

4.5 GREENHOUSE GAS EMISSIONS

This section describes existing greenhouse gas (GHG) emissions, a summary of applicable regulations, and an analysis of potential short-term construction and long-term operational GHG emissions impacts from implementing the 2012 General Plan. In addition, mitigation measures are recommended, as necessary, to reduce significant GHG emissions impacts. The GHG analysis is attached as Appendix C of this Program EIR.

4.5.1 Existing Environmental Setting

Climate and Meteorology

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens 2003). The City is located in a climatic zone characterized as dry summer subtropical or Mediterranean.

The City typically has hot, dry summers and warm winters, with most of the annual precipitation, around 13 inches, falling between November and March. This mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

Attributing Climate Change – The Physical Scientific Basis

Certain gases in Earth's atmosphere, classified as GHGs, play a critical role in determining Earth's surface temperature. Solar radiation enters Earth's atmosphere from space. A portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back toward space. However, infrared radiation is selectively absorbed by GHGs; as a result, infrared radiation released from Earth that otherwise would have escaped back into space is "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the naturally occurring GHGs and the greenhouse effect, Earth would not be able to support life as we know it.

However, anthropogenic emissions of GHGs leading to atmospheric levels in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect, and have led to a trend of unnatural warming of Earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007). There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global climate change, although there is uncertainty concerning the magnitude and rate of the change.

The principal GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, a single project would be unlikely to measurably contribute to a noticeable incremental change in the global average temperature. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative, and projects should be evaluated through cumulative impacts, since GHG emissions from multiple projects could result in a cumulative impact with respect to global climate change.

Attributing Climate Change – Greenhouse Gas Emissions Sources

Emissions of GHGs contributing to global climate change are attributable, in large part, to human activities. For purposes of accounting for and regulating GHG emissions, sources of GHG emissions are grouped into sectors. ARB identifies the following main GHG emissions sectors that account for most anthropogenic GHG emissions generated within California:

- *Transportation*: Fuel use in on-road motor vehicles, recreational vehicles, aviation, ships, and rail (CO₂, CH₄, N₂O).
- *Electricity*: Use and production of electrical energy (CO₂, CH₄, N₂O).
- *Industry*: Primarily stationary sources (e.g., boilers and engines) associated with process emissions (CO₂, CH₄, N₂O).
- *Commercial and Residential*: Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating (CO₂, CH₄, N₂O).
- *Agriculture*: Agricultural sources that include off-road farm equipment; irrigation pumps; crop residue burning (CO₂); and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH₄ and N₂O).
- *High-Global-Warming-Potential Gases*: Refrigerants and electrical insulation (e.g., SF₆), among other sources.
- *Recycling and Waste*: Waste management facilities and landfills; primary emissions are CO₂ from combustion and CH₄ from landfills and wastewater treatment.

Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄ is largely associated with agricultural practices, livestock grazing, and landfills. N₂O is also largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the

ocean, which absorb CO₂ through sequestration and dissolution, respectively, and are two of the most common processes of CO₂ uptake.

State Greenhouse Gas Emissions Inventory

California produced 453 million metric tons (MMT) of CO₂ equivalent (CO₂e) in 2009 (ARB 2011). CO₂e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO₂e takes the contributions to the greenhouse effect of all GHG emissions and converts them to the equivalent effect that would occur if only CO₂ were being emitted. This measurement, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix E of the Local Government Operation Protocol (ARB 2010), 1 ton of CH₄ has the same contribution to the greenhouse effect as approximately 21 tons of CO₂. Therefore, CH₄ is a much more potent GHG than CO₂ on a per-molecule basis.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2008, accounting for 38 percent of total GHG emissions in the state (ARB 2011), as shown in Figure 4.5-1. The next largest emitting sectors were the electric power sector (including both in-state and out-of-state sources), accounting for 23 percent of statewide emissions, and the industrial sector, accounting for 20 percent of statewide emissions.

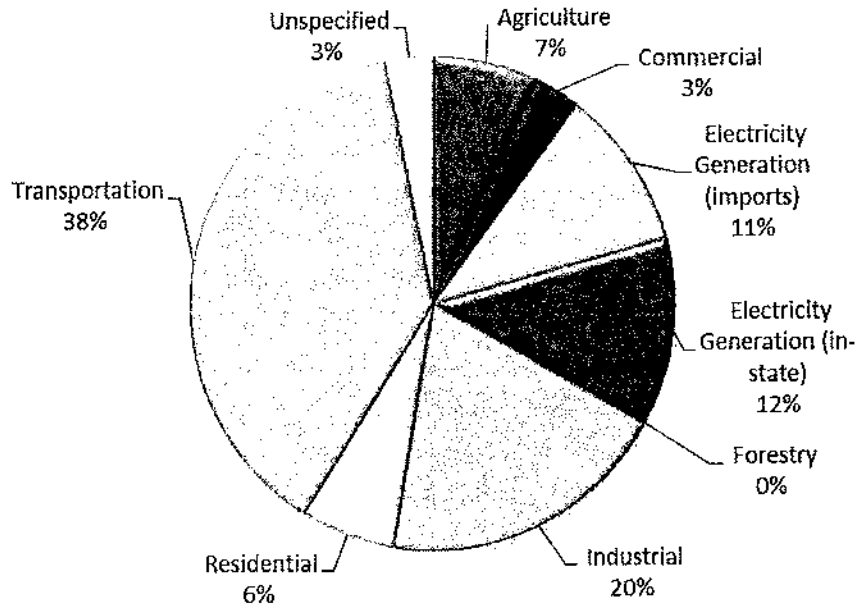
Regional Greenhouse Gas Emissions Inventory

The University of San Diego School of Law, Energy Policy Initiative Center prepared a GHG inventory for San Diego County (Anders et al. 2008). The inventory included estimates of GHG emissions for 1990 and 2006, and projections for 2020. As shown in Figure 4.5-2, total GHG emissions in San Diego County in 2006 were estimated to be 34 MMT CO₂e. Similar to statewide emissions, transportation is the largest emissions sector, accounting for 16 MMT of CO₂e, or 46 percent of total emissions. Energy consumption, including electricity and natural gas use, is the next largest source of emissions, at 34 percent of the total.

City of La Mesa Greenhouse Gas Emissions Inventory

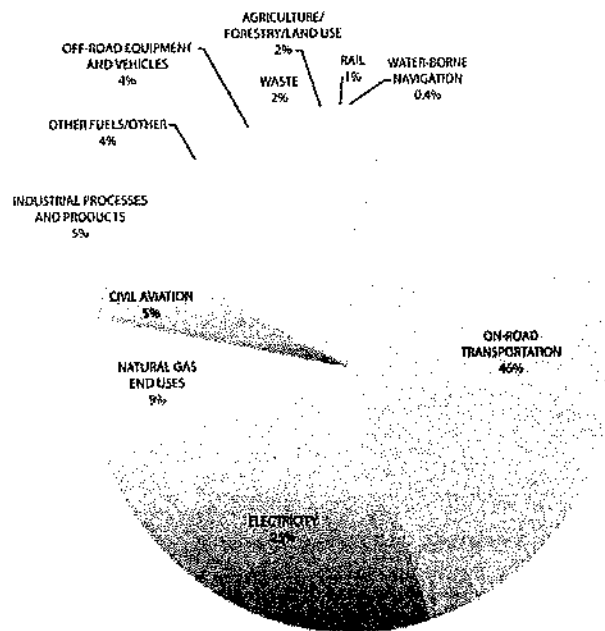
The City conducted a municipal GHG emissions inventory, which includes government-operated buildings, vehicle fleets, solid waste, streetlights, and other government owned/operated facilities, and a community-wide GHG emissions inventory, which quantified emissions from the transportation, residential, commercial/industrial, solid waste, and wastewater sectors (City of La Mesa 2009). The inventory was originally conducted in 2009 and updated in 2012 to account for

Figure 4.5-1. California's Greenhouse Gas Emissions by Economic Sector (2009)



Source: ARB 2011

Figure 4.5-2. San Diego County's Greenhouse Gas Emissions by Economic Sector (2006)



Source: Anders et al. 2008

more current GHG estimation methodologies, such as using emissions factors generated using EMFAC2011, which is ARB's approved model for estimating on-road emissions, and to include policy guidance provided by state agencies since 2005, such as the guidance provided by the Regional Targets Advisory Committee Pursuant to SB 375. The Regional Targets Advisory Committee recommends that transportation emissions account for regional transportation by discounting trips that only start or end in the jurisdiction by half and excluding pass-through trips from emissions calculations. The other sectors were reviewed for compliance with current methodologies. The updated 2005 GHG inventory is in Table 4.5-1. Details regarding methodology and results from the municipal operations inventory are provided in Appendix C.

**Table 4.5-1
La Mesa 2005 GHG Inventory**

Sector	GHG Emissions (MT CO₂e)
Transportation	81,123
Commercial/Industrial Energy	79,120
Residential Energy	69,258
Off-Road Transportation	17,381
Potable Water	14,683
Solid Waste	13,942
Wastewater	2,589
Total	278,096

MT CO₂e = metric tons of carbon dioxide equivalent

4.5.2 Regulatory Setting

Federal Regulations

Supreme Court Ruling

USEPA is the agency responsible for implementing the federal CAA. The U.S. Supreme Court ruled on April 2, 2007, that CO₂ is an air pollutant as defined under the CAA, and that USEPA has the authority to regulate emissions of GHGs. To date, no federal regulations or policies regarding GHG emissions applicable to the 2012 General Plan have been implemented.

Mandatory Greenhouse Gas Reporting Rule

On October 30, 2009, USEPA published the final version of the Mandatory Greenhouse Gas Reporting Rule in the Federal Register. In general, this national reporting requirement will

provide USEPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO₂ per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs and vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule. Subsequent rulings have expanded the emissions sources required to report emissions data, and now include oil and natural gas industries, industrial wastewater treatment, and industrial landfills.

Proposed Findings for Greenhouse Gases under the Federal Clean Air Act

On December 7, 2009, USEPA signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing USEPA's proposed GHG emissions standards for light-duty vehicles, which USEPA proposed on September 15, 2009, in a joint proposal that included the Department of Transportation's (DOT) proposed Corporate Average Fuel Economy standards. In April 2010, DOT and USEPA established GHG emissions and fuel economy standards for model year 2012–2016 light-duty cars and trucks. These emissions standards require model year 2016 vehicles to meet an estimated combined average emissions level of 250 grams of CO₂ per mile, which is equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO₂ level solely through fuel economy improvements. On August 28, 2012, DOT and USEPA issued a joint final rulemaking requiring additional federal GHG and fuel economy standards for model year 2017–2025 passenger cars and light-duty trucks. The standards would require these vehicles to meet an estimated combined average emissions level of 163 grams of CO₂ per mile in model year 2025, which is equivalent to 54.5 miles per gallon if the improvements were made solely through fuel efficiency. In addition to the standards for

light-duty vehicles, DOT and USEPA announced on August 9, 2011, standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses.

Council on Environmental Quality Guidance

On February 18, 2010, the Council on Environmental Quality (CEQ) Chair issued a memorandum titled Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. The draft guidance recognizes that many federal actions would result in the emission of GHGs, and that, where a proposed federal action may emit GHGs “in quantities that the agency finds may be meaningful,” CEQ proposes that an agency’s NEPA analysis focus on aspects of the environment that are affected by the proposed action and the significance of climate change for those aspects of the affected environment. In particular, the guidance proposes a reference point of 25,000 metric tons per year of direct GHG emissions as a “useful indicator” of when agencies should evaluate climate change impacts in their NEPA documents. CEQ notes that this indicator is not an absolute standard or threshold to trigger the discussion of climate change impacts.

State Regulations

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs.

Assembly Bill 1493

AB 1493, signed in 2002, required that ARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

In 2004, ARB adopted standards requiring automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. For passenger cars and light-duty trucks, the GHG emissions limits for the 2016 model year are approximately 37 percent lower than the limits for the first year of the regulations, the 2009 model year.

As described above, in April 2010, DOT and USEPA established GHG emissions and fuel economy standards for model year 2012–2016 light-duty cars and trucks. In the fall of 2010,

California accepted compliance with these federal GHG standards as meeting similar state standards that were adopted in 2004, resulting in the first coordinated national program with the state. California is currently working with DOT and USEPA on the new fuel economy and GHG standards for model year 2017–2025 cars and light-duty trucks.

Executive Order S-3-05

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

Further, the Secretary of the California Environmental Protection Agency (CalEPA) is directed to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and state legislature describing progress made toward reaching the emissions targets, the impacts of global warming on California’s resources, and mitigation and adaptation plans to combat these impacts.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

AB 32 was signed in September, 2006. AB 32 requires:

- ARB to adopt a statewide limit on GHG emissions equivalent to 1990 levels, to be achieved by 2020.
- ARB to adopt rules and regulations and market-based mechanisms to achieve the GHG emissions limit.
- Major-emitting sources to report and monitor GHG emissions.

AB 32 identifies specific dates by which ARB must prepare and approve a scoping plan that identifies measures for achieving GHG reductions by 2020. Further, AB 32 states that the GHG emissions limit will remain in effect beyond 2020 and that ARB will provide guidance for achieving GHG emissions reductions beyond 2020. AB 32 also recognizes the Governor’s Climate Action Team’s role in continuing to coordinate overall climate policy.

Climate Change Scoping Plan

In December 2008, ARB adopted its Climate Change Scoping Plan (Scoping Plan), which contains a comprehensive set of strategies designed to achieve the 2020 GHG emissions limit. The Scoping Plan estimates that reducing emissions to 1990 levels means a 15 percent reduction from current levels or 30 percent reduction from a 2020 business-as-usual scenario. The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The Scoping Plan calls for more than half of the reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (31.7 MMT CO₂e).
- The Low-Carbon Fuel Standard (15.0 MMT CO₂e).
- Energy efficiency measures in buildings and appliances, and the widespread development of combined heat and power systems (26.3 MMT CO₂e).
- A renewable portfolio standard for electricity production (21.3 MMT CO₂e).

In addition, the Scoping Plan states that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors.

Since adoption of the Scoping Plan, ARB reduced the 2020 business-as-usual forecast for state emissions to 506.8 MT CO₂e. This forecast was updated to account for new estimates for future fuel and energy demand, as well as other factors such as the effects of the recent economic recession and GHG reduction measures already in place.

Executive Order S-1-07

Executive Order S-1-07, which was signed in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at more than 40 percent of statewide emissions. Executive Order S-1-07 establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10 percent by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard could be adopted as a discrete early action

measure after meeting the mandates in AB 32. ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Senate Bill 97

SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the California Office of Planning and Research to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, the California Office of Planning and Research submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines for GHG emissions, as required by SB 97. On December 30, 2009, the Natural Resources Agency adopted the proposed CEQA Guidelines amendments, as required by SB 97. The amendments became effective March 18, 2010. The Office of Planning and Research's CEQA Guidelines amendments have been incorporated into this analysis.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) to prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted regional per-capita GHG reduction targets for passenger vehicles and light-duty trucks for 2020 and 2035 for the 18 MPOs in the state. For SANDAG, the MPO that includes La Mesa, the reduction target was 7 percent by 2020 and 13 percent by 2035 on a per-capita basis relative to 2005 levels. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012. SANDAG adopted the first SCS in 2011 when it adopted its RTP. In the SCS, SANDAG estimates those targets will be met or exceeded.

SB 375 also extends the minimum time period for the regional housing needs allocation cycle from 5 years to 8 years for local governments located within an MPO that meet certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

California Code of Regulations Title 17

On December 12, 2008, ARB approved Subarticle 1 of Title 17, California Code of Regulations (CCR) to significantly reduce emissions from existing on-road diesel vehicles operating in California. The regulation requires affected trucks and buses to meet performance requirements by 2023. Successful implementation of this measure will reduce diesel fuel consumption, truck operating costs, and nitrogen oxide emissions, as well as accelerate industry adoption of existing technologies to reduce GHG emissions.

Senate Bill X1-2

In 2002, California established a Renewables Portfolio Standard program, with the goal of increasing the percentage of renewable energy in retail sales of electricity. SB 1078 (2002) required investor-owned utilities to attain 20 percent of the Renewables Portfolio Standard goal by 2020; SB 107 (2006) accelerated the timeframe for the goal to be achieved by 2010. On April 12, 2011, SB X1-2 was signed, requiring California electric utilities to procure 33 percent of their total energy supplies from certified renewable sources by December 31, 2020.

Regional and Local Plans and Policies

ARB's Scoping Plan (ARB 2008) states that local governments are "essential partners" in the effort to reduce GHG emissions. The Scoping Plan also acknowledges that local governments have "broad influence and, in some cases, exclusive jurisdiction over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations." Many of the proposed measures to reduce GHG emissions rely on local government actions. The Scoping Plan encourages local governments to reduce GHG emissions by approximately 15 percent from current levels by 2020 (ARB 2008).

San Diego Air Pollution Control District

The San Diego Air Pollution Control District has no regulations relative to GHG emissions.

City of La Mesa

The City has no regulations directly pertaining to GHG emissions. However, the 2012 General Plan contains many policies and programs that indirectly pertain to the reduction of GHG emissions:

Land Use Element – The 2012 General Plan Land Use Element includes specific goals and policies to encourage resource-efficient building techniques, materials, and principles of sustainable design in new construction and renovation; create development standards to accommodate new technologies related to solar and wind energy; ensure that the built environment prepares for adaptation to adverse climate change impacts such as increasingly intense heat waves and water shortages; and increase the amount of foliage, especially street trees. As a result, potential GHG emissions impacts related to urban development would be reduced.

Circulation Element – The Circulation Element promotes the use of public transit by working with MTS to increase the access, aesthetics, and safety of trolley and bus infrastructure, and ensuring that future development improves access to public transit. The Circulation Element also encourages pedestrian and bicycle transportation by applying a “complete streets” approach to future transportation infrastructure projects, implementing the bicycle-related policies and programs contained in the 2012 Bicycle Facilities and Alternative Transportation Plan, and focusing on “Safe Routes to Schools” around school sites. These actions would reduce GHG emissions related to transportation within the City.

Conservation and Sustainability Element – This element promotes alternative energy sources for buildings and transportation vehicles, use of recycled water where feasible, conservation of potable water, mixed-use development along transportation corridors, incorporation of energy efficiency practices in new and existing development, and increased recycling and composting to reduce the amount solid waste sent to landfills.

4.5.3 Thresholds for Determining Significance

There are no quantitative federal or state significance criteria for global climate change impacts or GHG emissions that pertain to this 2012 General Plan.

Based on Appendix G of the CEQA Guidelines and ARB’s Scoping Plan, a significant impact related to GHG emissions would occur if implementation of the 2012 General Plan would result in any of the following:

- Result in an emissions level that cannot be reduced by 15 percent from baseline (2005) levels by 2020.
- Conflict with applicable plans and policies adopted for the purpose of reducing emissions of GHGs.
- Result in additional risk of physical harm related to flooding, public health, wildfire risk, or other impacts resulting from climate change.

4.5.4 Analysis of Environmental Impacts

Emissions Level 15 Percent Below 2005 Levels by 2020

Construction-Related Emissions

GHG emissions generated by construction activities would be primarily in the form of CO₂. Although emissions of other GHGs, such as CH₄ and N₂O, are important with respect to global climate change, the emissions levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared to the level of CO₂ emissions, even when factoring in the relatively larger GWP of CH₄ and N₂O.

Construction-related GHG exhaust emissions would be generated by sources such as heavy-duty off-road equipment, trucks hauling materials to the site, and worker commutes. Construction activities are anticipated to commence as early as 2013 and last until approximately 2035 (the time horizon of the 2012 General Plan). Exhaust emissions rates of the construction equipment fleet in California are expected to decrease over time due to advancements in engine technology, retrofits, and turnover in the equipment fleet that would result in increased fuel efficiency, lower levels of GHG emissions, and potentially more equipment using alternative fuel.

In addition, the regulatory environment that continues to evolve under the mandate of AB 32 is expected to reduce some of the GHG emissions from construction activity. ARB's Scoping Plan does not directly discuss GHG emissions generated by construction activity; however, it does recommend measures for improving the efficiency of medium- and heavy-duty on-road vehicles and efficiency strategies for off-road vehicles (e.g., forklifts, bulldozers). In addition, existing programs for air quality improvement in California, including the Diesel Risk Reduction Plan and the 2007 SIP, will result in the accelerated phase-in of cleaner technology for virtually all of California's diesel engine fleets, including construction equipment (ARB 2008). Measures implemented under these plans are likely to result in future fleets of construction equipment that are more GHG efficient than existing fleets. For these reasons, levels of GHG emissions associated with 2012 General Plan construction activities are expected to decrease over time as new regulations are developed under the mandate of AB 32.

Neither ARB nor SDAPCD directly discuss how to evaluate GHG emissions generated by construction activity, and SDAPCD does not have a quantitative threshold of significance for construction-related GHG emissions. Nonetheless, construction-generated GHG emissions resulting from the 2012 General Plan would make an incremental contribution to GHGs that cause climate change. Build-out of the 2012 General Plan is not precisely known at this time, and would depend on factors such as market demand and economic conditions; however, because GHG

emissions are important on a cumulative basis, it is possible to estimate the total construction-related emissions associated with build-out. Construction-related emissions were estimated using CalEEMod Version 2011.1.1, and detailed in Section 4.2. Construction-related emissions were assumed to occur equally year-to-year over the 23-year build-out period of 2013 through 2035; total GHG-related emissions are provided in Table 4.5-2. Although construction activity would be temporary, GHGs as a result of those activities would persist in the atmosphere. Existing regulatory efforts and new regulations that are expected to be enacted under AB 32 will help reduce GHG emissions generated by construction activity throughout the state.

**Table 4.5-2
Construction-Related Greenhouse Gas Emissions**

	Emissions (MT CO ₂ e/yr) ¹
Total GHG Emissions 2013–2035 ²	61,755
Amortized Annual Emissions	2,685

¹ Construction emissions were estimated assuming build-out of the proposed land uses; construction activities would occur linearly from the time of this writing until December 31, 2035. In reality, some years may generate more or less GHG emissions. Nevertheless, the total and annual average GHG emissions would remain similar to those shown above.

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

The City has not developed a Climate Action Plan (CAP) or a similar GHG emissions reduction plan for its jurisdiction. However, the 2012 General Plan includes policies that would contribute to reducing GHG emissions. These policies encourage the use of local and recycled materials and require that 50 percent of construction waste be diverted from landfills.

Operational and Construction Emissions

Operational GHG emissions may be both direct, which occur within La Mesa's jurisdiction, and indirect, which occur outside of La Mesa's jurisdiction but are a result of activities that are located within the jurisdiction. Operational GHG emissions are generated by area, mobile, and stationary sources. Direct emissions include those from fuel combustion, solid waste disposal, and wastewater treatment. Combustion of fuels includes mobile-source emissions (e.g., from vehicle trips by residents and employees), non-road emissions (e.g., from landscaping equipment), and natural gas combustion for space and water heating. Solid waste disposal and wastewater treatment from residential and commercial uses would also result in direct GHG emissions. Indirect emissions sources include stationary-source emissions from electricity generation at off-site utility providers. Consumption of water would also result in indirect GHG emissions because of the electricity consumption associated with the off-site conveyance, distribution, and treatment of water and wastewater.

AB 32 defines a quantifiable goal of reducing emissions to the 1990 level by year 2020 at the statewide level; therefore, operational GHG emissions from implementation of the 2012 General Plan were estimated and compared to the proposed threshold of significance, which was based on the goals stated in the Scoping Plan. The recommended target for local government municipal and community-wide emissions parallels the state's target. GHG emissions were modeled for 2020 and 2035 based on expected growth in population, land uses, and employment. Appendix C details the methodology and assumptions used to develop these projections. Table 4.5-3 presents operational emissions estimated for 2005 and projected for 2020 and 2035.

**Table 4.5-3
2005, 2020, and 2035 Operational Greenhouse Gas Emissions Summary**

Sector	GHG Emissions (MT CO ₂ e)		
	Baseline (2005)	2020	2035
On-Road Transportation	81,123	81,396	91,180
Commercial/Industrial Energy	79,120	87,391	94,079
Residential Energy	69,258	76,845	84,941
Off-Road	17,381	19,157	20,640
Water	14,683	15,918	17,297
Solid Waste	13,942	15,025	16,325
Wastewater	2,589	2,790	3,031
Total	278,096	298,523	327,493
Percent Change from Baseline		7%	18%

MT CO₂e = metric tons of carbon dioxide equivalent

As shown in Table 4.5-3, total GHG emissions are approximately 298,523 and 327,493 metric tons of CO₂e per year for 2020 and 2035, respectively. Commercial and industrial energy consumption, which includes electricity and natural gas consumption, is the largest source of emissions in 2020 and 2035 and represents about 29 percent of the emissions. The next largest contributor to emissions is the transportation sector, which represents about 28 percent of total emissions in 2020 and 2035. Operational emissions would be expected to increase 7 percent in 2020 and 18 percent in 2035 from 2005 levels with implementation of the 2012 General Plan.

Net Emissions

Net GHG emissions are the total annual emissions due to operation and construction-related emissions due to implementation of the 2012 General Plan. GHG emissions reductions are also expected from regulatory measures that have been or will be developed under the mandate of AB 32, as identified and recommended in ARB's Scoping Plan. In general, the Scoping Plan focuses on achieving the state's GHG reduction goals with regulations that improve the efficiency of motor vehicles and the production (and consumption) of electricity. Additionally, new technology improvements may become available or the feasibility of existing technologies may

improve. While a complete picture of the future regulatory environment is unknown, some measures have been implemented at the state or federal level that would have GHG-reducing impacts in the City. ARB's Scoping Plan includes measures that would indirectly address GHG emissions levels associated with construction and operational activities, including the phasing in of cleaner technology for diesel engine fleets (including construction equipment); federal fuel efficiency standards for vehicles; the state's Low Carbon Fuel Standard; and the Renewable Portfolio Standard, as discussed in the Section 4.5.2. Policies formulated under the mandate of AB 32 that are applicable to construction-related activity and operations, either directly or indirectly, would be implemented during activities associated with the 2012 General Plan if those implementing laws and regulations are developed before construction or operation begins.

Table 4.5-4 shows the effects these mitigation measures would have on La Mesa's GHG emissions. While the mitigation measures would decrease emissions from the business-as-usual estimates presented in Table 4.5-4, the emissions reductions would not be sufficient to meet the threshold of reducing emissions by 15 percent from 2005 levels by 2020. While additional measures promulgated under the AB 32 mandate may be implemented to further reduce future GHG emissions associated with the 2012 General Plan, the level of potential reductions is not known, and, therefore, not quantified. Therefore, it is not anticipated that existing state or federal measures would reduce GHG emissions associated with implementation of the 2012 General Plan below the threshold of significance.

**Table 4.5-4
2005, 2020, and 2035 Greenhouse Gas Emissions Summary with Mitigation Measures**

Sector	GHG Emissions (MT CO ₂ e)		
	Baseline (2005)	2020	2035
On-Road Transportation	81,123	62,136	63,208
Commercial/Industrial Energy	79,120	76,959	82,849
Residential Energy	69,258	66,621	73,639
Off-Road	17,381	19,157	20,640
Water	14,683	15,918	17,297
Solid Waste	13,942	15,025	16,325
Wastewater	2,589	2,790	3,031
Total Emissions with State-Implemented Reduction Measures	278,096	258,606	276,988
Percent Change from Baseline¹		-7.0%	-0.3%

¹ Construction-related emissions are included in total emissions and projection estimates.

MT CO₂e = metric tons of carbon dioxide equivalent

The total GHG emissions would exceed the recommended threshold of significance of 15 percent below 2005 levels; therefore, the 2012 General Plan would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The 2012 General Plan would result in a program-level impact and contribute to this **significant impact**; mitigation is required.

Conflict with any Applicable Plan, Policy, or Regulation

AB 32 states that the 1990 emissions limit would remain in effect “unless otherwise amended or repealed.” However, unlike the specific requirements and timelines for achieving GHG emissions reductions by 2020, AB 32 did not provide specific timelines for ARB to develop recommended GHG reductions beyond 2020. Although ARB has not developed an emissions forecast beyond the year 2020, emissions levels are closely tied to population growth and development, and the state is expected to continue to grow beyond 2020. Therefore, it is likely that additional reduction measures, policies, or regulations would be necessary to maintain a 1990 emissions limit beyond 2020.

Further, the Scoping Plan reiterates the state’s role in the long-term goal established in Executive Order S-3-05, which is to reduce GHG emissions 80 percent below 1990 levels by 2050. The Scoping Plan states that this will be achieved through development of new (non-fossil-fuel based) technologies and a “shift into a landscape of new ideas, clean energy, and green technology.” While the Scoping Plan does not demonstrate or recommend measures that would achieve the 2050 target, it repeatedly states that the measures “put the state on a path to meet the long-term goal” and “set the state on a trajectory toward 2050.”

The Scoping Plan includes a discussion of GHG reductions beyond 2020, to 2030, stating that to be on the trajectory toward the 2050 goal, statewide emissions would need to be reduced by an average of 4 percent per year between 2020 and 2030; it further states that this goal is achievable through expanding the programs identified in the Scoping Plan. The Scoping Plan does not recommend measures for meeting any specific GHG emissions limits beyond 2020; rather, it presents an example mix of programs already identified in the Scoping Plan that could be expanded to provide additional GHG reductions. The example included measures that would be implemented at the state, regional, and local levels to:

- Further limit emissions through a cap-and-trade system
- Expand the Renewable Portfolio Standard
- Further reduce the carbon intensity of transportation fuels
- Reduce the passenger-vehicle fleet
- Increase energy efficiency
- Continue land-use and transportation policies that reduce VMT and shift travel modes

While this example mix of programs does not constitute specific recommendations, ARB will update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process.

The Scoping Plan recognizes Executive Order S-3-05's long-term goal, but states that measures needed to achieve the 2050 goal are "too far in the future to define in detail" and does not present an example framework for achieving this goal.

The Scoping Plan did not directly create any regulatory requirements for the City or for projects anticipated under the 2012 General Plan. However, regulatory changes would affect GHG emissions rates from vehicles used by residents and businesses. Regulatory changes could affect GHG emissions rates associated with electricity demand created by proposed 2012 General Plan land uses. Project land uses would be required to comply with future regulatory changes, as appropriate.

Similar to the state, the City anticipates growth and, therefore, GHG emissions, beyond 2020, as shown in Table 4.5-3. The measures described in the Scoping Plan are designed to meet emissions goals by 2020. In general, the measures do not become increasingly stringent after 2020, and, given growth in the City, the reduction percentage declines after 2020 (Table 4.5-4).

Similar to the programs identified in the Scoping Plan, the programs identified in the 2012 General Plan are expandable and provide a framework for meeting future GHG emissions limits. However, since ARB has not prepared a plan beyond 2020, it is unknown at this time the level of reductions that may be achieved by state measures. In addition, ARB has not established a statewide or community-wide GHG emissions limit beyond 2020. Therefore, the timing and level of reductions needed beyond 2020 is uncertain, as is the City's role in developing local measures to parallel the state's efforts, and the **impact would be significant**; mitigation would be required.

Risk of Physical Harm Related to Impacts from Climate Change

Due to historic and current emissions, some impacts of climate change are predicted to be unavoidable. Because of this, it is important that the City account for these impacts in any future plans. In the study on regional impacts to the San Diego area, the California Energy Commission (CEC 2009) lists possible impacts that will affect La Mesa, including decreased water supply, increased risk of wildfires, increased risk of heat-related public health impacts, and increased strain on the regional ecosystem.

The City has taken multiple actions to help overcome these impacts, listed below:

- Water supply: Through 2012 General Plan policies in the Conservation and Sustainability Element (CS 1-3-1 and CS 1-3-2), the City will support regional and local water efficiency efforts and encourage the use of recycled water where applicable.
- Wildfire risks: Policies S 4-2-1 and S 4-2-2, included in the Safety Element of the 2012 General Plan, work to mitigate wildfire risk in La Mesa.
- Public health: The City has partnered with the County of San Diego and San Diego Gas & Electric (SDG&E) to set up cooling centers in and around La Mesa. These will provide at-risk citizens the ability to escape the heat.
- Ecosystem: As stated in the Recreation and Open Space Element of the 2012 General Plan (policies RO 2-1-1, RO 2-1-2, and RO 2-1-3), the City will work to preserve and restore open space and natural lands, where feasible. These efforts, in conjunction with other regional efforts such as San Diego County's MSCP, will assist in the preservation of existing ecosystems.

Although it is not possible to predict the level of impact to the City due to climate change, the policies and actions listed above would help mitigate changes anticipated by 2035. Therefore, there would not be a significant risk of physical harm related to impacts from climate change. The impact is **less than significant**.

4.5.5 Mitigation Measures

Implementation of the following mitigation measures would reduce potential impacts from GHG emissions.

GHG-1 Develop and Adopt a Climate Action Plan

The City shall prepare and adopt, within 18 months from adoption of the 2012 General Plan, a plan to reduce GHG emissions (i.e., a CAP) that complies with the requirements of CEQA Section 15183.5. The CAP will include, at a minimum, the following features:

- Quantified GHG emissions, both existing and projected over a specified time period. The City currently has an emissions inventory that was updated as part of the analysis above and could be used as the baseline emissions inventory for a CAP. The City shall confirm that the methodology and assumptions are consistent with current industry standards at the time of CAP preparation, including approaches or protocols recommended for local governments by ARB.

- Establish a GHG emissions limit, below which GHG emissions resulting from implementation of the 2012 General Plan would not be considered cumulatively considerable, including achieving 15 percent reduction from 2005 emissions levels by 2020.
- Establish policies, measures, and actions that will be implemented to reduce GHG emissions in the City that will achieve the specified emissions target.
- Implement a mechanism to monitor progress, and, if the CAP is not achieving specified emissions limits, update the CAP.

4.5.6 Significance After Mitigation

Emissions Levels 15 Percent Below 2005 Levels by 2020

Adherence to SDAPCD rules and regulations and 2012 General Plan policies, and implementation of Mitigation Measure GHG-1 would reduce construction and operational GHG emissions impacts associated with implementation of the 2012 General Plan. The City would achieve 7 percent reductions from baseline levels by 2020 by applying GHG emissions reductions that would result from existing federal and state measures. Implementation of additional measures developed in the CAP (Mitigation Measure GHG-1) would result in reductions that, at a minimum, would meet the performance measure of 1990 levels by 2020, or 15 percent below 2005 levels by 2020. However, the level of GHG emissions reductions that may be achieved through state programs and measures beyond 2020 are unknown. Therefore, the level of reductions needed at the local level beyond 2020 are uncertain, and the cumulatively considerable incremental contribution to the increase in GHG emissions represented by implementation of the 2012 General Plan would be **significant and unavoidable** after mitigation.

Conflict with any Applicable Plan, Policy, or Regulation

Implementation of Mitigation Measure GHG-1 would comply with the 2020 target identified in AB 32 and the Scoping Plan. However, reductions beyond 2020 are uncertain at this time, as is the City's role in developing local measures to parallel the state's efforts; this impact would be **significant and unavoidable** after mitigation.

Risk of Physical Harm Related to Impacts from Climate Change

Implementation of the 2012 General Plan would not increase the risk of physical harm related to impacts from climate change. Impacts would be **less than significant**.