

3.8 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section presents the current state of climate change science and greenhouse gas (GHG) emissions sources in California; a summary of applicable regulations; quantification of project-generated GHG emissions and discussion about their contribution to global climate change. The analysis considers whether adoption and implementation of the proposed CLUO, including issuance of subsequent Cannabis Use Permits pursuant to the adopted CLUO would result in impacts to GHG emissions and global climate change. Energy impacts of the project are evaluated in Section 3.6, “Energy.”

Comments on the NOP were received from residents, regarding GHG impacts from implementation of the CLUO. This issue is considered below. The reader is referred to Appendix A for comments received on the NOP.

3.8.1 Environmental Setting

THE PHYSICAL SCIENTIFIC BASIS OF GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

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 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.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth’s climate, known as global climate change or global warming. It is “extremely likely” that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014).

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 most pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the lifetime of any GHG molecule is dependent on multiple variables and cannot be determined with any certainty, 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 55 percent is estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs in the atmosphere that ultimately result in climate change is not precisely known, but is enormous; no single development project alone would measurably contribute to an incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

GREENHOUSE GAS EMISSION SOURCES

GHG emissions are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors (CARB 2014). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2014). Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and 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 (CO₂ dissolving into the water), respectively, two of the most common processes for removing CO₂ from the atmosphere.

As further discussed in Section 3.8.2, “Regulatory Setting,” Yolo County adopted its Climate Action Plan (CAP) on March 15, 2011. Table 3.8-1 summarizes GHG emissions under the CAP.

Table 3.8-1 Unincorporated Yolo County GHG Emissions Inventory for 2008 and Building-as-Usual Forecast Years (MTCO_{2e})

Emissions Sector	2008	2020	2030	2040	2050
Agriculture	297,341	289,482	281,624	281,624	281,624
Transportation	105,253	285,492	465,731	510,677	554,733
Energy	181,447	404,929	628,444	689,093	748,757
Solid Waste	6,871	12,660	18,449	20,230	21,975
Wastewater	974	974	709	709	709
Total	651,740	993,537	1,394,957	1,502,332	1,607,798

Notes: Totals may not add due to rounding.

MTCO_{2e} = metric tons of carbon dioxide equivalent.

Compiled by Ascent Environmental 2019

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

According to the Intergovernmental Panel on Climate Change, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 1.5 degrees Celsius (°C) (2.7 degrees Fahrenheit [°F]) by 2040 (IPCC 2018). According to *California’s Fourth Climate Change Assessment*, with GHGs reduced at a moderate rate then California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100. However, if GHG emissions continue at current rates then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (OPR, CEC, and CNRA 2018:5).

Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012-2016, an almost non-existent Sierra Nevada winter snowpack in 2014-2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (OPR, CEC, and CNRA 2018:3). According to the California Natural Resources Agency’s (CNRA’s) *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014, respectively (CNRA 2018:64). The changes in precipitation exacerbate wildfires throughout California, increasing their frequency, size, and devastation. As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow

into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018:190–192). Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR, CEC, and CNRA 2018:6). Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018:64, 116–117, 127; OPR, CEC, and CNRA 2018:7–14).

Cal-Adapt is a climate change scenario planning tool developed by the California Energy Commission (CEC) that downscales global climate model data to local and regional resolution under two emissions scenarios. The Representative Concentration Pathway (RCP) 8.5 scenario represents a business-as-usual future emissions scenario, and the RCP 4.5 scenario represents a lower GHG emissions future. According to Cal-Adapt, annual average precipitation in Yolo County is projected to increase by 3 to 5.7 inches by 2099, with the range based on low and high emissions scenarios (CEC 2018a). At the same time, annual average temperatures in Yolo County are projected to rise by 5.6 to 8.5 °F by 2099, under the same emissions scenarios (CEC 2018a).

3.8.2 Regulatory Setting

FEDERAL

In *Massachusetts et al. v. Environmental Protection Agency et al.*, 549 U.S. 497 (2007), the Supreme Court of the United States ruled that CO₂ is an air pollutant as defined under the federal Clean Air Act and that the U.S. Environmental Protection Agency (EPA) has the authority to regulate GHG emissions.

In 2010, EPA started to address GHG emissions from stationary sources through its New Source Review permitting program, including operating permits for “major sources” issued under Title V of the federal Clean Air Act.

In October 2012, EPA and the National Highway Traffic Safety Administration, on behalf of the U.S. Department of Transportation, issued final rules to further reduce GHG emissions and improve corporate average fuel economy standards for light-duty vehicles for model years 2017 and beyond (77 FR 62624). These rules would increase fuel economy to the equivalent of 54.5 miles per gallon, limiting vehicle emissions to 163 grams of CO₂ per mile for the fleet of cars and light-duty trucks by model year 2025 (77 FR 62630). However, on April 2, 2018, EPA administrator announced a final determination that the current standards should be revised. On August 2, 2018, the U.S. Department of Transportation (DOT) and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule), which would amend existing CAFE standards for passenger cars and light trucks, and retaining the current model year 2020 standards through model year 2026, establish new standards covering model years 2021 through 2026. Vehicles operating in the County would be subject to the CAFE standards. However, at the time of writing this Draft EIR, the SAFE Rule has not been formally adopted by EPA, and 17 states—including California—have filed a lawsuit against EPA. The timing for ultimate approval of the SAFE Rule and the outcome of any pending or potential lawsuits (and how such could delay or affect its implementation) are unknown at this time. The SAFE Rule's impact on future motor vehicle emissions is also unknown.

In June 2019, the EPA, under authority of the Clean Air Act section 111(d), issued the Affordable Clean Energy (ACE) rule which provides guidance to states on establishing emissions performance standards for coal-fired electric generating units (EGUs). Under this rule, states are required to submit plans to the EPA which demonstrate the use of specifically listed retrofit technologies and operating practices to achieve CO₂ emission reductions through heat rate improvement (HRI). HRI is a measurement of power plant efficiency that EPA determined as part of this rulemaking to be the best system of emission reductions for CO₂ generated from coal-fired EGUs (EPA 2019).

STATE

California Environmental Quality Act

CEQA requires lead agencies to consider the effects of their actions on climate change through analyzing a project's potential to emit GHGs. SB 97 of 2007 acknowledged that GHG emissions and directed the Governor's Office of Planning and Research (OPR) to address GHG emissions in CEQA analyses (PRC Section 21083.05). OPR adopted amendments to the State CEQA Guidelines in 2009 to address analysis and mitigation of the potential effects of GHG emissions in CEQA documents in Section 15064.4. The State CEQA Guidelines were also updated to include tiering streamlining provisions for the evaluation of GHG emissions when evaluated at a programmatic level as well as when a public agency has adopted a plan for the reduction of GHG emissions.

Statewide GHG Emission Targets and Climate Change Scoping Plan

Reducing GHG emissions in California has been a focus of state policy for approximately two decades (State of California 2018). GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (AB 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (SB 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. Executive Order B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (United Nations 2015:3).

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by the California Air Resources Board (CARB), outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017:1, 3, 5, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste). CARB and other state agencies are currently developing a Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal of Executive Order B-55-18.

The state has also passed more detailed legislation addressing GHG emissions associated with industrial sources, transportation, electricity generation, and energy consumption, as summarized below.

Cap-and-Trade Program

CARB administers the state's cap-and-trade program, which covers GHG emission sources that emit more than 25,000 metric tons of CO₂ equivalent per year, such as refineries, power plants, and industrial facilities. This market-based approach to reducing GHG emissions provides economic incentives for achieving GHG emission reductions.

Transportation-Related Standards and Regulations

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel-powered on-road vehicles. In addition, the program's zero-emission vehicle regulation requires battery, fuel cell, and plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025 (CARB 2016a:15). By 2025, when the rules will be fully implemented, GHG emissions from the statewide fleet of new cars and light-duty trucks will be reduced by 34 percent and cars will emit 75 percent less smog-forming pollution than the statewide fleet in 2016 (CARB 2016b:1).

Executive Order B-48-18, signed into law in January 2018, requires all state entities to work with the private sector to have at least 5 million zero-emission vehicles on the road by 2030, as well as 200 hydrogen fueling stations and 250,000 electric-charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity of California's transportation fuels. The LCFS applies to fuels used by on-road motor vehicles and off-road vehicles, including construction equipment (Wade, pers. comm., 2017).

In addition to regulations that address tailpipe emissions and transportation fuels, the state legislature has passed legislation to address the amount of driving by on-road vehicles. Since passage of SB 375 (Chapter 728, Statutes of 2008), CARB requires metropolitan planning organizations to adopt plans showing reductions in GHG emissions from passenger cars and light-duty trucks in their respective regions for 2020 and 2035 (CARB 2018:1). These plans link land use and housing allocation to transportation planning and related mobile-source emissions. The Sacramento Area Council of Governments (SACOG) serves as the metropolitan planning organization for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands located in the Lake Tahoe Basin. SACOG adopted its Metropolitan Transportation Plan/Sustainable Communities Strategy 2035 in 2012, and completed an update adopted in February 2016. SACOG was tasked by CARB to achieve a 7-percent per capita reduction compared to 2012 emissions by 2020 and a 16-percent per capita reduction by 2035, which CARB confirmed the region would achieve by implementing its SCS (CARB 2013). In March 2018, CARB adopted the Target Update for the SB 375 targets tasking SACOG to achieve a 7-percent and a 19-percent per capita reduction by 2020 and 2035, respectively (CARB 2018).

SB 743 (Chapter 386, Statutes of 2013) required that OPR propose changes to the State CEQA Guidelines to address transportation impacts in transit priority areas and other areas of the state. In response, Section 15064.3 was added to CEQA Guidelines in December 2018, requiring that transportation impacts no longer consider congestion but instead focus on the impacts of vehicle miles traveled (VMT). Agencies have until July 1, 2020, to implement these changes but can also choose to implement these changes immediately. In support of these changes, OPR published its *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which recommends that the transportation impact of a project be based on whether the project would generate a level of VMT per capita (or VMT per employee or some other metric) that is 15 percent lower than that of existing development in the region (OPR 2017:12–13), or that a different threshold is used based on substantial evidence. OPR's technical advisory explains that this criterion is consistent with PRC Section 21099, which states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions" (OPR 2017:18). This metric is intended to replace the use of delay and level of service to measure transportation-related impacts. More detail about SB 743 is provided in the "Regulatory Setting" Section 3.14, "Transportation and Circulation."

Laws Associated with Electricity Generation

The state has passed legislation requiring the increasing use of renewables to produce electricity for consumers. California utilities are required to generate 33 percent of their electricity from renewables by 2020 (SB X1-2 of 2011); 52 percent by 2027 (SB 100 of 2018); 60 percent by 2030 (also SB 100 of 2018); and 100 percent by 2045 (also SB 100 of 2018).

Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the state's Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions. The 2019 California Energy Code, which goes into effect January 1, 2020, will require builders to use more energy-efficient building technologies for compliance with increased restrictions on allowable energy use. Additionally, new residential units will be required to include solar panels, sized to offset the estimated electrical requirements of each unit (CCR, Title 24, Part 6, Section 150.1[c]14). CEC estimates that the combination of required energy-efficiency features and mandatory solar panels in the 2019 California Energy Code will result in new residential buildings that use 53 percent less energy than those designed to meet the 2016 California Energy Code. The CEC also estimates that the 2019 California Energy Code will result in new commercial buildings that use 30 percent less energy than those designed to meet the 2016 standards, primarily through the transition to high-efficacy lighting (CEC 2018b).

Medicinal and Adult-Use Cannabis Regulation and Safety Act

In June 2016, the Medicinal and Adult-Use Cannabis Regulation and Safety Act was signed into law, creating one regulatory system for both medicinal and adult-use cannabis. The three cannabis licensing authorities (i.e., California Department of Food and Agriculture's CalCannabis Cultivation Licensing program, the California Department of Consumer Affairs' Bureau of Cannabis Control, and the California Department of Public Health) drafted emergency regulations (CCR Title 3, Division 8, Chapter 1) that were released on November 6, 2017. The following regulations apply to GHG emissions and energy consumption:

- **Section 8203. Renewal of License. Section G.** Beginning January 1, 2022, an application for renewal of a license shall include the following records for each power source indicated on the application for licensure for the previous annual licensed period:
 1. Total electricity supplied by local utility provider, name of local utility provider, and greenhouse gas emission intensity (i.e., the amount of GHGs emitted) per kilowatt hour reported by the utility provider under Section 398.4(c) of the Public Utilities Code for the most recent calendar year available at time of submission;
 2. Total electricity supplied by a zero net energy renewable source, as set forth in Section 398.4(h)(5) of the Public Utilities Code, that is not part of a net metering or other utility benefit;
 3. Total electricity supplied from other unspecified sources, as defined in 398.2(e) of the Public Utilities Code, and other on-site sources of generation not reported to the local utility provider (e.g., generators, fuel cells) and the greenhouse gas emission intensity from these sources; and
 4. Average weighted greenhouse gas emission intensity considering all electricity use in Subsections (1), (2), and (3).
- **Section 8305. Renewable Energy Requirements.** Beginning January 1, 2023, all indoor, tier 2 mixed-light license types of all sizes, and nurseries using indoor or tier 2 mixed-light techniques, shall ensure that electrical power used for commercial cannabis activity meets the average electricity greenhouse gas emissions intensity required by their local utility provider pursuant to the California Renewables Portfolio Standard Program, Division 1, Part 1, Chapter 2.3, Article 16 (commencing with Section 399.11) of the Public Utilities Code. As evidence of meeting the standard, licensees shall comply with the following:
 - (a) If a licensee's average weighted greenhouse gas emission intensity as provided in Section 8203(g)(4) is greater than the local utility provider's greenhouse gas emission intensity, the licensee shall provide evidence of carbon offsets from any of the following sources to cover the excess in carbon emissions from the previous annual licensed period:
 - (1) Voluntary greenhouse gas offset credits purchased from any of the following recognized and reputable voluntary carbon registries:
 - (A) American Carbon Registry;
 - (B) Climate Action Reserve;
 - (C) Verified Carbon Standard.
 - (2) Offsets purchased from any other source are subject to verification and approval by the Department.
 - (b) New licensees, without a record of weighted greenhouse gas emissions intensity from the previous calendar year, shall report the average weighted greenhouse gas emissions intensity, as provided in Section 8203(g)(4), used during their licensed period at the time of license renewal. If a licensee's average weighted greenhouse gas emissions intensity is greater than the local utility provider's greenhouse gas emissions intensity for the most recent calendar year, the licensee shall provide evidence of carbon offsets or allowances to cover the excess in carbon emissions from any of the sources provided in Subsection (a).

LOCAL

Yolo-Solano Air Quality Management District

The Yolo-Solano Air Quality Management District's (YSAQMD's) CEQA handbook and website currently recommends that GHG emissions and impacts to climate change be evaluated for every CEQA project (YSAQMD 2007:24,25; 2016). YSAQMD's website recommends resources from the California Air Pollution Control Officers Association to evaluate project-level GHG emissions. YSAQMD has not adopted project- or plan-level thresholds to be used for CEQA evaluations at the time of writing of this EIR.

Yolo County

Yolo County 2030 Countywide General Plan

The Yolo County 2030 Countywide General Plan (General Plan) includes the following policies related to GHG emissions and climate change (Yolo County 2009):

- **Policy CC-2.3:** Include open space corridors and trails throughout each community to provide off-street bicycle and pedestrian access, as well as connections to intra-county corridors and trails.
- **Policy CC-2.7:** Provide for higher density housing and mixed-use development in the downtown areas of the unincorporated communities to support commercial uses, create more pedestrian travel, extend activity into the evening, increase the variety of housing opportunities to include affordable and special needs housing, enhance safety, reduce traffic and support regular, frequent fixed-route transit service.
- **Policy CC-4.1:** Reduce dependence upon fossil fuels, extracted underground metals, minerals and other non-renewable resources by:
 - Requiring projects to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.
 - Encouraging projects to use regenerative energy heating and cooling source alternatives to fossil fuels.
 - Encouraging projects to select building materials that require less energy-intensive production methods and long-distance transport, in compliance with Leadership in Energy and Environmental Design (LEED) or equivalent standards.
- **Policy CC-4.3:** Reduce activities that encroach upon nature, through:
 - Reuse of existing buildings and sites for development.
 - Compact and clustered residential development, including reduced minimum lot sizes.
 - Reduction or elimination of impervious paving materials.
 - Development patterns that respect natural systems such as watersheds and wildlife corridors.
- **Policy CC-4.4:** Encourage all new construction to be zero net energy by combining building energy efficiency design features with on-site clean distributed generation so as to result in no net purchases from the electricity or gas grid.
- **Policy CC-4.5:** Encourage individual and community-based wind and solar energy systems (micro-grids).
- **Policy CC-4.6:** Encourage all new residences to exceed Title 24 energy standards by at least 15 percent, and encourage all new commercial buildings to exceed Title 24 by at least 20 percent.

- **Policy CC-4.7:** Require energy efficiency design for all buildings.
- **Policy CC-4.8:** Require measures to minimize “heat islands” by requiring light-colored and reflective roofing materials and paint; “green” roofs; light colored roads and parking lots; extensive numbers of shade trees in parking lots; and shade trees and/or overhangs on the south and west sides of new or renovated buildings.
- **Policy CC-4.9:** Encourage construction and other heavy equipment vehicles (e.g., mining, agriculture, etc.) to use retrofit control devices.
- **Policy CC-4.12:** Require “green” design, construction and operation including:
 - A. Site planning sensitive to the natural environment.
 - B. Efficiency in resource use (including energy, water, raw materials and land).
 - C. Building reuse and adaptive reuse.
 - D. Selection of materials and products based on their life-cycle environmental impacts.
 - E. Use of materials and products with recycled content.
 - F. Use of materials provided from within the region.
 - G. Recycling of construction and demolition waste.
 - H. Reduction in the use of toxic and harmful substances in the manufacturing of materials and during construction.
 - I. Use of passive and active solar strategies and efficient heating and cooling technologies.
 - K. Reduction in water use for buildings and landscaping.
 - L. Light pollution reduction to protect “dark skies.”
 - M. Improvements to interior and exterior environments leading to increased health, comfort and productivity.
 - N. Facility maintenance and operational practices that reduce or eliminate harmful effects on people and the natural environment during occupancy.
 - O. Water reuse systems.
 - P. Other systems to capture energy sources that would otherwise be wasted.
- **Policy CI-1.3:** Reduce the total vehicle miles traveled per household by making efficient use of existing transportation facilities and by providing for more direct routes for pedestrians and bicyclists through the implementation of “smart growth” and sustainable planning principles.
- **Policy CI-2.1:** When constructing or modifying roadways, plan for use of the roadway space by all users, including automobiles, trucks, alternative energy vehicles, agricultural equipment, transit, bicyclists, and pedestrians, as appropriate to the road classification and surrounding land uses.

- **Policy CI-2.2:** Encourage employers (including the County) to provide transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education and preferential parking for carpools/vanpools.
- **Policy CI-2.3:** Ensure that, wherever feasible, public transit and alternative mode choices are a viable and attractive alternative to the use of single-occupant motor vehicles.
- **Policy CI-3.3:** CEQA review for subsequent projects will analyze project traffic and circulation impacts using both the Yolo County General Plan policies and Caltrans policies as applicable.
- **Policy CI-3.15:** Provide for greater street connectivity and efficient movement of all transportation modes.
- **Policy CI-4.2:** Support regional air quality and greenhouse gas objectives through effective management of the County's transportation system.
- **Policy CI-4.3:** Reduce dependence upon fossil fuels through:
 - Reduction of vehicle trips and vehicle miles traveled by requiring compact, infill and mixed use development.
 - Use of alternatives to the drive-alone automobile, including walking, bicycling and public transit.
 - Use of vehicles powered by renewable/alternative fuel sources.
 - Local street designs that encourage pedestrian and bicycle use and discourage high speed traffic.
 - Street designs that support/enhance access between neighborhoods and to neighborhood-based commercial developments.
 - Promotion of ride sharing and car sharing programs.
 - Encourage development of the infrastructure necessary to support clean alternative fuel vehicles and electric vehicles.
 - Emerging technologies related to goods movement activities at truck stops, loading terminals, airports and rail facilities.
- **Policy CI-4.4:** Support and encourage low emission or non-polluting forms of transportation.
- **Policy CI-5.1:** Work with local and regional agencies to implement a regional bikeway and/or alternative energy vehicle system that connect the cities, larger unincorporated communities and scenic areas.
- **Policy CI-5.2:** Create a complete bikeway and sidewalk system within each community, including the completion of existing systems. Create walkways and bikeways that connect existing paths where feasible, and that connect to grocery stores, parks, and other community features.
- **Policy CI-5.5:** Integrate bicycle, pedestrian and transit facilities into new developments.
- **Policy CI-5.12:** Support development of facilities that link bicyclists and pedestrians with other modes of transportation.
- **Policy CI-6.2:** Require new development to situate transit stops and hubs at locations that are convenient and accessible to transit users based on coordination with Yolo County Transportation District (YCTD).

- **Policy CI-6.5:** Integrate transit stops into new residential and employment center developments.
- **Policy CI-6.7:** Support multi-modal stations at appropriate locations to integrate transit with other transportation modes.
- **Policy CI-6.11:** Require new development to include design elements that promote transit use.
- **Policy PF-5.8:** Anticipate and adapt to potential changes in frequency and severity of wildfires resulting from predicted effects of global warming.
- **Policy PF-9.1:** Meet or exceed State waste diversion requirements.
- **Policy PF-9.8:** Require salvage, reuse or recycling of construction and demolition materials and debris at all construction sites.
- **Policy PF-9.9:** Encourage use of salvaged and recycled materials in construction.
- **Policy CC-4.11:** Site specific information shall be required for each application, subject to site conditions and available technical information, as determined by the County lead department, in order to enable informed decision-making and ensure consistency with the General Plan and with the assumptions of the General Plan EIR. Technical information and surveys requested may include, but not be limited to, the following: air quality and/or greenhouse gas emissions calculations, agricultural resource assessment/agricultural and evaluation and site assessment (LESA), biological resources assessment, cultural resources assessment, fiscal impact analysis, flood risk analysis, hydrology and water quality analysis, geotechnical/soils study, land use compatibility analysis, noise analysis, Phase One environmental site assessment, sewer capacity and service analysis, storm drainage capacity and service analysis, title report, traffic and circulation study, visual simulation and lighting study, and water supply assessment.

When a technical study is required, it must cover the entire acreage upon which development is being proposed including any off-site improvements (e.g., wells; pumps; force mains; new roads; dirt borrow sites; etc.) that may be necessary. Technical studies must meet CEQA standards and the standards in the applicable industry. As necessary, the technical studies shall include recommendations that are to be implemented as part of the project.

- **Policy CO-6.1:** Improve air quality through land use planning decisions.
- **Policy CO-6.3:** Encourage employers to increase telecommuting, telepresence, provide bicycle facilities, and enhance access to public transit for employees.
- **Policy CO-6.6:** Encourage implementation of YSAQMD Best Management Practices, such as those that reduce emissions and control dust during construction activities.
- **Policy CO-7.3:** Require all projects to incorporate energy-conserving design, construction, and operation techniques and features into all aspects of the project including buildings, roofs, pavement, and landscaping.
- **Policy CO-7.4:** Require the use of Energy Star certified appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units, where feasible.
- **Policy CO-7.5:** Require all new parking lots to significantly increase shading to relieve the potential for “heat islands.”

- **Policy CO-7.6:** Encourage the use of building materials and methods that increase energy efficiency by a minimum of 15 percent beyond State Title 24 standards for residential buildings and 20 percent beyond State Title 24 standards for commercial buildings.
- **Policy CO-7.7:** Support farmers and landowners in their efforts to maximize the efficiency of agricultural end uses.
- **Policy CO-7.9:** Require that new site and structure designs maximize energy efficiency.
- **Policy CO-7.11:** Strongly encourage LEED certification or equivalent for all public, private and existing buildings and strongly encourage LEED-Neighborhood Design certification or equivalent for other applicable projects, particularly within the Specific Plan areas.
- **Policy CO-8.2:** Use the development review process to achieve measurable reductions in greenhouse gas emissions.
- **Policy CO-8.3:** Implement those strategies as described in the adopted Climate Action Plan to adapt to climate change based on sound scientific understanding of the potential impacts.

Yolo County Climate Action Plan

Yolo County adopted its Climate Action Plan (CAP) on March 15, 2011. The Countywide GHG Emissions inventory for 2016 was updated in October of 2018 (Ascent 2018). The CAP commits the County to reducing GHG emissions to 1990 levels by 2020, 27 percent below 1990 levels by 2030, 53 percent below 1990 levels by 2040, and 80 percent below 1990 levels by 2050. The 2011 CAP satisfied the requirements of General Plan, Action CO-A117, which called for the County to create a GHG Emissions Reduction Plan and/or CAP. There are several GHG reduction measures in the CAP that are relevant to the project. The following measures apply to cannabis cultivation uses:

- **Measure A-1:** Reduce nitrogen fertilizer application rates.
- **Measure A-2:** Reduce fossil fuel consumption in field equipment.
- **Measure A-3:** Reduce energy use in agricultural irrigation pumping.
- **Measure A-6:** Sequester carbon in agricultural landscapes.
- **Supporting Measures for Agriculture:** Increase use of biofuels or low-carbon fuels in field equipment; reduce agricultural water use through alternative irrigation techniques.
- **Measure E-5:** Promote on-farm renewable energy facilities.
- **Supporting Measures for Solid Waste and Wastewater:** Reduce disposal of organic materials.

Additionally, the following measures apply to all cannabis uses:

- **Measure E-2:** Reduce energy consumption in existing non-residential units.
- **Measure E-3:** Reduce energy consumption in new non-residential units.
- **Measure E-4:** Increase on-site renewable energy generation to reduce demand for grid energy.
- **Measure E-6:** Reduce water consumption in existing buildings through increased plumbing fixture efficiency.
- **Measure E-7:** Promote weather-based irrigation systems and water efficient turf management.

- **Supporting Measures for Energy:** Energy efficient appliances, lighting, and equipment in existing buildings; require energy efficient appliances, equipment, and lighting in new construction; promote greywater and rainwater collection and non-potable water systems.
- **Supporting Measures for Solid Waste and Wastewater:** Reduce waste emissions from organic materials.

Cool Counties Climate Stabilization Program

On September 11, 2007, Yolo County joined the Cool Counties Climate Stabilization Program. Under this program, Yolo County works with regional jurisdictions to achieve a fair-share reduction in regional GHG emissions of 80 percent by the year 2050. To achieve this goal, Yolo County has committed to the following: developing a GHG emissions inventory, adopting proactive short-, mid-, and long-term GHG reduction goals, and urging Congress to enact more stringent GHG regulations.

3.8.3 Environmental Impacts and Mitigation Measures

METHODS AND ASSUMPTIONS

Under CEQA, GHG emissions and their contribution to global climate change are inherently cumulative. To that end, an individual project participates in this potential impact by its incremental contribution, combined with the cumulative contributions of all other sources of GHG, which, when taken together, cause potential global climate change impacts. Therefore, the cumulative global climate change analysis presented in this section of the EIR evaluates to what extent adoption and implementation of the CLUO, including issuance of subsequent Cannabis Use Permits pursuant to the CLUO, may result in significant impacts to climate change. This program-level analysis is based upon current estimates of GHG emissions in Yolo County (see Table 3.8-1) and emissions modeling tools available from the California Air Pollution Control Officers Association. The activity footprint and design of site-specific cannabis uses assumed under each of the five alternatives based on Table 2-4, Exhibits 2-4 through 2-8, and Appendix D to provide an assessment and comparison of reasonably foreseeable outcomes from different regulatory scenarios.

Chapter 4, “Cumulative Impacts and Overconcentration,” contains a separate detailed analysis of the potential for cumulative effects not otherwise identified in this section, and effects from concentrations or clusters of multiple cannabis uses located in distinct subregions of the County.

Construction activities that generate GHG emissions are assumed for each alternative to take place within the entire activity footprint of cannabis cultivation sites and noncultivation sites as identified in Table 2-4 and Appendix D. Details about the extent of site relocation under each alternative due to compliance with zoning and buffer standards under the CLUO is included in Appendix D. The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate GHG emissions associated with the construction and operation of the types of indoor, outdoor, mixed-light, and noncultivation sites that could be approved under the CLUO, including size limits and default values in CalEEMod based on the climatic conditions in the County. Construction-related emissions were estimated for individual license types. Refer to Appendix E for details about construction assumptions.

Operation of cannabis uses were based on assumptions provided in Appendix D. CalEEMod was also used to estimate operational GHG emissions associated with landscaping equipment, fertilizer use, and paint for paved parking lots; electricity consumption, including water consumption; off-road equipment, and the generation of solid waste. The application of paint for parking lots would result in off-gassing of ROG emissions from the painting of stripes, handicap symbols, directional arrows, and car space descriptions. Paved parking lots that would include painting were assumed for only noncultivation sites. It was assumed that all cultivation and noncultivation licenses would be permitted by 2021, representing a conservative estimate that all license types would be fully operational by 2022 for Alternatives 1, 2, 4, and 5. For Alternative 3, it was assumed that all cultivation and noncultivation licenses would be fully operational by 2023. CalEEMod default energy consumption rates were adjusted to account for the energy efficiency

improvements required by the 2019 California Energy Code, which would result in a 30-percent reduction in energy consumption compared with the 2016 California Energy Code that is included in CalEEMod. The CLUO requires the procurement of at least 50-percent renewable energy for all sites permitted (Section 8-2.1408[0]) and this requirement was applied to energy consumption modeled in CalEEMod.

Assumed off-road equipment includes the use of a utility vehicle for outdoor and mixed-light cultivation sites, and a forklift for noncultivation sites. Back-up diesel generators were also assumed to be used at all mixed-light and indoor cultivation sites. Current GHG emissions associated with existing agricultural uses were also estimated and subtracted from the operational emissions associated with cultivation sites. A weighted average based on existing types of agricultural uses in the County was calculated based on the 2016 GHG emissions inventory prepared for the County.

For mixed-light and indoor cultivation sites, the amount of CO₂ that may be injected into the cannabis plants to increase growth was quantified based on the amount of CO₂ needed to yield cannabis, and the amount of space needed to cultivate plants indoors. These factors were derived from cultivation studies (Mills 2012; Caulkins et al. n.d.).

GHG emissions associated with construction and operation of cultivation and noncultivation sites under the CLUO were evaluated for consistency with adopted regulations, plans, and policies aimed at reducing GHG emissions. These include the Yolo County CAP and the 2017 Scoping Plan. The Yolo County CAP includes GHG emission reduction targets for 2020, 2030, 2040, and 2050 with reduction measures able to close the gap necessary to meet the targets through 2030 but not for 2040 or 2050. The CAP was developed to satisfy the requirements of Section 15183.5(b) of the State CEQA Guidelines, which provides a tiering benefit for GHG analyses. Specifically, the CAP includes quantification of existing and projected GHG emissions for the unincorporated County area through 2050; identification of a 2020 GHG reduction target consistent with AB 32 and goals for 2030, 2040, and 2050; inclusion of GHG emissions associated with General Plan buildout; provision of substantial evidence that demonstrates implementation of GHG reduction measures; and inclusion of a monitoring program to track progress toward meeting GHG reduction targets and goals.

This approach is consistent with one of the pathways to compliance presented in the California Supreme Court (Court) ruling, *Center for Biological Diversity v. California Department of Fish and Wildlife*. The Court identified three pathways to evaluate the cumulative significance of a proposed land use development. One pathway suggests looking at compliance with regulatory programs designed to reduce GHG emissions from particular activities, especially regarding the goals of AB (and now SB) 32.

THRESHOLDS OF SIGNIFICANCE

State CEQA Guidelines Section 15064 and relevant portions of Appendix G recommend that a lead agency consider a project's consistency with relevant, adopted plans, and discuss any inconsistencies with applicable regional plans, including plans to reduce GHG emissions. Under Appendix G of the State CEQA Guidelines, implementing a project would result in a cumulatively considerable contribution to climate change if it would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or
- conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

For the purposes of this analysis, as described in "Methodology" above, the project's potential to result in a cumulatively considerable contribution to climate change would occur if the project conflicted with any applicable plan, policy or regulation of an agency adopted for the purposes of reducing GHG emissions. In this instance, the two plans with which the project would need to demonstrate consistency are the Yolo County CAP and the 2017 Scoping Plan.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact GHG-1: Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment or Conflict with Plan or Policies Adopted to Reduce Emissions of Greenhouse Gases

Construction and operation of commercial cannabis cultivation and noncultivation sites associated with adoption and implementation of the proposed CLUO, including subsequent Cannabis Use Permits pursuant to the adopted CLUO would result in the generation of GHG emissions. The CLUO would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans. For example, the cultivation sites permitted under the CLUO would be required be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping. Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for all alternatives.

Construction-related GHGs would be emitted by construction equipment, haul trucks transporting equipment and materials, and commute trips by construction workers. Operation of commercial cannabis cultivation sites would generate GHG emissions from area sources, energy consumption, water consumption, and wastewater and waste generation. During operation of cultivation sites, GHGs would be emitted by electricity and natural gas that supply power for well pumps and grow lights, as well as the generation of solid waste and wastewater. Use of on-site equipment such as a utility vehicle or back-up generator would also generate GHG emissions.

The CLUO includes the following requirements that address GHG emissions through energy use for cultivation and noncultivation uses:

- Section 8-2.1408(F) Building Design: Design and construction of buildings and structures shall comply with all applicable codes, standards, regulations, and guidelines, and shall demonstrate consideration of odor control, air quality, noise control, environmental controls (including temperature, humidity, and ventilation), safety and security, lighting, aesthetics, energy use, and other appropriate impact mitigation. Design, materials, and general appearance must be compatible with the character and scale of what is allowed in the applicable zone.
- Section 8-2.1408(O) Energy Use: Permittees shall demonstrate availability of adequate energy, and compliance with applicable local and regional energy saving goals. Permittees shall demonstrate use of energy efficient best practices for each proposed use type. Onsite generation of energy from clean and/or renewable sources is encouraged. Permittees shall purchase or generate a minimum of 50 percent renewable power through the Valley Clean Energy Alliance or other available energy purveyor. CDFA licensees must satisfy the requirements of Section 8305, Renewable Energy Requirements, of the CDFA Regulations (effective January 1, 2023).
- Section 8-2.1408(Z) Lighting: All exterior lighting shall be operational, full cut-off, shielded, and downward facing. Lighting shall not spill over onto other properties, structures, or the night sky. Lighting inside indoor and mixed light operations shall be fully controlled so that minimal or no light escapes. Lighting is prohibited in hoop houses. CDFA licensees must comply with Section 8304(c) of the CDFA Regulations. All lighting for indoor/enclosed spaces shall utilize LED bulbs, or equivalent or more efficient technology. Mixed light use types of all tiers and sizes shall ensure that lights used for cultivation are shielded from sunset to sunrise to avoid nighttime glare, pursuant to Section 8304(g) of the CDFA Regulations.

The above requirements would reduce energy-related GHG emissions associated with not only new cultivation and noncultivation sites, but also existing cultivation sites that would seek permitting under the CLUO that would need to demonstrate compliance with this requirement. This provision is consistent with policy provisions in the General Plan (Policies CC-4.4, CC-4.5, CC-4.7, CC-4.12, and CO-7.9), as well as the Yolo County CAP (Measure E-4). Incorporation of this renewable requirement would be consistent with goals and recommendations included in the 2017 Scoping Plan.

All buildings constructed under the CLUO, associated with either new or relocated sites, would be built to the California Energy Code in effect at the time of construction. As discussed under Section 3.8.2, “Regulatory Setting,” above, the 2019 California Energy Code would reduce energy consumption by 30 percent when compared to the 2016 standards. This would be consistent with the Yolo County CAP (Measure E-3). All indoor spaces used for cultivation and noncultivation would use light-emitting diode (LED) lighting or a more efficient lighting technology pursuant to Section 8-2.1408(Z) of the CLUO. This requirement would apply to existing buildings as well as those constructed under the project. The use of energy-efficient lighting in all project buildings would be consistent with the Yolo County CAP (Measure E-2), as well as goals and recommendations included in the 2017 Scoping Plan.

Additionally, all landscaping and irrigation at cultivation and noncultivation cannabis sites would be required to comply with Section 8-2.1408(Y) of the CLUO, which specifies applicable water conservation and drought tolerant landscaping requirements. This provision is consistent with policy provisions in the General Plan (Policy CC-4.12), as well as the Yolo County CAP (Measure E-7). Incorporation of water conservation measures would be consistent with goals and recommendations included in the 2017 Scoping Plan.

The potential use of nitrogen fertilizer at outdoor cultivation sites would be limited and regulated through compliance with Section 8-2.1408(A) of the CLUO as well as through implementation of a Nitrogen Management Plan required under State Water Resources Control Board Order WQ 2019-0001-DWQ (see Section 3.10, “Hydrology and Water Quality,” regarding this requirement), which specifies the application of fertilizers to plant performance. This provision would be consistent with the Yolo County CAP (Measure A-1).

GHG emissions associated with construction and operation of cannabis sites by license type are shown in Table 3.8-2. Refer to Appendix E for detailed modeling input parameters and results.

Table 3.8-2 GHG Emissions Associated with Construction and Operation of Cannabis Sites for Each Cannabis Use Type¹

Cannabis Use	GHG Emissions	
	Construction (MTCO _{2e})	Operation (MTCO _{2e} /year)
Cultivation		
Outdoor	113	43
Mixed Light	161	516
Indoor	112	198
Noncultivation		
Nursery	201	242
Processing	48	18
Distribution	43	11
Retail	46	16
Microbusiness	45	12
Manufacturing	46	15
Testing	58	15

Notes: GHG = greenhouse gas; MTCO_{2e}/year = metric tons of carbon dioxide equivalent per year.

¹ Includes CLUO requirement of 50-percent renewable electricity procurement at individual cannabis sites, as well as compliance with 2019 California Energy Code.

Source: Modeling conducted by Ascent Environmental in 2019

Alternatives 1, 2, 3, and 5 assume that personal use outdoor cultivation may occur in any zoning district on a parcel with a legal residence. Personal use outdoor cultivation of up to six plants is assumed to occur within pots or garden areas on the grounds of the parcel. Alternative 4 would limit personal use cultivation to indoor only. These activities would likely involve no more than 100 square feet of land area and would be required to be outside of front yard and side yard setback areas. Given the minor extent of this potential ground disturbance and the fact that personal outdoor cultivation would be an ancillary use to the residential parcel, minimal GHG emissions would be generated and would not be considered significant.

Alternative 1: Cultivation (Ancillary Nurseries and Processing Only) with Existing Limits (Existing Operations with CLUO) (CEQA Preferred Alternative)

While most of the existing licensed commercial cannabis cultivation operations would remain in their current locations, nine of the existing sites are assumed to be required to relocate under the CLUO zoning standards. No other construction activities are assumed to occur under this alternative. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities.

Table 3.8-2 shows the estimated GHG emissions associated with the construction and operation of individual cannabis uses by type. The total construction-generated GHG emissions for assumed cannabis uses under Alternative 1 would result in 2,511 metric tons of carbon dioxide equivalent (MTCO_{2e}). Annual operational emissions of GHGs from all cannabis cultivation sites assumed under Alternative 1 would be 9,831 MTCO_{2e}/year.

As noted above, the CLUO would result in GHG emission reductions because of the renewable energy, LED lighting, and water conservation performance standards. Table 3.8-2 shows the total estimated operational GHG emissions for cultivation sites.

CLUO Section 8-2.1408(O) would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans. For example, the cultivation sites permitted under the CLUO would be required to be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping. Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for Alternative 1.

Alternative 2: All License Types with Moderate Limits

Under Alternative 2, it was assumed for analysis purposes that there would be two new cultivation sites constructed as well as a total of 52 new noncultivation uses of which up to 47 would be vertically integrated and constructed on a single parcel (see Section 3.0, "Approach to the Environmental Analysis," and Appendix D). Additionally, it was assumed for analysis purposes that 30 of the 78 existing cultivation sites would be relocated due to zoning and buffering standards under the CLUO. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities. Refer to Appendix D for detailed descriptions of the construction assumptions for cannabis uses.

Table 3.8-2 shows the estimated GHG emissions associated with the construction and operation of individual cannabis uses by type. The total construction-generated GHG emissions of all relocated and new cannabis sites assumed under Alternative 2 would result in 8,355 MTCO_{2e}. Annual operational emissions of GHGs from all cannabis sites assumed under Alternative 2 would be 12,277 MTCO_{2e}/year.

CLUO Section 8-2.1408(O) would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans.

For example, the cultivation sites permitted under the CLUO would be required be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping. Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for Alternative 2.

Alternative 3: All License Types with High Limits

Under Alternative 3, it was assumed for analysis purposes that construction of all new individual cannabis uses would occur over 2 years (2021 and 2022) because of the extent of new cannabis uses assumed. This alternative is assumed to result in the construction of 82 new cultivation sites and total of 104 new noncultivation uses of which up to 94 would be vertically integrated and constructed on a single parcel (see Section 3.0, "Approach to the Environmental Analysis," and Appendix D). Additionally, it was assumed for analysis purposes that nine of the 78 existing cultivation sites would be relocated under the CLUO zoning standards. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities.

Table 3.8-2 shows the estimated GHG emissions associated with the construction and operation of individual cannabis uses by type. The total construction-generated GHG emissions of all relocated and new cannabis sites assumed under Alternative 3 would result in 18,836 MTCO_{2e}. Annual operational emissions of GHGs from all cannabis sites assumed under Alternative 3 would be 24,236 MTCO_{2e}/year.

CLUO Section 8-2.1408(O) would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans. For example, the cultivation sites permitted under the CLUO would be required to be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping. Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for Alternative 3.

Alternative 4: Mixed-Light/Indoor License Types Only with Moderate Limits, No Hoop Houses or Outdoor Types

Under Alternative 4, it was assumed for analysis purposes that nine of the 78 existing cultivation sites would be relocated under the CLUO zoning standards. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities. It was also assumed that 75 of the existing and eligible outdoor cannabis cultivation sites would convert entirely to indoor or mixed-light (greenhouse) cultivation. This alternative also assumed the construction of 2 new mixed-light or indoor cultivation sites and total of 52 new noncultivation uses of which up to 47 would be vertically integrated and constructed on a single parcel. Refer to Section 3.0, "Approach to the Environmental Analysis," Appendix D for detailed descriptions of the assumptions for cannabis uses.

Table 3.8-2 shows the estimated GHG emissions associated with the construction and operation of individual cannabis uses by type. The total construction-generated GHG emissions of all relocated, outdoor cultivation sites converted to mixed-light or indoor cultivation, and new cannabis sites assumed under Alternative 4 would result in 15,000 MTCO_{2e}. Annual operational emissions of GHGs from all cannabis sites assumed under Alternative 4 would be 39,280 MTCO_{2e}/year.

CLUO Section 8-2.1408(O) would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans. For example, the cultivation sites permitted under the CLUO would be required to be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping.

Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for Alternative 4.

Alternative 5: All License Types with Moderate Limits, within Agricultural Zones Only, No Retail

Under Alternative 5, it was assumed for analysis purposes that there would be two new cultivation sites constructed as well as a total of 50 new noncultivation uses of which up to 45 would be vertically integrated and constructed on a single parcel (see Section 3.0, "Approach to the Environmental Analysis," and Appendix D). Additionally, it was assumed for analysis purposes that 30 of the 78 existing cultivation sites would be relocated due to zoning and buffering standards under the CLUO. The relocated sites would either construct new buildings and infrastructure or occupy existing agricultural facilities.

Table 3.8-2 shows the estimated GHG emissions associated with the construction and operation of individual cannabis uses by type. The total construction-generated GHG emissions of all relocated and new sites assumed under Alternative 5 would result in 8,263 MTCO_{2e}. Annual operational emissions of GHGs from all cannabis sites assumed under Alternative 5 would be 12,245 MTCO_{2e}/year.

CLUO Section 8-2.1408(O) would require all cannabis uses to procure at least 50 percent of their energy demand from renewable sources and mobile-source emissions are anticipated to decrease due to federal and state regulations, which aligns with both the Yolo County CAP and the 2017 Scoping Plan. Other performance standards included in the CLUO would further align with these adopted GHG reduction plans. For example, the cultivation sites permitted under the CLUO would be required to be consistent with Measure A-3 of the Yolo County CAP which addresses reduction in energy use in agricultural pumping. Additionally, all existing buildings used for cultivation or noncultivation purposes would be required to be consistent with Measure E-6 of the Yolo County CAP which addresses reduction in water consumption through increased plumbing fixture efficiency. Because the proposed CLUO is silent on the requirement to be consistent with the CAP, this impact is conservatively identified as potentially **significant** for Alternative 5.

Mitigation Measures

Mitigation Measure GHG-1: Demonstrate Compliance with Yolo County CAP (Alternatives 1, 2, 3, 4, and 5)

The following shall be included as a new performance standard in Section 8-2.1408 of the CLUO:

- Permittees shall demonstrate compliance with the applicable provisions of the Yolo County Climate Action Plan (CAP) including energy efficiency measures for irrigation pumps and water efficiency requirements for buildings.

Significance after Mitigation

Implementation of Mitigation Measure GHG-1 would ensure compliance all Yolo County CAP measures that are intended to reduce GHG emissions. The GHG emissions associated with project implementation would not be a considerable contribution to global climate change would be **less than significant** for all alternatives.