

**APPENDIX C**

**GREENHOUSE GAS  
TECHNICAL REPORT**



**GREENHOUSE GAS ANALYSIS  
FOR THE  
GENERAL PLAN UPDATE  
LA MESA, CALIFORNIA**

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## **GREENHOUSE GAS ANALYSIS**

### **INTRODUCTION**

Emissions of greenhouse gases (GHGs) have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Global climate change also has the potential to affect rainfall and snowfall (leading to changes in water supply and runoff), affect temperatures and habitats (affecting biological resources and public health), and result in sea level rise (resulting in flooding of low-lying areas).

Legislation, regulations, and executive orders on the subject of climate change have established a Federal and Statewide context and process for developing an enforceable cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, the California Environmental Quality Act (CEQA) requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis. Small contributions to this cumulative impact of global climate change (from which significant effects are occurring and are expected to worsen over time) may be potentially significant.

The City of La Mesa proposes the adoption and implementation of the updated City of La Mesa 2012 General Plan (2012 General Plan) in the City of La Mesa, California (City). The primary objective of the 2012 General Plan is to serve as the blueprint for future growth and development. As a blueprint for the future, the plan contains policies and programs that provide decision-makers with a solid basis for decisions related to land use, development and public investment in infrastructure and facilities. The 2012 General Plan includes interrelated policies and programs to reinforce and build on the City's visions for its future.

This report discusses global climate change and existing GHG emission sources; summarizes applicable Federal, State, and local regulations; and analyzes potential construction-related and long-term operational GHG impacts resulting from development of the 2012 General Plan. The 2012 General Plan anticipates that development will occur intermittently until 2035. Therefore, the purpose of this analysis is to describe the existing climate conditions and analyze potential Program-level GHG impacts to global climate change upon complete implementation of the 2012 General Plan.

## **PROJECT DESCRIPTION SUMMARY**

### **REGIONAL SETTING AND PROJECT SITE**

The City of La Mesa (City) is located in central San Diego County, approximately 12 miles east of downtown San Diego (Figure 1). The City is surrounded by the City of San Diego to the west and north, the City of El Cajon and the unincorporated communities of Mount Helix, Casa Del Oro and Spring Valley to the east, and the City of Lemon Grove to the south. Regional motor vehicle access is provided by Interstate 8 and State Routes 94 and 125. Regional transit access is provided by the San Diego Metropolitan Transit System light rail (trolley) Orange and Green lines and five bus routes. There are no public or private airports located within the City. La Mesa does fall within the Airport Influence Area (AIA) for two airports that serve small aircraft. Gillespie Field and Montgomery Field are located six and ten miles, respectively, outside City limits.

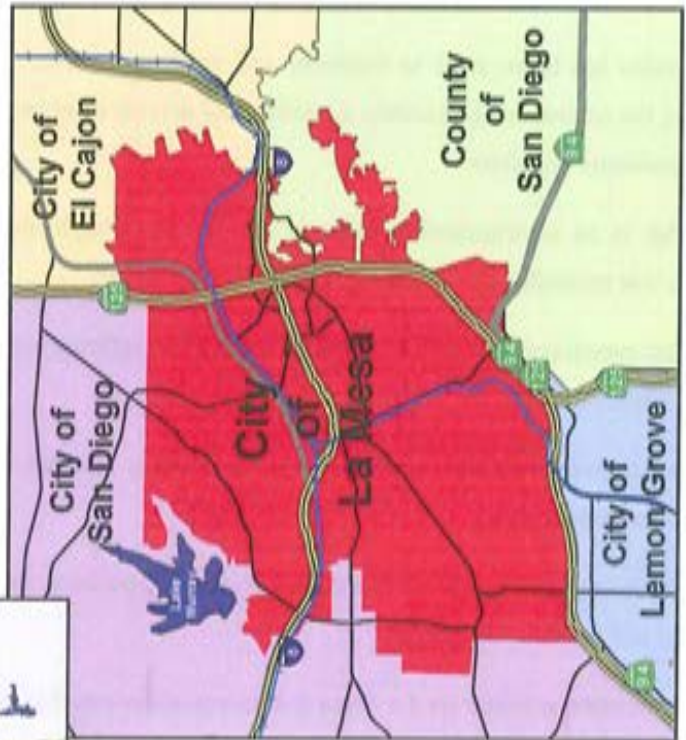
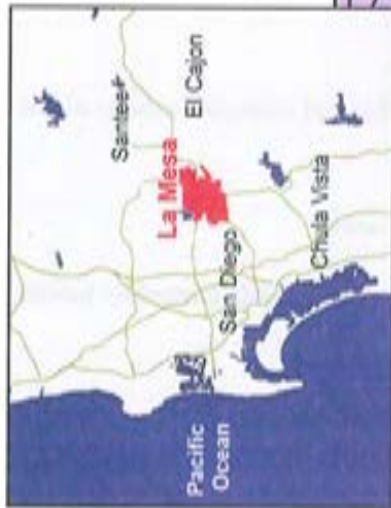
The planning area for La Mesa encompasses the corporate city limits, approximately 9.2 square miles or 5,876 acres. The City's Sphere of Influence (SOI) is coterminous with the City limits.

### **PURPOSE AND OBJECTIVES OF THE PROJECT**

The 2012 General Plan serves as the blueprint for future growth and development and contains policies and programs that provide decision-makers with a solid basis for decisions related to land use, development and public investment in infrastructure and facilities. The 2012 General Plan includes inter-related policies and programs to reinforce and build on the City's visions for its future. Visions contained in the General Plan have evolved over many years of public input. These visions are:

1. A City that works together with the community to achieve common goals which include a safe and healthy environment, state-of-the-art resources and technology, unsurpassed quality of life and an efficient and effectively run government organization.
2. A City where local governmental services, including police, fire and recreation meet the needs of its citizens.
3. A City where municipal buildings, parks, streets and other public facilities are well maintained.
4. A City where sound economic development practices have retained and attracted many successful businesses providing jobs for its citizens and a sound revenue base for City operations.





- Legend**
- San Diego Region
  - City of La Mesa
  - City of San Diego
  - City of El Cajon
  - City of Lemon Grove
  - County of San Diego
  - Oceans / Lakes
  - Freeways
  - Highways
  - Light Rail Transit
  - Major Road

**Figure 1**  
Vicinity Map

Source: City of La Mesa

5. A City which has maintained and improved its downtown as a focal point for community heritage as well as a place for operating a business, shopping, celebrating and living.
6. A City where the important travel corridors are tree line boulevards serving a rich mix of residential and commercial land uses, with infrastructure and amenities that support all modes of travel.
7. A City where travel is safe and easily accommodated whether by car or transit, on a bike or as a pedestrian.
8. A City where a natural landscape of rolling hills and canyons has provided a beautiful setting for its many well maintained residential neighborhoods, parks and open spaces.
9. A City which has taken steps to conserve and enhance its local resources, safeguard human health and the environment, maintain a healthy and diverse economy, and improve the livability for all community members.
10. A City that is an environmental leader in the region through implementation of sustainable principles that maintain and enhance quality of life in the City.
11. A City that encourages active and healthy lifestyles by offering a diverse range of recreational activities and facilities.
12. A City which recognizes the value of its natural assets and has taken steps to conserve the quality of its environment.
13. A City that recognizes its own history, and preserves and integrates its history in a variety of residential and commercial settings.
14. A City that creates a future for La Mesa that incorporates tangible and intangible aspects of our past.
15. A City that is a quiet and safe place to live, work, play, or go to school.
16. A City where the public is protected from both natural hazards and hazards created by human activities.
17. A City where the citizens are prepared for disasters and emergency situations.

18. La Mesa is the healthiest and most livable City in the San Diego region. It is a City that promotes an active lifestyle, social interaction, and healthy eating for all citizens, and where gardening and other types of urban farming are encouraged.
19. A City where everyday trips can be accomplished by walking, biking, or taking transit.
20. A City where children are safe to play in their neighborhoods, and where parks and recreational programming for all ages are available for all residents.
21. A City that encourages sustainable development principles to foster economic vitality, the health of the community and the natural environment.
22. A City that provides safe and decent housing opportunities for all its residents, offering a range of housing options.

## **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 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 (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

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. The California Air Resources Board (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 (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O).
- *Electricity:* Use and production of electrical energy (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O).
- *Industry:* Primarily stationary sources (e.g., boilers and engines) associated with process emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O).
- *Commercial and Residential:* Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O).

- *Agriculture:* Agricultural sources that include off-road farm equipment, irrigation pumps; crop residue burning (CO<sub>2</sub>), and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH<sub>4</sub> and N<sub>2</sub>O).
- *High-Global-Warming-Potential Gases:* Refrigerants and electrical insulation (e.g., SF<sub>6</sub>), among other sources.
- *Recycling and Waste:* Waste management facilities and landfills; primary emissions are CO<sub>2</sub> from combustion and CH<sub>4</sub> from landfills and wastewater treatment.

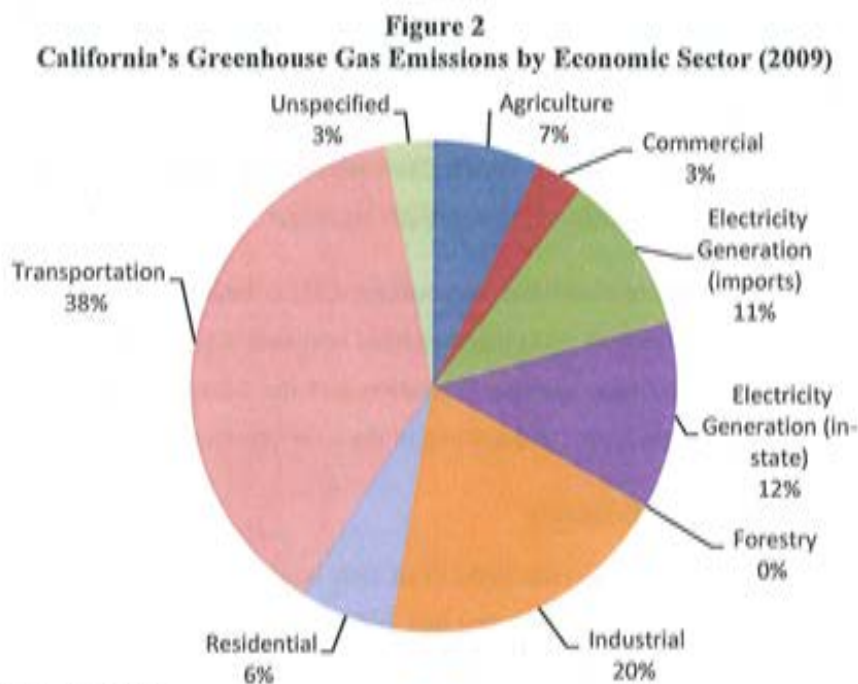
Emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion. CH<sub>4</sub> is largely associated with agricultural practices, livestock grazing, and landfills. N<sub>2</sub>O is also largely attributable to agricultural practices and soil management. CO<sub>2</sub> sinks, or reservoirs, include vegetation and the ocean, which absorb CO<sub>2</sub> through sequestration and dissolution, respectively, and are two of the most common processes of CO<sub>2</sub> uptake.

#### **State Greenhouse Gas Emissions Inventory**

California produced 453 million metric tons (MMT) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) in 2009 (ARB 2011). CO<sub>2</sub>e 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 CO<sub>2</sub>e takes the contributions to the greenhouse effect of all GHG emissions and converts them to the equivalent effect that would occur if only CO<sub>2</sub> 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 CH<sub>4</sub> has the same contribution to the greenhouse effect as approximately 21 tons of CO<sub>2</sub>. Therefore, CH<sub>4</sub> is a much more potent GHG than CO<sub>2</sub> 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% of total GHG emissions in the state (ARB 2011), as shown in Figure 2. The next largest-emitting sectors were the electric power sector (including both in-State and out-

of-State sources) (accounting for 23% of statewide emissions) and the industrial sector (accounting for 20% of statewide emissions).

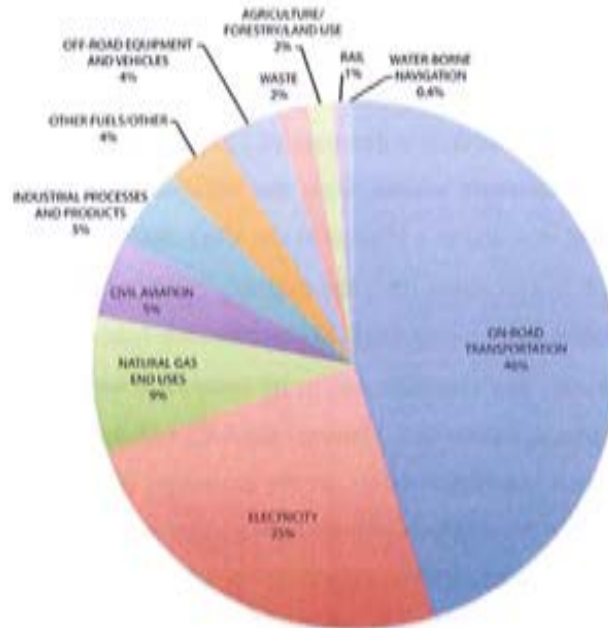


Source: ARB 2011

### Regional Greenhouse Gas Emissions Inventory

The University of San Diego's 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 3, total GHG emissions in San Diego County in 2006 were estimated to be 34 MMT CO<sub>2</sub>e. Similar to statewide emissions, transportation is the largest emissions sector, accounting for 16 MMT of CO<sub>2</sub>e, or 46% of total emissions. Energy consumption, including electricity and natural gas use, is the next largest source of emissions, at 34% of the total.

**Figure 3**  
**San Diego County's Greenhouse Gas Emissions by Economic Sector (2006)**



Source: Anders et al. 2008

### City of La Mesa Greenhouse Gas Emissions Inventory

In 2009, 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 emission from the transportation, residential, commercial/industrial, solid waste and wastewater sectors (La Mesa 2009). Since that time, guidelines and methodology have been established for conducting a GHG emissions inventory in California that provide consistency across jurisdictions and include those emissions over which the jurisdiction has control. For example, the original emissions inventory included emissions from vehicle miles traveled within the geographic boundary of the City. More recent guidance provided by the Regional Targets Advisory Committee (RTAC) Pursuant to Senate Bill 375 recommends transportation emissions should account for regional transportation by discounting trips that only start or end in the jurisdiction by half and exclude pass through trips from emissions calculations. In addition, emissions factors have been refined and updated since the original inventory. Therefore, as the City endeavored to

update their General Plan and were analyzing impacts related to GHG emissions, staff requested AECOM to review and update their inventory.

After review of the original 2005 GHG inventory, AECOM determined some emissions estimates should be updated to meet methodologies common in other GHG inventories and to meet guidance provided by state agencies. As shown in Table 1, there is a decrease of 257,732 MT CO<sub>2</sub>e between the original and updated inventory. The largest decrease comes from the transportation sector, which decreased by 276,713 MT CO<sub>2</sub>e; this decrease was due to a change in the VMT data used and the emissions factors to estimate emissions. A decrease in emissions from the original inventory also occurred in the residential energy sector. This change comes from a correction to the emission factor for natural gas. The emission factor for direct access electricity was also changed to be compliant with the California Air Resource Board's (ARB) Local Government Operations Protocol (LGOP) but due to the low amount of direct access energy this did not have a significant effect on the emissions estimate for the residential sector. These changes were also made for the commercial/industrial sectors and due to the large amount of direct access electricity in this sector this caused the emissions in this sector to increase from the original inventory. An additional sector, Potable Water, was added to the inventory. This sector quantifies emissions from the supply, treatment, distribution of potable water as well as the treatment of that water once it becomes wastewater. This sector was not included in the original inventory but is standard to include and provides the City a more complete view of how their actions contribute to climate change and because it is a scarce and important resource in California.

**Table 1**  
**Original and Revised La Mesa 2005 GHG Inventory**

Category	Original Inventory 2005 Emissions (MT CO <sub>2</sub> e)	Revised Inventory 2005 Emissions (MT CO <sub>2</sub> e)	Change (MT CO <sub>2</sub> e)	Change (%)
Transportation*	357,836	81,123	-276,713	-77%
Commercial/Industrial Energy	75,013	79,120	4,107	5%
Residential Energy	69,396	69,258	-138	-0.2%
Off Road	17,052	17,381	329	2%
Solid Waste	13,942	13,942	0	0%
Wastewater	2,589	2,589	0	0%
Potable Water	NA	14,683	14,682	100%
<b>Total</b>	<b>535,828</b>	<b>278,096</b>	<b>-257,733</b>	<b>-48%</b>

Notes: MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent; NA = not available. In the original inventory off road was a part of the transportation sector but was removed and put in its own sector for comparison with the updated inventory



## **REGULATORY SETTING**

Numerous Federal, State, regional, and local laws, rules, regulations, plans, and policies define the framework that regulates or will potentially regulate climate change. The following discussion focuses on climate change regulations applicable to the 2012 General Plan.

### **FEDERAL**

#### **Supreme Court Ruling**

The U.S. Environmental Protection Agency (EPA) is the agency responsible for implementing the Federal Clean Air Act (CAA). The U.S. Supreme Court ruled on April 2, 2007, that CO<sub>2</sub> is an air pollutant as defined under the CAA, and that EPA 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, EPA published the final version of the Mandatory Greenhouse Gas Reporting Rule in the Federal Register. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 MT or more of CO<sub>2</sub> 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% 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, EPA 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—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—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 EPA's proposed GHG emission standards for light-duty vehicles, which EPA proposed in a joint proposal including the Department of Transportation's (DOT) proposed Corporate Average Fuel Economy (CAFE) standards on September 15, 2009. In April 2010, the DOT and EPA established greenhouse gas emission and fuel economy standards for model year 2012-2016 light-duty cars and trucks. The emissions standards will require model year 2016 vehicles to meet an estimated combined average emissions level of 250 g CO<sub>2</sub> per mile, which is equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements. On August 28, 2012, the DOT and EPA 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 CO<sub>2</sub> 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, the DOT and EPA announced standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses on August 9, 2011.

#### **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 (U.S. Council on Environmental Quality). The draft guidance recognizes that many federal actions would result in the emission of GHGs, and that, where a proposed federal action may emit GHG emissions “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 MT 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**

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

**Assembly Bill (AB) 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), and beginning with the 2009 model year. For passenger cars and light-duty trucks, the GHG emission 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 EPA established GHG emission 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 as adopted in 2004, resulting in the first coordinated national program and is currently working with DOT and EPA 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 emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

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 emission targets, impacts of global warming on California's resources, and mitigation and adaptation plans to combat these impacts.

**AB 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 authorizes ARB to adopt market-based mechanisms, to achieve the GHG emissions limit;
- Reporting and monitoring of GHG emissions from major-emitting sources.

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 shall remain in effect beyond 2020 and that ARB shall provide guidance to achieving GHG emissions reductions beyond 2020. AB 32 also recognizes that the Governor's Climate Action Team's role in continuing to coordinate overall climate policy.

**AB 32 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% reduction from current levels or 30% reduction from a 2020 business-as-usual (BAU) 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 over half of the reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles;
- the Low-Carbon Fuel Standard;
- energy efficiency measures in buildings and appliances, and the widespread development of combined heat and power systems; and

- a renewable portfolio standard for electricity production.

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 emission sectors.

Since adoption of the Scoping Plan, ARB has reduced the 2020 BAU forecast for state emissions to 506.8 MT CO<sub>2</sub>e. This forecast has been 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% 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% by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early action measure after meeting the mandates in AB 32. ARB adopted the LCFS on April 23, 2009.

#### **Senate Bill 97**

SB 97, signed 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 (OPR) to prepare, develop, and transmit to the California Natural Resources Agency (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 OPR 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. OPR's CEQA Guidelines amendments have been incorporated into this analysis accordingly.

### **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), which will 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% by 2020 and 13% 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.

This bill 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 I 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 between 2011 and 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.

### **SB X1-2**

In 2002, California established a Renewables Portfolio Standard (RPS) 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% RPS 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% of their total energy supplies from certified renewable sources by December 31, 2020.

**REGIONAL AND LOCAL**

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% 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 or water shortages; and to increase the amount of foliage, especially street trees. As a result, potential GHG emissions impacts related to urban development are reduced.

*Circulation Element* – The Circulation Element promotes the use of public transit by working with the Metropolitan Transit System to increase the access, aesthetics and safety of trolley and bus infrastructure and ensuring that future developments improves access to public transit. The 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, the use of recycled water where feasible and the conservation of potable water, mixed use development along transportation corridors, the incorporation of energy efficiency practices in new and existing development and, increased recycling and composting to reduce the amount solid waste sent to landfills.

## **THRESHOLDS OF 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 California Scoping Plan, a significant impact related to greenhouse gas emissions would occur if implementation of the 2012 General Plan:

- Could implementation of the 2012 General Plan result in an emissions level that does not achieve a 15 percent reduction from baseline (2005) levels by 2020?
- Could implementation of the 2012 General Plan conflict with applicable plans and policies adopted for the purpose of reducing emissions of greenhouse gases?
- Could implementation of the 2012 General Plan result in additional risk of physical harm related to flooding, public health, wildfire risk, and other impacts resulting from climate change?

## **POTENTIAL IMPACTS**

The following sections discuss potential Program-level GHG impacts during implementation of the 2012 General Plan.

### **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 CO<sub>2</sub>. Although emissions of other GHGs, such as CH<sub>4</sub> and N<sub>2</sub>O, are important with respect to global climate change, the emission levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared with the level of CO<sub>2</sub> emissions, even when factoring in the relatively larger global warming potential of CH<sub>4</sub> and N<sub>2</sub>O.



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. Exhaust emission 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 would result in increased fuel efficiency, potentially more alternatively fueled equipment, and lower levels of GHG emissions.

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 State Implementation Plan, 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 activity 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 proposed General Plan would make an incremental contribution to GHGs that cause climate change. Buildout of the 2012 General Plan is not precisely known at this time and would depend on factors including 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 buildout. Construction-related emissions were estimated using the California Emission Estimator Model (CalEEMod) Version 2011.1.1, and detailed in Section 4.2. Construction-related emissions were assumed to occur equally over the buildout period of 2013-2035 and the total GHG-related emissions are provided in Table 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 2  
Construction-Related Greenhouse Gas Emissions**

	Metric Tons of Carbon Dioxide Equivalent <sup>1</sup>
<b>Total GHG Emissions 2013-2035<sup>2</sup></b>	<b>61,755</b>
<b>Amortized Annual Emissions</b>	<b>2,685</b>

<sup>1</sup>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 CO<sub>2</sub>e/yr = metric tons of carbon dioxide equivalent per year.

The City has not developed a CAP or a similar GHG emissions reduction plan for GHG emission-generating activity in 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% of construction waste must be diverted from landfills.

### Operational Emissions

Operational GHG emissions may be both direct, which occur within La Mesa's jurisdiction, and indirect emissions, emissions which occur outside of La Mesa's jurisdiction but are a result of activities that are located within the jurisdiction, and would be 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); and 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, but not to the 2005 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 Scoping Plan recommended target for local government municipal and community-wide emissions to parallel the State's target. GHG emissions were modeled for 2020 and 2035 based on expected growth in

population, land uses, and employment identified in the 2012 General Plan. Appendix C details the methodology and assumptions used to develop these projections. Table 3 presents operational emissions estimated for 2005 and projected for 2020 and 2035.

**Table 3**  
**2005, 2020 & 2035 Business-as-Usual Operational Greenhouse Gas Emissions Summary**

Sector	GHG Emissions (MT CO <sub>2</sub> e)		
	2005	2020	2035
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	298,523	327,493	352,493
City of San Diego (City) emissions	100,000	100,000	100,000

Notes: MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

As shown in Table 3, total GHG emissions are approximately 298,523 and 327,493 MT CO<sub>2</sub>e 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% of the emissions. The next largest contributor to emissions is the transportation sector, which represents about 28% of total emission in 2020 and 2035.

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 at this time, 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, Regulatory Setting. 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 implementation of the 2012 General Plan if those implementing laws and regulations are developed before construction or operation begins.

Table 4 shows the effects these mitigation measures would have on La Mesa's GHG emissions. While the mitigation measures would decrease emissions from the BAU estimates presented in Table 2, the emissions reductions would not be sufficient to meet the threshold of reducing emission by 15% 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 implementation of the 2012 General Plan, the level of potential reductions is not known, and, therefore, not quantified.

Therefore, it is not anticipated that existing state and federal measures would reduce GHG emissions associated with the 2012 General Plan below the threshold of significance.

The total GHG emissions would exceed the recommended threshold of significance of 15% below 2005 levels by 2020; therefore, implementation of 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.

**Table 4  
2005, 2020 & 2035 GHG Emissions Summary with Mitigation Measures**

Sector	Emissions (Metric Tons CO <sub>2</sub> e)		
	2005	2020	2035
Transportation	81,123	62,136	63,208
Commercial/Industrial Energy	79,120	76,959	82,849
Residential Energy	69,258	66,621	73,639
Area Sources (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
<b>Total Emissions</b>	<b>277,096</b>	<b>238,115</b>	<b>267,029</b>
<b>Percentage Change from 2005 to 2020</b>		<b>-14%</b>	<b>-3%</b>

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**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 the year 2020. Therefore, it is likely 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 EO S-3-05, which is to reduce GHG emissions 80% 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 four percent per year between 2020 and 2030 and 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:

- Further limiting emissions through a cap-and-trade system
- Expanding the Renewable Portfolio Standard
- Further reducing the carbon intensity of transportation fuels
- Reducing the passenger vehicle fleet
- Increasing energy efficiency
- Continuing land use and transportation policies that reduce VMT and shift travel modes

While this example does not constitute specific recommendations, ARB will update the plan at least once every five years to evaluate progress and developing future inventories that may guide this process.

Finally, the Scoping Plan recognizes EO S-3-05's long-term goal; however 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 emission rates from vehicles uses by residents and business. Regulatory changes could affect GHG emissions rates associated with electricity demand created by proposed General Plan land uses. Project land uses will 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 3. The measures described in the Scoping Plan are designed to meet emissions goals in 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).

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 State-wide 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, and 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 that they adopt. In the study on regional impacts to the San Diego area the CFC (CFC 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 ecosystems.

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 which are included in the Safety Element of the 2012 General Plan work to mitigate the wildfire risk of La Mesa.
- Public health: The City has partnered with the County of San Diego and San Diego Gas and Electric to set up cooling centers in and around La Mesa. These will provide at risk citizens the ability to escape the heat during the hottest parts of the day.
- 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 the Counties Multiple Species Conservation Plan, will assist in the preservation of existing ecosystems.

Although it is not possible to predict the level of impacts the City will have due to climate change, the policies and actions listed 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.

## **MITIGATION MEASURES**

Implementation of the following mitigation measures will reduce potential impacts. Individual development projects will be required to undergo project-specific environmental review and mitigation measures will be identified to reduce any project-specific significant impacts.

### **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 (Climate Action Plan [CAP]) that complies with the requirements in 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 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% 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 limit.
- Implement a mechanism to monitor progress and, if the plan is not achieving specified emissions limits, to update the CAP.

## **IMPACT AFTER MITIGATION**

### **Emissions level 15 percent Below 2005 Levels by 2020**

Adherence to SDAPCD rules and regulations, 2012 General Plan policies, and implementation of Mitigation Measure GHG-1 would reduce the construction and operational GHG emissions impact associated with implementation of the 2012 General Plan. By applying GHG emissions reductions that would result from existing federal and state measures, the City will achieve 7% reductions from baseline levels by 2020. Implementation of additional measures developed in the CAP shall meet, at a minimum, the performance measure of 1990 levels by 2020 or equivalently, 15% 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 and this impact would be significant and unavoidable after mitigation.

### **Risk of Physical Harm Related to Impacts from Climate Change**

Impacts are less than significant and no mitigation is required.



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