

CHAPTER 8 CLIMATE CHANGE

8.1 INTRODUCTION

The proposed Fiddymment Ranch Specific Plan Amendment (SPA) 3 project would amend the existing West Roseville Specific Plan (WRSP) by changing the land use and zoning designations for some parcels and by changing development densities within the project area. The project would result in the development of 1,661 additional residential units and 7.3 additional acres of commercial land uses compared with the development currently planned under the WRSP. Other changes proposed to the land uses within the Fiddymment Ranch project area include minor adjustments in acreage for parks, open space, an elementary school site, and roadway rights-of-way. The WRSP EIR did not include any analysis of climate change impacts and greenhouse gas emissions. This Recirculated Draft Subsequent EIR chapter evaluates the climate change impacts from buildout of all development within the Fiddymment Ranch SPA 3 project site. As shown in *Figure 3-4 Conceptual Land Use Plan* and *Figure 7-1 Phasing Plan*, this includes a total of 2,949 residential units, 7.3 acres of community commercial land uses, one elementary school site, parks and open space.

This chapter includes a description of existing climate change and greenhouse gas conditions, a summary of applicable regulations, and analyses of the project's potential to contribute to climate change impacts and the potential effects of climate change on the proposed project. Referenced materials include:

- ❖ *Air Quality Impact Analysis*, Shaw Environmental, 2011
- ❖ *CalEEMod Modeling*, Dudek, 2013
- ❖ *City of Roseville General Plan 2025*, City of Roseville, February 2013
- ❖ *Green Points Rating*, BuildItGreen, 2010
- ❖ *West Roseville Specific Plan*, City of Roseville, 2004, as amended 2013
- ❖ *West Roseville Specific Plan FEIR*, City of Roseville, February 2004

The Air Quality Impact Analysis (Shaw 2011) was prepared for the Fiddymment Ranch SPA 3 project proposed in 2009. That analysis has been updated for the currently proposed project, as reflected in the CalEEMod modeling outputs (Dudek 2013) provided in Appendix D. The other documents listed above are available for review during normal business hours at:

City of Roseville Permit Center

311 Vernon Center
Roseville, California

The 2013 Notice of Preparation (NOP) for this EIR, the Initial Study, comments received in response to the NOP and comments received at the 2013 Public Scoping Meeting are provided in Appendix A. The Placer County APCD responded to the 2013 NOP, providing guidance on the climate change impact analysis methodology and mitigation measures. As discussed in **CHAPTER 1 INTRODUCTION**, an NOP was circulated in 2010 and a Draft Subsequent EIR was circulated in 2011 for a previous Fiddymment Ranch SPA 3 proposal. The comments on the 2010 NOP and 2011 Draft Subsequent EIR are also included in Appendix A. Comments on the 2011

Draft Subsequent EIR included questions regarding the conclusion that the proposed project would have a less than significant climate change impact and that the project's climate change impacts would be less than the impacts of the other alternatives evaluated. The analysis in this 2013 Recirculated Draft Subsequent EIR uses a different threshold of significance and different methodology to evaluate the project's contribution to climate change than was used in the 2011 Draft Subsequent EIR and provides additional explanation to support the impact conclusions.

8.2 ENVIRONMENTAL SETTING

Greenhouse Gases and the Greenhouse Effect

Greenhouse gases (GHG) are gases that trap heat in the atmosphere, which regulates the earth's temperature by creating a greenhouse effect. When solar radiation enters the atmosphere from space, some is absorbed by the earth's surface and some is reflected back to space as infrared radiation. Some of that infrared radiation is absorbed by GHGs, trapping that energy and warming the atmosphere. The presence of natural GHGs and associated greenhouse effect is critical to the ability of the earth to support life.

As defined in California's Global Warming Solutions Act of 2006, (also referred to as Assembly Bill 32) GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆). Each of these gases has a different global warming potential (GWP), which refers to the rate at which each gas contributes to global climate changes. The GWP of each gas is affected by its physical properties and atmospheric lifetime. For ease of reference and analysis, carbon dioxide is widely used as the reference point, and emissions of other GHGs are converted into carbon dioxide equivalents (CO₂e). Large emission sources are reported in million metric tons of CO₂e (MMT CO₂e). (In the U.S., a ton is equal to 2,000 pounds; this is known as a short ton. A metric ton is equal to 2,204.6 pounds.)

GHGs are emitted by both natural processes and human activities. It is generally agreed that human activity has been increasing the concentration of GHGs in the atmosphere (mostly CO₂ from combustion of coal, oil, and gas, and a few other trace gases) (NCDC 2012) and through the removal of forests and woodlands around the world to provide space for agriculture and other human activities. Emissions of other GHGs, such as methane and nitrous oxide, have also increased due to human activities. These activities have elevated the concentration of GHGs in the atmosphere beyond naturally occurring concentrations and the increase in atmospheric concentrations of GHGs has resulted in more heat being held within the atmosphere. This has led to some changes in global climate patterns and these changes are expected to increase over time as GHG concentrations rise. Further, the major GHGs emitted by human activities remain in the atmosphere for periods ranging from decades to centuries; therefore, it is virtually certain that atmospheric concentrations of GHGs will continue to rise over the next few decades (EPA 2011).

The global atmospheric concentration of CO₂ has increased from a pre-industrial value of about 280 to 379 parts per million (ppm) in 2005 (IPCC 2007). A warming trend of approximately 1.0 degrees Fahrenheit (°F) to 1.7°F occurred during the twentieth century; warming occurred in both the northern and southern hemispheres and over the oceans (IPCC 2007). Most warming in recent decades is very likely the result of human activities (IPCC 2007).

Contributions to Greenhouse Gas Emissions

In 2011, the United States produced 6,702 MMT CO₂E (EPA 2013d). The primary GHG emitted by human activities in the United States was CO₂, representing approximately 84% of total GHG emissions. The largest source of CO₂, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 94% of the CO₂ emissions and 79% of overall GHG emissions.

On a per-person basis, greenhouse gas emissions are lower in California than most other states; however, California is a populous state and the second largest emitter of GHGs in the United States and one of the largest emitters in the world. According to the 2000-2010 GHG inventory data compiled by the California Air Resources Board (CARB), California emitted 452 MMT CO₂E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2013e). The primary contributors to California's GHG emissions are transportation, electric power production from both in-state and out-of-state sources, and industry. Other common sources are residential, commercial, agricultural and forestry activities. These primary contributors to California's GHG emissions and their relative contributions in 2010 are presented in *Table 8.1*.

Table 8.1
California GHG Inventory

Source Category	Annual GHG Emissions (MMT CO ₂ E)	% of Total
Agriculture	32.45	7.19%
Commercial and residential	43.89	9.72%
Electricity generation	93.30 ¹	20.66%
Forestry (excluding sinks)	0.19	0.04%
Industrial uses	85.96	19.03%
Recycling and waste	6.98	1.55%
Transportation	173.18	38.35%
High-GWP substances	15.66	3.47%
Totals	451.60	100.00%

Source: CARB 2013

Note: ¹ Includes emissions associated with imported electricity, which account for 43.59 MMT CO₂E annually

Climate Model Predictions

Almost all climate scenarios include a continuing trend of warming through the end of the century given the vast amounts of GHGs already released, and the difficulties associated with reducing emissions to a level that would stabilize the climate. In addition to increases in average temperatures, global climate changes include changes in precipitation and wind patterns and could lead to environmental impacts in a wide variety of areas, including: reduced snowpack resulting in changes to water supplies, increased risk of wildfires, changing conditions for farming and ranching operations, and public health hazards associated with higher peak temperatures, heat waves, and decreased air quality.

Some climate models indicate that if GHG emissions continue to proceed at a medium or high rate, temperatures in California would be expected to increase by 4.7°F to 10.5°F by the end of

the century. Lower emission rates would reduce the projected warming to between 3°F and 5.6°F.

Other climate predictions have been made by the Intergovernmental Panel on Climate Change (IPCC). The IPCC was established by the World Meteorological Organization and United Nations Environment Programme. IPCC's mission is to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, including the potential impacts and options for adaptation and mitigation. IPCC predicts substantial increases in global temperatures of between 2°F and 11.5°F by the end of the century under six different scenarios of emissions and carbon dioxide equivalent concentrations (IPCC 2007). Sea levels are predicted to rise by 0.18 to 0.59 meters (7 to 23 inches) during this time, with an additional 3.9 to 7.8 inches possible depending upon the rate of polar ice sheets melting from increased warming. The IPCC report also states that the increase in hurricane and tropical cyclone strength since 1970 can likely be attributed to human-generated greenhouse gases.

Effects of Global Climate Change

California's Climate Action Team (CAT) was established in 2005 to coordinate statewide efforts to identify and implement strategies to reduce GHG emissions in the state. The Climate Action Team reports regularly to the Governor and the Legislature and has found that climate change is already affecting California: average temperatures have increased, leading to more extreme hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010). These climate-driven changes affect resources critical to the health and prosperity of California. Climate change modeling using emission rates from the year 2000 shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to, the following:

- ❖ The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- ❖ A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007)
- ❖ Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and intensity of tropical cyclones (IPCC 2007)
- ❖ A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 30% to as much as 90% over the next 100 years (CAT 2006)
- ❖ An increase in the number of days conducive to O₃ formation by 25% to 85% (depending on the future temperature scenario) in high-O₃ areas of Los Angeles and the San Joaquin Valley by the end of the twenty-first century (CAT 2006).

8.3 REGULATORY SETTING

Federal Regulations

Clean Air Act

The federal Clean Air Act was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. The U.S. Environmental Protection Agency (EPA) is responsible for implementing most aspects of the Clean Air Act. While the Clean Air Act does not call specifically for regulation of GHGs, in *Massachusetts v. EPA*, 549 U.S. 497, the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act.

Energy Policy Act and Energy Independence and Security Act

The Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 both include provisions that may help reduce GHG emissions, but neither have a direct effect on analysis of the proposed project's GHG emissions, contribution to climate change effects, and exposure to the effects of climate change.

The Energy Policy Act of 2005 establishes a national program designed to encourage voluntary reductions in greenhouse gases and establishes a Renewable Fuel Standard which requires a minimum amount of renewable fuels be blended into transportation fuels each year. The Energy Independence and Security Act of 2007 strengthens the Renewable Fuel Standard by increasing the minimum level of renewable fuels and by setting maximum carbon content limits for renewable fuels. The Energy Independence Act also sets a target fuel economy standard of 35 miles per gallon (mpg) for cars and light trucks by model year 2020, and sets standards related to energy efficiency and energy conservation for heating and cooling products, consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Joint Final Rules for Vehicle Standards

The Joint Final Rules for Vehicle Standards were adopted by the U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA). The Joint Final Rules set increasing Corporate Average Fuel Economy (CAFE) standards for new passenger cars and light-trucks as well as for combination tractors (i.e., semi-trucks), heavy-duty pickup trucks and vans, and vocational vehicles including transit and school buses. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance such as electric, hybrid, and natural gas vehicles.

State Regulations

State of California Executive Order S-3-05

In June 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05 which identified the California Environmental Protection Agency (Cal/EPA) as the lead coordinating State agency for establishing climate change emission reduction targets in California and sets the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below

1990 levels. Under this order, several state agencies cooperatively prepared a Climate Action Plan, which identifies strategies to reduce GHG emissions. This order also established the state's Climate Action Team, which coordinates statewide efforts to implement the Climate Action Plan strategies and reports regularly to the Governor and the Legislature regarding progress made towards achieving the GHG emission reduction targets set by this order. There are several working groups within the Climate Action Team, including groups focused on agriculture, biodiversity, forestry, land use and infrastructure, public health, research, and water energy.

The California Global Warming Solutions Act of 2006 (Assembly Bill 32)

The Global Warming Solutions Act of 2006 (AB 32) defines the six GHGs identified in Section 8.2 above and established the Executive Order S-3-05 GHG emission reduction target for 2020 as a matter of law. Specifically, AB 32 requires that the State reduce GHG emissions in 2020 to 1990 levels. To accomplish this, AB 32 required the California Air Resources Board (CARB) to

- ❖ Adopt Early Action Measures to reduce GHGs;
- ❖ Establish a statewide GHG emissions cap for 2020 based on an approved inventory of 1990 emissions;
- ❖ Adopt mandatory reporting rules for significant GHG sources;
- ❖ Adopt a scoping plan indicating how emission reductions will be achieved through regulations, market mechanisms, and other actions;
- ❖ Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs; and
- ❖ Monitor compliance with and enforce adopted rules, regulations, orders, emission limitations, emission reduction measures, and/or market-based compliance mechanisms.

As required by AB 32, CARB's approval of an inventory of the GHG emissions generated in 1990 was used to establish the emissions limit for 2020, which was set at 427 MMT CO₂E. In addition, CARB adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO₂ in excess of specified thresholds.

Early Action Measures

As required by AB 32, CARB adopted the following nine "discrete early action GHG reduction measures":

- 1) A low-carbon fuel standard to reduce the "carbon intensity" of California fuels.
- 2) Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants.

- 3) Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.
- 4) Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology.
- 5) Reduction of auxiliary engine emissions of docked ships by requiring port electrification.
- 6) Reduction of PFCs from the semiconductor industry.
- 7) Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products).
- 8) Requirement that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency.
- 9) Restriction on the use of SF₆ from non-electricity sectors if viable alternatives are available.

California's Scoping Plan and GHG Emissions Cap

In the adopted Climate Change Scoping Plan (2008), CARB lays out the GHG reductions that need to be achieved and the types of measures that will be used to reach them. The Plan predicts that under a “business as usual” (BAU) scenario, 2020 GHG emissions would equal 596 MMT CO₂e. Consequently, compared to the 1990 GHG emissions inventory, emissions would need to be reduced by 169 MMT CO₂e in 2020. This represents a 30 percent GHG reduction from the 1990 levels to be achieved by 2020. In 2011 CARB updated the projected GHG emissions to reflect the effects of the economic downturn, finding that a reduction of 21% from the projected BAU scenario would be necessary to achieve the statewide emission targets. This 21% reduction assumes that the BAU scenario does not account for the effect of additional GHG regulations that have been adopted. CARB found that if using a BAU scenario that accounts for those additional regulations, specifically the increased renewable energy standard (the Renewable Portfolio Standard, RPS) and vehicle emissions reductions (under a regulation referred to as Pavley I), a reduction from that BAU scenario of 16% would be needed to achieve the established targets.

The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The key elements of the Scoping Plan include:

- ❖ Expanding and strengthening existing energy efficiency programs, and building and appliance standards.
- ❖ Achieving a statewide renewables energy mix of 33%.
- ❖ Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions.

- ❖ Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
- ❖ Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.
- ❖ Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order S-1-07 sets a declining Low Carbon Fuel Standard (LCFS) for GHG emissions measured in CO₂-equivalent gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell-power motor vehicles. The LCFS is anticipated to replace 20% of the fuel used in motor vehicles with alternative fuels by 2020.

Senate Bill 375 - Redesigning Communities to Reduce Greenhouse Gases

SB 375 encourages housing and transportation planning on a regional scale, in a manner designed to reduce vehicle use and associated GHG emissions. As required under this law, CARB has assigned regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035. The targets apply to the regions in the State covered by the 18 Metropolitan Planning Organizations (MPOs), including the Sacramento Regional Council of Governments (SACOG) in the Sacramento region. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012. CARB adopted regional reduction targets in 2010. For the SACOG area, the adopted reduction targets call for a 7% reduction by 2020 and a 16% reduction by 2025.

SB 375 also requires each MPO to include a Sustainable Communities Strategy (SCS) in their Regional Transportation Plan. The SCS must set forth a vision for growth for the region while taking into account transportation, housing, environmental, and economic needs. The SCS will be the blueprint by which the region will meet its GHG emissions reductions target if there is a feasible way to do so. Discussion of the recently adopted SACOG SCS is provided below in the Local Regulations section.

Executive Order S-13-08

Governor Arnold Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The Executive Order is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. It directs state agencies to take specified actions to assess and plan for such impacts, including requesting the National Academy of Sciences to prepare a Sea

Level Rise Assessment Report, directing the Business, Transportation, and Housing Agency to assess the vulnerability of the state's transportation systems to sea level rise, and requiring the Office of Planning and Research and the Natural Resources Agency to provide land use planning guidance related to sea level rise and other climate change impacts.

The order also required state agencies to develop adaptation strategies, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. The adaptation strategies report summarizes key climate change impacts to the state for the following areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. The report then recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Senate Bill X1 2

SB X1 2 expands the Renewable Portfolio Standard by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the Renewable Portfolio Standard. The California Public Utilities Commission (CPUC) has established the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets, and the governing boards are responsible for ensuring compliance with these targets. The CPUC is responsible for enforcement of the Renewable Portfolio Standard for retail sellers, while the California Energy Commission and CARB will enforce the requirements for local publicly owned electric utilities.

California Building Standards Code

One of the measures identified in the CARB Scoping Plan for reducing GHG emissions is a "Green Building Strategy," which the Scoping Plan estimates will result in a reduction of 26 million metric tons of carbon dioxide equivalent (MMTCO_{2e}), relative to business as usual, by 2020.

The California Building Standards Commission adopted the California Green Building Standards Code (CalGreen, Title 24 of the California Code of Regulations) in 2010. CARB has estimated that the mandatory requirements of CalGreen will result in a reduction of 3 MMT CO_{2e} by 2020. This represents approximately 1.8 percent of the total 169 MMT CO_{2e} that the state must reduce by 2020 from a business as usual scenario in order to satisfy AB 32's mandates.

CalGreen goes beyond energy performance to encompass many issues related to sustainability including reduced construction waste, water conservation, non-toxic sealants, and renewable materials. By contrast the California energy standard (also known as Title 24, Part 6) is

primarily on promoting more energy-efficient buildings, and only considers the fixed infrastructure: building envelope, heating and cooling, water heating, and lighting.

CalGreen applies to many types of residential and non-residential buildings throughout California. It includes mandatory provisions, as well as two tiers of voluntary provisions. Mandatory provisions for both residential and non-residential buildings are divided into five categories: site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. The mandatory provisions in each category are similar for residential and non-residential buildings, though the non-residential building requirements tend to include additional specifications and apply to more fixtures and systems. Key provisions of CalGreen include:

- ❖ Mandatory 20% reduction in indoor water use and voluntary goals for reductions of 30%, 35% and 40%;
- ❖ Separate meters must be provided for indoor and outdoor water use at nonresidential buildings; and at those sites, irrigation systems for larger landscaped areas must be moisture-sensing.
- ❖ 50% of construction waste must be diverted from the landfills; higher, voluntary diversion amounts of 65% to 75% for new homes, and 80% for commercial construction.
- ❖ Mandatory inspections of energy systems -- such as the heat furnace, air condition and mechanical equipment -- for nonresidential buildings that are larger than 10,000 square feet to “ensure that all are working at their maximum capacity according to design efficiencies.”
- ❖ Mandatory use of low-pollutant emitting paint, carpet, vinyl flooring, particle board and other interior finish materials.

Local Regulations

SACOG Sustainable Communities Strategy

In April 2012, SACOG, the designated MPO for the Sacramento region, adopted a Metropolitan Transportation Plan/Sustainable Communities Strategy for 2035 (MTP/SCS) (SACOG 2012). Building on prior plans including the Blueprint Growth Strategy discussed below and the 2008 MTP, the SCS accommodates future growth through a more compact land use pattern largely within the region’s current development footprint, emphasizes operational improvements over new roadway capacity projects, and reflects other factors that have tended to reduce motor vehicle use. The SCS demonstrates that, if implemented, the region will achieve a 9% per capita GHG reduction in passenger vehicle emissions in 2020 and a 16% reduction in 2035. These reductions meet the GHG targets for SACOG as discussed above. In June 2012, CARB issued an Acceptance of GHG Quantification Determination for the SACOG SCS, indicating that CARB concurs with SACOG’s quantification of GHG emission reductions from the final MTP/SCS and its determination that the SCS would achieve the 2020 and 2035 targets established by CARB.

Sacramento Region Blueprint

In 2004 SACOG adopted the Preferred Blueprint Scenario for 2050 (Blueprint). The Blueprint depicts a way for the region to grow through 2050 in a manner consistent with the seven smart growth principals: (1) transportation choices; (2) mixed-use developments; (3) compact

development; (4) housing choice and diversity; (5) use of existing assets; (6) quality design, and (7) natural resources conservation. The seven smart growth principals provide guidance for land use planners which, when implemented, would ultimately result in an overall reduction in vehicle miles traveled (VMT), emissions of criteria pollutants, and GHG emissions.

Placer County Air Pollution Control District

The Placer County Air Pollution Control District's (APCD's) *CEQA Air Quality Handbook* recommends that the threshold of significance for GHG emissions selected by lead agencies be related to compliance with AB 32 reduction goals. Thus, in accordance with CARB's 2011 revisions to the 2020 reduction goals, the Placer County APCD recommends a quantitative GHG analysis for development projects that considers whether the project would promote sustainability and implement operational GHG emission reduction strategies that would reduce GHG emissions to meet the statewide emission reduction target for GHG of 21% (where projected 2020 BAU levels is based on 2010 levels) or 16% (where the projected 2020 BAU levels is based on 2010 levels and includes accounting for percentages of emission reductions captured for implementation of Pavley and RPS). Emission reduction measures for GHG could include, but are not limited to, compliance with local, state, or federal plans or strategies for GHG reductions, on-site and off-site mitigation recommendations from the Office of the Attorney General, and project design features.

City of Roseville

The *City of Roseville General Plan 2025*, last updated in 2013, includes many policies that reduce GHG emissions. These policies address global climate change by requiring GHG emission reductions, conserving energy and resources, and addressing the potential impact of climate change (e.g., flood protection policies). The policies applicable to the analysis of the proposed project's GHG emissions, contribution to climate change effects, and exposure to the effects of climate change, include:

Community Form Policy 5: Promote land use patterns that result in the efficient use of urban lands and preservation of open space as specified in the Open Space and Conservation Element.

Community Form - Relationship to Transit, Pedestrian, and Air Quality - Policy 1: Promote land use patterns that support a variety of transportation modes and accommodate pedestrian mobility.

Community Form - Relationship to Transit, Pedestrian, and Air Quality - Policy 2: Allow for land use patterns and mixed use development that integrate residential and non-residential land uses, such that residents may easily walk or bike to shopping, services, employment, and leisure activities.

Community Form - Relationship to Transit, Pedestrian, and Air Quality - Policy 3: Concentrate higher intensity uses and appropriate support uses within close proximity of transit and bikeway corridors as identified in the Bicycle Master Plan. In addition, some component of public use such as parks, plazas, public buildings, community centers and/or libraries should be located within the corridors.

Community Form - Relationship to Transit, Pedestrian, and Air Quality - Policy 5: Where feasible, improve existing development areas to create better pedestrian and transit accessibility.

Community Form - Relationship to Transit, Pedestrian, and Air Quality - Policy 6: Through City land use planning and development approvals, require that neighborhood serving uses (e.g., neighborhood commercial uses, day care, parks, schools, and other community facilities) be physically linked with adjacent residential neighborhoods.

Community Form - Relationship of New Development - Policy 1: Require that new development areas and associated community-wide facilities (open space resources, parks, libraries, etc.) be linked and oriented to existing developed areas of the community through road networks, public transit systems, open space systems, bike way and pedestrian systems, and other physical connections.

Community Form - Jobs/Housing and Economic Development - Policy 1: Strive for a land use mix and pattern of development that provides linkages between jobs and employment uses, will provide a reasonable jobs/housing balance, and will maintain the fiscal viability of the City.

Community Form - Community Design - Policy 2: Continue to develop and apply design standards that result in efficient site and building designs, pedestrian friendly projects that stimulate the use of alternative modes of transportation, and the establishment of a functional relationship between adjacent developments.

Community Form - Community Design - Policy 3: Encourage designs that strike a balance between the incorporation of aesthetic and development requirements, and the economic considerations associated with development.

Community Form - Community Design - Policy 9: The location and preservation of native oak trees and oak woodlands shall be a primary factor in determining site design, building location, grading, construction and landscaping, and in establishing the character of projects through their use as a unifying element in both new and existing development.

Growth Management Policy 8: Manage growth in such a way to ensure that significant open space areas will be preserved.

Circulation - Level of Service - Policy 2: Strive to meet the level of service standards through a balanced transportation system that provides alternatives to the automobile.

Circulation - Transit - Policy 1: Pursue and support transit services within the community and region and pursue land use, design and other mechanisms that promote the use of such services.

Circulation - Transportation System Management - Policy 1: Continue to enforce the City's TSM ordinance and monitor its effectiveness.

Circulation - Bikeway/Trails - Policy 1: Develop a comprehensive and safe system of recreational and commuter bicycle routes and trails that provides connections

between the City's major employment and housing areas and between its existing and planned bikeways.

Air Quality and Climate Change Policy 4: As part of the development review process, develop mitigation measures to minimize stationary and area source emissions.

Air Quality and Climate Change - Transportation and Circulation - Policy 5: Develop transportation systems that minimize vehicle delay and air pollution.

Air Quality and Climate Change - Transportation and Circulation - Policy 6: Develop consistent and accurate procedures for mitigating transportation emissions from new and existing projects.

Air Quality and Climate Change - Transportation and Circulation - Policy 7: Encourage alternative modes of transportation including pedestrian, bicycle, and transit usage.

Air Quality and Climate Change - Energy Conservation - Policy 10: Conserve energy and reduce air emissions by encouraging energy efficient building designs and transportation systems.

Open Space and Conservation - Open Space System - Policy 1: Provide an interconnecting system of open space corridors that, where feasible, incorporate bikeways and pedestrian paths.

Open Space and Conservation - Open Space System - Policy 2: Provide interconnected open space corridors between open space and habitat resources, recreation areas, schools, employment, commercial service and residential areas.

Open Space and Conservation - Open Space System - Policy 4: Require all new development to provide linkages to existing and planned open space systems. Where such access cannot be provided through the creation of open space connections, identify alternative linkages.

Open Space and Conservation - Open Space System - Policy 6: Take into account consideration of natural habitat areas in developing linkages and in preserving open space areas. Identify alternate sites for linkages where sensitive habitat areas have the potential to be adversely impacted.

Open Space and Conservation - Open Space System - Policy 7: Maximize opportunities for preservation and maintenance of open space resources, including establishment of private open space areas. Consider coordination with non-profit organizations and investigate the potential for conservancy ownership and/or management of open space areas.

Open Space and Conservation - Vegetation and Wildlife - Policy 1: Incorporate existing trees into development projects, and where preservation is not feasible, continue to require mitigation for the loss of removed trees. Particular emphasis shall be placed on avoiding the removal of groupings or groves of trees.

Open Space and Conservation - Vegetation and Wildlife - Policy 2: Preserve and rehabilitate continuous riparian corridors and adjacent habitat along the City's creeks and waterways.

Open Space and Conservation – Vegetation and Wildlife – Policy 3: Require dedication of the 100-year flood plain or comparable mechanism to protect habitat and wildlife values in perpetuity.

Open Space and Conservation – Vegetation and Wildlife – Policy 4: Require preservation of contiguous areas in excess of the 100-year flood plain as merited by special resources or circumstances. Special circumstances may include, but are not limited to, sensitive wildlife or vegetation, wetland habitat, oak woodland areas, grassland connections in association with other habitat areas, slope or topographical considerations, recreation opportunities, and maintenance access requirements.

Open Space and Conservation – Groundwater Recharge and Water Quality – Policy 3: Ensure a buffer area between waterways and urban development to protect water quality and riparian areas.

Open Space and Conservation – Groundwater Recharge and Water Quality – Policy 5: Continue to monitor groundwater resources and investigate strategies for enhanced sustainable use. Areas where recharge potential is determined to be high shall be considered for designation as open space.

Parks and Recreation Policy 1: The City shall ensure the provision of 9 acres of park land per 1,000 residents

Parks and Recreation Policy 6: Take into consideration energy efficiency and water conservation, including the use of treated wastewater, in park development and design.

Public Facilities – Electric Utilities – Policy 5: Explore the feasibility of the development of and participation in renewable energy resources.

Public Facilities – Electric Utilities – Policy 6: Adopt a load/resource management plan, incorporating energy efficiency, conservation, load management, and reliability strategies, identifying program objectives and implementation and monitoring mechanisms.

Public Facilities – Electric Utilities – Policy 8: Pursue reasonable and cost-effective energy efficiency, conservation, and load management programs pertinent to the electric utility system.

Public Facilities – Electric Utilities – Policy 10: Require new development to pay a fair share of the cost of new sub-transmission and distribution needed to serve the development and to dedicate sites and easements needed for substations, transmission, sub-transmission, and distribution.

Public Facilities – Water System – Policy 10: Develop and implement water conservation standards and measures as necessary elements of the water system.

Public Facilities – Water System – Policy 11: Develop and implement an aquifer storage and recovery program.

Public Facilities – Wastewater and Recycled Water System – Policy 5: Explore potential alternatives to treatment and discharge.

Public Facilities – Wastewater and Recycled Water System – Policy 6: Develop, plan, and provide incentives for use of recycled water by the public and private sectors.

Public Facilities – Solid Waste, Source Reduction and Recycling – Policy 1: Ensure existing and future recycling sites and operations remain viable through application of land use compatibility standards.

Public Facilities – Solid Waste, Source Reduction and Recycling – Policy 2: Comply with the source reduction and recycling standards mandated by the State by reducing the projected quantity of solid waste disposed at the regional landfill by 50%, as well as any mandated future reductions.

Public Facilities – Solid Waste, Source Reduction and Recycling – Policy 5: Develop public education and recycling programs

Public Facilities – Water and Energy Conservation – Policy 1: Develop and implement water conservation standards.

Public Facilities – Water and Energy Conservation – Policy 2: Implement various water conservation plans developed by the Environmental Utilities Department.

Public Facilities – Water and Energy Conservation – Policy 3: Explore potential uses of treated wastewater.

Public Facilities – Water and Energy Conservation – Policy 4: Protect the quality and quantity of the City’s groundwater and consider designating areas as open space where recharge potential is high.

Public Facilities – Water and Energy Conservation – Policy 5: Develop and adopt a landscape ordinance that provides standards for the use of drought tolerant, xeriscape, and water-conserving landscape practices for both public and private projects.

Public Facilities – Water and Energy Conservation – Policy 6: Develop and implement public education programs designed to increase public participation in energy, water conservation and recycled water use.

Public Facilities – Water and Energy Conservation – Policy 8: Enforce energy requirements and encourage development and construction standards that promote energy efficiency and conservation.

Public Facilities – Water and Energy Conservation – Policy 9: Preserve scarce resources by undertaking major projects in energy conservation and load management, including increasing efficiency in the City’s electrical system.

Public Facilities – Water and Energy Conservation – Policy 10: Continue and expand energy efficiency and conservation programs to serve all utility users.

Safety – Flood Protection – Policy 1: Continue to regulate, through land use, zoning, and other restrictions, all uses and development in areas subject to potential flooding.

Safety – Flood Protection – Policy 2: Monitor and regularly update City flood studies, modeling and associated land use, zoning, and other development regulations.

Safety – Flood Protection – Policy 3: Continue to pursue a regional approach to flood issues.

Safety - Flood Protection - Policy 4: Provide flood warning and forecasting information to community residents to reduce impacts to personal property.

Safety - Flood Protection - Policy 5: Minimize the potential for flood damage to public and emergency facilities, utilities, roadways, and other infrastructure.

Safety - Flood Protection - Policy 6: Require new developments to provide mitigation to insure that the cumulative rate of peak run-off is maintained at pre-development levels.

Safety - Flood Protection - Policy 8: Establish flood control assessment districts or consider other funding mechanisms to mitigate flooding impacts.

Safety - Flood Protection - Policy 9: Where feasible, maintain natural stream courses and adjacent habitat and combine flood control, recreation, water quality, and open space functions.

8.4 IMPACTS

Significance Criteria

In accordance with Section 15064.4 and Appendix G of the CEQA Guidelines, The Scoping Plan, the Placer County APCD CEQA Air Quality Handbook, and the *City of Roseville General Plan 2025*, the proposed Fiddymont Ranch SPA 3 project would have a significant environmental effect related to climate change if the project would:

- ❖ Generate greenhouse gas emissions, either directly or indirectly, that would not achieve a minimum 21% GHG emission reduction from the 2010 BAU scenario;
- ❖ Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG; or
- ❖ Be affected by climate change effects, such as loss or substantial reduction in water supply reliability or exposure to increased flooding risks.

As discussed above, the CARB Scoping Plan, as updated in 2011, found that GHG emissions must be reduced by 21% compared to projected BAU levels based on conditions existing in 2010 in order to meet the statewide GHG emission reduction targets.

Accordingly, the impact analysis below compares GHG emissions associated with the proposed land uses under 2010 conditions (not including Pavley and RPS) with GHG emissions associated with the proposed land uses under 2020 conditions (including Pavley and RPS).

IMPACT 8.1:	Generate a Substantial Contribution to GHG Emissions that Conflict with an Applicable Plan or Policy
APPLICABLE POLICIES AND REGULATIONS:	AB 32 City of Roseville General Plan 2025
SIGNIFICANCE WITH POLICIES AND REGULATIONS:	Significant
MITIGATION MEASURES:	Mitigation Measures 8.1a and 8.1b
SIGNIFICANCE AFTER MITIGATION:	Less than Significant

Construction of the proposed project would generate GHG emissions through consumption of fuel for construction equipment, vehicles transporting materials to and from the site, and vehicles transporting construction workers to and from the site. Operation of the project would generate GHG emissions from onsite area sources, offsite energy production required for onsite activities and water use, and project-related vehicle trips.

Neither the City of Roseville nor the Placer County APCD has adopted significance thresholds for GHG emissions. Instead, the City of Roseville applies a threshold based on the AB 32 Scoping Plan. As described in the Regulatory Framework section above, the project would have a significant impact related to its contribution to climate change effects if it would generate GHG emissions that would hinder the state’s ability to achieve the reduction targets established in AB 32. Specifically, the project would have a significant effect if it would generate emissions greater than 21% below the emissions that would be generated by the project under a BAU scenario based on conditions in the year 2010.

Construction Emissions

As discussed in CHAPTER 7 AIR QUALITY, the CalEEMod air pollutant emissions modeling program, Version 2013.2.1, was used to quantify emissions estimates produced through construction and operation of the proposed Fiddymment Ranch SPA 3 project. Project construction would be phased over a 12-year period, from 2014 to 2025. The actual buildout schedule will be dependent on market forces and could be slightly shorter or somewhat longer than 12 years. However, the 103-year construction schedule provides a reasonable estimate of the total GHG emissions from construction. Construction emissions would occur over a discrete time period (approximately 12 years); however they would be ongoing in the year 2020, which is the year in which compliance with AB 32 must be achieved. In order to reflect the impact of construction emissions of achievement of the state’s GHG emission reduction goals, the maximum annual construction GHG emissions have been added to the proposed project’s operational emissions in the analysis below.

Based on the CalEEMod modeling results construction-related activities would generate between approximately 248 metric tons (MT) and 679 MT annually. Construction-related GHG emissions would then cease upon completion of the construction phase of the project and would therefore represent a minor fraction of total project-related emissions, when considering the longevity of operational emissions associated with the project. Details of the GHG emissions modeling for project construction are provided in the CalEEMod results (Dudek 2013) provided in Appendix D to this Recirculated Draft Subsequent EIR.

Operational Emissions

Development of the portions of the Fiddymment Ranch area of the WRSP affected by the proposed SPA 3 project would include a total of 2,949 residential units, 7.3 acres of community commercial land uses, an elementary school and parks and open space. Community commercial land uses may develop at a Floor-Area-Ratio of between 0.2 and 0.4. For this analysis, it is assumed that the commercial areas would develop at a Floor-Area-Ratio of 0.25, consistent with the analysis in the WRSP EIR and the project's *Fiddymment Ranch SPA 3 Revised Project Memorandum* Transportation Analysis (DKS 2013). At this Floor-Area-Ratio, a total of 79,170 square feet of commercial land uses would be constructed.

The number of vehicle trips associated with project operation used for this analysis is consistent with the project's transportation impact analysis *Revised Project Memorandum* (DKS 2013) provided in Appendix B to this Recirculated Draft Subsequent EIR. Details of the GHG emissions modeling for this project are provided in the CalEEMod results (Dudek 2013) provided in Appendix D to this Recirculated Draft Subsequent EIR.

As discussed above, operational emissions were quantified using the CalEEMod model based on the proposed land uses. Modeling was prepared assuming full buildout of the project in the year 2010 without implementation of mitigation measures to identify the GHG emissions under the year 2010 BAU scenario. The CalEEMod modeling found that without implementation of mitigation measures, operation of the project in the year 2010 BAU scenario would emit an annual total of 46,790 MTCO_{2e}, as shown in *Table 8.2*.

Table 8.2
Year 2010 BAU GHG Emissions

Source	CO _{2e} Emissions (MT/Year)
Maximum Annual Construction Emissions	679.78
Area Sources	2,768.62
Energy Consumption	8,810.33
Mobile Sources	32,368.21
Solid Waste	1,534.13
Water Consumption	629.01
Total	46,790.08

The project applicant contracted with BuildItGreen to complete a Green Point Ratings analysis for the Fiddymment Ranch development. The BuildItGreen program identifies a menu of options that builders can select in order to increase energy and water efficiency for their products. Each menu item is associated with a particular point value or point value range. As described in *Mitigation Measure 8.1a*, the project applicant has committed to achieving a specific point rating for each housing type in order to reduce GHG emissions. For LDR areas within the Fiddymment Ranch SPA 3 project site, each residence will achieve a BuildItGreen score of 101; each residence within MDR areas of the proposed project will achieve a BuildItGreen score of 97; and each residence within HDR areas of the proposed project will achieve a BuildItGreen score of 105. In addition, *Mitigation Measure 8.1b* requires the project to implement a water conservation plan to

reduce water usage at the project site, consistent with menu options selected in the Green Point Ratings analysis and the evaluation of the project's water demands presented in CHAPTER 9 PUBLIC SERVICES of this Recirculated Draft Subsequent EIR.

In preparing the Green Point Ratings analysis, specific BuildItGreen menu options were selected for each residential density category. These design features are typical of the options that may actually be selected at the time that tentative maps are processed. The options included in the Green Point Ratings analysis are:

- ❖ **Indoor Water Usage:** High efficiency toilets, lavatory faucets, kitchen/utility faucets, and shower fixtures
- ❖ **Outdoor Water Usage:**
 - All residential areas – for developer-installed landscaping, group landscaping plants by water needs; mulch all planting beds; avoid planting invasive plants; 75 percent of plants are drought tolerant, California natives or Mediterranean species or other appropriate species
 - MDR - Turf is less than 25 percent of landscaped area, install high-efficiency irrigation systems
 - HDR - turf shall not be installed on slopes exceeding 10 percent and no overhead sprinklers shall be installed in areas less than 8 feet wide; turf is less than 10 percent of landscaped area; plant shade trees; install high-efficiency irrigation systems; incorporate two inches of compost in the top 6 to 12 inches of soil
- ❖ **Energy Usage:**
 - All homes – no fireplaces, provide high-efficiency HVAC system and filters, install Energy Star bathroom fans on timer or humidistat, install whole house fans, install Energy Star dishwashers
 - HDR - exceed Title 24 energy efficiency by 17 percent
 - MDR - minimum 16-inch overhangs and gutters, verify quality of insulation installation & thermal bypass checklist before drywall, house passes blower door test, exceed Title 24 energy efficiency by 17 percent, provide built-in recycling center
 - LDR - minimum 16-inch overhangs and gutters, verify quality of insulation installation & thermal bypass checklist before drywall, house passes blower door test, exceed Title 24 energy efficiency by 15 percent, provide built-in recycling center

Some of these options are reflected in the CalEEMod modeling – specifically the indoor water usage and the energy usage measures applicable to all homes. In addition, the CalEEMod modeling reflects exceeding Title 24 energy requirements by 10% for each housing product. Although this is less than the actual targets of 15% and 17%, this approach provides a conservative estimate and allows for future flexibility in achieving the BuildItGreen point ratings for each housing product (i.e., because the BuildItGreen program provides a menu of options to select, a developer may select another, equally effective option).

The mitigated project operations were also modeled assuming full buildout in year 2020, reflecting the year in which the AB 32 targets must be achieved. This also provides a

conservative analysis since full buildout is expected to occur later than 2020; therefore the full buildout emissions may not occur in 2020. The CalEEMod assumptions for year 2020 project operations include the effects of regulations already adopted that will provide some reductions in GHG emissions. Specifically, this includes reductions in GHG emissions from motor vehicles associated with increased fuel efficiency required under the Pavley I regulation and associated with the reduced carbon intensity of fuels required under the LCFS. This also includes reductions in GHG emissions generated by production of energy used in project operations required by the RPS regulation. As of 2010, Roseville Electric was obtaining 17% of its energy from sources that qualify under the RPS regulation. The CalEEMod modeling for year 2020 assumes that Roseville Electric will comply with the 33% RPS requirement for year 2020.

Table 8.3 presents the CalEEMod estimated GHG emissions for project operation in year 2020, including implementation of *Mitigation Measure 8.1a*. As shown, it is estimated that operation of land uses within the Fiddymont Ranch SPA 3 project site combined with the average annual construction GHG emissions is expected to generate 41,126.47 MTCO₂e per year, which is 30% less than the Year 2010 BAU GHG emissions.

Table 8.3
Year 2020 Mitigated GHG Emissions

Source	CO₂e Emissions (MT/Year)
Maximum Annual Construction Emissions	679.62
Area Sources	1,323.90
Energy Consumption	6,869.70
Mobile Sources	22,010.64
Solid Waste	1,534.13
Water Consumption	450.05
Total Project 2020 GHG Emissions	32,868.04
Total Year 2010 BAU Emissions	46,790.08
Percent Reduction from Year 2010 BAU	29.75%

The GHG emissions during project construction and operation in year 2020 would achieve more than the minimum 21% reduction from the year 2010 BAU emissions. Therefore the project would meet the reduction targets identified by CARB and would result in a less than significant impact related to GHG emissions and the associated contribution to climate change effects and would not interfere with achievement of the statewide GHG emissions targets. Furthermore, additional GHG emission reductions will occur pursuant to a settlement reached in litigation filed in 2004 challenging the City's approval of the WRSP. The settlement agreement requires that development within the WRSP area pay an additional \$125 fee per dwelling unit to the Placer County APCD's Offsite Mitigation Program, which is used to fund projects that will result in a regional reduction in air pollutant and GHG emissions.

In addition to the AB 32 emission reduction targets, the City of Roseville has adopted many policies to guide land use development towards minimizing GHG emissions, ensuring individual projects contribute to the State’s GHG targets under AB 32, and minimizing the exposure of City residents to the effects of climate change. The following list demonstrates how the proposed project would comply with those policies. The proposed project:

- ❖ Provides urban levels of development consistent with the SACOG Blueprint and increases residential density relative to the previously approved WRSP;
- ❖ Preserves open space and existing trees along Pleasant Grove Creek;
- ❖ Mixes commercial and public land uses with residential areas which may reduce vehicle miles traveled;
- ❖ Provides transit and bicycle facilities that are linked to public and commercial land uses and other existing facilities in the City;
- ❖ Avoids development in the 100-year floodplain and adjacent to waterways;
- ❖ Provides parkland in excess of City requirements;
- ❖ Implements a water conservation plan; and
- ❖ Uses recycled water.

In addition, development within the project site would include energy and water efficiency features in buildings and landscaping in order to attain the BuildItGreen scores required under *Mitigation Measure 8.1a* while *Mitigation Measure 8.1b* requires development to comply with the project’s Water Conservation Plan. Increasing energy and water efficiency would contribute to reducing the project’s GHG emissions. Given the proposed project design considerations reflected above and the requirements of *Mitigation Measures 8.1a* and *8.1b*, the project would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing GHG emissions. This impact would remain less than significant with implementation of mitigation.

IMPACT 8.2:	Be Affected by Climate Change Effects
APPLICABLE POLICIES AND REGULATIONS:	AB 32
SIGNIFICANCE WITH POLICIES AND REGULATIONS:	Less than Significant
MITIGATION MEASURES:	None
SIGNIFICANCE AFTER MITIGATION:	Less than Significant

Although there is consensus that global warming is occurring and is greatly influenced by human activity, there is less certainty as to the timing, severity and potential consequences of global climate change. Nonetheless, the following provides information on the potential effects of climate change on development within Fiddymment Ranch under the proposed Fiddymment Ranch SPA 3 project.

Temperature

An increase in average annual temperatures would, by itself, have little effect on the proposed project, other than increasing the demand for irrigation from increased evapo-transpiration rates, and increasing overall energy demand to meet air conditioning needs.

Precipitation

Although global climate change models generally predict an increase in overall precipitation on a worldwide scale, regional models applied to California predict both increases and decreases in annual precipitation. Therefore, the data have been inconclusive in formulating agreed-on predictions of future conditions.

According to the California Department of Water Resources (DWR), when trends are analyzed for northern, central and southern California, they show that precipitation in the northern portion of the state appears to have increased slightly from 1890 to 2002, while precipitation in the central and southern areas has decreased slightly. All changes were in the range of one to three inches annually. These changes are not expected to substantially affect the proposed project in relation to stormwater runoff and flooding.

Snow Pack/Surface Water Supply

California's annual snow pack is deposited primarily between the months of November and March. The snow pack typically melts from April through July, which in turn feeds the American and Sacramento rivers. Snowmelt provides significant quantities of water to streams and reservoirs for several months after the annual storm season has ended.

The snow pack is important to the state's annual water supply because of its volume and the time of year that it typically melts. Average runoff from melting snow pack provides about 20 percent of the state's total annual natural runoff and roughly 35 percent of the state's total usable annual surface water supply. The state's snow pack is estimated to contribute an average of about 15 million acre-feet of runoff each year, about 14 million acre feet of which is estimated to flow into the Central Valley. In comparison, total reservoir capacity in watersheds with snowmelt contributions and that serve the Central Valley is about 24.5 million acre feet.

According to DWR, total water runoff from snow pack into Sacramento Valley rivers remained the same between the months April through July, 1906 through 2002; however, more runoff occurred in the form of rain during the winter months, and less as a result of melting snow during the spring and early summer. This shift towards a greater relative proportion of rain rather than snow could have ramifications on water supply, since snow pack is the primary storage mechanism for potable surface water supplies. As warming trends continue, it is reasonable to surmise that snow pack will be reduced and could melt earlier. This phenomenon could affect the proposed project indirectly by altering the timing and volume of runoff that feeds Folsom Lake, which provides water to the project area. The management of reservoirs generally, including the management of Folsom Reservoir by the Bureau of Reclamation, may need to be altered to account for seasonal variations in precipitation type and intensity. Upstream water management is complex, because it serves multiple purposes such as flood control and habitat management.

The City of Roseville is taking a proactive approach in the face of future uncertainties, and requested the Fiddymment Ranch SPA 3 applicants to prepare a water conservation strategy, which has been incorporated into the project, to reduce Fiddymment Ranch water demands. This will assist the City in continuing to provide water to City residents in the face of potential future reductions in surface water supply. At a state or regional level, it is expected that new technologies for water supply, treatment and water use efficiency, implementation of water

transfers and conjunctive use, coordinated operation of reservoirs, improved flow forecasting, and the cooperation of local, regional, state, and federal agencies will be needed to help California respond to the effects of global climate change on water supply.

Based on increasing knowledge of climate change, it is reasonable to expect that California will adapt the State's water system to meet demands created by climate change, including changes to a warmer winter season. Measures that are likely include augmenting traditional water supply reservoir operations with other actions such as conservation, conjunctive use, desalination, and changes to water portfolios. Climate change is expected to have a greater effect on Southern California and agricultural users than urban users in the Sacramento Valley.

Although California could experience an increased number of single-dry and multiple dry years as a result of global climate change, based on current knowledge it is reasonably expected that such increase would not significantly affect the ability of the City of Roseville to reliably meet the build-out water demands for Fiddymment Ranch. As described in Appendix E1, *Water Supply Assessment for the Fiddymment Ranch Specific Plan Amendment 3 Project*, adequate water supply is available to reliably meet all of the projected existing City demands and the increased water demands resulting from the proposed Fiddymment Ranch SPA 3 project, even under single-year and multiple year drought conditions.

Importantly, the City of Roseville's surface water supply entitlements have historically demonstrated a high reliability during even multiple-dry years, as discussed in **CHAPTER 9A WATER SUPPLY**. Even during the time between 1987 and 1992, when California experienced a five-year drought, Roseville had sufficient water to serve its customers. In addition, on an as-needed basis, Roseville would supplement its surface water supplies with groundwater in dry years to improve reliability and ensure that all city water needs are met. Although, as discussed below, there is still a great deal of uncertainty in respect to potential impacts of climate change on future groundwater availability in California, in view of the high reliability of the City of Roseville's water supply, the wide variety of water management techniques available to the City, and predictions about the effects of climate change on water supply in the geographic area of Fiddymment Ranch, the long term water supply is considered sufficient.

Ground Water Supply

Little work has been performed on the effects of climate change on specific groundwater basins or groundwater recharge characteristics. Changes in rainfall and changes in the timing of the groundwater recharge season could result in changes in recharge rates. Warmer temperatures could increase the rate of evaporation, which would reduce percolation. The City of Roseville is separately pursuing an Aquifer Storage and Recovery program, which would enable the city to inject surplus water into the groundwater table.

The Placer County Water Agency (PCWA) integrated water resources strategy anticipates that groundwater pumping would not exceed safe yields as long as the long-term multiple years average does not exceed 95,000 acre-feet per year (AFY). Long-term average groundwater pumping is not expected to exceed the 95,000 AFY average. This finding was supported by the PCWA Integrated Water Resources Plan and by the initial findings of the Western Placer County Groundwater Management Plan. Therefore, it is expected that groundwater will be a reliable back-up or supplemental water source for the City of Roseville.

Storms and Extreme Events

Weather events are a natural part of any climate system. Although the climate in the project area is very stable and relatively predictable (hot, dry summers and cool, wet winters), there can be variations over periods of time including droughts or severe storms. There is a potential that climate change could lead to more intense local storms and changes in runoff patterns and more frequent and longer periods of drought. There is a potential California could experience an increased number of single dry, multiple dry, and critically dry years as a result of global climate change. However, it is not possible to predict with any accuracy these types of events.

Development in Fiddymment Ranch must comply with the City's requirements to provide adequate stormwater facilities in the event of storms, and would implement a water conservation program to minimize demand for water supply.

Rise in Sea Level

A consistent rise in sea level has been recorded worldwide over the last 100-years. Based on climate change modeling, a rise in sea level is expected to continue, including along the California Coast. Given the location and altitude of Fiddymment Ranch, the project site would not be affected by a rise in sea level, even if the Sacramento Delta were to be impacted.

Based on the analysis presented above, it is expected that the effects of global climate change on residents of Fiddymment Ranch represent a less than significant impact of the proposed project.

8.5 MITIGATION MEASURES

Generate a Substantial Contribution to GHG Emissions that Conflict with an Applicable Plan or Policy

Mitigation Measure 8.1a: Greenhouse gas emissions within the project area shall be reduced by including energy and water efficiency features and designs in each residential unit. All residential units within LDR areas of the Fiddymment Ranch Specific Plan Amendment 3 project site shall achieve a BuildItGreen score of 101; all residential units within MDR areas of the Fiddymment Ranch Specific Plan Amendment 3 project site shall achieve a BuildItGreen score of 97; and all residential units within HDR areas of the Fiddymment Ranch Specific Plan Amendment 3 project site shall achieve a BuildItGreen score of 105.

Mitigation Measure 8.1b: Each future applicant for tentative map approval shall demonstrate compliance with the proposed Water Conservation Plan for the Fiddymment Ranch SPA 3 project.

Be Affected by Climate Change Effects

This impact is determined to be less than significant. No mitigation measures are necessary.