

## 12 CLIMATE CHANGE ELEMENT

### *A. Background Information*

The Earth's climate has always evolved—the extremes of the 100,000-year ice-age cycles in both climate and climate change emissions over the last half million years are well documented. The period of the last 10,000 years has been warm and stable, and the last millennium, over which current societies have developed, has been one of the most stable climates observed.

Yet, during the late 20<sup>th</sup> century and the beginning of the 21<sup>st</sup> century, we have observed a rapid change in the climate and climate change pollutants that is attributable to human activities. These recent changes in greenhouse gases (GHGs) exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone.

Today there is broad scientific consensus that humans are changing the chemical composition of our atmosphere through the buildup of GHGs<sup>1</sup>. Activities such as fossil fuel combustion, deforestation, and other changes in land use result in the accumulation of GHGs such as carbon dioxide (CO<sub>2</sub>) in our atmosphere.

The principle GHGs are listed below. The potency of a given gas in heating the atmosphere is defined as its global warming potential (GWP). The GWP for certain GHGs other than carbon dioxide (CO<sub>2</sub>) are commonly converted into carbon dioxide equivalents to allow for the summation of different greenhouse gas emissions into a single total. This takes into account the differing GWP of different gases. For example, the Intergovernmental Panel on Climate Change (IPCC) finds that methane has a GWP of 21 over a 100-year time horizon. Thus emission of one ton of methane is represented as the emission of 21 tons of CO<sub>2</sub>. When available, the GWP for the non-CO<sub>2</sub> GHGs described below is included.

---

<sup>1</sup> The best broad summary of the current scientific understanding of Climate Change is the 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) Intergovernmental Panel on Climate Change. See: *Climate Change 2007: The Physical Science Basis, Summary for Policy Makers. (Working Group 1 Fourth Assessment Report)*. Available: <http://www.ipcc.ch/SPM2feb07.pdf>.

### *Carbon Dioxide (CO<sub>2</sub>)*

In the atmosphere, carbon generally exists in its oxidized form, as CO<sub>2</sub>. Increased CO<sub>2</sub> concentrations in the atmosphere have been primarily linked to increased combustion of fossil fuels from both transportation and energy generation and consumption.

### *Methane (CH<sub>4</sub>)*

Methane is produced during anaerobic decomposition of organic matter in biological systems. Decomposition occurring in landfills accounts for the majority of anthropogenic CH<sub>4</sub> emissions in California and in the United States as a whole. Agricultural processes such as enteric fermentation (fermentation that takes place in the digestive systems of some types of animals such as cows), manure management, and rice cultivation are also significant sources of CH<sub>4</sub> in California. Methane has a GWP equivalent to 21 tons of CO<sub>2</sub> over a 100-year time horizon.

### *Nitrous Oxide (N<sub>2</sub>O)*

The primary sources of anthropogenic N<sub>2</sub>O emissions in California are agricultural soil management and fossil fuel combustion in mobile sources. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N<sub>2</sub>O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Nitrous oxide has a GWP equivalent to 310 tons of CO<sub>2</sub> over a 100-year time horizon.

### *Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF<sub>6</sub>)*

HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol. PFCs and SF<sub>6</sub> are generally emitted from various industrial processes including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. The GWP

equivalency to CO<sub>2</sub> for these gasses varies greatly between 140 and 23,900 tons over a 100-year time horizon.

### *Other Radiatively Important Gases*

In addition, there are a number of man-made pollutants, emitted primarily as by-products of combustion (both of fossil fuels and of biomass), that have indirect effects on terrestrial or solar radiation absorption by influencing the formation or destruction of other climate change emissions. These include carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds, and sulfur dioxide (SO<sub>2</sub>).

### *Aerosols*

Aerosols are extremely small particles or liquid droplets found in the atmosphere. Various categories of aerosols include naturally produced aerosols (e.g., soil dust, sea salt, biogenic aerosols, and volcanic aerosols), and anthropogenic aerosols (e.g., sulfates, ammonium nitrate, industrial dust, and carbonaceous aerosols including black carbon and organic carbon). Anthropogenic aerosols are derived directly or indirectly from transportation, coal combustion, cement manufacturing, waste incineration, and biomass burning.

### *Water Vapor*

Water vapor is the most important contributor to the natural greenhouse effect; however, human activities do not seem to be appreciably changing the atmospheric concentration of water vapor in any direct way on the global average.

An increase in GHG emissions results in an increase in the Earth's average surface temperature, which is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., in a manner commonly referred to as *climate change*.

Climate change may impact the natural and human environment in California in the following ways, among others:

- Rising sea levels along the California coastline may increase the risk of inundation;
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent would increase the potential for ozone production, increase summer energy demand, stress water supplies, and increase health risks;
- An increase in heat-related human deaths, infectious diseases and a higher risk of respiratory problems caused by deteriorating air quality;
- Reduced snow pack and stream flow in the Sierra Nevada mountains, affecting winter recreation and water supplies;
- Potential increase in the severity of winter storms, affecting peak stream flows that may increase the risk of flooding;
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission [CEC] 2005). As such, the number of people potentially affected by climate change as well as the amount of anthropogenic (human produced) GHG emissions are expected to increase unless steps are taken to reduce emissions. Similar changes as those noted above for California would also occur in other parts of the world with regional variations in resources affected and vulnerability to adverse effects.

### *California Assembly Bill 32*

As of January 2009, there have been no significant environmental regulations enacted in the United States at the national level specifically designed to reduce greenhouse gas emissions. In April 2007, the U.S. Supreme Court determined that the U.S. Environmental Protection Agency has the regulatory authority to list GHGs as pollutants under the federal Clean Air Act, but the U.S. Environmental Protection Agency has not yet proposed nor adopted any regulations of GHGs to date. Numerous proposals are being considered in the U.S. Congress to regulate GHGs, but no legislation has been adopted. Although GHG emissions reductions are currently not addressed in federal regulation, state and local governments are passing legislation and adopting action plans to reduce GHG emissions.

The State of California passed into law the Global Warming Solutions Act of 2006, commonly referred to as Assembly Bill 32 (AB 32), which is designed to significantly reduce GHG emissions generated by California in the short- and long-term. Other states and cities are also adopting action plans to reduce GHG emissions within their jurisdictions.

AB 32 recognizes that GHG reduction in California will require similar reductions by other states and countries in order to be meaningful. As such, California's prospective emission reductions specified in AB 32 are an attempt to establish a global leadership role on climate change abatement and to act as a blueprint for other states and nations to reduce their respective GHG emissions. The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by the year 2020. The bill requires the California Air Resources Board (CARB) to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions, as specified.

The following are the key milestones of AB 32.

- June 30, 2007—Identification of “discrete early action greenhouse gas emissions reduction measures.” *This has been completed.*

- January 1, 2008—Identification of the 1990 baseline GHG emissions level and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions. *This has been completed.*
- January 1, 2009—Adoption of a scoping plan for achieving GHG emission reductions. A draft scoping plan was released in June 2008. *The final scoping plan was adopted by CARB in December 2008.*
- January 1, 2010—Adoption and enforcement of regulations to implement the “discrete” actions.
- January 1, 2011—Adoption of GHG emission limits and reduction measures by regulation.
- January 1, 2012—GHG emission limits and reduction measures adopted in 2011 become enforceable.

The bill authorizes the use of market-based compliance mechanisms, including a cap and trade program. Market-based approaches to GHG emission reduction are currently in use in Europe and have been used in the United States to address acid rain precursors. A GHG cap and trade program is also being implemented in the Northeastern and Mid-Atlantic states as part of the Regional Greenhouse Gas Initiative and has been recently proposed by the Western Climate Initiative for the western U.S. and Canada, including California. There is also specific language to support the use of AB 32 to abate other air quality issues, such as ozone, particulate matter, and toxic air contaminant exposures “to the extent feasible and in furtherance of achieving the statewide GHG emissions limit.”

### ***Statewide Emissions***

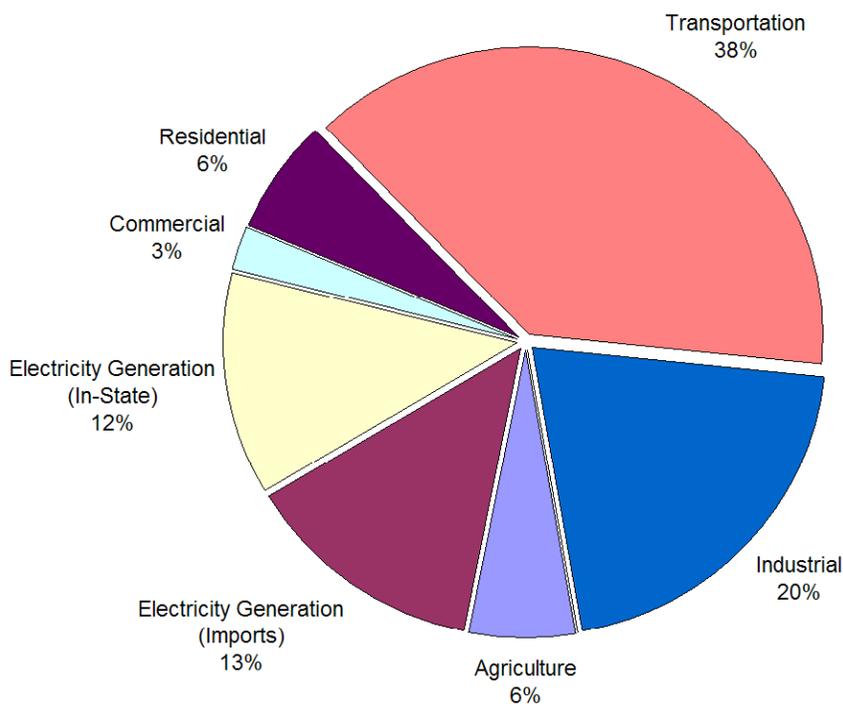
CARB estimates that the 1990 statewide emissions level was 427 million metric tons of carbon dioxide equivalents<sup>2</sup> (MMT<sub>CO<sub>2</sub>e</sub>) and the 2004 emissions level was 480 MMT<sub>CO<sub>2</sub>e</sub>. The total reductions needed to achieve a level of 427 MMT<sub>CO<sub>2</sub>e</sub> by 2020 are determined

---

<sup>2</sup> As described in the Background Information section, GHG emissions other than CO<sub>2</sub> are commonly converted into carbon dioxide equivalents which take into account the differing GWP of different gases.

from the difference between the projected 2020 business-as-usual (BAU)<sup>3</sup> emissions level and the proposed 2020 limit of 427 MMTCO<sub>2</sub>e. CARB developed a preliminary estimate of approximately 600 MMTCO<sub>2</sub>e for the 2020 business-as-usual projection. This 2020 business-as-usual estimate is being assessed further by CARB during 2008. Based on current estimates, California emissions overall will need to be reduced approximately 28% by 2020 compared to a business-as-usual scenario to meet the requirements of AB 32 or about 15% less than current (2008) emissions.

**FIGURE 12-1 2004 CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR (480 MMTCO<sub>2</sub>E NET EMISSIONS)**



<sup>3</sup> “Business as usual” (BAU) conditions are defined as year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. BAU condition forecasts presume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today. Specifically, BAU conditions do not include current or proposed General Plan policies and currently adopted (AB 1493, SB 1078/SB107) mandates nor do they include GHG reduction measures included in the CARB Draft Scoping Plan (June 2008) which are not yet enacted in statute. This is consistent with the way in which CARB estimated BAU emissions for 2020.

## ***B. Inventory for the City of Livermore***

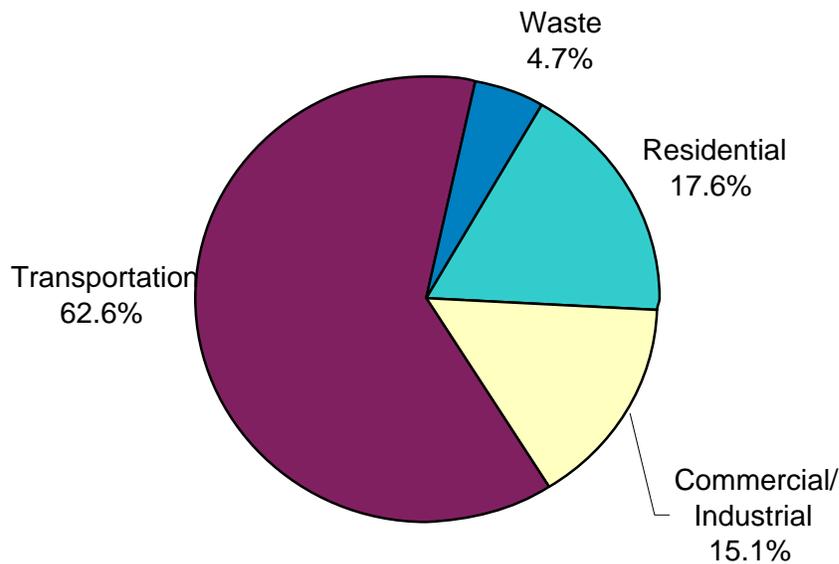
The International Council for Local Environmental Initiatives (ICLEI) assisted the City of Livermore in the preparation of a GHG inventory for the 2005 year for the City of Livermore using ICLEI's Clean Air and Climate Protection (CACP) Software. The emissions coefficients and quantification method employed by the CACP software are consistent with national and international inventory standards established by the IPCC (1996 revised IPCC Guidelines for the Preparation of National Inventories) and the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form 1605).

The GHG inventory consists of two distinct components: one for the Livermore community as a whole defined by its geographical borders, and the second for emissions resulting from the City of Livermore's municipal operations. The municipal inventory is effectively a subset of the community-scale inventory (the two are not mutually exclusive). The methodology for preparation of the 2005 GHG inventory is presented in greater detail in ICLEI's report on the City of Livermore's 2005 emissions inventory (ICLEI 2008). The City of Livermore's 2005 inventory is based on the best available information. As discussed above, CARB's most recent statewide GHG inventory was completed in 2004 and is continuing to assess the State's 2020 GHG business-as-usual projection. As more GHG inventory information is made available, the City can incorporate this information into the preparation of its Climate Action Plan.

### ***Livermore Community Emissions Inventory***

The 2005 community GHG inventory for the City of Livermore includes GHG emissions from fuel burned for mobile transportation; residential, commercial, and industrial use of electricity and natural gas; and from the landfilling of solid waste.

FIGURE 12-2 COMMUNITY GREENHOUSE GAS (GHG) EMISSIONS BY SECTOR (2005)



The community of Livermore emitted approximately 692,000 metric tons of CO<sub>2</sub>e in the year 2005. As shown below, vehicles on roads and state highways in Livermore are by far the largest source of Livermore’s community emissions (63%). Emissions from the built environment (residential, commercial, and industrial sectors) collectively account for around one-third (33%) of community emissions. The rest of Livermore’s emissions are from waste sent to landfills (5%) by Livermore residents and businesses (ICLEI 2008).

Comparing the City of Livermore to California, the 2005 emissions related to the City represent approximately 0.12 % of 2004 California emissions (CARB has not yet released a 2006 emissions estimate).

**TABLE 12-1 INVENTORY OF 2005 LIVERMORE COMMUNITY GREENHOUSE GAS EMISSIONS BY SECTOR (METRIC TONS OF CO<sub>2</sub>E)**

Source	GHG Emissions	Percent of Total
Residential	121,572	18%
Commercial/Industrial	104,183	15%
Transportation <sup>4</sup>	433,051	63%
Waste	32,783	5%
<b>Total</b>	<b>691,589</b>	<b>100%</b>

***Government Operations Emissions Inventory***

Government operations in the City of Livermore emitted approximately 6,300 metric tons of CO<sub>2</sub>e in the year 2005. The 2005 government GHG inventory for the City of Livermore includes emissions resulting from electricity and natural gas used for government buildings and public lighting; fuel consumption of the vehicle fleet; electricity used in water pumping and irrigation; and the landfilling of solid waste.

The largest source of emissions from government operations is the City building facilities, emitting 54% of greenhouse gases. The City fleet is the second largest source of emissions, emitting about one-fifth (18%) of all emissions. Indirect GHG emissions from electricity generation due to public lighting electricity consumption is also a significant source of emissions (14%); electricity used for water pumps and irrigation controls makes up 5% of

---

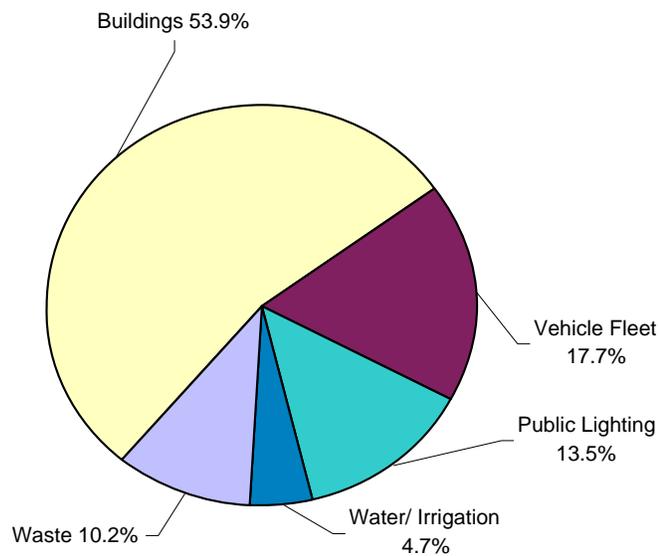
<sup>4</sup> This inventory includes the emissions of traffic along roadways within the City boundaries, which includes the through traffic using I-580 and SR-84. Thus, the transportation emissions noted above are not all related to the residential, commercial, industrial, and institutional traffic originating or ending in the City of Livermore. In subsequent inventory development, the City intends to examine the separate transportation emission related to through traffic versus locally derived traffic to understand better the GHG emissions that can be influenced through City action. Given that the City cannot control the traffic along state highways, reduction of through traffic emissions is not included in the reduction commitment included in this Element. As described below, the City intends to work with regional transit providers, Caltrans, and neighboring jurisdictions to promote regional alternatives to vehicle travel, but the responsibility for reduction of through traffic GHG emissions is beyond the jurisdiction of the City.

the total, and waste created through government operations makes up the remaining 10% of the total emissions (ICLEI 2008).

**TABLE 12-2 INVENTORY OF 2005 CITY OF LIVERMORE GOVERNMENT GREENHOUSE GAS EMISSIONS BY SECTOR (METRIC TONS OF CO<sub>2</sub>E)**

Source	GHG Emissions	Percent of Total
Buildings	3,378	54%
Vehicle Fleet	1,111	18%
Public Lighting	844	14%
Water	297	5%
Waste	642	10%
<b>Total</b>	<b>6,272</b>	<b>100%</b>

**FIGURE 12-3 GOVERNMENT OPERATIONS GHG EMISSIONS BY SECTOR (2005)**



### *C. City of Livermore Existing Policies and Programs*

The City of Livermore has previously adopted many General Plan policies and programs that would reduce greenhouse gas emissions associated with current and future development. This Climate Change Element, one of the first of its kind in California at a municipal level, provides additional policies to support AB 32 and the City's on-going efforts to reduce GHG emissions. The City's existing policies and programs that reduce potential GHGs associated with current and future development are presented in the tables below.

### *D. Goals, Objectives, Policies, and Actions*

**Goal CLI-1: By 2020, the City of Livermore shall seek to reduce greenhouse gas emissions under the control of the City to a level 15% less than 2008 levels<sup>5</sup> in order to support State implementation of the Global Warming Solution Act of 2006 (AB 32).**

**Objective CLI-1.1 Adopt a Climate Action Plan by 2010 that will help the City address climate change.**

#### Policies

- P1. CLIMATE ACTION PLAN - The City will prepare and adopt a Climate Action Plan (CAP) by 2011. The CAP shall include an inventory of the 2008 level of GHG emissions within the City. The CAP shall set out specific policies and actions to be undertaken by the City to reduce GHG emissions under the control

---

<sup>5</sup> The California Air Resource Board adopted the Climate Change Proposed Scoping Plan in December 2008, which is the state's policy document for implementing AB-32. In the Scoping Plan, CARB calls for reducing California greenhouse gas emissions to 1990 levels by 2020, which means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from today's levels (p. ES-1). CARB specifically "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020" (p. 27). The goal for the City of Livermore matches CARB's recommendation for local communities.

of the City to a level 15% less than 2008 conditions in order to support State implementation of AB 32. The policies and actions will include incentives, actions, and requirements to reduce the City's GHG emissions, the GHG emissions of the private sector, and actions that the City will take in concert with public agencies, the private sector, and other stakeholders to reduce GHG emissions. Development of the CAP will include a public and stakeholder process.

- P2. CLIMATE ACTION PLAN - Include mechanisms to ensure regular review of progress toward the GHG emission reduction targets established by the CAP, report progress to the public and responsible officials, and revise the plan as appropriate, using principles of adaptive management.
- P3. CLIMATE ACTION PLAN - Work with other local and regional governments to assess federal and state programs and their impact on GHG emissions and mitigation efforts.
- P4. DEVELOPMENT PROJECT FRAMEWORK - Evaluate the GHG emissions impacts of proposed developments through the CEQA process. Require preparation of project level GHG emissions inventories. Establish requirements for tiered significance thresholds for the evaluation of projects and identification and application of mitigation.

The interim threshold shall be residential projects of 50 units or more and commercial/industrial projects of 50,000 square feet or more. Based on review of recent projects, projects of this size constitute a large percentage of new development in the City of Livermore.

The following are the initial best management practices (BMPs) to be implemented for all new developments of 50 residential units or greater and/or 50,000 square feet of commercial/industrial use until completion of the Climate Action Plan, which may alter or amend these BMPs:

- Climate BMP No. 1 – Energy-efficient buildings in compliance with the Livermore Green Building Ordinance.
- Climate BMP No. 2 – Use of energy-efficient appliances that meet Energy Star standards.
- Climate BMP No. 3 – Incorporate solar roofs into commercial development. Residential development to be “solar-ready” including proper solar orientation (south facing roof area sloped at 20° to 55° from the horizontal), clear access on the south sloped roof (no chimneys, heating vents, plumbing vents, etc.), electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water system, and space provided for a solar hot water storage tank.
- Climate BMP No. 4 – Incorporate transit and bicycle/pedestrian connections into development.
- Climate BMP No. 5 - For Commercial/Industrial projects, prepare and implement a voluntary Trip Reduction Plan (TRP) consisting of, at a minimum, marketing of commute alternatives, ride-matching assistance, and transit information. Suggest TRP targets to reduce vehicle trips per employee that are a reduction of 15% within 5 years and 25% within 10 years compared to business as usual.
- Climate BMP No. 6 – Incorporate priority facilities for alternative-fueled and carpool vehicles, such as priority parking and recharging facilities.
- Climate BMP No. 7 – In compliance with the Construction and Demolition Ordinance, recycle construction materials and divert construction waste from disposal as feasible.
- Climate BMP No. 8 – Include recycling facilities to provide for commercial and/or community recycling of plastic, paper, green waste, and food waste.

- Climate BMP No. 9 –Incorporate “heat island” treatments including cool roofs, cool pavements, and strategically placed shade trees.
- Climate BMP No. 10 –Use landscaping that meets the City’s *Water Efficient Landscape Ordinance*.

The tiered thresholds and best management practices will be established and revised, respectively, during the preparation of the Climate Action Plan and may differ from these interim requirements.

The project review process relative to GHGs shall include the following:

- Assessment of the project’s estimated GHG emissions without mitigation;
- Formulation of any project-level proposed measures necessary for the project to meet any applicable GHG reduction targets;
- Assessment of the project’s VMT and formulation of proposed measures that would reduce the project’s VMT;
- Assessment of the transit needs of the project and identification of the project’s proposed fair share of the cost of meeting such needs;
- Assessment of the project’s estimated energy consumption, and identification of proposed measures to ensure that the project conserves energy and uses energy efficiently;
- Formulation of proposed measures to ensure that the project is configured to allow the entire development to be internally accessible by all modes of transportation.

The City Council shall consider the feasibility of imposing conditions of approval, including mitigation measures pursuant to CEQA, based on the studies and recommendations of City staff described above.

The City Council shall consider including in any development approvals, or development agreements, that the City grants or enters into during the time the City is developing the Climate Action Plan, a requirement that all such approvals and development agreements shall be subject to ordinances and enactments adopted after the effective date of any approvals of such projects or corresponding development agreements, where such ordinances and enactments are part of the Climate Action Plan.

- P5. EDUCATION/AWARENESS - The City will launch a climate protection action-awareness campaign as well as support and coordinate other similar efforts in order to make residents, public institutions and businesses aware of the link between their everyday energy use and GHG emissions. The campaign, which will employ a variety of media, will use that awareness to stimulate positive actions by individuals and organizations that reduce GHG emissions.

**TABLE A. EXISTING CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS RELATED TO ADOPTING A CLIMATE ACTION PLAN THAT WILL HELP THE CITY ADDRESS CLIMATE CHANGE**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
Green Resource Center	Since 2005, the Green Resource Center within the City Hall Permit Center has offered comprehensive public resources and staff assistance regarding green planning/building, recycling, reuse and conservation.

### *Land Use*

The existing General Plan policies and programs (Table B) support higher density in the Downtown and in other targeted areas of the City, an urban growth boundary, density bonus transfers, jobs/housing balance, and mixed use development. The following additional policies and programs will help the City to reduce GHG emissions by reducing emissions associated with vehicle travel.

**Objective CLI-1.2 Encourage and provide greater support for infill, mixed use, and higher density development in order to reduce GHG emissions associated with vehicle travel.**

#### Policies

- P1. MIXED USE INTENSIFICATION—Conduct a survey of sites that currently do not permit any residential or residentially mixed uses in order to identify additional sites that have the potential for mixed-use development as follows:
- a. Site-selection efforts should be focused on areas located near to the Downtown and in or near commercial corridors, shopping centers, and mixed use areas.
  - b. For each identified site, analyze current zoning and development standards to identify constraints that may limit mixed-use development.
  - c. Develop criteria for site identification, such as proximity to transit, availability of commercial services, compatibility with surrounding land uses and scale of development, lack of land use conflicts, and applicability of CEQA Section 15332 (“Infill Development Projects”).
- P2. BASELINE DENSITIES—Expand allowable baseline densities of mixed-use designations located within close proximity and/or within activity centers that can

be served efficiently by public transit and alternative transportation modes. Update the zoning code accordingly.

- P3. DENSITY—Investigate feasibility of establishing minimum residential densities and parking maximums in areas designated for transit-oriented, mixed use development to ensure higher density in these areas.
- P4. DENSITY—Promote infill, mixed use, and higher density development located in close proximity to existing public transportation corridors by providing incentives for these projects.
- P5. FORM BASED CODE—The City shall update the Livermore Planning and Zoning Code (LPZC) to include Form Based Code Principles and application areas, which helps to create a more predictable public realm primarily by controlling physical form, with a lesser focus on land use, through City regulations.
- P6. HOUSING ELEMENT UPDATE—As part of the Housing Element update, the City shall reiterate/reinforce policies that promote infill, mixed use, and higher density development.

**TABLE B. EXISTING LAND-USE-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
<b>MIXED USE INTENSIFICATION</b>	
Housing Element Policy 1.1	Land density inventory
Housing Element Program 1.1.2	Redesignation of non-residential sites
<b>INFILL</b>	
LU-1.1, P1	Development adjacent to urban areas
LU-1.1, P2	Urban growth boundary

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
LU-5	Coherent pattern of urban uses
CC-1.1, P2	Protection of hills
CC-1.1, P6	Non-urbanized land surrounding Livermore
<b>DENSITY</b>	
Housing Element Policy 1.1	Land density inventory
Housing Element Program 1.1.1	Inventory of residential lands/densities
Housing Element Program 1.1.3	Downtown specific plan update
Housing Element Program 1.1.4	Consistency with general plan density
Housing Element Program 1.1.5	Support of mixed-use development
Housing Element Policy 2.1	Adequate housing and infrastructure
Housing Element Program 2.1.1	Housing Implementation Program
Housing Element Policy 3.1	Promotion of affordable housing
Housing Element Program 3.1.3	Density Bonuses
LU-1.2, P1	Mixed-use neighborhoods
LU-1.3, P1-P4	Density transfers
LU 1.4, P3	Neighborhood shopping centers
LU-1.5, P2	Publicly-owned lands
LU-2.1, P7	Housing Implementation Program/growth determination
LU-2.1, P8	Protection of agriculture
LU-2.1, P9	Downtown redevelopment and housing
LU-2.1, P13	Balanced communities
LU-2.1, P15	Housing allocations/TDC Ordinance
LU-3.1, P1	Specific plan/Greenville BART TOD
LU 13	Support of wineries
LU-14	Support of agriculture
LU-15	Maintain a land trust
LU-16	Support of agriculture

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
LU-17	Growth boundary and open space buffers
LU-18	Urban growth boundary
LU-19	Support of agriculture and responsible development
LU-20	Support of agriculture and natural resources
N-1.1, P6	Support of active uses in downtown area
CC-2.1, P6	Multi-modal transportation, mixed uses, and pedestrian scale neighborhoods
CC- 4.17	Coordination of scenic routes and recreation areas
INF-7.3, P3	Schools and public recreation areas/connections
INF-7.3, P4	School locations and multi-modal access
ED-2.1, P1	Diversification of employment
ED-2.1, P2	Jobs/housing balance
ED-2.1, P3	Maintain range of housing opportunities
Housing Implementation Program	Facilitates a process for competing building proposals to earn preference points for: 1) exceptional architectural design and amenities that meet or exceed green building ordinances and 2) compliance with General Plan guidelines and community vision.

### *Transportation*

The existing General Plan policies and programs (Table C) support mixed use development, expansion of transit, promotion of alternative transportation modes, transit oriented developments, downtown development, and bicycle/pedestrian friendly roadways. The

following additional policies and programs would provide further support for transit and other alternative modes of travel, alternative fuels, and reduction of vehicle miles travelled.

**Objective CLI-1.3: Support measures that encourage alternative modes of transportation and alternative fuels in order to reduce emissions associated with vehicle travel.**

Policies

- P1. ALTERNATIVE FUEL VEHICLE INFRASTRUCTURE/ PUBLIC—Provide the necessary facilities and infrastructure to encourage the use of City-owned low or zero-emission vehicles such as electric vehicle charging facilities and conveniently locate alternative fueling stations.
- P2. ALTERNATIVE FUEL VEHICLE INFRASTRUCTURE/PRIVATE—Promote the necessary facilities and infrastructure to encourage the use of privately owned low or zero-emission vehicles such as electric vehicle charging facilities and conveniently locate alternative fueling stations.
- P3. ALTERNATIVE FUELS—Collaborate with local and regional governments and businesses to support expanded use of renewable fuels by, for example, helping to coordinate and leverage the purchasing power of multiple jurisdictions/businesses and to properly site alternative fuel infrastructure.
- P4. VMT REDUCTION—Evaluate the feasibility of a VMT reduction target in concert with other Alameda County municipalities. Evaluate the feasibility of a VMT target for new development below “business as usual” VMT levels. If determined feasible, adopt a VMT reduction target in conjunction with adoption of the Climate Action Plan. Part of the evaluation of a VMT reduction target would require an analysis of the City’s existing multi-modal circulation infrastructure such as pedestrian routes, bicycle lanes, and transit services and operations. Monitor VMT every two years to evaluate the effectiveness of VMT reducing strategies in this element.

- P5. TRANSIT PROMOTION—Evaluate and consider multi-modal transportation benefits to all City employees, such as free or low-cost monthly transit passes. Encourage employer participation in similar programs. Encourage new transit/shuttle services and use. Encourage appropriate use of telecommuting for municipal employees.
- P6. BICYCLE USE—Evaluate and consider free bicycles for public use and/or charge a nominal fee for their use.
- P7. CAR SHARE—Encourage community car-sharing and carpooling.
- P8. PARKING—Build upon the City’s Downtown Parking Study and adopt a comprehensive parking policy for the entire City that encourages carpooling and the use of alternative fuel vehicles and transportation. The feasibility of potential use of parking fees/parking maximums shall also be evaluated.
- P9. TRAFFIC SIGNALING—Evaluate potential efficiency gains from further signal synchronization and transit signal priority.
- P10. ANTI-IDLING REQUIREMENTS—Limit idling of municipal, community, and/or commercial vehicles for new development through the CEQA process. Support CARB anti-idling requirements and provide signage in key areas where idling that is not consistent with CARB requirements might occur.<sup>6</sup>
- P11. NEW ROAD WIDTHS—To reduce heat gain from pavement, consider reducing street pavement in new developments.

---

<sup>6</sup> CARB anti-idling requirements apply to diesel-fueled commercial motor vehicles with gross vehicular weight ratings over 10,000 pounds that are or must be licensed for operation on highways as well as in-use sleeper berth equipped diesel trucks. CARB requirements specify that these drivers shall not idle for more than five minutes at any location, except as noted in the California Code of Regulations. Idling restrictions do not apply, for example, when the vehicle must remain motionless due to traffic conditions or during an official traffic control signal over which the driver has no control. For additional information regarding idling, please see CARB’s website: <http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm#OVERVIEW>

- P12. CONGESTION PRICING—Work with regional partners to analyze and develop potential congestion road pricing scenarios for the I-580 HOT (High Occupancy Toll) lanes and address any legal and implementation issues. Report findings and recommendations on pricing options as well as mechanisms for applying part or all of the road-pricing revenues to fund transit and other alternatives to single occupancy vehicles.
- P13. TRANSPORTATION PLANNING—Work with county, regional, and state governments to account for greenhouse gas emissions in evaluations of land use and regional transportation infrastructure investments.
- P14. TRANSPORTATION FUNDING—Consider a public transportation impact fee on new development in order to provide additional capital improvements to support increased public transit service.
- P15. TRIP REDUCTION ORDINANCE—The city shall evaluate the feasibility of implementing a voluntary trip reduction ordinance that promotes the preparation and implementation of a trip reduction plan (TRP) for large employers (100 employees or more) in the City. The TRP should include, at a minimum, performance of annual employee commute surveys, marketing of commute alternatives, ride matching assistance, telecommuting, and transit information. The suggested performance target for the TRPs is a reduction of the vehicle trips per employee by 15% in five years and 25% in ten years.
- P16. CARBON FOOTPRINT FEE—Explore and consider a carbon footprint fee on new developments to fund transit, other alternatives to single occupancy vehicles, and alternative fuel infrastructure.
- P17. TRANSIT REAL-TIME INFORMATION - Promote real-time information for transit and ridesharing.

**TABLE C. EXISTING TRANSPORTATION-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
<b>ALTERNATIVE FUEL VEHICLE INFRASTRUCTURE</b>	
OSC-6.1, A.1	Incentives for alternative fuel vehicles
OSC-7.1, A2, A3	City ownership of alternative fuel vehicles
<b>BICYCLE USE</b>	
CIR-3.3, P3	Bicycle and pedestrian facilities services
<b>CAR SHARE</b>	
CIR-3.2, A1-A2	Vehicle trip reduction strategies
<b>OTHER</b>	
CIR 1.1, P3	Location of high traffic generating uses and major streets
CIR 1.1, P4	Mixed-use and transit oriented development
CIR-3.1, A1	Promotion of local transit
CIR-3.1, A2	Support of future transit facilities/use
CIR-3.1, A3	Extension of BART
CIR-3.1, A4	Exploration of other rail options
CIR-3.1, A5	I-580 and HOV, BART and auxiliary lanes
CIR-3.1, A6	Expansion of ACE passenger railroad service
CIR-3.1, A7	Coordination with regional transit providers
CIR-3.3, P1	Bike and trails system
CIR-3.3, P2	Bicycle, pedestrian, and equestrian in City planning
CIR-3.3, P4	Bicycle and pedestrian safety

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
CIR-3.3, P5	Maintenance of roadway/multi-use trails
CIR-3.3, P6	Bikeway system and community input
CIR-3.3, A1	Master plan for Citywide bicycle and trails network
CIR-3.3, A2	Development of bicycle and multi-use trails
CIR-3.3, A3	Acquisition of land for trails
CIR-4.1, P2	No LOS for the downtown area
CIR-6.1, P1	Pedestrian access primary mode of travel
CIR-6.1, P2	Roadway subordinate to pedestrian environment
CIR-9.2, A1	Shared parking arrangements
CIR-10.1, P1	Truck traffic not allowed in residential areas
OSC-6.1, P7	Development/use of regional/local transit
City charging stations	The City maintains charging stations at City Hall and the Maintenance Service Center for two electric trucks it currently operates.
Hybrid vehicles	The City operates seven hybrid vehicles

### ***Water Efficiency***

Water is an important and scarce resource and the importation of water to the City requires energy which produces GHG emissions. As a result, water conservation and efficiency both help to reduce GHGs.

The existing General Plan policies and City programs (Table D) support water conservation and efficiency. The following additional policies and programs will help to further the efficient use of water and thus the reduction water delivery GHG emission associated with pumping.

**Objective CLI-1.4 Enhance existing water efficiency and conservation measures and adopt new programs that encourage recycled water use and water efficiency in order to reduce energy and GHGs associated with water use.**

Policies

- P1. RECYCLED WATER USE—Update the Recycled Water Master Plan to establish additional areas and uses that could also be required to use recycled water.
- P2. RECYCLED WATER USE—Assess the feasibility of using advance treatment of recycled water with microfiltration or reverse osmosis for future potable water use. Assess associated energy/GHG tradeoffs vs. out of basin water supply.
- P3. WATER EFFICIENCY—Review and update the City's water efficient landscape ordinance.
- P4. WATER EFFICIENCY—Promote water audit programs that offer free water audits to single family, multi-family and commercial customers.
- P5. WATER EFFICIENCY—Participate in and support regional programs and projects that target the improvement and conservation of the region's groundwater and surface water supply. Also consider programs to collect stormwater for landscape watering.

**TABLE D. EXISTING WATER EFFICIENCY-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
INF-1.2	Land use planning/water service coordination
INF-1.3, P2	Recycled water requirements
INF-1.3, P3	Water conservation measures
INF-1.3, P4	Compliance with water efficient landscape ordinances
INF-1.3, A1	Incentives for reduced water consumption
INF-1.3, A2	Water conservation measures for new development
INF-1.3, A3	Reclaimed water and irrigation
Landscape Water Conservation System	Many civic areas are connected to the Landscape Water Conservation System via a centralized irrigation system that schedules irrigation cycles based on evaporation rates provided by a weather station. To minimize water waste, sites are frequently checked and automatically shut off when a broken pipe or large flow increase is detected.
Recycled Water System	Recycled water has been produced at the Livermore Water Reclamation Plant for over 30 years. City water treatment facilities utilize effluent filters and an ultra-violet disinfection system. The recycled water system contains over 14 miles of pipeline, a pump station, and a 1.9-million-gallon

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
	<p>reservoir. Livermore Municipal Water delivers high-quality recycled water for irrigation and fire protection to Las Posits Golf Course, Las Posits Community College, and commercial customers in northwest Livermore. The Oaks, west of Isabel Avenue, will be Livermore’s first development to use recycled water for toilet flushing. The City continues to seek new ways to use recycled water and conserve potable water. The 2004 Recycled Water Master Plan allocates improvements necessary to supply recycled water for projected General Plan land uses within the recycled water area. The Wastewater Connection Fee Study and Capital Improvement Plan have been updated to provide funding for the \$4.2 million recycled water system capacity improvements stipulated in the Master Plan. Overall, the existing system is sized well for ultimate build-out. Future plans include filter and pumping improvements at the Water Reclamation Plant and construction of a new 1.9-million-gallon storage reservoir.</p>
<p>Landscape efficiency/water conservation literature</p>	<p>The City provides literature to new homeowners on how to maximize landscape efficiency and water conservation.</p>

## *Energy*

The General Plan energy related policies and programs (Table E) associated with climate change support alternative energy production, green building practices, and the reduction of air pollution and energy consumption. The following additional policies will help to promote energy-efficiency and expand the use of renewable energy.

**Objective CLI-1.5 Expand and adopt new policies and programs that will help to provide energy efficiency alternatives to fossil fuel use and reduce consumption in order to reduce greenhouse gas emissions.**

### Policies

- P1. ALTERNATIVE ENERGY DEVELOPMENT PLAN—Explore possibilities for alternative energy production and establishing City-wide measurable goals. Develop an Alternative Energy Development Plan to identify the allowable and appropriate alternative energy facility types (i.e., solar photovoltaic (PV) on urban residential and commercial roofs and wind farms on the edge of town or in rural areas) and locations within Livermore as well as propose phasing and timing of alternative energy facility and infrastructure development. Continue to identify and remove regulatory or procedural barriers to producing renewable energy in building and development codes, design guidelines, and zoning ordinances. Work with related agencies such as fire, water, and health that may impact the use of alternative technologies. Develop protocols for alternative energy storage such as biodiesel, hydrogen, and/or compressed air. Establish a protocol for reviewing a proposed alternative energy project against existing City policies and ordinances. The Alternative Energy Development Plan shall identify optimal locations and best means to avoid noise, aesthetic, and other potential land use compatibility conflicts (e.g., installing tracking solar PV or angling fixed solar PV in a manner that reduces glare to surrounding land uses.)

- P2. RENEWABLE ENERGY PROMOTION—Expand incentives and goals for incorporating energy reducing practices into existing and proposed public and private developments and alternative energy vehicles. Consider potential public and private funding partnerships for solar roofs through a solar power loan program that would pay for the installation of solar panels and solar hot water systems for any homeowner or commercial building owner. For example, the owners of the home or the business building could retain ownership of the solar systems, by paying back the cost through an assessment on their annual property tax bill.
- P3. RENEWABLE ENERGY FOR MUNICIPAL FACILITIES—Explore using renewable energy and clean generation technologies such as solar, wind, biogas, or fuel cells to power City facilities where appropriate.
- P4. RENEWABLE ENERGY/REGIONAL COLLABORATION—Explore regional collaborations among local governments, special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop renewable energy policies and programs that are optimized on a regional scale.
- P5. ENERGY MANAGEMENT—Use Geographic Information Systems (GIS) to map and assess local renewable resources, the electric and gas transmission and distribution system, community growth areas anticipated to require new energy services, and other data useful to deployment of renewable technologies.
- P6. GREEN BUILDING ORDINANCE EXPANSION—City departments will work together to periodically review (approximately every five years) the City's Green Building Ordinances in order to expand LEED™ (Leadership in Energy and Environmental Design) or GreenPoint Rating System (or other) certification requirements to all new construction of private and public buildings.
- P7. ALTERNATIVE BUILDING MATERIALS—Encourage the use of cement substitutes and recycled building materials for new construction.

P8. GREEN BUSINESSES–The City shall support green businesses through the efforts of the Alameda County Green Business Program to recognize and assist businesses to operate in an environmentally friendly manner.

**TABLE E. EXISTING ENERGY-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
<b>RENEWABLE ENERGY</b>	
OSC-7.1, P1	Support of wind turbines
OSC-7.1, A1	Support of alternative energy sources
The Livermore and Pleasanton Solar Cities Program	The Livermore and Pleasanton Solar Cities Program is in the design stage to provide residents and businesses comprehensive assistance with the purchase and installation of photovoltaic systems. This is a privately operated program that is not managed by the City and is expected to establish a “Solar Buyers Club,” which would bring buyers and qualified contractors together, resulting in cost savings to consumers.
Livermore’s Green City Hall	In 2002, Livermore’s Green City Hall celebrated its “grand re-opening” after a major renovation that incorporated many sustainable building materials and practices to conserve natural resources. More than 75% of the original building shell was retained and more than half of demolition materials were salvaged or recycled. Green

<b>GENERAL PLAN POLICY OR CITY PROGRAM</b>	<b>BRIEF DESCRIPTION OF POLICY/PROGRAM</b>
	redesign features qualified the City to receive a \$30,000 rebate from PG&E. Since 2004, City Hall’s 75-Kilowatt Photovoltaic System has been generating 13.5% of the facility’s annual electricity needs and lowering power bills. Expandable to 100 kilowatts with additional solar panels, the \$880,000 installation cost was reduced by about \$335,000 through a PG&E (State mandated) rebate program.
ABAG Energy Watch Partnership Program	The City has participated in the ABAG Energy Watch Partnership Program since 2004 which has provided technical assistance toward achieving energy efficiency and cost savings in public facilities.
<b>GREEN BUILDING</b>	
LU-4.2, P2	“Green construction” and land development techniques
LU-4.2, P3	Incorporate LEED™ prerequisites and credits
CC-2.1, P5	Green building practices
INF-4.2, P3	City’s design review process
Civic Green Buildings Ordinance LEED requirement	The City’s existing Civic Green Buildings Ordinance (Muni Code 15.74) requires certain city projects to incorporate LEED™ green building measures. Projects following the LEED™ rating system, under this program, shall be required to have a LEED™ accredited professional on the

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
	project team.
Commercial and Residential Green Buildings Ordinance	The City’s existing Commercial and Residential Green Buildings Ordinance (Municode Chapter 15.76) requires new residential and commercial projects to incorporate green building measures.
<b>ALTERNATIVE BUILDING MATERIALS</b>	
Use of Rubberized Asphalt Concrete (RAC)	RAC is used on City high-volume/major arterial road paving projects and is implemented when the City receives significant grants for large projects due to the costs. RAC uses recycled tires to add rubber to a concrete mix. This practice reduces the stockpile of waste tires statewide and studies show that RAC-paved roadways are cost-effective and decrease road noise compared to other paving methods.
<b>OTHER</b>	
OSC-6.1, P1	Construction-period air pollution control plan
OSC-6.1, P3	Reduction of automobile-related emissions
OSC-6.1, P4	Industrial uses and pollution standards
OSC-6.1, P5	Increase of employment to population ratios
OSC-6.1, A2	Reduction of vehicle trips and increase of ridesharing
OSC-6.1, A3	State standards for emissions of air pollutants
OSC-6.1, A5	Coordination of control of fugitive dust

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
OSC-7.1, P2	Reduction of energy, air, land, and water impacts
Street-Level Imagery Project	Livermore’s award-winning Street-Level Imagery Project enables staff to inspect city streets via photo files from any computer on the City’s network. In addition to saving staff the time of site visits, this innovative system reduces City vehicle workload, fuel consumption and emissions.
Spare the Air program	The City is active in the Spare the Air program and the Tri-Valley Resources Subcommittee of the Bay Area Air Quality Management District. Since 2002, on declared Spare the Air days, City maintenance crews have been minimizing or eliminating turf mowing, paving work, and the use of two-cycle engines.

***Open Space/Conservation***

The existing General Plan policies and programs (Table F) support native and/or low water use vegetation, promote tree planting, and prohibit the use of invasive non-native plant species in new developments. The following additional policies and programs would increase the level of support for these initiatives.

**Objective CLI-1.6 Expand the number of trees in Livermore in order to provide a larger carbon sink<sup>7</sup> or area containing natural sources that retain more carbon than what those sources emit.**

---

<sup>7</sup> Carbon sinks, such as forests, oceans, and soils help to remove carbon from the atmosphere by sequestering carbon.

Policies

- P1. URBAN FORESTRY–Evaluate feasibility of expanding tree planting within the City during preparation of the Climate Action Plan including evaluation of potential carbon sequestration as well as GHG emissions associated with irrigation.
  
- P2. AGRICULTURAL LAND MANAGEMENT–Support the voluntary efforts of the wine industry and other agricultural businesses to promote land management activities that reduce GHG emissions and promote sequestration of carbon in agricultural soils.

**TABLE F. EXISTING OPEN SPACE/CONSERVATION-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
<b>URBAN FORESTRY</b>	
OSC-1.3, P1	Natural resource area linkages
National Arbor Day Foundation’s Tree City USA Program	Livermore has participated in The National Arbor Day Foundation’s Tree City USA Program for over 13 years. The City was recently awarded the Sterling Tree City USA designation for urban forestry achievements in education and public relations, planning and management, partnerships, and tree planting and maintenance.
Tree Preservation Ordinance	This ordinance establishes the policies, regulations, and standards for the protection of trees on any parcel of land within the City.

### *Waste Reduction*

The existing General Plan policies and City programs (Table G) support waste diversion and recycling goals. The following additional policies will expand the amount of waste diversion and recycling and the effectiveness of existing programs.

**Objective CLI-1.7 Expand methods to increase waste diversion and recycling goals in order to reduce GHGs associated with waste disposal.**

#### Policies

- P1. WASTE REDUCTION—Research, evaluate and report to the Council on best practices, innovations, trends and developments in waste-to-energy, climate-friendly building materials and waste reduction practices, as relevant to greenhouse gas emissions reduction. Promote regional development and use of new waste-to-energy technologies, waste reduction and climate-friendly materials as relevant to greenhouse gas emissions reduction.
- P2. WASTE REDUCTION—Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs.
- P3. WASTE REDUCTION—Support State legislative or regulatory efforts that will aid in achieving zero waste.
- P4. WASTE MANAGEMENT—Work with public and private waste disposal entities to reduce methane emissions released from waste disposal and promote methane recovery for energy production from other sources.

**TABLE G. EXISTING WASTE REDUCTION-RELATED CITY OF LIVERMORE GENERAL PLAN POLICIES AND CITY PROGRAMS THAT PROMOTE REDUCTIONS IN GREENHOUSE GAS EMISSIONS**

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
<b>WASTE REDUCTION</b>	
INF-8.2, A1	Purchase and use of recycled materials in City operations
Environmental Education for Kids (EEK) and Go Green Initiative	Education and Recycling Programs in Livermore Schools – For 14 years, Environmental Education for Kids (EEK) and, more recently, the Go Green Initiative have provided hands-on projects and assistance with on-site recycling and diversion programs. These programs promote the understanding and importance of environmental stewardship for students and school staff.
<b>WASTE DIVERSION</b>	
INF-8.1, P1	Meet/exceed State requirements
INF-8.1, P2	Alameda County Measure D waste diversion goal
INF-8.1, A1	Source reduction and recycling programs
INF-8.1, A2	On-site storage facilities for recycled materials
INF-8.1, A3	Expansion of recycling facilities
INF-8.2, A2	State requirements for recycled container enclosures
INF-8.2, A4	Development of procedures that increase recycling

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
PS-4.1, P6	Reduction of solid and hazardous wastes
PS-4.1, P8	Reuse and/or recycling of debris after a disaster
PS-4.1, A1	Hazardous materials and waste management plans
PS-4.1, A2	Access for disposal of household hazardous wastes
Annual electronic waste recycling events	Livermore has conducted annual Electronic Waste Recycling events for residents and businesses and will continue to provide support as needed as there are now frequent events held by private firms. These events enable participants to comply with State regulations that prohibit the disposal of e-waste in landfills.
E-waste and cell phones programs	The public has been able to drop off cell phones for free at City Hall since 2005. E-waste and cell phones are recycled domestically in a socially responsible manner.
City Resolution 2007-225	A 75% waste diversion goal by 2015 consistent with the Alameda County Waste Management Authority guidelines (Adopted by City Resolution 2007-225 in November 2007).
Community Recycling	More than 30 years ago, Livermore began Community Recycling—13 years before solid-waste diversion became mandatory statewide. Residential and commercial

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
	<p>recycling have evolved into Waste Management’s current “Single-Stream” Recycling Program. This program makes it easy and efficient for residents and businesses to mix recyclable materials in one cart or bin and has helped Livermore exceed State-mandated diversion goals. Between 2004 and 2006, Waste Management added both Residential and Commercial Food Scrap Recycling Programs. When customers recycle more, they can often reduce their costs, since rates are based on container size and pickup frequency for businesses.</p>
<p>Construction and Demolition (C&amp;D) Ordinance</p>	<p>In force since 2002, the Construction and Demolition (C&amp;D) Ordinance helps Livermore meet State mandates to divert at least 50% of solid waste from landfills through recycling and reuse.</p>
<p>Damaged asphalt recycling</p>	<p>The City has been using a cold milling machine since 2003 to remove and recycle approximately 3,000 tons of damaged asphalt—eliminating unnecessary landfill waste and associated high disposal fees.</p>
<p>Recycled Product Procurement Policy</p>	<p>In 1992, the Recycled Product Procurement Policy directed City staff to purchase recycled content products and encouraged City consultants, contractors and vendors to do the same. Examples of recycled content materials procured to date include office</p>

<i>GENERAL PLAN POLICY OR CITY PROGRAM</i>	<i>BRIEF DESCRIPTION OF POLICY/PROGRAM</i>
	<p>supplies, furniture, park benches, picnic tables, and school and park playground structures. To expand and strengthen this policy, the City is developing an Environmentally Preferable Practices Policy for City Council consideration. If approved, this policy would direct staff to, whenever feasible, purchase products that: are lead and mercury-free, energy and water efficient, reduce greenhouse gas emissions, include recycled content and/or durable and long-lasting features, minimize environmental pollutants and hazards to worker and public safety, use unbleached/chlorine-free manufacturing processes, agricultural fibers/residues, and sustainably harvested wood.</p>

(Reso. 2009-040)