
4.4 - Greenhouse Gas Emissions

4.4.1 - Introduction

This section describes the existing greenhouse gas setting and potential onsite and surrounding area effects from the implementation of the proposed Walmart. The analysis for the proposed Walmart includes construction and operational greenhouse gas emissions modeling. The analysis concludes that there are no mitigation measures required because the proposed Walmart will include various project design features to reduce potential greenhouse gas emissions impacts to less than significant. The following is a list and location of information reviewed in preparation of this section:

- Greenhouse Gas Modeling Data. November 2010. Michael Brandman Associates, Inc. This information is located in ~~Draft~~ [Final](#) SEIR Appendix F.

4.4.2 - Environmental Setting

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. The Intergovernmental Panel on Climate Change predicted that global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a).

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009).

- **A reduction in the quality and supply of water to the State from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant “fuel” available to burn in the fall. In contrast, a hotter,

drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.

- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If heat-trapping emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** In forests, climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and

causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, carbon dioxide.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, use is made of a metric called the carbon dioxide equivalent. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent reference gas, carbon dioxide. For example, methane’s warming potential of 21 indicates that methane has a 21 times greater warming affect than carbon dioxide on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential.

Greenhouse gases as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Greenhouse gases as defined by AB 32 are summarized in Table 4.4-1.

Table 4.4-1: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide is also known as laughing gas and is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, decay of organic matter, and cattle.
Carbon dioxide	Carbon dioxide (CO ₂) is an odorless, colorless, natural greenhouse gas. Carbon dioxide’s global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chloro-fluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth’s surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.

Table 4.4-1 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Hydro-fluorocarbons	Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Per-fluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Sources: Compiled from a variety of sources, primarily IPCC 2007a and IPCC 2007b.		

Greenhouse gases not defined by AB 32 include water vapor, ozone, and aerosols. Water vapor is an important component of our climate system and is not regulated. Ozone and aerosols are short-lived greenhouse gases; global warming potentials for short-lived greenhouse gases are not defined by the IPCC. Aerosols can remain suspended in the atmosphere for about a week and can warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light. Black carbon is a type of aerosol that can also cause warming from deposition on snow.

There are no adverse health effects from the concentration of greenhouse gases in the atmosphere at the current levels, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high concentrations, carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (NIOSH 2005, OSHA 2003).

4.4.3 - Regulatory Setting

International

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations. On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments gather and share information on greenhouse gas emissions, national policies, and best practices; launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. A particularly notable result of the United Nations Framework Convention on Climate Change efforts is a treaty known as the Kyoto Protocol, which went into effect on February 16, 2005. When countries sign the Kyoto Protocol, they demonstrate their commitment to reduce their emissions of greenhouse gases or engage in emissions trading. More than 170 countries are currently participating in the Kyoto Protocol. Industrialized countries are required to reduce their greenhouse gas emissions by an average of 5 percent below their 1990 levels by 2012. In 1998, United States Vice President Al Gore symbolically signed the Protocol; however, in order for the Kyoto Protocol to be formally ratified, the United States Congress must approve it. Congress did not do this during the Clinton Administration. Former President George W. Bush did not submit the Protocol to Senate to be ratified based on the exemption granted to China. President Barack Obama has not taken action regarding the Kyoto Protocol because it is about to end.

National

Clean Vehicles. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four greenhouse gases, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court held that petitioners have a standing to challenge the EPA and that the EPA has statutory authority to regulate greenhouse gases emissions from new motor vehicles.

Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the

vehicles sold under the program (model years 2012-2016). The EPA and the National Highway Safety Administration will now begin working on a second-phase joint rulemaking to establish national standards for light-duty vehicles for model years 2017 and beyond.

On October 25, 2010, the EPA and the U.S. Department of Transportation proposed the first national standards to reduce greenhouse gas emissions and improve fuel efficiency of heavy-duty trucks and buses. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10 percent reduction for gasoline vehicles and 15 percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the agencies are proposing engine and vehicle standards starting in the 2014 model year, which would achieve up to a 10 percent reduction in fuel consumption and carbon dioxide emissions by 2018 model year.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory greenhouse gas reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of greenhouse gas emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of greenhouse gas emissions are required to submit annual reports to the EPA.

Greenhouse Gas Endangerment. On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under Section 202(a) of the Clean Air Act: 1) Current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations. 2) The combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution that threatens public health and welfare.

California

There has been significant legislative and regulatory activity that affects climate change and greenhouse gases in California, as discussed below.

Title 24. Although not originally intended to reduce greenhouse gases, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and

possible incorporation of new energy efficient technologies and methods. The 2008 standards became effective January 1, 2010. The requirement for when the 2008 standards must be followed is dependent on when the application for the building permit is submitted. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

California Green Building Standards Code. On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and school buildings.

The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

The California Green Building Standards Code requires:

- A minimum 50-percent diversion of construction and demolition waste from landfills;
- 20-percent mandatory reduction in indoor water use;
- Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day;
- Moisture-sensing irrigation systems for larger landscaped areas;
- Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particle board;
- Mandatory inspections of energy systems (i.e. heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.

Pavley Regulations. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. The regulation was stalled by automaker lawsuits and by the EPA's denial of an implementation waiver. On January 21, 2009, the ARB requested that the EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that the EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, the EPA granted the waiver request, which begins with motor vehicles in the 2009 model year.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near term (2009-2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013-2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

Executive Order S-3-05. California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for greenhouse gas emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, mid-term target. The Climate Action Team's Report to the Governor in 2006 contains recommendations and strategies to help ensure the 2020 targets in Executive Order S-3-05 are met.

Low Carbon Fuel Standard - Executive Order S-01-07. The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low-Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

SB 1368. In 2006, the State Legislature adopted Senate Bill (SB) 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for greenhouse gas emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly,

the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower greenhouse gas emissions associated with California's energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out-of-state producers that cannot satisfy the performance standard for greenhouse gas emissions required by SB 1368.

SB 375. Passing the Senate on August 30, 2008, SB 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of greenhouse gas emissions, which emits over 40 percent of the total greenhouse gas emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies. Concerning CEQA, SB 375, section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. ARB is the State agency charged with monitoring and regulating sources of greenhouse gases. AB 32 states the following:

Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB Board approved the 1990 greenhouse gas emissions level of 427 million metric tons of carbon dioxide equivalent (MMT CO_2e) on December 6, 2007 (ARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMT CO_2e . Emissions in 2020 in a “business as usual” scenario are estimated to be 596 MMT CO_2e .

Under AB 32, the ARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California. Discrete early action measures are currently underway or are enforceable by January 1, 2010. The ARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of these early action measures, nine are considered discrete early action measures, as they are regulatory and enforceable by January 1, 2010. The ARB estimates that the 44 recommendations are expected to result in reductions of at least 42 MMT CO_2e by 2020, representing approximately 25 percent of the 2020 target.

The ARB approved the Climate Change Scoping Plan in December 2008 (ARB 2008). The Scoping Plan contains measures designed to reduce the State’s emissions to 1990 levels by the year 2020. The Scoping Plan identifies recommended measures for multiple greenhouse gas emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. The measures in the Scoping Plan will be in place by 2012. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 greenhouse gas target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas 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; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State’s long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between “capped” and “uncapped” strategies. “Capped” strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the

inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. “Uncapped” strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional greenhouse gas emission reductions.

Executive Order S-13-08. Executive Order S-13-08 indicates that “climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California’s economy, to the health and welfare of its population and to its natural resources.” Pursuant to the requirements in the order, in December 2009, the California Natural Resources Agency released its 2009 California Climate Adaptation Strategy (CNRA 2009). The Strategy is the “...first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.” Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

SB 1078, SB 107, and Executive Order S-14-08. On September 12, 2002, Governor Gray Davis signed SB 1078 requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

CEQA Guidelines Update. As required by SB 97, the Governor’s Office of Planning and Research prepared and transmitted recommended Amendments to the CEQA Guidelines for greenhouse gas emissions to the California Natural Resources Agency on April 13, 2009. After a public comment period, the Natural Resources Agency proposed revisions to the text of the Proposed Guidelines Amendments. The Natural Resources Agency provided additional public comment time on the revised text. The Natural Resources Agency adopted the CEQA Guidelines Amendments with minor, non-substantial changes.

The Natural Resources Agency transmitted the Adopted Amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. The Office of Administrative Law reviewed the Adopted Amendments and the Natural Resources Agency’s rulemaking file. The Adopted Amendments were filed with the Secretary of State, and became effective March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of greenhouse gas emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. Importantly, however, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project’s estimated greenhouse gas emissions are significant or cumulatively considerable. In particular, Section 15064.4(b) states:

- (b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:
 - (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
 - (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
 - (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project’s incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. Greenhouse gas mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze greenhouse gas emissions in an EIR when a project’s incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic greenhouse gas analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project’s cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

In addition, the Amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation, and Appendix G, which includes the sample Environmental Checklist Form. The Checklist was also amended to include greenhouse gas questions, as identified in the Thresholds of Significance section of this document.

San Joaquin Valley Air Pollution Control District

The project is within the San Joaquin Valley Air Basin, which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District).

Climate Change Action Plan

On August 21, 2008, the District Governing Board approved a proposal called the Climate Change Action Plan, to begin a public process to bring together stakeholders, land use agencies, environmental groups, and business groups, and conduct public workshops to develop comprehensive policies for CEQA guidelines and a carbon exchange bank, and voluntary greenhouse gas emissions mitigation agreements for the Governing Board's consideration. The Climate Change Action Plan contained the following goals and actions:

Goals:

1. Assist local land-use agencies with CEQA issues relative to projects with greenhouse gas emissions increases.
2. Assist Valley businesses in complying with mandates of AB 32 (Global Warming Solutions Act of 2006).
3. Ensure that climate protection measures do not cause increases in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

Actions:

1. Authorize the Air Pollution Control Officer to develop greenhouse gas significance threshold(s) or other mechanisms to address CEQA projects with greenhouse gas emissions increases. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in the spring of 2009.
2. Authorize the Air Pollution Control Officer to develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary greenhouse gas reductions created in the Valley. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in spring 2009.
3. Authorize the Air Pollution Control Officer to enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB 32 emission reporting requirements to submit simultaneous streamlined reports to the District and the state of California with minimal duplication.
4. Authorize the Air Pollution Control Officer to develop and administer voluntary greenhouse gas emission reduction agreements to mitigate proposed greenhouse gas increases from new projects.

5. Direct the Air Pollution Control Officer to support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

San Joaquin Valley Air Pollution Control District CEQA Greenhouse Gas Guidance

On December 17, 2009, the District Governing Board adopted: “Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA” and the policy: “District Policy - Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency.” The District concluded that the existing science is inadequate to support quantification of the impacts that project-specific greenhouse gas emissions have on global climatic change. The District found the effects of project-specific emissions to be cumulative, and without mitigation, that their incremental contribution to global climatic change could be considered cumulatively considerable. The District found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The District’s approach is intended to streamline the process of determining if project specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified Final CEQA document.

Best Performance Standards (BPSs) would be established according to performance-based determinations. Projects complying with BPSs would not require specific quantification of greenhouse gas emissions and would be determined to have a less than significant cumulative impact for greenhouse gas emissions. Projects not complying with BPSs would require quantification of greenhouse gas emissions and demonstration that greenhouse gas emissions have been reduced or mitigated by 29 percent, as targeted by ARB’s AB 32 Scoping Plan. Furthermore, quantification of greenhouse gas emissions would be required for all projects for which the lead agency has determined that an Environmental Impact Report is required, regardless of whether the project incorporates Best Performance Standards.

For development projects, BPS means, “Any combination of identified GHG emission reduction measures, including project design elements and land use decisions that reduce project specific GHG emission reductions by at least 29 percent as compared to business as usual.” The District proposes to create a list of all approved BPSs to help determine whether a proposed project has reduced its greenhouse gas emissions by 29 percent. No timeline has been established for the development of said list.

San Joaquin Valley Carbon Exchange

The District initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary greenhouse gas emissions reductions generated within the San Joaquin Valley. To investigate the various issues concerning the development of a mechanism to register greenhouse gas emission reductions, the District formed a technical workgroup consisting of District staff, land use agency representatives, industry representatives, agricultural representatives, environmental group representatives, and other interested parties. The workgroup met several times in public meetings during late 2008 and early 2009 to discuss several areas of concern regarding a greenhouse gas emission reduction registration program, including:

- The differences between the upcoming AB 32 cap-and-trade program and a greenhouse gas emission reduction registration program.
- Potential uses of registered greenhouse gas emission reductions. Registered greenhouse gas emission reductions could possibly be used to provide mitigation in the CEQA process, as a means to comply with a greenhouse gas cap-and-trade program, or other purposes.
- A review of other greenhouse gas emission reduction registration programs currently in existence, including the Chicago Climate Exchange, New York Climate Exchange, Northeast Climate Exchange, Climate Action Reserve, and South Coast Air Quality Management District's SoCal Climate Solutions Exchange.
- Required elements of a District-administered greenhouse gas emission reduction registration program, including the establishment of criteria for greenhouse gas emission reduction registration, the use of ARB protocols, and the requirement to quantify some emission reductions.
- The advantages and disadvantages of development of a greenhouse gas emission reduction registration program.
- Alternatives to the development of a District-administered greenhouse gas emission reduction registration program were discussed, including the District's possible role in California Climate Action Reserve as an emission reduction project verifier and/or providing technical assistance to project proponents quantify and mitigate their projects greenhouse gas emissions as part of the CEQA process.

While the Climate Change Action Plan indicated that the greenhouse gas emission reduction program would be called the San Joaquin Valley Carbon Exchange, District staff has proposed to incorporate a method to register voluntary greenhouse gas emission reductions into its existing Rule 2301-Emission Reduction Credit Banking through amendments of the rule.

In its present draft form, the amendments to Rule 2301 would provide a mechanism to preserve voluntary, high-quality greenhouse gas emission reductions. The draft rule will allow the use of registered greenhouse gas emission reductions for any purpose and will not impose any restrictions on their use. The draft amendments to Rule 2301 will allow greenhouse gas emission reductions that fall into two different categories to be registered with the District: non-protocol greenhouse gas emission reductions and protocol-based greenhouse gas emission reduction credits.

The non-protocol based reductions would be quantified using the criteria in Rule 2301; i.e., that the emission reductions be real, enforceable, permanent, surplus, and quantifiable. Emission reductions would not be required to be additional; in other words, greenhouse gas emission reductions that occur as a collateral benefit of another requirement may qualify for registration, provided they are surplus of existing regulations. Emission Reduction Credits quantified without ARB-approved protocols could likely be retired as one possible method to provide mitigation for a project's greenhouse gas emissions as part of the CEQA process, if approved by the lead agency.

ARB-approved greenhouse gas emission reduction project protocols include detailed procedures on how to quantify emission reductions for specific project types and specific criteria to ensure that the emission reductions are additional. To date, there are three ARB-approved greenhouse gas emission reduction project protocols—forestry preservation, urban forestry, and manure management.

The District has held two workshops on the proposed rule in May and June 2009. The District staff is still addressing concerns from interested parties and no timeline has been released for the adoption of the amendments.

Local

Neither the City of Wasco nor the County of Kern have draft or adopted Climate Action Plans or similar greenhouse gas emission reduction plans. In addition, the City of Wasco does not have a recommended emissions threshold for determining significance associated with greenhouse gas from development projects.

4.4.4 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether greenhouse gas emissions impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?
- c) Be significantly affected by climate change through a reduction in the quality and supply of water available within the State or increased flooding?

4.4.5 - Impact Analysis and Mitigation Measures

Greenhouse Gas Emissions

Impact GHG-1: **Although the proposed Walmart would generate greenhouse gas emissions, the emissions would not have a significant impact on the environment.**

Project Specific and Cumulative Impact Analysis

The San Joaquin Valley Air Pollution Control District (District) published guidance for how to address greenhouse gas emissions in CEQA documents for projects located within its jurisdiction (SJVAPCD 2009). In the guidance, the District states the following:

...District staff concludes that existing science is inadequate to support quantification of impacts that project specific [greenhouse gas] GHG emissions have on global climatic change. This is readily understood when one considers that global climatic change is the result of the sum total of GHG emissions, both manmade and natural that occurred in the past; that is occurring now; and will occur in the future. The effects of project specific GHG emissions are cumulative, and unless reduced or mitigated, their incremental contribution to global climatic change could be considered significant. District staff concludes that this cumulative impact is best addressed by requiring all projects subject to CEQA to reduce their GHG emissions through project design elements.

Therefore, the potential Walmart specific and cumulative impacts are addressed utilizing the District's guidance as shown below.

Thresholds of Significance

In accordance with the District's guidance for addressing greenhouse gas emission impacts for new projects under CEQA, a project would be considered to have a less than significant individual and cumulative impact on climate change if it were to do at least one of the following (SJVAPCD 2009):

- Qualify for an exemption from the requirements of CEQA, or
- Comply with an approved greenhouse gas emission reduction plan or greenhouse gas mitigation program, which avoids or substantially reduces greenhouse gas emissions within the geographic area in which the project is located. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency, or
- Implement District-approved best performance standards, or
- Quantify project greenhouse gas emissions and reduce those emissions by at least 29 percent compared to business as usual.

The District's guidance states that "Business as usual" is defined in ARB's AB 32 Scoping Plan as emissions occurring in 2020 if the average baseline emissions during the 2002–2004 period grew to

2020 levels without additional control. Therefore, 2002–2004 emissions factors, on a unit of activity basis, multiplied by the activity expected to occur in 2020, is an appropriate representation of 2020 business as usual. The reductions can be based on any combination of reduction measures, including greenhouse gas reductions achieved as a result of changes in building and appliance standards occurring since the 2002–2004 baseline period. In addition, an individual project may also take reduction credit for statewide regulations, such as the Pavley Regulations, discussed in the Regulatory Setting.

The proposed Walmart is not exempt from CEQA. The Scoping Plan prepared pursuant to AB 32 demonstrates how California would reduce greenhouse gas emissions to 1990 levels by the year 2020. However, most of the measures in the Scoping Plan are not applicable to the proposed Walmart (see Impact GHG-2). There are not approved best performance standards that would apply to the project. Therefore, the approach used in this analysis is to quantify greenhouse gas emissions and reduce the emissions by at least 29 percent compared to business as usual.

Greenhouse gas threshold: Emissions would be considered less than significant if the project would reduce its greenhouse gas emissions by at least 29 percent compared to business as usual.

Greenhouse Gases Considered

This analysis is restricted to greenhouse gases identified by AB 32, which include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The proposed Walmart would generate a variety of greenhouse gases during construction and operation, including several defined by AB 32 such as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, and sulfur hexafluoride. Perfluorocarbons are typically used in industrial applications, none of which would be used by the proposed Walmart.

The Walmart may also emit greenhouse gases that are not defined by AB 32. For example, the Walmart may generate aerosols. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty (IPCC 2007a). Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from Walmart-related activities. The proposed Walmart would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants. Only greenhouse gases as defined in AB 32 are addressed in this analysis.

An inventory of greenhouse gas emissions generated by the proposed Walmart is presented below. The emissions are converted to metric tons of carbon equivalents (MTCO₂e) using the formula:

$$\text{MTCO}_2\text{e} = (\text{tons of gas}) \times (\text{global warming potential}) \times (0.9072 \text{ metric tons of gas})$$

Construction Greenhouse Gas Emissions

The previously approved Wasco Center did not identify the significance of construction related greenhouse gas emissions. However, construction-related greenhouse gas emissions stemming from the proposed Walmart would parallel those that would otherwise result from the approved Wasco Center.

Walmart construction activities would be responsible for releases of greenhouse gases from upstream emission sources and direct sources (combustion of fuels from worker vehicles and construction equipment). An upstream emission source (also known as life cycle emissions) refers to emissions that were generated during the manufacture of products to be used for construction of the project. Upstream emission sources for the project include but are not limited to emissions from the manufacture of cement, emissions from the manufacture of steel, and/or emissions from the transportation of building materials to the seller (i.e., URBEMIS only estimates the transportation of building materials locally). The upstream emissions were not estimated because they are not within the control of the proposed Walmart and to do so would be speculative at this time. Additionally, the California Air Pollution Control Officers Association White Paper on CEQA and Climate Change supports this conclusion by stating, “The full life-cycle of GHG [greenhouse gas] emissions from construction activities is not accounted for ... and the information needed to characterize [life-cycle emissions] would be speculative at the CEQA analysis level” (CAPCOA 2008). Therefore, pursuant to CEQA Guidelines Sections 15144 and 15145, upstream /life cycle emissions are speculative and no further discussion is necessary.

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions from heavy-duty construction equipment and motor vehicle operation. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, and worker traffic. Major construction-related activities that emit greenhouse gases include the following:

- Grading;
- Trenching for utilities;
- Building construction of the onsite structures;
- Asphalt paving of parking lots; and
- Application of architectural coatings on exterior and interior surfaces.

- Installation of the refrigeration system.

Construction emissions from the proposed Walmart were estimated using multiple models, primarily utilizing URBEMIS2007 Version 9.2.4. The California Emissions Estimator Model Version 2011.1 (CalEEMod) was released in February 2011. The District is formulating a policy regarding the use of CalEEMod (Dan Barber, personal communication, February 4, 2011). The District indicated that URBEMIS2007 should be used at this time. The District anticipates a transition period where CalEEMod and URBEMIS2007 would both be acceptable. Eventually, the District may phase out URBEMIS2007. The assumptions used for the construction modeling are as follows:

- All phases would operate 6 days per week.
- Grading of 28 acres (1/4 of the Wasco Center site), with a duration of 2 months.
- Grading equipment fleet is the “mass grading” equipment fleet for first phase of construction from the Wasco Center 2008 analysis.
- For the removal of the onsite trees during grading, assuming 28 acres of trees, or 1,219,680 square feet, divided by 2 because there is space between the trees is 609,840 square feet, assuming 1 foot high of debris would total 609,680 cubic feet (22,587 cubic yards) of material to be removed.
- Trenching equipment fleet is the trenching phase fleet for the first phase of construction from the Wasco Center 2008 analysis.
- Building equipment fleet consists of the equipment from the first phase of building from the Wasco Center 2008 analysis, with the addition of four generator sets.
- Paving equipment fleet consists of the equipment from the first phase of paving from the Wasco Center 2008 analysis with the addition of 3 cement and mortar mixers and 1 tractor.
- Acreage to be paved assumed that approximately half of the project site would be paved, or 8.5 acres.

The greenhouse gas emissions from project construction are shown in Table 4.4-2. These emissions represent business as usual emissions, as they do not take into account regulations or project design features that would reduce greenhouse gas emissions. As shown in the table, emissions would be approximately 1,500 MTCO₂e for the duration of construction.

Table 4.4-2: Project Construction Greenhouse Gas Emissions

Source	Carbon Dioxide (tons)	CH ₄ , N ₂ O, HFCs (MTCO ₂ e)	Total Emissions (MTCO ₂ e)
Exhaust: grading	224	11	235
Exhaust: trenching	22	1	23
Exhaust: building	567	28	595
Exhaust: coating	2	<1	2
Exhaust: paving	46	2	44
Installation of refrigeration system	0	492	492
Waste	0	96	96
Total	861	630	1,487

Notes:
 CH₄ = methane; N₂O = nitrous oxide; HFCs = hydrofluorocarbons (refrigerants); MTCO₂e = metric tons of carbon dioxide equivalents; <1 = less than one
 Source of installation of the refrigeration system: Installation would result in leakages of HFCs; emissions are estimated as shown in the spreadsheets contained in Appendix F.
 Source of waste: The generation of waste would result in emissions of greenhouse gas emissions as estimated by the WARM model (see Appendix F).
 Source of exhaust emissions: Carbon dioxide emissions were generated by URBEMIS, the output is contained in Appendix F; CH₄, N₂O, and HFC emissions estimated as 5 percent of carbon dioxide emissions; total estimated by converting tons of carbon dioxide to metric tons by multiplying by 0.9072 and adding the CH₄, N₂O, and HFC emissions (EPA 2005).

Regulations and project design features would reduce construction related greenhouse gas emissions, as shown in Table 4.4-3.

Table 4.4-3: Construction Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature	Reduction (%)	Reduction Comments
Refrigerators and Freezers		
Project design feature: The project will use a secondary loop refrigeration system or use ammonia or carbon dioxide as the refrigerant in the refrigeration system.	0	If the project applicant chooses to use ammonia or carbon dioxide as a refrigerant, greenhouse gas emissions from the installation of the refrigeration system would be reduced.
Construction Waste		
Regulation - California Mandatory Green Building: A minimum 50-percent diversion of construction and demolition waste from landfills.	50	A 50 percent reduction in greenhouse gas emissions from waste generated during construction activities associated with the proposed project is taken for these items. Construction waste associated with the proposed project accounts for 6 percent of the total construction emissions. Therefore, the percent reduced from
Project design feature: The Walmart will recycle or reuse a minimum of 50 percent of the onsite trees and related debris (measured by weight or volume, but not both).		

Table 4.4-3 (cont.): Construction Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature	Reduction (%)	Reduction Comments
Construction Waste (cont.)		
Project design feature: Walmart employs a Construction and Demolition (C&D) program at the project site in order to capture and recycle as much excess and discarded materials during the construction process as possible.		the total construction emissions of the proposed project is 3 percent.
Project design feature: Paint products required for the Walmart will be purchased in 55-gallon drums and 275-gallon totes, reducing the number of one and five gallon buckets needed.		
Project design feature: The store will be constructed using cement mixes that include 15 to 20 percent fly ash or 25 to 30 percent slag, both industrial byproducts.	0	Utilizing recycled materials during construction would reduce upstream/lifecycle emissions, which are not estimated as part of this analysis.
Project design feature: The store will be constructed using steel containing 90-98 percent recycled structural steel.		
Project design feature: Plastic baseboards and shelving will be composed of recycled plastic.		
Construction Equipment Exhaust		
Mitigation measure AQ-1d: reduce construction equipment idling time.	0	The reduction for this measure varies depending on multiple factors such as if the construction equipment would be idle. Therefore, no reduction is taken.
Source: Michael Brandman Associates, 2010.		

Operational Greenhouse Gas Emissions

Operational or long-term emissions occur over the life of the proposed Walmart. The Air Quality Impact Analysis prepared in 2008 for the Wasco Center only estimated greenhouse gas emissions from vehicles and natural gas combustion. However, there are other sources of greenhouse gas emissions during operation of the Walmart, as discussed below. The estimation contains the major sources of emissions and does not include minor sources such as emissions from landscaping equipment.

Motor vehicles: Motor vehicle emissions refer to greenhouse gas emissions contained in the exhaust from the cars and trucks that would travel to and from the project site. Carbon dioxide emissions were estimated using URBEMIS 2007 as discussed in Impact AIR-1. Methane and nitrous oxide emissions were estimated using emission factors as discussed in Appendix F. Absent of regulations adopted after the year 2004, pursuant to AB 32, greenhouse gas emissions from motor vehicles are

assumed to remain the same over time because the emission factors used to estimate emissions from the motor vehicles that would access the project site are currently calculated as remaining constant.

Natural Gas: Natural gas emissions refer to the emissions that occur when natural gas is burned on the project site. Natural gas may be used for heating water, space heating, dryers, stoves, or other uses. Carbon dioxide, methane, and nitrous oxide emissions were estimated using the procedures outlined in Appendix F.

Indirect Electricity: Indirect electricity refers to the emissions generated by offsite power plants to supply the electricity required for the proposed Walmart. Electricity usage was converted to greenhouse gas emissions using emission factors as shown in Appendix F.

Water Transport: There would be greenhouse gas emissions generated from the electricity required to transport and treat the water to be used on the project site.

Waste: There would be greenhouse gas emissions from the decomposing waste generated by the proposed Walmart. The emissions were estimated by the EPA WARM model.

Refrigeration System and Air Conditioning: During operation, there may be leakages of refrigerants (hydrofluorocarbons) from air conditioners and the refrigeration system.

Miscalculation of Reductions in Prior Analysis: The Air Quality Impact Analysis prepared in 2008 for the Wasco Center applied a 49.61 percent reduction in greenhouse gas emissions from mitigation and project design features; however, there was a miscalculation in determining the percent reduction. In the 2008 analysis, the parking supply mitigation option in URBEMIS was used, which erroneously overestimated the percent reduction in motor vehicle emissions.

Reductions: Since the time of the publication of the 2008 analysis, CAPCOA has published a document that provides guidance for quantifying the reductions attributed to mitigation measures (CAPCOA 2010). This document is used where applicable to identify percent reductions in greenhouse gas emissions. The District’s Staff Report (SJVAPCD 2009b) was also used to explore potential greenhouse gas emissions reduction measures. The proposed Walmart will comply with all appropriate regulations and will incorporate numerous design features that will reduce emissions from business as usual, as summarized in Table 4.4-4.

Table 4.4-4: Operational Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature ¹	Reduction ² (%)	Reduction Comments and Calculations
Emission Category: Transportation		
Project design feature: There will be safe pedestrian connections from the Walmart store entrance to the nearest offsite business prior to operation of the Walmart.	0.5	Reduction is from CAPCOA SDT-1.

Table 4.4-4 (cont.): Operational Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature ¹	Reduction ² (%)	Reduction Comments and Calculations
Project design feature: There will be a minimum of one short-term bicycle rack space per 20 vehicle spaces. There will be long-term bicycle storage for employees at the ratio of one long-term bicycle storage space per 20 employee parking spaces.	0.5	Reduction is from CAPCOA SDT-6.
Regulation - Pavley (AB 1493): Clean car standards would mean replacing some existing vehicles with hybrid, battery, plug-in hybrid, and hydrogen-fueled cell electric vehicles. The vehicles that would access the proposed Walmart would in general be cleaner.	15	In 2020, a reduction of 1,286 MTCO ₂ is estimated by the Bay Area Air Quality Management District's Greenhouse Gas Model (version 1.1.9 Beta), which is 15 percent of the project's operational motor vehicle carbon dioxide emissions (8,791 metric tons).
Regulation - Low Carbon Fuel Standard (Executive Order S-01-07): The low carbon fuel standard would reduce carbon intensity in fuels. Carbon intensity is a measure of the greenhouse gas emissions associated with production and use of a fuel. Fuels like natural gas from landfills, dairy biogas, and biodiesel have lower carbon intensity than gasoline or diesel.	7	In 2020, this regulation would reduce 567 MTCO ₂ e, as estimated by the Bay Area Air Quality Management District's Greenhouse Gas Model (version 1.1.9 Beta); 7 percent of the project's BAU operational motor vehicle emissions (8945 MTCO ₂ e).
<i>Subtotal: Transportation</i>	23	—
Emission Category: Electricity		
Project design feature: The store will use T-8 fluorescent lamps and electronic ballasts for the sales areas, light emitting diodes (LEDs) for exterior building signage and refrigerated food cases, occupancy sensors in most non-sales areas, and a daylight harvesting system that automatically dims or turns off the store lights during periods of higher natural daylight.	5	The combination of these measures would result in at least a 5 percent reduction in electricity.
Project design feature: Walmart employs a centralized energy management system (EMS) to monitor and control the heating, air condition, refrigeration, and lighting systems for all stores from Walmart's corporate headquarters. The EMS enables Walmart to constantly monitor and control the expanded store's energy usage, analyze refrigeration temperatures, observe heating, ventilating, and air-conditioning (HVAC) and lighting performance, and adjust system levels from a central location.		
Project design feature: The store will use one of the industry's most efficient HVAC units available.		
Project design feature: The store will use a dehumidifying system that allows the structure to operate at a higher temperature, use less energy,		

Table 4.4-4 (cont.): Operational Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature ¹	Reduction ² (%)	Reduction Comments and Calculations
<p>and allow the refrigeration system to operate more efficiently.</p> <p>Project design feature: The store will use a white membrane roof instead of the typical darker colored roof materials employed in commercial construction. The white membrane roof's higher reflectivity helps reduce building energy consumption and reduces the heat island effect, as compared to buildings utilizing darker roofing colors.</p> <p>Project design feature: The roof will be sufficiently kept clean to maintain its ability to reflect light.</p>		
<p>Project design feature: The proposed Walmart will use Energy Star refrigerators.</p>	8	<p>The proposed Walmart is in climate zone 3*; which would result in 18% reduction (Table BE-4.1 - CAPCOA). Refrigeration uses 43 percent of the total electricity (EPA 2008). Therefore, the total reduction is 8 percent.</p>
<p>Regulation: Renewable Electricity Standard and Renewables Portfolio Standard.</p>	15	<p>GHG electricity emissions in California in 2020 are estimated to be 139.2 million MTCO₂e (ARB 2008b). These regulations are expected to reduce emissions by 21.3 million MTCO₂e (ARB 2010), or 15 percent.</p>
<p><i>Subtotal: Electricity</i></p>	28	—
Emission Category: Water		
<p>Project design feature: The store will use high-efficiency sinks, toilets, and urinals in its restrooms to drastically reduce the amount of water used per use.</p> <p>Project design feature: Walmart landscaping will use only drought tolerant plants (trees, shrubs, vines, groundcover); project landscaping shall have a plant factor range between zero and 0.5 (as defined in the California Model Water Efficient Landscape Ordinance).</p> <p>Regulation – California Green Building: 20-percent mandatory reduction in indoor water use; separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day; moisture-sensing irrigation systems for larger landscaped areas</p>	20	<p>These measures would result in at least a 20 percent reduction in water.</p>
<p><i>Subtotal: Water</i></p>	20	—

Table 4.4-4 (cont.): Operational Greenhouse Gas Emission Reduction Analysis

Regulation or Project Design Feature ¹	Reduction ² (%)	Reduction Comments and Calculations
Emission Category: Natural gas		
Project design feature: The store will use reclaimed waste heat from the onsite refrigeration equipment to supply approximately 70 percent of the hot water needs for the store.	9	Hot water is 13 percent of the natural gas needs (EPA 2008); a reduction of 70 percent natural gas results in an overall reduction of 9 percent.
<i>Subtotal: Natural Gas</i>	9	—
Emission Category: Refrigeration System		
Project design feature: Refrigeration equipment is typically roof-mounted close to the refrigerated cases. This reduces the amount of copper refrigerant piping, insulation, potential for leaks, and refrigerant charge needed.	90	A secondary loop refrigeration system could reduce emissions by 90 percent (WALMART 2009). Utilizing carbon dioxide or ammonia would reduce emissions even more.
Project design feature: The proposed Walmart will use a secondary loop refrigeration system or use ammonia or carbon dioxide as the refrigerant in the refrigeration system.		
<i>Subtotal: Refrigeration System</i>	90	—
Emission Category: Air Conditioning		
Regulation: High global warming potential stationary source refrigerant management program.	50	See “Air Conditioning Emissions” spreadsheet in the appendix.
<i>Subtotal: Air Conditioning</i>	50	—
Emission Category: Operation Waste		
Project design feature: The proposed Walmart will recycle and store organic waste in sealed bins for composting offsite during operation.	10	This measure would reduce waste by at least 10 percent.
Regulation: Landfill Methane Control Measure	19	The greenhouse gas emissions in California in 2020 are estimated to be 7.7 million MTCO ₂ e for the waste sector (ARB 2008b). These standards are expected to reduce emissions by 1.5 million MTCO ₂ e (ARB 2010), or 19 percent.
<i>Subtotal: Operation Waste</i>	29	—
Notes:		
¹ Project design features are from the Project Description of this Draft Final SEIR.		
² The emission reduction percentages shown in the table apply to each emissions category.		
* It is assumed that the project is within climate zone 3, utilizing Figure BE-1.1 in the CAPCOA document. This figure was used even though it differs from the California Energy Commission Climate Zone map that is online at: www.energy.ca.gov/maps/building_climate_zones.html .		
CAPCOA refers to the California Air Pollution Control Officers Association’s document, Quantifying Greenhouse Gas Mitigation Measures (CAPCOA 2010).		
Source: Michael Brandman Associates, 2010.		

Emissions Summary

The greenhouse gas emissions for the project are shown in Table 4.4-5. Construction emissions are added to the operational emissions even though the emissions would not occur in the same year. This is because the District guidance is not clear on operational versus construction emissions. As shown in the table, with incorporation of project design features and regulations, the Walmart emissions are reduced by 36 percent, which is greater than the required 29 percent from business as usual. Therefore, greenhouse gas emissions are less than significant.

Table 4.4-5: Operational Greenhouse Gas Emissions with Project Design Features and Regulations

Source	Business as Usual 2020 Emissions (MTCO ₂ e per year)	Reduction (%)	2020 Emissions (MTCO ₂ e per year)
Motor vehicles	8,945	23	6,888
Natural gas	327	9	298
Electricity	1,957	28	1,409
Water transport	59	20	47
Waste	166	44	93
Air conditioning	489	50	245
Refrigeration system	3,444	90	344
Total Operational	15,387	39	9,323
Construction*	1,487	3	1,442
Operation + Construction	16,874	36	10,765
Reduction Required	—	29	—
Significant Impact?	—	No	—
Notes: MTCO ₂ e = metric tons of carbon dioxide equivalents (includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, and/or sulfur hexafluoride). * Construction would not occur in the same year as operation; however, to present a worst-case approach, the construction emissions are added to the operational emissions. Source for business as usual emissions: Michael Brandman Associates, Appendix F. Source for reductions: Table 4.4-4; the subtotal and total percent reductions (the reductions in bold font) are calculated by dividing the decrease in emissions by the business as usual emissions.			

Level of Significance Before Mitigation

Project Specific and Cumulative
Less than significant impact.

Mitigation Measures

Project Specific and Cumulative
No mitigation measures are required.

Level of Significance After Mitigation

Project Specific
Less than significant impact.

Cumulative

Less than significant impact.

Conflict with Plan, Policy, or Regulation That Reduces Emissions

Impact GHG-2: **The proposed Walmart would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.**

Project Specific and Cumulative Impact Analysis

The City of Wasco does not have a greenhouse gas reduction plan or climate action plan.

As discussed in Impact GHG-1, the proposed Walmart would be consistent with the District's recommendations in its guidance for addressing greenhouse gases in CEQA (SJVAPCD 2009). The District's guidance is based on a minimum of 29 percent reduction from business as usual, which is the same reduction that California would need to reduce greenhouse gas emissions to 1990 levels by the year 2020. Further compliance with AB 32 is identified through compliance with the applicable measures in the Scoping Plan below.

Scoping Plan

Emission reductions in California alone would not be able to stabilize the concentration of greenhouse gases in the earth's atmosphere. However, California's actions set an example and drive progress towards a reduction in greenhouse gases elsewhere. If other states and countries were to follow California's emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

The ARB Board approved a Climate Change Scoping Plan in December 2008. The Scoping Plan outlines the State's strategy to achieve the 2020 greenhouse gas emissions limit. The Scoping Plan "proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (ARB 2008). The measures in the Scoping Plan will be developed over the next two years and be in place by 2012.

Consistency of the proposed Walmart with applicable strategies in the Scoping Plan is assessed in Table 4.4-6. As shown, the proposed Walmart is consistent with the applicable strategies in the Scoping Plan.

Table 4.4-6: Walmart Consistency with Scoping Plan

Scoping Plan Reduction Measure	Project Consistency
3. Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	Consistent with project design features.
4. Renewable Portfolio Standard. Achieve 33 percent renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	Consistent. This is a regulation that applies to utility providers that provide electricity to the proposed Walmart.
13. Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California’s new and existing inventory of buildings.	Consistent with project design features.
15. Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Consistent with project design features.
17. Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	Consistent with project design features.
Source of ARB Scoping Plan Reduction Measure: ARB 2008. Source of Project Consistency or Applicability: Michael Brandman Associates, 2010.	

One additional Scoping Plan Reduction Measure to discuss is the Million Solar Roofs Program, which entails installing 3,000 MW of solar-electric capacity under California’s existing solar programs. This program is not feasible because of the following barriers:

- The roof area that can be devoted to solar panels is restricted because of the configuration of the roof, the required clearance values, and the set back requirements.
- The need to reduce skylight areas to increase solar panel capacity would increase energy demand and would result in a negative energy penalty since the energy reduction value for Walmart’s daylight harvesting system exceeds the photovoltaic capacity it replaces.

Summary

Additional reductions (i.e., above those that would result from compliance with regulatory measures) are expected for heavy-duty vehicles serving the proposed Walmart, but are not included in this analysis. Walmart replaces its trucks on a five-year cycle, so all trucks in their fleet are five years old or newer. The newer trucks will comply with new energy efficiency requirements based on improved aerodynamics and tire rolling resistance. Walmart’s rapid fleet turnover makes their fleet cleaner than

the statewide average since they will have a larger percentage of vehicles meeting the new requirements. However, no calculation methodology has been developed to reasonably quantify the benefits of the cleaner fleet on greenhouse gas emissions.

Aside from helping to implement measures contemplated in ARB's Scoping Plan, the project design features likely will help to implement measures contemplated by the District's CEQA guidance document. The District notes that projects can reduce greenhouse gas emissions from energy consumption through building designs that increase energy efficiency, water conservation, and the use of energy efficient appliances. Projects can further reduce greenhouse gas emissions through project designs that reduce vehicle miles traveled through features that promote pedestrian access and use of public transportation. Land use planning decisions, such as creating mixed-use development, discouraging leap-frog development, and creating favorable jobs to housing ratios can significantly reduce vehicle miles traveled and the associated greenhouse gas emissions. The project design features are consistent with this strategy.

In terms of land use planning decisions, the proposed Walmart would constitute development within an established community and would not be opening up a new geographical area for development such that it would draw mostly new trips, or substantially lengthen existing trips. The project location and associated transportation infrastructure are consistent with the District's approach to reducing greenhouse gas emissions (as well as like provisions in ARB's Scoping Plan and SB 375 that discourage leapfrog development and smart growth).

In summary, the proposed Walmart would not obstruct attainment of any of the goals established under AB 32. The proposed Walmart would comply with all present and future regulatory measures developed in accordance with AB 32 and ARB's Scoping Plan, and will incorporate a number of features that would minimize greenhouse gas emissions beyond existing regulatory requirements. Such features also are consistent with the California Air Pollution Control Officers Association paper and general guidance provided by the District.

It should be noted that, with regard to AB 32 and ARB's Scoping Plan, reductions in greenhouse gas emissions need not be equal amongst all sectors (e.g., the 1990-based reduction levels apply on a statewide basis and are not independently required of every individual project, or sector for that matter). The commercial sector accounts for only approximately 3 percent of greenhouse gas emissions in the State; arguably the key means by which to meet the AB 32 and S-3-05 goals will be to target the transportation, industrial, and electricity production sectors, which combined create approximately 85 percent of the State's emissions. At the same time, the project design features and applicable laws do result in a forecasted 36 percent reduction from business-as-usual levels, which not only shows compliance with District thresholds, but also promotion of AB 32 goals for 2020. Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the proposed Walmart would comply with

whatever measures are enacted that state lawmakers decide would lead to an 80-percent reduction below 1990 levels by 2050. Note again that the proposed Walmart already includes several project design features that exceed regulatory requirements and reduce vehicle miles traveled.

Accordingly, taking into account the proposed Walmart's emissions, project design features, and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the project furthers the state's goals of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80-percent reduction below 1990 levels by 2050, and does not obstruct their attainment. Impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Climate Change Adaptation

Impact GHG-3:	The proposed Walmart would not be significantly affected by climate change through a reduction in the quality and supply of water available within the State or increased flooding.
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Background Information

Although human understanding of the Earth's climate is increasing, it is accepted by the majority of climate change researchers that anthropogenic sources of greenhouse gases are influencing climate patterns. There are several negative potential environmental effects associated with climate change. Worldwide, average temperatures are estimated by some researchers to increase by 1.8 degrees centigrade (°C) to 4°C, or 3 degrees Fahrenheit (°F) to 7°F, by the end of the 21st century. However, a global temperature increase does not translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependent on multiple variables, such as topography. One region of Earth may experience increased temperature, increased incidents of drought and similar warming effects, whereas another region may experience a relative cooling. According to the United Nations Intergovernmental Panel on Climate Change's Working Group II Report, climate change impacts to North America may include:

- Diminishing snowpack.
- Increasing evaporation.

- Exacerbation of shoreline erosion.
- Sea level rise.
- Increased risk and frequency of wildfire.
- Increased risk of insect outbreaks.
- Increased experiences of heat waves.
- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations.

The California Climate Change Center published a report that assesses the risks of climate change to California. In addition, the California Natural Resources Agency published the 2009 California Climate Adaptation Strategy in December 2009 in response to the Governor's Executive Order S-13-2009. The document contains strategies for addressing impacts to public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure.

Project Specific Analysis

Sea Level Rise

Climate change could result in sea level rises and increased flooding, as explained in the following excerpts from a paper published by the California Climate Change Center in 2006 and a paper prepared by Moser et al. in 2009.

Sea level rise is already affecting much of California's coastal region, including the Southern California coast, the Central California open coast, and the San Francisco Bay and upper estuary. During the past century, sea levels along California's coast have risen about 7 inches. The rate of sea level rise observed at the gauges along the California coast is similar to the estimate for global mean sea level. Sea levels are likely to increase by up to 35 inches by the year 2100, depending on the magnitude of climate warming. However, the project area is approximately 100 meters above current mean sea levels. Therefore, the proposed Walmart would not be subject to inundation from sea level rise.

Flooding

Climate change will require major changes in flood management. In many regions such as the Central Valley, where urbanization and limited river channel capacity already exacerbate rising flood risks, flood damage and flood control costs could amount to several billion dollars. One estimate indicated that if levees in the Sacramento-San Joaquin Delta region are compromised, costs could reach up to \$40 billion (Moser et al 2009).

The California Department of Water Resources (2008) recommends the following to adapt to increases in flooding:

- Local land use agencies should update General Plans to address increased flood risks posed by climate change. General Plans should consider an appropriate risk tolerance and planning horizon for each locality.
- Local governments should site new development outside of undeveloped floodplains unless the floodplain has at least a sustainable, 200-year level of flood protection.
- Local governments should use low-impact development techniques to infiltrate and store runoff.
- Local governments should include flood-resistant design requirements in local building codes. State, federal, and local agencies should develop conjunctive use management plans that integrate floodplain management, groundwater banking and surface storage. Such plans could help facilitate system reoperation and provide a framework for the development of local projects that are beneficial across regions.
- Local land use agencies should adopt ordinances that protect the natural functioning of groundwater recharge areas.

However, as shown above, the California Department of Water Resources' recommendations are applicable to local government planning actions.

Based on a review of the Flood Insurance Rate Maps for the Wasco area, the Wasco Center including the Walmart site, is not located in a 100-year or 500-year flood zone. The nearest water body to the project site is the Calloway Canal, which is located approximately 5 miles to the east. As a result, potential climate change will not affect flood management on the Wasco Center including the Walmart site.

Wildfires

As discussed in Section 7, Effects Found Not to be Significant, wildfires would not pose a hazard to the proposed Walmart because the project site is not located in areas susceptible to such fires. Any increases in wildfires as a result of climate change would be less than significant.

Cumulative Impact Analysis

The only impact that is "cumulative" in nature is the availability of water. More development and more people would require more fresh water.

Water Supply

A vast network of manmade reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

One of the major impacts of climate change is a loss of natural snowpack, particularly the Sierra Nevada snowpack. Snowmelt provides an annual average of 15 million acre-feet of water, released between April and July each year, according to a paper by the Department of Water Resources. The California Department of Water Resources projects that the Sierra snowpack will experience a 25- to 40-percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack.

As discussed in Section 7, Effects Found Not to be Significant, groundwater is the sole source of water supply for the City of Wasco. Groundwater supplies within the sub-basin increase from natural or direct recharge. The groundwater sub-basin that provides water supply to the City as well as the project site has a net groundwater gain of 133,700 acre-feet per year. The analysis in Section 7, Effects Found Not to be Significant, concludes that the proposed Walmart along with the entire Wasco Center would result in a negligible increase in water demand (i.e., less than 0.05 percent) of the annual groundwater supplies within the sub-basin. Therefore, water supply impacts from climate change to the proposed Walmart would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant.

Cumulative

Less than significant.