

5.3 GREENHOUSE GAS EMISSIONS

This section of the Subsequent Draft Environmental Impact Report (SDEIR) evaluates the potential for the Crown City Medical Center (proposed project) to cumulatively contribute to greenhouse gas (GHG) emissions. Because no single project is large enough to result in a measurable increase in global concentrations of GHG emissions, climate change impacts of a project are considered on a cumulative basis.

The chapter evaluates consistency of the revised project with the strategies outlined in the California Air Resources Board's (CARB) Scoping Plan in accordance with the GHG reduction goals of Assembly Bill 32 (AB 32) and strategies proposed by the Southern California Association of Governments (SCAG) to reduce vehicle miles traveled (VMT) in the region, in accordance with Senate Bill 375 (SB 375). This chapter also considers policies and mitigation suggested by the California Attorney General and the California Air Pollution Control Officer's Association (CAPCOA) to reduce GHG emissions. GHG modeling is included in Appendix C.

5.3.1 Environmental Setting

Greenhouse Gases and Climate Change

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,¹ carbon dioxide (CO₂), methane (CH₄), and ozone (O₃)—that are the likely causes of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001). The major GHG are briefly described below. Table 5.3-1 lists the GHG applicable to the proposed project and their relative global warming potentials (GWP) compared to CO₂.

Carbon dioxide (CO₂) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH₄) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

Nitrous oxide (N₂O) is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

¹ Water vapor (H₂O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant.



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Table 5.3-1

Greenhouse Gases and Their Relative Global Warming Potential Compared to CO₂

GHG	Atmospheric Lifetime (years)	Global Warming Potential Relative to CO ₂ ¹
Carbon Dioxide (CO ₂)	50 to 200	1
Methane (CH ₄) ²	12 (±3)	21
Nitrous Oxide (N ₂ O)	120	310
Hydrofluorocarbons:		
HFC-23	264	11,700
HFC-32	5.6	650
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
Perfluoromethane: CF ₄	50,000	6,500
Perfluoroethane: C ₂ F ₆	10,000	9,200
Perfluorobutane: C ₄ F ₁₀	2,600	7,000
Perfluoro-2-methylpentane: C ₆ F ₁₄	3,200	7,400
Sulfur Hexafluoride (SF ₆)	3,200	23,900

Source: USEPA 2008, IPCC 2001.

¹ Based on 100-Year Time Horizon of the Global Warming Potential (GWP) of the air pollutant relative to CO₂.

² The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO₂ is not included.

Fluorinated gases are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as High GWP gases.

- **Chlorofluorocarbons (CFCs)** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are therefore being replaced by other GHG compounds covered under the Kyoto Protocol.
- **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF₄] and perfluoroethane [C₂F₆]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.
- **Sulfur Hexafluoride (SF₆)** is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF₆ is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.
- **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (USEPA 2008a).

California's GHG Sources and Relative Contribution

California is the second largest emitter of GHG in the United States, only surpassed by Texas, and the tenth largest GHG emitter in the world. However, because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO₂ emissions from fossil fuel consumption per unit of gross state product (total economic output of goods and services) (CEC 2006).

CARB's latest update to the statewide GHG emissions inventory was conducted in 2012 for year 2009 emissions.² In 2009, California produced 457 million metric tons (MMTons) of CO₂-equivalent (CO₂e) GHG emissions.³ California's transportation sector is the single largest generator of GHG emissions, producing 37.9 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 22.7 percent. Industrial activities are California's third largest source of GHG emissions, comprising 17.8 percent of the state's total emissions. Other major sectors of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, agriculture, and forestry (CARB 2012).

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHG in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and climate change pollutants that is attributable to human activities. The amount of CO₂ has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006).

Climate change scenarios are affected by varying degrees of uncertainty. The 2007 IPCC Fourth Assessment Report projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8°C (2.5 to 10.4°F). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic timeframe but within a human lifetime (CAT 2006).

Potential Climate Change Impacts for California

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. In California and western North America, observations of the climate have shown: 1) a trend toward warmer

² Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (AB 32).

³ CO₂-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.



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winter and spring temperatures, 2) a smaller fraction of precipitation is falling as snow, 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, 4) an advance snowmelt of 5 to 30 days earlier in the springs, and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms (CAT 2006). According to the California Climate Action Team (CAT), even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.3-2), and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks are shown in Table 5.3-2 and include public health impacts, water resources impacts, agricultural impacts, coastal sea level impacts, forest and biological resource impacts, and electricity impacts. Specific climate change impacts that could affect the project include health impacts from a reduction in air quality, water resources impacts from a reduction in water supply, and increased energy demand.

*Table 5.3-2
Summary of Global Climate Change Risks to California*

Impact Category	Potential Risk
Public Health Impacts	<ul style="list-style-type: none"> • Poor air quality made worse • More severe heat
Water Resources Impacts	<ul style="list-style-type: none"> • Decreasing Sierra Nevada snow pack • Challenges in securing adequate water supply • Potential reduction in hydropower • Loss of winter recreation
Agricultural Impacts	<ul style="list-style-type: none"> • Increasing temperature • Increasing threats from pests and pathogens • Expanded ranges of agricultural weeds • Declining productivity • Irregular blooms and harvests
Coastal Sea Level Impacts	<ul style="list-style-type: none"> • Accelerated sea level rise • Increasing coastal floods • Shrinking beaches • Worsened impacts on infrastructure
Forest and Biological Resource Impacts	<ul style="list-style-type: none"> • Increasing risk and severity of wildfires • Lengthening of the wildfire season • Movement of forest areas • Conversion of forest to grassland • Increasing threats from pest and pathogens • Declining forest productivity • Shifting vegetation and species distribution • Altered timing of migration and mating habits • Loss of sensitive or slow-moving species
Electricity	<ul style="list-style-type: none"> • Potential reduction in hydropower • Increased energy demand

Sources: CEC 2006; CEC 2008.

Regulatory Setting

Regulation of GHG Emissions on a National Level

The United States Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements, but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (EPA 2009).

The EPA's endangerment finding covers emissions of six key GHGs—CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons, and SF₆—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world (the first three are applicable to the proposed project).

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MTons) or more per year are required to submit an annual report.

Regulation of GHG Emissions on a State Level

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32, the Global Warming Solutions Act, and Executive Order S-03-05. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05, signed June 1, 2005. Executive Order S-03-05 set the following GHG reduction targets for the state:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

AB 32 directed CARB to adopt discrete early action measures to reduce GHG emissions and outline additional reduction measures to meet the 2020 target. Based on the GHG emissions inventory conducted for the Scoping Plan by CARB, GHG emissions in California by 2020 are anticipated to be approximately 596 MMTons. In December 2007, CARB approved a 2020 emissions limit of 427 MMTons (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 MMTons, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 MMTons) (CARB 2008).⁴

Since release of the 2008 Scoping Plan, CARB has updated the statewide GHG emissions inventory to reflect GHG emissions in light of the economic downturn and of measures not previously considered in the 2008 Scoping Plan baseline inventory. The updated forecast predicts emissions to be 507 MMTons by 2020. The new inventory identifies that an estimated 80 MMTons of reductions are necessary to

⁴ CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.



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achieve the statewide emissions reduction of AB 32 by 2020, 15.7 percent of the projected emissions compared to BAU in year 2020 (i.e., 15.7 percent of 507 MMTons) (CARB 2012).

In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 MTons per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012. The Climate Action Registry Reporting Online Tool was established through the Climate Action Registry to track GHG emissions. Key elements of CARB's GHG reduction plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a mix of 33 percent for energy generation from renewable sources;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system for large stationary sources;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS);⁵
- Creating target fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Table 5.3-3 shows the proposed reductions from regulations and programs outlined in the Scoping Plan. While local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services result in a reduction of 5 MMTons, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments plays in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of today's levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. Measures that local governments take to support shifts in land use patterns are anticipated to emphasize compact, low-impact growth over development in greenfields, resulting in fewer VMT (CARB 2008).

⁵ On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoins the CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Ninth Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision.

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*Table 5.3-3
Scoping Plan Greenhouse Gas Reduction Measures and
Reductions toward 2020 Target*

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO₂e	Percentage of Statewide 2020 Target
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets ¹	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
Total Cap and Trade Program Reductions	146.7	87%
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
Total Uncapped Sources/Sectors Reductions	27.3	16%
Total Reductions Counted toward 2020 Target	174	100%
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	1.0 to 2.0	1%
Local Government Operations	To Be Determined	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
Total Other Recommended Measures – Not Counted toward 2020 Target	42.8	NA

Source: CARB 2008.

Notes: The percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 MMTons and the Scoping Plan identifies 174 MMTons of emissions reductions strategies.

MMTCO_{2e}: million metric tons of CO₂e

¹ Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.

² According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO_{2e} (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.



Energy Conservation Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

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The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. While these regulations are now often viewed as “business-as-usual,” they exceed the standards imposed by all other states and they reduce GHG emissions by reducing energy demand.

On July 17, 2008, the California Building Standards Commission adopted the nation’s first green building standards. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations). The green building standards that became mandatory in the 2010 edition of the code established voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011.

Renewable Power Requirements

A major component of California’s Renewable Energy Program is the renewable portfolio standard (RPS), established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. CARB has now approved an even higher goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Vehicle Emission Standards/Improved Fuel Economy

Vehicle GHG emission standards were enacted under AB 1493 (Pavley I) and the LCFS. Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California’s transportation fuels by 2015 and a reduction of at least 10 percent by 2020.

Regulation of GHG Emissions on a Regional Level

In 2008, SB 375 was adopted and was intended to represent the implementation mechanism necessary to achieve the GHG emissions reductions targets established in the Scoping Plan for the transportation sector as it relates to local land use decisions that affect travel behavior. Implementation is intended to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations with local land use planning to reduce vehicle miles traveled and vehicle trips. Specifically, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 17 regions in California managed by a metropolitan planning organization (MPO). Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. SCAG is the MPO for the southern California region, which includes the counties of Los Angeles, Orange, San Bernardino County, Riverside, Ventura, and Imperial. SCAG’s targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035.

The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios

reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's existing transportation network. Adherence to the targets would result in 3 MMTons of GHG reductions by 2020 and 15 MMTons of GHG reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. For the SCAG region, the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was adopted April 2012 (SCAG 2012). The SCS sets forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). The SCS is meant to provide growth strategies that will achieve the regional GHG emissions reduction targets. However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS, but rather provides incentives for consistency for governments and developers.

5.3.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

South Coast Air Quality Management District

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency:

- Tier 1 If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.
- Tier 2 If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, SCAQMD requires an assessment of GHG emissions. SCAQMD is proposing a screening-level threshold of 3,000 MTons annually for all land use types or the following land-use-specific thresholds: 1,400 MTons for commercial projects, 3,500 MTons for residential projects, or 3,000 MTons for mixed-use projects. This bright-line threshold is based on a review of the Governor's Office of Planning and Research database of CEQA projects. Based on review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds identified above. Therefore, projects that do not exceed the bright-line threshold would have a nominal, and therefore, less than cumulatively considerable impact on GHG emissions:

- Tier 3 If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.



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Tier 4 If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

- Project Level – 4.8 MTons per year per service population
- Program Level – 6.6 MTons per year per service population

SCAQMD is proposing to adopt an efficiency target for projects that exceed the screening threshold. The current recommended approach is per capita efficiency targets. SCAQMD is not recommending use of a percent emissions reduction target. Instead, SCAQMD proposes a 2020 efficiency target of 4.8 MTons per year per service population (MTons/year/SP) for project-level analyses and 6.6 MTons/year/SP for plan level projects (e.g., program-level projects such as general plans).⁶ For the purpose of this project, SCAQMD's project-level thresholds are used. If projects exceed these per capita efficiency targets, GHG emissions would be considered potentially significant in the absence of mitigation measures.

Service population is traditionally defined as the summation of residents and employees that are generated by a project. The origin behind the service population metric is derived from CARB's 2008 Scoping Plan. The Scoping Plan identified that based on the GHG emissions inventories for the state, people living in California generate approximately 14 tons of GHG emissions per capita and need to reduce GHG emissions to approximately 10 tons of GHG per capita to meet the GHG reduction target of AB 32. Because people who live in California generally work in California, the service population metric used in the Scoping Plan did not include employees. As CEQA significance thresholds were being developed by individual air districts, air districts considered applying this type of efficiency metric to the air district's boundaries. In line with the methodology developed by the Regional Targets Advisory Committee (RTAC) as part of SB 375 target setting discussions, the definition of service population for a local air district was amended to include employees as well as residents because the transportation sector is the primary source of project-related GHG emissions; and unlike the state as a whole, people who work in one county/air district may not live in the same air district/city/county. However, it should be noted that people who live and work within the air district/city/county would also have other trip ends to services including, schools, retail uses, and parks. Therefore, for an air district/city/county boundary as a whole, the per capita metric does not include other users of the site. However, a project encompasses a much smaller boundary than an air district/city/county and for commercial and other non-residential development projects (e.g., parks, schools) the primary user of a site is not the employee but other visitors which depending on the land use may include patients, customers, students, clients, etc.). Therefore, for the purpose of this project whose primary users are patrons of the medical office building, the service population includes both employees and patrons.

5.3.3 Environmental Impacts

On December 30, 2009, the Natural Resources Agency adopted amendments to the CEQA Guidelines. These amendments became effective on March 18, 2010. The amendments to the CEQA Guidelines include new requirements to evaluate GHG emissions. Pursuant to the amended CEQA Guidelines, a lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;

⁶ It should be noted that the Working Group also considered efficiency targets for 2035 for the first time in this Working Group meeting.

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3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.⁷

GHG emissions modeling was conducted using SCAQMD's California Emissions Estimator Model (CalEEMod). Life cycle emissions are not included in this analysis because not enough information is available for the proposed project, and therefore life cycle GHG emissions would be speculative.⁸

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

IMPACT 5.3-1: BUILDOUT OF THE CROWN CITY MEDICAL CENTER WOULD RESULT IN A SUBSTANTIAL INCREASE IN GHG EMISSIONS BUT WOULD NOT CONFLICT WITH STATEWIDE, REGIONAL, AND LOCAL GHG EMISSIONS REDUCTIONS STRATEGIES. [THRESHOLDS GHG-1 AND GHG-2]

Impact Analysis: As described previously, a project does not generate enough GHG emissions on its own to influence global climate change; therefore, this impact analysis measures the project's contribution to the cumulative environmental impact. Buildout of the Crown City Medical Center would result in direct and indirect increases in GHG emissions from transportation, energy (natural gas use), water and wastewater generation, and waste disposal. In addition, project-related construction emissions generate GHG emissions and are amortized as part of the project's GHG emissions inventory over a 30-year lifetime in accordance with SCAQMD's proposed methodology. Transportation sources of GHG emissions are based on the traffic impact analysis conducted by Iteris (see Appendix F). The proposed project would generate a total of 4,118 average daily vehicle trips. Water use is based on indoor and outdoor water demand based on water and wastewater generation rates from Pasadena Water and Power. Waste generation is calculated based on rates from CalRecycle. GHG emissions for these sectors were modeled using CalEEMod. Energy use is based on estimates of Title 24, non-Title 24, and lighting electricity and natural gas use using CalEEMod model defaults.



Project-Related GHG Emissions

The proposed project is anticipated to be built out by 2015. GHG emissions associated with the project would exceed the proposed SCAQMD screening criteria of 3,000 MTons (Tier 3). Because GHG emissions would substantially increase at the site, total GHG emissions were compared to the proposed per capita thresholds (Tier 4). Pursuant to SCAQMD's draft methodology, the efficiency metric is based on 2020 GHG efficiency values (i.e., 2020 emission rates) to be consistent with the GHG reduction targets of AB 32 and GHG reduction measures that have been adopted to reduce GHG emissions.

Table 5.3-4 shows the GHG emissions generated at buildout of the project in 2020 as modeled with CalEEMod. As shown in the table, the project would generate a net increase of 4,618 MTons of GHG emissions. The primary users of the site would be the medical office and retail employees and patients. The primary source of GHG emissions is transportation sources from employees and patients driving to and from the medical office/retail building. When patients driving to and from the site are not considered

⁷ OPR recommendations include a requirement that such a plan be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

⁸ Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative.

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part of the project's service population, operation of the project would substantially exceed SCAQMD's proposed per capita significance threshold of 4.8 MTons per service population. However, the project would generate approximately 956 patients at the medical office building generating two trips per day, totaling 1,912 daily trips. Therefore, due to the size of the project, as noted above, and because a substantial number of trips will be derived from patient trips, patients were considered in the total service population. As a result, operation of the project would not exceed SCAQMD's proposed per capita significance threshold of 4.8 MTons per service population. Consequently, GHG emissions generated by the project are not considered to cumulatively contribute to statewide GHG emissions.

Table 5.3-4
Project-Related GHG Emissions

Source	GHG Emissions, Year 2020	
	MTons	Percent
Energy ¹	1,195	26%
Transportation ²	2,771	60%
Waste	495	11%
Water ³	130	3%
Amortized Construction Emissions	28	1%
Total	4,618	100%
Screening Threshold	3,000	NA
Service Population (SP) ⁴ without Medical Patrons	159	NA
Emissions Per Service Population without Medical Patrons	29.0	NA
Service Population (SP) ⁴ with Medical Patrons ⁵	1,115	NA
Emissions Per Service Population with Medical Patrons	4.14	NA
SCAQMD Proposed Project-Level Efficiency Metric	4.8	NA
Exceeds Efficiency Metric	No	NA

Source: CalEEmod Version 2011.1.1.

¹ Includes adherence to Pasadena's Green Building Practices Ordinance requiring a 20 percent increase in building energy efficiency compared to the 2008 Building and Energy Efficiency Standards (Title 24).

² Transportation reductions are based on the CAPCOA GHG Quantification Guidance for urban centers (representative of downtown Pasadena) and include increased employment density, proximity to high frequency transportation corridors, and connectivity improvements onsite.

³ Includes reductions from the California Green Building Code (CalGreen), which requires installation of low-flow fixtures and water-efficient irrigation systems in new development consistent with the State Water Conservation Plan 20X2020.

⁴ Based on a service population of 159 employees.

⁵ Based on a service population of 159 employees and 956 medical office patrons.

Consistency with GHG Reduction Plans

In accordance with AB 32, CARB developed the Scoping Plan to outline the state's strategy to achieve 1990 level emissions by year 2020. To estimate the reductions necessary, CARB projected statewide 2020 BAU GHG emissions and identified that the state as a whole would be required to reduce GHG emissions by 28.5 percent from year 2020 BAU to achieve the targets of AB 32 (CARB 2008). Since release of the 2008 Scoping Plan, CARB has updated the 2020 GHG BAU forecast to reflect GHG emissions in light of the economic downturn and measures not previously considered in the 2008 Scoping Plan baseline inventory. The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.6 percent from BAU without Pavley and the 33 percent RPS, or 15.7 percent from the adjusted baseline (i.e., with Pavley and 33 percent RPS) (CARB 2012). The City of Pasadena has adopted a Green Building Practices Ordinance (City of Pasadena Municipal Code, Chapter 14.04) to reduce building energy use and associated GHG emissions. Further, the Pasadena Green City Action

Plan provide several objectives and specific actions which encourage sustainable development that is consistent with GHG reduction plans.

Pasadena Green Building Ordinance

The proposed project is a nonresidential building that encompasses more than 25,000 square feet of new construction and is therefore subject to the mandatory Tier 1 CALGreen standards as part of Pasadena's Green Building Ordinance (City of Pasadena Municipal Code, Chapter 14.04, Green Building Standards Code, Section 14.04.504). Compliance with Pasadena's Green Building Practices Ordinance under the City's Tier 1 standards (as amended) would result in a 20 percent increase in building (Title 24) energy efficiency compared to the 2008 Building and Energy Efficiency Standards (City of Pasadena Municipal Code, Section 14.04.540). The City also requires compliance with prerequisite and elective measures to achieve an equivalent 40 Leadership in Energy and Environmental Design (LEED) points. The City's mandatory Green Building Ordinance's prerequisite and elective measures include:

- Designated parking requirements encompassing a minimum of 10 percent of parking capacity for fuel efficient vehicles
- Roofing materials with a high solar reflectance index (i.e., cool roofs)
- Water efficient landscaping that achieves a 50 percent reduction in landscape irrigation water use
- Low flow fixtures that achieve a 20 percent reduction in indoor water use
- Construction and demolition debris diversion of 65 percent from landfills for recycling, reuse, or recovery

The project would incorporate these features as mandated by the City's Green Building Practices Ordinance. No other GHG reduction plans are applicable for the proposed project. Statewide strategies to reduce GHG emissions include the LCFS, California Appliance Energy Efficiency regulations, California Building Standards (e.g., CALGreen and the 2008 Building and Energy Efficiency Standards), California RPS, changes in the corporate average fuel economy standards (e.g., Pavley I and Pavley II [Advanced Clean Cars]), and other measures that would ensure the state is on target to achieve the GHG emissions reduction goals of AB 32. Statewide GHG emissions reduction measures that are being implemented over the next eight years would assist the City in reducing the project's GHG emissions. The project would be consistent with GHG reduction policies and programs to achieve the GHG reduction targets of AB 32.

City of Pasadena Green City Action Plan

The City of Pasadena developed an Action Plan (2006) to create a more sustainable City capable of meeting growing demand and reducing impacts to natural resources. The City's Green City Action Plan goals are applicable on a City-level and include:

- Action 1: Increase the use of renewable energy to meet 10 percent of the city's peak electric load within seven years.
- Action 2 Reduce the city's peak electric load by 10 percent within seven years through energy efficiency, shifting the timing of energy demands and conservation measures.
 - 2. Conducting a feasibility study for installing devices on municipal and private buildings that reduce the power required to operate equipment and for shifting the equipment usage to off-peak



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- 3. Creating a “time of use” billing rate that offers lower rates for electric usage during off-peak hours than during peak hours. Other possible rates to consider include tiered energy rates.
- Action 3 Reduce greenhouse gas emissions by 25 percent by 2030, and include a system for accounting and auditing these emissions.
- Action 4 Achieve zero waste to landfills and incinerators by 2040.
- Action 5 Reduce the use of disposable, toxic, or non-renewable product category by at least 50 percent in seven years.
- Action 21 Adopt municipal wastewater management guidelines and reduce the volume of untreated wastewater discharges by 10 percent in seven years through the expanded use of recycled water and the implementation of a sustainable urban watershed planning process that includes participants of all affected communities and is based on sound economic, social, and environmental principles.

Implementation of the proposed project would not hinder the City’s ability to implement the goals contained within the Green City Action Plan.

SCAG’s 2012 RTP/SCS

SCAG’s 2012 RTP/SCS was adopted April 4, 2012. SCAG’s 2012 RTP/SCS identifies multimodal transportation investments, including bus rapid transit (BRT), light rail transit, heavy rail transit, commuter rail, high-speed rail, active transportation strategies (.e.g., bike ways and sidewalks), transportation demand management (TDM) strategies, transportation systems management, highway improvements (interchange improvements, high-occupancy vehicle lanes, high occupancy toll lanes), arterial improvements, goods movement strategies, aviation and airport ground access improvements, and operations and maintenance to the existing multimodal transportation system. SCAG’s RTP/SCS identifies that land use strategies that focus new housing and job growth in areas served by high quality transit and other opportunities areas would be consistent with a land use development pattern that supports and complements the proposed transportation network that emphasizes system preservation, active transportation, and transportation demand management measures (SCAG 2012).

The project is consistent with regional strategies to reduce passenger VMT to achieve the per capita GHG emissions reduction targets of SB 375 for the SCAG region. The project site is within a high quality transit area and is adequately served by existing public transit (i.e., Metrolink and local bus lines). The project is in the Central District Specific plan area, which requires pedestrian-oriented uses on Colorado Boulevard. The project would increase employment density in downtown Pasadena. Consequently, the project would not conflict with the strategies within the 2012 RTP/SCS to reduce per capita passenger vehicle GHG emissions.

5.3.4 Cumulative

As described under Impact 5.3-1, project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts identified under Impact 5.6-1 are not project-specific impacts to global warming but the project’s contribution to this cumulative impact. As discussed above, at buildout the project would not result in a substantial increase in GHG emissions. Therefore, project-related GHG emissions and their contribution to global climate change are not cumulatively considerable.

5.3.5 Existing Regulations and Standard Conditions

- AB 32: California Global Warming Solutions Act
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new cars.
- Title 24 California Code of Regulations, Part 6 (Building and Energy Efficiency Standards). Establishes building energy efficiency standards for residential and nonresidential development.
- Title 24 California Code of Regulations, Part 11 (California Green Building Code). Establishes sustainability criteria to reduce building energy use and water use for new residential and non-residential development.
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances.
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires the carbon content of fuel sold in California to be 10 percent less by 2020.
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010, to ensure efficient landscapes in new development and reduced water waste in existing landscapes.
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions.
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020.
- City of Pasadena Municipal Code Chapter 14.04, Green Building Standards Code. Requires adherence to the Tier 1 CALGreen measures (as amended) for nonresidential buildings over 25,000 square feet.



5.3.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impact would be less than significant: 5.3-1

5.3.7 Mitigation Measures

No significant impacts were identified and no mitigation measures are warranted.

5.3.8 Level of Significance After Mitigation

GHG emissions from the proposed project would not exceed the SCAQMD's proposed per capita significance threshold. The proposed project would be constructed to meet the Tier 1 CALGreen standards of Title 24. No significant GHG emissions impacts are identified and no mitigation measures are warranted.

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