CHAPTER

2 Air Quality and Climate Change Element

INTRODUCTION

Clean Air & Climate Smart

Burbank lies in the north central portion of the South Coast Air Basin (Basin), in a geographically challenged location east of the San Fernando Valley and the Santa Monica Mountains, south of the San Gabriel Mountains, and directly west of the Verdugo Mountains). Because Burbank lies upwind of numerous cities and freeways to the southwest, air pollution is trapped against the Verdugo Mountains. Burbank suffers from regional pollution problems and has several large emission sources within its boundaries: two major freeways, heavily traveled roadways, two major rail corridors, an airport with Amtrak and Metrolink train connections, and a power plant.

Air Basin Geography

Air quality has been a concern in Burbank and the Basin dating back to the 1940s, when smog was first recognized as a danger to human health and the environment. Efforts to eradicate smog and air pollutants have included both simple solutions (e.g., banning backyard trash burning; limiting emissions from incinerators) and major technological innovations (e.g., developing catalytic converters, reformulating gasoline). However, the absence of smoggy skies does not mean the risks and costs associated with poor air quality have been eliminated. Continued population growth and the dominance of the automobile introduce new challenges; fossil fuel combustion required to heat homes, power vehicles, and deliver water create a variety of pollutants, including carbon dioxide and other greenhouse gases (GHGs). These are not new pollutants, but they compound health risks and economic costs historically associated with poor air quality, driving advances in legislation, technology, and more sustainable ways to live.

Burbank and nearby areas of the South Coast Air Basin

Burbank's biggest challenge, as a prominent city in the most populous county in California, is how best to accommodate growth and encourage economic development, while protecting air quality and taking action to curb GHG emissions. Looking ahead to 2035, Burbank will transition to clean, efficient energy and transportation choices. With high-speed rail, electric trains, and zero-emission vehicles, people and goods will move more efficiently to, from, and through the community. Buildings and infrastructure will be energy efficient and comfortable. Natural resources will be preserved, and all of this will be accomplished without the costly health and environmental effects of air pollution.

Purpose and Statutory Requirements

The Air Quality and Climate Change Element is an optional general plan element. Section 65303 of the California Government Code enables a county or city to adopt "any other elements or address any other subjects, which, in the judgment of the legislative body, relate to the physical development of the county or city." An optional element must be consistent with the seven mandatory elements and, once adopted, carries the same legal weight as any of the mandatory elements.

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, acknowledged the threat that GHGs pose to the health, safety, and welfare of California communities, and established statewide targets for GHG emission reductions, requiring that emissions be reduced to 1990 levels by 2020. Previous executive orders, including Executive Order S-03-05, specified that statewide emissions should be reduced to 80% below 1990 levels by 2050. To meet the intent of this legislation, the City has prepared a Greenhouse Gas Reduction Plan (GGRP) as an implementing document for Burbank2035. The GGRP provides an inventory of current GHG emissions in Burbank. In addition, emission reduction measures and actions presented in the GGRP implement the goals, policies, and implementation actions of the Air Quality & Climate Change Element to reduce GHG emissions and improve overall air quality and environmental health.

Relationship to Other Elements

Realization of the goals and policies in this Element depends, in part, on consistency with the Land Use Element and Mobility Elements. The Land Use Element identifies desired future uses for all lands in Burbank, including housing, commercial and industrial uses, and parks and recreational facilities. Land use patterns established and maintained by Land Use Element policies directly influence the generation of air pollutants and GHGs. Similarly, as the Land Use Element defines land use patterns,

the Mobility Element defines traffic and circulation patterns for all modes of transportation. Efficient circulation can reduce vehicle miles traveled and associated emissions.

AIR QUALITY AND CLIMATE CHANGE GOALS AND POLICIES

Burbank's climate, character, and employment opportunities continue to attract new residents each year. Reducing air pollution and GHG emissions is critical to the health and well-being of Burbank residents and businesses. Promoting cleaner air quality will also reduce negative economic effects related to air quality, climate change, and harm to the environment and human health. Because air quality and climate change are regional and global issues, resolving them requires coordinated efforts on many scales. The region must be considered when goals, plans, and policies to improve air quality are developed, because polluted air circulates from one place to another throughout the Basin. However, local actions can have wide-reaching effects, and Burbank is committed to do its part.

Nighttime view of Burbank

GOAL 1 REDUCTION OF AIR POLLUTION

The health and sustainability of the city, county, and Basin are improved by planning and programs that reduce air pollutants. Policies that reduce fossil fuel combustion (by reducing vehicle miles traveled and promoting conservation and use of renewable energy) lessen adverse impacts on both air quality and climate change.

Policy 1.1 ***Coordinate air quality planning efforts with local, regional, state, and federal agencies, and evaluate the air quality effects of proposed plans and development projects.***

Policy 1.2 ***Seek to attain or exceed the more stringent of federal or state ambient air quality standards for each criteria air pollutant.***

Policy 1.3 ***Continue to participate in the Cities for Climate Protection Program, South Coast Air Quality Management District's (SCAQMD's) Flag Program, SCAQMD's Transportation Programs (i.e., Rule 2202, Employee Rideshare Program), and applicable state and federal air quality and climate change programs.***

Policy 1.4 ***Cooperate with the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and the SCAQMD to measure air quality at emission sources (including transportation corridors), and enforce the provisions of the Clean Air Act, as well as state and regional policies and established standards for air quality.***

Policy 1.5 ***Require projects that generate potentially significant levels of air pollutants, such as landfill operations or large construction projects, to incorporate best available air quality and greenhouse gas mitigation in project design.***

Policy 1.6 ***Require measures to control air pollutant emissions at construction sites and during soil-disturbing or dust-generating activities (i.e., tilling, landscaping) for projects requiring such activities.***

Policy 1.7 ***Require reduced idling, trip reduction, and efficiency routing of transportation for City departments, where appropriate.***

Policy 1.8 ***Continue to acquire alternative fuel vehicles like hybrid, natural gas, electric, or hydrogen-powered vehicles when adding to the City's vehicle fleet.***

Policy 1.9 ***Encourage the use of zero-emission vehicles, low-emission vehicles, bicycles, and other non-motorized vehicles, and car-sharing programs. Consider requiring sufficient and convenient infrastructure and parking facilities in residential developments and employment centers to accommodate these vehicles.***

Policy 1.10 ***Give preference to qualified contractors using reduced-emission equipment for City construction projects and contracts for services, as well as businesses that practice sustainable operations.***

Policy 1.11 ***Offer incentives for all City employees to use means other than a single-occupant vehicle for their daily work commute. Require large employers, defined with the City's Transportation Demand Management program to offer similar incentives to reduce employee vehicle trips.***

Policy 1.12 ***Provide public information describing air quality standards, health effects, and efforts that residents and businesses can make to improve regional air quality. Encourage businesses and residents to participate in SCAQMD's public education programs.***

GOAL 2 SENSITIVE RECEPTORS

Burbank is committed to reducing the exposure of sensitive receptors to toxic air contaminants and odors.

Policy 2.1 ***Mitigate emissions from retail food grilling and barbequing (indoor and outdoor) through the use of industry-specific equipment.***

Policy 2.2 ***Separate sensitive uses such as residences, schools, parks, and day care facilities from sources of air pollution and toxic chemicals. Provide proper site planning and design features to buffer and protect when physical separation of these uses is not feasible.***

Policy 2.3 ***Require businesses that cause air pollution to provide pollution control measures.***

Policy 2.4 ***Reduce the effects of air pollution, poor ambient air quality, and urban heat island effect with increased tree planting in public and private spaces***

Policy 2.5 ***Require the use of recommendations from the California Air Resources Board's*** Air Quality and Land Use Handbook ***to guide decisions regarding location of sensitive land uses.***

GOAL 3 REDUCTION OF GREENHOUSE GAS EMISSIONS

Burbank seeks a sustainable, energy-efficient future and complies with statewide greenhouse gas reduction goals.

Policy 3.1 ***Develop and adopt a binding, enforceable reduction target and mitigation measures and actions to reduce communitywide greenhouse gas emissions within Burbank by at least 15% from current levels by 2020.***

Policy 3.2 ***Establish a goal and strategies to reduce communitywide greenhouse gas emissions by at least 30% from current levels by 2035.***

Policy 3.3 ***Continue to participate in the Cities for Climate Protection program and applicable state and federal climate change programs.***

Policy 3.4 ***Reduce greenhouse gas emissions from new development by promoting water conservation and recycling; promoting development that is compact, mixed-use, pedestrian-friendly, and transit-oriented; promoting energy-efficient building design and site planning; and improving the jobs/housing ratio.***

Policy 3.5 ***Submit an annual report on implementation of the Greenhouse Gas Reduction Plan, in conjunction with the annual report to the City Council regarding implementation of Burbank2035.***

Policy 3.6 ***Reduce greenhouse gas emissions by encouraging the retrofit of older, energy inefficient buildings.***

Policy 3.7 ***Update Burbank's communitywide greenhouse gas emissions inventory every 3–5 years.***

Policy 3.8 ***Transition all economic sectors, new development, and existing infrastructure and development to low- or zero-carbon energy sources. Encourage implementation and provide incentives for low- or zero-carbon energy sources.***

Policy 3.9 ***Continue efforts to diversify Burbank Water and Power's energy portfolio beyond 2020.***

GOAL 4 CLIMATE CHANGE

Prepare for and adapt to anticipated effects of climate change.

Policy 4.1 ***Evaluate the potential effects of climate change on Burbank's human and natural systems and prepare strategies that allow the City to appropriately respond.***

Policy 4.2 ***Consult with state resource and emergency management agencies regarding updates to climate change science and development of adaptation priorities.***

AIR QUALITY AND GREENHOUSE GAS REDUCTION PLAN

The Basin includes the southern 2/3 of Los Angeles County, all of Orange County, and the western urbanized portions of Riverside and San Bernardino counties. It covers a total of 6,480 square miles, is home to more than 43% of California's population, and generates about 28% of the state's total emissions of criteria pollutants. Pollutant concentrations in parts of the Basin are among the highest in the nation.

Despite significant success in reducing overall pollution levels, air pollution continues to be an important public health consideration. Air quality monitoring shows that more than 90% of Californians breathe unhealthy levels of one or more air pollutants during some part of the year. Poor air quality is linked to a higher incidence of respiratory illnesses. ARB estimates that approximately 9,000 people in California die prematurely each year as a result of exposure to fine particle pollution. About 90% of California residents live in areas that exceed the state ambient air quality standards for fine particle pollution.

Criteria Air Pollutants

ARB and EPA currently focus on the following air pollutants as indicators of ambient air quality: ozone, particulate matter, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These

are the most prevalent air pollutants known to be hazardous to human health, and their effects have been extensively documented.

Ozone

Ozone is a photochemical oxidant that is not directly emitted into the air; rather, ozone is formed by chemical reactions between reactive organic gases and oxides of nitrogen (NO_X) in the presence of sunlight, creating smog. Reactive organic gases are volatile organic compounds that are emitted primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. Conditions for ozone formation are optimal in areas with low wind speeds or stagnant air, coupled with warm temperatures and clear skies. Peak ozone concentrations often occur far downwind of the precursor emissions, rather than close to the source. Ozone can adversely affect the respiratory system and aggravate asthma.

Particulate Matter

Particulate matter consists of small particles emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction, fires, and natural windblown dust. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. Fine particulate matter consisting of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less is referred to as $PM_{2.5}$. PM_{10} can result in adverse health effects, including those associated with toxic substances that may be found on the surfaces of particulate matter. Generally, effects resulting from exposure to elevated concentrations of PM_{10} and $PM_{2.5}$ may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis (the production of cancer), and premature death. $PM_{2.5}$ poses an increased health risk because the particles can deposit deep within the lungs and may contain substances that are harmful to human health.

Carbon Monoxide

CO is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels, primarily from mobile sources. Other sources of CO include wood-burning stoves, managed burning, and incineration. The highest CO concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. Adverse health effects associated with exposure to CO include dizziness, headaches, fatigue, and at higher concentrations, death. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas present in most urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal-combustion engines. Combustion devices emit primarily nitric oxide, which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of nitric oxide and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographic area may not be representative of the local NO_X emission sources. When inhaled, NO_2 can result in severe adverse health effects. Short-term effects include coughing, difficulty breathing, vomiting, headache, and eye irritation, during or shortly after exposure. Longer term effects, or effects occurring after prolonged exposure to NO_2, include chemical pneumonitis (inflammation of the lungs) or pulmonary edema with breathing abnormalities, cough, cyanosis (bluish or purplish discoloration caused by insufficient oxygenation of the blood), chest pain, and rapid heartbeat. Severe, symptomatic

NO_2 intoxication after acute exposure has been linked to prolonged respiratory impairment, with such symptoms as chronic bronchitis and decreased lung function.

Sulfur Dioxide

SO_2 is produced by stationary sources such as coal and oil combustion, steel mills, refineries, and pulp and paper mills. Exposure to SO_2 can result in major adverse health effects, particularly in the upper respiratory tract. It can cause constriction of the bronchioles and produce sulfurous acid when it comes into contact with the mucous membranes of the lungs. People with existing respiratory problems, such as people with asthma, allergies, and Reactive Airways Disease Syndrome (acute, irritant-induced asthma) may also be more sensitive to SO_2 irritation.

Toxic Air Contaminants

TACs are air pollutants that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity and health risk may pose a threat to public health even at low concentrations. Most health risks from TACs are attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM, a subset of PM_{10} emissions). Diesel PM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Sources of diesel PM in Burbank include automobiles and passenger and freight rail operations, as well as minor sources such as off-road construction equipment, portable and backup diesel generators, pumps, and other heavy equipment. Other sources of TACs in Burbank include fuel dispensing stations, Providence St. Joseph's Medical Center, and commercial and industrial facilities.

Inventory and Sources of Criteria Air Pollutant Emissions

SCAQMD estimates emissions of criteria air pollutants from various source categories. The estimates are based on permit information for stationary sources (e.g., manufacturing industries, dry-cleaning operations), plus more generalized estimates for area sources (e.g., space heating, landscaping, use of consumer products) and mobile sources (e.g., trains, planes, and on- and off-road motor vehicles). Mobile sources generate most of the emissions of ozone precursors in Los Angeles County, while area sources are the largest contributor of emissions of particulate matter.

Stationary Sources

Major stationary sources of air pollutant emissions in Burbank include fuel combustion from electric utilities and other commercial/industrial processes, waste disposal, surface coating and cleaning, electroplating, petroleum production, television and motion picture production and related services (e.g., film processing, set construction), a hospital, and other sources. SCAQMD issues permits to various types of stationary sources, which must demonstrate implementation of best available control technology.

Areawide Sources

Areawide sources of emissions in Burbank include solvent evaporation from consumer products and application of architectural coatings, residential fuel combustion, construction and demolition, dust from paved roads, fugitive dust, landscaping, and other miscellaneous sources.

Mobile Sources

On-road and other mobile sources contribute the greatest emissions of ozone precursors within Burbank. On-road sources consist of passenger vehicles, trucks, buses, and motorcycles, and off-road vehicles and other mobile sources consist of heavy-duty equipment, boats, aircraft, trains, recreational

vehicles, and farm equipment. Major highways and freeways in and near Burbank include Interstate 5 and State Route 134. Major roadways include Burbank Boulevard, Magnolia Boulevard, Verdugo Avenue, Olive Avenue, Victory Boulevard, Hollywood Way, Alameda Avenue, San Fernando Boulevard, and Glenoaks Boulevard.

In addition to the highways, freeways, and high-volume arterials, Burbank is home to the Bob Hope Airport, and nearby Amtrak, Metrolink, Los Angeles County Metropolitan Transportation Authority (MTA), and BurbankBus stops. Criteria pollutants and diesel PM are emitted from diesel-electric locomotives that compose the Amtrak, Metrolink, and Union Pacific fleets.

Sensitive Land Uses and Receptors

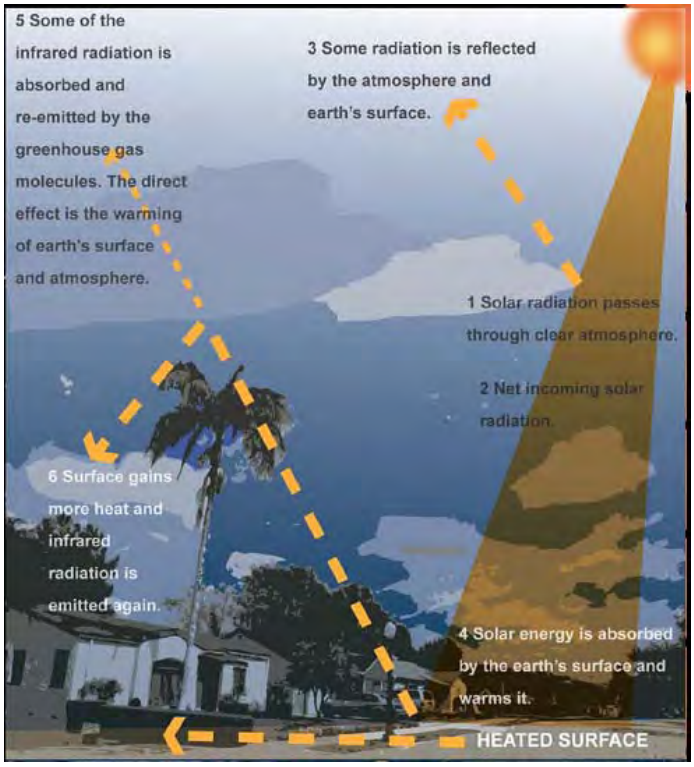
Some members of the population are particularly sensitive to emissions of air pollutants and should be given special consideration when evaluating project-related impacts on air quality. Children, the elderly, persons with preexisting respiratory or cardiovascular illness, and athletes are all especially sensitive to such emissions. Facilities where the above-mentioned segments of the population live, gather, play, or exercise (e.g., residences, hospitals, schools, and nursing homes) are defined as sensitive land uses or sensitive receptors. Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to pollutants. Recreational land uses are considered moderately sensitive to air pollution because exercise places a high demand on respiratory functions, which can be impaired by air pollution. Because numerous types of these receptors exist throughout the Basin, SCAQMD has developed guidance and permitting programs to limit exposures to TACs by sensitive receptors.

Odors

Typically odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Several major sources of odor in Burbank include Public Works Department activities, Burbank Landfill sites 1 and 3, the Burbank Water Reclamation Plant, Burbank Water and Power activities, and the Stough Park Landfill. Examples of minor odor sources in Burbank include restaurants with charbroilers and construction sites (diesel exhaust and asphalt paving).

Climate Change

Certain gases in the earth's atmosphere, called GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere, where a portion is absorbed by the earth's surface and a smaller portion is reflected back toward space. The radiation absorbed by the earth is re-radiated. Most incoming solar radiation passes through GHGs; however, some is absorbed by GHGs and trapped,



The Greenhouse Effect

resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on Earth.

Greenhouse Gases

The concept of CO_2 equivalency (CO_2e) is used to account for the different potentials of GHGs to absorb infrared radiation. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Prominent GHGs contributing to the greenhouse effect include CO_2, methane, nitrous oxide, and high-GWP GHGs. CO_2 emissions associated with fossil fuel combustion are the primary contributors to human-induced climate change. After CO_2 emissions, methane and nitrous oxide emissions associated with human activities are the next largest contributors to climate change.

Unlike criteria air pollutants and TACs, which have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). Therefore, GHGs persist in the atmosphere for a long enough time to be dispersed around the globe. More CO_2 is currently emitted into the atmosphere than is absorbed by CO_2 sinks, which include vegetation and the ocean. Overall, 46% of human-caused CO_2 emissions remain stored in the atmosphere.

GHGs with lower emissions rates than CO_2 also contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2. Emissions of methane and nitrous oxide are generally much lower than those of CO_2, and are associated with anaerobic microbial activity resulting from agricultural practices, flooded soils, and landfills. However, methane and nitrous oxide have approximately 23 and 296 times the GWP of CO_2, respectively. High-GWP chemicals, which are commonly used as refrigerants have GWPs that exceed the GWP of CO_2 by factors ranging from thousands to tens of thousands.

Climate Change and Local Planning

Concerned about the effects of climate change, California has adopted a wide variety of legislation aimed at reducing the state's GHG emissions, including AB 32 and Executive Order S-03-05, which are described above under "Purpose and Statutory Requirements." In 2008 ARB finalized a statewide Climate Change Scoping Plan (Scoping Plan) describing the various strategies California will use to reduce statewide GHG emissions by about 28% from projected 2020 emission levels. Most elements of the Scoping Plan fall under the jurisdiction of state government; however, local governments are identified as "essential partners" in achieving statewide GHG reduction goals, and are advised to take on reduction targets for their municipal operations and communitywide activities.

A series of comment letters on environmental impact reports, administrative actions, and California Environmental Quality Act (CEQA) lawsuits have set the course for climate change policy among local governments. As a result of these factors, local governments must incorporate GHG reduction policies into their general plans and other implementing planning and design documents. Planning decisions, policies, and actions found in general plans do not directly result in the emission of GHGs. However, planning decisions made and future development projects approved pursuant to implementation of a general plan can affect the generation of GHG emissions from multiple sectors (e.g., transportation, energy, water, waste), resulting in direct or indirect GHG emissions. For example, electricity consumed in structures would indirectly cause GHGs to be emitted at a utility provider. Residents, employees, shoppers, and visitors drive vehicles that generate direct GHG emissions associated with the transportation sector.

Local Sources of Greenhouse Gas Emissions

As the second largest emitter of GHG emissions in the United States and one of the largest in the world, California contributes a significant quantity of GHGs to the atmosphere. Emissions of CO_2 are byproducts of fossil fuel combustion and are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs (36%), followed by electricity generation (24%), industrial operations (21%), residential (6%), agriculture and forestry (6%), commercial (3%), and other emitters not specified (3%).

A communitywide GHG emissions inventory for Burbank was prepared for the year 2010. Communitywide "business-as-usual" emissions projections were also prepared for the years 2020 and 2035, the AB 32 horizon year and the planning horizon for Burbank2035, respectively. This business-as-usual projection assumes future development directed by the Land Use Element without implementation of the GGRP. The inventory and projections address communitywide emissions (i.e., those emissions attributable to all sources in the city), which include emissions directly attributable to City government operations.

The communitywide GHG emissions inventory and projections are divided into the following sectors: residential, commercial, and industrial energy use (electricity and natural gas consumption); transportation (on-road mobile sources and aviation); waste (solid waste and wastewater treatment); and water use (pumping-related emissions from water demand). Table AQCC-1 summarizes the magnitude and relative contribution of communitywide baseline emissions from each sector for each year (2010, 2020, and 2035). All GHG emissions are presented in units of million metric tons of CO_2e emissions per year (MMT CO_2e/yr) or metric tons of CO_2e emissions per year (MT CO_2e/yr), to allow emissions of other GHGs, such as methane and nitrous oxide, to be normalized to a single unit of measure.

Table AQCC-1
Burbank Communitywide Jurisdictional Greenhouse Gas Emissions: 2010, 2020, and 2035[1]

Community Sector	2010 Inventory Emissions		2020 Inventory Emissions		2035 Inventory Emissions	
	MT CO_2e	%	MT CO_2e	%	MT CO_2e	%
Energy Consumption:						
Electricity	564,719	34%	619,634	33%	710,592	33%
Natural Gas	164,146	10%	182,853	10%	203,561	10%
Transportation:						
Mobile Sources	896,421	53%	995,517	54%	1,143,229	54%
Waste	24,021	1%	26,766	1%	29,806	1%
Wastewater	13,307	1%	14,853	1%	17,859	1%
Water	19,880	1%	20,275	1%	22,453	1%
Total	1,682,494	100%	1,859,899	100%	2,127,500	100%

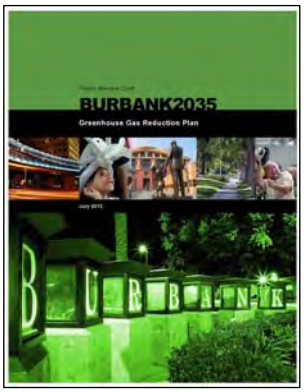
Notes: CO_2e = carbon dioxide equivalent; MT= metric tons.

[1] The emissions inventory shown in this table does not include expected statewide GHG reductions in the projections. See the Burbank Greenhouse Gas Reduction Plan for further details about the current GHG inventory and future projections that include statewide and local reductions.

Communitywide GHG emissions totaled approximately 1.68 MMT CO_2e/yr in 2010. On-road mobile transportation, the largest source, composed 53% of the emissions, followed by 44% from electricity and natural gas consumption throughout the community. Communitywide GHG emissions are projected to

increase to approximately 1.86 MMT CO_2e/yr in 2020, and to approximately 2.13 MMT CO_2e/yr in 2035. Projected communitywide GHG emissions for 2020 and 2035 are similar to 2007 emissions in terms of percentage contributions by sector.

Greenhouse Gas Reduction Plan



This element of Burbank2035 contains goals and policies that direct the City's approach to climate change, including emission reduction targets and general emission reduction strategies. This element also provides goals and policies in areas such as land use, mobility, waste reduction, and energy conservation that reinforce policy direction found elsewhere in Burbank2035. An accompanying GGRP provides specific GHG reduction measures applicable to various sectors of the community and the City's municipal operations. The GGRP as a whole is considered an implementation measure for the policies described in this element.

Climate Change Adaptation Strategies

The Air Quality and Climate Change Element calls for a reduction in the greenhouse gas intensity of Burbank Water and Power's power portfolio.

Scientific studies indicate that a certain amount of change in our climate is inevitable, even if we are aggressive in our efforts to prevent it. Many regions of the U.S. and California are projected to experience substantial effects on agriculture, climate-dependent business (e.g., recreation and tourism), infrastructure, and habitat. Coastal areas will experience rising sea levels. Wildfires are expected to increase in number, size, and severity. Stresses on the environment, combined with extreme weather events, are projected to increase the incidence and severity of a number of infectious diseases and other medical conditions. These and myriad other changes pose increased risks to people, the global economy, and standards of living.

For that reason, in December 2009, a team of California state agencies released a Climate Adaptation Strategy. The team estimated that $2.5 trillion worth of infrastructure in California is at risk from climate-related environmental changes. The report identifies near-term steps to appropriately plan for and address this threat: new approaches to water management; revised land-use planning processes to avoid construction in highly vulnerable areas; evaluation of all state infrastructure projects to avoid exacerbating threats; and more specific planning by emergency response agencies, public health agencies, and others to fortify existing communities and resources, and prepare for future stressors.

Burbank should consider adaptive planning to prepare for the foreseeable effects of climate change on California. Many adaptation strategies can be implemented only at the local level. The following are descriptions of several adaptation strategies that Burbank can employ to address local effects of climate change.

Wildfire Hazards

Research conducted at the U.S. Department of Energy's Lawrence Berkeley National Laboratory indicates that climate change will increase the frequency and size of wildfires in California. Hotter, drier climates, aided by prolonged drought, will promote increased accumulation of fire-prone vegetation. When fires occur, stronger winds will continue to fan the flames, spreading fires faster and farther than previously experienced. This will expand the size of the urban-wildland interface, because more residential communities will be within reach of wildfire activity. Maintaining and defending an expanded urban-wildland interface will require increased resources, planning, and funding.

Wildfires can have a severe impact on California's air quality and public health. In the coming years, as wildfires increase in intensity and frequency as a result of climate change, they will produce more extreme bad-air days and longer fire seasons. This can negatively affect public health and result in increased firefighting and medical costs; damage to property, natural areas, and agricultural lands; loss of tourism, other businesses, and employment; and increased insurance rates.

In terms of fire protection, Burbank will continue to adapt by regularly updating fire protection requirements, especially in transition areas between developed and undeveloped land, and by enforcing stringent construction and design standards. Additionally, the City will work to preserve open space where wildfire hazards exist.

Flooding

The California Climate Change Center, a research arm of the California Energy Commission, has found that climate change will result in new flooding concerns throughout California. Climate change will increase the severity of winter storms, particularly in El Niño years. Such weather events will result in higher levels of seasonal flooding than those currently experienced, straining dam capacity and increasing floodplain areas.

Safety Element policies regarding flood protection will help Burbank mitigate existing and increased potential for flooding. The City will continue to work with the Los Angeles County Flood Control District to maintain, identify, and fund flood control improvements regularly, and to update the Burbank *All-Hazard Mitigation Plan* on a regular basis. Public facilities must be flood-proofed, and buildings in floodplains must adhere to construction standards. The City will continue to require flood/storm control facilities for proposed development and redevelopment projects, and will upgrade street storm drains to deal with potential dam inundation. These programs will take into account current potential flood events and be adaptable enough to account for unforeseen increases.

Water Supply

Water is already a scarce resource in California and is likely to become more so in the future. Water demand is expected to increase because of rising temperatures and increasing population. At the same time, the water supply is expected to decrease. California's water supply system relies on a network of dams, reservoirs, and canals, which depend upon water supplied by the snowpack in the Sierra Nevada. The Sierra Nevada snowpack provides natural water storage, storing winter precipitation in the form of snow and releasing it in the spring and early summer as the snow melts. This system is estimated to hold about half the storage capacity of California's major reservoirs. Some studies show that if heat-trapping GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada's spring snowpack by as much as 70–90% by the end of the century. Decreasing snowmelt and spring stream flows coupled with increasing demand for water could lead to increasing water shortages, which could exacerbate drought conditions and increase the diversion of water from rivers in California. Most of California's

population relies on Sierra Nevada snowmelt in the summer for drinking water and agriculture. The California Energy Commission projects a 15–30% reduction in surface water supply to California's cities and farms over this century as a result of climate change.

Sea level rise also puts California's water supplies at risk. Rising sea levels would aggravate saltwater intrusion, which would degrade California's estuaries, coastal aquifers, wetlands, and groundwater aquifers. Sea level rise would also threaten the quality and reliability of the Sacramento–San Joaquin Delta's water transfer system, one of the major water supply sources for Southern California.

Policies and programs in the Land Use Element and Open Space and Conservation Element regarding water resources will prepare Burbank for the possible consequences of climate change on the water supply. Such policies include using native or drought-tolerant plants in landscaping, using recycled water in irrigation, and promoting all possible water conservation efforts. Many measures and actions in the GGRP also promote water conservation measures.

Burbank in 2035: Drawing by Katie Simic of Stevenson Elementary School