

3.4 GREENHOUSE GAS EMISSIONS

Emissions of greenhouse gases (GHGs) have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. The proper context for addressing this issue in an EIR is as a discussion of cumulative impacts, because although the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate low-lying areas; to affect rainfall and snowfall, leading to changes in water supply; to affect habitat, leading to adverse effects on biological resources; and to result in other effects.

Therefore, the cumulative global climate change analysis presented in this section of the DEIR estimates and analyzes the GHG emissions associated with project-related construction activities and operation of the proposed project. The potential effects of global climate change on the project are also identified based on available scientific data.

Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment. In determining the significance of a proposed project's contribution to anticipated adverse future conditions, a lead agency should generally undertake a two-step analysis. The first question is whether the *combined* effects from *both* the proposed project *and* other projects would be cumulatively significant. If the agency answers this inquiry in the affirmative, the second question is whether "the proposed project's *incremental* effects are cumulatively considerable" and thus significant in and of themselves. The cumulative context for this issue (climate change) comprises anthropogenic (i.e., human-made) GHG emissions sources across the globe, and no project alone would reasonably be expected to contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context for and a process for developing an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs, even relatively small (on a global basis) additions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and therefore significant.

The analysis is presented here, rather than Chapter 4, "Cumulative Impacts," because this issue is presented in greater project-level detail. This discussion presents a summary of applicable regulations, the current state of climate change science and GHG emissions sources in California, and a description of project-generated GHG emissions and their contribution to global climate change.

3.4.1 REGULATORY SETTING

FEDERAL

SUPREME COURT RULING

The U.S. EPA is the federal agency responsible for implementing the CAA. The Supreme Court of the United States ruled on April 2, 2007, that carbon dioxide (CO₂) is an air pollutant as defined under the CAA, and that the U.S. EPA has the authority to regulate emissions of GHGs. The ruling in this case resulted in the U.S. EPA taking steps to regulate GHG emissions and lent support for state and local agencies' efforts to reduce GHG emissions.

U.S. EPA ACTIONS

In response to the mounting issue of climate change, the U.S. EPA has taken actions (described below) to regulate, monitor, and potentially reduce GHG emissions.

Greenhouse Gas Permitting Requirements

New major stationary emissions sources and major modifications at existing stationary sources are required by the CAA to obtain an air pollution permit before commencing construction. On May 13, 2010, the U.S. EPA issued the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailor Rule (U.S. EPA 2011). This final rule sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

PSD permitting requirements now cover new construction projects that emit GHG emissions of at least 100,000 tons carbon dioxide equivalent (CO₂e) (90,718 metric tons [MT]) per year even if they do not exceed the permitting thresholds for any other pollutant. Modifications at existing facilities that increase GHG emissions by at least 75,000 tons (68,039 MT) per year will be subject to permitting requirements, even if they do not significantly increase emissions of any other pollutant. Title V Operating Permit requirements apply to sources based on their GHG emissions even if they would not apply based on emissions of any other pollutant. Facilities that emit at least 100,000 tons (90,718 MT) per year of CO₂e will be subject to Title V permitting requirements.

As part of this rule, the U.S. EPA undertook another rulemaking on June 29, 2012. This action issued a final rule that continues to focus permitting on the largest emitters. The U.S. EPA did not revise the GHG permitting thresholds that were established by the GHG Tailoring Rule. Therefore, at this time, PSD and Title V permitting requirements are not applicable to additional, smaller sources of GHG emissions (U.S. EPA 2012).

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, U.S. EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the U.S. EPA with accurate and timely GHG emissions data from facilities that emit 25,000 MT or more of CO₂ per year. This publicly available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks

On September 15, 2009, the U.S. EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. The U.S. EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. This proposed national program would allow automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both Federal programs and the standards of California and other states.

STATE

EXECUTIVE ORDER S-3-05

Executive Order S-3-05, which was signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea level. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

ASSEMBLY BILL 32, THE CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs the ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

ASSEMBLY BILL 32 CLIMATE CHANGE SCOPING PLAN

In December 2008, ARB adopted its *Climate Change Scoping Plan*, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons (MMT) CO₂e, or approximately 22% from the state's projected 2020 emission level of 545 MMT of CO₂e under a business-as-usual scenario (this is a reduction of 47 MMT CO₂e, or almost 10 percent, from 2008 emissions). ARB's original 2020 projection was 596 MMT CO₂e, but this revised 2020 projection takes into account the economic downturn that occurred in 2008 (ARB 2011). The Scoping Plan reapproved by ARB in August 2011 includes the Final Supplement to the Scoping Plan Functional Equivalent Document, which further examined various alternatives to Scoping Plan measures. The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. ARB estimates the largest reductions in GHG emissions to be achieved by implementing the following measures and standards (ARB 2011):

- ▲ improved emissions standards for light-duty vehicles (26.1 MMT CO₂e),
- ▲ the Low-Carbon Fuel Standard (15.0 MMT CO₂e),
- ▲ energy efficiency measures in buildings and appliances (11.9 MMT CO₂e), and
- ▲ a renewable portfolio and electricity standards for electricity production (23.4 MMT CO₂e).

In 2011, ARB adopted the cap-and-trade regulation. The cap-and-trade program covers major sources of GHG emissions in the State such as refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable emissions cap that will decline over time. The State will distribute allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources under the cap will need to surrender allowances and offsets equal to their emissions at the end of each compliance period (ARB 2012).

With regard to land use planning, the Scoping Plan expects that reductions of approximately 3.0 MMT CO₂e will be achieved through implementation of Senate Bill (SB) 375, which is discussed further below (ARB 2011).

SENATE BILL 375

SB 375, Sustainable Communities and Climate Protection Act of 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG emission reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

LOCAL

Napa County General Plan

The Napa County General Plan includes the following applicable policies related to reducing GHG emissions in Napa County (Napa County 2008):

- ▲ **Policy CON-65:** The County shall support efforts to reduce and offset greenhouse gas (GHG) emissions and strive to maintain and enhance the County's current level of carbon sequestration functions through the following measures:
 - a) Study the County's natural, agricultural, and urban ecosystems to determine their value as carbon sequesters and how they may potentially increase.
 - b) Preserve and enhance the values of Napa County's plant life as carbon sequestration systems to recycle greenhouse gases.
 - c) Perpetuate policies in support of urban-centered growth and agricultural preservation preventing sprawl.
 - d) Perpetuate policies in support of alternative modes of transportation, including transit, paratransit, walking, and biking.
 - e) Consider GHG emissions in the review of discretionary projects. Consideration may include an inventory of GHG emissions produced by the traffic expected to be generated by the project, any changes in carbon sequestration capacities caused by the project, and anticipated fuel needs generated by building heating, cooling, lighting systems, manufacturing, or commercial activities on the premises. Projects shall consider methods to reduce GHG emissions and incorporate permanent and verifiable emission offsets.
 - f) Establish partnerships with experts, trade associations, non-governmental associations, and community and business leaders to support and participate in programs related to global climate change.
- ▲ **Policy CON-66:** The County shall promote the implementation of sustainable practices and green technology in agriculture, commercial, industrial, and residential development through the following actions:
 - a) Project Construction
 - 1) Utilize recycled, low-carbon, and otherwise climate-friendly building materials such as salvaged and recycled content materials for buildings, hard surfaces, and landscaping materials.
 - 2) Minimize, reuse, and recycle construction-related waste.
 - 3) Utilize alternative fuels in construction equipment and require construction equipment to utilize the best available technology to reduce emissions.
- ▲ **Policy CON-67:** The County shall promote and encourage "green building" design, development, and construction through the achievement of Leadership in Energy and Environmental Design (LEED) standards set by the U.S. Green Building Council, the Green Point Rated system standards set by Builditgreen.org, or equivalent programs. Actions in support of this policy shall include:
 - a) Audit current County practices to assess opportunities and barriers to implementation of current sustainable practices.
 - b) Amend the County Code as necessary to remove barriers to and encourage "green" construction.
 - c) Develop new County buildings as "green buildings," utilizing sustainable construction and practices.
 - d) Encourage all new large development projects and major renovation of existing facilities to be based on Green Building Council standards utilizing sustainable construction and practices to achieve a minimum LEED rating of Silver, or comparable level on the Green Point Rated system per standards set by Builditgreen.org or other comparable updated rating systems.

- e) Support state and federal incentive programs that offer rebates and cost sharing related to the implementation of “green building” standards and LEED certification.
- ▲ **Policy CON-72:** The County shall seek to reduce the energy impacts from new buildings by applying Title 24 energy standards as required by law and providing information to the public and builders on available energy conservation techniques, products, and methods available to exceed those standards by 15 percent or more.
 - ▲ **Policy CON-73:** The County shall monitor the ecological effects of climate change in Napa County over time, including sea level rise, effects on water resources, local microclimates, native vegetation, agriculture, and the economy. Consistent with the principle of adaptive management, the County shall adapt policies and operations to address identified effects as feasible.
 - ▲ **Policy CON-76:** The County shall minimize air pollutant emissions from all County facilities and operations to the extent feasible, consistent with the County’s desire to provide a high level of public service.

Napa County Climate Action Plan & Emissions Reduction Plan

The County of Napa is in the process of preparing a Climate Action Plan (Napa County CAP) that would provide emissions reduction strategies necessary to reduce emissions in unincorporated Napa County to 1990 levels by 2020. In December 2012, the Napa County Board of Supervisors (Board) considered adoption of the Napa County CAP and requested revisions to better reflect ongoing activities and to achieve more reductions in transportation-related emissions if feasible. County staff is in the process of gathering community input to support revisions to the CAP, in anticipation of bringing a revised CAP back to the Planning Commission and the Board of Supervisors late in 2013. This EIR analysis uses existing setting information from the Draft Napa County CAP, primarily from the emissions inventory.

Napa County has also prepared an emissions reduction plan for County operations, which identifies measures that the County can take to reduce emissions from its own energy use, fleet, and other operations (Napa County Department of Public Works and Kenwood Energy 2010). Among other things, the emission reduction plan identifies a goal for energy efficiency of new construction like the proposed project by calling for construction equivalent to LEED Gold.

3.4.2 ENVIRONMENTAL SETTING

ATTRIBUTING CLIMATE CHANGE—THE PHYSICAL SCIENTIFIC BASIS

Certain gases in the earth’s atmosphere, classified as GHGs, play a critical role in determining the earth’s surface temperature. Solar radiation enters the earth’s atmosphere from space. A portion of the radiation is absorbed by the earth’s surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead “trapped,” resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth’s climate, known as global climate change or global warming. It is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities (Intergovernmental Panel on Climate Change [IPCC] 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 54% is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO₂ emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

ATTRIBUTING CLIMATE CHANGE—GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial and agricultural emissions sectors (ARB 2010). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2010). Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) is largely associated with agricultural practices and landfills. N₂O is also largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution, respectively, two of the most common processes of CO₂ sequestration.

GHG EMISSIONS INVENTORY

According to the Draft Napa County CAP (October 2011), total GHG emissions in 2005 for Napa County were 443,670 MT CO₂e. GHG emissions in 2005 are listed by sector in Table 3.4-1 and shown by sector in Exhibit 3.4-1. These emissions are the result of activity associated with Napa County residents, businesses, farms and include the following sectors:

- ▲ residential building energy use,
- ▲ commercial building energy use,
- ▲ residential wastewater,
- ▲ commercial wastewater,
- ▲ waste generation,
- ▲ on-road vehicles,
- ▲ off-road vehicles,
- ▲ agriculture, and
- ▲ land use change.

The principal GHG gases that are emitted as a result of human activities are CO₂, CH₄, N₂O and fluorinated gases (HFCs, PFCs and SF₆). The data presented in Table 3.4-1 and Exhibit 3.4-1 account for emissions of CO₂, CH₄ and N₂O, but do not include emissions of fluorinated compounds. Accurate data for usage and storage of these compounds is difficult to obtain and the associated emissions likely represent less than 5% of total County emissions (Napa County 2011).

Table 3.4-1 Napa County 2005 GHG Inventory by Emissions Sector

Sector	MT CO ₂ e/yr
Residential Buildings ¹	48,220
Commercial/Industrial Buildings	95,320
Waste	9,240
Wastewater (Residential)	5,630
Wastewater (Commercial/Industrial)	4,270
On-Road Vehicles	191,270
Off-Road Vehicles (Lawn and Garden)	750
Off-Road Vehicles (Construction/Industrial)	15,870
Agriculture ²	46,800
Land Use Change ³	26,300
Total ⁴	443,670
Municipal Operations ⁵	7,940

Notes: MT CO₂e/yr = metric tons of carbon dioxide equivalent per year.

¹ Includes energy used by wastewater treatment and water pumping facilities. Napa County does not require water imports from outside the County.

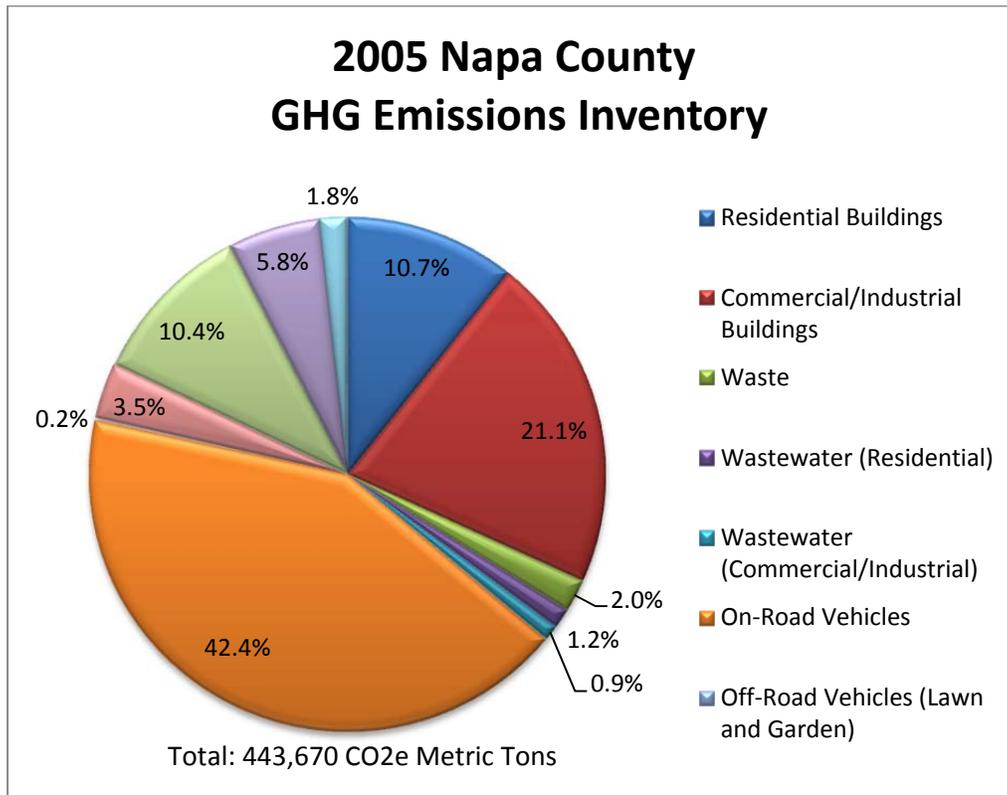
² Includes emissions from vehicles/equipment, enteric fermentation, manure, fertilizer use, and lime use

³ includes emissions from loss in carbon stock, gain in carbon stock, and loss in annual sequestration capacity from vineyard development

⁴ All values rounded to the nearest 10 – consistent with the level of uncertainty of the overall inventory

⁵ Municipal operations are a subset of the community’s emissions and are captured in each sector total. They are shown as a separate line item for informational purposes only and are not included in the total.

Source: Napa County 2011



Source: Napa County 2011

Exhibit 3.4-1

Napa County’s Greenhouse Gas Emissions by Sector

The largest source of GHG emissions in Napa County in 2005 was on-road transportation (43%), followed by commercial building energy (21%), residential building energy (11%) and agriculture (11%). Emissions due to waste generation, wastewater generation, off-road vehicles and land use change combined represent approximately 14% of total GHG emissions in 2005. Per capita emissions for Napa County in 2005 were 15.5 MT CO₂e per person. Average per capita emissions for the state of California in 2005 were approximately 13 MT CO₂e per person (Napa County 2011).

ADAPTATION TO CLIMATE CHANGE

According to the IPCC, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3–7°F by the end of the century, depending on future GHG emission scenarios (IPCC 2007). According to the California Natural Resources Agency (CNRA) temperatures in California are projected to increase 2 to 5°F by 2050 and by 4 to 9°F by 2100 (CNRA 2009).

Environmental resource other than air quality and global average temperature could be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. According to the California Energy Commission (CEC) (2012), the snowpack portion of the State's water supply could potentially decline by 30 to 90% by the end of the 21st century. An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system.

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2009).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity large wildfires (CNRA 2009).

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century and it is predicted to rise an additional 7 to 22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007). CNRA projects that sea levels along California will rise 12 to 18 inches by 2050 and 21 to 55 inches by 2100 (CNRA 2009).

3.4.3 ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

METHODS AND ASSUMPTIONS

Quantification of short-term construction-related GHG emissions was based on a combination of methods, including the use of exhaust emission rates from OFFROAD 2007 and EMFAC 2011. Project-generated emissions were modeled based on this information and information provided in the project description to estimate reasonable worst-case conditions.

Construction emissions modeling assumed construction would occur over a three-year period (2016 to 2019). Initial construction of the facility would begin in March 2016 and last approximately 24 months. The project would also include an additional 160-bed expansion which, for modeling purposes, was assumed to begin

immediately following the initial construction. This methodology would result in worst-case exhaust emissions because exhaust emission rates now are expected to decrease in the future.

Operational mobile-source emissions were modeled based on projected full time employees that would operate the facility and daily visitation rates. Indirect emissions associated with electricity consumption were calculated based on utility emission factors for the Pacific Gas and Electric Company for CO₂, N₂O, and CH₄ as contained in California Emissions Estimator Model Version 1.1.1 (CalEEMod), and estimates of project-related electricity consumption. Indirect emissions associated with natural gas consumption were calculated using emission factors provided by The California Climate Action Registry (2009) and the annual estimate of natural gas consumption mentioned in Section 3.10, Utilities & Service Systems.

THRESHOLDS OF SIGNIFICANCE

The BAAQMD is the local agency overseeing air quality considerations in Napa County. On June 2, 2010 the BAAQMD adopted new CEQA significance thresholds including a threshold for GHGs of 1,100 metric tons MT CO₂e/yr for evaluating operation-related emissions (BAAQMD 2010). This threshold was designed to establish the mass emissions level at which a project's contribution would be considered a significant environmental impact under CEQA. The threshold was developed based on overall projections of development in the region, and how the region would come into compliance with the goals established by AB 32.

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted these thresholds. The court did not determine whether the thresholds were valid on the merits, but rather found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease their dissemination until the BAAQMD had complied with CEQA.

CEQA gives lead agencies discretion whether or not to classify a particular environmental impact as significant. Ultimately, formulation of a standard or "threshold" of significance requires the lead agency to make a policy judgment about where the line should be drawn distinguishing adverse impacts it considers significant from those that are not deemed significant. This judgment must, however, be based on scientific information and other factual data to the extent possible. (State CEQA Guidelines Section 15064[b]).

Although the Alameda County Superior Court has ordered the BAAQMD to cease dissemination of the previously adopted threshold of 1,100 MT CO₂e/yr, the court has made no finding on the applicability or the merits of the quantitative threshold. BAAQMD states that lead agencies will need to determine appropriate air quality thresholds to use for each project they review based on substantial evidence that they should include in the administrative record for the project. One resource BAAQMD provides as a reference for determining appropriate thresholds is the CEQA Thresholds Options and Justification Report developed by staff in 2009 (BAAQMD 2009). The CEQA Thresholds Options and Justification Report outlines substantial evidence supporting a variety of thresholds of significance.

Therefore, because the proposed project would result in operational-related emissions of GHGs from mobile and indirect sources (i.e., energy consumption), and is located within the BAAQMD's jurisdiction for which these thresholds were determined to be applicable, the County considers the threshold of 1,100 MT CO₂e/yr to be an acceptable threshold for CEQA significance with regards to GHG emissions.

Thus, based on Appendix G of the CEQA Guidelines, impacts are considered significant if implementation of the proposed project would do any of the following:

- ▲ generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (i.e., result in GHG emissions that exceed 1,100 MT CO₂e/yr); or

- ▲ conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

ISSUES OR POTENTIAL IMPACTS NOT DISCUSSED FURTHER

All issues related to climate change listed above are addressed in the analysis below.

IMPACT ANALYSIS

Impact 3.4-1 Generation of Greenhouse Gas Emissions. The proposed project (366 beds or 526 beds) would result in long-term operational emissions from mobile (i.e., employees and visitors) and indirect sources (i.e., electricity consumption) that exceed 1,100 MT CO₂e/year. This would be a **significant** impact on climate change. This impact would remain significant and unavoidable even with implementation of Mitigation Measure 3.4-1.

Project-related construction activities would result in increased generation of GHG emissions. Heavy-duty off-road equipment, materials transport, and worker commutes during construction of the proposed project would result in exhaust emissions of GHGs. Construction equipment would include earth-moving equipment, including graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks, which would be used during excavation for utilities and building foundations.

GHG emissions associated with operation of the jail would consist of indirect emissions from electricity consumption, electricity consumption as a result of water consumption (i.e., GHG emissions that would occur offsite at utility providers), and mobile-source emissions of GHGs from worker commute and visitors to the jail.

Operational GHG emissions were estimated using a combination of methods, as described above in Methods and Assumptions, and are presented in Table 3.4-2.

Source	CO ₂ e (MT/year)
Phase 1 (2-year period)	442
Phase 2 (12-month period)	356
Total Construction Emissions ²	1,240
Operational-Related Emissions	(MT/year)
Electricity Consumption	931
Natural Gas Consumption	535
Water Consumption	29
Mobile Sources (Net Increase in Vehicle Trips)	1,573
Total Project Operational-Related GHG Emissions	3,068

Notes: CO₂e = carbon dioxide equivalent; GHG = greenhouse gas; MT = metric tons
¹ Detailed assumptions and modeling output files are included in Appendix C.
² Construction emissions represent the total, not per year, estimates of GHG emissions for all construction activities until build out in 2030.
 Source: Modeled by Ascent Environmental, Inc. in 2013

Construction emissions were modeled for initial construction activities commencing in 2016 (366-bed facility) and for future buildout by 2030 (526-bed facility). For modeling purposes, emissions of 526-bed facility are considered worst-case because emission rates for 2018 were used rather than future emission rates which would be lower. See Appendix C for all assumptions and modeling inputs.

As shown above in Table 3.4-2 construction activities would result in 442 MT CO₂e/year for each of the first two years of construction and 356 MT CO₂e/year for one year during the final expansion of the facility. Operation of the proposed project would result in approximately 3,068 MT CO₂e/year for the lifetime of the project. Thus, construction would contribute GHG emissions to a much lesser extent than operation of the facility.

Operational emissions of GHGs, however, would be exceed the 1,100 MT CO₂e/yr threshold discussed above and, therefore, could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. This would be a **significant** impact.

Mitigation Measure 3.4-1. Incorporate Design Features into Project to Reduce Project-Related Operational GHG Emissions

To reduce project-related operational GHG emissions, Napa County shall achieve a 15% or more reduction in energy consumption below Title 24 standards (Green Building Code). Measures implemented to achieve this performance standard may include but shall not be limited to the following:

- › *construct all buildings at the new jail facility to LEED Gold standard;*
- › *install enough solar panels on and/or around the new facility to meet the facility's full electricity demand on a year-round basis, provided that the County has the funding to support associated capital costs at the time of building;*
- › *install rooftop solar hot water heaters to partially meet the demand for hot water by the facility;*
- › *in rooftop areas where solar panels or solar hot water heaters are not installed, incorporate cool roofs using material with a greater than or equal to 30 albedo (i.e., the proportion of the incident light or radiation reflected by a surface);*
- › *install smart meters and programmable thermostats into the heating, ventilation, and cooling systems for all buildings;*
- › *only include drought tolerant plants in the facility's landscaping; and*
- › *install energy-efficient appliances, fixtures, and water-saving plumbing (i.e., low-flow toilets, faucets).*

Implementation of the above mitigation measure would reduce GHG emissions associated with energy consumption by a minimum of 15%. This reduction along, however, would not reduce total operation emissions to less than the threshold of 1,100 MT CO₂e/yr. Therefore, operational GHGs associated with the proposed project would remain cumulatively considerable. This impact would be **significant and unavoidable**.

Impact 3.4-2

Impacts of Climate Change on the Project. Climate change is expected to result in a variety of effects on the project area including changes to timing and intensity of precipitation resulting in increased risk from flood and impacts associated with increased stormwater runoff. Climate change could also result in increased temperatures, leading to increased wildland fire risk and elevated sea levels. However, the proposed project is not located in an area prone to wildland fire and is not located near the California coast such that projected sea level rise would directly affect the project. Additionally, Napa County has various policies in place that would protect development from increased risk of flooding. Therefore, this impact would be **less than significant**.

Human-induced increases in GHG concentrations in the atmosphere have led to increased global average temperatures (climate change) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions.

Although there is a strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (CNRA 2009, CEC 2012, DWR 2006, IPCC 2007). These include:

- ▲ increased average temperatures;
- ▲ modifications to the timing, amount, and form (rain vs. snow) of precipitation;
- ▲ changes in the timing and amount of runoff;
- ▲ reduced water supply;
- ▲ deterioration of water quality; and
- ▲ elevated sea level.

These changes may translate into a variety of issues and concerns that may affect the project area, including but not limited to:

- ▲ increased frequency and intensity of wildfire as a result of changing precipitation patterns and temperatures,
- ▲ sea level rise inundating portions of SR 221 used to travel between the proposed new jail and the Courthouse,
- ▲ increased stormwater runoff associated with changes to precipitation patterns,
- ▲ increased risk of flooding associated with changes to precipitation patterns.

Although uncertainty exists to the precise levels of these impacts, there is consensus regarding the range, frequency, or intensity of these impacts that can be expected. The project could be subject to potential hazards that could be exacerbated by climate change, such as changes in the timing and amount of runoff and the increased risk of flooding associated with changes to precipitation. Because the project site is located in a developed area and far from any forest lands or wildlands, it would not be affected by increased frequency or intensity of wildfire.

Sea level rise is expected to increase 21 to 55 inches by the year 2100 (CNRA 2009). While the proposed project would not be located where inundation from sea level rise would occur, portions of Soscol Avenue (off of SR 221) near the Napa River and north of the project site would become inundated if sea level rise increased by 55 inches (1.4 meters) according to inundation maps developed by Cal-Adapt (Cal-Adapt 2012). The segments of Soscol Avenue that would be inundated comprise a portion of the route that would be used to transport inmates and staff between the proposed new jail and the Criminal Court facility at the existing jail. If such inundation did occur, access between the proposed new jail and the Criminal Court facility would not be completely restricted because alternative routes would be possible, either using Silverado Trail (SR 121) or, if segments of Silverado Trail are also inundated, less direct routes that pass through the neighborhoods to the east.

In addition, as discussed in the setting, the County has adopted policies to plan for flood control and protection of natural floodways in response to climate change, including General Plan Policy CON-50.5, which recognizes the importance of water resources and lands that may accommodate floodwater and as those areas identified on the County's adopted Federal Emergency Management Agency (FEMA) Flood Insurance Rate Mapping (FIRM). Also, General Plan Policy CON-73 states that the County shall monitor the effects of sea level rise on water resources, local microclimates, native vegetation, agriculture, and the economy. These policies would reduce the extent and severity of climate change-related impacts to the project from increased risk of flooding associated with changes to precipitation patterns. The project would not be affected by increased risk of wildfire or increases in stormwater runoff. Additionally, alternative driving routes would be available even if access

between the project and the Criminal Court facility would become restricted due to sea level rise and County policies would minimize risks from increased flooding. For these reasons, this impact is considered **less than significant**.

Mitigation Measure

No mitigation is required.

This page intentionally left blank.