1 that would result in reduced transportation-based energy use (particularly that associated with the automobile mode). The relevant transportation policies include TC-17 through TC-26, which indirectly facilitate transportation via alternative modes, and TC-45 through TC-76, which directly facilitate non-motorized transportation modes plus train and bus transit.

Implementation of all of these policies would reduce the need for new power plants and other electrical energy generators and the development of new sources of liquid or gaseous energy for transportation.

2. Policies That Reduce Cumulative Impacts

The proposed General Plan amendment policies described immediately above and 24 CCR, which requires LEED certification of all new development projects, would reduce the proposed project's contribution to cumulative impacts through a program of energy conservation measures.

D. MONITORING POLICIES THAT REDUCE IMPACTS

The following information is provided in accordance with Public Resources Code (PRC) Section 211081.6. The mitigation measures identified in the Master EIR have been incorporated into the UAGP and are implemented by that plan. City staff provides the Modesto City Council with an annual report on General Plan implementation. Therefore, no separate mitigation monitoring program is required for the UAGP Master EIR.