ESCONDIDO
City of Choice

Chapter 5

CLIMATE ADAPTATION

This chapter summarizes climate change-related impacts that may affect the City of Escondido ("City") in the future and evaluates how these impacts would potentially affect the community's population, functions, and structures. Following identification of potential climate change—related impacts, this chapter outlines key strategies for improving community resiliency and adaptation, and addresses and provides equitable resilience and hazard mitigation for everyone in the community. The City is committed to ensuring socially equitable climate change outcomes through the implementation of adaptation strategies and measures.

5.1 Introduction

Long-term climate trends are not dependent on any single extreme event. A single large storm event or even a single wet or dry year may just be a normal fluctuation in atmospheric conditions. However, continuing changes that are sustained year after year can be attributed to a climate change. While there is general consensus that global climate change is occurring, there is less certainty as to the potential consequences of climate change, particularly at the local level. Based on a climate system that is no longer staying within a stationary range of extremes, weather-related emergencies and climate hazards are expected to increase (Hay 2016). Our changing climate can affect every aspect of the local, natural environment – and each of these impacts often causes chain-reaction changes that affect people, places, resources, and other aspect of the ecosystem. If we hope to limit the negative impacts of climate change in Escondido, we must assess the range of possibilities, likelihoods, and consequences of climate risk and explore strategies for their prevention.

"Adaptation planning" is a process of identifying climate risks and opportunities, assessing the options to manage those risks and opportunities, and implementing actions to sustain and even improve the quality of life.

This chapter of the Climate Action Plan ("CAP") provides a range of adaptation strategies and measures that the City can implement to be better prepared for and adapt to climate change. Through "adaptation planning" the City is undertaking a process of identifying climate risks and opportunities, assessing the options to manage these risks and opportunities, and implementing actions to sustain and even improve the community's quality of life. However, this CAP is about much more than climate change. Rather than being indifferent to the reality that groups are situated differently relative to their access to resources and opportunity, our vision for a climate-positive future starts when we address existing disparities and advance more equitable outcomes. Not only will the City adapt and become more resilient to unavoidable impacts from climate change, the City will also position itself for a more positive future – one that addresses social equity and environmental justice to help mitigate the disproportionate harm faced by certain groups and classes in the city. This CAP has established a series of cross-cutting priorities to build thriving and resilient neighborhoods for all. Because the climate will keep changing over time, and our responses change with it, the adaptation strategies and measures identified in this chapter will be continuously monitored and updated by the City.

Section 5.4, *Adaptation Measures and Next Steps*, outlines the strategies and measures the City will implement to adapt to climate change, as well as the next steps in this implementation process. These strategies, measures, and next steps will be continually reviewed and refined over time to address changing climate impacts and understanding of adaptation. The City's adaptation approach outlined within this chapter is based upon best available science, currently known adaptation practices, and a snapshot understanding of the city's existing vulnerabilities. Additional background information on the methodology used to develop the adaptation measures is included in **Appendix F**. In the future, the City will reevaluate the feasibility and necessity of adaptation options as appropriate, continuing to use best available data, with reference to current State adaptation planning guidance.

5.2 Vulnerability Assessment

In the San Diego region, as well as throughout California, climate change is already affecting and will continue to affect the physical environment. It is the responsibility of all to prepare for increased temperatures, more frequent extreme weather events, and changes in precipitation patterns. Because impacts of climate change vary by location and other social and economic characteristics, it is important to specifically identify the projected severity of these impacts on the city and the surrounding area. Consideration of how the City can respond effectively to mitigate that risk, or how the City can and should respond to increasing future risk would make the community more prepared for projected climate impacts. The goal of this section is to increase the understanding of the vulnerabilities associated with what is projected to happen in Escondido and encourage consideration of these impacts without creating further vulnerabilities or liabilities. The direct, or primary, changes analyzed for the city include increased temperatures, increased frequency of extreme weather events, and increased intensity and frequency of precipitation. Secondary impacts, which can occur because or one or more primary changes, are also assessed and include increased risk for wildfire, flooding, and landslides.

Source: City of Escondido

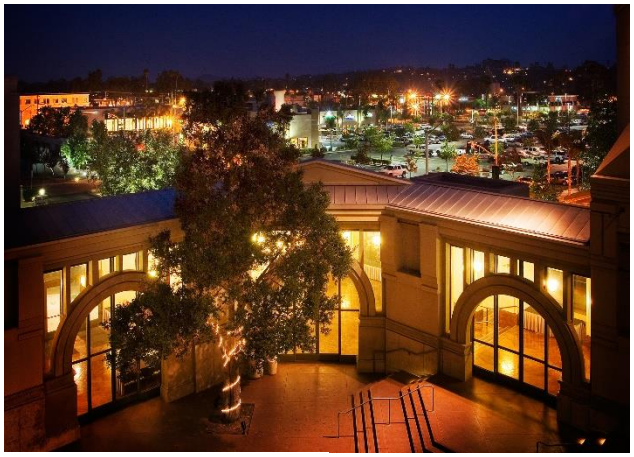
To begin assessing potential climate change impacts over time, Cal-Adapt (a climate change scenario-planning tool developed by the California Energy Commission [“CEC”] and the University of California Berkeley Geospatial Innovation Facility) was used. To address the uncertainty in future emissions of greenhouse gases (“GHGs”), Cal-Adapt uses Representative Concentration Pathways (“RCPs”), which encapsulate different possible future GHG emissions scenarios; a “medium” RCP emissions scenario that models a future where communities attempt to reduce GHG emissions and a business as usual (“BAU”) RCP scenario. The BAU emissions scenario predicts GHG emissions will continue to rise over the 21st century. The medium GHG emissions scenario predicts GHG emissions will level off in the middle of the 21st century (approximately 2040) and decrease to lower than 1990 levels by the end of the century (CAL ADAPT 2020).

5.2.1. Increased Temperatures

Temperature affects the smallest details of our daily life. It influences how you dress to stay comfortable, whether you enjoy outside activities, stay inside, or retreat to safer areas during weather-related emergencies and climate hazard events. It also has been found to affect the living organisms in various ways, including the physiology, behavior, growth, and distribution of plants and animals. Increases in average temperatures can have many impacts on the environment. For example, temperature plays an important part in the life cycle of insects. Many insects die during the colder winter months, but if temperature increases by just a couple of degrees, some of these insects would persist. This could lead to an increase in the insect population or a change in insect breeding habits, which could be devastating to farming practices and/or the agricultural crop industry. In addition to warm-weather insects/vectors, increased air temperatures can result in stagnant air masses, which could retain pollution from vehicles

and industry for extended periods of time and would increase the frequency and intensity of conditions conducive to smog formation. Children and the elderly are particularly vulnerable to respiratory, cardiovascular, and heat-related illnesses exacerbated by increased average temperatures. Furthermore, numerous research studies have shown that indoor air temperature and circulation can impact one's level of productivity, as well as one's ability to learn, concentrate and remember important information (Schneider 2016). Warmer lakes, rivers, and streams threaten aquatic species by disrupting reproductive cycles, displacing cold-water species, through acidification, and/or creating dead zones in deep lakes. Warmer air temperatures may put inland communities at risk by expanding dry areas and their propensity to fuel wildfires.

Some areas of the city will also experience heat island effects. An urban heat island or a heat island effect is an urban or built-up area that is significantly warmer than its surrounding rural areas despite having similar climate systems. The temperature difference is usually due to human activities and from the modification of land surfaces. Heat is created in places with lots of activity and lots of people. The temperature difference is usually larger at night than during the day and is most apparent when winds are weak. The City developed a mapping tool to identify at-risk areas. The 2020 Heat Vulnerability Map is provided in **Appendix F** and is referenced in Section 5.4, *Adaptation Measures and Next Steps*.



Source: City of Escondido

The greenhouse effect, described in **Chapter 1**, has already begun to heat the atmosphere beyond normal levels and will continue to do so over the next century, even if the City's emission reduction targets are met. From 1900 to 2000, the average global daily maximum temperature increased approximately 1.0 degrees Fahrenheit ("°F") (Nature 2019). Within the last 20 years, the average global temperature has increased by an additional 1.0 °F. Using Cal-Adapt, it was predicted there would be an average temperature increase of 3.0 to 10.0°F by 2099 worldwide (CAL ADAPT 2020). It is important to note that the tipping point to many of the aforementioned climatic changes is an increase of 1.0 to 2.0°F. Although future climate-risks depend on the rate and duration of the "warming," in the aggregate they are expected to be irreversable or irrecoverable if temperatures exceed 2.7°F (IPCC 2018). Using baseline observed temperatures in the city from 1960 to 2000, the collective projections from Cal-Adapt show an average maximum temperature increase of 3.9 to 4.9°F by 2050, and 5.4 to 9.6°F by 2099, depending on a range of GHG emissions scenarios.

5.2.2. Extreme Weather Events

Extreme weather events include extreme heat and storms. Extreme heat events generally include extreme heat days and heat waves. Extreme heat days are days in which the temperature is significantly greater than the historic average temperature and can be further exacerbated when combined with high relative humidity. Heat waves can occur when high daily temperatures persist for several days and if nighttime temperatures do not drop significantly enough to reduce nighttime cooling Extreme heat events can further exacerbate the threat of wildfire by increasing the drying of

Extreme weather events include extreme heat, heat waves, and extreme storms. These events can be extremely harmful to human populations, especially vulnerable populations, such as low-income communities and children.

vegetation. The frequency of extreme heat days, heat waves, and warm nights are a threat because they induce injury, illness, and death from the resulting heat waves and wildfires. Heat stroke and dehydration can occur during extreme heat and hazardous weather can cause injuries and, in some cases, death. Warmer climates have increased levels of harmful air pollutants, such as ground-level ozone, which can damage lung tissue, inflame airways, impair respiratory health, and aggravate lung diseases, which are amplified during extreme weather events. Extreme weather events also impact the transmission of food, water, and animal-borne diseases. Prolonged drought in dry areas can lead to property and infrastructure damage. Power outage, road surface deterioration, railroad track buckling, and bridge damage are some of the types of resource or asset failures that have occurred during extreme weather events.

Disruptions in daily life caused by property and infrastructure damage can mean lost work and school days and harm commercial trade. Extreme weather-related health risks also reduce productivity, such as when extreme heat curtails construction, or when more potent allergens and more air pollution lead to lost work and school days.

Cal-Adapt loosely defines extreme heat days at or above the 98th percentile daily maximum temperature for a given area based on observed historical climate data. For the city, an extreme heat day is a day in which the average temperature is greater than 97.1°F, and historical observations show an average of five extreme heat days per year from 1961 to 2000. The frequency of extreme heat days are projected to increase as average temperature increases, rising to 15 to 20 extreme heat days per year by 2050, and 21 to 40 extreme heat days per year by 2100 (CAL ADAPT 2020). Warm nights, defined by the 98th percentile daily minimum temperature, are project to increase as well. For the city, a warm night is a night during which average temperature is greater than 66.4°F. Historical observations show an average of five warm nights per year from 1961 to 2000, and projections show an average of 25 to 37 extreme heat nights by 2050, and 36 to 91 extreme heat nights by 2100 (CAL ADAPT 2020).

Source: City of Escondido

While the world is experiencing an overall warming trend, more significant changes are occurring in winter months beyond temperature — snowfall and large storms depend on moisture in the atmosphere, which is increasing as a result of climate change. Snowy weather patterns depend on the large-scale flow of the atmosphere, which is changing, too. A phenomenon, called “winter temperature dipole”, is shifting winter weather patterns. This phenomenon yields a severe temperature contrast between eastern and western North America, where cold periods in the winter have been increasing in their frequency, as arctic air is pushed into areas further south than where it has historically flowed. Many extreme temperature conditions that redistribute heat and produce some combination of clouds, precipitation, and wind are becoming more common. These atmospheric conditions will affect snowstorms, derechos, hailstorms, rainstorms, blizzards, low-pressure systems, lightning storms, hurricanes, typhoons, and twisters. Scientific studies indicate that extreme weather events, like large storms, are likely to become more frequent and/or more intense with climate change. Tropical storm activity in the Atlantic Ocean, the Caribbean, and the Gulf of Mexico has increased during the past 20 years (Earth Observatory 2020). Storm intensity is closely related to variations in sea surface temperature in the tropical Atlantic. Although

Escondido is unlikely to experience snowstorms and derechos, climate change may result in changes to the atmospheric processes that could result in increased frequency of damaging winds, hailstorms, rainstorms, lightning storms, and hurricanes or other tropical storm systems.

5.2.3. Frequency and Intensity of Precipitation

Both the amount and distribution of precipitation are likely to change over the coming years. Southern California already experiences highly variable precipitation patterns, and climate change will further increase this volatility. The range of precipitation extremes will likely expand, resulting in fewer wet days and more dry days. More intense rainstorms could occur, distributing precipitation over a smaller window of time, followed by longer periods of minimal precipitation or drought.

The city is anticipated to experience more frequent extreme precipitation events and greater variability in the amount of rainfall from year to year.

The Cal-Adapt projections do not show a significant increase or decrease in the average annual precipitation for Escondido, which is observed to be 15.3 inches per year using the 1961 to 2000 baseline. However, as a result of increased climate variability, annual averages may not best represent the climate change-related impacts that would occur. For example, the average annual precipitation in Escondido from 1996 to 1999 was 15.3 inches, which is equal to the observed baseline average (CAL ADAPT 2020). The recorded precipitation for those years were 13.1, 14.0, 27.4, and 6.8 inches, respectively (CAL ADAPT 2020). Thus, while the average precipitation for those years suggests normalcy, the recorded rainfall for each year suggests the city is experiencing significant precipitation variability. The Cal-Adapt projections show yearly precipitation highs of 40 inches and lows of two to three inches, highlighting the variability and uncertainty of the projections on a year to year basis.

Extreme precipitation events can delay planting and harvesting, cause power outages, reduce transportation system efficiency, delay air travel, induce soil erosion and mudslides, and otherwise make it difficult for people to go about their daily business. The expansion of flood-prone areas, flood plains, and inundation zones could put more people and property at risk within the city. Higher year-to-year variability can change overall water availability, even if the yearly average does not change significantly over time. Wetter years will see a higher proportion of water lost to runoff, along with higher risk of flooding. Drier years will increase water demand, while also losing more to evaporation. Overall, these factors will lead to less water capture by constructed and natural environments, depleting the local water supply. It could also lead to more water entering the lakes from the surrounding watershed, bringing with it pesticides and invasive species.

5.2.4. Wildfire Risk

Wildfires in open, wildland areas typically display a range of fire behavior and fire characteristics that depend on factors such as vegetation fuel, terrain, types of past management, stage of succession after previous fires or other disturbances, and climate and weather patterns (including prevailing wind factors). Fire regimes (i.e. the general pattern of natural wildfire occurrence in a particular geography) may also be affected by terrain features and slope exposure. The city's environment consists of a broad mixture of urban settings, semi-urban settings, rural areas, and open space areas characterized by shrubs, native trees, and high fire fuel areas with steep topography. During the dry months, the wildfire risk in these open, vegetated areas can increase when exacerbated by occasional Santa Ana winds and high temperatures. Additionally, extreme weather conditions, such as high

Wildfire occurrence would be exacerbated by climate change impacts including increased frequency of droughts, extreme heat days, and heat waves

temperature, low humidity, and/or winds of extraordinary force, may cause an ordinary, localized fire to expand into one that is more intense and difficult to contain. Currently, about 43,388 homes within Escondido are located in the Fire Regime II & IV; this includes the wildland-urban interface, which is characterized by zones of transition between wildland and developed areas and often include heavy fuel loads that increase wildfire risk (City of Escondido 2018). The potential loss of these homes is valued at over 12 billion dollars. The City also has 426 critical facilities and infrastructure assets in these areas. The potential exposure of these assets is valued at over 1.9 billion dollars (City of Escondido 2018).

Increased temperatures and changes in precipitation patterns associated with climate change are expected to increase the risk of wildfire. Cal-Adapt's Wildfire Tool is a useful modeling tool to help predict the potential amount of area at risk of burning through the year 2100. According to Cal-Adapt's Wildfire Tool, because of the City's diverse environment, the amount of area at risk of burning will increase anywhere from 1.5 to 28.3 percent (based on different location attributes) (CAL ADAPT 2020). Even though areas with greater population are inherently more vulnerable than areas with less population, it is anticipated that fire behaviors and fire characteristics in urban areas are different than more fire prone, open space areas. Based on CalAdapt's Wildfire Tool, an increase in burn rates is most likely to occur within the eastern portions of the city, which include much of the unincorporated and open space lands.

The California Department of Forestry and Fire Protection ("CAL FIRE"), in collaboration with the City, has developed the City's Fire Hazard Severity Zone Map identifying Very High Fire Hazard Severity Zones that are included in the City's Local Responsibility Area ("LRA") (**See Appendix F**). The map identifies areas in the City included in the different fire hazard areas. Due to topography and vegetation, properties located within and surrounding the Very High Fire Hazard Severity Zones have increased risks of wildfires and associated hazards than that of most areas within the city.

Source: City of Escondido

In addition to increased threats to human safety, the increased frequency of wildfire results in the release of harmful air pollutants into the atmosphere, which dissipate and can affect the respiratory health of residents across a broad geographical scope. Particulate matter (soot and smoke), carbon monoxide, nitrogen oxides, and other pollutants are emitted during the burning of vegetation, and can cause acute (short-term) and chronic (long-term) cardiovascular and respiratory illness, especially those suffering from pre-existing cardiovascular or respiratory conditions. The issue may be even more complicated with an increased burden in specific, vulnerable populations such as the elderly, children, homeless, minorities and non-English speaking populations, and agricultural and outdoor workers. The complex interplay between social and economic factors that these groups and classes experience cause them to generally be more susceptible to certain systemic illnesses because of a lack of targeted health care policies and/or lack of access to adequate health care.

5.2.5. Flooding and Landslides

Several factors determine the severity of floods, including rainfall intensity and duration. Along with reductions in the amount of snowpack and accelerated snowmelt, scientists project greater storm intensity. Climate change is predicted to vary the frequency, intensity, and duration of extreme storm events, such as sustained periods of heavy precipitation and increased rainfall intensity during precipitation, resulting in more direct runoff. Flash floods occur when a large amount of rain falls over a short period of time. The city's flooding potential will also be exacerbated when experiencing atmospheric rivers, or narrow streams of warm, concentrated precipitation, often resulting in considerable rainfall over a short period of time. Under higher emissions scenarios, the intensity and magnitude of atmospheric rivers are expected to become more severe, resulting in increased regional and localized flooding. With the added potential increases in the frequency and intensity of wildfires due to climate change, there is potential for more floods following wildfires, which will increase sediment loads and impact water quality. Floodwaters during storm events can interact with sources of pollution and distribute hazardous pollutants locally and regionally. The resulting water contamination may lead to human health impacts, as well as degradation of ecosystems.

Source: City of Escondido

Currently, the city experiences localized flooding in several areas during heavy rainfall and extreme weather events. Historically, the city has experienced property-related losses and damage because of localized flooding. As variability in precipitation frequency and intensity occurs, what is currently considered a 100-year flood may occur more often than projected, further increasing the risk of flooding to communities already located in these areas. Currently, there are 1,399 homes in the city located within the 100-year floodplain mapped areas. As these floodplain maps are updated and revised to account for increased flooding as a result of climate change, it is anticipated more homes in the city would be located within these areas of risk. The potential exposure or loss of residential buildings currently located within the 100-year floodplain is valued at $393,819,000 (City of Escondido 2018). During flooding events, infrastructure (e.g., roadways, power lines) may be damaged, resulting in disruptions to communications, energy transmission, public services, and transportation systems. There are 37 critical facilities and City assets within the 100-year floodplain, with an asset value of $43,352,000 (City of Escondido 2018). Flood events can also cause considerable property damage from extended exposure to water, and structural damage from erosion and mudslides. There are approximately 76 homes at high risk and 22 homes at moderate risk, with a potential exposure or loss value of $27,587,000 (City of Escondido 2018). A snapshot assessment of potential home threat exposure is provided in the City's 2018 Multi-Jurisdictional Hazard Plan, with tabular excerpts provided in **Appendix F.**

5.3 Social Equity and Environmental Justice

Environmental issues are almost always rooted in economic and social issues. In fact, climate change is a direct product of extended environmental and social policies. An ironic, yet unfortunate, aspect of climate change is that the individual, businesses, agencies, or organizations most responsible for

This City's vision of climate justice is where solutions begin with addressing the needs of those who are most vulnerable to climate change and/or experiencing disparate outcomes.

causing climate change are often the ones that are the least affected by it. The world's richest households, businesses, and industries generate more than half of the GHG emissions and the poorest half contribute just 10 percent of all emissions (The Guardian 2015). Even though all residents and businesses will all be affected by a changing climate, they will be impacted in different ways. The interactions between climate change and health are numerous. Not only will climate change have significant health impacts, but how we prepare to, mitigate, and adapt to our changing climate will also influence human health. Preparing and responding to climate change is a powerful opportunity to improve the health of Escondido's residents. To do this, the City will need to determine the scope and extent of existing social and economic vulnerabilities and disparities and identify ways to make the community less susceptible to, or able to cope with, the adverse effects of climate change.

Social equity, as a term, is more than just the fair, just, and equitable distribution of public services and implementation of public policy; it also means understanding and giving people what they need to enjoy full and healthy lives. If properly incorporated into planning efforts, social equity ensures traditionally disadvantaged and under-represented groups equally experience the positive outcomes of these planning efforts. This involves being inclusive of both dominant and marginalized groups, and ensuring that the benefit to one does not result in the detriment to the other. Planning for equity does not stifle growth or impede development. Instead, it expands opportunities to all members of a community and builds local resiliency.

Source: City of Escondido

This City's vision of climate justice is where solutions begin with addressing the needs of those who are most vulnerable to climate change and/or experiencing disparate outcomes. For the City to provide equitable protection from environmental hazards and burdens, climate adaptation planning efforts must involve all social groups and classes in the development and implementation of environmental policies, and ensure equitable benefits to all community members from projects funded and directed by the City (a snapshot assessment of Escondido's unique socio-economic profile is provided in **Appendix F**).

5.3.1. Social Equity and Health Index Map

Climate adaptation measures should not be implemented without consideration of wider social equity and environmental justice concerns. Understanding these vulnerability factors and the populations affected is critical for crafting climate change adaptation measures. Although disaster impacts can vary from hazard to hazard, vulnerability indicators – or measurable variables – allow for the quantification and comparison of climate risk within cities, counties, or sub-regions. The City created a mapping tool, called a Social Equity and Healthy Index Map, to measure the degree to which climate change would impact different geographical areas and to evaluate levels of access to opportunity within a census tract. The data-backed mapping tool created a heat map of related risk factors. All indicators fall into one of five broader categories: housing, mobility, economic, environmental, and health. The overlap of these risk factors highlight areas of greater cumulative risk that should be prioritized when implementing corresponding adaptation strategies. As a result, a significant majority of the adaptation actions include implementation steps that will require the City to prioritize these actions in areas of highest need. The 2020 Social Equity and Healthy Index Map is provided in **Appendix F** and is referenced in Section 5.4, *Adaptation Measures and Next Steps*.

5.4 Adaptation Measures and Next Steps

The CAP provides evidence-based measures to reduce GHG emissions and preventative measures to address the negative outcomes of climate change. In implementing the measures listed in this section, this CAP also outlines how the City will adapt and improve its resilience to existing and future climate change impacts. As documented in this chapter and **Appendix F**, the City's sensitivity and vulnerability to climate change is influenced by diverse demographic and socio-economic factors. The City will strive to achieve climate justice (the concept that no group of people should disproportionately bear the burden of climate impacts or the costs of adaptation) by addressing these factors. As this is the beginning of the City's process of developing its adaptation strategies and measures, many early initiatives are exploratory in nature and aim to identify potential changes or actions to respond to the impacts of concern. The City will begin responding to climate change impacts through the initiation of two climate adaptation strategies.

Strategy A-1: Become a "Climate Smart" Leader

Table 5-1 Strategy A-1: Become a "Climate Smart" Leader

Measure A-1.1: Fully anticipate, plan for, and mitigate the risks of climate change and seize the opportunities associated with the social and environmental change.

Recognize climate impact variables as a risk in how the City manages programs, projects, and infrastructure.

Target Year	Adaptation Action
2020	Annually monitor climate change research and best practices to improve the understanding of local climate change, weather-related emergencies and climate hazards, and to support climate change preparation efforts in local, state, and federal partners.
2023	Adopt established methods for projecting the lifecycle carbon emissions of land use and transportation investments and begin to prioritize projects that have the greatest potential to sustain future changes and changing weather-related emergencies and climate hazards.
2023	Assess climate impacts in the 2023 MJHMP update, incorporate social equity and environmental justice concepts to the extent practicable, and develop system wide approach to prepare for and respond to changing weather-related emergencies and climate hazard events.
2024	Prioritize plantings, materials, and infrastructure specifications that will be resilient to climate change hazards and be cost-effective over the lifetime of the asset in infrastructure design.
2025	Update the "2020 Escondido Climate Adaptation Study".

Measure A-1.2: Make sure that everyone is given the opportunity to be prepared for the current and future risks that are exacerbated by climate impacts.

Develop and build capacity for a transparent and inclusive education and outreach processes and design a decision-making framework to achieve equitable access and other climate health-related goals.

Target Year	Adaptation Action
2020	Designate point of contact(s) to establish and maintain staff ability and capacity to ensure effective implementation and equitable outcomes of climate action efforts.

Table 5-1	Strategy A-1: Become a "Climate Smart" Leader
2022	Create collaborative partnerships with community-based organizations including vulnerable populations to broaden and diversify community engagement, and to support community-based initiatives that align with climate action planning priorities.
2023	Develop a climate change adaptation public outreach and education program. Engage typically underrepresented vulnerable populations by creating neighborhood climate ambassador liaisons.
2025	Provide quality information and/or "how-to" resources for local climate adaptation using interactive approaches that may include competition, feedback, and recognition. Activities may include: ▪ Provide free technical assistance to businesses. ▪ Develop working groups with workforce development and training organizations to integrate green jobs into existing work. ▪ Develop and implement a local green business program to provide recognition for business achievements. ▪ Partner with business groups to conduct Fix-It Fairs or participate in street-fairs by engaging under-served businesses in learning about sector opportunities ▪ Hold regular workshops with building contractors on green building best practices.
2026	Minimize health issues and disparities caused by weather-related emergencies and climate hazard events (such as extreme heat days), especially for populations most vulnerable to these impacts, by improving the preparation for and response from health, community service, public safety, and emergency staff, resources, and/or services. Actions may include: ▪ Leverage partnerships and support organizations to provide assistance to vulnerable populations in high fire hazard areas. ▪ Advertise outdoor worker protection measures, including heat safety and employment security. ▪ Develop a cool zone plan in consultation with resident, business, and community groups and provide updates in conspicuous locations online and on social media when cool zones are activated. ▪ Educate homeowners and tenants of multi-family housing about weatherization projects and the cost savings gained from energy efficient homes through training programs. ▪ Develop evacuation assistance plans and advertise their availability to vulnerable populations in hazard areas and be prepared to implement these plans as part of climate hazard-related emergency operations. ▪ Utilize citywide publication and social media to reach a broad audience to advertise preparedness, risks of potential climate hazard events, and/or implementation status of these measures.

Measure A-1.3: Hardwire social equity and environmental justice into new programs and projects.

Focus planning and intervention programs on neighborhoods that currently experience social or environmental injustice and/or bear a disproportionate burden of potential public health impacts.

Target Year	Adaptation Action
2020	Redress social equity disparities by targeting some of the CAP implementation projects into the most vulnerable areas as defined by the "2020 Social Equity and Health Index Map".
2020	Maximize mitigation benefits locally by prioritizing community specific (i.e. local) mitigation for GHG emissions and biological impacts/habitat loss. If no local mitigation credits or mitigation opportunities are available, allow project applicants to seek out regional solutions first. If no regional solutions are available then State solutions, with a preference to proximity.

Table 5-1	Strategy A-1: Become a "Climate Smart" Leader
2023	Consider establishing equity considerations for recreation/parks programming, planning, engineering, and public works projects, such as: ▪ Does the proposed action generate burdens either directly or indirectly to vulnerable populations? If yes, are there opportunities to avoid, minimize, or reduce those impacts? ▪ Can the benefits of the proposed action be targeted in ways to reduce vulnerable population disparities? ▪ Are the benefits of the proposed action broadly accessible to residents or businesses of vulnerable populations?
Measure A-1.4: Develop working relationships with other agencies and continue to analyze climate impacts.	
Establish working groups and collaborate with regional and State agencies and groups to promote becoming "Climate Smart" and promote complementary adaptation strategy development.	
Target Year	**Adaptation Action**
2020	Work with SANDAG and NCTD to make the regional transportation network more resilient, incorporate consideration of climate impacts as part of infrastructure planning and development, and prioritize transportation investments that have the capacity to adapt to climate change, while promoting social equity and environmental justice.
2022	Work with law enforcement, CAL FIRE, City of San Marcos, County of San Diego, City of Vista, and City of Poway to reduce risk from high fire hazard areas and develop effective response mechanisms and evacuation scenarios.

Notes: CAL FIRE = California Department of Forestry and Fire Protection; City = City of Escondido; GHG = greenhouse gas; MJHMP = Multi-Jurisdictional Hazard Mitigation Plan; NCTD = North County Transit District; SANDAG = San Diego Association of Governments

Source: City of Escondido 2020.

Strategy A-2: Build Thriving and Resilient Neighborhoods

Table 5-2 Strategy A-2: Build Thriving and Resilient Neighborhoods

Measure A-2.1: Make sure that everyone has equitable access to full, healthy lives.

Recognize the importance of the ecosystem in improving personal, environmental, and economic health

Target Year	Adaptation Action
2022	Develop equitable programmatic resources to increase the production and consumption of home grown and locally sourced food by supporting farmers' markets, community gardens, and other forms of urban agriculture.
2022	Establish partnerships with local businesses and groups to provide educational opportunities for residents to gain skills in organic gardening, fruit production, composting, food preservation, and cooking healthy foods.
2023	Review and update heat response plans to: ▪ Coordinate operations of readily accessible cooling centers. ▪ Recommend potential ways for property managers and homeowners' associations to implement Cool Zones. ▪ Develop an "early warning system" and response plans that alert residents, businesses, and community members, especially those most vulnerable to heat, when projected heat conditions exceed 100 degrees.
2023	Develop incentives to increase the planting of fruit trees in appropriate areas on private property.
2024	Use regulatory and voluntary tools to increase access to neighborhood parks, passive parklands, parklets, and/or pop-up recreation programs to increase parkland coverage and/or expand equitable access to recreational opportunities.
2025	Consider ways to improve equitable access to clean and sustainable energy. This could include the creation of a "Clean Energy Equity Plan" to support low-income residents and small organizations to purchase or obtain renewable energy.

Measure A-2.2: Create "climate safe and decent" housing options.

Support more comfortable and resilient homes and buildings to proactively adapt to changing weather-related emergencies and climate hazard events.

Target Year	Adaptation Action
2020	Increase the use of public and private roofs for rooftop gardens. Provide education on how private property owners can use rooftop gardens as an eco-friendly alternative to: bring greenery into a sterile space, provide a place to relax or grow food, delay stormwater runoff, and cool the building to reduce energy consumption. Expand green roof installations through outreach and incentives, such as the Stormwater Credit Fee.
2023	Update the building code to require new private buildings to have operable windows, providing choice levels of light, and wall-to-wall ventilation.
2023	Update the building code to mandate the installation of cool roofs on all new and retrofitted roofs on multi-family projects.
2027	Analyze the feasibility of a point-of-sale weatherization audit and wildfire risk assessment for existing single-family homes in high or very high wildfire hazard areas.

Table 5-2	Strategy A-2: Build Thriving and Resilient Neighborhoods
2027	Develop and implement a mitigation plan for power outages, which may include the following: ▪ Adopt an ordinance that requires new senior housing or large care facilities to install air conditioning in all units and on-site home energy batteries and energy storage. The ordinance shall also require conversion projects to provide adequate on-site temperature-controlled spaces in indoor common areas, if any. ▪ Adopt an ordinance that requires new affordable housing projects to install air conditioning in all units. Require affordable rehabilitation projects or other conversions to provide adequate on-site temperature-controlled spaces in indoor common areas, if any.
2028	Consider ways to reduce reliance on centralized sources for energy including: ▪ Facilitate access to local, decentralized renewable energy by incorporating renewable energy projects into CCA or other community-wide renewable programs. ▪ Complete a micro-grid feasibility study and begin implementation.

Measure A-2.3: Build capacity for adaptive neighborhoods.

Reduce risks and impacts from increased temperatures, drought conditions, and precipitation variability in the areas around homes and businesses.

Target Year	Adaptation Action
2022	Utilize the "2020 High Fire Hazard Map" to better manage the risk of wildfires as a result of drier summers, especially in areas where homes are next to natural open space areas: ▪ Enforce statutory standards for provision of defensible space inhibiting wildfire spread on private properties, and implement brush clearing and fuel breaks to manage the potential spread of wildfire. Evaluate other ways to reduce risks in and around wildland-urban interface areas that are rated as high fire hazard areas, such as improving the quality and plant palette around wildfire prone areas, and/or other ways to reduce risks in and around high fire hazard areas. ▪ Manage the increased risk of wildfires of new residential subdivisions in very high fire hazard areas by expanding the required fuel modification zones from 100 to 150 or 200 feet, depending on geographic conditions such as land slope, unburnable areas, and surrounding vegetation fuel points. ▪ When analyzing new residential projects in very high fire hazard areas, incorporate evacuation route planning into the analysis. Evaluate brush fire spread and wildland fire behavior characteristics that utilize a 60 mph prevailing wind factor at a minimum, or higher wind speeds, if documented, as necessary.
2024	Adopt plant palettes in the Landscape Ordinance to withstand drought conditions and promote plant-type resilience (in street and park trees, green roofs, etc.).
2024	Utilize the "2020 Heat Vulnerability Map" to identify at-risk areas and help inform decisions and priorities about implementing ways to cool the urban environment. When evaluating programs, projects, and infrastructure in at risk areas, prioritize efforts that decrease the urban heat island effect, especially in areas with populations most vulnerable to heat, through strategies like revegetation, tree preservation, new plantings, depaving and porous pavement, green infrastructure, and site specific development design.
2026	Consider a coordinated, integrated approach to flood or water-surge event planning and consider new innovative ways to adapt to climate impacts, including the following: ▪ Increase resilience of natural systems by keeping natural resources areas, especially streams and creeks, cooler by adding vegetation in areas adjacent to the resource and maintain upland tree canopies. ▪ Establish a fund to acquire or protect land in particularly vulnerable areas.

Table 5-2 Strategy A-2: Build Thriving and Resilient Neighborhoods	
2027	Consider developing, adopting, and implementing integrated plans for mitigating climate impacts in wildland-urban interface areas that could include any of the following: ▪ Collaborate with agencies managing public lands to identify, develop, or maintain corridors and linkages between undeveloped areas. ▪ Use purchase of development rights or conservation easements to protect climate-vulnerable habitats. ▪ Develop, adopt, and implement integrated plans for mitigating wildfire impacts in the wildland-urban interface.
Measure A-2.4: Build a sustainable and resilient transportation network.	
Align the transportation system improvements with quality of life and enable a variety environmentally friendly choices that feature green infrastructure and have the capacity to adapt to climate impacts.	
Target Year	**Adaptation Action**
2023	Work with NCTD to build more bus shelter amenities to help prevent health effects from long sun exposure and incentivize usage of public transportation.
2024	Evaluate and pursue stable funding sources and financing strategies to accelerate and sustain natural and green infrastructure within the public right-of-way.
2025	Conduct walk audits around prioritized schools, transit boarding areas, and parks to encourage Safe Routes to Schools, Transit, and Parks.
2026	Develop urban tree canopy targets and equitable distribution of tree-related benefits, which may include any one of the following: ▪ Develop an urban heat island reduction program that includes an urban forest program or plan. ▪ Develop a governance structure, including a way to fund new tree plantings such as an in-lieu program to offset trees plantings on highly constrained sites. ▪ Expand and focus tree plantings in low-canopy neighborhoods and neighborhoods at a higher risk of adverse outcomes of urban heat island effects. ▪ Encourage urban agriculture through edible landscapes within public spaces. ▪ Adopt a new tree code in the Landscape Ordinance that considers tree selections so that tree plantings are known to perform well in the general climate conditions, are climate resilient trees, and will increase canopy or vegetative cover. ▪ Set priorities to expand planning, maintaining and management of trees, such as expanding urban forest canopy to cover at least 20 percent of each neighborhood and 10 percent of commercial and industrial areas. As part of the next CAP update, monitor tree canopy changes due to development and determine if policy and rule changes are needed.
2026	Give greater weight to investing in improvements to transportation infrastructure that are projected to be affected by multiple climate changes and/or build in flexible options that can adapt to changing conditions.
2027	Launch and implement a City Vision Zero initiative and help achieve the goal of zero traffic deaths and serious injuries on City transportation facilities.

Notes: CCA = community choice aggregation; City = City of Escondido; NCTD = North County Transit District; mph = miles per hour
Source: City of Escondido 2020.