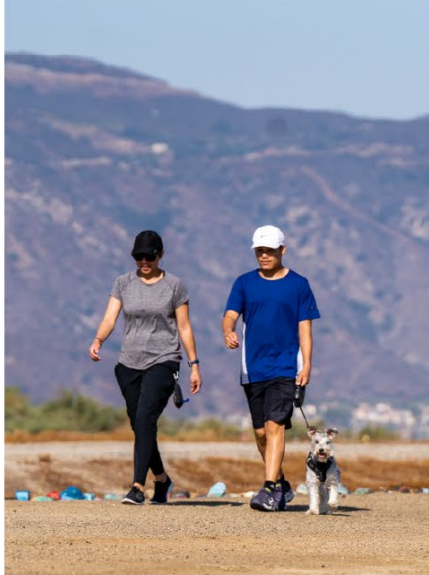




LAKE ELSINORE

CLIMATE ACTION & ADAPTATION PLAN



JANUARY 2026

ACKNOWLEDGEMENTS

The Lake Elsinore Climate Action and Adaptation Plan (CAAP) is supported by the Adaptation Planning Grant Program implemented by the Governor's Office of Land Use and Climate Innovation.

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As communities in California experience more frequent, prolonged, and severe impacts from climate change, communities and governments at all scales are developing strategies and implementing actions to build a climate-resilient future. However, many jurisdictions, especially under-resourced communities in California, lack the capacity, tools, guidance, and resources to effectively prepare for climate impacts.

The Adaptation Planning Grant Program addresses this capacity gap by providing funding to help fill planning needs, providing communities with the resources to identify climate resilience priorities, and supporting the development of climate resilience projects across the state. The Adaptation Planning Grant Program enables communities to climate risk and adaptation considerations into planning activities and prepare for climate readiness and resilience in the long term.

The Adaptation Planning Grant is part of the Integrated Climate Adaptation and Resiliency Program (ICARP) housed within the Governor's Office of Land Use & Climate Innovation. ICARP advances statewide climate adaptation and resilience by coordinating investments, partnerships, and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

Through direct and equity-focused investments and resources, ICARP helps build climate-adapted and equitable communities in California, with a focus on solutions that address the impacts of climate change and reduce greenhouse gas emissions. ICARP works to advance these priorities across all levels of government by developing actionable science and research; providing guidance, tools, and technical assistance; and administering climate resilience-focused grant programs.

Learn more: <https://lci.ca.gov/climate/icarp/>

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ABBREVIATIONS AND ACRONYMS

°C	Celsius
°F	Fahrenheit
2022 Scoping Plan	2022 Scoping Plan for Achieving Carbon Neutrality
AB	Assembly Bill
APG	Adaptation Planning Guide
BAU	business-as-usual
BE	Building Energy
CAAP	Climate Action and Adaptation Plan
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards
CalOES	California Governor's Office of Emergency Services
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH ₄	methane
City	City of Lake Elsinore
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Community Protocol	US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions
CPUC	California Public Utilities Commission
CSD	California Department of Community Services and Development

DEIR	Environmental Impact Report
EPA	Environmental Protection Agency
EV	electric vehicle
EVMWD	Elsinore Valley Municipal Water District
FEMA STAPLEE	Federal Emergency Management Agency Social, Technical, Administrative, Political, Legal, Economic, Environmental framework
FEMA	Federal Emergency Management Agency
FHSZ	High or Very High Fire Hazard Severity Zones
GC	Green Community
GHG	greenhouse gas
GPU	General Plan Update
GWP	global warming potential
HVAC	heating, ventilation, and air conditioning
ICARP	Integrated Climate Adaptation and Resiliency Program
ICLEI	ICLEI—Local Governments for Sustainability
IIJA	Infrastructure Investment and Jobs Act
IPCC	Intergovernmental Panel on Climate Change
IRA	Inflation Reduction Act
I-REN	Inland Regional Energy Network
LCI	Governor’s Office of Land Use and Climate Innovation
LEED	Leadership in Energy and Environmental Design
LHMP	Local Hazard Mitigation Plan
LRA	Local Responsibility Area
MJLHMP	Multi-Jurisdictional Hazard Mitigation Plan
MTCO ₂ e	metric tons of carbon dioxide equivalent
N ₂ O	nitrous oxide

NA	not applicable
PV	photovoltaic
RCP	Representative Concentration Pathway
RFS	Renewable Fuel Standard
RTA	Riverside Transit Agency
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SOI	Sphere of Influence
SRA	State Responsibility Area
SW	Solid Waste
TR	Transportation
UWMP	Urban Water Management Plan
VA	Vulnerability Assessment
VMT	vehicle miles traveled
W	Water
WRCOG	Western Riverside Council of Governments

EXECUTIVE SUMMARY



Executive Summary

The vision for Lake Elsinore is to “Dream Extreme” by fostering a destination for action sports and seeking innovative, inclusive, and enduring solutions to provide services and opportunities for community members. Extreme weather and other hazards brought on by climate change are a challenge that must be addressed to protect residents, workers, and businesses in Lake Elsinore. Increased occurrences of extreme heat, extreme precipitation and flooding, drought, and wildfires put populations and critical infrastructure at risk. The City of Lake Elsinore (City) Climate Action and Adaptation Plan (CAAP) presents a framework for the City to implement policies and programs that seek to build resilience to climate hazards while limiting local contributions of greenhouse gases (GHGs) that contribute to worsening climate change.

The City of Lake Elsinore (City) developed its first Climate Action Plan (CAP) in 2011, which provided a long-range roadmap for the City to enable sustainable growth. Building on this previous effort, the CAAP incorporates strategies for reducing local GHG emissions while addressing communitywide adaptation to climate change.

Lake Elsinore Background

Lake Elsinore (city) has a population of around 70,000 and is located in western Riverside County. The city is approximately 43 square miles with 11 planning districts and is known for its historical sites and recreational activities. The City’s Sphere of Influence (SOI) extends into unincorporated Riverside county land and covers a total of 72 square miles. The city surrounds Lake Elsinore, the largest freshwater lake in southern California and referred to as Entengvo Wumoma by the Luiseño Indians.

The climate experienced in Lake Elsinore is semi-arid, with generally mild temperatures and occasional rainfall in the winter months and high temperatures in summer months. Extreme heat (temperatures over 103.8 °F) is a primary climate hazard, with up to 31 extreme heat days per year expected by mid-century. Wildfire and extreme precipitation are other important hazards in Lake Elsinore, especially when the impacts combine to trigger landslides and mudflows.

The Holy Fire of 2018 caused evacuations for Lake Elsinore residents and created conditions for mudslides later that year when heavy rainfall saturated burn scars. Periods of drought also threaten lake levels that sustain recreational activities and a water delivery system that already relies heavily on imported water.

The primary sources of GHG emissions in Lake Elsinore that contribute to global climate change are fuel combusted in vehicles and energy used in buildings. Lake Elsinore is a primarily residential city, with only about 7% of workers in the city also living in Lake Elsinore, 31% commuting to Lake Elsinore for work, and 62% commuting out (City of Lake Elsinore 2024a). Energy use in residential buildings contributes about two-thirds of total citywide energy use, while nonresidential buildings contribute the remaining third. The consumption of resources by residents and businesses also contributes GHG emissions in smaller amounts through the generation of waste and wastewater and use of water.

Purpose

The City has taken a proactive approach to climate change, adopting its first CAP in 2011. The CAP identified major sources of emissions in the city and proposed strategies for reducing emissions. Since adoption of the 2011 CAP, new legislation has been adopted at the State level to establish long-term GHG reduction targets. In addition, climate datasets and methodologies have evolved over this time period. To reflect these changes, and to address climate change holistically by incorporating an analysis of climate vulnerabilities, the City undertaken development of this CAAP. The CAAP will continue to serve as a long-term roadmap to reduce GHG emissions and improve the resilience of the Lake Elsinore community.

The City of Lake Elsinore CAAP is supported by the Adaptation Planning Grant Program at the Governor's Office of Land Use and Climate Innovation (LCI). The Adaptation Planning Grant Program is an initiative of LCI's Integrated Climate Adaptation and Resiliency Program (ICARP). ICARP advances climate adaptation and resilience in California by coordinating investments, partnerships and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

Plan at-a-glance

The CAAP has two primary objectives: to build adaptive capacity to climate hazards and to reduce local GHG emissions. The following sections provide a brief overview of the City's strategies to achieve these outcomes.



Climate Adaptation Strategies

The City has identified 74 climate adaptation strategies to reduce risks, protect vulnerable residents, and enhance resilience across the community. These strategies were informed by a Vulnerability Assessment, which identified population groups and community assets that are most at risk to current and future climate hazards. The strategies are organized under five (5) goals, which are summarized in Table ES-1. Additional information on the Vulnerability Assessment, and climate adaptation goals and strategies can be found in Chapter 3.

Table ES-1 Climate Adaptation Goals Summary

Climate Adaptation Goal	Number of Strategies
Goal 1: Improve The Overall Climate Resilience of the City of Lake Elsinore.	17
Goal 2: Prepare for More Frequent Drought Events and Enhance the City's Overall Water Supply Resilience.	12
Goal 3: Prepare for Increased Temperatures and More Frequent Extreme Heat Events.	11
Goal 4: Prepare for More Frequent Extreme Precipitation, Flooding, Landslide, Mudflow, and Debris Flow Events.	16
Goal 5: Prepare For and Adapt to Increased Wildfire Risk	18

Climate Action Strategies

The climate action strategies are intended to reduce Lake Elsinore's contribution of GHG emissions across the major sources of emissions. The strategies are organized into five (5) focus areas and are informed by analysis of current emissions (a GHG emissions inventory) and projections of future emissions that consider growth within the city limits and SOI. The strategies were designed to balance the need to reduce local GHG emissions to levels that are consistent with State regulatory targets while allowing for continued economic and population growth. The GHG emissions analysis that informs the development of the climate action strategies is summarized in Chapter 2. This includes a GHG emissions inventory that establishes baseline levels, forecasts of future emissions, and development of reduction targets that are consistent with key State legislation. Details on climate action strategies, measures, and actions are provided in Chapter 4. Table ES-2 summarizes the climate action strategies organized by focus area.

Table ES-2 Climate Action Strategies Summary

Focus Area	Number	Strategy
Building Energy	BE-1	Energy Efficiency and Decarbonization
	BE-2	Renewable Energy
	BE-3	Energy Education
Transportation	TR-1	Active Transportation
	TR-2	Transit
	TR-3	Zero-Emissions Vehicles and Equipment
	TR-4	Smart Growth
Water	W-1	Water Conservation
	W-2	Recycled Water
Solid Waste	SW-1	Recycling and Compost
	SW-2	Local Produce
Green Community	GC-1	Green Jobs
	GC-2	Urban Tree Canopy
	GC-3	Green Construction Materials

Chapter 1

INTRODUCTION



Chapter 1

1.1 Climate Action Planning Overview

The City of Lake Elsinore (hereafter referred to as “City”) has a population of around 70,000 and is located in western Riverside County. The city is approximately 43 square miles with 11 planning districts and is known for its historical sites and recreational activities. The City’s Sphere of Influence (SOI) extends into unincorporated Riverside county land and covers a total of 72 square miles. The city surrounds Lake Elsinore, the largest freshwater lake in southern California, and is referred to as Entengvo Wumoma by the Luiseno Indians. With 3,000 surface acres and over 14 miles of shoreline, Lake Elsinore is ideal for fishing, boating, jet skiing, water skiing, wake boarding, kayaking, paddle boarding, windsurfing, and swimming. The Cleveland National Forest is located to the southwest of the City’s SOI. The city is located east of the Santa Ana Mountains, characterized by hot summers and cool winters typical of a Mediterranean climate. The city has grown at a rapid pace over the last decade and is expected to outpace Riverside county’s growth over the next 25 years. As the city and local community continue to experience this significant growth, and as climate change presents new challenges and exacerbates existing challenges, it presents an opportunity for the City to build a more sustainable future through the development of this climate action and adaptation plan (CAAP).

The City has taken a proactive approach to climate change, adopting its first climate action plan (CAP) in 2011. The

CAP identified major sources of emissions in the city and proposed strategies for reducing emissions. Since adoption of the 2011 CAP, new legislation has been adopted at the State level to establish long-term GHG reduction targets. In addition, climate datasets and methodologies have evolved over this time period. To reflect these changes, and to address climate change holistically by incorporating an analysis of climate vulnerabilities, the City undertaken development of this CAAP. The CAAP will continue to serve as a long-term roadmap to reduce GHG emissions and improve the resilience of Lake Elsinore communities.

The City of Lake Elsinore CAAP is supported by the Adaptation Planning Grant Program at the Governor’s Office of Land Use and Climate Innovation (LCI). The Adaptation Planning Grant Program is an initiative of LCI’s Integrated Climate Adaptation and Resiliency Program (ICARP). ICARP advances climate adaptation and resilience in California by coordinating investments, partnerships, and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

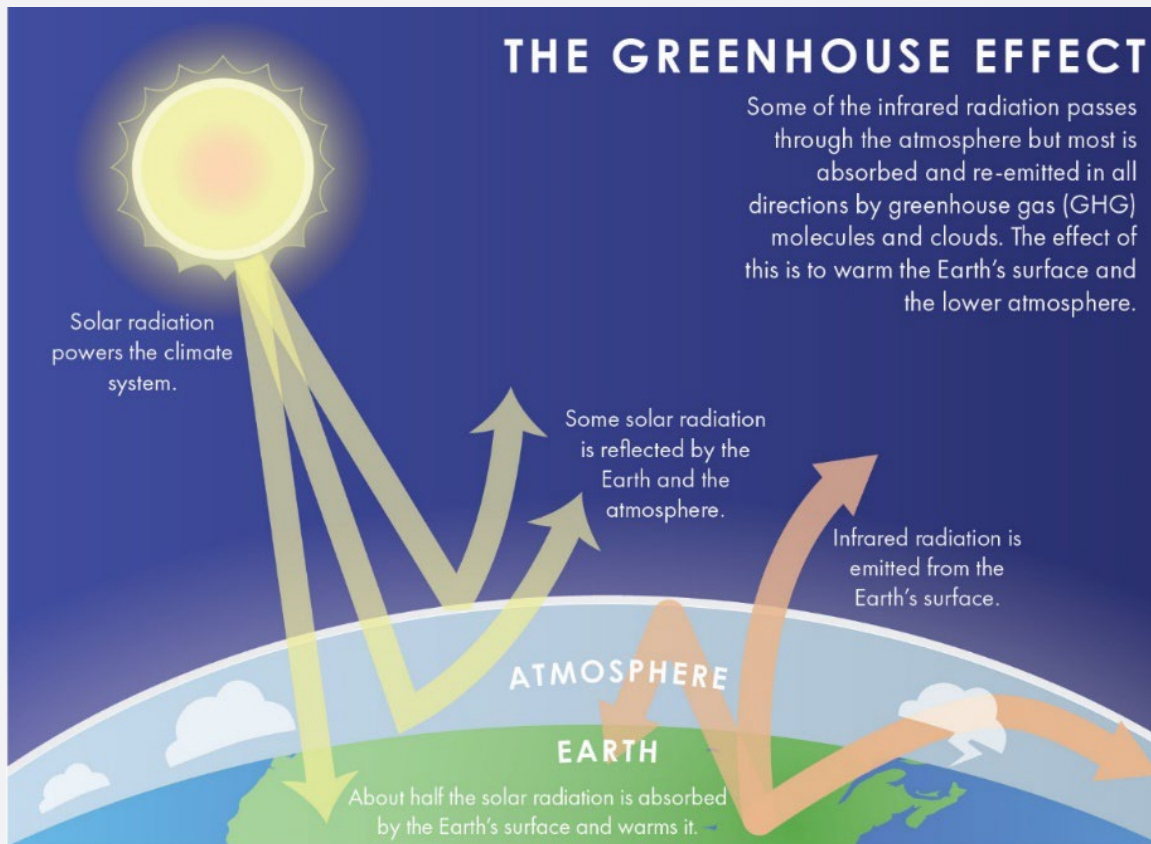
Climate Change Science

The greenhouse effect, illustrated in Figure 1.1, is a natural process that insulates the Earth and helps to regulate its temperature. After absorbing sunlight, the Earth emits heat in the form of infrared radiation. This radiation is then absorbed by naturally occurring atmospheric gases called GHGs. These gases, which mainly consist of methane (CH₄), carbon dioxide (CO₂), water vapor, and nitrous oxide

(N₂O), all act as effective global insulators by absorbing some of the infrared radiation that is emitted by Earth and re-emitting it back down toward the planet. This process, where some heat is prevented

from escaping out of the atmosphere, is what keeps temperatures on Earth conducive to life. Without the greenhouse effect, Earth would not be able to support life as we know it.

Figure 1.1 The Greenhouse Effect



Source: Prepared by Ascent in 2022.

The combustion of fossil fuels and other anthropogenic (i.e., human-caused) activities since the Industrial Revolution in the 19th century have introduced GHGs into the atmosphere at an increasingly accelerated rate. These significantly elevated levels of GHGs above natural ambient concentrations have intensified the greenhouse effect, causing the Earth to warm at an unprecedented and unnatural rate. This effect, known as climate change, is the driver behind changes in other phenomena, including more extreme weather patterns,

rapid melting of the polar ice caps, rising sea levels, and other impacts on biological resources and humans.

There is scientific evidence that observed increases in atmospheric GHG concentrations and the consequential warming of Earth's atmosphere, oceans, and land are linked to human activities and influence. Human activities are estimated to have caused approximately 2 degrees Fahrenheit (°F) of warming across the globe compared to pre-industrial era levels (i.e., before the year 1900). The global average

temperature is expected to increase by up to approximately 8 °F by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2021). The GHG emissions that have created this warming—those released between the pre-industrial era and the present—will persist for hundreds to thousands of years and create further long-term impacts to the climate system (IPCC 2018).

In Riverside county, temperatures are expected to rise between 3.7 to 6.5 °F by 2099, almost three times the statewide average (California Department of Public Health 2017). The region is also susceptible to climate events such as wildfire, with over 500,000 acres designated as a very high fire hazard severity zone (CAL FIRE 2023). The impacts of climate change will continue to affect the environment and communities, resulting in adverse effects to economy, human health, and ecosystems.

1.2 Purpose and Co-Benefits

Planning for the effects of climate change is an iterative process. The CAAP builds upon

the framework of the 2011 CAP, consisting of a baseline inventory, GHG emissions forecasts, GHG reduction targets, and proposed strategies to help the City meet its emissions targets. Emissions reductions progress since 2011 was incorporated into the CAAP, while accounting for methodologies that have changed since the original CAP. Development of the CAAP has been coordinated with the City's General Plan Update and is intended to serve as a "Plan for the Reduction of Greenhouse Gases" under the California Environmental Quality Act.

In addition to the original elements of the 2011 CAP, the CAAP utilizes a vulnerability assessment to identify the city's exposure to climate related hazards. An analysis of the city's sensitivity to these hazards and the City's existing adaptive capacity to prepare for and adapt to the impacts is provided in Chapter 3. An array of adaptation strategies were developed to help the City improve its capacity to address these hazards and enhance community resilience. The CAAP planning process for both GHG reduction and adaptation planning is illustrated in Figure 1.2 below.

Figure 1.2 GHG Mitigation and Adaptation Planning Process



CAAP development was centered around the needs of Lake Elsinore community members. Feedback from community engagement was incorporated in the design of GHG reduction strategies, emphasizing social equity and environmental justice. An important component of CAAP strategies, besides GHG emissions reductions and climate adaptation, are the additional environmental, economic, and social “co-benefits.” Co-benefits are positive effects that would result from CAAP strategy implementation, ranging from improvements to air and water quality to improved commuting options. Potential benefits of climate mitigation and adaptation actions were identified and assigned a unique icon displayed in Figure 1.3. Co-benefits identified in this CAAP include:

- **Improved Health and Well-being:** The CAAP would improve the health and well-being of community members through reduced air pollution (e.g., through reduction in vehicle trips and transition to cleaner energy sources) and improved mental health (e.g., through access to clean and green spaces).
- **Cost Savings:** The CAAP would provide savings related to energy efficiency (e.g., lower energy bills), infrastructure resilience (e.g., avoidance of costly repairs for damage that would have happened otherwise), and healthcare.
- **Healthy Natural Environment:** The CAAP would improve environmental conditions through biodiversity conservation (e.g., protecting and

restoring ecosystems that support essential ecosystem functions, such as pollination, water filtration, and carbon sequestration), water conservation, and waste reduction.

- **Economic Opportunity:** The CAAP would improve local economic conditions through job creation (e.g., investments in renewable energy and green infrastructure resulting in economic growth and diversification), innovation and entrepreneurship, and tourism and recreation (e.g., through preserving landscapes and biodiversity hotspots, which can indirectly stimulate local economies and generate revenue).
- **Equity:** Strategies in the CAAP are intended to enhance social inclusion (e.g., addressing disparities, promoting greater access to resources), environmental justice (e.g., mitigating cumulative impacts from environmental stressors, fair distribution of environmental benefits), and economic empowerment.
- **Community Resilience:** The CAAP would improve community resilience through improved infrastructure resilience, improved disaster preparedness, and enhanced community cohesion.
- **Resource Conservation:** The CAAP would contribute to resource conservation through sustainable resource management (e.g., preservation of natural resources, efficient use of resources, protecting ecosystem services).

Figure 1.3 Co-Benefits Icons



1.3 Climate Planning Efforts

Collective action across federal, state, and local governments is essential to reduce GHG emissions and improve the resiliency of communities against the impacts of climate change. Action can take multiple forms; emissions reduction targets, regulations, and long-term planning documents have been a key part of the efforts to address climate change in California. An overview of relevant legislation and resources is provided below.

Federal Efforts

The Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Act, was passed by Congress in November 2021 to provide a once-in-a-generation bipartisan infrastructure bill. IIJA is the largest long-term investment to rebuild roads, bridges, and railways; expand access to high-speed internet; tackle the climate crisis; advance environmental justice; and invest in underrepresented communities. By investing in transportation and public transit, GHG emissions will be reduced and clean, zero-emission vehicles will be incentivized.

Corporate Average Fuel Economy Standards

On April 1, 2022, the US Department of Transportation updated its Corporate

Average Fuel Economy standards to apply to mileage standards for passenger cars and light trucks. The standards apply to model years 2024 and 2026, requiring an industry-wide fuel economy average of approximately 49 miles per gallon for passenger cars and light trucks for model year 2026. The new standards will increase fuel efficiency 8 percent annually for model years 2024 to 2025, and 10 percent for model year 2026.

Inflation Reduction Act

The Inflation Reduction Act (IRA) was signed into law by President Biden on August 16, 2022. The IRA is intended to address climate pollution by investing in GHG reduction strategies. Goals of the IRA include deficit reduction to fight inflation, invest in domestic energy production and manufacturing, and reduce carbon emissions by roughly 40 percent below

2005 levels by 2030. It builds on the opportunities passed into law by the IIJA through supporting projects across electric vehicle charging, power infrastructure and climate resilience. Examples include supporting US manufacturing of solar panels, wind turbines, batteries, and critical materials by expanding production tax credits; providing direct incentives for American families to decarbonize their homes; and establishing the Greenhouse Gas Reduction Fund to support rapid deployment of low- to zero- emission technologies to benefit disadvantaged communities.

Renewable Fuel Standard Program

The Renewable Fuel Standard (RFS) program was created under the Energy Policy Act of 2005 and further expanded by the Energy Independence and Security Act of 2007, which amended the Clean Air Act. On June 3, 2022, the US Environmental Protection Agency (EPA) finalized a package of regulatory changes to set biofuel volumes for 2020, 2021, and 2022 to reach the objectives of the RFS. The goals are to increase the amounts of renewable fuels to be blended into transportation fuel in increasing amounts each year. The renewable fuels in the RFS program must emit lower levels of GHGs relative to the petroleum fuel it replaces.

State Efforts

Assembly Bill 32

The Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) established regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions. AB 32 put a cap on GHGs and set a target of reducing statewide emissions to 1990 levels by 2020. California achieved the AB 32 target in 2016.

Senate Bill 32

The Global Warming Solutions Act of 2016 (Senate Bill [SB] 32) codified a target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030, expanding upon AB 32.

Assembly Bill 1279

The California Climate Crisis Act (AB 1279), signed in September 2022, further established the State's GHG emissions reduction targets to 85 percent reduction in anthropogenic emissions below 1990 levels by 2045 and net zero GHG emissions by 2045. The bill requires the California Air Resources Board (CARB) to work with other State agencies to develop and implement comprehensive strategies, policies, and regulations to meet this target.

2022 Scoping Plan

CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) in December 2022, providing a comprehensive roadmap for California to achieve its goal of carbon neutrality by 2045. Building on previous plans, it incorporates the latest scientific findings, technological advancements, and policy developments to guide the State toward a sustainable, low-carbon future.

Local and Regional Efforts

2022 Western Riverside Council of Governments Subregional CAP

The Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan Update serves as a framework for GHG emissions reductions in the subregion. The document built on the 2014 climate action plan (also referred to as CAPtivate) and established a target year of 2030 in accordance with SB 32. A series of local measures were identified, including estimated emissions reductions and implementation tracking metrics.

Elsinore Valley Municipal Water District Urban Water Management Plan

The Elsinore Valley Municipal Water District (EVMWD) Urban Water Management Plan (UWMP) was adopted in 2020 as a long-term water resource planning document for EVMWD. The UWMP identifies water supply needs for its service area over the next 25 years. The update was completed to address regulations enacted since the 2015 UWMP.

County of Riverside Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan

The County of Riverside published its Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) in 2018, with an update in 2023. The LHMP

identifies hazards within Riverside County and includes mitigation actions intended to prevent and prepare for disaster occurrences.

1.4 Community Engagement

Collaboration with the community is integral to climate action planning and implementation. As a document intended to improve the resiliency of the community, local needs and voices are essential to the process. The City ensured there were ample opportunities for public engagement to inform CAP development. Figure 1.4 reflects takeaways from workshops and surveys the City hosted. A full summary of community outreach and engagement activities and outcomes is provided in Appendix A.

Figure 1.4 Community Engagement Feedback



Workshops

The City hosted engagement opportunities like workshops to involve the public and interested parties in the CAAP development process. Public workshops were intended to share an overview of climate vulnerabilities in the region and how the CAAP could increase resiliency of infrastructure, the economy, and the environment through mitigation and adaptation. The first workshop was hosted on March 19, 2025, and covered climate vulnerabilities as well as a discussion of the GHG inventory. Attendees were able to provide feedback during presentation polls and interactive activities.

Pop-Ups

Local events like pop-ups at community gatherings allowed the City to connect with community members in a familiar space. Pop-ups were hosted at multiple event locations to ensure engagement with diverse perspectives at different points in the CAAP planning process. The first pop-up event took place at the December 23, 2024 Santa Dash, largely focused on the CAAP's purpose and next steps. Subsequent pop-ups at the July 24, 2025 Night Market and September 13, 2025 Emergency Preparedness Fair included an interactive activity where participants placed stickers corresponding with priority outcomes from the CAAP.

Questionnaire

The City launched a community questionnaire from December 2024 to April 2025 to gather input from the community on local concerns, priorities,

and potential actions that could be incorporated into the CAAP. To maximize engagement with the questionnaire, the City employed a variety of strategies including social media campaigns, presentations at City Council meetings, Santa Dash pop-up, and advertisements on the project website, via emails, and newsletters. The questionnaire received widespread engagement with a total of 373 responses. Approximately 66 percent of residents responded that climate change poses a threat to their friends and family. The highest priorities for residents included green infrastructure and reduced energy costs. Some of the most popular responses to Question 3 are displayed in Figure 1.5. Questions included in the survey were as follows:

Question 1: How likely do you think it is that climate change will affect the health and safety of you, your friends, and/or your loved ones?

Question 2: Which three climate impacts concern you the most?

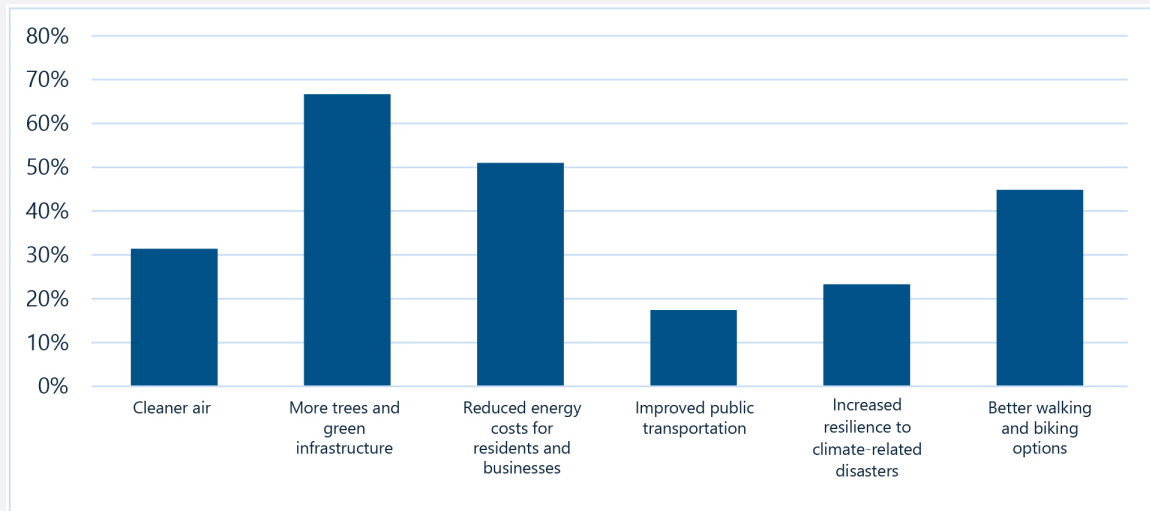
Question 3: Which outcomes would you most like to see from Lake Elsinore's Climate Plan?

Question 4: Please identify your level of concern with the following: environmental and economic categories.

Question 5: What barriers, if any, make it harder for you to adopt more environmentally friendly actions in your day-to-day life?

Question 6: Which of the following methods of support would help you overcome barriers you identified in Question 5?

Figure 1.5 Top 6 Desired Outcomes from the Climate Action Plan



Chapter 2

GREENHOUSE GAS EMISSIONS



Chapter 2

This chapter summarizes an accounting of greenhouse gas (GHG) emissions generated by activities within the City. It presents the City's baseline GHG emissions levels in 2022 and the anticipated increase in emissions if no local actions are taken through the year 2045. Additionally, this chapter establishes targets for reducing GHG emissions consistent with statewide GHG reduction targets and goals for the years 2030 and 2045.

2.1 Why Prepare a GHG Emissions Inventory?

Preparing a GHG emissions inventory is the first critical step in the overall climate action planning process. To develop and implement a Climate Action and Adaptation Plan (CAAP) that will effectively reduce GHG emissions, local governments must first have a comprehensive understanding of the emissions that are generated by activities within their jurisdictions. GHG emissions inventories not only serve to provide this knowledge, but they also act as the basis for measuring progress and provide agencies with a framework to track emissions over time and assess the effectiveness of CAP implementation.

2.2 Baseline GHG Inventory

A GHG inventory provides a detailed accounting of the sources and quantities of GHG emissions generated from activities within the City. This CAAP uses 2022 as its updated baseline inventory year, compared to the 2008 baseline year from the original CAP. The GHG inventory was prepared using the ICLEI–Local Governments for Sustainability (ICLEI) protocols for local-scale accounting of emissions. This protocol reflects refinements in the planning process that have resulted from research in the field and

shared knowledge from local governments engaged in climate action planning. The most recent guidance for community-scale emissions is ICLEI's US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol), Version 1.2 (ICLEI 2019). State agencies, such as the Governor's Office of Land Use and Climate Innovation (LCI) and the California Air Resources Board (CARB), recommend that GHG emission inventories be prepared consistent with the guidelines in the Community Protocol.

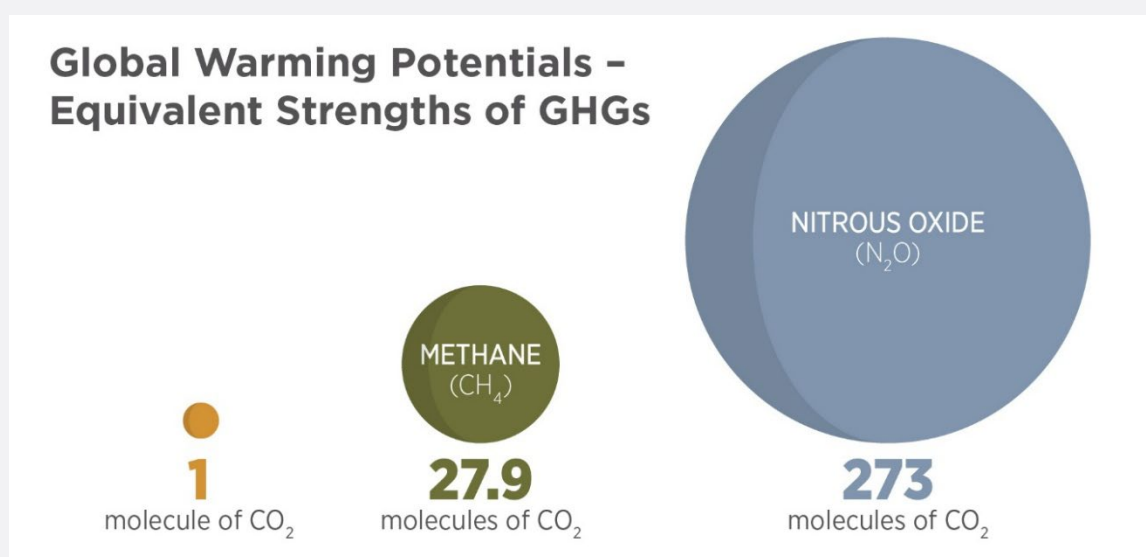
The three primary GHGs included in this inventory are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Emissions of these gases are converted to a comparable unit by multiplying each non-CO₂ gas by their global warming potential (GWP), enabling the reporting of emissions in terms of carbon dioxide equivalent (CO₂e). This conversion allows consideration of all gases in comparable terms and makes it easier to communicate how various sources and types of GHG emissions contribute to climate change. Emissions are reported in metric tons of CO₂e (MTCO₂e), the standard measurement for the amounts of GHG emissions created and released into the atmosphere. GWP values for CH₄ and N₂O included in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report were used for calculating emissions estimates (IPCC 2021).

Figure 2.1 illustrates the comparison of the GWP of CH₄ and N₂O with that of CO₂. The 2022 inventory estimates citywide emissions in six sectors: building energy, on-road transportation, off-road vehicles and equipment, solid waste, water supply, and wastewater treatment.

Moreover, the CAAP is being developed within the context of the City's General Plan Update (GPU) and its associated

Environmental Impact Report (DEIR), which considers the environmental effects of growth within the Lake Elsinore city limits and its Sphere of Influence (SOI). As such, the GHG emissions analysis for the CAAP, including the GHG emissions inventory, was prepared to maintain consistency with the boundary of the GPU and includes estimates of GHG emissions for both the city limits and SOI.

Figure 2.1 Global Warming Potentials – Equivalent Strengths of GHGs



Note: GHG = greenhouse gas.

Source: Created by Ascent in 2025.

The 2022 baseline inventory estimated that the community emissions were approximately 488,339 MTCO₂e (Table 2.1). Emissions from on-road transportation, which included emissions from fossil fuel (e.g., gasoline and diesel) combustion in vehicles, accounted for approximately 58 percent of community emissions. The second-largest sector, building energy, contributed approximately 33 percent of community

GHG emissions in 2022. Both the solid waste and off-road vehicles and equipment sectors generated 4 percent of the City's emissions. Water supply contributed 1 percent of the total emissions. Wastewater treatment contributed less than 1 percent of the total emissions. The City's GHG emissions by sector in 2022 are displayed in Figure 2.2.

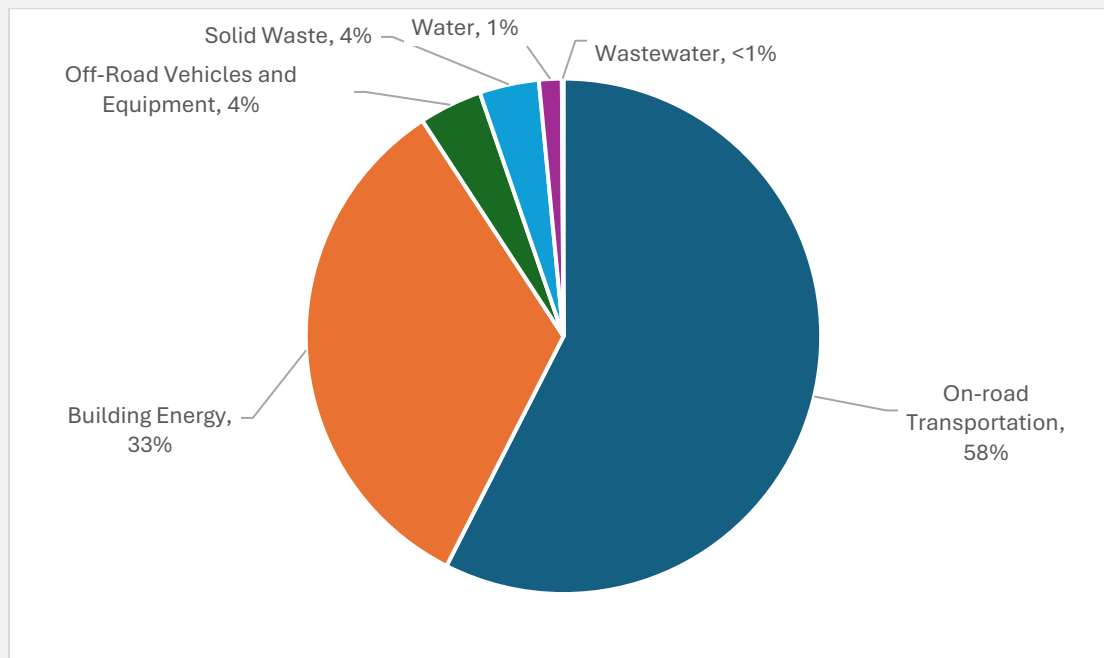
Table 2.1 Greenhouse Gas Emissions Inventory

Sector	GHG Emissions (MTCO ₂ e)	Percent of Total GHG Emissions (%)
On-Road Transportation	280,784	58
Building Energy	162,526	33
Off-Road Vehicles and Equipment	19,336	4
Solid Waste	18,224	4
Water	6,982	1
Wastewater	487	<1
Total	488,339	100

Notes: Actual GHG emissions have been rounded to the nearest thousand, and percentages have been rounded to the nearest whole percent. Rounding was conducted independently after all calculations were made. / % = percent; < = less than; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

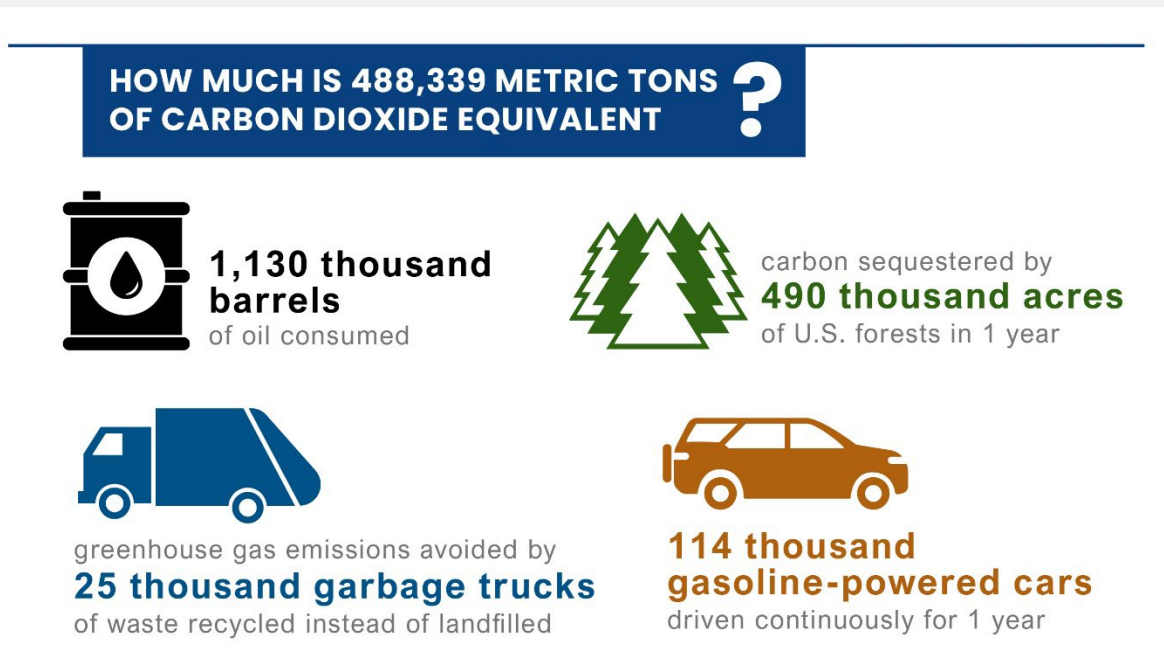
Figure 2.2 2022 Greenhouse Gas Emissions Inventory



Source: Created by Ascent in 2025.

As shown in Figure 2.3, citywide emissions in 2022 of 488,339 MTCO₂e are equivalent to combusting 1,130,608 barrels of oil, or the amount of carbon that can be sequestered by 489,833 acres of US forests in one year. It is also equivalent to 24,651 garbage trucks of waste recycled instead of landfilled and total combustion from 113,908 gasoline-powered passenger vehicles driving continuously for one year (EPA 2024).

Figure 2.3 Greenhouse Gas Emissions Equivalencies



Source: EPA 2024.

2.3 GHG Emissions Forecasts

GHG emissions forecasts provide a modeled estimate of future GHG levels based on a continuation of trends in activity, population, and job growth. The forecasts also account for known regulatory actions by State and federal agencies (i.e., “legislative” actions) that are expected to reduce emissions in the future. Emissions forecasts provide insights into the scale of local reductions needed to achieve GHG emissions reduction targets after applying anticipated reductions from regulatory actions.

This CAP includes two forecast scenarios: a “business-as-usual” (BAU) scenario, and a legislative-adjusted BAU scenario. The BAU scenario is based on a variety of scaling factors for each sector (or activities that occur within the sector[s]) in the City and assumes no additional State or federal actions will occur after 2022 (the updated baseline inventory year). In the legislative-adjusted BAU scenario, the BAU forecast is “adjusted” to account for the effects of State and federal laws and regulatory actions on the City’s forecasted emissions.

The forecasts estimate emissions for the years 2030 and 2045, which align with the State's GHG reduction target years established in key legislation and policies, including Senate Bill (SB) 32 and Assembly Bill (AB) 1279, as well as an interim target to align with the Lake Elsinore General Plan Update horizon year.

"Business-as-Usual" Forecast

The BAU forecast estimates GHG emissions based on assessing how emissions generated by community

activities will change over time without federal, State, or local action. The BAU forecast only includes expected employment and population changes in the future. Based on 2022 GHG emissions levels, this scenario estimates annual GHG emissions in Lake Elsinore will increase steadily and rise by approximately 27 percent in 2030 and 77 percent in 2045 (Table 2.2). This projected increase in BAU emissions is due to anticipated growth in demographics and vehicle activity within the city.

Table 2.2 Business-as-Usual Greenhouse Gas Emissions Forecast

Sector	GHG Emissions (MTCO ₂ e)	
	2030	2045
On-Road Transportation	350,215	470,410
Building Energy	211,710	307,658
Off-Road Vehicles and Equipment	24,124	41,180
Solid Waste	24,090	33,439
Water	8,749	12,252
Wastewater	615	864
Total	620,623	865,804

Notes: Actual GHG emissions have been rounded to the nearest thousand and percentages have been rounded to the nearest whole percent. Rounding was conducted independently after all calculations were made. / % = percent; < = less than; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

Legislative-Adjusted Greenhouse Gas Emissions Forecast

Legislative-adjusted BAU emissions forecast evaluates how the City's GHG emissions would change over time, accounting for legislative actions at the federal and State levels, such as regulatory requirements to increase vehicle fuel efficiency. This forecast provides the City with the information needed to focus efforts on certain emissions sectors and sources that have the most GHG reduction opportunities.

Based on 2022 GHG emissions levels, this scenario estimates annual GHG emissions in Lake Elsinore will decrease by approximately 9 percent in 2030 and 57 percent in 2045 (Table 2.3). This projected decrease in Legislative-adjusted BAU emissions is due to the accounting for legislative actions at the federal and State levels.

Table 2.3 Legislative-Adjusted Greenhouse Gas Emissions Forecast

Sector	GHG Emissions (MTCO ₂ e)	
	2030	2045
On-Road Transportation	258,720	86,072
Building Energy	130,739	51,908
Off-Road Vehicles and Equipment	23,380	35,938
Solid Waste	24,090	33,439
Water	6,931	-
Wastewater	580	622
Total	444,439	207,979

Notes: Actual GHG emissions have been rounded to the nearest thousand and percentages have been rounded to the nearest whole percent. Rounding was conducted independently after all calculations were made. / % = percent; < = less than; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

2.4 GHG Emissions Reduction Targets

The emissions reduction targets in this CAAP have been established to be consistent with statewide GHG emissions targets. As directed in SB 32 and AB 1279, the State aims to reduce annual GHG emissions to:

- 40 percent below 1990 levels by 2030,
- 85 percent below 1990 levels by 2045, and
- Net zero GHG emissions by 2045.

The State's targets are in line with the scientifically established levels needed to limit the rise in global temperature to no more than 2 degrees Celsius (°C), equivalent to 3.6 degrees Fahrenheit [°F], the warming threshold at which major climate disruptions, such as mega-droughts, are projected. These targets also pursue efforts to limit the global temperature increase even further to no more than 1.5 °C, equivalent to 2.5 °F (United Nations 2015:3).

The City aims to reduce GHG emissions in proportion to the State's targets and goals. Community emissions levels from 1990 are not available, which is the case

for most local jurisdictions in California. Therefore, community GHG reduction targets for the City's CAP were developed relative to the City's emissions in 2022 and established in proportion with statewide reduction for all emissions sectors relevant to the City's jurisdiction, consistent with CARB guidance. Estimating equivalent reductions needed from the 2022 baseline, the City aims to reduce emissions to:

- 21 percent below 2022 levels by 2030, and
- 88 percent below 2022 levels by 2045.

The City's 2030 target requires GHG emissions to be reduced to 388,224 MTCO₂e in 2030. In 2045, GHG emissions will need to be reduced to 57,278 MTCO₂e. Achievement of the 2045 target will require significant investments at the State level to transform the transportation and energy sectors to low- and zero-carbon, as well as improvements in and deployment of carbon removal technologies. Additional details on the GHG technical analysis can be found in Appendix B and Appendix E.

2.5 Local Emissions Gap

State and federal regulations alone will not be sufficient to achieve the City's GHG emissions reduction targets. The City needs to implement additional actions to close the remaining "local emissions gap" and achieve its reduction targets. Table 2.4 and Figure 2.4 display the City's forecasted emissions, targets, and the local emissions gap.

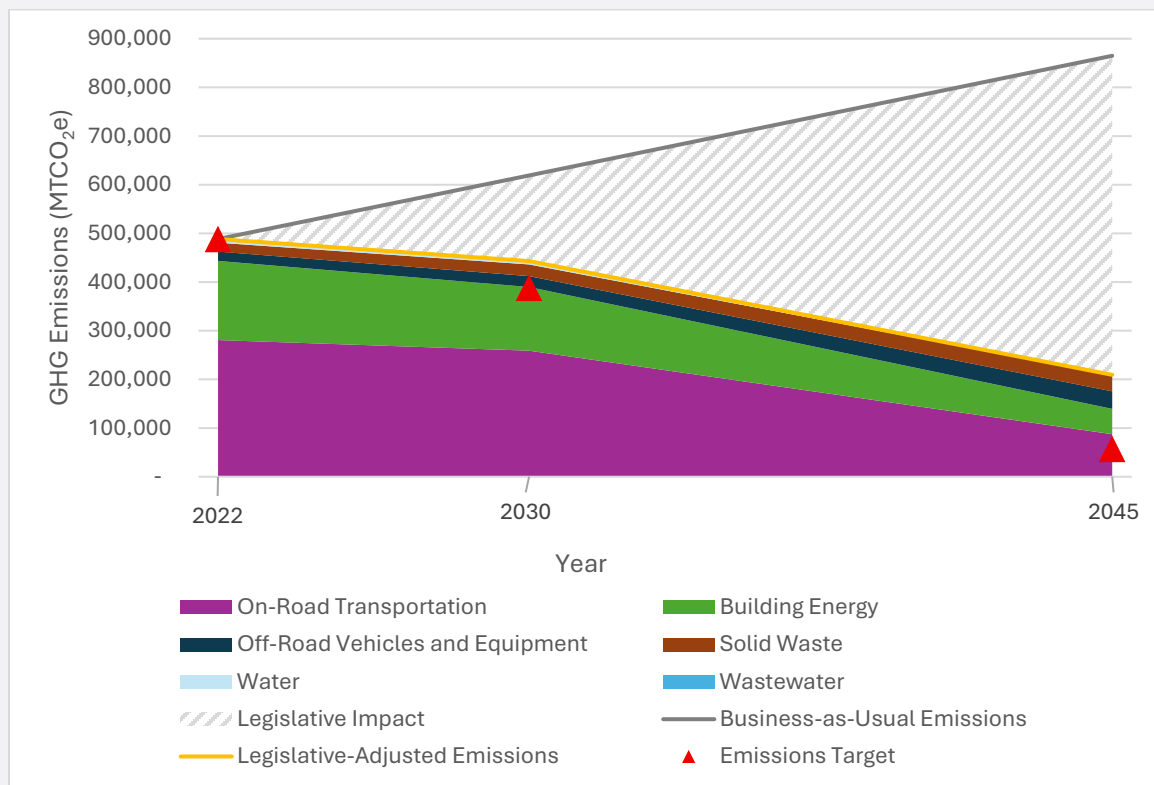
Table 2.4 Greenhouse Gas Local Emissions Gap

Sector	GHG Emissions (MTCO ₂ e)	
	2030	2045
Business-as-Usual Emissions	620,623	865,804
GHG Emissions Target	388,224	57,278
GHG Reductions Needed to Meet Target	230,638	807,628
Total Reductions from Federal and State Legislation	176,184	657,825
Local Emissions Gap	56,215	150,701

Notes: Actual GHG emissions have been rounded to the nearest thousand and percentages have been rounded to the nearest whole percent. Rounding was conducted independently after all calculations were made. GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

Figure 2.4 Legislative-Adjusted Greenhouse Gas Emissions Forecast



Notes: GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

Chapter 3

CLIMATE ADAPTATION



Chapter 3

This chapter describes the context of climate change adaptation and resilience for the City of Lake Elsinore. It outlines the climate change adaptation planning process; summarizes the city's exposure to existing and projected climate change effects, sensitivity to these effects and potential climate-related impacts, and the City's existing adaptive capacity to address these impacts. This chapter summarizes the Climate Resiliency Vulnerability Assessment (VA), which was finalized in April 2024 and developed in preparation for the Lake Elsinore General Plan Update. The VA, which includes additional information, data, and methodologies, can be found in Appendix C. A vulnerability assessment is a detailed analysis of how changing climate conditions can harm people, physical structures, and other community assets throughout the city. The VA assesses the increasing severity of climate change hazards to Lake Elsinore's people and assets and identifies the ones likely to face the greatest risks. In addition, this chapter identifies adaptation goals and strategies for the City to adapt to climate change effects and potential climate-related impacts.

Note that in this chapter, "City" (capitalized) refers to the City of Lake Elsinore as a local government agency, while "city" (lowercase) refers to the entire geographic area of Lake Elsinore.

3.1 Risks & Vulnerabilities

Overview

Climate change impacts are already occurring at global, regional, and local scales and will continue to intensify in the city. The primary effects of climate change evaluated in the VA include increased temperatures and changes in precipitation patterns. These primary climate change effects are projected to amplify risks from secondary climate change impacts, including wildfires, extreme heat events, extreme precipitation and flooding, and drought. While these climate change impacts have historically occurred across the city and surrounding regions, their frequency, intensity, and/or duration will increase due to climate change.

While it is imperative that global greenhouse gas (GHG) emissions be reduced to combat climate change, it is equally important for communities to

prepare for the impacts of climate change and improve resilience through adaptation planning. Regional and local efforts are essential in building climate resilience—the capacity of a community to prepare for disruptions, recover from shocks and stresses, and adapt and grow from a disruptive experience arising from climate-related challenges. These efforts can lead to a greater understanding of localized climate change effects and a better sense of strategies to minimize their impacts. In many instances, there are already plans, policies, and programs in place at the local and regional levels that address existing climate change effects. In some instances, these may be sufficient to address existing climate change effects. In other cases, significant gaps may exist, and therefore, new and revised plans, policies, and programs will be needed. This Climate Action and Adaptation Plan (CAAP) aims to identify and address those gaps.

Adaptation Planning Process

The adaptation planning process aims to strengthen community resilience to climate change impacts. A resilient community is one that is prepared for current and future climate change effects and can minimize disruption when these impacts occur. Resilient communities can recover from climate change effects more quickly and rebuild in ways that enhance their future adaptive capacity.

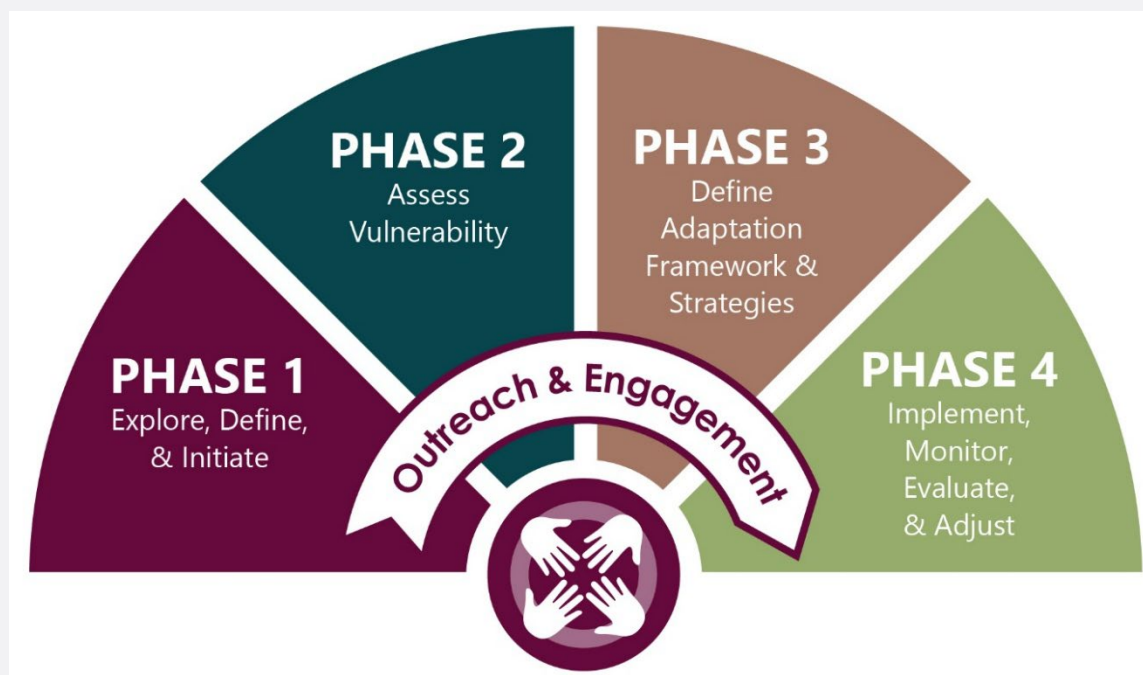
To assist local governments with adaptation planning, the California Governor's Office of Emergency Services (Cal OES) developed the California Adaptation Planning Guide (APG), which provides communities with vulnerability assessment and adaptation planning guidance. Last updated in June 2020, the APG includes a step-by-step process that communities may use to help plan for the impacts of climate change. The APG provides a framework for communities to identify potential climate change effects and important physical, social, and natural assets (e.g. critical facilities, disadvantaged communities, critical habitats); create adaptation strategies to address the impacts of climate change effects; and develop a monitoring and implementation framework for climate change adaptation. The APG served as the primary guidance document for preparing the adaptation components of this CAAP (Cal OES 2020).

The APG includes a four-phase process, illustrated in Figure 3.1, which allows communities to assess their specific climate vulnerabilities and informs strategies for communities to reduce risk and prepare for current and future impacts of climate change effects.

- **Phase 1, “Explore, Define, and Initiate,”** includes scoping and defining the adaptation planning effort. This involves identifying key interested parties, potential climate change effects, and important populations and assets in the community.
- **Phase 2, “Assess Vulnerability,”** includes an analysis of the potential impacts and adaptive capacity associated with climate change effects to determine the vulnerability of populations and community assets. The vulnerability assessment is composed of four steps: exposure, sensitivity and potential impacts, adaptive capacity, and vulnerability scoring.
- **Phase 3, “Define Adaptation Framework and Strategies,”** focuses on developing adaptation strategies to address the risks posed by climate change effects based on the results of the vulnerability assessment.
- **In Phase 4, “Implement, Monitor, Evaluate, and Adjust,”** the adaptation framework is implemented, consistently monitored and evaluated, and adjusted based on continual learning, feedback, or triggers.

The VA prepared for the City fulfilled the objectives of Phase 2: “Assess Vulnerability.” Section 3.2 of this chapter advances the process by addressing the objectives of Phase 3: “Define Adaptation Framework and Strategies.” The following subsections under Section 3.1 provide a summary of the VA findings.

Figure 3.1 Climate Adaptation Planning Phases



Source: CalOES 2020; adapted by Ascent in 2025.

Vulnerability Assessment Process

The City's VA provides a comprehensive analysis of community vulnerabilities to climate change. It identifies and characterizes projected climate change effects that are anticipated to impact the community. Following Phase 2 of the APG, the VA identifies and characterizes projected climate impacts and addresses four key questions:

- Exposure: what climate change effects will the city experience?
- Sensitivity and Potential Impacts: what aspects of the community (i.e., populations, built environment, community functions) will be affected? How will climate change affect the points of sensitivity?
- Adaptive Capacity: what is currently being done and what ability does the City have to address the impacts?

- Vulnerability Scoring: how vulnerable is the city to each climate change effect?

The VA was conducted according to APG guidance using the steps outlined above. For the exposure analysis, potential climate impacts were assessed using Cal-Adapt—a climate modeling tool developed by the California Energy Commission and the University of California, Berkeley that uses downscaled global climate model data. One future emissions scenario, known as a Representative Concentration Pathway (RCP), was applied in the VA: RCP 8.5, which reflects a high GHG emissions trajectory. This scenario assumes that global emissions continue to rise throughout the 21st century with little to no climate policy. The geographic boundary of the city was used as the study area for this analysis of climate change effects.

In addition to Cal-Adapt, several existing resources were reviewed to obtain

information about climate change effects. Data from California's Fourth Climate Change Assessment (LCI et al. 2018) and the 2017 Lake Elsinore Local Hazard Mitigation Plan (City of Lake Elsinore 2017), along with additional resources (see Appendix C), were reviewed to assess the various potential climate change effects and associated impacts within the city.

Summary of Climate Change Effects

The VA was prepared to help the City identify the most urgent climate vulnerabilities in the community that should be prioritized during the adaptation strategy development process. The results also informed the prioritization of strategy implementation. The full VA, including detailed data, additional information, and references, can be found in Appendix C. Prioritization criteria and results of the prioritization exercise are provided in Appendix D.

Exposure and Sensitivity Analysis Summary

The following sections summarize the projected exposures and their impact on the city's population groups and community assets. The climate change effects evaluated include drought and water supply, increased temperature and extreme heat, extreme precipitation and flooding, and increased wildfire risk. As part of the VA, a total of 17 population groups and 15 community assets were identified. Population groups include, but are not limited to, low-income households, households in poverty, and cost-burdened households. Community assets include, but are not limited to, major roads and highways, airports, and electric transmission and distribution lines.

To evaluate how significant the impacts of each relevant exposure are for these sensitive populations and assets, a set of guiding questions was applied to ensure the assessment considered a broad range of potential harms, following the APG's guidance. These questions include, but are not limited to:

- What types of impacts may occur?
- Is there a risk of behavioral or mental harm, loss of economic activity, or other nonphysical effects?
- How long would the impacts persist?

Based on this analysis, impacts to each population group and community asset were ranked from low to high for each relevant exposure. Additional details on the methodology used in the VA can be found in Appendix C.

Drought and Water Supply

Drought is a recurring hazard in Lake Elsinore and throughout Southern California, and it is expected to become more frequent, severe, and prolonged under a changing climate. Although projections suggest that annual precipitation will remain close to historical averages, climate models indicate that rainfall patterns will be less stable, with longer dry periods punctuated by more extreme precipitation events. Rising temperatures and more frequent extreme heat days will further intensify drought impacts by increasing evaporation from lakes and reservoirs, reducing soil moisture, and accelerating water loss across the region. These changes not only threaten water supply but also place stress on ecological systems and increase wildfire risk as vegetation becomes more flammable during extended dry periods.

The city's potable water supply is heavily dependent on imported water, which accounts for about 65 percent of Elsinore Valley Municipal Water District (EVMWD)'s total supply. Imported water is sourced primarily through the Colorado River Aqueduct and the State Water Project, with supplemental supplies from Lake Skinner in Temecula and Lake Mathews in Riverside. Local groundwater and surface water from Canyon Lake provide the remainder. While this reliance on imported water provides some protection from local drought conditions, it also makes the community vulnerable to regional and statewide shortages under hotter and drier conditions. Locally, Lake Elsinore itself relies on rainfall and urban runoff for recharge. During drought conditions, lake levels can drop significantly, leading to degraded water quality, algae blooms, and fish kills, which in turn threaten recreation and tourism, a major economic driver and part of the City's community identity.



The impacts of drought and water scarcity are not felt equally across the community. Financially constrained households are particularly vulnerable as drought can lead to higher water utility costs and greater maintenance expenses, straining already limited budgets. These households may have fewer resources to invest in water-efficient appliances, landscaping, or home retrofits. Socially or physically isolated communities are also at greater risk, as they may be cut off from emergency

resources if water service is disrupted or if communication barriers limit access to drought-related advisories. Seniors, individuals with chronic health conditions, and those dependent on medical devices are additionally vulnerable, as service interruptions in water or wastewater systems can directly impact health and safety.



Critical community assets face significant risks as well. Water infrastructure can be impaired when reservoir levels drop too low, limiting the ability to deliver reliable supplies. Wastewater systems also become stressed when reduced flows hinder their ability to operate effectively, and pump stations or distribution systems may be damaged under drought-related conditions, particularly when combined with wildfire impacts. Natural and managed resources, including wildlands and open spaces around the city, are particularly sensitive to prolonged drought, which weakens ecological health, reduces habitat quality, and increases fire ignition potential. These cascading impacts can reduce the recreational, ecological, and protective functions of local landscapes.

Taken together, drought in Lake Elsinore poses both direct threats to water supply and quality and indirect cascading risks to public health, infrastructure, natural systems, and the local economy. Building resilience requires acknowledging the city's dual vulnerabilities: dependence on

external imported supplies that may diminish under regional drought, and reliance on local water bodies that support recreation, tourism, and community well-being but are highly sensitive to changing climate conditions.

Increased Temperatures and Extreme Heat

Extreme heat is expected to become much more frequent and intense in Lake Elsinore as the climate warms. Historically, the city’s annual average maximum

temperature was about 78 °F (1961–1990). By mid-century, this could rise to 83 °F, and by the end of the century to nearly 87 °F (CEC 2025a). Under the high-emissions scenario (RCP 8.5), residents may experience 31 to 51 extreme heat days per year by mid- and end-century, with heat waves lasting up to 15 days (CEC 2025b). The extreme heat season, once limited to May through October, could expand to cover most of the year. These changes will elevate health risks, strain energy and water systems, and limit safe opportunities for outdoor activities.

Table 3.1 Changes in Annual Average Maximum Temperature and Extreme Heat Events

Annual Averages	Historical (1961-1990)	Mid-Century (2035-2064)	End-Century (2070-2099)
Annual Average Maximum Temperature	78.1°F	83.3 °F	86.7 °F
Number of Extreme Heat Days	5	31	51
Number of Days in Longest Stretch of Consecutive Extreme Heat Days	3	9	15

Note: Extreme heat threshold: 103.8 °F. All extreme heat data and projections are based on Representative Concentration Pathway 8.5. °F = Fahrenheit.

Source: CEC 2025a, 2025b.

Financially constrained households may struggle to keep homes cool, leading to unsafe indoor temperatures. Outdoor workers and unhoused residents are directly exposed to high heat, increasing risks of dehydration and heat illness. Seniors, children, and people with chronic health conditions are more susceptible to heat stress, especially if they lack access to air-conditioned spaces or reliable transportation to cooling centers.

Prolonged extreme heat places stress on the electric grid, raising the risk of power outages during peak demand. Emergency

and health services may be strained as staff face fatigue and greater demand for response. Older homes, schools, and community facilities without modern cooling systems can quickly become unsafe. Natural areas and open spaces are also at risk, as high heat combined with drought can degrade ecosystems and increase wildfire hazards.

Extreme Precipitation and Flooding

Flooding is a primary hazard of concern in Lake Elsinore. Severe or prolonged rainfall can overwhelm streams, drainage systems,

and urban storm systems, causing localized and regional flooding. Flash floods are especially dangerous because they develop quickly with little advance warning.

Flood events can cause severe impacts to people, property, and infrastructure, including drowning risk, erosion and slope instability, damage to roads and utilities, and destruction of buildings and personal property. Large portions of the city lie within Federal Emergency Management Agency 100-year flood hazard zones, which are areas with a one percent chance of flooding in any given year.

Lake Elsinore has the following history of significant flooding events:

- In February 2019, flooding and mudflows occurred in areas adjacent to the 2018 Holy Fire burn area after heavy rains.
- In 1980, heavy rainstorms caused Lake Elsinore to flood, destroying nearby homes and businesses. This led to the construction of the Lake Elsinore Management Project (1988–1994) and improvements to water release from Canyon Lake Dam.

Flood management is the joint responsibility of the Riverside County Flood Control and Water Quality Management District and the City of Lake Elsinore. All new development projects must consider flooding and storm drainage, with limited encroachment allowed into the 100-year floodplain fringe (primarily for public facilities).

Although Southern California is projected to experience overall decreases in precipitation, the frequency of extreme precipitation events is expected to rise under climate change. These changes are likely to increase the frequency and severity of flood events in Lake Elsinore,

even though precise projections are not yet available at the local scale.



Financially constrained households may struggle to repair or retrofit flood-damaged homes, leaving them in unsafe conditions. Physically or socially isolated communities can lose access to water, energy, or evacuation assistance during flood events. Seniors, people with disabilities, and those with chronic illnesses may face difficulties evacuating or coping if services are disrupted.

Flooding can damage low-lying roads, cutting off access to goods, services, and emergency response. Water and wastewater systems may be overwhelmed, while power lines and substations near flood zones are vulnerable to outages. Communication systems such as cell towers in flood-prone areas can fail, limiting emergency alerts. Residential, commercial, and public buildings may be damaged, with mold growth or unsafe conditions prolonging recovery. Flooding also degrades natural areas and open space, reducing ecosystem health and increasing long-term risks.

Increased Wildfire Risk

Wildfires are a persistent and growing hazard in Lake Elsinore due to the region's Mediterranean climate of hot, dry summers, steep and varied terrain, and abundant vegetation. Fires may ignite naturally from lightning or Santa Ana winds, but most are

caused by human activity such as smoking, campfires, equipment use, or arson. Recently, many wildfires in Riverside county have been linked to arson or equipment sparks. The mix of dry fuels, high winds, and rugged topography creates conditions where fires can spread rapidly and become extremely difficult to control. Grasslands and shrublands in particular pose elevated risk because they ignite easily and burn quickly at high temperatures, especially during wind-driven events. Much of Lake Elsinore and its Sphere of Influence is mapped by the California Department of Forestry and Fire Protection (CAL FIRE) to fall within High or Very High Fire Hazard Severity Zones (FHSZs), underscoring the level of exposure within the city and surrounding areas.

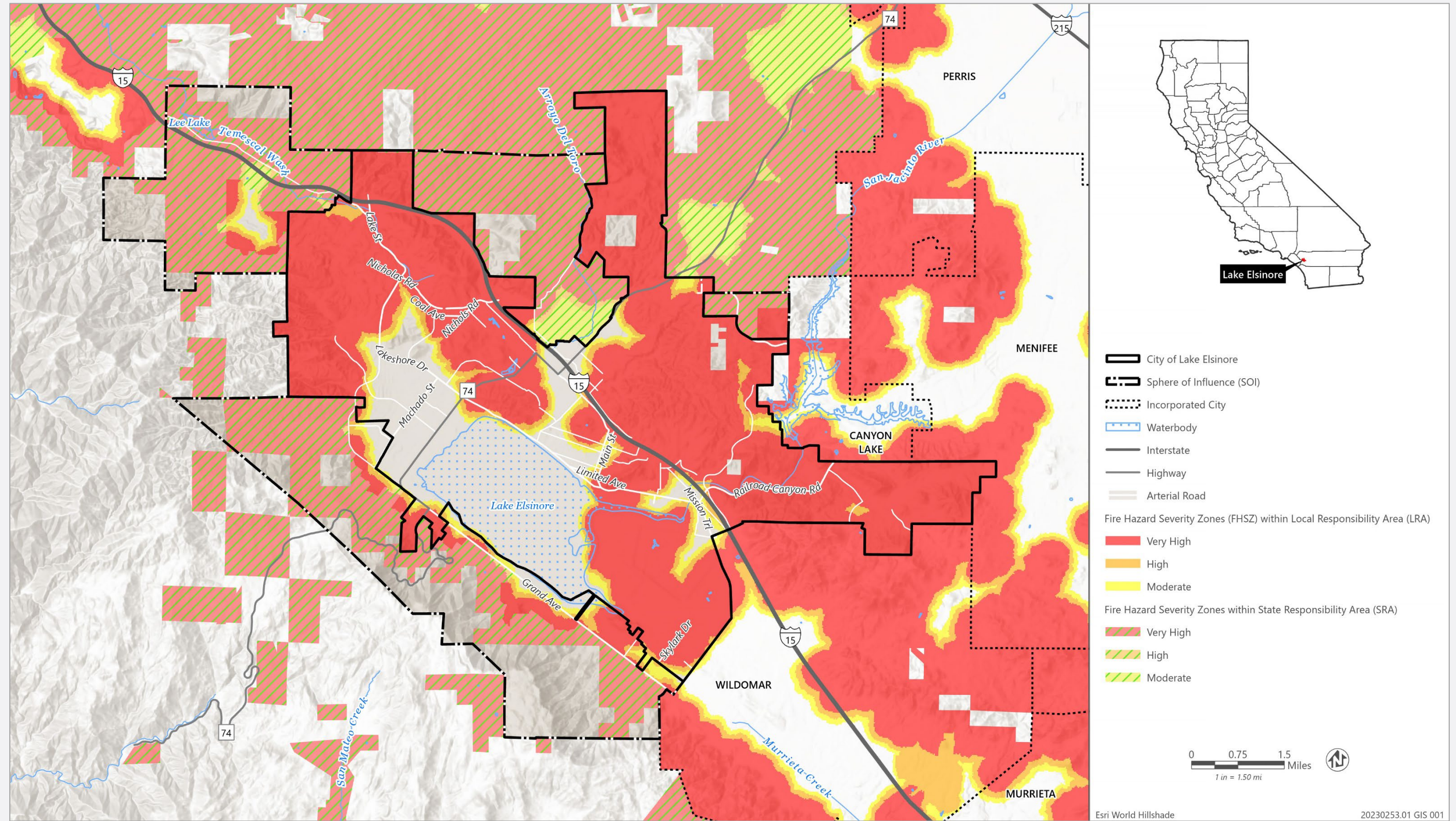
The City contracts with the Riverside County Fire Department and CAL FIRE for fire protection services. CAL FIRE is responsible for State Responsibility Areas (SRAs), which generally cover undeveloped lands and natural areas, while the County Fire Department provides services in Local Responsibility Areas (LRAs), including incorporated areas and developed communities. On federal lands, the U.S. Forest Service has primary responsibility, often working in coordination with CAL FIRE and Riverside County. This tiered system of fire protection means that effective wildfire management depends heavily on interagency coordination and resource sharing, particularly during large-scale fire events. Figure 3.2 below shows the FHSZs, and various SRAs and LRAs within the city and surrounding areas.

Wildfires have already had serious consequences for Lake Elsinore. The 2018 Holy Fire burned 92 square miles of the Cleveland National Forest, including more

than 23,000 acres and 160 buildings within city limits. The fire forced large-scale evacuations, destroyed homes and infrastructure, and left behind steep, unstable slopes that later produced flooding and mudflows during heavy rains. Historical data indicate that nearly 80 percent of wildfires in the region occur during the summer and fall, with about one quarter ignited during Santa Ana wind events. These wind-driven fires are especially destructive due to their speed and intensity, often overwhelming firefighting efforts and leaving little time for evacuation.

Looking ahead, climate change is projected to further increase both the frequency and severity of wildfires in Lake Elsinore. Rising temperatures and prolonged droughts will create longer and drier fire seasons. Vegetation that dries out earlier in the year will provide more continuous fuel, and soils weakened by drought will be less able to recover after fires. These conditions are also expected to heighten the risks of secondary hazards such as flash floods, erosion, landslides, and mudflows in recently burned areas. According to the California Fourth Climate Change Assessment, the region could see more than a 60 percent increase in burned area from Santa Ana wind-driven fires and more than a 75 percent increase from non-Santa Ana wind-driven fires by mid-century. Models also suggest a long-term shift: while burned area may decline toward the end of the century due to fuel reductions from repeated burning, the overall trend will be toward more severe and damaging wildfire events over the coming decades (LCI et al. 2018).

Figure 3.2 City of Lake Elsinore Fire Hazard Severity Zones, Local Responsibility Areas and State Responsibility Areas



Source: Data downloaded from CAL FIRE in 2025; adapted by Ascent in 2025.

At-risk groups, including seniors, people with chronic illnesses, children, and financially constrained households, are especially vulnerable to wildfire smoke, which can worsen respiratory and cardiovascular conditions. Residents with limited mobility or resources may also face difficulties evacuating quickly during fire events or coping with secondary hazards like post-fire flooding and mudflows.

Wildfires can damage or destroy homes, schools, and public facilities, displacing residents and disrupting essential services. Smoke and ash can render buildings unusable until cleaned or repaired. Critical infrastructure such as power lines, water systems, and roads are also at risk, leading to outages, unsafe conditions, and barriers to emergency response. Natural areas, including hillsides and open space, are highly susceptible to burning, and post-fire conditions often increase erosion, landslides, and debris flows.

Summary of Adaptive Capacity

The third step of the VA process evaluates the City's adaptive capacity to address climate change impacts. In the context of climate adaptation, adaptive capacity measures a community's current and future ability to address the impacts of climate change effects.

The City's adaptive capacity to address climate change impacts can be assessed through its current policies, plans, programs, and resources, along with those of relevant regional and State agencies and organizations. This adaptive capacity review reveals how effectively the City can minimize climate vulnerabilities and implement adaptation strategies. Table 3.2 shows a summary of existing plans and reports that contribute to the City's adaptive

capacity to address the anticipated impacts of climate change effects.

The City has already taken a number of actions to address climate change impacts on its communities. The Riverside County Multi-Jurisdictional Hazard Mitigation Plan (MJLHMP) and the Lake Elsinore Local Hazard Mitigation Plan (LHMP) establish the foundation for assessing and addressing hazards in the region, including those intensified by climate change, while strengthening overall community resilience. Beyond the MJLHMP and LHMP, the City maintains several additional adaptive efforts in place to address climate change effects. More details on the City's adaptive capacity can be found in the VA in Appendix C.

Vulnerability Assessment Results

The VA evaluates 17 population groups and 15 community assets for each relevant climate exposure, assessing both impact and adaptive capacity. Each group or asset is assigned a final vulnerability score on a scale of V1 to V5, adjusted for risk and timing of the exposure. Scores of V4 or V5 are considered significant, reflecting high susceptibility to harm. The 17 population groups and their associated scores are shown in Table 3.3, and the 15 community assets and their associated scores are shown in Table 3.4. Additional detail on the methodology and full results of the Vulnerability Assessment can be found in Appendix C

Table 3.2 Adaptive Capacity in Local and Regional Existing Plans and Reports

Plan or Report	Climate Change Effects			
	Drought and Water Supply	Increased Temperature and Extreme Heat	Extreme Precipitation and Flooding	Increased Wildfire Risk
Lake Elsinore General Plan (2011)	— ¹	✓	✓	✓
Lake Elsinore Local Hazard Mitigation Plan (2023)	— ¹	✓	✓	✓
Lake Elsinore Climate Action Plan (2011) ²	—	—	—	—
Riverside County Multi-Jurisdictional Local Hazard Mitigation Plan (2023)	✓	✓	✓	✓
Riverside County Climate Action Plan (2019) ²	—	—	—	—
Western Riverside Council of Governments Western Riverside County Vulnerability Assessment and Adaptation Strategies (2019)	☒	☒	☒	☒

¹ This denotes that while a given plan explores how drought will affect Lake Elsinore's populations and assets, it does not contain drought-specific policies and adaptation measures.

² The climate action plans do not identify hazard-specific policies and adaptation measures, although GHG reduction policies and measures could reduce the future probability and severity of climate-induced hazards.

Source: City of Lake Elsinore 2024b.

Table 3.3 Population Groups and Vulnerability Scores

Population Group	Drought	Extreme Heat	Flooding	Wildfire
Low-income Households	N/A	V4	V5	V4
Households in Poverty	N/A	V5	V5	V5
Cost-burdened Households	N/A	<V4	<V4	<V4
Severely Overcrowded Households	N/A	<V4	<V4	<V4
Renters	N/A	<V4	V4	<V4
Mobile Homes	N/A	<V4	<V4	V4
Persons without Access to Transportation or Telecommunications	N/A	<V4	V5	V5
Linguistically Isolated Communities	N/A	<V4	<V4	V4
Low-Resources Racial or Ethnic Minorities	N/A	<V4	V4	V4
Outdoor Workers	V5	V4	V4	V4
Healthcare Workers, First Responders, and Protective Service Occupations	V5	V4	V4	V4
Houseless Population	V5	V4	V5	V4
Children (Under 14 Years of Age)	N/A	V5	<V4	V5
Persons with Disabilities	N/A	V4	V4	V5
Persons with Chronic Health Problems	N/A	V5	<V4	V5
Seniors (65+)	N/A	V4	<V4	V5
Persons Living Alone	N/A	<V4	<V4	<V4

Source: City of Lake Elsinore 2024b.

Note: N/A = Not Applicable; < = lower than. For population groups with vulnerability scores below V4 (<V4), please refer to Appendix C for the full set of scores and additional details.

Table 3.4 Community Assets and Vulnerability Scores

Population Group	Drought	Extreme Heat	Flooding	Wildfire
Airports	N/A	N/A	<V4	<V4
Transit Routes	N/A	N/A	<V4	<V4
Major Roads and Highways	N/A	N/A	V4	V4
Freight	N/A	N/A	V4	V4
Electrical Substations	N/A	V4	<V4	V4
Electrical Transmission and Distribution Lines	N/A	V4	<V4	V4
Water and Wastewater Infrastructure	<V4	<V4	V4	<V4
Flood Control Infrastructure	V4	N/A	V4	<V4
Emergency Services	N/A	V4	V4	V4
Communication Services	N/A	<V4	<V4	V5
Areas of Concentrated Residential Development	N/A	<V4	V5	V4
Government Buildings and Sites	N/A	<V4	<V4	<V4
Key Employment or Commercial Centers	N/A	<V4	<V4	<V4
Schools	N/A	<V4	<V4	<V4
Wildlands and open spaces	V4	<V4	<V4	<V4

Source: City of Lake Elsinore 2024b.

Note: N/A = Not Applicable; < = lower than. For community assets with vulnerability scores below V4 (<V4), please refer to Appendix C for the full set of scores and additional details.

Based on the results of the VA, increased wildfire risk poses the greatest vulnerability in the city, as shown by Tables 3 and 4 above. Thirteen population groups are significantly vulnerable to wildfire, more than any other hazard. This is followed by increased temperatures and extreme heat (nine groups), extreme precipitation and flooding (nine groups), and drought and water supply (three groups). Similarly, community assets show the highest vulnerability to wildfire, with seven assets rated significant. This is followed by extreme precipitation and flooding (six assets), increased temperatures and extreme heat (three assets), and drought and water supply (two assets). Refer to Appendix C for more details on the VA scoring results.

Many populations in Lake Elsinore are highly vulnerable to extreme heat, flooding, landslides, and wildfire due to both the severity of impacts and limited adaptive capacity. Households in poverty and low-income households are more vulnerable because of fewer financial resources and limited ability to respond or recover, while socially isolated communities may struggle to receive emergency notifications or evacuate quickly. Seniors, people with disabilities, and those with chronic illnesses face additional risks because of mobility challenges or reliance on medical equipment that cannot be transported easily. Outdoor workers, health and emergency service workers, and unhoused individuals are also especially vulnerable because of their constant exposure to hazardous conditions. Although some regional and local programs exist, additional local measures are needed to strengthen resilience and support the city's most vulnerable populations.

Many of Lake Elsinore's key infrastructure systems, including roads, freight routes, water and wastewater networks, and the electrical grid, are highly vulnerable to climate hazards due to their scale, integration, and cost of relocation or redesign. Flooding, wildfire, or other hazards can damage or close major roads and highways, isolating residents and disrupting access to essential services. Emergency and communication services are also at risk, as climate events increase demands on staff, equipment, and coordination, with multi-jurisdictional collaboration becoming more critical during major disasters. Buildings, particularly in areas of concentrated residential development, face high vulnerability, and while retrofits or upgrades can reduce risks, they are often costly or infeasible for many property owners, especially households in poverty and low-income households. Without adequate protection or insurance, buildings could sustain long-term damage or even become uninhabitable under chronic climate stresses. Wildlands and open spaces are similarly at risk, as drought, extreme heat, and wildfire degrade vegetation, wildlife habitat, and slope stability, leading to cascading risks such as pest infestations, erosion, and landslides. While local and regional policies and plans exist to address these vulnerabilities, additional strategies are also needed to strengthen the resilience of critical assets across the city.

3.2 Goals & Strategies

Lake Elsinore faces growing risks from climate change effects and hazards. The City's VA identified population groups and community assets that are most at risk, highlighting the importance of proactive adaptation efforts. Building on these findings, the City developed a set of climate adaptation goals and strategies to reduce risks, protect vulnerable residents, and enhance resilience across the community.

Methodology

The adaptation goals and strategies were developed by reviewing Lake Elsinore's existing plans, such as the City's General Plan Safety Element, LHMP, and regional efforts led by Riverside County and the Western Riverside Council of Governments, and identifying gaps where vulnerabilities remained. Goals represent broad outcomes the City seeks to achieve, while strategies identify specific actions, programs, and policies to achieve these goals. The goals and strategies presented below form the foundation of Lake Elsinore's long-term approach to enhancing climate adaptation and building climate resilience.

Climate Adaptation Goals and Strategies

Goal 1: Improve The Overall Climate Resilience of the City of Lake Elsinore.

Strategies identified under this goal focus on comprehensively preparing the city for impacts from climate change hazards and improving the city's overall climate resilience.

Strategy All-1: Implement and monitor the effectiveness of existing policies, actions, and measures identified in the City and regional entities' existing plans, including, but not limited to the hazard mitigation plan(s), general plan safety element and Western Riverside Adaptation and Resiliency Strategy.

Strategy All-2: Enhance the climate resilience of existing and new residential and commercial developments by encouraging and incentivizing the use of pervious paving and climate-smart landscaped surfaces to prepare for more frequent extreme heat, drought and flooding events.

Strategy All-3: Increase the climate resilience of existing and new residential and commercial development through structural strengthening and hardening to adapt to multiple climate change hazards, via updating the City's local building code or adopting targeted amendments to address key climate vulnerabilities.

Strategy All-4: Avoid the future construction of critical facilities and infrastructure in or near climate change hazard-prone areas.

Strategy All-5: Collaborate with nearby jurisdictions and Riverside County to protect existing critical facilities and infrastructure from climate change hazards via regular maintenance and retrofitting.

Strategy All-6: Invest in sustainable backup power sources to provide redundancy and continued services for critical facilities in the event of an outage.

Strategy All-7: Utilize the best available data and research to understand how climate change hazards may affect the city's transportation system and infrastructure. Collaborate with the California Department of Transportation (Caltrans) to improve the climate resilience of the city's transportation system and infrastructure.

Strategy All-8: Incorporate considerations of climate change and health equity into all governmental initiatives and fundamental operations. Ensure that public health initiatives serving vulnerable communities address the disproportionate impacts of climate change hazards on these communities.

Strategy All-9: Integrate climate change considerations into all stages of the City's emergency management planning, encompassing mitigation, preparedness, response, and recovery endeavors.

Strategy All-10: Consider the impacts of climate change hazards when carrying out the City's evacuation planning. Ensure the planning efforts are consistent with the City's emergency operations plan and general plan safety element.

Strategy All-11: Enhance the resilience of energy infrastructure systems against climate change hazards by collaborating with Southern California Edison (SCE) to bolster redundancy in the energy network. Ensure the regular maintenance and retrofitting of energy infrastructure to prepare it for climate change hazards.

Strategy All-12: Maintain and update the City's website with information about current climate change hazards. Enhance the monitoring of these hazards to ensure rapid response and recovery.

Coordinate with SCE on the notifications of power outages due to climate change hazards

Strategy All-13: Increase public awareness of climate change hazards and how to prepare for such hazards via the regular community outreach events hosted in the city. Improve collaboration and information sharing among the City, other public agencies, community-based organizations, and vulnerable communities.

Strategy All-14: Identify potential locations throughout the city as new community resilience centers or "resilience hubs," either through new construction or repurposing of existing facilities. Resilience hubs provide places of refuge for vulnerable community members during power outages, extreme weather events, wildfires, or other climate change hazards.

Strategy All-15: Establish backup power and water resources at emergency shelters and cooling centers in case of power outages due to climate change hazards.

Strategy All-16: Coordinate with the County of Riverside Continuum of Care and other existing programs to ensure that emergency shelters are available during climate change hazards. Ensure that vulnerable communities are made aware of these resources.

Strategy All-17: Enhance the climate resilience of existing and new residential and commercial development by promoting structural hardening, pervious surfaces, and climate-smart landscaping to address multiple hazards such as extreme heat, flooding, and wildfire. This may include updates to the City's building

code, targeted retrofits, and incentives or support for resilience upgrades, particularly in disadvantaged communities, mobile home parks, and other vulnerable areas.

Goal 2: Prepare for More Frequent Drought Events and Enhance the City's Overall Water Supply Resilience.

Strategies identified under this goal focus on preparing the city for more frequent drought events and enhancing the city's overall water supply resilience.

Strategy Drought-1: Partner with EVMWD to evaluate the vulnerability of the local water supply systems and networks to climate impacts and develop strategies to enhance the resilience of these systems.

Strategy Drought-2: Collaborate with EVMWD and expand upon existing water conservation-related education and outreach programs for the City's residents and businesses.

Strategy Drought-3: Collaborate with federal, State, and local agencies and organizations to identify future water supplies and explore alternative supply sources.

Strategy Drought-4: Implement systems to capture and store stormwater for reuse in irrigation, landscape maintenance, or non-potable uses. Encourage the installation of greywater and water recycling systems to reuse water for irrigation purposes.

Strategy Drought-5: Collaborate with regional water agencies to stabilize water levels in Lake Elsinore, using supplemental water sources if necessary to maintain the Lake's ecological health and recreational value. Restore the

Lake's surrounding wetlands and riparian zones to enhance water retention, improve water quality, and support biodiversity.

Strategy Drought-6: Consider amending the City's Uniform Building Code to require development projects to reduce indoor water consumption by 30% (consistent with 2025 CALGreen Tier 1, Section A5.303.2.3.1), and implement through conditions of approval.

Strategy Drought-7: For outdoor irrigation, recommend using automatic timers and adjusting watering schedules to the cooler hours between 6 p.m. and 6 a.m., which are more restrictive than the current municipal code hours of 5 p.m. to 9 a.m.

Strategy Drought-8: Encourage the adoption of advanced irrigation techniques such as drip irrigation, moisture sensors, and weather-responsive controllers to enhance water efficiency and promote sustainable landscaping practices. Incentivize planting native and drought-tolerant plants that require less watering instead of traditional lawns.

Strategy Drought-9: Restrict water use during construction activities to only those purposes required by regulatory agencies when using water from a construction meter, hydrant meter, or water truck.

Strategy Drought-10: Encourage the installation of water-saving devices for indoor and outdoor uses, including but not limited to open hoses equipped with automatic and positive shutoff nozzles, low-flow showerheads and faucet aerators for residential and commercial buildings, and recirculating pumps for

swimming pools, fountains, and other water features.

Strategy Drought-11: Collaborate with EVMWD to offer residential and commercial customers water efficient rebate to upgrade their properties and fixtures.

Strategy Drought-12: Encourage and expand the implementation of drought-resistant green infrastructure such as street trees and landscaped areas to enhance cooling in both public and private spaces.

Goal 3: Prepare for Increased Temperatures and More Frequent Extreme Heat Events.

The strategies proposed here focus on preparing the city for increased temperatures and more frequent extreme heat events.

Strategy Temp-1: Enhance the City's emergency preparedness and response efforts regarding extreme heat events by developing or enhancing heatwave early warning systems. Consider collaborating with Riverside County or creating the City's own heat action plan.

Strategy Temp-2: Use reflective or permeable pavement materials that reduce heat absorption and mitigate the heat island effect, particularly in parking lots, sidewalks, and streets.

Strategy Temp-3: Collaborate with SCE to prepare the city's electric substations as well as transmission and distribution lines for more frequent extreme heat events by upgrading conductors, transformers, and other critical components with materials that are better suited to withstand higher temperatures, as well as improving the

insulation on transmission and distribution lines to prevent overheating.

Strategy Temp-4: Partner with SCE to implement load management strategies and demand response programs to reduce strain on electric substations and transmission lines during extreme heat events.

Strategy Temp-5: Revise the City's municipal code to require new development to plant at minimum two 15-gallon non-deciduous, umbrella-form trees per 30 linear feet of boundary length near buildings through the development review process. Trees shall be planted in strategic locations around buildings or to shade pavement in parking lots and streets.

Strategy Temp-6: Consider amending the City's municipal code to require new non-residential development to use roofing materials having solar reflectance, thermal emittance or solar reflectance index consistent with 2025 CALGreen Tier 1 values (Table A5.106.11.2.1) and implement through conditions of approval.

Strategy Temp-7: Employ passive solar heating techniques whenever possible with new development projects. Such techniques involve, but are not limited to, orienting buildings properly, planting trees to take advantage of the sun, as well as ensuring adequate roof overhangs and proper wall insulation.

Strategy Temp-8: Work with the California Division of Occupational Safety and Health and employers to provide outdoor workers with sufficient training regarding protection from extreme heat conditions, ensuring the maintenance of healthy and safe working environments.

Strategy Temp-9: Coordinate with Riverside Transit Agency to increase shading and heat-mitigating materials on pedestrian walkways and transit stops.

Strategy Temp-10: Restore and enhance plant habitats for natural shading and cooling.

Strategy Temp-11: Reduce public exposure to extreme heat by expanding access to drinking water and shaded spaces in parks, schoolyards, and recreational facilities with a focus on equity and prioritization of underserved communities and high-heat zones.

Goal 4: Prepare for More Frequent Extreme Precipitation, Flooding, Landslide, Mudflow, and Debris Flow Events.

The strategies proposed here focus on preparing the city for more frequent extreme precipitation and flooding events, combined with landslides, mudflows, and debris flow events.

Strategy Flood-1: Implement the Master Drainage Plan adopted by the City in April 2023. Continue to update studies that outline flood hazard areas outside of the Master Drainage Plan.

Strategy Flood-2: Ensure that new construction activities in floodways and floodplains conform to all applicable provisions of the National Flood Insurance Program to protect from flooding.

Strategy Flood-3: Utilize the City's Capital Improvement Program for storm drainage projects and maintenance and improvement of local storm drain systems, including but not limited to channels, pipes, and inlets to ensure capacity for maximum runoff flows.

Strategy Flood-4: Identify and address areas with poor drainage to lower disease risks associated with stagnant water. Enhance education and outreach initiatives to inform communities about potential increases in vector-borne diseases due to stagnant water.

Strategy Flood-5: Encourage retrofits of hardscaped areas to use permeable paving. Permeable paving can also mitigate the heat island effect, as specified in Strategy Temp-2.

Strategy Flood-6: Restore riparian corridors, soft-bottomed streambeds, and seasonal flood basins to help mitigate flood hazards.

Strategy Flood-7: Encourage the creation of floodway setbacks for greenways, trails, and recreation areas while discouraging development within floodways.

Strategy Flood-8: Mandate the construction of channel improvements designed to accommodate 100-year flood flows where applicable. Promote drainage improvements that maintain a natural or semi-natural floodplain.

Strategy Flood-9: Promote low-impact development practices in new construction projects. Low-impact development is a land use and engineering design approach that aims to manage stormwater runoff and protect water quality.

Strategy Flood-10: Assess new development applications for potential flood hazards through project review and California Environmental Quality Act processes using Federal Emergency Management Agency (FEMA) regulations and mapping data. Require compliance with FEMA Special Flood Hazard Area requirements for projects located within or

adjacent to designated flood hazard areas, or when site-specific conditions indicate a flood risk.

Strategy Flood-11: Coordinate with EVMWD and other sanitation districts and waste management agencies to improve sewage and solid waste management infrastructure to lessen the occurrences of floodwater contamination, thereby reducing the spread of pollution and degraded water quality.

Strategy Flood-12: Coordinate with Riverside County Flood Control and Water Quality Management District to identify new locations suitable for multi-benefit flood control that encourage groundwater recharge and habitat restoration.

Strategy Flood-13: Retrofit and/or relocate infrastructure and critical facilities exposed to flooding and landslide hazards to make them more resilient to such hazards, based on GIS-based spatial analyses.

Strategy Flood-14: Ensure the regular maintenance of water and wastewater infrastructure and facilities to prepare them for extreme precipitation events.

Strategy Flood-15: Assess and map areas with bare soil or significant disturbance due to natural hazards such as wildfire events and/or anthropogenic changes to prioritize restoration efforts. Implement targeted restoration activities where feasible by selecting appropriate vegetation, applying erosion control measures, and following best management practices.

Strategy Flood-16: Partner with Riverside County Flood Control and Water Quality Management District, Riverside County, and National Weather Service to deliver robust multilingual education and outreach materials accessible across multiple media

forms (e.g. radio, text messaging) to publicize information regarding potential day-to-day flood risk, key terminology, emergency supplies, pet protection, electrical safety, and evacuation routes in the case of flooding.

Goal 5: Prepare For and Adapt to Increased Wildfire Risk.

The strategies proposed here focus on helping the city prepare for and adapt to increased wildfire risk.

Strategy Fire-1: Promote programs aimed at raising public awareness of regional air quality issues and highlighting actionable solutions and improvement opportunities.

Strategy Fire-2: Implement ongoing brush clearance requirements and establish low-fuel landscaping policies to minimize combustible vegetation near the urban-wildland interface.

Strategy Fire-3: Strengthen defensible space inspections in wildfire-prone areas. Create fuel modification zones around developments within high wildfire hazard areas by clearing combustible vegetation within 100 feet of such developments. The fuel modification zone size may be altered with the addition of fire-resistant building techniques.

Strategy Fire-4: Perform fuel reduction projects throughout the city to reduce fire potential. Develop a wildfire risk reduction assessment that the City can use for new development in wildfire-prone areas.

Strategy Fire-5: Develop and enforce construction and design standards that ensure the development project incorporates fire prevention features.

Encourage the use of fire-resistant building techniques for new developments such as non-combustible wall surfacing materials, enclosed materials and features, and automatic fire sprinklers.

Strategy Fire-6: Promote programs that educate city residents about the threat of human wildfire origination from residential practices such as outdoor barbecues and from highway use, such as cigarette littering.

Strategy Fire-7: Continue to follow Riverside County Fire Department's most current guidelines to achieve standard response times and staffing levels to prepare for wildfire events.

Strategy Fire-8: Establish neighborhood and building design standards that minimize wildfire hazards in very high and high fire hazard severity zones. Create wildfire protection zones that reduce the risks to citizens and firefighters from fire dangers.

Strategy Fire-9: Initiate wildfire fuel management practices in parks and open spaces.

Strategy Fire-10: Collaborate with Riverside County and regularly maintain existing fire roads throughout the city to provide fire department access.

Strategy Fire-11: Implement long range fire safe planning through code adoption/policies consistent with the City's General Plan Public Safety, Noise, and Air Quality Element.

Strategy Fire-12: Work with CAL FIRE and the Riverside County Fire Department to map and identify locations that are newly at risk, or at risk for fire hazards because of climate change; implement wildfire

mitigation best practices such as maintaining defensible spaces and fire breaks, as well as hardening structures with fire-resistant materials in these mapped and identified locations.

Strategy Fire-13: Coordinate with CAL FIRE, California Department of Fish and Wildlife, University of California Cooperative Extension, and other agencies and organizations to establish post-fire ecological recovery programs to support ecological restoration efforts. Such ecological restoration endeavors could include the reintroduction and establishment of native species, and ecologically-beneficial vegetation management techniques (e.g., prescribed burns, invasive species removal) that would reduce the potential for high-intensity wildfires and improve the resilience of the city's wildlands.

Strategy Fire-14: Retrofit and/or relocate infrastructure and critical facilities exposed to wildfire hazards to make them more resilient to wildfire, based on GIS-based spatial analyses.

Strategy Fire-15: Increase the city's water storage capacity specifically for firefighting purposes, ensuring that fire hydrants are well-distributed in vulnerable and wildfire-prone areas

Strategy Fire-16: Similar to Strategy Flood-5, invest in fire detection and early warning systems such as remote sensors and surveillance technologies to detect wildfires early and notify residents and responders quickly.

Strategy Fire-17: Adhere to Chapter 15.56.020, Part P of the Fire Code pursuant to adopted High Severity Zone Maps.

Strategy Fire-18: Collaborate with the CAL FIRE and the Riverside County Fire Department to support public wildfire education and prevention programs.

Looking Ahead

These goals and strategies provide a roadmap for Lake Elsinore to address climate risks comprehensively, while ensuring that the most vulnerable populations and critical community assets are prioritized. By implementing these actions, the City will be able to enhance public safety, protect natural resources, and strengthen long-term resilience in the face of climate change.

Furthermore, these adaptation strategies are evaluated and prioritized using a set of criteria based on the FEMA STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, Environmental) framework, with an additional Equity criterion incorporated to better reflect community needs. The resulting prioritization matrix provides the City with a clear reference for identifying which strategies should advance first based on feasibility, effectiveness, and equitable outcomes. More information on the prioritization criteria, evaluation process, and full matrix is provided in Appendix D.

Chapter 4

CLIMATE ACTION STRATEGIES AND MEASURES



Chapter 4

To achieve the greenhouse gas (GHG) reduction targets identified in Chapter 2, the City will implement a variety of climate action strategies. In addition to emissions reductions, these strategies would provide benefits such as improved public health, cost savings, and enhanced quality of life for Lake Elsinore residents. This chapter includes the complete list of GHG reduction strategies and accompanying measures and actions.

4.1 Overview

Based on the GHG emissions forecast and input from the community, the City identified opportunities for reducing emissions using a framework of strategies and measures. Each strategy contains one or more measures that provide further focus into the ways the City can impact local GHG emissions. The measures contain specific implementing actions, which are the tangible steps the City will take to realize the measure's overarching objectives. Strategies are organized under focus areas, which represent common themes and objectives. The focus areas, although not synonymous with the emissions sectors described in Chapter 2

(i.e., on-road transportation, building energy, off-road vehicles and equipment, solid waste, water, and wastewater), do encompass and capture each of these sectors. These focus areas include: Building Energy (BE), Transportation (TR), Water (W), Solid Waste (SW), and Green Community (GC).

A total of 14 strategies and 27 measures were identified to achieve emissions reductions from each sector. A summary of all strategies and associated emissions reductions is included in Table 4-1. Additional information on the methods and assumptions used to quantify the GHG reductions associated with the strategies is available in Appendix E.

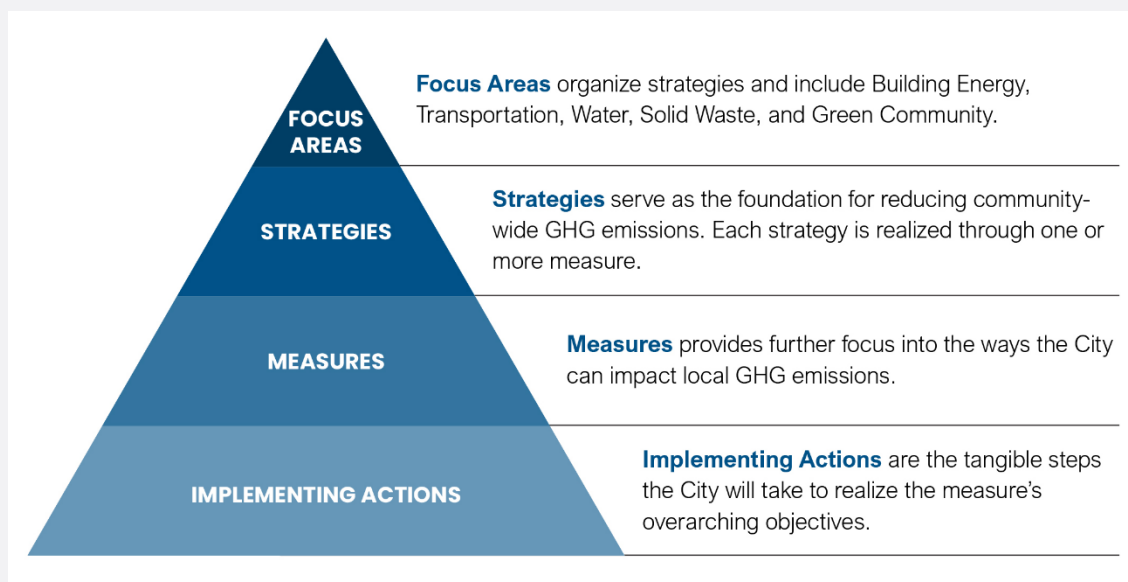


Table 4-1 Climate Action Strategies Summary

Focus Area	Number	Strategy	GHG Reductions (MTCO ₂ e)	
			2030	2045
Building Energy	BE-1	Energy Efficiency and Decarbonization	5,207	38,726
	BE-2	Renewable Energy	31,430	0
	BE-3	Energy Education	Not quantified	Not quantified
Transportation	TR-1	Active Transportation	110	451
	TR-2	Transit	1,588	2,399
	TR-3	Zero-Emissions Vehicles and Equipment	0	78,322
	TR-4	Smart Growth	853	1,254
Water	W-1	Water Conservation	7	0
	W-2	Recycled Water	849	0
Solid Waste	SW-1	Recycling and Compost	20,475	29,856
	SW-2	Local Produce	Not quantified	Not quantified
Green Community	GC-1	Green Jobs	Not quantified	Not quantified
	GC-2	Urban Tree Canopy	133	323
	GC-3	Green Construction Materials	Not quantified	Not quantified
Total GHG Reductions			60,653	151,331

Notes: Totals may not sum exactly due to rounding. GHG = greenhouse gas, MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2025.

Table 4.1 summarizes the collective emissions reductions from the measures within each strategy. Of all the identified strategies, those responsible for the largest emissions reductions include: BE-1, BE-2, TR-3, and SW-1. These four strategies make up 96 percent of total emissions reductions. Within each strategy, there are specific measures and actions that contribute to the total reductions; some emissions reductions are achieved through multiple actions, while others result from a single primary action.

Although not all strategies result in quantifiable GHG emissions reductions due to data or methodology limitations, most strategies will contribute to GHG emissions reductions in some capacity. Additionally, there are important co-benefits associated with every strategy (see Section 1.2 for the list of identified co-benefits). In this chapter, co-benefits are applied and displayed at the measure level, where the presence of any particular

co-benefit means that at least one action under that measure would either directly or indirectly result in that co-benefit.

4.2 Meeting the Targets

As described in Section 2.5, the City needs to take additional action to meet GHG reduction targets that align with State targets. With implementation of the strategies described in this chapter, the City is expected to be able to reduce local emissions to levels that are consistent with the targets of Senate Bill 32 and Assembly 1279. Table 4-2 demonstrates the analysis of forecasted GHG emissions, with consideration of State and federal legislation and regulations and implementation of the climate action strategies, in comparison to the City's GHG reduction targets. A visual summary of future GHG emissions levels for Lake Elsinore with implementation of all strategies, compared to the targets, is also provided in Figure 4-1.

Table 4-2 Meetings the Targets

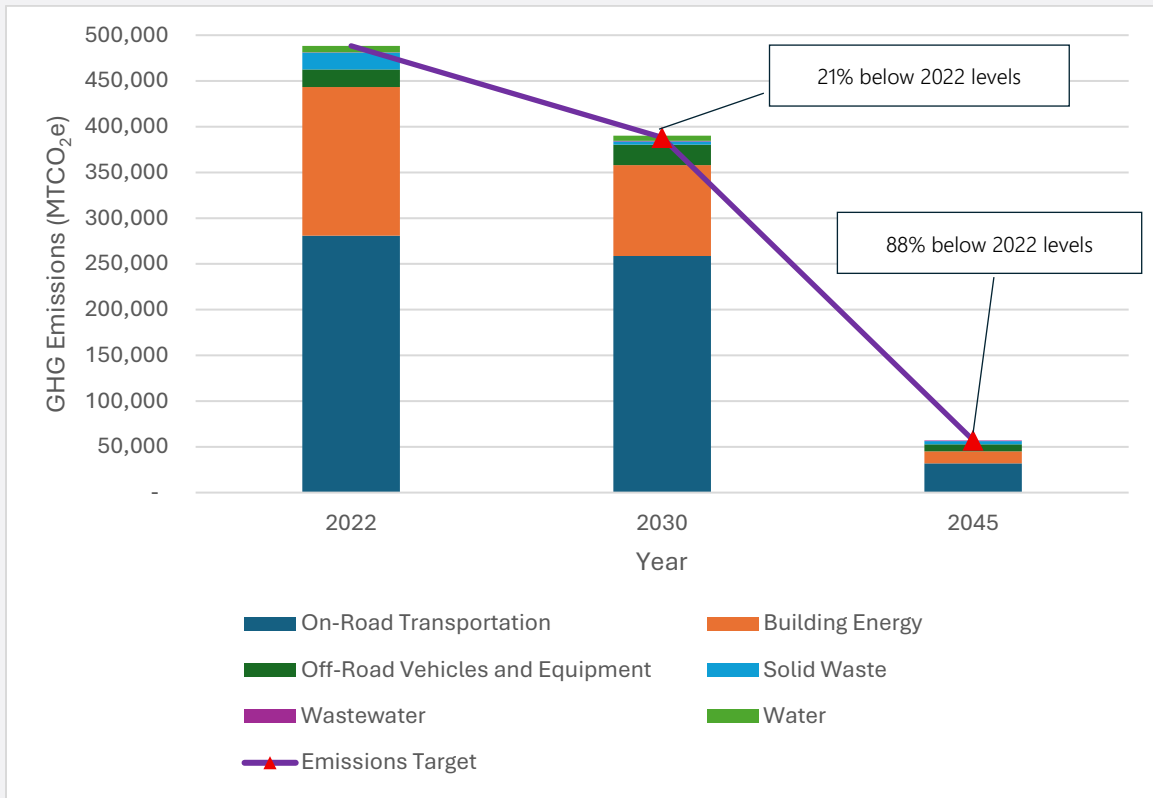
Forecast Scenario	2022	2030	2045
Legislative-Adjusted Business-as-Usual Forecast	488,339	444,439	207,979
GHG Emissions Reductions from Implementation of Strategies	NA	60,653	151,331
GHG Emissions with Implementation of GHG Strategies¹	488,339	383,786	56,648
Percent Change from 2022 Levels	NA	-21%	-88%
CAAP Target Emissions Levels	NA	388,224	57,278
CAAP Targets (percent reduction from 2022 levels)	NA	21%	88%
Difference between CAAP Targets and GHG Emissions with Implementation of GHG Strategies	NA	-4,438	-630
Target Met?	NA	Yes	Yes

Note: Totals may not sum exactly due to rounding. NA = Not applicable.

¹ GHG Emissions with Implementation of GHG Strategies shows the GHG Emissions Reductions from Implementation of Strategies subtracted from the Legislative-Adjusted Business-as-Usual Forecast.

Source: Analysis conducted by Ascent in 2025.

Figure 4.1 GHG Emissions with Implementation of Climate Action Strategies



Notes: MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Created by Ascent in 2025.

Building Energy

BE-1 Energy Efficiency and Decarbonization

BE-2 Renewable Energy

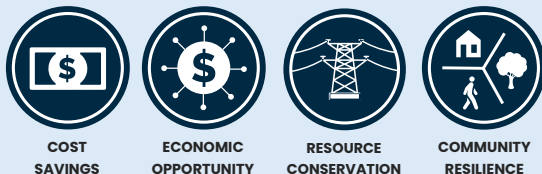
BE-3 Energy Education



Strategy BE-1 Energy Efficiency and Decarbonization

Measure BE-1.1 Encourage building operations that minimize electricity use.

Co-Benefits



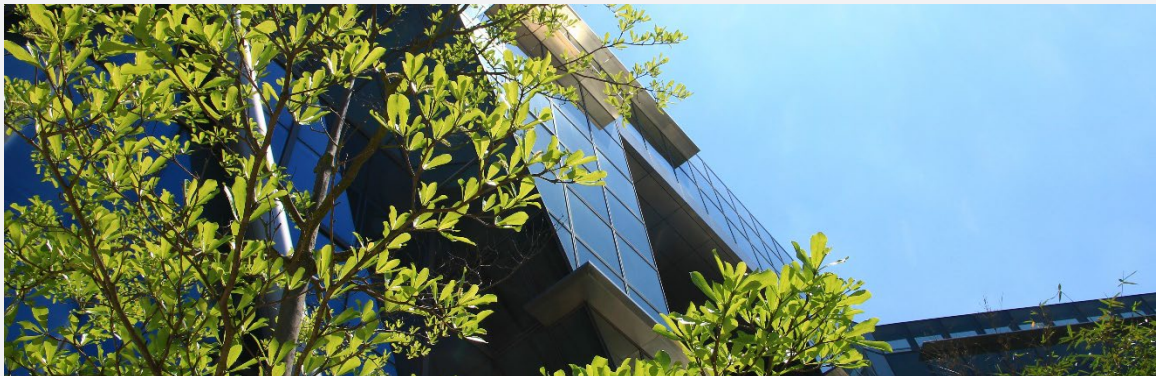
Measure Description

Nonresidential buildings are responsible for 9% of the GHG emissions in Lake Elsinore. To reduce these emissions, building owners and businesses can invest in energy efficient systems and replace natural gas with electricity powered by renewable energy sources. Investments could include upgrades to heating and cooling systems, and the installation of solar energy systems. The City can support the decarbonization of nonresidential buildings by providing incentives such as a Green Business certification, which may contribute to a business's sustainability goals and competitiveness in the marketplace.

GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A



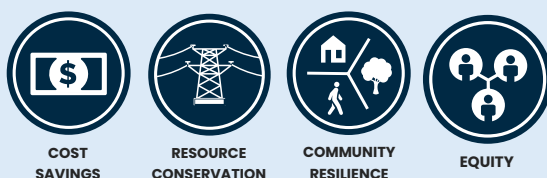
Implementing Actions

Action BE-1.1.1

Establish and administer a voluntary Green Business Certification Program to recognize businesses that voluntarily develop and implement energy conservation programs, including energy efficiency improvements, installation of solar energy arrays, and energy-efficient heating and cooling systems\.

Measure BE-1.2 Support efforts to reduce energy burden and track energy consumption.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Energy benchmarking programs and discounted rates programs can increase consumer awareness of energy consumption. Greater participation in these programs would reflect a shift toward efficient energy technologies and a reduction in energy use. Building owners can use energy benchmarking, which is the practice of comparing building energy use between historical energy use or against building energy standards, to access energy use data and adjust consumption behavior. Discounted electricity rate programs can be implemented to reduce residential cost burden and barriers to household electrification.

Implementing Actions

Action BE-1.2.1

Partner with Southern California Edison to advertise their energy benchmarking and discounted rates programs.



Measure BE-1.3 Develop building performance standards that adhere to or go beyond CALGreen Tier 1 values.

Co-Benefits



ECONOMIC
OPPORTUNITY



RESOURCE
CONSERVATION

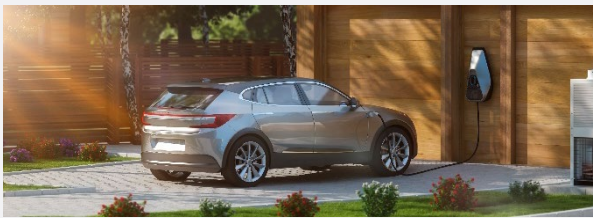


COMMUNITY
RESILIENCE

GHG Emissions Reductions MTCO₂e

2035: 0

2045: 2,132



Measure Description

Building standards ensure that there are baseline safety and structural regulations all buildings must adhere to. Some requirements under the standards directly contribute to GHG reductions. The California Green Building Standards Code (CALGreen) establishes building standards that include electric vehicle charging infrastructure and the electric-readiness of new buildings. Local agencies can achieve greater emissions reductions by adopting the voluntary CALGreen Tier 1 standards, which include increased energy efficiency targets. There are also certifications such as Leadership in Energy and Environmental Design (LEED), that recognize green building design and may incentivize energy efficient development beyond building standards.

Implementing Actions

Action BE-1.3.1

Evaluate the adoption of an ordinance requiring that all new construction exceed the California Energy Code requirements, based on the 2025 Energy Efficiency Standards consistent with CALGreen Section A4.203.1. Modification to the building code would be informed by:

- 1) Conducting outreach with internal stakeholders such as City staff and officials, and external stakeholders such as local developers and utility providers.
- 2) Complete a cost-effectiveness analysis study and obtain California Energy Commission (CEC) approval.

Action BE-1.3.2

Provide incentives for developers to achieve green building standards such as LEED certification, expedited permitting, and density bonuses.

Measure BE-1.4 Retrofit existing residential and nonresidential buildings to use electric heating and cooling technology.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 5,207

2045: 36,594

Measure Description

Natural gas and diesel use in existing nonresidential and residential buildings in Lake Elsinore comprise 35% of building sector emissions. The decarbonization of existing buildings is crucial to the achievement of emissions reduction goals. Heating, ventilation, and air conditioning (HVAC) equipment dependent on natural gas infrastructure are less efficient than newer technologies. Requiring the replacement of equipment with electric alternatives once it has reached end-of-life serves to replace the most inefficient technologies. To support residents and building owners and operators during this shift, financial assistance like rebates can reduce cost-burden at the time of replacement.

Implementing Actions

Action BE-1.4.1

Partner with Southern California Edison to provide rebates/loans for the installation of electric water heaters and HVAC units at time of replacement in existing residential and nonresidential buildings.

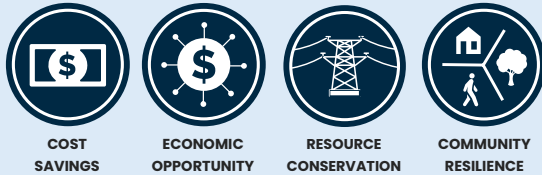
Action BE-1.4.2

Evaluate the adoption of an ordinance requiring air conditioning equipment to use heat pumps at time of replacement in single-family residential housing units consistent with CALGreen voluntary standards Section A4.204.1.1, including exceptions. Modification to the building code would be informed by:

- 1) Conducting outreach with internal stakeholders such as City staff and officials, and external stakeholders such as local contractors.
- 2) Complete a cost-effectiveness analysis and obtain CEC approval.

Measure BE-1.5 Replace fixtures with energy efficient options.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Actions like light fixture replacement and HVAC replacement in municipal buildings can help the City do its part in achieving GHG emission reductions. The replacement of light bulbs is an accessible and cost-effective upgrade for City facilities and residents that can contribute to energy savings and emissions reductions. In addition to light fixtures, sensor technology can prevent energy waste by turning off lights when there is adequate lighting available. These upgrades utilize the most efficient technologies and are among the first steps in improving efficiency.

Implementing Actions

Action BE-1.5.1

Install energy efficient lights, ballasts, and occupancy sensors at all City facilities.

Action BE-1.5.2

Partner with Southern California Edison or a local business to sponsor a LED light bulb distribution program; distribute at least 4,000 LEDs.

Action BE-1.5.3

Replace existing HVAC at City buildings at the end of its life cycle with higher efficiency equipment.



Strategy BE-2 Renewable Energy

Measure BE-2.1 Facilitate the transition of residential electricity use to 100% renewable energy sources.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 31,430

2045: 0

Measure Description

A transition to renewable energy not only reduces GHGs, it improves the resilience of communities. Natural gas can be subject to fluctuations in market price and releases GHGs in both its production and eventual combustion; renewable energy is a sustainable source of energy with zero emissions associated with the generation of electricity. Solar is a crucial source of energy in California and the resulting electricity can be stored in photovoltaic batteries for long-term use. The shift to renewable energy systems will partially depend on making equipment accessible to the community.



Implementing Actions

Action BE-2.1.1

Create or join a Community Choice Aggregator to establish energy independence and receive electricity from renewable sources. Seek guidance from the California Public Utilities Commission (CPUC) or contact other local jurisdictions (for example those that were a part of Western Community Energy) for partnership.

Action BE-2.1.2

Collaborate with the CPUC and California Department of Community Services and Development (CSD) to offer solar array and photovoltaic battery storage incentives for residents.

Action BE-2.1.3

Conduct outreach to builders and developers to assess the feasibility of community solar project development in Lake Elsinore.

Strategy BE-3 Energy Education

Measure BE-3.1 Develop educational campaigns and programs that inform community members about renewable energy and electrification benefits and opportunities.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Educational campaigns and programs can increase awareness of technologies like solar power, electric vehicles, and energy-efficient appliances, encouraging households to transition away from fossil fuels. These technologies are less carbon intensive and offer financial benefits, such as lower utility costs. Solar installation programs run by GRID Inland Empire and the Department of Energy's Weatherization Assistance Program that assist low-income individuals with housing insulation and equipment replacement are examples of beneficial programs. As participation in these programs grows, communities can collectively lower their carbon footprint while improving air quality and public health. By engaging with local communities, educational programs build community resilience, create local green jobs, and promote a more equitable transition to a sustainable energy future.



Implementing Actions

Action BE-3.1.1

Partner with utility providers and other energy efficiency program administrators, such as Inland Regional Energy Network (I-REN) and GRID Inland Empire to spread awareness of clean energy and energy efficiency opportunities/programs. Assist the organization in applications to CPUC and California Department of CSD grants.

Action BE-3.1.2

Develop educational materials/conduct outreach regarding weatherization programs and provide assistance to residents to navigate applications.

Transportation

TR-1 Active Transportation

TR-2 Transit

TR-3 Zero-Emissions Vehicles and Equipment

TR-4 Smart Growth



CLOSE OPEN

Strategy TR-1 Active Transportation

Measure TR-1.1 Expand active transportation infrastructure by implementing the infrastructure, programmatic, and policy recommendations included in the Active LE Plan.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 110

2045: 451

Measure Description

The City is dedicated to improving mobility and connectivity in Lake Elsinore. In 2019 the City adopted the Active LE Plan to prioritize pedestrian and bicycle improvements. This measure aligns with the recommendations in the Active LE Plan to improve the City's active transportation infrastructure. Active transportation emphasizes the transition away from car-dominant spaces and travel, reducing GHG emissions and improving air quality. Constructing more bike facilities and pathways designated for cyclists and pedestrians can encourage active transportation through a sense of safety and improved accessibility to various locations.

Implementing Actions

Action TR-1.1.1

Support the installation of sidewalks and bike lanes identified in the Active LE Plan.

Action TR-1.1.2

Develop a bikeshare program that connects highly frequented areas of the city.



Strategy TR-2 Transit

Measure TR-2.1 Increase opportunities for residents to access alternative transportation and reduce financial barriers to transit ridership.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 1,116

2045: 1,447

Measure Description

Increasing access to alternative transportation can encourage community members to shift away from personal vehicle use. Affordable and accessible transit supports equity by ensuring that all community members can travel sustainably and safely, regardless of income. Greater carpool opportunities, in addition to transit use, reduce traffic congestion and improve air quality, creating healthier urban environments. By investing in alternative transportation, the City can meet climate goals while enhancing mobility and quality of life for residents.

Implementing Actions

Action TR-2.1.1

Provide community-based travel planning with direct outreach to households that is geographically targeted with information, incentives, and support to encourage the use of alternative transportation.

Action TR-2.1.2

Institute a microtransit program for employers with fewer than 100 employees (below the requirements of the existing Transportation Demand Management Program). Provide information, training, and incentives to encourage participation.

Action TR-2.1.3

Identify partnerships for car-share programs and offer reduced pricing for low-income residents.

Action TR-2.1.4

Create a vanpool or shuttle service program to reduce vehicle miles traveled (VMT) from City employee commute.

Measure TR-2.2 Upgrade transit facilities and operations to better accommodate residents.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 471

2045: 952

Measure Description

Improving the accessibility and functionality of transit facilities can encourage more people to choose public transportation over personal vehicles. Reduced traffic congestion and cleaner air contribute to healthier, more livable neighborhoods. Greater participation in transit reduces emissions and fuel use while improving air quality. These upgrades also promote social equity by connecting residents to jobs, schools, and essential services. Better transit supports both climate action and more connected communities.

Implementing Actions

Action TR-2.2.1

Collaborate with Riverside Transit Agency (RTA) to revitalize bus stops, including signage with live updates of bus arrivals, shade structures, and expansion of the service area.

Action TR-2.2.2

Continue partnership with RTA to establish a GoMicro microtransit service area that includes Lake Elsinore.

Action TR-2.2.3

Produce a Multi-Modal Transportation Access Guide, which concisely describes and provides maps on how to reach a major destination in Lake Elsinore by foot, bicycle, transit, rideshare, etc. This information can be provided online, at City buildings, and major destinations in Lake Elsinore.

Action TR-2.2.4

Increase parking spots at existing park-and-ride facilities and add additional spots near high-usage transit stops.

Strategy TR-3 Zero-Emission Vehicles

Measure TR-3.1 Increase the adoption of EVs through financial incentives and vehicle replacement policies.

Co-Benefits



Measure Description

Financial incentives and vehicle replacement policies reduce barriers for individuals to purchase electric vehicles (EVs). This phasing out of older, high-emitting gasoline and diesel vehicles reduces emissions and improves local air quality. Financial incentives make EVs more affordable and accessible to more residents, helping to accelerate the transition to cleaner transportation choices. Vehicle replacement programs can also ensure the benefits of cleaner air and reduced fuel costs are distributed equitably.

GHG Emissions Reductions MTCO₂e

2030: 0

2045: 50,052

Implementing Actions

Action TR-3.1.1

Partner with organizations like the South Coast Air Quality Management District (SCAQMD) to offer rebates for hybrid, plug-in-electric, and other low- and zero-emissions vehicles.

Action TR-3.1.2

Develop and adopt a low and zero-emissions replacement/purchasing policy for new and replaced City vehicles.



Measure TR-3.2 Expand EV charging infrastructure.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 0

2045: See TR-3.1

Measure Description

Expanding EV infrastructure plays a key role in reducing GHG emissions. By increasing the availability of public and private charging stations, communities can support the transition away from fossil fuel-powered transportation. Strategically placed charging stations in underserved areas also promote equity in clean transportation access. In addition to these benefits, building EV infrastructure can help create local jobs, support renewable energy investment, and improve air quality. Overall, enhanced charging infrastructure contributes to the social, economic, and climate resilience of the community.

Implementing Actions

Action TR-3.2.1

Consider adopting reach codes that meet CALGreen Tier 1 or 2 EV charging voluntary measures for residential and nonresidential buildings (Sections A4.106.8 and A5.106.5.3). Modification to the building code would be informed by conducting outreach with internal stakeholders such as City staff and officials, and external stakeholders such as local developers.

Action TR-3.2.2

Collaborate with the RTA to conduct a study of potential public EV charging station locations.

Action TR-3.2.3

Partner with RTA and Southern California Edison to develop a framework for city-wide EV charging infrastructure and identify financial resources for residents.

Action TR-3.2.4

Survey residents, including those in low-income residential areas, to increase access to charging stations and install stations in priority areas.

Action TR-3.2.5

Conduct an educational campaign to promote the transition to EVs and installation of EV charging stations, highlighting available incentives and rebates.

Measure TR-3.3 Transition away from fossil-fuel powered equipment.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 0

2045: 28,270

Measure Description

Diesel use in construction and portable equipment makes up 54% of Lake Elsinore's off-road emissions. Diesel has higher emissions compared to natural gas and gasoline, and the combustion of fuels like diesel contributes to poor air quality due to emissions of pollutants such as particulate matter. Other fossil-fuel powered equipment like leaf blowers also contribute to degradation of air quality, largely due to inefficient fuel use. Replacing equipment that utilizes fossil fuels with electric alternatives can reduce emissions and provide health benefits to the community.

Implementing Actions

Action TR-3.3.1

Promote SCAQMD electric lawn and garden programs, which provide electric equipment rebates for residents and discounted electric equipment prices for commercial landscapers and gardeners.

Action TR-3.3.2

Consider an ordinance for new development projects that requires use of only electric- and renewable-fueled construction and portable equipment after the year 2035, pending market availability and feasibility of use for such equipment.

Action TR-3.3.3

Develop and adopt a low and zero-emissions replacement/purchasing policy for new and replaced City non-road equipment that considers the technological availability and use feasibility of equipment types.



Strategy TR-4 Smart Growth

Measure TR-4.1 Encourage smart-growth strategies that increase connectivity and density.

Co-Benefits



Measure Description

Smart-growth strategies that prioritize increased connectivity and density help make communities more walkable, bikeable, and transit friendly. Mixed-use development reduces the need for long vehicle trips by building housing, jobs, schools, and services closer together. Improved street connectivity and access to public transit promote healthier, more active lifestyles. By focusing growth in already-developed areas, communities can use infrastructure more efficiently and equitably.

GHG Emissions Reductions MTCO₂e

2030: 853

2045: 1,254

Implementing Actions

Action TR-4.1.1

Identify and provide incentives to promote mixed-use, infill, and transit-oriented development, such as a streamlined permitting process, less restrictive parking requirements, less restrictive height limits, lower permit fees, and/or reduced impact fees.

Action TR-4.1.2

Require new subdivisions and large developments to provide sidewalks and bike paths to increase connectivity to transit and activity centers. New infrastructure should connect to the sidewalk and bike networks identified in the General Plan, Bike Lane Master Plan, Trails Master Plan, and Western Riverside County Non-Motorized Transportation plan where feasible.

Action TR-4.1.3

Prioritize development projects that incorporate the Southern California Association of Governments Regional Pilot Initiative Program Development Framework to qualify for future funding opportunities. Develop a checklist or add criteria to planning applications. The program is intended to fund projects that reduce VMT and include housing and equity initiatives.



Measure TR-4.2 Reduce the space dedicated to vehicles.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Reducing the amount of space dedicated to vehicles can discourage car dependency and support alternative modes of transportation. Prioritizing spaces for walking, biking, and public transit creates safer, more accessible streets that support healthier, more active communities. Less paved surface area also reduces heat island effects and stormwater runoff, contributing to improved climate resilience.

Implementing Actions

Action TR-4.2.1

Review/re-evaluate parking minimums for new construction.

Action TR-4.2.2

Consider metered public parking in new and existing central business areas.



Water

W-1 Water Conservation

W-2 Recycled Water



Strategy W-1 Water Conservation

Measure W-1.1 Reduce water consumption through regulation and assisting residents to upgrade to efficient fixtures.

Co-Benefits



COST
SAVINGS



RESOURCE
CONSERVATION



COMMUNITY
RESILIENCE



EQUITY

GHG Emissions Reductions MTCO_{2e}

2030: 7

2045: 0

Measure Description

Reduced water consumption not only contributes to water conservation, it can also lower utility costs. To achieve water use reductions the City can adopt policies that set standards for water-efficient appliances and landscaping practices. Incentives, rebates, or direct assistance for upgrading to efficient fixtures such as low-flow toilets, showerheads, and irrigation systems can make water-saving technologies more accessible. These efforts not only preserve limited water supplies but also reduce the energy needed to treat and deliver water.

Implementing Actions

Action W-1.1.1

Consider amendment to the City's Uniform Building Code to require development projects to reduce indoor water consumption by 12% (consistent with CALGreen Tier 1, Section A5.303.2.3.1). Modification to the Uniform Building Code would be informed by conducting outreach with internal stakeholders such as City staff and officials, and external stakeholders such as local developers.

Action W-1.1.2

Collaborate with Elsinore Valley Municipal Water District (EVMWD), Western Municipal Water District and Metropolitan Water District of Southern California to offer customers residential and commercial water efficient rebates to upgrade their properties and fixtures.

Action W-1.1.3

Consider adopting Appendix L of the 2025 California Plumbing Code to implement greater equipment efficiency and prevent water loss.

Measure W-1.2 Increase awareness of water loss through education and audits.

Co-Benefits



COST
SAVINGS



RESOURCE
CONSERVATION



COMMUNITY
RESILIENCE



EQUITY

GHG Emissions Reductions MTCO₂e

2030: See W-1.1

2045: See W-1.1

Measure Description

Public education and system audits represent a critical step toward more efficient and sustainable water use. Leaks and outdated infrastructure cause water waste and higher energy use. Conducting regular audits helps identify inefficiencies and results in cost savings for businesses and residents. Upgrading water distribution systems reduces water loss in addition to improved community resilience to climate events like drought. Reduced water loss decreases the energy needed to treat and pump water, further lowering GHG emissions.

Implementing Actions

Action W-1.2.1

Collaborate with EVMWD and expand upon existing water conservation-related educational and outreach programs for the City's residents and businesses.

Action W-1.2.2

Collaborate with the EVMWD to offer free water audits to businesses and residents.



Measure W-1.3 Replace lawn irrigation equipment to prevent water loss.

Co-Benefits



**COST
SAVINGS**



**HEALTHY NATURAL
ENVIRONMENT**



**RESOURCE
CONSERVATION**



**COMMUNITY
RESILIENCE**

GHG Emissions Reductions MTCO₂e

2030: See W-1.1

2045: See W-1.1

Measure Description

Replacing outdated or inefficient lawn irrigation equipment can prevent water loss and improve landscape sustainability. Upgrading to modern, water-efficient systems like drip irrigation and smart controllers ensures that water is delivered more precisely. These improvements help conserve water and lower utility bills. Efficient irrigation also reduces strain on local water supplies, particularly during drought conditions. By investing in upgraded equipment, communities can prevent water loss.

Implementing Actions

Action W-1.3.1

For outdoor irrigation, recommend residents and businesses use automatic timers and adjusting watering schedules to the cooler hours between 6 p.m. and 6 a.m., which are more restrictive than the current Municipal Code hours of 5 p.m. to 9 a.m.

Action W-1.3.2

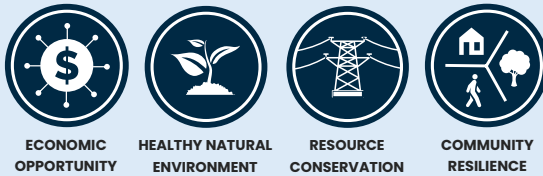
Encourage the adoption of advanced irrigation techniques, such as drip irrigation, moisture sensors, and weather-responsive controllers, to enhance water efficiency and promote sustainable landscaping practices. Incentivize residents and businesses to plant native and drought-tolerant plants that require less watering instead of traditional lawns.



Strategy W-2 Recycled Water

Measure W-2.1 Encourage the use of recycled water by increasing access to recycled water systems and informational materials.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 849

2045: 0

Measure Description

Utilizing recycled water can conserve water supplies and contribute to long-term water resilience. Recycled water systems can be used for landscape irrigation, industrial processes, and other non-potable uses. Informational materials help residents, businesses, and property managers understand how recycled water can be safely and effectively used. Increased awareness also helps normalize recycled water use, making it a standard part of sustainable water management. Using recycled water reduces the need for energy-intensive treatment of freshwater, contributing to lower GHG emissions.

Implementing Actions

Action W-2.1.1

Coordinate with EVMWD to establish an educational program to inform residents about on-site recycled water systems, encouraging the reuse of graywater in compliance with the California Regional Water Quality Control Board and Riverside County Health Department.

Action W-2.1.2

Partner with EVMWD to expand its recycled water service area. Install metering systems on newly included residences.



Solid Waste

SW-1 Recycling and Composting

SW-2 Local Produce



Strategy SW-1 Recycling and Composting

Measure SW-1.1 Increase the diversion of organic waste for commercial, residential, and municipal facilities.

Co-Benefits



HEALTHY NATURAL
ENVIRONMENT



RESOURCE
CONSERVATION



COMMUNITY
RESILIENCE

GHG Emissions Reductions MTCO₂e

2030: 20,475

2045: 29,856

Measure Description

Proper disposal of food waste and other organics is important for emissions reductions. Organic waste that decomposes in landfills contributes to GHG emissions by producing methane, a more potent GHG than carbon dioxide. By redirecting food scraps, yard trimmings, and other organic materials to composting or anaerobic digestion facilities, communities can reduce these emissions. Improved waste practices can also enhance community health by reducing landfill odors, pests, and groundwater contamination.

Implementing Actions

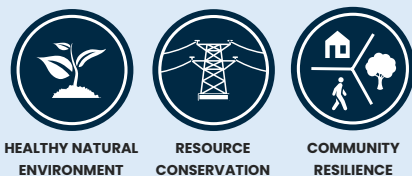
Action SW-1.1.1

Conduct an outreach campaign to educate residents and businesses about existing waste management programs and resources to increase awareness of the emissions associated with solid waste. Partner with the City's franchise waste hauler CR&R Environmental Services.



Measure SW-1.2 Support the use of sustainable materials.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Promoting the use of sustainable materials can lower GHG emissions associated with landfilling of items such as plastics. Incentivizing alternatives can facilitate the use of recyclable or compostable materials and the reuse of existing products. These alternatives reduce the amount of waste sent to landfills and do not contribute to soil or water contamination. Less waste generation lessens costs for municipal waste management, encourages sustainable consumer habits, and contributes to the conservation of resources.

Implementing Actions

Action SW-1.2.1

Consider an ordinance to require sustainable take-out foodware to reduce the landfill disposal of single-use plastics.

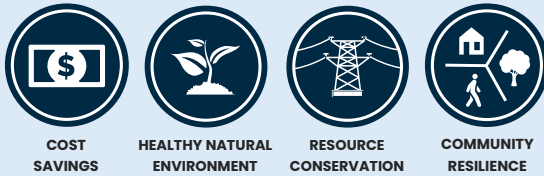
Action SW-1.2.2

Install water bottle filling stations at public facilities to encourage the use of reusable bottles.



Measure SW-1.3 Expand access to recycling and compost materials and programs.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Increasing the accessibility of composting and recycling can encourage greater participation within the community. This can be achieved by providing educational resources and establishing partnerships with entities that do not currently have food diversion systems in place. Composting organic materials produces nutrient-rich soil that can also be supplied to residents. In addition to its environmental benefits, organic waste diversion can create local green jobs in waste management, compost production, and sustainable landscaping.

Implementing Actions

Action SW-1.3.1

Partner with the City's franchise waste hauler CR&R Environmental Services to provide free compost giveaways to residents.

Action SW-1.3.2

Collaborate with the Lake Elsinore Unified School District to implement a composting program to divert organic waste.



Measure SW-1.4 Enable the proper disposal of non-organic waste.

Co-Benefits



HEALTHY NATURAL
ENVIRONMENT



RESOURCE
CONSERVATION



COMMUNITY
RESILIENCE

GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Proper disposal of non-organic waste, such as plastics, metals, and electronic materials, plays a crucial role in reducing emissions. If these materials are landfilled, they can release GHGs and toxic substances into the air and soil. Recycling these materials can reduce the need for new raw materials, and therefore reduce the energy used to produce new products. The provision of resources like bins and equipment and accessible recycling facilities can encourage the recycling of non-organic waste.

Implementing Actions

Action SW-1.4.1

Partner with battery storage and solar panel businesses to establish a battery/panel recycling program.

Action SW-1.4.2

Reduce the use of and improper disposal of greases and oils by partnering with companies that specialize in oil recycling and disposal.



Strategy SW-2 Local Produce

Measure SW-2.1 Improve access to local healthy produce.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Improving access to local healthy produce has significant benefits for both the community and the environment. Fresh produce contributes to well-rounded diets and better physical health. Purchasing produce through local agriculture strengthens the local economy. Growing food at the individual or community level contributes to resiliency against food system disruptions and reduces the need to travel great distances to access food. These community efforts contribute to lower GHGs via less vehicle travel to transport produce, and create an opportunity to reduce food waste if all organics are recycled or composted.

Implementing Actions

Action SW-2.1.1

Partner with community groups and consider an ordinance that establishes community gardens as a permitted use and/or identify locations that can be rezoned for agricultural use.

Action SW-2.1.2

Partner with local food pantries to develop a nutritional foods educational campaign that promotes healthy food alternatives and recipes. Encourage pantries to stock healthy food options.



Green Community

GC-1 Green Jobs

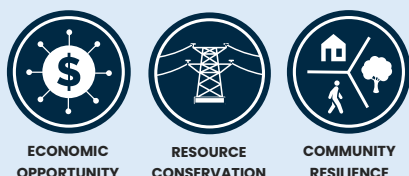
GC-2 Urban Tree Canopy

GC-3 Green Construction Materials

Strategy GC-1 Green Jobs

Measure GC -1.1 Enhance economic resilience by investing in green job development.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Green jobs help support the transition of emission-intensive activities to greener alternatives. Green jobs include positions such as solar and EV installation, sustainable agriculture, and environmental restoration. Providing educational opportunities and workforce training are essential to infrastructure development, sustainable operations, and achieving emissions reductions. Investing in green industries also keeps more economic activity within local communities, supporting small businesses and local growth. By building a workforce skilled in green industries, communities can adapt more effectively to changing economic and environmental conditions.

Implementing Actions

Action GC-1.1.1

Establish partnerships with local community colleges to strengthen the clean energy workforce and streamline hiring for municipal programs.



Strategy GC-2 Urban Tree Canopy

Measure GC-2.1 Expand urban tree canopy to reduce the urban heat island effect.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: 133

2045: 323

Measure Description

An urban tree canopy is important for protecting the health of community members. Trees provide natural shade which helps lower temperatures in areas with dense buildings and largely paved surfaces. A larger tree canopy improves air quality by filtering pollutants and absorbing carbon dioxide. The sequestered carbon also serves as emissions reductions. In addition to cooling and sequestration benefits, trees can contribute to urban biodiversity and improve individual wellbeing. Investing in urban tree planting strengthens community resilience against extreme heat while promoting public health and environmental sustainability.

Implementing Actions

Action GC-2.1.1

Require new development to plant at minimum two 15-gallon native, non-deciduous, umbrella-form tree per 30 linear feet of boundary length near buildings.

Action GC-2.1.2

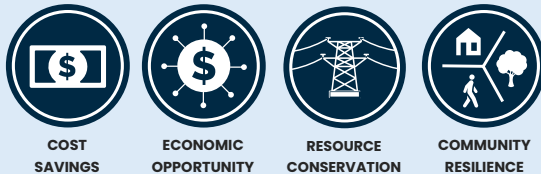
Consider adding tree planting to capital projects where feasible.



Strategy GC-3 Green Construction Materials

Measure GC-3.1 Reduce emissions associated with construction by requiring materials be low-carbon or recycled.

Co-Benefits



GHG Emissions Reductions MTCO₂e

2030: N/A

2045: N/A

Measure Description

Traditional construction materials, like cement and steel, are significant sources of GHG emissions. However, recycled or low-carbon alternatives can significantly reduce emissions from essential building materials. Utilizing recycled materials also reduces waste sent to landfills and conserves natural resources. Prioritizing low-carbon or recycled materials helps promote a circular economy and is aligned with a community's long-term climate and sustainability goals.

Implementing Actions

Action GC-3.1.1

Provide educational information on the benefits and options for low-carbon materials to encourage new development to use low-carbon materials for building construction. *Action GC-3.1.2*

Amend the Municipal Code to require development projects to divert, recycle or salvage at least 65% of nonhazardous construction and demolition debris generated at the site (consistent with CALGreen Tier 1, Section A5.408.3.1).

Action GC-3.1.3

Require all construction and demolition projects to be accompanied by a waste management plan for the project and a copy of records for proper disposal of waste shall be provided to the City prior to final permit approval.



Chapter 5

IMPLEMENTATION AND MONITORING



Chapter 5

This chapter outlines the process by which the City of Lake Elsinore (City) will implement its Climate Action and Adaptation Plan (CAAP) strategies and measures, and how progress will be monitored over time to ensure the CAAP is effective in reducing greenhouse gas (GHG) emissions and building climate resilience in the city. This chapter also discusses the application of the CAAP for future development projects in relation to the California Environmental Quality Act (CEQA).

5.1 Implementation Strategy

Effective implementation of the CAAP will require ongoing management and oversight. Multiple ongoing and interrelated City efforts serve as the basis for the CAAP implementation strategy. For example, the City's General Plan Update is a complementary effort that can be leveraged to implement the CAAP. Individual strategies and actions will be brought forward through the City's annual budgeting process, whereupon the city can allocate its resources to ensure progress is maintained and CAAP goals are achieved. Chapters 3 and 4 provide information for each strategy to help guide the implementation of CAAP actions.

Adaptation Strategies

Climate adaptation strategies are evaluated and prioritized using a set of criteria based on the FEMA STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, Environmental) framework, with an additional Equity criterion incorporated to better reflect community needs. The resulting prioritization matrix provides the City with a clear reference for identifying which strategies should advance first based on feasibility, effectiveness, and equitable outcomes. More information on the prioritization criteria, evaluation process, and full matrix is provided in Appendix D.

Climate Action Strategies and Measures

Information on implementation timelines and responsible departments for GHG reduction measures and implementing actions is provided in Appendix F. This provides transparency as to how an action will reduce GHG emissions and provides accountability by identifying implementation timeframes and responsible departments. The schedule by which each measure is to be implemented, beginning from the year the CAAP is adopted, range from short-term (before 2030), mid-term (2030 to 2034), long-term (2035 or later), and ongoing. These designations, in addition to considerations of equity, will help City staff determine which measures should be implemented and when, which will contribute to the effectiveness of the CAAP.

Regarding emissions reductions, the City has identified target indicators and data needs to track the impact of each strategy with an associated GHG reduction potential. These target indicators intend to show the collective impact of measures in making progress toward 2030 and 2045 targets. These target indicators are available in Appendix F. Collecting the appropriate data is essential to provide an accurate indicator of strategy completion progress.

5.2 California Environmental Quality Act

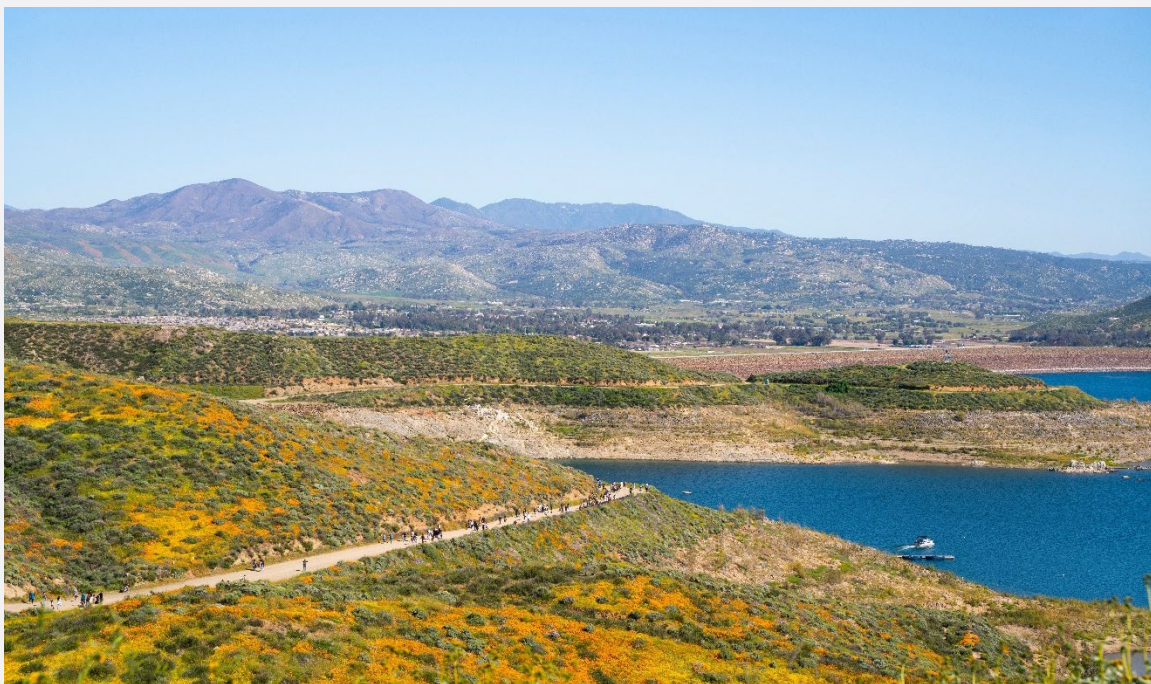
The CAAP was developed with the intent to serve as a resource for CEQA streamlining, per the provisions of state CEQA Guidelines Section 15183.5. Under these provisions, a project that is subject to discretionary review and is consistent with the City's General Plan Update's growth projections can streamline its GHG analysis under CEQA by demonstrating consistency with applicable GHG reduction measures in the CAAP.

A "qualified" CAP, or a GHG reduction plan consistent with CEQA Guidelines Section 15183.5, will allow project-specific environmental documents, if eligible, to tier from and/or incorporate by reference the CAP's programmatic review of GHG impacts in their cumulative impact analyses for GHGs. Streamlined projects fulfill the City's strategic approach to environmental sustainability, expediting environmental review while

meeting the demand for green development. Environmental review for the CAAP is being incorporated into the ongoing General Plan Update process.

5.3 Monitoring and Updates

Once the CAAP is adopted, the City will begin implementing measures and actions and collecting any necessary data needed for monitoring. City staff will need to evaluate and monitor CAAP performance over time and alter or amend the plan if it is not following the emissions trends needed to meet its reduction targets. This will include conducting periodic GHG emissions inventories and analyzing individual actions' performance, as well as incorporating CAAP implementation needs into the annual budgeting cycle. Each quantified climate action strategy included in the CAAP has an associated quantitative target indicator to track success in making the shifts needed to reduce GHG emissions. This monitoring approach will also allow City staff to ensure the CAAP stays relevant and effective.



To gauge progress over time, CAAP monitoring will also require updates to its GHG emissions inventory. An updated GHG inventory is a critical piece of monitoring data for the CAAP. Inventory updates are recommended every two years to ensure continuity and timely intervention as needed. Since the CAAP includes emissions from both the Lake Elsinore City Limits and Sphere of Influence (SOI), the City will conduct an updated GHG emissions inventory as areas of the SOI are annexed into the City Limits. Appendix B provides a breakdown of the GHG inventory between the City Limits and SOI, and monitoring progress towards reaching GHG reduction targets will need to consider both boundaries.

The City will monitor and report on CAAP implementation activities every two years, along with a GHG inventory update. The reports are anticipated to include the most recent GHG emissions data, the implementation status of each action, and progress toward achieving the target indicators. As technologies and markets change and the City implements the actions in the CAAP, these reports will be used to track progress and identify actions that need to be improved,

adjusted, or removed. The reports would also provide transparency and promote engagement with the public for CAAP implementation.

Ensuring that the measures identified in the CAAP result in emissions reductions and resilience improvements is central to the success of the CAAP. Achieving these goals will require investments and long-term commitments from the City government as well as participation from staff in various City departments. The success of CAAP implementation will also depend on the participation of residents, businesses, and other stakeholders in Lake Elsinore.

Finally, the City will prepare a comprehensive update to the CAAP every five years. The next update is anticipated to be in 2030. Future updates will be necessary to account for any new state or federal legislation, measures, and actions that may have been difficult to implement previously due to a lack of available technologies or high upfront implementation costs, and any relevant findings and recommendations from the City's monitoring reports.



Chapter 6

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Chapter 6

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