

5.6 GREENHOUSE GASES AND CLIMATE CHANGE

This section of the Draft Environmental Impact Report (EIR) evaluates greenhouse gas (GHG) emissions associated with the proposed project and analyzes project compliance with applicable regulations. Consideration of the project's consistency with applicable plans, policies, and regulations, as well as the introduction of new sources of GHGs, is included in this section. Information in this section was obtained from the *Dignity Mercy Medical Center Redding North State Pavilion Project Greenhouse Gas Report*, prepared by GHD Inc., (May 2019) and included in Appendix 15.5, GREENHOUSE GAS REPORT). This study is available for review at the City of Redding Development Services Department, Planning Division.

5.6.1 ENVIRONMENTAL SETTING

CLIMATE AND METEOROLOGY

The proposed project is located at the northern end of the Northern Sacramento Valley Air Basin (NSVAB). Prevailing winds in the area are from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas. Growth and urbanization in Shasta County have also contributed to an increase in emissions.

GLOBAL CLIMATE CHANGE – GREENHOUSE GASES

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse. The accumulation of GHG has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and water vapor (H₂O).

While GHGs in the atmosphere are naturally occurring, the emission rate of CO₂, CH₄ and N₂O has been accelerated by human activities. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with such activities as agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, which are generated during certain industrial processes. GHGs are typically reported in “carbon-dioxide-equivalent” measures (CO₂e) as each GHG has a different global warming potential.

Potential climate change impacts in California may include, but are not limited to, a decrease in snowpack; sea level rise; and a greater number of extreme heat days per year, high ozone days, large forest fires, and drought years. Secondary effects are likely to include impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The Environmental Protection Agency (EPA) reports U.S. GHG emissions for 2014 as 6,870 million metric tons of CO₂e (MMT CO₂e). Electricity production accounted for approximately 30 percent of national GHG emissions, followed by the transportation sector at approximately 26 percent and the industrial sector at approximately 21 percent. Commercial and residential fuel use and the agricultural sector accounted for the remaining 21 percent.

The California Air Resources Board (CARB) estimated that in 2015 California produced about 440 MMT CO₂e. The transportation sector was the highest source at 39 percent of the State's total GHGs, followed by the industrial sector at 23 percent, and electricity generation (both in-state and out-of-state) at 19

percent. Commercial and residential fuel use, recycling and waste, high global warming potential, and agricultural sectors accounted for the remaining 19 percent of the State’s total GHG emissions. Table 5.6-1, DESCRIPTION OF GREENHOUSE GASES, describes the primary GHGs attributed to global climate change, including their physical properties.

**Table 5.6-1
DESCRIPTION OF GREENHOUSE GASES**

Greenhouse Gas	Description
Carbon Dioxide (CO ₂)	CO ₂ is a colorless, odorless gas that is emitted naturally and through human activities. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The largest source of CO ₂ emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. The atmospheric lifetime of CO ₂ is variable because it is readily exchanged in the atmosphere. CO ₂ is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs. Due to the emergence of industrial facilities and mobile sources in the past 250 years, CO ₂ emissions from fossil fuel combustion increased by 8.8 percent between 1990 and 2013. ¹
Nitrous Oxide (N ₂ O)	N ₂ O is largely attributable to agricultural practices and soil management. Primary human-related sources of N ₂ O include agricultural soil management, sewage treatment, combustion of fossil fuels, and adipic and nitric acid production. N ₂ O is produced from biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N ₂ O is approximately 120 years. The Global Warming Potential of N ₂ O is 298.
Methane (CH ₄)	Methane, 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. Methane is the major component of natural gas, about 87 percent by volume. Human-related sources include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Natural sources of CH ₄ include wetlands, gas hydrates, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. The atmospheric lifetime of CH ₄ is about 12 years and the Global Warming Potential is 25.
Hydrofluorocarbons (HFCs)	HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase out of Chlorofluorocarbons (CFCs) and HCFCs gains momentum. The 100-year Global Warming Potential of HFCs range from 124 for HFC-152 to 14,800 for HFC-23.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth’s surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Global Warming Potentials range from 6,500 to 9,200.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth’s surface). CFCs were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. Global Warming Potentials for CFCs range from 3,800 to 14,400.
Sulfur Hexafluoride (SF ₆)	SF ₆ is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. The Global Warming Potential of SF ₆ is 23,900.

¹ U.S. Environmental Protection Agency. *Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2013*. April 2015.

Table 5.6-1 (Continued)
DESCRIPTION OF GREENHOUSE GASES

Greenhouse Gas	Description
Hydrochlorofluorocarbons (HCFCs)	HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, HCFCs are subject to a consumption cap and gradual phase out. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year Global Warming Potentials of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.
Nitrogen trifluoride	Nitrogen trifluoride (NF ₃) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. This gas is used in electronics manufacture for semiconductors and liquid crystal displays. It has a high global warming potential of 17,200.

Source: Compiled from U.S. EPA, *Overview of Greenhouse Gases*, April 11, 2018 (<https://www.epa.gov/ghgemissions/overview-greenhouse-gases>); U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, 2018; IPCC *Climate Change 2007: The Physical Science Basis*, 2007; National Research Council, *Advancing the Science of Climate Change*, 2010; U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, April 2010.

5.6.2 REGULATORY SETTING

The following is a description of federal, State, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process.

FEDERAL

U.S. Environmental Protection Agency Endangerment Finding

The EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs (carbon dioxide [CO₂], methane [CH₄], nitrous oxide [N₂O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF₆]) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

STATE

Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is occurring, and that there is a real potential for severe adverse environmental, social, and economic effects in the long term. Every nation emits GHGs and as a result makes an incremental cumulative contribution to global climate change; therefore, global cooperation would be required to reduce the rate of GHG emissions enough to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

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

CARB adopted its Scoping Plan on December 11, 2018. The Scoping Plan functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations.

CARB's Scoping Plan contains the main strategies California will implement to reduce CO₂e emissions by 174 million metric tons (MT), or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MT CO₂e under a business as usual (BAU) scenario. This is a reduction of 42 million MT CO₂e, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

AB 32 requires CARB to update the Scoping Plan at least once every five years. CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes recent science related to climate change, including anticipated impacts to California and the levels of GHG reduction necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32. The Scoping Plan update also looks beyond 2020 toward the 2050 goal, established in Executive Order S-3-05, and observes that "a mid-term statewide emission limit will ensure that the State stays on course to meet our long-term goal." The Scoping Plan update did not establish or propose any specific post-2020 goals, but identified such goals adopted by other governments or recommended by various scientific and policy organizations.

Senate Bill 375

SB 375, known as the Sustainable Communities Strategy and Climate Protection Act, was signed into law in September 2008. SB 375 builds upon AB 32 by requiring CARB to develop regional GHG reduction targets for automobile and light truck sectors for 2020 and 2035, as compared to 2005 emissions levels. SB 375 provides a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires metropolitan planning organizations (MPOs) to incorporate a Sustainable Communities Strategy in their Regional Transportation Plans that will achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities.

Pursuant to SB 375, the CARB established emission reduction targets for California's eighteen MPO regions for the year 2020 and 2035. Shasta County was assigned a 0 percent per capita change when compared to the 2005 baseline year.

Senate Bill 32 and Assembly Bill 197

Senate Bill (SB) 32, passed in 2016, extended the goals of AB 32 and codifies the GHG reduction target of 40 percent below 1990 levels by year 2030, consistent with EO B-30-15. The companion bill to SB 32, AB 197 provides additional direction to CARB for developing the Updated Scoping Plan.

Executive Order S-1-07

Executive Order S-01-07 (2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California. CARB approved the regulation in 2009 and began implementation on January 1, 2011. The low carbon fuel standard (LCFS) will reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016.

Executive Order S-3-05

Executive Order S-3-05 in 2005 set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (Cal/EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary would also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of Cal/EPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first report in March 2006, with its most recent S-3-05-mandated CAT Report released in 2010. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order B-30-15

California Governor Jerry Brown signed EO B-30-15 on April 29, 2015. EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40% below 1990 levels and requires ARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target. The EO supports EO S-03-05, described above, but is currently only binding on state agencies. However, there are current (2015/2016) proposals (SB 32) at the state legislature to establish a statutory target for 2030.

Executive Order B-55-18

On September 10, 2018, California Governor Jerry Brown issued EO B-55-18, which establishes the following GHG emissions target:

- By 2045, California shall achieve carbon net neutrality.

EO B-55-18 identifies that new statewide goal is to achieve carbon neutrality as soon as possible, and no later than 245, and achieve and maintain net negative emissions thereafter. This emissions goal is in addition to the existing targets established by EO B-30-15 and SB 32, and EO S-3-05. The order also

directs the CARB to work with other state agencies to identify and recommend measures to achieve this goal.

Assembly Bill 1493

Assembly Bill 1493 (“the Pavley Standard”) (Health and Safety Code Sections 42823 and 43018.5) aims to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model years 2009–2016 by achieving “the maximum feasible reduction of GHG emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State.” To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California’s existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 and adoption of 13 CCR Section 1961.1 require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty weight classes for passenger vehicles (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily to transport people), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO₂e emissions and 75 percent fewer smog-forming emissions.

Renewables Portfolio Standard (Senate Bill X1-2 & Senate Bill 350)

California’s Renewables Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan. The passage of Senate Bill 350 in 2015 updates the RPS to require the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. The bill would make other revisions to the RPS program and to certain other requirements on public utilities and publicly owned electric utilities.

Senate Bill 100

SB 100, the 100 Percent Clean Energy Act of 2018, sets a state policy that eligible renewable energy and zero-carbon energy resources supply 100 percent of all retail sales of electricity in California by 2045. The bill accelerates the existing RPS goals to:

- 50 percent renewable by 2025.
- 60 percent renewable by 2030.

The bill became effective January 1, 2019.

California Building Energy Efficiency Standards and Green Building Standards

Title 24 of the California Code of Regulations regulates how each new home and business is built or altered in California. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings, and for fire and life safety, energy conservation, green design, and accessibility in and about buildings. Two sections of Title 24 – Part 6, the California Energy Code, and Part 11, the

California Green Building Standards Code or CalGreen Code – contain standards that address GHG emissions related to construction.

The California Green Building Standards Code, or CalGreen, became a mandatory code beginning January 1, 2011. The code takes a holistic approach to green building by including minimum requirements in the areas of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. The CalGreen code has minimum mandatory standards and two additional tiers of voluntary measures intended to achieve greater levels of efficiency that result in lower levels of GHG emissions. Local governments must enforce the minimum standards and can choose to adopt either Tier 1 or Tier 2 standards to achieve greater positive environmental impacts. The current 2016 Title 24 standards became effective January 1, 2017. However, the 2019 Title 24 standards have been adopted and will be effective January 1, 2020, prior to the operation of the project. Nonresidential buildings constructed under the 2019 Title 24 standards are estimated to use about 30 percent less energy than those constructed under the 2016 Title 24 standards.

CARB Climate Change Scoping Plan

On December 11, 2008, the California Air Resources Board (CARB) adopted its Climate Change Scoping Plan, which functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's Scoping Plan contains the main strategies California will implement to reduce CO₂e emissions by 174 million metric tons (MMT), or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MTCO₂e under a business as usual (BAU)² scenario. This is a reduction of 42 million MTCO₂e, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020. This was updated to 105.3 MMT CO₂e in the Status of Scoping Plan Recommended Measures, or 24 percent more than is needed to meet the 2020 mandate.

In May 2014, CARB approved the First Update to the Climate Change Scoping Plan (Updated Scoping Plan) which describes the progress made to meet the near-term (2020) objectives of AB 32 and defines California's climate change priorities and activities for the next several years (CARB 2014). The Updated Scoping Plan identifies the 2020 emissions limit as 431 MMT CO₂e and the 2020 business-as-usual forecast as 509 MMT CO₂e. Finally, the Updated Scoping Plan provides recommendations for establishing a mid-term emissions limit that aligns with the long-term (2050) goals of Executive Order S-3-05. The recommendations cover the energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green building, and cap-and-trade sectors.

The initial Scoping Plan recommended that local governments achieve a 15-percent reduction below 2005 levels by 2020, which aligns with the State's goal of not exceeding 1990 emissions levels by 2020. However, the Updated Scoping Plan does not contain a recommended reduction level or percent for local government's municipal operations. The CARB is moving forward with a second update to the Scoping Plan. The Final Proposed 2017 Climate Change Scoping Plan update was released in November 2017. The CARB has updated the Scoping Plan twice, approving the First Update to the Climate Change Scoping Plan (Updated Scoping Plan) in May 2014, and the 2017 Scoping Plan in December 2017.

² "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions. See <http://www.arb.ca.gov/cc/inventory/data/forecast.htm>. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

The 2017 Scoping Plan identifies progress made to meet the near-term (2020) objectives of AB 32 and defines California's climate change priorities and activities for the next several years (CARB 2017). The 2017 Scoping Plan identifies the 2020 emissions limit as 431 MMT CO₂e and the 2020 business-as-usual forecast as 509 MMT CO₂e. The 2017 Climate Change Scoping Plan provides strategies for meeting the mid-term 2030 greenhouse gas reduction target set by Senate Bill (SB) 32. The plan also identifies how the State can substantially advance toward the 2050 greenhouse gas reduction target of Executive Order S-3-05, which consists of reducing greenhouse gas emissions to 80 percent below 1990 levels. The recommendations cover the key sectors, including: energy and industry; transportation; natural and working lands; waste management; and water. The recommended measures in the 2017 Scoping Plan are broad policy and regulatory initiatives that will be implemented at the State level and do not relate to the construction and operation of individual projects.

The initial Scoping Plan recommended that local governments achieve a 15-percent reduction below 2005 levels by 2020, which aligns with the State's goal of not exceeding 1990 emissions levels by 2020. However, the 2017 Scoping Plan does not contain a recommended reduction level or percent for local government's municipal operations.

Assembly Bill 341

Assembly Bill (AB) 341 establishes a policy goal for California of no less than 75 percent reduction in solid waste generation by year 2020 through source reduction, recycling or composting. The California Department of Resources Recycling and Recovery (CalRecycle) tracks the reduction in solid waste generation throughout the State, and prepares reports summarizing the current state of recycling in California with respect to implementation of AB 341. The most recent report, the State of Recycling in California Updated 2016, details recycling and composting in the State, current regulation of recycling and composting, and other parameters of recycling infrastructure and market.

REGIONAL

Shasta County Air Quality Management District

The Shasta County AQMD does not have an adopted Climate Action Plan, greenhouse gas threshold of significance, or guidance document for assessing project-level greenhouse gas impacts under CEQA. The following Shasta County AQMD rule is applicable to the project:

- *Rule 3:28 Stationary Internal Combustion Engines.* This rule applies to any gaseous, diesel, or any other liquid-fueled stationary internal combustion engine within the boundaries of the air district, including emergency standby engines. Emergency standby internal engines may be operated only during emergencies and for testing and maintenance purposes. Testing and maintenance shall be limited to no more than 100 hours per year.

The City of Redding does not have an adopted Climate Action Plan, greenhouse gas threshold of significance, or guidance document for assessing project-level greenhouse gas impacts under CEQA. In 2010, the Shasta County AQMD initiated the regional climate action planning (RCAP) process, and released a draft RCAP in 2011. The Draft RCAP included jurisdictional climate action plan components for the City of Redding. The Draft RCAP contains a 2008 baseline GHG emissions inventory for the community, business-as-usual emissions forecasts for year 2020, the adjusted business-as-usual forecasts for 2020, emission reduction measures the City may implement. However, the draft RCAP has not been adopted and, therefore, is not used to assess the project's greenhouse gas.

Shasta Regional Transportation Agency

In June 2015, Shasta Regional Transportation Agency (SRTA) adopted the 2015 Regional Transportation Plan (RTP) for Shasta County, which contains SRTA's Sustainable Communities Strategy (SCS). The per-capita regional emission reduction target set by CARB under the purview of SB 375 are as follows:

- 0 percent (no increase) below 2005 rates by 2020
- 0 percent (no increase) below 2005 rates by 2035

Development of the SCS included testing three (3) different growth scenarios using the UPlan urban growth model: Scenario A, Rural & Peripheral Growth; Scenario B, Urban Core & Corridors; and Scenario C, District Cities & Towns. It was determined that the preferred regional growth vision is a melding of Scenario B and Scenario C. The preferred regional growth vision was used to then identify Strategic Growth Areas (SGA), which were then refined based on travel demand modeling and emissions modeling to achieve the emission reduction targets of the SCS. The SCS assumed that growth within the SGAs would be slightly higher (an increase of 6 to 10 percent) than the current growth rate. The SCS determined that increased density within the SGAs, if accompanied by coordinated local and regional policies, programs, incentives, and investment strategies, the region would achieve the required emission reduction targets. In addition to increased growth within the SGAs, the SCS assumed the following:

- Increased residential densities in the SGAs
- Increased automobile operating costs
- Increased public transportation services
- Accelerated delivery of active transportation investment in SGAs

The project is not located within an SGA, but is located approximately 0.83 mile from the Redding SGA. Therefore, the 2015 RTP/SCS recommendation for increased density does not apply to the project.

The 2015 RTP/SCS determined that not only would Shasta County achieve the per capita emission reduction goals set by CARB, but would further reduce emissions to 4.9 percent below 2005 emissions by 2020, and 0.5 percent below 2005 emissions by 2035. CARB accepted the GHG quantification determination from the 2015 RTP/SCS in October 2015.

LOCAL

City of Redding General Plan

The City's *General Plan 2000-2020* was adopted in 2000, with amendments in 2012, 2013, and 2014. The *General Plan* does not contain goals or policies directly aimed at reducing greenhouse gas emissions. Goals and policies within the Community Development and Design Element, Transportation Element, Transportation Element, and Air Quality Element affect or reduce greenhouse gas generation through requiring or promote alternative transit infrastructure. Applicable goals and policies relative to the proposed project are listed in Table 5.6-2, CONSISTENCY WITH APPLICABLE CITY OF REDDING GENERAL PLAN GOALS AND POLICIES RELATED TO GREENHOUSE GASES, followed by a brief explanation of how the proposed project complies with the objectives and policies.

5.6.3 STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

CEQA Thresholds

In accordance with State *CEQA Guidelines*, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The environmental analysis in this section is patterned after the Initial Study Checklist recommended by Appendix G of the State *CEQA Guidelines*, as amended, and used by the City of Redding in its environmental review process. The Initial Study Checklist includes questions relating to GHG emissions. The issues presented in the Initial Study Checklist have been utilized as impact criteria in this section. The following significance thresholds related to GHG emissions have been derived from Appendix G of the State *CEQA Guidelines*:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.* Refer to Impact 5.6-1 through Impact 5.6-3, below.
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.* Refer to Impact 5.6-1 through Impact 5.6-3, below.

Addressing GHG generation impacts requires an agency to make a determination as to what constitutes a significant impact. The amendments to the State *CEQA Guidelines* specifically allow lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which to apply mitigation measures. This means that each agency is left to determine whether a project's GHG emissions will have a significant impact on the environment. The guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" the project's GHG emissions (14 California Code of Regulations Section 15064.4(a)).

Thresholds and CEQA Case Law

A number of expert agencies throughout the State have drafted or adopted varying threshold approaches and guidelines for analyzing 2020 operational GHG emissions in CEQA documents. The different thresholds include (1) compliance with a qualified GHG reduction strategy, (2) performance-based reductions, (3) numeric "bright-line" thresholds, and (4) efficiency-based thresholds.

Efficiency-based thresholds represent the rate of emission reductions needed to achieve a fair share of California's GHG emissions reduction target established under AB 32, SB 32, EO B-30-15, and EO S-03-05. As noted earlier, the state has the following GHG emissions reductions goals:

- By 2020, achieve 1990 levels emissions (AB 32)
- By 2030, 40 percent below 1990 levels by 2030 (EO B-30-15, SB 32)
- By 2045, net carbon neutrality (EO B-55-18)
- By 2050, 80 percent below 1990 levels by 2050 (EO S-03-05)

**Table 5.6-2
CONSISTENCY WITH APPLICABLE CITY OF REDDING GENERAL PLAN GOALS AND POLICIES RELATED TO GREENHOUSE GASES**

General Plan Goal / Policy	Consistency Analysis
<u>GENERAL PLAN GOAL CDD10</u>	
<i>PROVIDE A PATTERN OF DEVELOPMENT THAT: INCREASED RESIDENTIAL DENSITIES IN THE SGAS; ESTABLISHES DISTINCT NEIGHBORHOODS, DISTRICTS, AND ACTIVITY CENTER; LINKS OPEN-SPACE AREAS TO EACH OTHER AND TO DEVELOPED AREAS SUCH AS PARKS, SCHOOLS, RESIDENCES, AND COMMERCIAL DEVELOPMENTS; PROMOTES MIXED-USE DEVELOPMENTS; PLACES EMPLOYMENT, SHOPPING, AND OTHER ACTIVITY CENTERS IN OR NEAR RESIDENTIAL NEIGHBORHOODS; ENCOURAGES WALKING, BICYCLING, AND TRANSIT USE.</i>	
<p>Policy CDD10F. Provide comprehensive transportation facilities, including bicycle and pedestrian routes. Integrate pedestrian and bicycle routes into developments to provide alternative access to public and private parks and open space, transit stops, nearby commercial developments, and schools.</p>	<p>Consistent. Refer to Consistency Analysis under Policy T1A and T12G, below.</p>
<u>GENERAL PLAN GOAL T1</u>	
<i>PROVIDE SAFE, EFFICIENT, AND COMFORTABLE ROUTES FOR WALKING, BICYCLING, AND PUBLIC TRANSPORTATION TO INCREASE THE USE OF THESE MODES OF TRANSPORTATION, ENABLE CONVENIENT AND ACTIVE TRAVEL AS PART OF DAILY ACTIVITIES, AND MEET THE NEEDS OF ALL USERS OF THE STREETS.</i>	
<p>Policy T1A: Ensure that multimodal infrastructure improves transportation choices for pedestrians, bicyclists, motorists, and public transportation riders of all ages and abilities and that all users are considered and included in the planning, design, approval, construction, and operation of new streets, and the alteration and maintenance phases of existing streets by:</p> <ul style="list-style-type: none"> • Including infrastructure that promotes a safe means of travel for all users along the right of way, such as sidewalks, shared-use paths, bicycle lanes, and paved shoulders. • Provide pedestrian and bike connections from developments to adjacent main streets, open space areas, parks, transit stops, schools, commercial and employment centers, and other activity centers as opportunities arise. • Designing new development to incorporate street connectivity for all users. • Including new or alteration of existing infrastructure that facilitates safe crossing of the right-of-way for all users, such as: accessible curb ramps, high-visibility crosswalks, pedestrian refuge islands, smaller curb radii, corner bulbouts, pedestrian signals, and bicycle detection at traffic signals where warranted. • Incorporating street design features and techniques that promote safe and comfortable travel along streets by pedestrians, bicyclists, and public transportation riders. Examples include: constructing traffic-calming mechanisms in neighborhoods; providing pedestrian refuge medians on busy streets; reducing the number of motor vehicle lanes and/or widths where appropriate; providing transit turnouts; and constructing physical buffers and separations between vehicular traffic and other users. • Providing features that improve the comfort, convenience, and safety of users such as pedestrian-oriented/wayfinding signs, pedestrian-scale lighting, benches and other street furniture, bicycle parking facilities, comfortable and attractive public transportation stops and facilities, street trees, landscape, and planting strips. 	<p>Consistent. The proposed project’s design and adjoining roadway improvements include multimodal opportunities as noted below:</p> <ul style="list-style-type: none"> • The proposed project would be designed and constructed consistent with the provisions of RMC Title 11, <i>Traffic and Vehicles</i>, and RMC Title 13, <i>Street and Sidewalks</i>, and provide appropriate bicycle signage per direction by the City. The proposed project has been designed to provide a 6-foot wide sidewalk and landscape buffer along the east side of Henderson Road (South), a 6-foot sidewalk along the northwest side of Henderson Road (North), and an 8-foot wide sidewalk along the project’s southern frontage along the Parkview Avenue (Open Space Access) connection from Henderson Road (South) to the Henderson Open Space. A pedestrian walkway commencing approximately 200 feet west of the intersection of Henderson Road (North) and Hartnell Avenue, will provide pedestrian access to the northerly portion of the Henderson Open Space and Sacramento River. This walkway will also provide pedestrian access from the existing Cypress Avenue stairway to the project site and the Henderson Open Space. Refer to Figures 3-6b and 3-6c, ENLARGED SITE PLANS. • Access to the proposed project and the Henderson Open Space from the south will be provided from Hartnell Avenue and then Parkview Avenue (South) via an existing sidewalk abutting the Cobblestone Shopping Center. Then from this point westward, a 6-foot wide sidewalk will be constructed along Parkview Avenue (South) to its intersection with Henderson Road (South) where the 6-foot wide sidewalk will continue north along the east side of Henderson Road (South). The sidewalk will terminate and then cross the eastern portion of the Parkview Avenue (Open Space Access) and the 28-foot wide project driveway that connects to Henderson Road (North). The sidewalk will continue as a path along the southern portion of Building ‘B’ then proceed easterly to the Henderson Open Space via an 8-foot wide sidewalk paralleling Parkview Avenue (Open Space). • Bicycle routes throughout the project site and on adjoining streets have been defined to facilitate access to the Redding Area Bus Authority (RABA) transit stop located approximately 200 feet from the project site at the intersection of Henderson Road (North) and Hartnell Avenue. The proposed

project also includes 28 secured bicycle racks onsite (refer to Figure 3-6a, PROPOSED SITE PLAN).

- The perimeter sidewalks would connect to a 5-foot concrete meandering path along the site’s northern boundary and provide a linkage to internal 5-foot wide pedestrian walkways between the proposed buildings and parking lots. These internal walkways would provide access to the exterior sidewalks that provide connections to the RABA transit stop. The project is also proposing the addition of crosswalks at all project driveway locations.
- The City’s *Parks, Trails, and Open Space Master Plan* identifies the following bicycle routes that about or are in close proximity to the proposed project. Cypress Avenue west of the intersection with Hartnell Avenue is a Class 2 route and east of the intersection it is a Class 3 route. Hartnell Avenue between Cypress Avenue and Bechelli Lane is a Class 2 route as is Bechelli Lane to the east. The proposed project would be designed and constructed consistent with the provisions of RMC Title 11, *Traffic and Vehicles*, and RMC Title 13, *Street and Sidewalks*. As a result, development of the proposed project would not result in a conflict with any of the existing Class 2 and 3 bicycle routes. Cypress Avenue could be accessed via Henderson Avenue (North) and then northerly along Hartnell Avenue to Cypress Avenue where one could proceed west or east to Bechelli Lane. Proceeding from Henderson Road (South) to Parkview Avenue (South) and then to Hartnell Avenue, one can access Cypress Avenue to the north or proceed south then east along Hartnell Avenue to Bechelli Lane.
- The project proposes approximately 92,100 square feet of landscaped areas including parking islands, perimeter landscaping, landscaped sidewalks, planting trips and internal “campus type” landscaping. Also proposed is the planting of approximately 210 trees throughout the site to enhance the site’s aesthetics (refer to Figure 3-9a, LANDSCAPE LAYOUT). As previously noted, the project provides access to the RABA transit stop at the intersection of Henderson Road (North) and Hartnell Avenue to serve the project and local residents.

GENERAL PLAN GOAL T5

COORDINATE TRANSPORTATION AND LAND USE PLANNING; PROTECT EXISTING AND PLANNED LAND USES FROM TRANSPORTATION-RELATED CONFLICTS; PROMOTE MULTI-MODAL TRANSPORTATION OPTIONS.

Policy T5D. Encourage employers to provide incentives for employees utilizing alternatives to the single-occupant automobile, such as car pools, van pools, buses, bicycling, and walking.

Consistent. Refer to discussion under Policy T1A, above. Based on the project as proposed, the minimum onsite parking required by the RMC is 548 parking spaces. As depicted in Figure 3-6a, PROPOSED SITE PLAN, in Section 3.0, PROJECT DESCRIPTION, the project proposes as total of 549 parking spaces that included 417 standard spaces, 44 compact spaces, 10 motorcycle spaces, 59 standard accessible parking spaces, 11 van accessible parking spaces, and 28 secured bicycle racks (refer to Figure 3-6a, PROPOSED SITE PLAN). Dignity Health encourages employees to car pool. In addition, 33 of the standard parking spaces will have electric vehicle charging stations, and 44 spaces will be preferential parking for clean air vehicles.

Policy T5E. Encourage employers, including government agencies, to allow telecommuting and flex time and to promote staggered shifts or base work hours that do not coincide with peak-period traffic to reduce peak-hour trips.

Consistent. Through implementation of **MM 5.6-1**, below, the project applicant will be required to implement a voluntary trip reduction program and/or voluntary ride sharing program for all employees.

GENERAL PLAN GOAL T10

PROVIDE AN ATTRACTIVE, SAFE, AND CONTINUOUS SYSTEM OF SIDEWALKS AND OTHER PEDESTRIAN FACILITIES.

<p>Policy T10A. Provide pedestrian-oriented features, such as benches, enhanced landscape, and trash receptacles, in commercial areas, particularly in the Downtown and Park Marina areas.</p>	<p>Consistent. Although the project is not located in the Downtown or Park Marina areas, the proposed project provides for a significant amount of onsite landscaping of approximately 92,100 square feet with 210 trees, trash receptacles, and direct access to the Henderson Open Space via Parkview Avenue (Open Space Access) and onsite project walkways.</p>
<p>Policy T10B. Require new development to provide sidewalks or other pedestrian dedicated facilities on both sides of new public streets. Exceptions may be appropriate where topography is difficult, proposed lots are of a rural or semi-rural nature, or where the development plan illustrates that pedestrians will be accommodated by alternative means.</p>	<p>Consistent. The proposed project would be developed consistent with City of Redding Construction Standards that allow for this type of sidewalk. The proposed project would provide a 5-foot sidewalk only along the east side of Henderson Road (South) and an 8-foot sidewalk only along the northern side of Parkview Avenue (Open Space Access). This is due to the undeveloped parcels that would be required to provide sidewalks as a condition of their future development. Sidewalks, 5 feet wide, would be located along Henderson Road (North).</p>
<p>Policy T10F. Require all new or renovated pedestrian facilities to be of a sufficient width to ensure pedestrian comfort and safety and to accommodate the special needs of the physically disabled.</p>	<p>Consistent. The proposed project would be developed in accordance with the RMC and City of Redding Construction Standards, which are consistent with the policy.</p>

GENERAL PLAN GOAL T12

MAKE IT EASIER AND SAFER FOR PEOPLE TO TRAVEL BY BICYCLE.

<p>Policy T12G. Require new development to provide bicycle facilities or pay in-lieu fees based on the fair share of that development's impacts on the bikeway system and needs identified on the Comprehensive Bikeway Plan.</p>	<p>Consistent. Onsite secured bicycle racks are incorporated into the project design.</p>
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GENERAL PLAN GOAL 2

REDUCE MOTOR VEHICLE TRIPS AND VEHICLE MILES TRAVELED AND INCREASE AVERAGE VEHICLE RIDERSHIP (AVR).

<p>Policy 17. Transit and Pedestrian-Oriented Design Guidelines. Source: City of Redding. 2000-2020 General Plan. October 2000.</p>	<p>Consistent. Refer to Consistency Analysis above under Policy T1A, T10A, T10B, and T10F.</p>
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Efficiency-based thresholds are typically calculated by dividing emissions associated with residential and commercial uses within the state by the sum of jobs and residents. The sum of jobs and residents is called the “service population,” and a project’s service population is defined as the people that work, study, live and congregate within the project site. Therefore, for the purposes of this analysis, the proposed project is compared to an efficiency-based significance threshold.

The California Supreme Court decision in the *Centers for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) confirmed that when an “agency chooses to rely completely on a single quantitative method to justify a no-significance finding, CEQA demands the agency research and document the quantitative parameters essential to that method.”

The Newhall Ranch decision did not comment on use of an efficiency-based threshold for analyzing project-level GHG emissions. However, U.S. Supreme Court rulings establish that the U.S. Constitution limits exactions on new development to those having a “nexus” and “rough proportionality” to the impact actually caused by the new development. While there is a nexus for requiring GHG reductions for new development that results in new GHG emissions, the reductions mandated must be proportional to the impact caused by new development. Requiring new development to meet the average statewide GHG efficiency is a proportional measure, but requiring more than average levels of efficiency would be mitigating the effects of existing development by imposing requirements beyond the fair share of new development’s effect.

Because it meets the nexus and rough proportionality requirements, the efficiency threshold is an appropriate and fair threshold for evaluation of the significance of new land use development, including the proposed project.

Given the recent legislative attention and case law regarding post-2020 goals and the scientific evidence that additional GHG reductions are needed through 2050 to stabilize CO₂ concentrations, the Association of Environmental Professionals’ (AEP) Climate Change Committee (2015) recommended in its *Beyond 2020: The Challenges of Greenhouse Gas Reduction Planning by Local Governments in California* (Beyond 2020) white paper that CEQA analyses for most land use development projects can continue to rely on current thresholds for the immediate future, but that long-term projects should consider “post-2020 emissions consistent with ‘substantial progress’ along a post-2020 reduction trajectory toward meeting the 2050 target.” The Beyond 2020 white paper further recommends that the “significance determination... should be based on consistency with ‘substantial progress’ along a post-2020 trajectory.”

Scale and Source of Thresholds

As noted above, the state has established state-wide GHG emission reduction goals. It is noted that the state-wide emission reduction goals do not equate to an equal project-level emission reduction goal for all land uses or economic sectors. Statewide and regional planning documents were reviewed to identify the most-appropriate emission reduction goal for the proposed project. Available planning documents that may be used as the source of project-level emission reduction goals include the state-wide applicable 2017 Scoping Plan, and the county-specific 2015 RTP/SCS. The City of Redding does not have an adopted Climate Action Plan, greenhouse gas threshold of significance, adopted emissions reduction goal, or guidance document for assessing project-level greenhouse gas impacts under CEQA. In addition, the Shasta County AMQD does not have adopted GHG emissions thresholds, targets, or goals.

Although the county-specific 2015 RTP/SCS contains region-specific emission reduction targets set by CARB under the purview of SB 375, CARB has identified that the adopted SCS targets are not enough to achieve the statewide per capita reductions necessary to meet adopted climate goals (CARB 2017). Additionally, the emission reduction targets of the 2015 RTP/SCS applied only to mobile emissions. Therefore, it was determined that the 2015 RTP/SCS was not appropriate to determine the project-level emissions thresholds for the proposed project. Therefore, the best available and most-applicable source of emissions reduction goals are the state-wide goals set by AB 32, SB 32, EO B-30-15, EO S-03-05, and EO B-55-18. At the time of analysis, there is no known documentation or substantiated analysis available to guide or support an adjustment the state-wide average GHG emission reduction goals for specific land uses, development types, or regions.

Project-Specific Threshold

As detailed in the prior section, efficiency-based thresholds represent the rate of emissions reductions needed to achieve a fair share of California's GHG emissions reduction target established under AB 32, SB 32, EO B-30-15, EO S-03-05, and EO B-55-18. Therefore, an efficiency-based threshold approach is applied in this report to assess the project's greenhouse gas impacts.

Analysis Years. For the purposes of this analysis, project-related impacts in both 2024 and 2035 are considered. Year 2024 represents the first year of full project operation. Year 2035 is consistent with the future-year horizon of SRTA's 2015 RTP/SCS.

Service Population. The California Air Pollution Control Officers Association's (CAPCOA) 2008 CEQA & Climate Change white paper defines service population (SP):

...the sum of the number of residents and the number of jobs supported by the project.

CAPCOA's guidance is unclear if the residents supported by a project must need to reside at the project location, or be supported by the project location through provision of services, goods, or other means. The guidance further states:

The subcommittee believes this methodology may eventually be appropriate to evaluate the long-term GHG emissions from a project in the context of meeting AB 32 goals. However, this methodology will need substantially more work and is not considered viable for the interim guidance presented in this white paper. (CAPCOA 2008)

The project would provide medical services within a developed metropolitan area. The project would support jobs and patients. It is assumed that the patients would be residents of the general Redding metropolitan area. The estimated number of patients served by the project was estimated using CalEEMod default data for commercial-customer trips, as detailed in the methodology section. The project would support an estimated 1,207 patients (residents) per day. For reference, a population of 1,207 residents is equal to approximately 421 households.

Because of the projects location within an urbanized area, and because the project supports residents of the urban area, the project's service population is calculated as the number of jobs and residents supported by the project.

The project would support 180 jobs (employees) and an estimate 1,207 residents (patients) per day. Therefore, the project is calculated to support a service population of 1,387. This service population is applicable to both the 2024 and 2035 analysis years.

Efficiency-Based Threshold. In developing the efficiency-based threshold, the statewide emission reduction goals for years 2024 and 2035 were calculated. Then, the statewide population and employment (service population) for those years were identified, and the emission rate per service population was calculated.

The emission reduction goals established for the State are based on the statewide 1990 greenhouse gas emissions inventory. Since the land use sector inventory only includes residential and commercial emission sources; industrial, marine vessels, aviation, and other emission sources not applicable to land use developments are not included as part of the project efficiency-based threshold, and are excluded from the 1990 inventory. Transportation emissions related to the land use sector were included in the 1990 inventory. The statewide 1990 land use GHG emissions inventory of 264.1 MMT CO₂e is used in this analysis.

- *Year 2024 Threshold.* The 2024 GHG inventory goal was calculated based on the 1990 inventory and a linear interpolation of the reduction goals of AB 32, SB 32, and EO B-30-15 for years 2020 and 2030. The State’s 2020 emissions goal is the 1990 emissions level, and the 2030 emissions goal is 40 percent below 1990 levels. Linear interpolation between the 2020 and 2035 goals shows a reduction goal of 16 percent below 1990 levels by year 2024. The resulting year 2024 “full operation” efficiency threshold is 3.7 MT CO₂e per service population, and was calculated using the following equation:

$$2024 \text{ Threshold} = \frac{2024 \text{ Inventory Goal}}{(2024 \text{ Population} + 2024 \text{ Employment})}$$

Where:

2024 Inventory Goal	=	16 percent below statewide 1990 land use GHG emissions levels, calculated as 221.14 million metric tons CO ₂ e
2023 Population	=	Statewide population in 2024, 42.0 million ³
2023 Employment	=	Statewide jobs in 2024, 18.2 million ⁷

- *Year 2035 Threshold.* The 2035 GHG inventory goal was calculated based on the 1990 inventory and a linear interpolation of the reduction goals of SB 32, EO B-30-15, and EO B-55-18 for years 2030 and 2045. The State’s 2030 emissions goal is 40 percent below 1990 levels, and the 2045 goal is net carbon neutrality (0 MTCO₂e). Linear interpolation between the 2030 and 2045 goals shows a 31.25 percent increase of the reduction goal every 5 years, equating to a 2035 reduction goal of 58.75 percent below 1990 levels. The resulting 2035 “substantial progress” efficiency threshold is 1.7 MT CO₂e per service population, and was calculated using the following equation:

$$2035 \text{ Threshold} = \frac{2035 \text{ Inventory Goal}}{(2035 \text{ Population} + 2035 \text{ Employment})}$$

³ GHD. *Dignity Mercy Medical Center, Redding North State Pavilion Project Greenhouse Gas Report.* May 2019.

Where:

2035 Inventory Goal	=	58.75 percent below statewide 1990 land use GHG emissions levels, calculated as 108.60 million metric tons CO ₂ e
2035 Population	=	Statewide population in 2035, 45.5 million ⁴
2035 Employment	=	Statewide jobs in 2035, 19.9 million ¹²

Project Threshold Summary. Based on the above analysis, the project must achieve an average emissions efficiency of 3.7 metric tons CO₂e per service population in the year 2024, and 1.7 MT CO₂e per service population in the year 2035. Emissions in excess of 1.7 metric tons CO₂e per service population may conflict with the trajectory of long-term GHG reduction goals, as identified by EO B-30-15 and EO S-03-05, and the project’s cumulative contribution of long-term GHG emissions would be considered significant.

Shasta County AQMD does not provide specific guidance regarding construction emissions. Therefore, total construction-generated GHG emissions were conservatively amortized over the estimated life of the development and included with operational emissions for comparison to the significance thresholds. A life of 30 years was assumed for the proposed project based on a standard 30-year project lifetime assumption developed by the South Coast Air Quality Management District (SCAQMD 2009).⁵

Based on these standards, the effects of the proposed project have been categorized as either a less than significant impact or a potentially significant impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant and unavoidable impact.

5.6.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

The project’s construction and operational emissions were calculated using the California Emissions Estimator Model version 2016.3.2 (CalEEMod). Details of the modeling assumptions and emission factors are provided in Appendix 15.5, GREENHOUSE GAS REPORT. For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. GHG emissions during construction were forecasted based on the proposed construction schedule, and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod. The project’s construction-related GHG emissions would be generated from off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The project’s operations-related GHG emissions would be generated by vehicular traffic, area

⁴ GHD. *Dignity Mercy Medical Center, Redding North State Pavilion Project Greenhouse Gas Report*. May 2019.

⁵ The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, August 26, 2009). The Shasta County Air Quality Management District does not provide specific guidance regarding construction emissions. Therefore, the South Coast Air Quality Management District approach was conservatively used.

sources (e.g., landscaping maintenance, consumer products), electrical generation, natural gas consumption, water supply and wastewater treatment, and solid waste.

Emissions can be estimated by using emission factors and a level of activity. Emission factors are the emission rate of a pollutant given the activity over time. The CARB has published emission factors for on-road mobile vehicles/trucks in the emission factors (EMFAC) mobile source emissions model, and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity, and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was developed in cooperation with the South Coast Air Quality Management District and other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses.

Emission factors are often updated and there is a normal lag time between the development of new emission factors and the integration of the new emissions factors into the appropriate models. The CalEEMod version 2016.3.2 uses OFFROAD2011 and EMFAC2014 emission factors.

CalEEMod version 2016.3.2 was used to estimate construction-generated and operational GHG emissions for the project. Emissions output is provided in Appendix A of the *Dignity Mercy Medical Center Redding North State Pavilion Greenhouse Gas Report* (refer to Appendix 15.5, GREENHOUSE GAS REPORT).

IMPACT	<i>Greenhouse gas emissions generated by the project, either directly or indirectly, would not have a significant impact on the environment.</i>
5.6-1	

Significance: Potentially Significant Impact.

Impact Analysis: The proposed project would result in direct and indirect emissions of CO₂, CH₄, and N₂O, and would not result in other GHGs that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions. Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources, while indirect sources include emissions from electricity consumption, water demand, and solid waste generation. Project-related GHG emissions were quantified with the California Emissions Estimator Model (CalEEMod). CalEEMod relies upon vehicle trip rates and project specific land use data to calculate emissions. The proposed project would result in approximately 4,697 weekday trips and 2,414 trips would be generated by customers per the *Dignity Mercy Medical Center Redding North State Pavilion Greenhouse Gas Report*, (refer to Appendix 15.5, GREENHOUSE GAS REPORT).

Construction Emissions

The proposed project includes two phases of construction. Phase I includes demolition and removal of the existing 7,500 square-foot building and approximately 64,000 square-feet of pavement. Phase I also includes mass grading of the entire 10.55-acre project site. Phase I would also include construction of Building 'A', interior roads, and 338 parking spaces. Construction in this phase would most likely begin in

2020 and be completed by 2022. Phase II is assumed to commence in 2022 and would include construction of Building 'B' and 'C' and the remaining 211 parking spaces.

Project construction activities would result in a temporary increase in GHG emissions, primarily in the form of CO₂ from exhaust emissions associated with haul trucks, construction worker commute vehicles, and construction equipment. Project construction emissions are provided in Table 5.6-3, PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS. As shown in Table 5.6-3, construction activities are estimated to generate approximately 945 MT CO₂e. When annualized over an assumed 30-year project lifespan, project construction would generate approximately 31.5 MTCO₂e per year.

**Table 5.6-3
 PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS**

Parameter	Emissions MTCO ₂ e
Phase 1 Construction	551
Phase 2 Construction	394
Total Project Emissions	945
Annualized Emissions (per year)	31.5

Source: GHD. *Dignity Mercy Medical Center Redding North State Pavilion Greenhouse Gas Report*. May 2019. Refer to Appendix 15.5, GREENHOUSE GAS REPORT.

Construction of the project would result in direct emissions of CO₂, N₂O, and CH₄ from the operation of construction equipment and the transport of materials and construction workers to and from the project site. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions. Shasta County AQMD does not have a threshold for construction GHG emissions. However, to be conservative these emissions were amortized. The CalEEMod outputs are contained within the *Dignity Mercy Medical Center Redding North State Pavilion Greenhouse Gas Report*, (refer to Appendix 15.5, GREENHOUSE GAS REPORT).

Operational Emissions

Operational or long-term emissions would occur annually over the life of the project. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as offsite generation of electrical power over the life of the project, the energy required to convey water to, and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. The project's operational emissions in years 2024 and 2035 are shown in Table 5.6-4, ANNUAL PROJECT GREENHOUSE GAS EMISSIONS.

**Table 5.6-4
 ANNUAL PROJECT GREENHOUSE GAS EMISSIONS**

Emissions Category	Total MTCO ₂ e 2024 ³	Total MTCO ₂ e 2035 ³	After Mitigation Measure 5.6-1 MTCO ₂ e
Area	<0.1	<0.1	<0.1
Energy	164.9	164.9	0.0
Mobile	3,085	2,718.7	2,330.5
Stationary	28.7	28.7	28.7
Waste	176.0	176.0	176.5
Water	4.2	4.2	4.2
Sequestration (annualized)	-5.9	-5.9	-5.9
Construction (annualized)	31.5	31.5	31.5
Total Project Emissions	3,485.3	3,117.7	2,642.8
<i>Service Population</i>	1,387	1,387	1,387
<i>Project Efficiency (MT CO₂e / Service Population)</i>	2.51	2.25	1.90
<i>Threshold of Significance</i>	3.7	1.7	1.7
<i>Significant Impact?</i>	No	Yes	No

Source: GHD. *Dignity Mercy Medical Center Redding North State Pavilion Greenhouse Gas Report*. May 2019. Refer to Appendix 15.5, GREENHOUSE GAS REPORT.

The project’s annualized construction emissions and sequestration are also provided in the tables. The project would generate approximately 3,485 MT CO₂e per year in 2024. With a service population of 1,387 people, the project would achieve an efficiency metric of 2.51 MT CO₂e per service population, which is less than the significance threshold of 3.7 MT CO₂e per service population. Therefore, the project would result in a *less than significant* impact in year 2024.

Area Source. Area source emissions were calculated using CalEEMod and project-specific land use data. The primary GHG emission sources calculated by CalEEMod include hearths and landscape equipment. These uses are not expected to be part of the project. As noted in Table 5.6-4, the proposed project would result in negligible area source GHG emissions (<0.1 MTCO₂e per year).

Energy Consumption. Energy consumption emissions were calculated using CalEEMod and project-specific land use data. Electricity and natural gas would be provided to the project site via the Redding Electric Utility. CalEEMod does not contain a default energy intensity for energy for Redding Electric Utility. Redding Electric Utility’s power content labels for years 2013 through 2017 were reviewed to determine the energy sources and fuel types. Between 2013 and 2017, the majority of electricity for Redding Electric Utility came from eligible renewable energy sources and large hydroelectric facilities. An average of 32 percent of the energy came from natural gas consumption. Therefore, the carbon dioxide energy intensity factor in pounds per megawatt hour (lb/MWh) was calculated by applying the 32 percent factor to the CalEEMod default GHG intensity factors for natural gas from a non-residential land use. The proposed project would indirectly result approximately 165 MTCO₂eq/yr due to energy consumption. However, as noted in Table 5.6-4, with **MM 5.6-1** (including purchase of verifiable greenhouse gas offsets), energy consumption emissions would reduce to 0 MTCO₂e per year.

Mobile Source. CalEEMod relies upon trip data within the project Traffic Study and project specific land use data to calculate mobile source emissions. The proposed project would directly result in approximately 3,085 MTCO₂eq/year of mobile source-generated GHG emissions in 2024 and 2,719 in 2035. With **MM 5.6-1** there would be a further reduction in mobile source emissions to 2,331 MTCO₂e per year; refer to Table 5.6-4.

Stationary Source. Stationary source emissions includes emergency generators, boilers, and fire pumps. The proposed project would include three emergency diesel backup generators. The proposed project would directly result in approximately 29 MTCO₂e per year; refer to Table 5.6-4.

Solid Waste. GHG emissions would be generated from the decomposition of solid waste generated by the project. The CalEEMod default waste generation values were used for this analysis. The emissions analysis incorporates the use of recycling and composting service with a 75 percent reduction in waste disposed, consistent with California's 75 percent recycling goal and current diversion rates for the City of Redding. CalEEMod accounts for GHG emission reductions associated with waste diversion through the 'mitigation' module. These specifics are considered a part of the project. Solid waste associated with operations of the proposed project would result in an approximately 176 MTCO₂e per year; refer to Table 5.6-4.

Water Demand. There would be GHG emissions from the use of electricity to pump water to the project and to treat wastewater. It is assumed that the project-specific water consumption incorporates reductions for -flow interior water fixtures and a water-efficient irrigation system, as required under the Green Building Standards. Emissions from indirect energy impacts due to water treatment and transport would result in approximately 4.2 MTCO₂e per year; refer to Table 5.6-4.

Sequestration/Vegetation. The project would construct buildings onsite as well as asphalt parking areas, thereby changing the land use and reducing potential carbon sequestration. The project would remove 58 existing trees. The project would also plant trees and integrate landscape into the project design, thereby increasing carbon sequestration. The project would include installation of 210 trees. The sequestration benefits of these trees were quantified in CalEEMod, using the project specific details of vegetation types and net increase. The project's planned landscaping is estimated to result in a total 118.35 MT CO₂e of sequestration over 20 years, or approximately 5.9 MT CO₂e per year; refer to Table 5.6-4.

The project would generate approximately 3,118.0 MT CO₂e per year in 2035. With a service population of 1,387, the project would achieve an efficiency metric of 2.25 MT CO₂e per service population, which exceeds the significance threshold of 1.7 MT CO₂e per service population. Therefore, the project would result in a potentially significant impact in 2035. Therefore, implementation of **MM 5.6-1** would be required. Mitigation Measure **MM 5.6-1** requires a Greenhouse Gas Reduction Plan (GGRP) must include reduction measures that demonstrate achievement of a project emissions inventory that is less than the 2035 threshold of 1.7 MT CO₂e per service population by year 2035. The GGRP must include measures such as implementation of voluntary trip reduction program as well as a voluntary ride-sharing program for all employees. The proposed project would also be constructed to comply with the 2016 Title 24 Building Codes, which result in a 5 percent increase in energy efficiency in commercial buildings when compared with the 2013 Title 24 Building Codes. Increases in building energy efficiency results in a reduction of pollutant emissions. After implementation of the recommended actions in **MM 5.6-1**, there would be an estimated reduction in emissions to less than the applied 2035 threshold of 1.7 MT CO₂e per service population. Therefore, the proposed project would have a *less than significant* impact for generation of GHG emissions after incorporation of the mitigation.

Mitigation Measures:

MM 5.6-1: Dignity Health shall prepare and implement a Greenhouse Gas Reduction Plan (GGRP) that contains specific design features and actions to be implemented by the project prior to year 2035, and quantify the emission reductions associated with those features and actions. The GGRP shall demonstrate achievement of a project emissions inventory that is less than the 2035 threshold of 1.7 metric tons of carbon dioxide equivalent (CO₂e) per service population by year 2035. The emissions inventory must be prepared using model(s) and methodology accepted by the Shasta County Air Quality Management District. The GGRP shall be submitted to the City for approval prior to the issuance of grading permits. The GGRP may be updated after City approval to account for emission reductions associated with new regulations, as applicable. Any updates to the GGRP must be submitted to the City for approval. Specific measures may include (but are not limited to):

- Implement a voluntary trip reduction program for all employees.
- Implement a voluntary ride sharing program for all employees.
- Provide a Commute Trip Reduction subsidy for employees consistent with California Air Pollution Control Officer's Association's Greenhouse Gas Measure TRT-4 (CAPCOA 2010).
- Utilize high pressure sodium cutoff lights in outdoor lighted areas.
- Use Energy Star energy efficient fans and refrigerators.
- Utilize 100 percent renewable energy through a community choice aggregate (CCA), buy into 100 percent renewable from the local energy utility, or onsite generation, or a combination thereof.
- Generate at least 15 percent of the project's energy demand through onsite renewable energy.
- Use 100 percent electric lawnmowers and leafblowers.
- Purchase verifiable greenhouse gas offsets.

The bullet points listed above are provided as a guide and can be substituted with other measures when shown to achieve the same result of reducing annual emissions to less than 1.7 MT CO₂e per service population by year 2035.

Level of Significance After Mitigation: Impacts would be *less than significant*.

IMPACT	<i>Implementation of the proposed project would not conflict with an applicable greenhouse gas reduction plan, policy, or regulation.</i>
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Significance: Less Than Significant Impact.

Impact Analysis: The following discussion address the proposed project's consistency with applicable plans and policies for greenhouse gas reduction.

The project is not located within a jurisdiction covered by an applicable, or “qualified”, Climate Action Plan. However, the SCS component of the 2015 RTP/SCS was adopted for the purpose of reducing GHGs. For the purposes of analysis, this section uses the 2015 RTP/SCS and the Updated Scoping Plan as the applicable plans adopted for the purpose of reducing emissions of greenhouse gases.

2015 Regional Transportation Plan/Sustainable Communities Strategy

The SCS identifies the need for growth to have high location efficiency, meaning more compact and connected to meet community needs with fewer trips and fewer miles traveled, and a smaller urban footprint. To achieve the per-capita emission reduction goals set by CARB, the SCS identified SGAs for increased density and growth. The SCS determined that increased density within the SGAs, if accompanied by coordinated local and regional policies, programs, incentives, and investment strategies, the region would achieve the required emission reduction targets. In addition to increased growth within the SGAs, the SCS assumed the following:

- Increased residential densities in the SGAs.
- Increased automobile operating costs.
- Increased public transportation services.
- Accelerated delivery of active transportation investment in SGAs.

The project is not located within a SGA. However, the project is located within City limits, adjacent to existing development, and approximately 0.83 mile from an existing urban corridor and SGA. Existing commercial, office, and residential development is located with 0.5 mile of the project site. The project would fully develop a mostly vacant, underutilized parcel and result in 180 employees and 1,207 population served per day, for a total service population of 1,387. The project site is located near existing and planned alternative and active transportation infrastructure, including:

- *Pedestrian Infrastructure.* The project would implement onsite and offsite pedestrian improvements that would allow pedestrian movement within the project site and connecting the project facilities to offsite sidewalks.
- *Bicycle Facilities.* The project site is in close proximity to existing and proposed Class I and Class II bicycle facilities. In addition, the project would include bike parking onsite.
- *Transit Service.* The nearest bus stop (Route 5) is approximately 200 feet from the proposed project.

The project would not conflict with the SGA growth assumptions or policy assumptions detailed above because it is not in an SGA. Therefore, the project would not conflict with the 2015 RTP/SCS. The project would result in no impact.

2017 Climate Change Scoping Plan

The 2017 Climate Change Scoping Plan is guided by the state-wide 2030 GHG target of 40 percent emissions reductions below 1990 levels (EO B-30-15 and SB 32), and demonstrates that California is doing its part in the global effort under the Paris Agreement to limit global temperature rise below 2 degrees Celsius in this century.

The 2017 Scoping Plan demonstrates that the state is on-track to achieve and exceed the AB 32 emissions reduction goals of achieving 1990 emissions levels by 2020. The Scoping Plan provides California's climate policy portfolio and recommended strategies to put the state on a path to achieve the 2030 target. The scenario includes ongoing and statutorily required programs, continuing the Cap-and-Trade Program, and high-level objectives and goals to reduce GHGs across multiple economic sectors. Existing programs, also known as "known commitments", identified by the 2017 Scoping Plan include: SB 350, the LCFS, CARB's Mobile Source Strategy, Senate Bill 1383 for short-lived climate pollutants, California's Sustainable Freight Action Plan. The high-level objective and goals recommendations cover the energy, transportation, industry, water, waste management, agriculture, and natural and working lands, and are to be implemented by a variety of State agencies.

The recommendations are broad policy and regulatory initiatives that will be implemented at the State level and do not relate to the construction and operation of individual projects such as the project. Although project construction and operation may benefit from some of the state-level regulations and policies that will be implemented, such as SB 100's requirement that 100 percent of retail sales of electricity be renewable by 2045, the project would not impede the State developing or implementing the greenhouse gas reduction measures identified in the Updated Scoping Plan. The project facilities would comply with applicable State requirements, such as Title 24 energy efficiency standards and the California Green Building Standards mandatory measures. The project would not conflict with this statewide policy document. Impacts would be *less than significant* in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

5.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

The administrative record for the SB 97 CEQA Guidelines Amendments clarifies "that the effects of greenhouse gas emissions are cumulative, and should be analyzed in the context of California Environmental Quality Act's requirements for cumulative impact analysis."⁶

The geographic extent of the cumulative impacts analysis for GHG emissions are the same as the extent of the regional setting, as described in Subsection 5.6.1, *Environmental Setting*, of Section 5.2, AIR QUALITY. That extent is defined as the Shasta County portion of the NSVAB as well as the State of California. Although GHG emissions have a global effect, this represents the geographic limit for cumulative GHG emissions since the focus of this analysis is compliance with State and regional GHG emission reduction targets.

Under AB 32, the CARB, which is the agency in charge of regulating sources of emissions of GHGs in California, has been tasked with adopting regulations for reduction of GHG emissions. The effects of this project are evaluated based not upon the quantity of emissions, but rather on whether the project implements reduction strategies identified in AB 32, SB 32, or other strategies to help toward reducing GHGs to the level proposed by the governor. If so, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change.

⁶ Letter from Cynthia Bryant, Director of the Governor's Office of Planning and Research to Mike Chrisman, California Secretary for Natural Resources, April 13, 2009.

Section 4.0, BASIS OF CUMULATIVE ANALYSIS, of this EIR describes the details cumulative projects within the general geographic scope of the proposed project. Developments that are currently under construction or proposed in the vicinity of the project site in the City are listed in Table 4-1, CUMULATIVE PROJECTS CONSIDERED.

IMPACT	<i>Greenhouse gas emissions generated by the project would not have a significant impact on global climate change.</i>
5.6-3	

Significance: Potentially Significant Impact.

Impact Analysis: As noted above, it is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory.⁷ GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective.⁸ The additive effect of project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the proposed project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As shown in Table 5.6-2, the proposed project would not impede progress toward the reduction targets of AB 32 and SB 32 with the implementation of **MM 5.6-1**.

The analysis of a project's GHG emissions is inherently a cumulative impacts analysis because climate change is a global problem and the emissions from any single project alone would be negligible. Accordingly, the analysis above took into account the potential for the project to contribute to the cumulative impact of global climate change. The project would be required to implement **MM 5.6-1**, which requires a Greenhouse Gas Reduction Plan (GGRP) to reduce project emissions below the 2035 threshold of 1.7 MT CO₂e per service population by year 2035. The GGRP would include measures such as use of 100 percent renewable energy and implementation of voluntary trip reduction program as well as a voluntary ride-sharing program for all employees. The proposed project would also be constructed to comply with the 2016 Title 24 Building Codes, which result in a 5 percent increase in energy efficiency in commercial buildings when compared with the 2013 Title 24 Building Codes. Increases in building energy efficiency also result in a reduction of GHG emissions. Additionally, the analysis shows that the project is consistent with SRTA's 2015 RTP/SCS and CARB's Scoping Plan. Therefore, the proposed project would not impede progress toward the reduction targets of SB 32 beyond 2020 and the project's cumulative contribution of GHG emissions in the post-2020 scenario would be *less than significant*. Therefore, the project's cumulative GHG impacts would also be *less than significant*.

Mitigation Measures: Implement **MM 5.6-1**.

Level of Significance After Mitigation: Cumulative impacts related to greenhouse gases and climate change would be cumulatively *less than significant* after implementation of the actions recommended in **MM 5.6-1**.

⁷ California Air Pollution Control Officers Association. *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*. 2008.

⁸ Ibid.