Chapter 14

Sustainability, Climate Action, and Resilience

This chapter of the General Plan serves as the Climate Action Plan for the City of Palmdale and outlines the City's greenhouse gas reduction and sustainability strategies.

Overview

Climate change is affecting California and the Los Angeles region, and the impacts are projected to worsen, even with only moderate increases in greenhouse gas (GHG) emissions. Climate change is not only impacting our natural environment, but also threatening the health and economic vitality of communities across the State. The future extent to which Palmdale is impacted by climate change is dependent on our actions today. By curbing GHG emissions and adapting our community to the already changing environment, we can significantly reduce the damages incurred from climate change. Palmdale is in a unique position to become a regional climate leader by implementing citywide policies, incentives, and education programs to deploy new technologies, pilot regulatory mechanisms, and spark behavioral change to meet the deep greenhouse gas reduction targets established by the State of California.

Palmdale has embedded this Climate Action Plan (CAP) into its General Plan to serve as a guide for the community's response to challenges posed by climate change and to build on the City's ongoing efforts to mitigate and adapt to the impacts of climate change. In addition to climate concerns, this chapter addresses the following additional sustainability issues: water quality and supply, waste management, ecosystem stewardship, environmental literacy, equitable access to open spaces, and supporting the health, well-being, and spirit of the community.

Wind Turbine near Lake Palmdale

What is Sustainability?

Sustainability is the ability to meet the needs of the current generation without compromising the ability of future generations to meet their needs. Sustainability is a cross-cutting issue that centers on the dynamic relationship between environmental, social equity, and economic considerations. In specific terms, taking a sustainability approach means conserving energy and water, diverting waste from landfills, reducing greenhouse gas emissions, protecting, and restoring ecosystems, and preparing for the potential impacts of climate change, among others.

The importance of practicing sustainability is becoming a greater priority due to the potential impacts of climate change. Climate is the long-term behavior of the atmosphere – typically represented as averages – for a given time of year. This includes average annual temperature, snowpack, or rainfall. Human emissions of carbon dioxide and other greenhouse gases are important drivers of global climate change. Greenhouse gases trap heat in the atmosphere, resulting in warming over time. This atmospheric warming leads to other changes in earth systems, including changing patterns of rainfall and snow, melting of glaciers and ice, and warming and acidification of oceans.

Wildfire

California, the Antelope Valley, and the City of Palmdale are already experiencing the effects of a changing climate. Both gradual climate change (e.g., extreme heat days or weather events) and climate hazard (e.g., wildfires) events expose people, infrastructure, buildings and properties, and ecosystems to a wide range of stress-inducing and hazardous situations. These hazards and their impacts often have a disproportionate effect on the most vulnerable populations in the City.

The future impacts of climate change depend in part on the amount of greenhouse gas emissions that are present in the atmosphere. Greenhouse gas emissions are driven by economic systems, land use patterns, transportation and energy systems, resource use, and other social and political factors. The City can help to mitigate the long-term impacts of climate change by reducing greenhouse emissions. Adaptation strategies such as increasing shade and increasing light-colored surfaces can reduce the negative effects of high heat days. Combining climate strategies with other efforts related to water conservation, energy efficiency, recycling, and ecosystem protection helps to increase the overall sustainability and livability of the community.

What is a Climate Action Plan?

A Climate Action Plan (CAP) is the City's strategic planning document that outlines:

- Current inventory of greenhouse gas emissions
- Projected greenhouse gas emissions
- Greenhouse gas emissions reduction targets
- Strategies and actions for reducing emissions to meet the targets
- Projected changes to natural hazards from climate change

The CAP is reflective of Palmdale's unique environment and community, and it affirms the City's environmental leadership in the region.

CEQA Qualified Plan

The GHG reduction targets specified by the State are consistent with substantial scientific evidence published by the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC) regarding the need to ultimately reduce global GHG emissions to 80% below 1990 levels by 2050. This consistency is important for creating a "qualified" CAP. The concept of having a "qualified" CAP means that a CAP meets the criteria specified in CEQA Guidelines Section 15183.5(b) for a plan for the reduction of greenhouse gas emissions, such that a "qualified" CAP may then be used for the specific purpose of streamlining the analysis of GHG emissions in subsequent projects. Local governments have discretion on what levels or targets are established in a "qualified" CAP, provided they address adopted policies and are based on substantial evidence.

State Regulatory Framework

California is a national leader on climate action. The following section describes key elements of the legislative and regulatory context in California. This legislative framework guided the development of the CAP and GHG forecasting.

Climate Action Targets

Executive Order B-55-18 (2018): Carbon neutrality by 2045

This Executive Order set a target of statewide carbon neutrality by 2045 and to maintain net negative emissions thereafter.

Senate Bill 32 (2016): Greenhouse Gas emission reduction target for 2030

This Senate Bill establishes a statewide GHG emission reduction target of 40% below 1990 levels by 2030.

Assembly Bill 32 (2006): California Global Warming Solutions Act of 2006.

This Assembly Bill requires the California Air Resources Board (CARB) to adopt a statewide GHG limit equivalent to the statewide GHG levels in 1990 to be achieved by 2020. It was California's first GHG reduction target.

Senate Bill 379 (2015): Adaptation and Resiliency Planning

This Senate Bill requires cities and counties to include climate adaptation and resiliency strategies in their general plan updates. The updates were required to include a set of goals, policies, and objectives based on a vulnerability assessment.

Climate Change Scoping Plan (2017)

The Climate Change Scoping Plan was approved by CARB in December 2008 and outlines the State's plan to achieve the GHG reductions required in AB 32. The plan directed municipal governments to reduce emissions by at least 15% by 2020 compared to 2008 levels or earlier. The Scoping Plan was updated in 2017 to reflect the SB 32 target of reducing emissions by 40% under 1990 levels by 2030.

Clean Energy

Senate Bill 100 (2018): Renewable Portfolio Standard

This Senate bill requires that 100% of all electricity within California be carbon-free by 2045. Electricity providers must procure from eligible renewable energy sources, with interim goals of 40% by 2024 and 50% by 2030.

Transportation

Senate Bill 375 (2008): Greenhouse Gas emission reduction targets for vehicles

The Sustainable Communities & Climate Protection Act of 2008 requires CARB to develop regional GHG reduction targets for passenger vehicles. CARB is required to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations.

Senate Bill 743 (2013): Transportation Impacts

Introduces a new performance metric, vehicle miles travelled (VMT), as a basis for determining significant transportation impacts under CEQA. Projects that are anticipated to increase VMT may mitigate impacts through measures such as car-sharing services, unbundled parking, improved transit, and enhanced pedestrian and bicycle infrastructure.

Executive Order N-79-20 (2020): Zero Emission Vehicles

In line with the carbon neutrality goal, this Executive Order requires the elimination of new, internal combustion passenger vehicles by 2035.

Assembly Bill 2127 (2018): EV charging infrastructure

The California Energy Commission is required to prepare and biennially update a statewide assessment of the electric vehicle charging infrastructure needed to support the levels of electric vehicle adoption for the state to meet its goal of putting at least 5 million zero-emission vehicles on California roads by 2030.

Advanced Clean Truck Rule (2020): Zero emission trucks

CARB adopted this rule requiring manufacturers of heavy-duty, on-road trucks to sell an increasing number of zero-emission trucks. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b – 3 truck sales, 75% of Class 4 – 8 vocational truck sales, and 40% of Class 7-8 truck tractor sales.

Innovative Clean Transit (2018): Zero emission bus fleets

CARB adopted this rule requiring public transit agencies to gradually transition to 100% zero-emissions bus fleets by 2040. This regulation applies to all transit agencies that own, operate, or lease buses with gross vehicle weight rating (GVWR) above 14,000 lbs.

Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule (2018)

The U.S. Environmental Protection Agency (US EPA) and the National Highway Traffic Safety Administration (NHTSA) issued the SAFE Vehicles Rule. This rule set a vehicle fleet efficiency standard increase of 1.5% per year above 2020 standards through 2026.

Solid Waste

Senate Bill 1383 (2016): Short-lived Climate Pollutants - Organic Waste Reductions

This Senate Bill establishes a statewide target to reduce the disposal of organic waste by 75% by 2025 to reduce methane emissions from organic material in landfills. As well as establishes edible food rescue requirements.

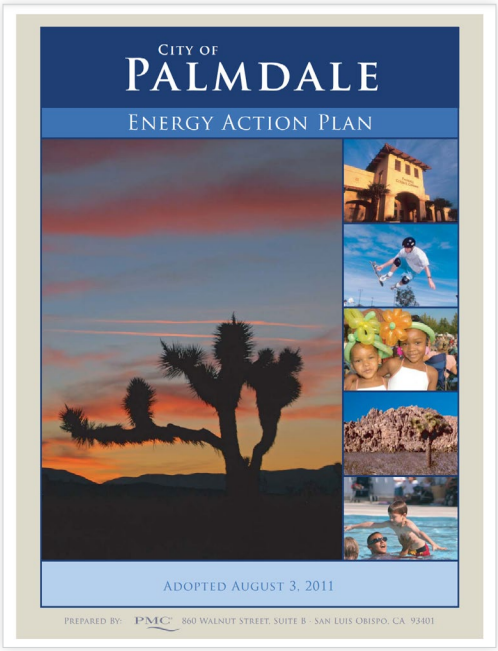
Assembly Bill 341 (2012) and Assembly Bill 1826 (2016): Mandatory Recycling

AB 341 requires all commercial businesses and public entities that generate four cubic yards or more of waste per week and all multi-family apartments with five or more units to have a recycling program in place to help meet the state's recycling goal of 75% diversion by 2020. AB 1826 requires all commercial businesses to collect yard trimmings, food scraps, and food-soiled paper for composting.

Current Conditions

Sustainability in Palmdale

To date, Palmdale has several key plans in place with the direct purpose of reducing GHGs citywide. The City is implementing the 2011 Palmdale Energy Action Plan (PEAP). Efforts include implementing interior and exterior lighting and heating, ventilation, and air conditioning (HVAC) upgrades across City facilities and installing solar panels to generate renewable, carbon-free energy. The City also installed 21 publicly accessible electric vehicle (EV) chargers, including five DC Fast Chargers to support the transition to EVs. Most importantly, the City is moving forward with a Community Choice Aggregation program (CCA) to supply carbon-free electricity to City residents and businesses starting in October of 2022. Focusing on community emission mitigation provides the City with the greatest opportunity to reduce emissions.



Climate Resilience in Palmdale

Senate Bill 379

California Senate Bill (SB) 379 requires cities and counties within the state to consider and address climate change and resiliency within the Safety Element of their General Plans. The Bill requires local agencies to perform a vulnerability assessment that identifies the potential impacts to the community associated with climate change. Further, cities and counties must utilize the vulnerability assessment to develop goals and policies to facilitate climate adaptation and minimize the risks associated with climate impacts.

Resilience issues impacting the City include changes to temperature, precipitation, and wildfire threats. See Table 14.1 for a more detailed explanation of the current and future climate hazards facing Palmdale.

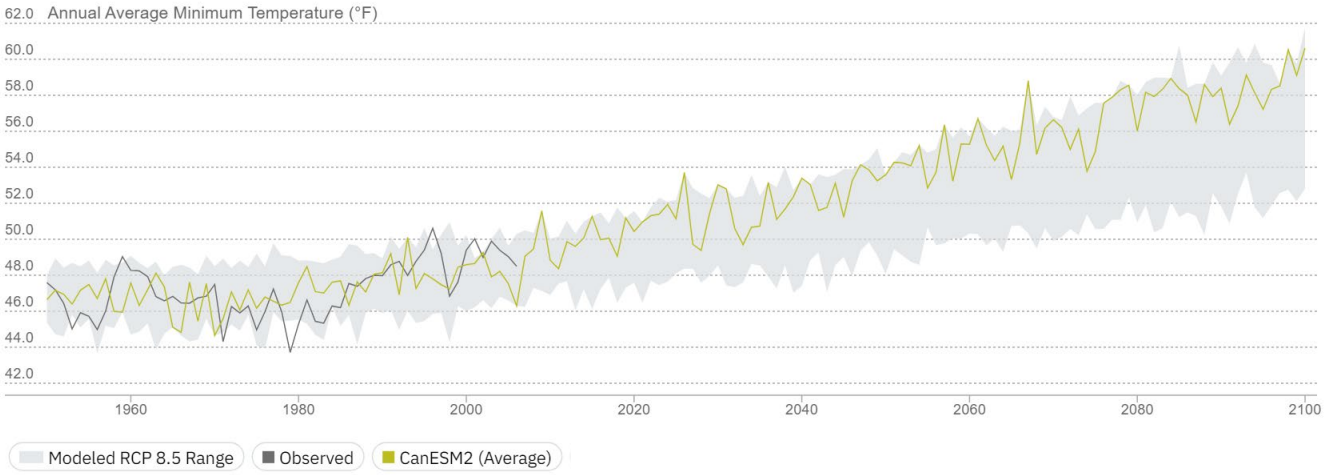
Temperature

Average temperatures and the number of extreme heat days are expected to increase in the future. Annual temperatures are estimated to increase by 4.6°F to 9.1°F by the end of the century.[51] Similarly, the number of high heat days[52] is modeled to increase from 11 in 2017 to 27-33 in 2045 and 35-60 days by the end of the century according to Cal-Adapt.[53] Higher temperatures and prolonged heat waves can negatively impact human health. Figure 14.1 illustrates the projected change in average annual minimum temperature in Palmdale, while Figure 14.2 illustrates the projected change in average annual maximum temperatures in Palmdale.

51. Temperature change range represent lower and higher-emissions scenario for Palmdale. California Energy Commission. (2017). Cal-Adapt. Retrieved from: http://cal-adapt.org/.
52. Number of days in a year when daily maximum temperature is above a threshold temperature of 102.5 °F. Threshold temperature is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at a location.
53. CalAdapt. (2018). Business as Usual Scenario (High Emissions), CanESM2 Model (Average). Retrieved from: https://cal-adapt.org/tools/annual-averages/

Figure 14.1 Projected Change in Average Annual Minimum Temperatures in Palmdale

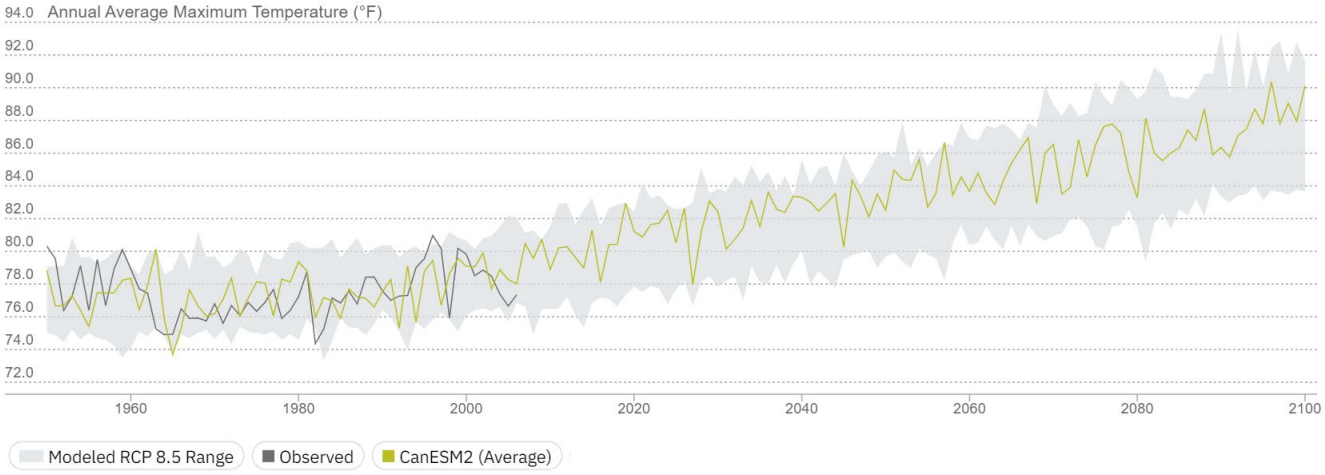
MODELED HISTORICAL		FUTURE PROJECTIONS		FUTURE PROJECTIONS	
Baseline (1961-1990)		**Mid-Century (2035-2064)**		**End-Century (2070-2099)**	
30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE
46.9 °F	44.7–49.7 °F	52.4 °F	49.7–56.7 °F	56.2 °F	52.4–60.5 °F



Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

Figure 14.2 Projected Change in Average Annual Maximum Temperatures in Palmdale

MODELED HISTORICAL		FUTURE PROJECTIONS		FUTURE PROJECTIONS	
Baseline (1961-1990)		**Mid-Century (2035-2064)**		**End-Century (2070-2099)**	
30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE
77.1 °F	73.7–80.2 °F	83.0 °F	79.3–87.7 °F	86.2 °F	81.6–90.4 °F



Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

Precipitation

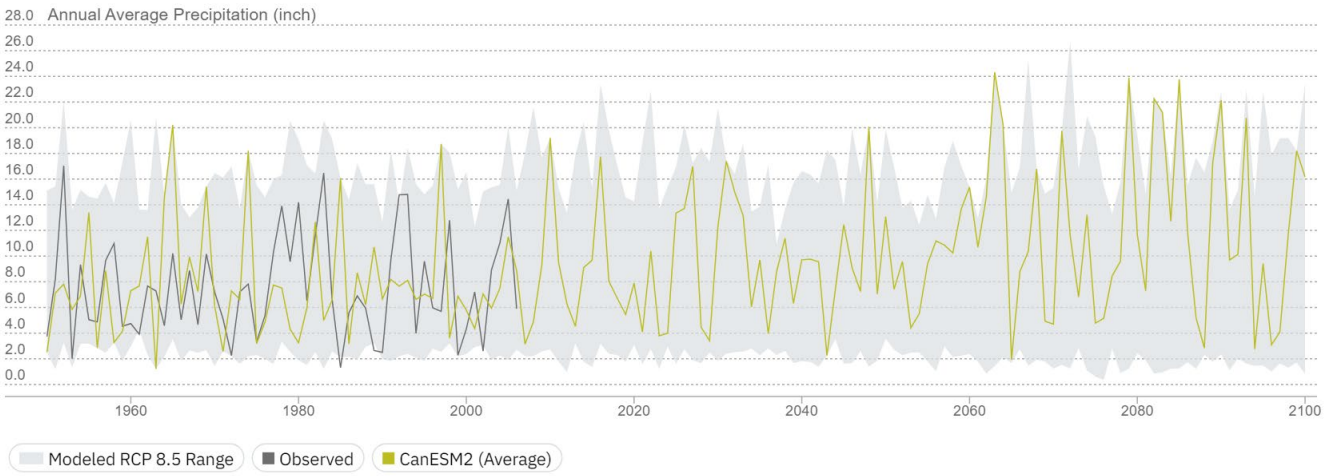
In the present-day climate, the region experiences wide swings in precipitation from year-to-year, and this variability is expected to continue under climate change with fluctuations between wet years and dry years.[54] Climate change is likely to increase the duration and severity of droughts in California. Increasing temperatures and changing precipitation patterns can create periods of abnormally dry weather that result in water supply shortages. Reduced water supplies can have direct and indirect impacts on natural vegetation, wildlife, and quality of life. Figure 14.3 below illustrates the annual precipitation variability beginning in the year 1950 projected through the year 2100.

Similarly, these fluctuations in precipitation can exacerbate flooding hazards. The Antelope Valley Integrated Water Management Plan identified flash flooding and inland flooding as likely to increase due to climate change.[55] The areas of Amargosa Creek, Anaverde Creek, Little Rock Wash, and Big Rock Wash are subject to 100-year floods.

54. Berg, N, et al. (2015). Twenty-Frist Century Precipitation Changes over the Los Angeles Region. Journal of Climate. 28: 401 – 421.
55. 2013. Antelope Valley Integrated Regional Water Management Plan. Retrieved from http://www.avwaterplan.org/

Figure 14.3 Projected Change in Average Annual Maximum Temperatures in Palmdale

MODELED HISTORICAL Baseline (1961-1990)		FUTURE PROJECTIONS Mid-Century (2035-2064)		FUTURE PROJECTIONS End-Century (2070-2099)	
30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE	30 YEAR AVG	30 YEAR RANGE
7.7 inch	1.2–20.8 inch	7.8 inch	0.8–24.3 inch	8.7 inch	0.9–23.9 inch



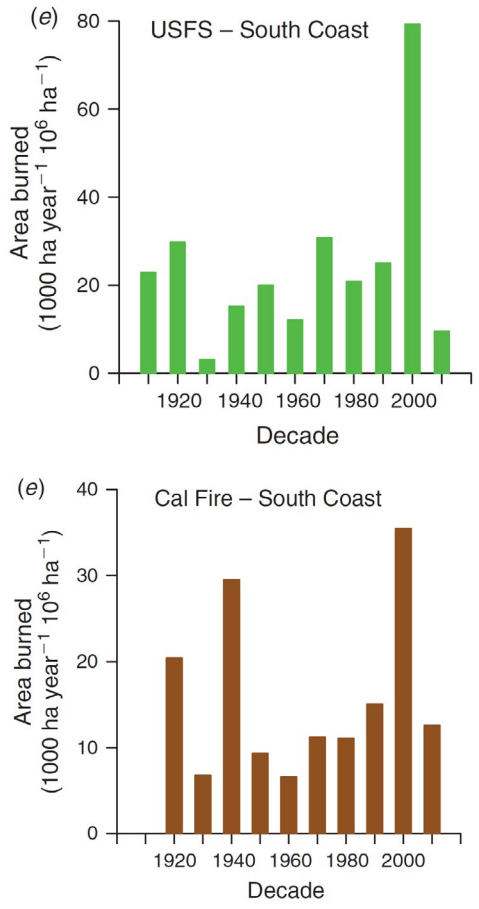
Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

Wildfire

Wildfires in the Angeles National Forest and other nearby forested and natural areas and the associated property damage and worsened air quality are also a concern. Fire danger is impacted by human activity, vegetation, wind, temperature, relative humidity, atmospheric stability, etc. The Keetch-Byram Drought Index (KBDI) represents a simplified proxy for favorability of occurrence and spread of wildfire but is not itself a predictor of fire. The KBDI suggests that by 2045 Palmdale could have 57-64 days with conditions to produce and spread wildfire and 62-91 days by the end of the century.[56] As shown in Figure 14.4, the South Coast region, which includes Palmdale, had significant peaks in the area burned in the 1920s, 1940s, 2000s in CalFire state lands and 1920s, 1970s, and 2000s in USFS federal lands. The South Coast region was among the few areas within the State that had an increase in burned area in recent decades.[57]

Figure 14.4

Decadal Burning on US Forest Service and Cal Fire Managed Lands



Source: Keeley, J.E. and A.D. Syphard (2017).[58]

Air Quality

Air quality is expected to worsen with climate change, as shown in Table 14.1 which describes historic and expected climate impacts in California. Air quality is strongly dependent on weather, and climate change is expected to impact air quality through warming temperatures and more frequent episodes of stagnant air. Many strategies that are used to reduce greenhouse gases, however, will also reduce emissions of air pollutants, such as ozone and particulate matter. Palmdale is part of the Antelope Valley Air Quality Management District (AVAQMD), which does not currently meet state or federal standards for ozone or particulate matter (PM10).

Table 14.1 Existing Palmdale Parks

Climate Change Hazards	Historical Trend	Future Change	Confidence for Future Change
PRIMARY CLIMATE CHANGE IMPACTS			
Average Temperature	Warming (last 100+ years)	Warming	Very High
Extreme Heat	Rising (last 100+ years)	Rising	Very High
Annual Precipitation	No significant trends (last 100+ years)	Unknown	Low
Heavy Precipitation Events	No significant trends (last 100+ years)	Increasing	Medium-High
SECONDARY CLIMATE CHANGE IMPACTS			
Drought	No significant trends (last 100+ years)	Increasing	Medium-High
Air Quality	Improving (30+ years)	Worsening	Low
Wildfire	Increasing (last 30+ years)	Increasing	Medium-High

Source: Adapted from California's Fourth Climate Change Assessment (2018).[59]

56. Wildfire risk range represent lower and higher-emissions scenario for Palmdale. California Energy Commission. (2017). Cal-Adapt. Retrieved from: http://cal-adapt.org/.
57. Keeley, JE, AD Syphard. (2017). Different historical fire–climate patterns in California. International Journal of Wildland Fire 26(4): 253-268.
58. Keeley, JE, AD Syphard. (2017). Different historical fire–climate patterns in California. International Journal of Wildland Fire 26(4): 253-268.
59. Hall, Alex, Neil Berg, Katharine Reich. (University of California, Los Angeles). (2018). Los Angeles Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-007.

Social Vulnerability

There are many social, economic, and environmental factors that influence community and individual vulnerability to climate impacts and their ability to adapt to climate change. Chapter 9: Equitable and Healthy Communities identifies disadvantaged communities (DACs) in Palmdale where residents experience health inequities based on pollution burden and social determinants of health. The populations in DACs may also be more vulnerable to climate change.

For example, outdoor workers are at greater risk of heat stroke and related illnesses from extreme heat events, lower income residents have fewer resources to repair flood or fire damage and may live in poor housing conditions, and people with limited English language proficiency are less likely to access programs that could help during or after an extreme weather event. Moreover, individual biological factors, such as age or health status, can amplify a population's sensitivity to climate change. The following sections describe social vulnerabilities to wildfire, heat, flood, and air quality.

Wildfire

The direct and indirect impacts of wildfire are particularly harmful to vulnerable segments of the population. Damage to housing and community assets, evacuation, rebuilding incurs financial losses for which low-income households may not have resources. Residents who are more physically vulnerable (i.e. older adults, people with disabilities) and those without access to information and resources (i.e. people with limited English proficiency or households without a vehicle) may experience challenges evacuating and accessing emergency services like shelters.[60] Older adults, people with heart disease, and people with respiratory conditions are more susceptible to adverse health impacts from wildfire smoke exposure.[61] Children are also more at risk for lung issues related to smoke because their lungs are still developing and other physiological factors.[62] Unhoused individuals are also vulnerable to wildfire smoke if they live outdoors and do not have places to take refuge or access filtered air.

As shown in Figure 14.5, DACs within the Palmdale city limits are not directly within any of the fire hazard severity zones. Within the Sphere of Influence, the DAC portion of census tract 9102.13 is within Moderate, High, and Very High fire hazard severity zones. The DAC portion of census tract 9110.01 is in the High fire hazard severity zone. Regardless of inclusion in fire hazard severity zones, it is important to note that wildfire smoke can affect all DAC tracts by producing bad air quality in the entire city.

Flood

Like wildfire, the direct and indirect impacts of flood are particularly harmful to vulnerable segments of the population. In general, people with lower income are less able to pay for resources to respond and recover from flooding; for instance, recovering from property damage may be burdensome to low-income households, households without flood insurance, and renters.[63] Similarly, unhoused individuals are highly vulnerable to flood because their dwellings and possessions are directly exposed to damage from flooding and susceptible to developing mold post-flood.[64] Households with lower educational attainment and/or who are linguistically isolated are vulnerable to flood impacts as they may have insufficient understanding of preparedness information for flooding risks.[65] After a flood, people with respiratory conditions and other preexisting conditions are more susceptible to adverse health effects from mold accumulation.

As shown in Figure 14.6, Palmdale's DACs are mostly within the moderate to low-risk zones so they are not highly exposed to flood hazards. Small portions of the DAC tracts east of State Route 14 (Tracts 9102.18, 1905.05, and 1904.04) are in high-risk flood areas.

60. County of Los Angeles. (2021). LA County Climate Vulnerability Assessment.
61. US Environmental Protection Agency (EPA). (2021). Which Populations Experience Greater Risks of Adverse Health Impacts Resulting from Wildfire Smoke Exposure? Available: https://www.epa.gov/wildfire-smoke-course/which-populations-experience-greater-risks-adverse-health-effects-resulting
62. US Environmental Protection Agency (EPA). 2021. Which Populations Experience Greater Risks of Adverse Health Impacts Resulting from Wildfire Smoke Exposure? Available: https://www.epa.gov/wildfire-smoke-course/which-populations-experience-greater-risks-adverse-health-effects-resulting
63. County of Los Angeles. (2021). LA County Climate Vulnerability Assessment.
64. Ibid.
65. United States Environmental Protection Agency (EPA). (2021). Climate Change and Social Vulnerability in the United States.

Figure 14.5

WildFire Hazard Severity Zones and DACs

Fire Hazard Severity Zones

- City Boundary
- Sphere of Influence
- Major Highway/Arterial
- SB1000 DAC (Not Vacant)

Fire Hazard Responsibility Area, Severity Reponsibility Area

- Moderate, SRA
- High, SRA
- Very High, SRA
- Very High, LRA

0 0.75 1.5 2.25 3 Miles

0 3,200 6,400 Feet

Data Sources:
City of Palmdale GIS data; CalFire, 2007, 2012

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Raimi + Associates
April 2022

City of Lancaster
50TH STREET WEST
30TH STREET WEST
20TH STREET WEST
10TH STREET WEST
DIVISION STREET
20TH STREET EAST
COLUMBIA WAY / AVENUE M
AVENUE N
AVENUE O
RANCHO VISTA BLVD
RANCHO VISTA BL / AVENUE P
ELIZABETH LAKE ROAD
RITTER RANCH ROAD
RANCH CENTER DRIVE
BRIDGE ROAD
TERRA SUBIDA AVENUE
SIERRA HIGHWAY
14
138
45TH STREET EAST
50TH STREET EAST
90TH STREET EAST
AVENUE P
AVENUE P-8
AVENUE Q
PALMDALE BLVD
120TH STREET EAST
AVENUE R
AVENUE S
25TH STREET EAST
30TH STREET EAST
40TH STREET EAST
47TH STREET EAST
60TH STREET EAST
PEARBLOSSOM HIGHWAY
FOOTHILL BLVD
AVENUE T

Figure 14.6

Flood Hazard Areas and DACs

City Boundary
Sphere of Influence
Other City Boundary
Major Highway/Arterial
Railroad
SB1000 Disadvantaged Communities

Flood Hazard Areas

Moderate to Low Risk Areas
High Risk Areas
Undetermined Risk Areas

0 0.75 1.5 2.25 3 Miles
0 3,000 6,000 Feet

Data Sources: City of Palmdale GIS data; FEMA, 2019.

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April 2022

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Air Quality

Air quality could worsen with climate change due to the increased occurrence of stagnation events, a term that describes the phenomenon of contaminated air lingering over a region combined with a lack of rain and wind.[66] Stagnation events lead to an increased concentration of pollution exposure, and thus, increased risk of heart disease and respiratory illnesses. Additionally, ozone production generally increases with hotter temperatures, which can result in the number of ozone days increasing up to 9 days by 2050.[67] In California, rising temperatures could also see an increase between 22-30 days in the annual number of ozone days with over 90 parts per billion (ppb).[68] The current EPA standard for ground-level ozone is 70 ppb, based on scientific evidence of the effects of ozone on public health, including asthma attacks, emergency room visits, and premature death.

Older adults are particularly vulnerable to negative health impacts because they are more likely to have chronic heart conditions and respiratory illness that are exacerbated by poor air quality. Additionally, people of all ages who exercise, work, or live outdoors are more likely to be impacted due to greater exposure.[69]

Heat

Older adults, people with heart disease, and people with respiratory conditions are more susceptible to heat-related illness and death when exposed to extreme heat. Extreme heat affects these physically vulnerable populations because it exacerbates pre-existing conditions and thus their ability to regulate their body temperature.[70] Children are also more vulnerable to impacts of high temperatures because they have less ability to naturally cool their bodies. [71,72]

Households with lower socioeconomic status are also more at risk of heat stress and/or high temperature mortality. One reason is that having access to air conditioning contributes to one's ability to withstand high temperatures. Lower income households may not have air conditioning in their dwellings, or if they do, they may not be able to afford running it. Having a lower income is also associated with lack of access to quality healthcare in the case that they experience heat stress or illness.[73] Lastly, workers in outdoor occupations are also more vulnerable to the impacts of extreme heat because they are exposed for longer periods of time to high temperatures.

As shown in Figure 14.7 and Figure 14.8, all DACs in Palmdale will be exposed to extreme heat to varying degrees based on representative concentration pathway (RCP)8.5 projections for mid- and end-of century. By mid-century, the DAC tracts around the State Route 14 and Highway 138 connection (portions of census tracts 9102.18 and all of census tracts 9104.05, 1904.04, and 9102.13) and those south of Avenue R-8 (portions of census tracts 9106.02, 9106.08, 9107.20 and 9107.06; and all of census tracts 9106.06, 9107.15 and 9107.14) will experience 60-89 extreme heat days annually. The other tracts will experience 90-119 extreme heat days annually. By end-of-century, all DAC tracts will experience 90-119 extreme heat days annually. The tract in the eastern portion of Palmdale's Sphere of Influence will experience slightly more, with an expected 120.6 extreme heat days annually.

Resilience and Adaptation Opportunities

Land use modifications, water efficiency and stormwater management, renewable energy generation and storage, and increased organic waste diversion are all adaptive approaches that can improve sustainability on an ongoing basis while also increasing resilience to both the stressors and shocks related to climate change. Additionally, the Local Hazard Mitigation Plan (LHMP) and Safety Element provide guidance to prepare for and respond to earthquakes and other disasters. Many of the measures established in the LHMP can also be activated to respond to climate-related events such as high heat, poor air quality, extreme storm events, or temporary disruption of electricity service. Resilience and adaptation opportunities are addressed by the policies under Goal 8: proactively advance community resilience. Additional emergency response and hazard mitigation policies are included in the Safety, Air Quality, and Equitable and Healthy Communities Elements.

66. Horton, D., et. al. (2014). "Occurrence and persistence of future atmospheric stagnation events." Nature Climate Change 4 (8): 698-703.
67. Shen, L., et. al. (2016). "Impact of increasing heat waves on U.S. ozone episodes in the 2050s: Results from a multi-model analysis using extreme value theory." Geographical Research Letters 43: 4017-4025.
68. Mahmud, A., et. al. (2008). "Statistical downscaling of climate change impacts on ozone concentrations in California." Journal of Geophysical Research 113.
69. https://www.cdc.gov/air/ozone.html
70. US Environmental Protection Agency. (2021). Climate Change and Social Vulnerability in the United States. https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf
71. Kenney WL, Craighead DH, Alexander LM. 2014. Heat waves, aging, and human cardiovascular health. Med Sci Sports Exerc. 46(10): 1891-1899.
72. Natural Disasters and Severe Weather. 2017. Centers for Disease Control and Prevention, National Center for Environmental Health. https://www.cdc.gov/disasters/extremeheat/heat_guide.html
73. Natural Disasters and Severe Weather. 2017. Centers for Disease Control and Prevention, National Center for Environmental Health. https://www.cdc.gov/disasters/extremeheat/heat_guide.html

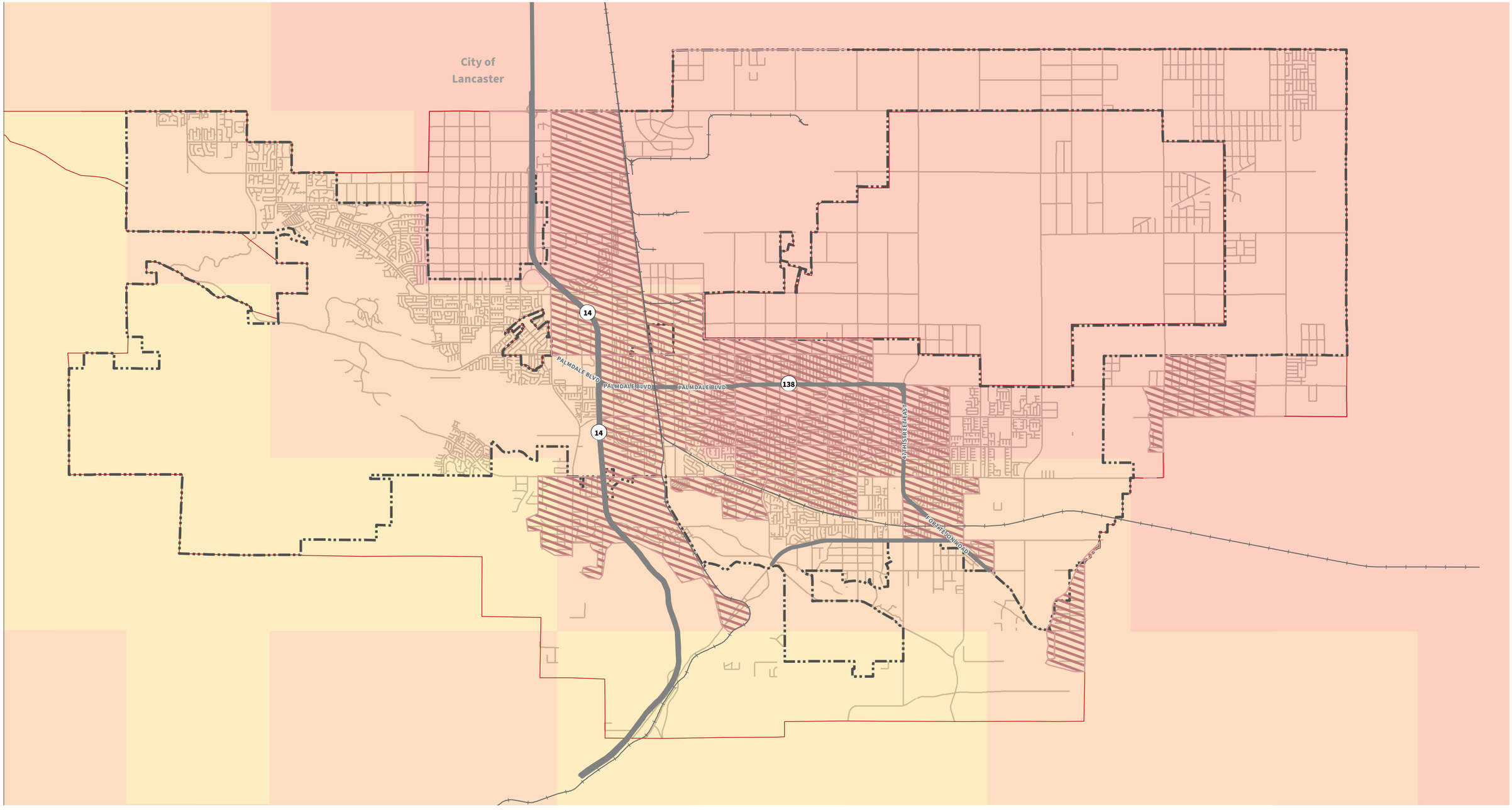

Figure 14.7

Extreme Heat Days and DACs (Mid-Century)

Extreme Heat Days Mid-Century (RCP 8.5)

- City Boundary
- Sphere of Influence
- SB1000 DAC
- Major Highway/Arterial
- Railroad

- 0-29
- 30-59
- 60-89
- 90-119
- 120-152

0 0.75 1.5 2.25 3 Miles

0 3,200 6,400 Feet

Data Sources: City of Palmdale GIS data;
Business as Usual Scenario (High Emissions), Coupled Model Intercomparison Project (CMIP5)
Fengpeng S, et al. 2015;
World Terrain Base, 2015 ESRI, USGS, NOAA.

Produced by Raimi + Associates
April 2022

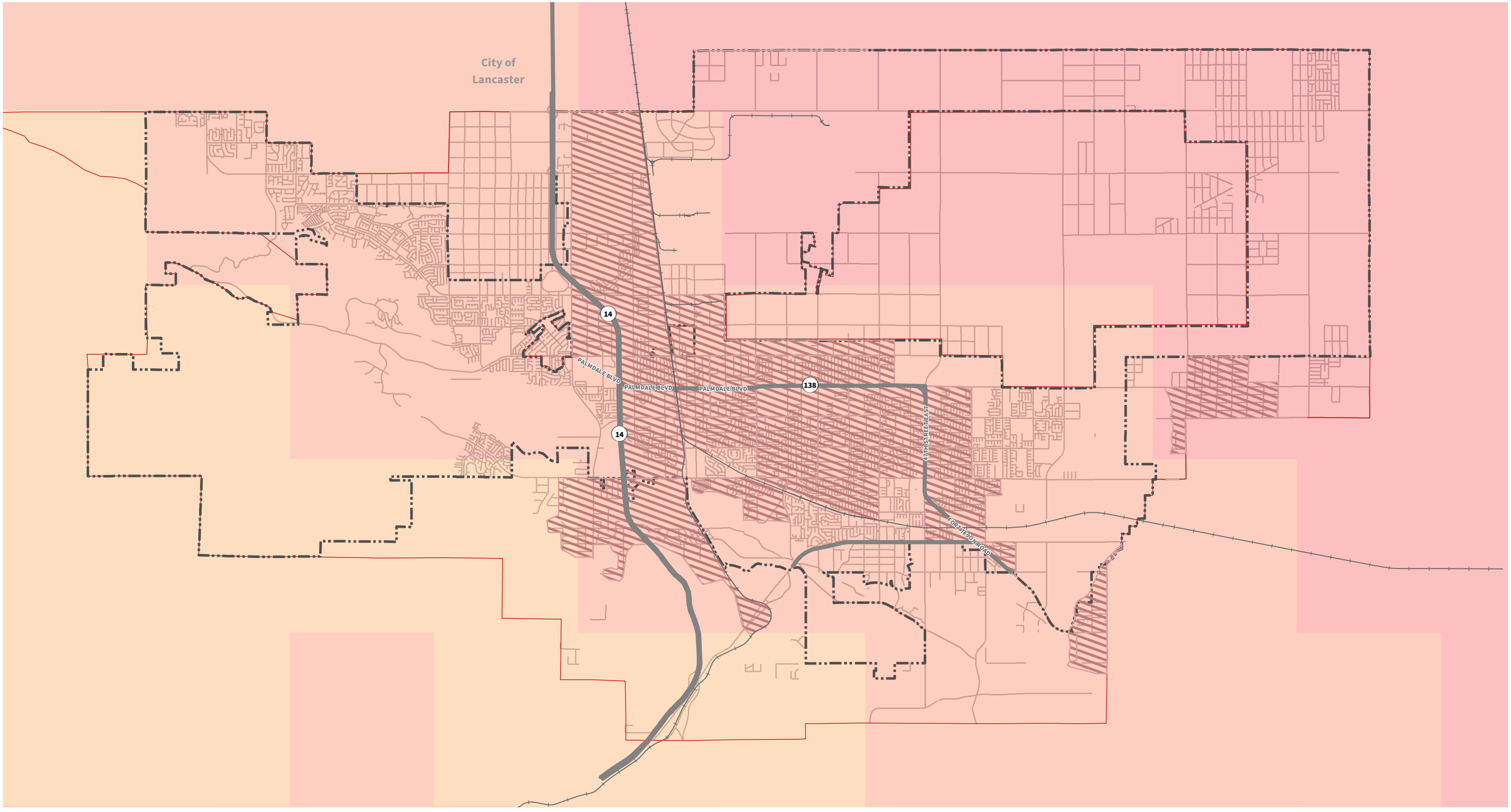

Figure 14.8

Extreme Heat Days and DACs (End-of-Century)

Extreme Heat Days End of Century (RCP 8.5)

- City Boundary
- Sphere of Influence
- SB1000 DAC

- 0-29
- 30-59
- 60-89
- 90-119
- 120-152

0 0.75 1.5 2.25 3 Miles

0 3,200 6,400 Feet

Data Sources: City of Palmdale GIS data;
Business as Usual Scenario (High Emissions), Coupled Model Intercomparison Project (CMIP5)
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Produced by Raimi + Associates
April 2022

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2017 Greenhouse Gas Inventory

The 2017 City of Palmdale greenhouse gas emissions inventory captures communitywide emissions generated from transportation, energy consumption in homes and buildings, solid waste, water, and off-road transportation (e.g., construction and landscaping equipment). It was developed using the ICELI Global Protocol for Community-Scale Greenhouse Gas Emission Inventories.

The City's most recent GHG inventory for calendar year 2017 estimates total community emissions of 1,042,284 metric tons of Carbon Dioxide equivalent (MTCO2e) (see Table 14.2). Transportation related emissions are the largest contributor to community emissions, accounting for 59%, followed by residential energy use, accounting for 19%, and nonresidential energy use, accounting for 16% of emissions.[74] The remaining 6% of emissions are made up of solid waste, off-road equipment, water and wastewater, and industrial sources (see Figure 14.9).

Community-wide, the City of Palmdale emitted 1,042,284 MTCO2e in 2017, an increase of 13% from the 2005 GHGs estimate of 934,415 MTCO2e. Despite a 13% increase in overall emissions, annual per service population emissions decreased from 2005 to 2017 by 12%, from 6.1 MTCO2e in 2005 to 5.3 MTCO2e in 2017. The service area population is a sum of the populations that live and/or work in the city (population and jobs). These numbers show that population, job growth, and a strong regional economy are the primary driver of emission increases.

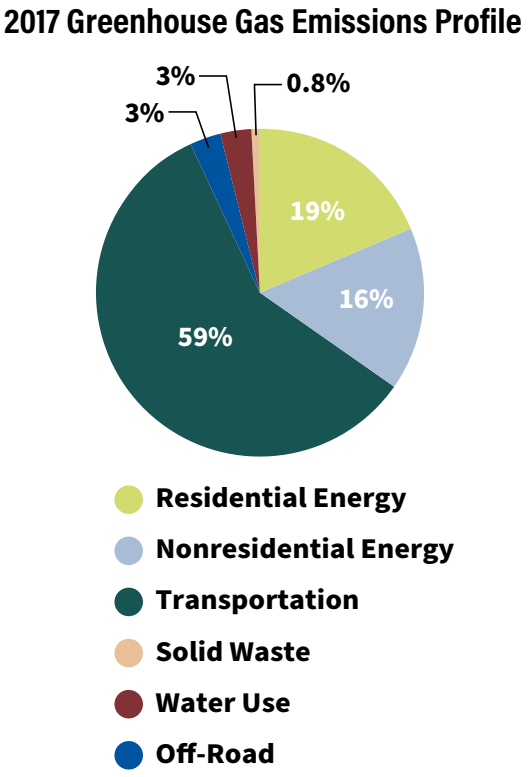
74. Nonresidential energy use data for 2017 is not fully complete because of privacy and aggregation laws that prevent the utilities from providing information for certain customer types. Nonresidential gas and electricity use is likely higher, which would increase total greenhouse gas emissions.

Table 14.2 Total Annual Community GHG emissions (2005-2017)

Sector	Subsector	2005	2017
RESIDENTIAL ENERGY	Residential electricity	98,080	90,470
	Residential natural gas	114,620	107,180
NONRESIDENTIAL ENERGY	Nonresidential electricity	142,570	119,700
	Nonresidential natural gas	77,510	42,310
TRANSPORTATION	On-Road Transportation	379,810	615,601
SOLID WASTE	Landfilled Waste	44,050	30,490
OFF-ROAD	Off-Road Equipment	31,300	8,634
WATER	Water and Wastewater	46,475	27,900
Total		**934,415**	**1,042,284**

Source: R+A 2017 Community GHG Emissions Inventory. 2021.

Figure 14.9 Percent of Palmdale Community GHG Emissions by Source in 2017



Source: R+A 2017 Community GHG Emissions Inventory. 2021.

Greenhouse Gas Emissions Forecast

Two emissions forecasts were prepared to estimate Palmdale's emissions from 2020-2045 as presented in Table 14.3. The forecasts were developed based on the General Plan growth projections related to population and the number of jobs and housing units in the City in horizon year 2045. Population is projected to increase 31%, jobs 95%, housing units 48%, and service population 43% by 2045.

These forecasts show the emissions reductions the CAP actions will need to achieve to become carbon neutral by 2045.

Business-As-Usual (BAU)
The BAU scenario projects future emissions based on current population and regional growth trends, climate patterns and their impacts on energy use, and regulations (Federal, State, and local) introduced before the 2017 inventory year. BAU projections demonstrate the expected growth in GHG emissions if no further action is taken by the State or at the local level after 2017. Under this "do nothing" scenario, the City's emissions are estimated to increase by 54% by 2045 as compared to 1990 levels.

Adjusted Business-as-Usual (ABAU)
The ABAU forecast shows how Palmdale's emissions are anticipated to change while accounting for the impacts of adopted State climate-related policies if no action is taken at the local level. Based on the results of the ABAU forecast, emissions are expected to decrease of 10% by 2045 as compared to 1990 levels.

Table 14.3 Community GHG Forecast 2020-2045 in MTCO2e

	1990 (Backcast)	2020	2025	2030	2035	2040	2045
BAU	794,253	1,064,115	1,121,756	1,179,398	1,236,709	1,294,680	1,352,322
ABAU		1,017,165	933,108	849,051	795,517	767,790	706,943

Source: R+A Emissions Forecast (2021).

Greenhouse Gas Reduction Targets

Palmdale has set the following GHG reduction targets consistent with State policy:

40% BELOW 1990 LEVELS BY 2030 (SB 32)

CARBON NEUTRALITY BY 2045 (EO B-55-18)

The CAP includes strategies and actions to significantly reduce GHGs in the future—but legacy use of natural gas or other fossil fuels or technological constraints may prevent the ability to reduce emissions to absolute zero by 2045. As a result, to achieve carbon neutrality, the City may need to offset any remaining tons of GHGs emitted with an equivalent amount of GHGs removed through a combination of nature-based solutions, carbon capture technology, and carbon offsets.

Greenhouse Gas Reduction Strategy

One of the primary objectives of this CAP is to identify pathways for reducing local GHG emissions from the City of Palmdale. The following section includes mitigation opportunities to reduce local GHG emissions.

Solar Panel Farm

Mitigation Opportunities

Clean Energy

Residential and nonresidential energy use, including electricity and natural gas, account for 35% of Palmdale's greenhouse gas emissions.[75] These emissions are mainly driven by the burning of fossil fuel and natural gas. The proportion of emissions related to natural gas are expected to increase while emissions related to electricity are expected to decrease because the City has created a Community Choice Aggregation (CCA) program, Energy for Palmdale's Independent Choice (EPIC), that will be able to supply less carbon intensive electricity than what is currently available from Southern California Edison. A keystone effort being led by the State to help achieve its climate goals is to provide clean grid electricity, including the installation of distributed energy resources (DERs) such as local solar projects. Senate Bill 100's renewable portfolio standard will require that supplied energy not only be 100% carbon-free by 2045 but also 100% generated from renewable sources like wind, solar, and local biogas. This opportunity for clean energy to fuel buildings and vehicles in Palmdale is addressed by the policies under Goal 2: Utilize a fossil fuel free energy system (SB 100).

75. Raimi + Associates. (2021). Palmdale 2017 Greenhouse Gas Inventory.

Buildings

Buildings are the primary users of energy within the city and the main vehicle to reduce energy-related emissions. Electricity use in residential and nonresidential buildings accounts for 20% of community emissions and natural gas use accounts for 14% of community emissions; however, natural gas use is underestimated due to aggregation laws. There are two main approaches to reduce emissions in buildings. The first is improved energy efficiency of new and existing buildings and the second is through the electrification of buildings. Electrification removes natural gas systems from buildings and uses electric alternatives to take advantage of the cleaner electricity that will be provided by EPIC.

The number of employees and residents in Palmdale is expected to increase through 2045, and this growth will result in the construction of new residential and commercial buildings. New construction is governed by the California Building Code and must meet the California Green Building Standards (CALGreen), which includes requirements for energy performance. The building code is updated every three years to reflect industry best practices and increase the sustainability of new construction. However, to avoid developing GHG-emitting buildings and infrastructure with useful lives beyond the City's emissions reduction goals, Palmdale will need to exceed CALGreen standards for all new construction and major remodels in the city.

Building Under Construction

Most building-related emissions are attributable to the existing building stock, which is much less efficient than new construction due to being built when building energy standards were nonexistent. Decarbonizing existing buildings is critical to meeting emissions reduction goals. There are many challenges associated with improving the performance of existing buildings including costs, rental/ownership status and split incentives, and technological constraints. However, benefits include healthier indoor air quality, reduced energy use and lower utility bills, and more resilient building systems. The opportunity to reduce building related emissions are addressed by the policies under Goal 3: Green and decarbonized buildings for new construction and major renovations.

Electric Vehicle Charging Stations

Transportation

Having access to clean electricity makes supporting the transition to electric vehicles across Palmdale more beneficial. Although transportation demand policies are addressed in the Mobility Element of the General Plan, transportation is the largest contributor to community emissions, accounting for 59% of total emissions. Transportation is also projected to account for most emissions in 2045. To date, Palmdale has participated in the Southern California Electric Vehicle Ready project and is installing electric vehicle charging stations in public parking facilities. The City also partners with regional transit agencies including Antelope Valley Transit Authority (AVTA), Santa Clarita Transit, and Metrolink to provide alternative transportation choices. In March 2022, AVTA became the first agency to place into service a 100% zero-emission transit fleet in North America with 57 BYD zero-emission buses, 10 GreenPower EV Star Microtransit vans, and 20 MCI battery-electric commuter coaches. The City is also currently undertaking several Complete Streets projects to encourage walking and biking. The opportunity to reduce transportation related emissions are addressed by the policies under Goal 4: Reduced greenhouse gas emissions from transportation (SB 379, EO N-79-20).

Solid Waste

Solid waste accounts for 3% of Palmdale's community emissions. By consuming less materials, recycling, and composting more, the community will be able to reduce the amount of waste sent to the landfill. Specifically, diverting organic material including food waste is a crucial step to meeting long-term goals, because organic materials produce methane, which is a more potent GHG than carbon dioxide. The State adopted Senate Bill 1383, the Short-Lived Climate Pollutants Act, which requires jurisdictions to divert 75% of food waste from landfills by 2025 and recover food waste that can be repurposed. Moreover, organics recycling can provide useful byproducts including compost and biogas, which can further reduce emissions and provide economic benefits. The opportunity to reduce solid waste related emissions are addressed by the policies under Goal 5: Increased resource capture and reduced waste sent to landfills (SB 1383).

Water and Wastewater

Water is a critical resource in California and Palmdale. Regional water supplies are already being adversely affected by climate change induced drought and decreased snowpack. Two water suppliers predominantly serve Palmdale: Palmdale Water District (PWD) and Los Angeles County Waterworks District 40 (LACWD 40). Both suppliers draw primarily from imported water from the State Water Project or Antelope Valley-East Kern Water Agency and local groundwater. Local groundwater supplies account for 25%-65% of supplies. Climate change may impact local hydrology and affect natural recharge to the local groundwater aquifers and the quantity of groundwater that could be pumped sustainably over the long-term. Lower rainfall and/or more intense runoff, increased evaporative losses, and warmer and shorter winter seasons can also alter natural recharge of groundwater.

Although water related emissions in Palmdale account for only 3% of the communitywide total emissions, the ecosystem and quality of life benefits that reliable clean water provide are important to protect. Thus, reducing indoor and outdoor water use through fixture upgrades and climate-appropriate landscaping for both residential and nonresidential buildings is incorporated in the General Plan. The opportunity to reduce water and wastewater related emissions are addressed by the policies under Goal 6: Safe and secure water supply.

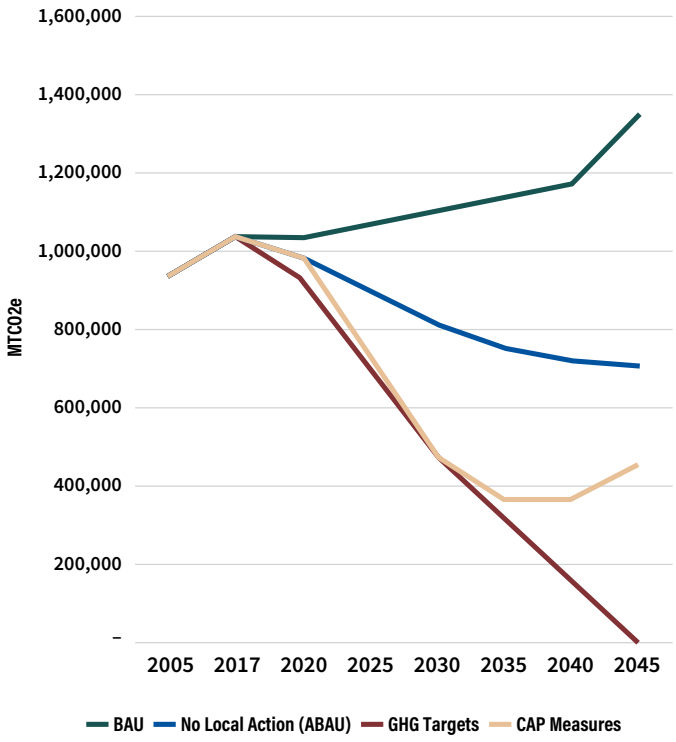
Ecosystems

Carbon sequestration is the long-term removal of carbon dioxide from the atmosphere into the earth's natural systems including trees, grasses, soils, and riparian areas, thereby slowing the accumulation of GHGs in the atmosphere. There are several forms of carbon sequestration, including planting trees, applying compost to open spaces, reusing tree biomass (tree chips) as mulch, and restoring and protecting natural areas. Carbon sequestration through the enhancement of natural systems provides many quality-of-life and resiliency co-benefits in addition to emissions reductions. For example, expanding the urban forest can help mitigate the urban heat island, improve air quality, provide traffic calming, and reduce energy use. Similarly, protecting open space can provide increased opportunities for outdoor recreation and promote biodiversity. Opportunities for ecosystem enhancement and sequestration are addressed by the policies under Goal 7: Open spaces designed to provide multiple climate and sustainability functions.

As illustrated in Figure 14.10 below, the City will need to proactively take local climate action to reduce and offset greenhouse gas emissions to achieve the GHG reduction targets. Implementing these measures can achieve the 2030 target and SB 32 goal of a 40% mass emissions reduction below 1990 levels. Furthermore, this analysis shows a 73% reduction of emissions is possible by 2045. State and regional policies and regulations are projected to reduce 2045 business-as-usual (BAU) emissions by 48%, while the actions within this CAP are projected to further reduce 2045 emissions by 25%. Therefore, additional action will be needed to close the gap of 369,956 MTCO2e to achieve carbon neutrality by 2045.

Figure 14.10

Percent of Palmdale Community GHG Emissions by Source in 2017

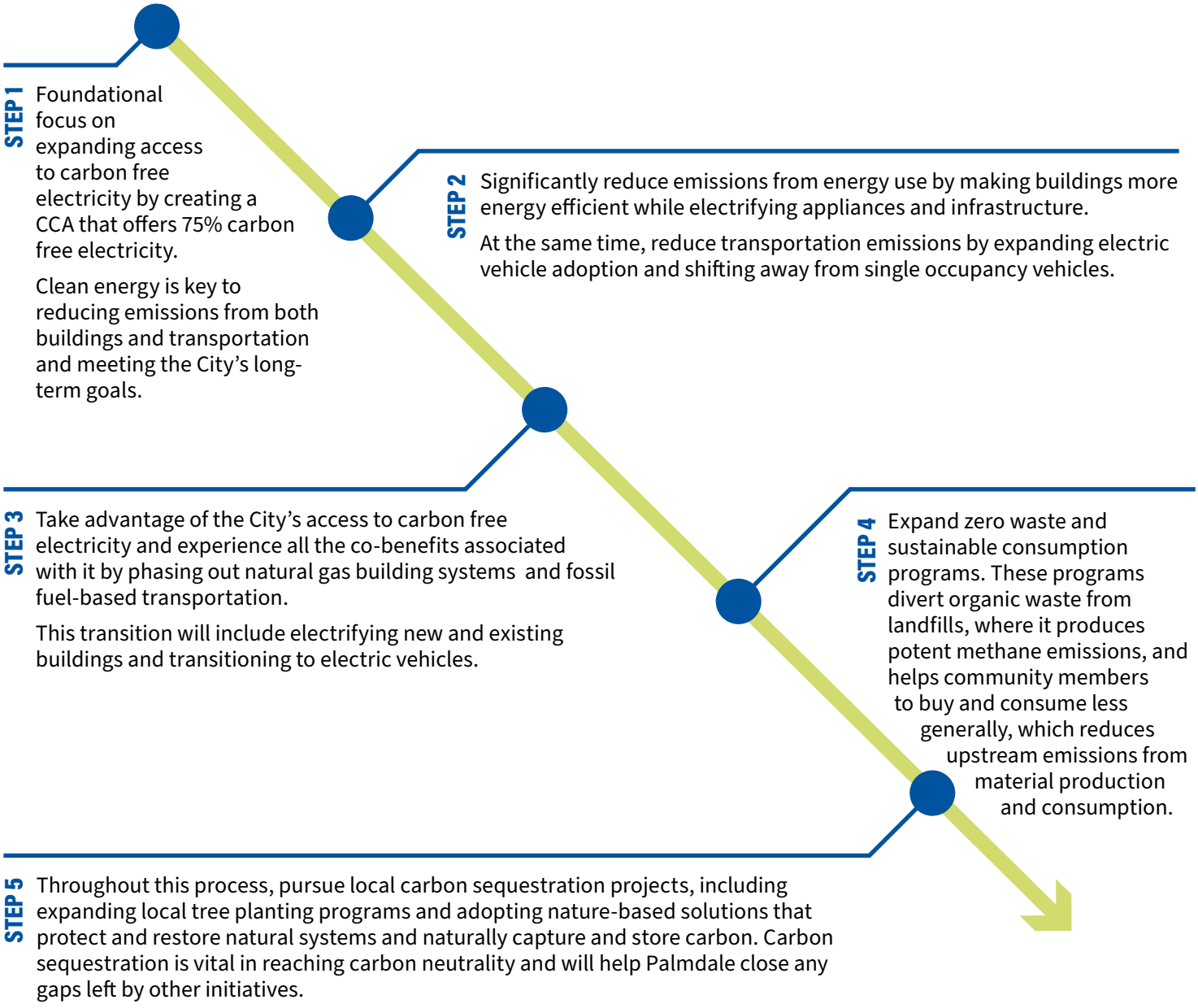


Source: R+A GHG Reduction Analysis. 2021.

Reduction Approach

Palmdale will work to achieve carbon neutrality by 2045 by building upon the progress the City has already made and adopting new emissions reduction strategies and actions. Together, these strategies and actions: (1) provide a framework for reaching carbon neutrality; (2) make Palmdale more resilient to future climate impacts; and (3) have important social and economic benefits, such as addressing historic inequities, creating green jobs, increasing community green spaces, and improving public health. Figure 14.11 outlines the City's five step approach to reducing community GHG emissions.

Figure 14.11 Approach To Reduce GHG Emissions



Desired Outcomes, Indicators, and Targets

The following desired outcomes and metrics were identified to help the City of Palmdale in tracking progress toward creating a more sustainable community. This process follows the City of Palmdale's General Plan Vision and Guiding Principles document which was informed by the General Plan Advisory Committee (GPAC), the Planning Commission, and City Council.

Top Key Outcomes

OUTCOME: Palmdale is a regional leader by integrating sustainability and climate action into all decisions and inspiring other communities to eliminate greenhouse gas emissions.

KPI's:
- Reduction in energy and water use
- Reduction in vehicle miles traveled
- Increased diversion of waste from landfills

TARGET:
- **Carbon neutrality by 2045 (EO B-55-18)**

OUTCOME: New and existing buildings are decarbonized and able to operate on carbon-free energy.

KPI's:
- Number of buildings retrofit per year to be all-electric
- Renewable or carbon-free content of electricity
- Total kilowatts or megawatts of distributed renewables installed
- Energy Use Intensity for existing buildings

TARGETS:
- **100% of new and 50% of existing buildings are all-electric and energy efficient**
- **Energy supply is 100% renewable (SB 100)**

OUTCOME: Secure water supply and efficient use through aquifer management and increased water reuse.

KPI's:
- Compliance with water quality regulations for potable water and stormwater quality
- Water use per capita (gpcd)
- Number of permitted greywater reuse systems

TARGET:
- **Water use is 85 gallons or less per person per day**

OUTCOME: Reduced emissions from transportation, increase access and safety for walking, biking, and transit use.

KPI's:
- Number of pedestrian and cyclist accidents and fatalities
- Vehicle miles traveled
- Mode share
- Number of EV chargers installed
- Electric vehicle ownership

TARGETS:
- **Zero pedestrian and cyclist fatalities**
- **Increase in walking and biking mode share**

KPI = Key Performance Indicator

OUTCOME: Ecosystems and other existing or future natural open spaces are enhanced through restoration, redesign, and ongoing maintenance practices.

KPI's:
- Total area of parks
- Park space per capita
- Percentage of people within a 20-min to a park or open space

TARGET:
- **80% of residents have nearby access to natural or open space**

OUTCOME: The most vulnerable residents are protected from climate and hazard impacts.

KPI's:
- Number of resilience hubs
- Number of low-income and senior housing units receiving weatherization and energy efficiency upgrades
- Number of heat-related deaths, hospitalizations, and emergency room visits

TARGETS:
- **A community resilience hub at each Village Center and Multiuse Nodes**
- **50% of existing low-income dwelling units receive weatherization/upgrades**
- **15% reduction in heat-related hospitalization and emergency room visits**

OUTCOME: Impacts of urban heat island are reduced and mitigated.

KPI's:
- Total area of green space and reflective roofs

TARGETS:
- **30% of heat trapping surfaces converted to green space or reflective materials**
- **40% tree canopy cover**

CV Link Trail in Cathedral City, California

KPI = Key Performance Indicator

Goals and Policies

The following section includes goals and policies for the Sustainability, Climate, and Resilience Element. Goals and policies are followed by implementation actions. Related Sustainability, Climate, and Resilience policies are woven throughout the General Plan, including in the Land Use and Community Design, Circulation and Mobility, Public Facilities, Services, and Infrastructure, Equitable and Healthy Communities, and Safety Elements, among others.

MAINTAIN AND IMPLEMENT CAP

Goal SCR-1

Achieve a carbon neutral community by 2045 (EO B-55-18).

SCR-1.1 CAP Maintenance. Maintain and regularly update a Climate Action Plan to reduce GHGs generated within the City.

SCR-1.2 GHG Inventory. Conduct community GHG inventories every 3-5 years to track progress toward achieving the City's GHG reduction goal.

SCR-1.3 Funding Sources. Seek funding to support implementation of GHG reduction projects for the City, residents, and businesses.

SCR-1.4 Community Engagement. Develop and implement comprehensive community engagement including educational outreach, issue-specific awareness campaigns, and technical assistance.

CLEAN ENERGY

Goal SCR-2

Utilize a fossil fuel free energy system (SB 100).

SCR-2.1 Carbon Free Energy. Direct EPIC to provide 75% carbon-free or renewable electricity to residents and businesses by 2030, achieving 100% carbon-free electricity by 2045.

SCR-2.2 Community Solar. Explore the development of community solar projects and microgrids.

SCR-2.3 Battery Permitting. Establish a streamlined approval process for battery storage systems.

BUILDINGS

Goal SCR-3

Green and decarbonized buildings for new construction and major renovations.

SCR-3.1 Energy Efficient New Construction. Integrate CALGreen Tier 1 and Tier 2 green building and energy efficiency standards into new construction and major remodels.

SCR-3.2 All-Electric Reach Code. Consider adopting a local reach code to encourage new buildings to be all-electric.

SCR-3.3 Solar and Storage. Require installation of photovoltaic panels and battery storage on all residential new construction and nonresidential new construction over 5,000 sq. ft.

SCR-3.4 Energy Efficient Existing Buildings. Establish an energy and water efficiency upgrade program for existing buildings, focusing resources on the most underserved populations.

SCR-3.4 Benchmarking Energy and Water Use. Register municipal buildings with Energy Star Portfolio Manager and report energy and water use (AB 802).

TRANSPORTATION

Goal SCR-4

Reduced greenhouse gas emissions from transportation (SB 379, EO N-79-20).

SCR-4.1 Bike Facilities. Promote bicycle use with new private development projects through requirements for bicycle parking, lockers and showers, bike share facilities, and when feasible, connections to City bike lanes.

SCR-4.2 Public Transit. Expand the public transit system, increase frequency of service, and provide shade at transit stops.

SCR-4.3 Public EV Chargers. Install EV chargers at suitable public facilities, including any parking structures, the future multi-modal High Speed Rail station, and community parks.

SCR-4.4 EV Reach Code. Adopt EV requirements beyond CALGreen in both number of chargers and charger capacity.

SCR-4.5 ZEV Purchasing. When purchasing City vehicles give preference to fuel efficient vehicles, including the use of zero emission vehicles.

SCR-4.6 Clean Fuels. Require use of clean fuels for City construction and maintenance vehicles and lawn/garden equipment.

SCR-4.7 Pedestrian and Cyclist Safety. Promote bicycle and pedestrian modes of travel by promoting pedestrian and cyclist safety.

SOLID WASTE

Goal SCR-5

Increased resource capture and reduced waste sent to landfills (SB 1383).

SCR-5.1 Zero Waste Plan. Create a zero-waste plan that institutes cost-effective diversion programs for municipal operations and the community.

SCR-5.2 Organic Waste Diversion. Establish programs to comply with State-established requirements for organics and food waste diversion.

SCR-5.3 Waste Diversion Education and Assistance. Develop an education and technical assistance program for residents and businesses on composting, recycling, and reuse of materials.

SCR-5.4 Nonresidential Collection Efficiency. Continue to review waste franchise agreements to establish rate structures that encourage less frequent nonresidential collection.

WATER AND WASTEWATER

Goal SCR-6

Safe and secure water supply.

SCR-6.1 Recycled Water. Increase municipal reuse of local recycled water. Support the efforts of the Palmdale Water District and the Joint Powers Authority (JPA) Palmdale Recycled Water Authority (PRWA) in its proof of concept and implementation of aquifer augmentation through advanced treatment of recycled water.

SCR-6.2 Water Efficiency Standards. Establish water efficiency standards that are more stringent than CALGreen and model water efficient landscape ordinance (MWELO).

SCR-6.3 Low-Water Use Plant List. Implement the City's landscape plant list and use of low-water plants in new or renovated landscaped areas.

SCR-6.4 Rainwater Capture. Encourage rainwater capture and use of cisterns for outdoor watering purposes.

SCR-6.5 Greywater Permitting. Establish a streamlined permitting process for greywater systems.

ECOSYSTEMS

Goal SCR-7

Open spaces designed to provide multiple climate and sustainability functions.

SCR-7.1 Tree Planting in Public Spaces. Plant additional trees on streets, parks, and other public spaces to sequester carbon, provide shade, contribute to stormwater management, provide habitat, and enhance community character.

SCR-7.2 Preferred Tree and Plant List. Establish a preferred tree list of species appropriate for the urban forest which are more resilient to drought, heat, and pests. Prioritize native plants and pollinator-friendly plants.

SCR-7.3 Tree Planting on Private Property. Adopt a tree preservation ordinance to encourage tree preservation and additional planting on private property as appropriate.

SCR-7.4 Green Infrastructure. Integrate green infrastructure stormwater management practices into the design of open spaces and public rights-of-way.

SCR-7.5 Cool Pavement. Incorporate cool pavement practices into street maintenance activities to reduce the urban heat island effect.

COMMUNITY RESILIENCE AND AWARENESS

Goal SCR-8

Proactively advance community resilience.

SCR-8.1 Local Hazard Mitigation Plan. Build on the existing LHMP and acknowledge the LHMP in the General Plan per AB 2140.

SCR-8.2 Areas of Physical and Social Vulnerability. Focus investments on areas of high vulnerability, exposure, and sensitivity for both physical infrastructure and social communities.

SCR-8.3 Public Safety Power Shutoffs. Work with Southern California Edison (SCE) to minimize the impacts of Public Safety Power Shutoffs.

SCR-8.4 Resilience Features. Add resilience features to community facilities to provide basic services during disruptive events or disasters.

SCR-8.5 Pre-Disaster Recovery Plan. Create a pre-disaster recovery plan that sets up post-disaster policies and programs indicating which areas will be replanned and when, and that shows where and how rebuilding will occur.

SCR-8.6 Disaster Rebuilding and Recovery. Develop policies to ensure that housing units damaged during a natural disaster are repaired or replaced in ways that advance the policies, objectives, and actions of the General Plan.

SCR-8.7 Heat and wildfire mitigation. Develop policies and building standards that reduce the urban heat island effect and the risk and damage of wildfire such as:

- Encourage the use of high-albedo roofs and paving
- Incorporate more robust temperature and air quality controls in facility retrofits and designs
- Provide consolidated public messaging about wildfire preparation, evacuation, and communications avenues in multiple languages
- Encourage fire-wise landscaping including alternatives to wood fencing
- Require ember-resistant attic ventilation openings
- Encourage the installation of air filters to protect against indoor air quality impacts during wildfire smoke exposure events
- Identify and modify vulnerable infrastructure in high wildfire risk areas, such as replacing wooden utility poles or undergrounding utility lines

Goal SCR-9

Awareness of Palmdale's environmental past and present.

SCR-9.1 Integration of Sustainability. Integrate environmental and sustainability issues into City decision-making processes, operations, community activities, and criteria in budgeting and prioritization efforts through a "triple bottom line" approach.

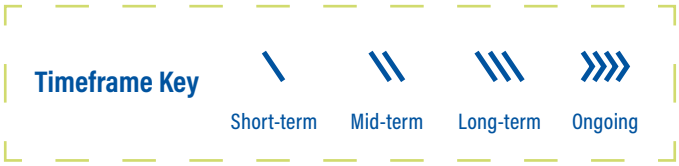
SCR-9.2 Acknowledge Indigenous History. Acknowledge and celebrate the Indigenous history and tradition of the area now known as Palmdale.

SCR-9.3 Raise Awareness about Natural Systems. Provide interpretive displays and other information on natural systems at parks, nature centers, and trailheads.

Implementation Actions

The table below identifies programs, policy updates, planning efforts, coordination efforts, and other actions that will help implement the General Plan's sustainability, climate, and resilience vision and policies. Programs are consistent with this chapter's goals and policies.

The table provides a description of each Implementation Action and lists the correlating policies. Each action also identifies a timeframe for implementation with Short-term representing a 1–3-year timeframe, Medium-term is 4-7 years, Long-term is 8+ years and Ongoing represents an action that the City should continue. Additionally, the table includes the City department that should function as the lead for implementing the actions.



Correlating Goals	Description	Timeframe	Responsible Department
SCR-1	**Conduct community GHG inventory and update CAP.** Track GHG reductions by inventorying community emissions and update CAP to address challenges.	Short-term – Mid-term	Economic and Community Development and Public Works
SCR-1	**Conduct Outreach.** Develop and implement comprehensive community engagement including educational outreach, issue-specific awareness campaigns (i.e., wildfire prevention, water, and energy efficiency, building and vehicle electrification, etc.), and celebrate Palmdale's natural and cultural history.	Mid-term	Economic and Community Development and Public Works
SCR-2	**Provide 75% carbon-free electricity.** Prepare for EPIC to provide 75% carbon-free electricity by 2030 and 100% carbon-free electricity by 2045 through the Integrated Resource Plan (IRP) process.	Short-term – Long-term	Finance and City Manager's Office
SCR-2	**Streamline battery permitting process.** Establish a streamlined approval process for battery storage systems.	Mid-term	Economic and Community Development

Correlating Goals	Description	Timeframe	Responsible Department
SCR-3, SCR-4	**Adopt Reach Codes.** Amendment to the Building Code that incentivizes all-electric new construction, increased energy efficiency, electric-ready buildings, enhanced solar and battery requirements, and installation of EV chargers or EV-Ready infrastructure.		Public Works and Economic and Community Development
SCR-4	**Install public EV chargers.** Install EV chargers at suitable public facilities, including Downtown parking structures and community parks and the future High-Speed Rail station.		Public Works
SCR-4	**Adopt City purchasing policies.** Adopt city vehicle purchasing policy giving preference to fuel efficient vehicles and zero emission vehicles. Require use of clean fuels for City construction and maintenance vehicles and lawn/garden equipment.		Finance and Public Works
SCR-5	**Zero Waste.** Explore ways to reduce waste generation and divert recyclables and organic waste from landfills to move toward zero waste.		Public Works
SCR-5	**Establish compliance pathways to comply with SB 1383.** Establish programs to comply with requirements for organics and food waste diversion.		Public Works
SCR-5	**Develop and implement community outreach.** Develop an education and technical assistance program for residents and businesses on composting, recycling, and reuse of materials.		Public Works and Communications
SCR-3, SCR-4, SCR-6, SCR-7, SCR-8	**Implement Code/Guideline Modifications.** Multiple code modifications to Building Code and Zoning Ordinance to address expanded application of the MWELO, stricter plumbing fixture standards, tree planting, battery storage, and microgrids		Public Works, Finance, and Economic and Community Development
SCR-6	**Streamline greywater permitting process.** Establish a streamlined permitting process for greywater systems.		Economic and Community Development

Correlating Goals	Description	Timeframe	Responsible Department
SCR-8	**Adopt City policies and plans to improve emergency response**. Develop resilient infrastructure and supply networks, including back up sources of water, power, and communications; increasing membership in CERT; and creating evacuation procedures for vulnerable populations in partnership with CBOs and facilities that serve identified populations.		Economic and Community Development, Public Works, and Neighborhood Services
SCR-8	**Prioritize investments in vulnerable populations.** Assess climate hazards/resilience benefits in capital improvement planning and building design. Use projected climate change impacts rather than historical averages.		Economic and Community Development, Public Works, and Neighborhood Services
SCR-8	**Increase resilience to power outages from public safety or weather-related events.** Require battery backup systems in new residential and multi-family developments whenever cost is not prohibitive.		Economic and Community Development and Public Works

Lake Palmdale at Sunset

Correlating Goals	Description	Timeframe	Responsible Department
SCR-8	**Add resilience features to community facilities.** Identify and implement modifications to existing cooling centers to function as resilience hubs, clean air spaces, and community space during disaster events		Public Works