Climate Action and Resilience Plan 2025-2030

ANTIOCH
CALIFORNIA

Table of Contents

Acknowledgements 2
Executive Summary 2
Why Act? 5
Goals of the CARP 6
Community Outreach for the CARP 9
Aligning the CARP with Existing and Future Plans 10
State Goals and Action 10
Contra Costa County Climate Goals 11
COVID-19 impacts on CARP 11
Alignment with City of Antioch Strategies and Plans 12
A Path Toward Resilience 14
Adaptation 17
Extreme Heat 19
Financial Impacts of Extreme Heat 20
Health Impacts of Extreme Heat 21
Summary of Effects of Climate Change on Extreme Heat 21
Adapting to Extreme Heat 22
Flooding 24
Summary of Effects of Climate Change on Flooding 26
Adapting to Increased Flooding 27
Earthquake 29
Summary of the Effects of Climate Change on Earthquakes 29
Adapting to the Earthquake Hazard 30
Air Quality 31
Summary of the Effects of Climate Change on Air Quality 33
Adapting to Poorer Air Quality 33
Energy Insecurity 36
Summary of the Effects of Climate Change on Energy Insecurity 37
Supporting Energy Security 38
Drought 40
Summary of the Effects of Climate Change on Water Availability 41
Adapting to Drought Conditions 41
Mitigation 43

Understanding Antioch's Emissions Status 44
Transportation 46
Energy 52
Waste 57
Shortcomings of the Greenhouse Gas Inventories 61
Community Development 64
Community Engagement 66
Youth Engagement 66
Disaster Communication 67
Other Outreach & Engagement 68
Workforce Development and Local Economy 69
Economic Security and Equity 72
Implementation and Next Steps 73
Short-term implementation 73
Long-term implementation 74
2030 Climate Action & Resilience Plan 74
Summary of Actions 76
Clarifying the Action Summary Chart 76
Hazard Preparedness 78
Mitigation 81
Community Development 86
Waste 89
Hazard Preparedness 92
Appendix I: Survey Results 95
Appendix II: Hazard Mapping 106
Flood Mapping 106
Heat Resilience Mapping 108
Appendix III: Get Involved 109

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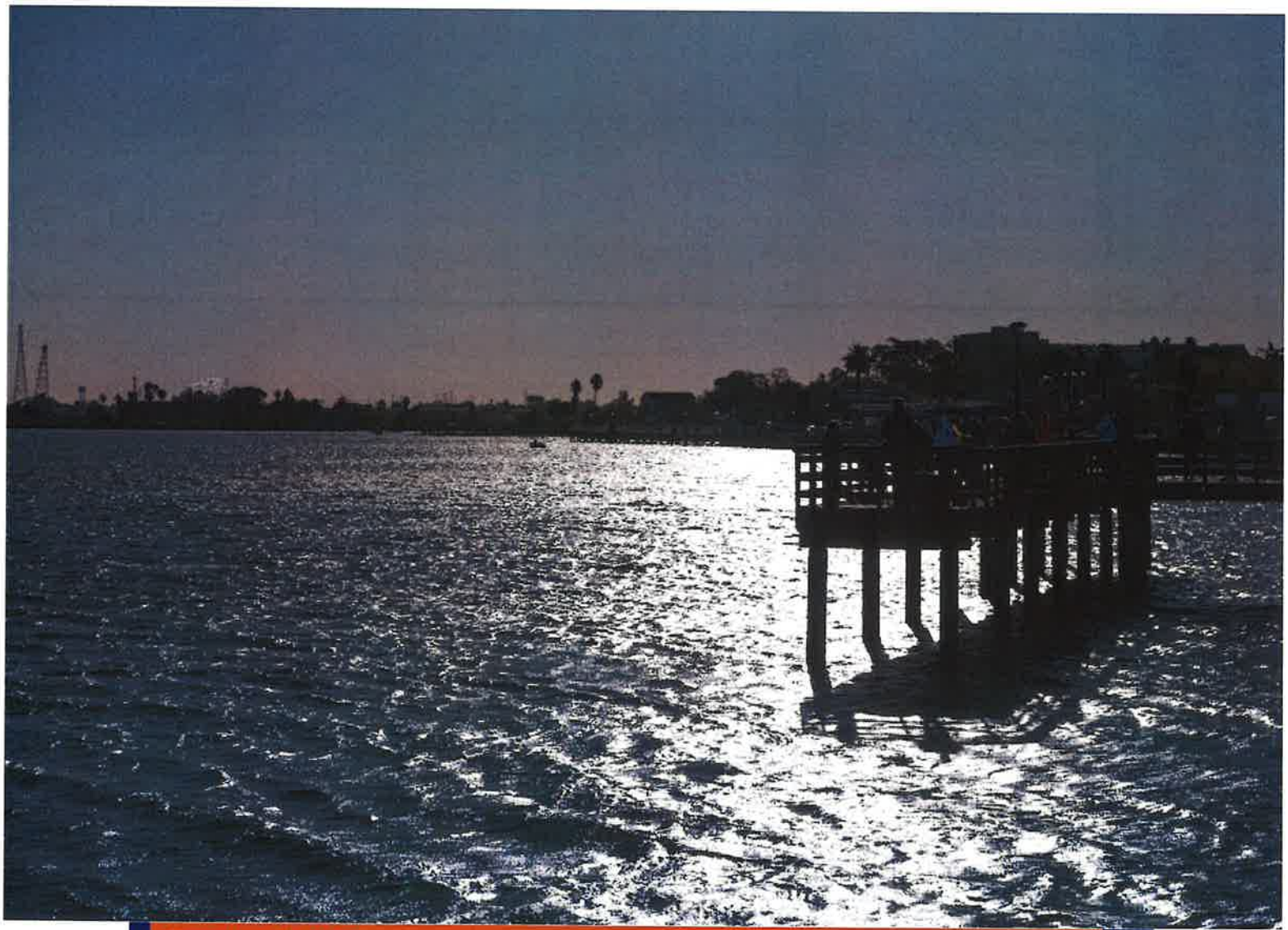
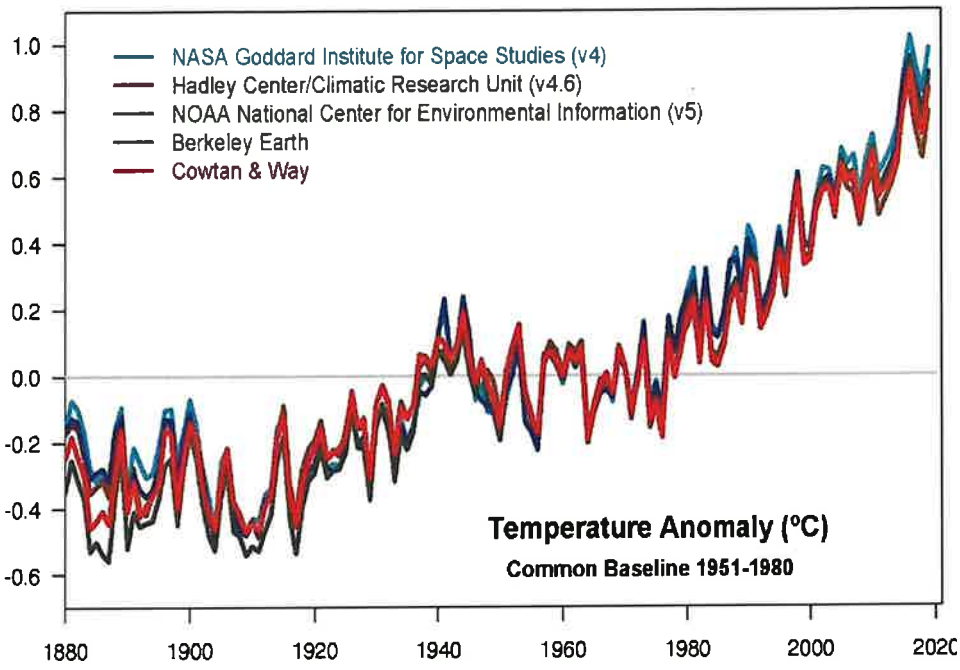
Executive Summary

Climate change is here. The past five years have been defined by extreme heat, severe storms, and devastating fire seasons. 2023 was the hottest year on record. The next nine hottest years have all occurred since 2014. There is a 100% chance that 2024 will be one of the five hottest years on record. Humanity is feeling the heat, and we know why. Over 97% of scientists agree that human activities, specifically emissions of greenhouse gases from the burning of fossil fuels, are the major cause of this trend.[1] Climate change brings added stress to community members' livelihoods, businesses, and infrastructure systems. While no individual weather event can be fully and directly



attributed to climate change, a warming climate increases the volatility of weather and climate conditions. Heat waves become hotter. Storms become more extreme. Fires burn more land.

In the Bay Area alone, the effects of climate change have been slowly intensifying. Between 1950 and 2005, the Bay Area's average annual maximum temperature increased by 1.7°F (0.95 °C). From 2000 to 2022, California faced a megadrought longer and drier than any period since the year 800 CE[2]. Seventeen of the most destructive wildfires in California state history have occurred in the last fifteen years[3]. Sea levels in the Bay Area have risen over 8 inches in the last 100 years.[4] These conditions will worsen in the foreseeable future as warming continues to intensify.



From increasing energy and water costs to fires and potential grid failures, the challenges communities face are diverse. The updated Climate Action & Resilience Plan lays out information to understand the effects of climate change and proposes strategies and actions to address them.

The Climate Action Resilience Plan (CARP) will explore the relationship between climate change, natural hazards, and Antioch's economic and social structures. Understanding these relationships can help the City of Antioch develop policies and programs that can help the community adapt to future changes in the natural environment. This document also examines how the Antioch community can reduce its dependence on carbon-based fuel in the built environment and in the transportation sector. Addressing and limiting greenhouse gas emissions is an important way that the City can reduce the magnitude of future hazards. Lastly, the effects of climate change are strongly tied to the economic and social conditions of a given location. A community

[2] Williams, A.P., Cook, B.I. & Smerdon, J.E., 2022
[3] CalFire, 2024

[4] Bay Area Climate Change Regional Report – California's Fourth Climate Change Report, 2019

development section addresses how economy and community building can come together to strengthen climate resilience in Antioch.

This Climate Action & Resilience Plan is developed in conjunction with the Five Year 2020-2025 Contra Costa HOME/CDBG Consortium Consolidated Plan, including the City's Strategic Plan and Annual Action Plan. The Consolidated Plan is submitted to the U.S. Department of Housing and Urban Development (HUD) every five years for review. After HUD approval, the City can access a variety of federal and state funding to achieve the goals laid out in the Consolidated Plan. Funding to implement the Consolidated Plan goals includes the Community Development Block Grant (CDBG), HOME Investment partnership funding, Housing Successor funds, Permanent Local Housing Allocation (PLHA) funding, Energy Efficiency and Conservation Block Grant (EECBG) funding, and such other community development funds as may become available. By aligning CARP actions with CDBG funds, the City of Antioch can secure and utilize federal and state funding to increase community resilience for vulnerable populations over the next five years.

Over the next five years however, changes will continue. New technologies will develop, new understandings of the coming climate changes will materialize, and new solutions to address these changes will emerge. As such, the Climate Action & Resilience Plan is a living document. The City of Antioch will continue to add new insights into the Climate Action & Resilience Plan to keep the document updated and informative. The next edition of CARP will align with the next 5-year Consolidated Plan to ensure continuity in the resilience building process.

This document informs the Antioch community of climate risks and provides understanding as to how they can motivate the creation of an economy that produces low levels of carbon emissions (known as a low carbon economy). This document explores policies and programs that can help the community prepare for more natural hazards, scarcer resources, and infrastructure disruptions. Together, Antioch businesses, residents, employees, and city staff can build a resilient community and support each other in the face of these challenges.

Why Act?

In 2015, countries around the world agreed to try and limit global warming to well below 2deg C, and ideally only 1.5 deg (2.7F), above pre-industrial levels. This would avoid the most catastrophic effects of climate change around the world, the least loss of life, and minimize the economic burden of such severe warming. Unfortunately, as global surface temperatures have hit 1.1degC of warming, "global warming is more likely than not to reach 1.5°C even under the very low greenhouse gas emission scenarios," according to NOAA[5]. Every fraction of a degree of warming matters. Cutting emissions, immediately and drastically, warming is limited to 2 degrees instead of 3 or 4 and this will save lives.

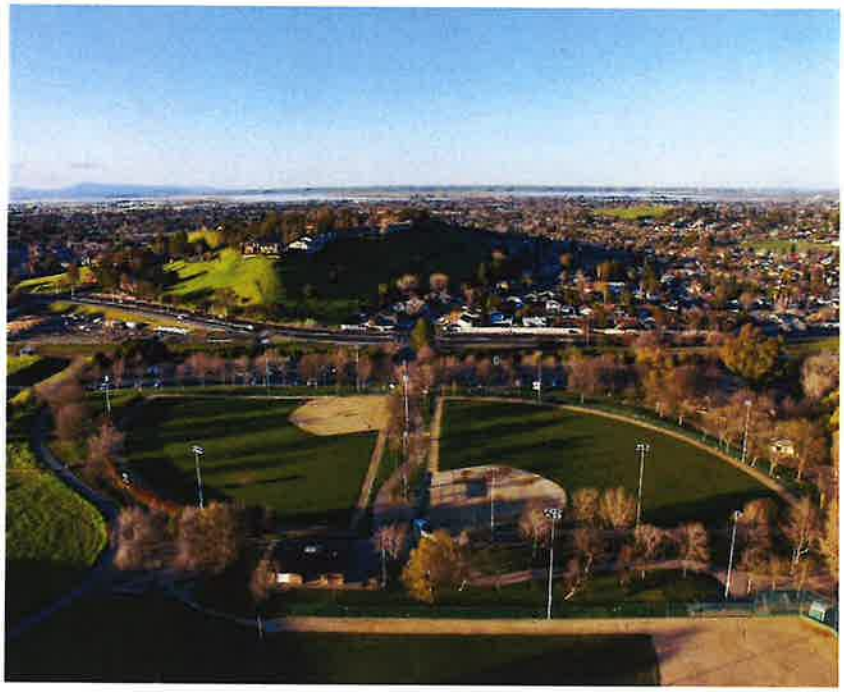
Antioch has, over the last five years, seen an intensification of heat, wildfire smoke, flooding, and severe weather. The summer of 2020 brought devastating wildfires to California, and winter storms flooded streets and knocked out powerlines across the area in 2023. As more emissions are released into the atmosphere and stored within, more natural changes will occur. These changes will strain the health and safety of Antioch neighborhoods.

There is still time to stem the tide of climate change. The City of Antioch has opportunities to build resilience in the community, and this document aims to discover and explore these opportunities. Through this process, the CARP strives to help facilitate community resilience, to ensure that Antioch is both prepared for the changes to come and ready to help reduce the future impact and scale of those changes.

We hope you will join us in making Antioch safer, healthier, and more resilient now and in the future.

[5] NOAA, 2024

Goals of the CARP



Antioch's CARP operationalizes, in the context of climate resilience, the City's Vision to create bright opportunities for families to grow, offering places to plan, enabling businesses to thrive and cultivating a unique downtown experience. It encourages residents and businesses to conserve resources, prepare for the future, and increase the "livability" of the City of Antioch.

What does it mean for a community to be more "livable"? Livability is an important concept in the field of planning. In general, livability is defined by the quality of life, and measured by such factors as access to fresh water, food, housing, transport, health care, education, and a safe and stable environment. AARP says that "A livable community is one that has affordable and appropriate housing, supportive community features and services, and adequate mobility options, which together facilitate personal independence and the engagement of residents in civic and social life."

HUD, collaborating with the Partnership for Sustainable Communities, established six livability principles that guide funding investment for the major departments of the federal government. They are:

1. **Provide more transportation choices.** Develop safe, reliable and economic transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
2. **Promote equitable, affordable housing.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. **Enhance economic competitiveness.** Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers as well as expanded business access to markets.
4. **Support existing communities.** Target federal funding toward existing communities – through such strategies as transit-oriented, mixed-use development and land recycling – to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.

5. **Coordinate policies and leverage investment.** Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
6. **Value communities and neighborhoods.** Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods – rural, urban or suburban.

The Antioch Climate Action & Resilience Plan (CARP) aligns with federal and state guidelines, and various city plans to best position the City to access funding opportunities to increase the livability of the City over the next five years.

The CARP's primary strategies to accomplish short and long-term livability are based on resilience, sustainability, and equity:

- Begin building **resilience** by preparing Antioch for the coming changes associated with a warming climate to ensure that Antioch is a livable city in the near and distant future.
- Begin the process of transitioning Antioch to long-term **sustainability** through actions that support an economy and environment that can remain healthy for generations to come.
- Promote **equity,** the idea that those most vulnerable need the most support, by prioritizing the needs of populations most vulnerable to negative effects of climate change and by ensuring the healthy inclusion of disadvantaged populations into a sustainable economy. Assessing community-driven equity impact for each action can ensure that all actions support the goal of expanding equitability in the Antioch community.

The concepts of resilience, sustainability, and equity are deeply connected and work together to support livability for all in a community. A community that is more equitable will be more resilient to natural hazards and more holistically sustainable. A community that is more environmentally and economically sustainable is more likely to be resilient to strains on its systems.

The principles outlined in this document are important for Antioch community members, leaders, and business owners. Antioch will need everyone's support and participation to build a resilient, sustainable, equitable, and livable city.

Livable

Maintain a healthy, happy, and safe population, environment, and economy now and in the future.

Equitable

-Job opportunities for all Antioch residents

-Financial security (rent, utilities, and food) for all Antioch residents

-Removal of barriers to economic, political, and social participation for vulnerable populations

Resilient

-Prepared for the emergency situations

-Ability to quickly recover from hazard occurrences

-Ability to maintain economic and social stability through major strain

Sustainable

-Low carbon, low waste economy

-Local, green, and decent paying jobs

-Protection the natural environment and preservation of natural and environmental services

Community Outreach for the CARP

The process of developing the Climate Action & Resilience Plan required community participation. To gather input from the community, the City of Antioch conducted two community surveys, gathering input from a variety of sources. Flyers for the surveys were posted in numerous community centers, on City social media accounts and websites, and sent out to community business and organization networks. The City did outreach for the CARP and the survey by tabling at many events throughout the spring of 2024. The City also promoted the surveys while doing door-to-door outreach for SB1383 implementation at multi-family housing complexes. This outreach alone reached over 400 residences. Together, the City was able to gather the opinions of over 200 community members. Participating community members, almost doubling the input of the 2020 survey. While the information and expertise from the community was invaluable, the City will continue working to improve engagement for the development of the next edition of the Climate Action & Resilience Plan.

The community outreach process revealed a particularly high need for hazard preparedness and education, increased energy security, and more effective public transit infrastructure. The City will focus on the priorities of the community as they have been expressed throughout the process of engagement.

Aligning the CARP with Existing and Future Plans

Antioch does not face these challenges alone. Other jurisdictions have their own goals, plans, and projects to address the climate challenge. Because climate change does not begin and end at city borders, and because the social and economic effects of climate change will be felt on a wide scale, Antioch can work in tandem with its local, regional, and statewide partners to strengthen community resilience.

Furthermore, the City of Antioch has priorities that go beyond the scope of climate change. However, the issue of climate change touches many different industries, locations, and social systems. To ensure continuity within the City, the Climate Action & Resilience Plan aligns with the General Plan and approved Housing Element, the Local Hazard Mitigation Plan, the 5-year Consolidated Plan, and the Vision and Strategic Plan.

Highlighted Quotes:

- "Antioch research potential locations for microgrids"
- "bike lockers - for safe storage of bikes when you arrive at destination - at the least = city hall, libraries, all public buildings"
- "Better and more direct bus routes to Bart Station"
- "Find way to help fund low energy use house to still qualify for solar rebate"
- "have low-income weatherization program, include some way to provide insulation - particular older homes"
- "Please encourage local businesses to switch any disposable materials to COMPOSTABLE materials"

State Goals and Action

The State of California has set ambitious greenhouse gas emissions targets for the next 30 years. The State has implemented policies, spanning from renewable energy procurement to sustainable transportation planning, that help it achieve its goals. Aligning with the state can help the City secure funding for projects to improve the livability of its neighborhoods.

SB 32 and AB 32 have outlined goals for the state's greenhouse gas emissions reductions:

- AB 32 (2006): Limit greenhouse gas emissions to 1990 levels by 2020
- SB 32 (2016): Limit greenhouse gas emissions to 40% of 1990 levels by 2030

State Assembly and Senate bills over the last 20 years have supported greenhouse gas efforts that have helped Antioch reduce its own carbon footprint:

- SB 350 (2015): Increase California's renewable energy portfolio to 50% and double statewide energy efficiency savings and natural gas by 2030
- SB 100 (2018): Requires the state to procure 60% of all electricity from renewable sources by 2030 and 100% from carbon free sources by 2045.
- SB 375 (2008): Lays out greenhouse gas emission reduction targets for passenger vehicles
- AB 1493 (2002): Required the first set of greenhouse gas emission standards for passenger vehicles
- SB 1383 (2016): Requires reductions in emissions of short-lived climate pollutants (such as methane) by 40-50% below 2013 levels by 2030
- AB 2514 (2010): Requires electric utilities to install minimum levels of grid-scale energy storage infrastructure
- AB 1279 (2022): Sets goals to reduce anthropogenic GHG emissions to 85% below 1990 levels and achieve carbon neutrality by 2045.

Contra Costa County Climate Goals

The effects of climate change and natural disasters do not end strictly at the borders of one jurisdiction or another. Aligning city goals with County goals can facilitate a more efficient allocation of funding and resources to address climate challenges.

Contra Costa County currently has its 2024 Climate Action Plan (CAP) Update available for public review. The City of Antioch has been working with the County to ensure that the concerns and perspectives of Antioch neighborhoods are addressed, and to solidify continuing regional collaboration.

COVID-19 impacts on CARP

The global COVID-19 pandemic began shortly before the 2020-2025 CARP was published, causing an unprecedented disruption to daily life in Antioch. The declaration of a state of emergency and the subsequent stay-at-home order lasted until January 2021. During this time, VMT in the City dropped by approximately 26%, as schools and businesses transitioned to online instruction and operation. Public transportation ridership also dropped significantly as a result of surging case rates and social distancing measures.

Much of the City's funds and efforts were diverted away from ongoing projects towards addressing the pandemic, and as a result many actions outlined in the 2020 CARP were significantly delayed. However, safety measures taken to improve air filtration in public buildings also addressed the need for improved air filtration in wildfire smoke events. The summers of 2020 and 2021 saw intense wildfires across northern California. Adapting to health hazards and climate hazards go hand in hand. Mitigation and adaptation measures that required in-person actions, such as in home energy audits and weatherization upgrades, could not happen due to social distancing measures. This delayed Antioch's progress towards achieving the City's climate goals.

Alignment with City of Antioch Strategies and Plans

The CARP aligns with Antioch's other plans and goals. As a living document, the CARP will be updated to reflect ongoing additions to other city planning documents as they occur.

The City of Antioch released its **Strategic Vision and Plan** in 2019, which laid out goals, priorities, and recommendations for the City from 2019 to 2029. The Climate Action & Resilience Plan update will continue to align its strategies and goals with the Strategic Plan in the following areas:

- Beautification and Urban Forestry
- Mobility Plan Development and Active Transportation
- Municipal Center and community engagement
- Expansion of solar projects
- Youth programs for improved public health and workforce development

The CARP also aligns with the City of Antioch's 5-year **Consolidated Plan**. Alignment with the Consolidated Plan is necessary to help secure funding to address housing and environmental issues in Antioch's low-income communities. Among the goals of the Consolidated Plan is to improve the quality of the housing stock, expand access to government for low-income and non-English speaking populations, and to promote affordable housing for low to middle income residents.

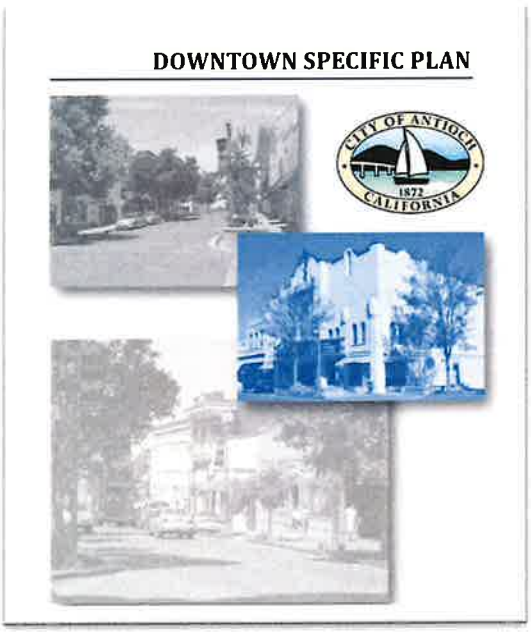
The **Downtown Specific Plan** outlines strategies to make Antioch's downtown area more sustainable and more attractive for local business. The Climate Action & Resilience Plan lays out strategies that aim to increase bicycle use and connectivity and encourage local business and community vibrancy in the downtown area.

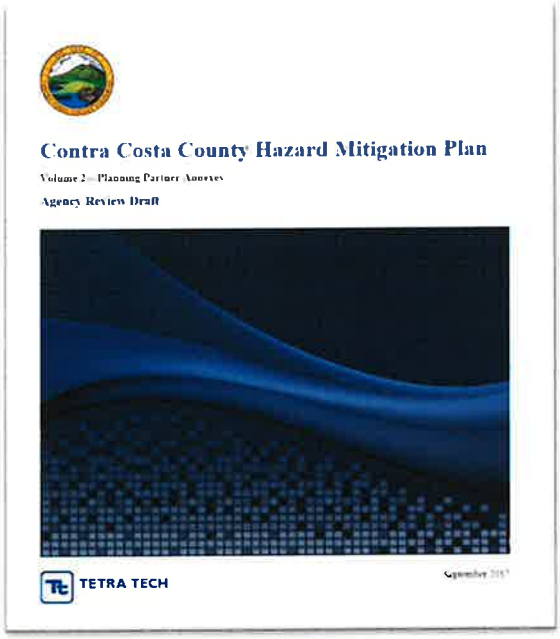
In many ways, Contra Costa County's **Local Hazard Mitigation Plan** (LHMP), published in 2018, functioned as a basis for the initial Climate Action & Resilience Plan.

The LHMP complies with State legislation in **SB 379**, which requires counties and cities to consider the risk of climate change in safety element documents. This version of the CARP expands on analyses done in the loca by focusing on the impact of climate change on the Antioch community and by proposing actions to address these challenges. The City of Antioch will be updating its own Local Hazard Mitigation Plan after the publication of this document.

The Climate Action Resilience Plan will be guided by the Antioch Environmental Justice Element, which was published as a part of the City's general plan in 2023. California Senate Bill 1000 stipulates that in cities and counties must incorporate principles of environmental justice into their general plans if they contain communities defined as "disadvantaged". These are called Environmental Justice neighborhoods. Environmental Justice is defined as "the fair treatment and meaningful participation of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies," according to California State Code. The notion of Environmental Justice will guide this plan's approach to climate solutions that foster a healthier, more just community.

The CARP will remain updated as more local and regional plans are published.





A Path Toward Resilience

The primary goal of the CARP is to provide tools for the City of Antioch and the Antioch community to build community resilience to climate challenges.

The Asian Pacific Environmental Network (APEN) defines community resilience as "the ability of communities to withstand, recover, and learn from past disasters to strengthen future response and recovery efforts".[6] Within the context of climate change, gradual, longer-term hazards such as extreme heat increases and drought fall under the umbrella of disaster. Key elements of effective community resilience include resilient built environments, resilient economies, and resilient natural systems.

Actions that build resilience have benefits that fall into three broad categories: **adaptation** to climate related changes, **mitigation** of greenhouse gas emissions, and **community development** for building strong communities that can withstand the climate challenge.

Adaptation to climate change refers to actions that will directly help prepare communities for the effects of climate change. Adaptation measures focus largely on making sure human populations, built environments, and natural resources are prepared for increased strain. Examples of adaptation include installing green infrastructure to limit the destruction of floods and securing backup water supplies that can support the population in times of drought.

Mitigation of greenhouse gas emissions refers to the act of reducing the greenhouse gas emissions from the community. Because long-term environmental sustainability relies on reducing greenhouse gas emissions, mitigation has been the traditional instrument of Climate Action Plans. Recent impacts of climate change have brought the necessity of including climate adaptation into focus. While a discussion of mitigation alone is no longer sufficient to address the climate challenge, it remains vitally important in order avoid catastrophic climate changes in the future. Examples of mitigation include reducing single driver vehicle use and decreasing natural gas use in the built environment.

[6] APEN Mapping Resilience Report, 2019

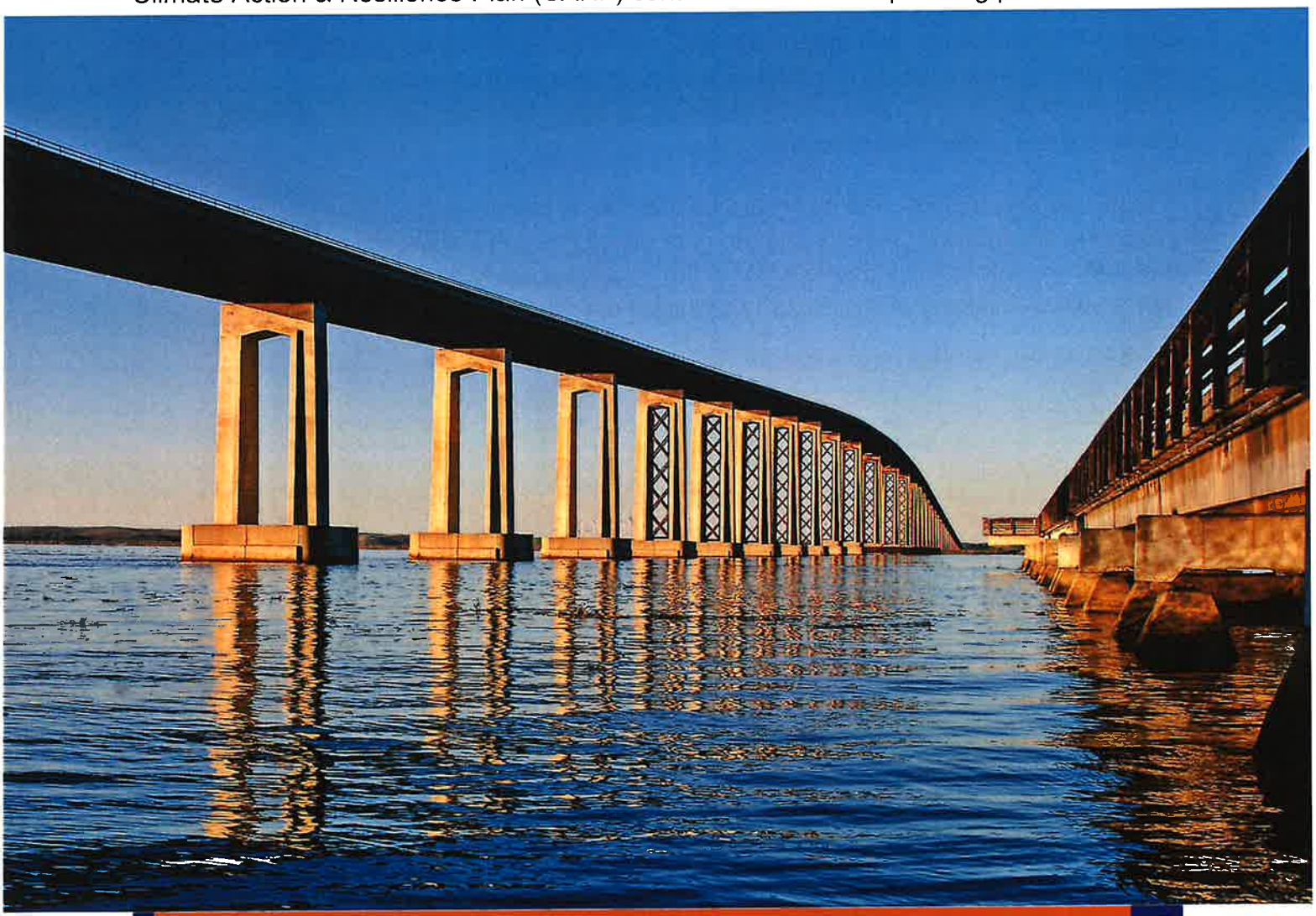
Community development actions build resilience by improving the strength of economic and social systems that may be strained by climate change. Establishing strong and equitable economic conditions and communication networks that encourage engagement and participation in the community are necessary to strengthen resilience. Improving the health of residents also contributes to the resilience of communities by reducing the stress and financial repercussions of poor health. Because social and economic conditions play a large role in a community's ability to address challenges, community development is a crucial aspect of climate policy.

Many actions proposed in this document provide benefits beyond the boundaries of a single categorization. For example, energy efficiency improvements in homes can help reduce energy use and energy production emissions, while helping people adapt to warmer temperatures by improving insulation from outside elements. Antioch's CARP actively seeks actions that can provide multiple benefits for the Antioch community.

Adaptation

Climate change will touch many aspects of society. According to the Bay Area Climate Change Regional Report, climate change will increase the likelihood of certain hazard occurrences, disrupt social systems, and damage built environments such as transportation nodes and energy distribution pipelines. Many of these changes will occur across regional areas and will require coordinated planning processes. It is important that the City both participate in these planning processes and consider the ways regional disruption will affect local communities.

Antioch also faces specific, localized hazards whose frequency and impact will likely increase due to climate change. The 2018 Local Hazard Mitigation Plan began the analysis of how hazards might impact the Antioch community. However, hazard risks do not remain static, especially considering the intensification of climate change. This Climate Action & Resilience Plan (CARP) continues the hazard planning process.



The table below outlines current hazard risks as laid out by the Local Hazard Mitigation Plan:

Table 1 – Antioch Hazard Risk Ranking[7]			
Rank	**Hazard Type**	**Risk Rating Score** (Probability x Impact)	**Category**
1	Earthquake	48	High
2	Severe weather	30	Medium
3	Landslide	27	Medium
4	Flood	18	Medium
5	Drought	9	Low
6	Dam and levee failure	6	Low
6	Wildfire	6	Low
6	Sea level rise	6	Low

The current rating associated with each hazard reflects the current risks posed by each hazard. The frequency and magnitude of some hazards, however, is likely to increase in the upcoming years due to the effects of climate change. The number of severe heat days, for example, will substantially increase by 2050, and drought is expected to become more common and severe.

Though climate change was incorporated into the hazard mitigation planning process, projecting the future impacts of climate change was beyond the scope of that plan. This adaptation section builds on the work of the Local Hazard Mitigation Plan by outlining future vulnerabilities that will become apparent over the coming years.

[7] Contra Costa County Local Hazard Mitigation Plan Volume II, 2019

Extreme Heat

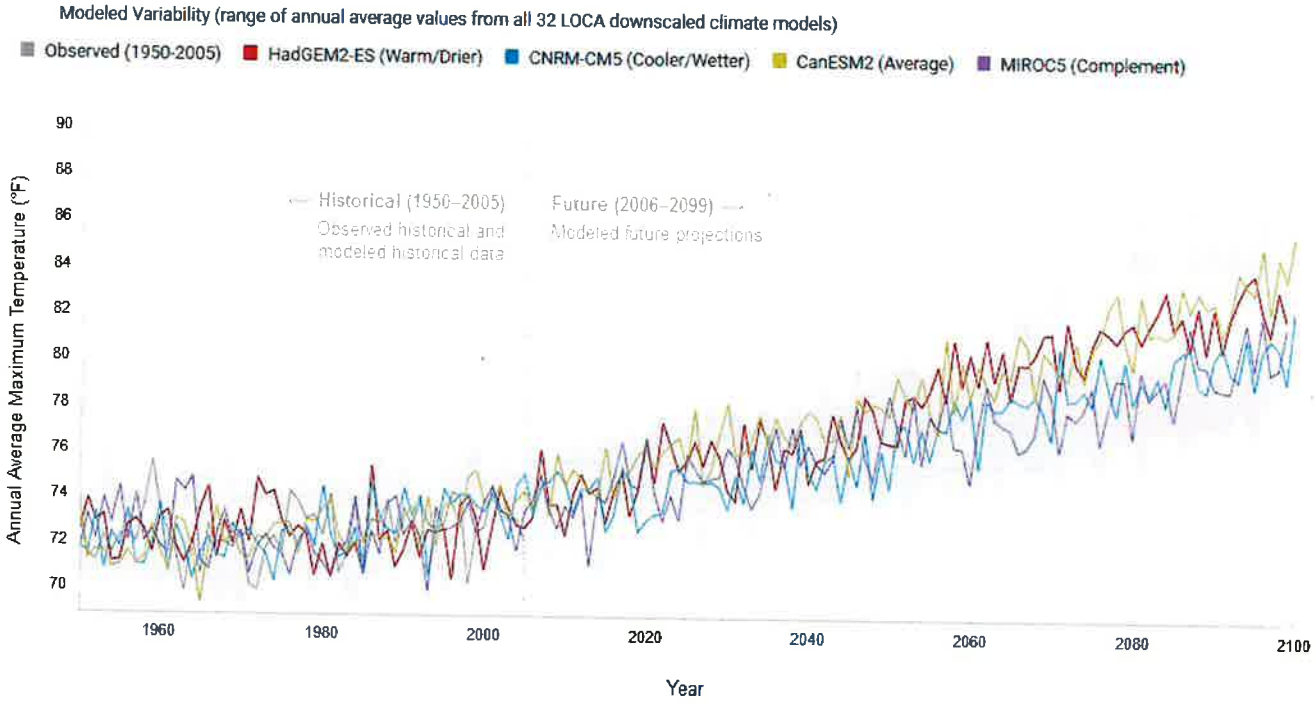
Antioch is already one of the warmest communities in the Bay Area region and is expected to see further heat intensification. The Bay Area's average annual maximum temperature increased by 1.7°F (0.95 °C) from 1950-2005, and is expected to continue warming in the range of 3.3°F by mid-century under low emissions, and 4.4°F under high emissions. By 2100, average temperatures could increase by 7.2°F to 10.0°F, causing severely climate disrupting consequences.[8] To support energy security and public health, the City will need to address the effects of extreme heat.

Average yearly number of extreme heat days in Antioch[9]:

	(Historically (1971-2000)	BAU Midcentury (2036-2065)	BAU Late Century (2070 -2099)	With Bold Action (2°C)
Days Over 90	31	72	110	64
Days over 100	3	19	44	13
Days over 105	0	7	22	4
Off the charts Days (127)	0	0	2	0

[8] Bay Area Climate Change Regional Report
[9] Union of Concerned Scientists Killer Heat Tool, 2019

Cal-Adapt Antioch Annual Average Maximum Temperature Projections[10]



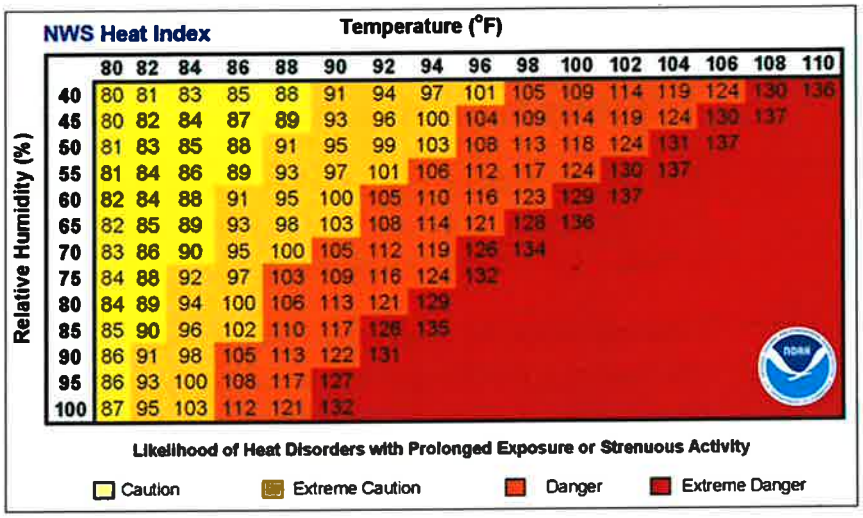
Financial Impacts of Extreme Heat

Adapting to extreme heat requires time and money. Neighborhoods with already high housing burdens are likely to suffer the greatest consequences, as lower income residents have few resources to spend on the installation of air conditioning or the increased energy bills associated with its use.[11] Furthermore, most of Antioch's housing stock was built between 1980 and 1999, meaning many homes are over thirty years old.[12] These structures are less likely to have effective insulation, which increases pressure on the cooling systems to maintain a cool temperature. Because homes with low insulation levels are unable to hold the cold air generated from air conditioning systems, the costs associated with cooling can increase drastically. High levels of air conditioning use on a macro scale can also strain the electrical grid, which can result in even higher energy costs as dynamic pricing attempts to deter users from using electricity during times of high demand.

[10] Cal-Adapt
[11] Heat Islands and Equity, EPA, 2024
[12] Antioch Housing Element, 2023

Health Impacts of Extreme Heat

Source: NWS, 2016



Extreme heat can increase the likelihood of heat stroke, heat exhaustion, and even heat-related death. The EPA has found that in the last century, heat waves are becoming worse. Heat waves are increasing in intensity, duration, and frequency in the United States. In Antioch, heat waves and number of excessive heat days are likely to intensify and increase in the coming years. Excessive heat can lead to severe health impacts and associated costs. According to the California Department of Public Health, the 2006 summer heat wave in California lead to the deaths of over 140 people, many of whom were elderly[13]. In September of 2022, California was struck by an extreme heat wave that lasted 10 days and caused an estimated 395 "excessive deaths". These excess deaths disproportionately affected Hispanic communities in California.[14] This heat wave resulted in Antioch Unified School District sending students home early as heat had become unsafe in the afternoons.[15] The heat also caused BART delays and slowdowns across the region.

Summary of Effects of Climate Change on Extreme Heat

- Drastic **increase in severe heat days** and increased frequency and magnitude of **heat waves**
- **Increase in health events and energy costs** associated with extreme heat events

Most Vulnerable Communities

- Low-income communities
  - Those without access to sufficient healthcare
  - Those without access to air conditioning
  - Those facing energy insecurity
- Elderly populations
- Neighborhoods in Urban Heat Islands and with little tree canopy
- Outdoor workers

[13] Knowlton, *et al*, 2008
[14] Heat Islands and Equity, US EPA
[15] CBS News, 2022

- Active transportation commuters
- Populations with cardiovascular or respiratory conditions
- Unsheltered persons

Adapting to Extreme Heat

The City of Antioch can address extreme heat by promoting both financial security and public health in indoor and outdoor environments.

Financial security and health are strongly linked in the indoor environment. High costs of energy bills, especially as indoor cooling becomes more prevalent, restrict people from making their homes healthy and comfortable. The City can support weatherization efforts to increase insulation and energy efficiency to support household health and decrease energy demand. Weatherization efforts, which include improving roof insulation, installing duct sealing, and replacing old, inefficient HVAC equipment with newer, more energy efficient equipment, can substantially increase the resilience of homes to outside conditions.

Urban Heat Island (UHI): The Urban Heat Island effect explains the phenomenon that cities and urban areas are generally warmer than their rural surroundings. **U.S. EPA definition**: "As cities develop, more vegetation is lost and more surfaces are paved or covered with buildings. The change in ground cover results in less shade and moisture to keep urban areas cool. Built-up areas also evaporate less water, which contributes to elevated surface and air temperatures." Properties of urban materials, such as the level at which these materials reflect, store, and emit the sun's energy, help determine the intensity of the urban heat island effect.[10]

Maintaining public health in the outdoor environment requires a different approach. Increasing tree canopy is one way to address extreme heat in the community at-large.[16] The City has already begun tree planting campaigns through both the Public Works department and community events, and should continue to support these efforts. Tree canopy can provide shade and can reduce the Urban Heat Island (UHI) effect through evapotranspiration. The City can prioritize tree planting in areas along bicycle and pedestrian avenues to provide safe active transportation for the Antioch community. The City can also prioritize tree planting in areas with high percentages of outdoor workers to maintain worker health and safety.

Another way to address the Urban Heat Island effect is by cooling the built environment through the use of cool roofs on buildings and cool pavements on streets. Cool roofs and pavements use materials that reflect more solar energy than typical materials, which help cool indoor and outdoor environments.[17]

The City of Antioch can further explore how to encourage implementation of appropriate cool surfaces in areas that have high UHI and in areas that are expected to see high

[16] U.S. EPA
[17] U.S. EPA, 2008

levels of development in the coming years. The California Heat Assessment Tool (CHAT) provides a mapping of the urban heat island effect in Antioch by census tract.[18]

Proposed Actions

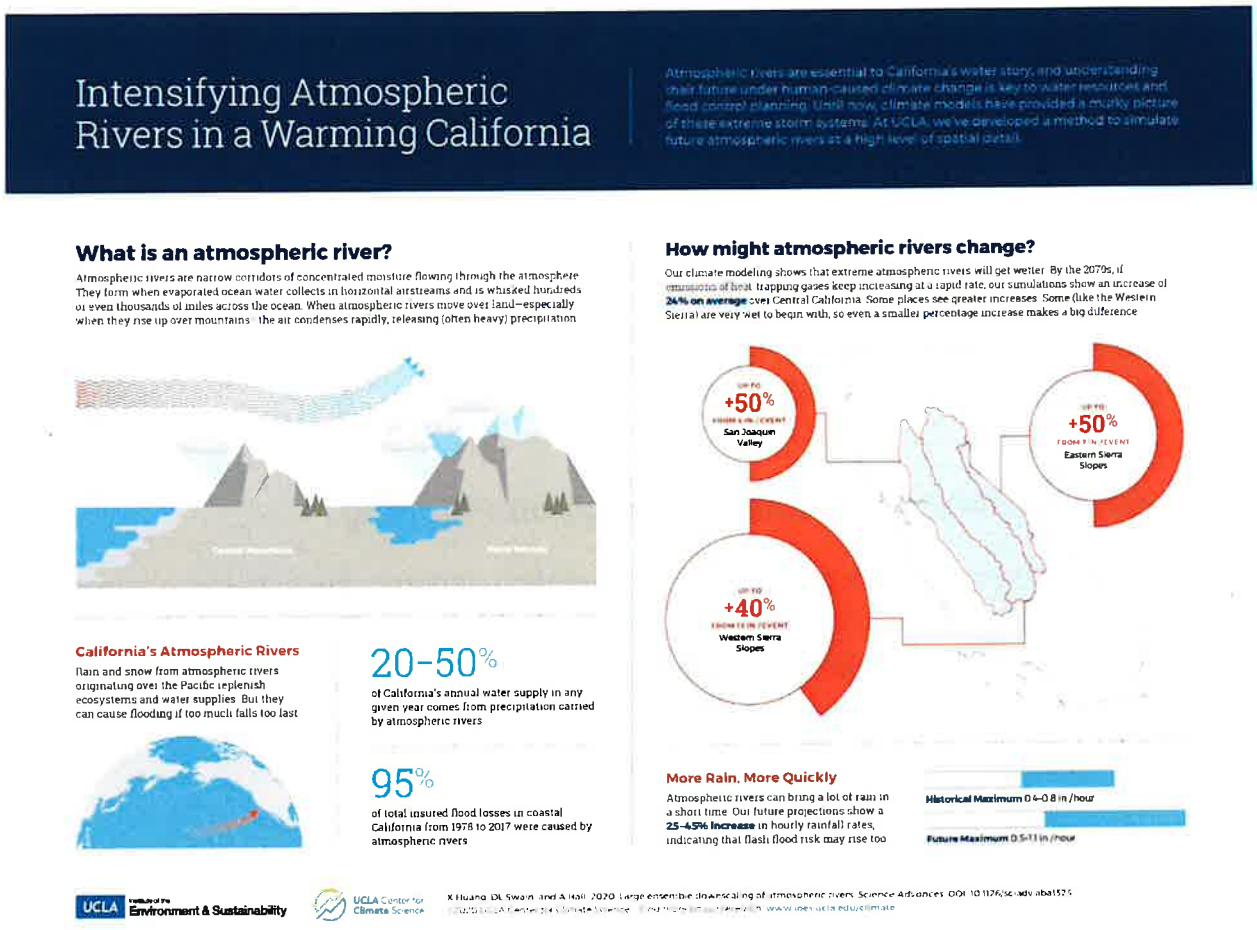
1. Support energy efficiency upgrades and weatherization in homes
    a. Continue outreach for BayREN programs, which provide rebates for energy efficiency improvements
    b. Partner with Habitat for Humanity to promote weatherization upgrades in the Housing Rehabilitation program, including installation of energy efficient air conditioning, HVAC, and insulation.
2. Partner with and promote the County Weatherization program for extremely low-income residents, which will help to leverage additional HUD funding.
    a. Provide assistance to residents in filling out and submitting required paperwork.
    b. Increase outreach for the County's Weatherization program.
    c. Provide a City of Antioch subsidy to increase access to residents with incomes up to 80% of the area median income (AMI) (presently the program only serves up to about 40% AMI.)
3. Increase in green infrastructure and reflective surfaces in the built environment
    a. Explore mandate on new development requiring holistic review of energy efficiency (explore CalGreen Tier 1 reach code)
        i. Develop guidelines for floor-to-area ratio bonuses and other incentives if developers comply with CalGreen Tier 2 requirements
    b. Continue tree planting efforts in necessary areas, such as those with low tree canopy and high UHI effect.
    c. Encourage the use of green roofs in new construction.
    d. Encourage the use of cool roofs in new construction.
    e. Consider the use of cool pavements when repaving and paving roads in appropriate areas. Determine procurement guidelines for pavements based on Environmental Product Declaration (EPD) when available
4. Increase number of cooling centers and conduct analysis into best locations for new cooling centers

[18] California Heat Assessment Tool (CHAT)

Flooding

The combination of sea level rise and increased likelihood of extreme storms make future flooding in Antioch more likely. While flooding was initially thought to be a longer-term concern, intense storms over the last five years have already caused flooding in Antioch. As the planet warms, sea level rise is expected to substantially increase flooding intensity in the second half of the 21st century. Sea levels have already risen by 6 inches in the last 100 years.[19] By the end of the century, even with substantial greenhouse gas emission reductions, three to six feet of sea level rise is likely inevitable[20]. In addition to sea level rise, a warmer Pacific Ocean and atmosphere could lead to the intensification of winter storms that hit California. Many of these may be caused by atmospheric rivers, which are long, narrow bands of water vapor in the atmosphere that transport huge amounts of moisture out of the tropics towards the poles. Atmospheric river events, due to their high water volume, can drop as much as half the state's yearly water supply in as few as 5-10 days. A large storm would damage a significant portion of north Antioch.

[19] Sea Level Rise
[20] San Francisco Planning Dept., 2018



21

Flooding as a result of storms has caused destruction in Antioch in recent years. Late December of 2022 through January of 2023 saw a series of intense atmospheric river systems hit California, bringing hurricane force wind to many parts of the Bay Area and dropping over 10 inches of rain in Antioch. The City declared a local state of emergency. The storms caused approximately $1.9 million in damages, and 13 sites in Antioch were deemed eligible for FEMA's Public Assistance grant. As of March 2024, no funding from FEMA had been committed[22]. The City's Public Works department incurred $122,291 for the storm as they responded to the storms, barricading streets and setting up sandbag areas to prevent flooding. Heavy, rapid rainfall is expected to become more likely in the future and will put vital infrastructure in Antioch at risk. Flood mapping from Adapting to Rising Tides (ART) maps areas that are at risk from coastal flooding that are likely to result from sea level rise. Flooding can contaminate housing stock with toxins from impaired water and can spread hazardous materials into homes. Flooding has the potential, especially on ground level, to result in substantial property destruction. Single-story, single-family homes in flood risk areas are the most vulnerable. Flood mitigation strategies should be prioritized in these areas.

[21] UCLA Institute of the Environment and Sustainability, 2020
[22] The East Bay Times, 2023

Flood mapping from the Adapting to Rising Tides study illustrates that flooding occurring as a result of sea level rise will disproportionally impact Antioch's lower income neighborhoods on the northern side of Highway 4. Health impacts related to flooding are associated with releases of hazardous waste and water contamination. Many of Antioch's low income neighborhoods are located near hazardous waste sites. Flood water can spread hazardous material contamination of air, water, and soil to nearby communities. Even without the presence of hazardous waste facilities, contaminated water, also known as impaired water, contains toxins that can spread due to flooding. Delta water on the north coast of Antioch is considered impaired, and the projected flooding is likely to result in health impacts.

Summary of Effects of Climate Change on Flooding

- Decreasing snowpack and altered precipitation patterns, such as more rain and less snow, may disrupt stream flows and create **greater flood risk in winter**
- **Increase in risk of dam and levee failure** as rising tides put more pressure on those systems
- **Disruption of water supply and water quality** due to changing precipitation and runoff patterns
- **Increase of flood risk on inland water bodies** due to increase of severe storms
- Rising groundwater may **increase the risk of soil liquefaction**

Most Vulnerable Communities

- Populations living in single story residences in flood prone areas
- Communities with nearby flood-prone waste facilities
- Populations that rely on at-risk transportation routes for work
- Non-English speaking populations
- Populations at risk of housing displacement

Also vulnerable: infrastructure

Projections

BCDC's Adapting to Rising Tides study has mapped the area of Antioch that is at risk of major flood damages over the course of the next 80 years (see appendix for larger images). These mappings can help inform future development in

flood prone areas and can help educate people on the risks they may face in the coming years.[23]

Adapting to Increased Flooding

Though large-scale flooding is a longer-term concern, the City of Antioch can begin preparing for its effects. Public health, property disruption, and economic fallout of severe flooding are important issues to address.

Ensuring quick and effective evacuation measures are necessary in the case of a major flood. The City's Emergency Operations Plan has laid out plans for evacuation. Expanded outreach to community members, especially those without access to broadband, smartphone and computer technology, and those without English language skills will make crisis response more equitable and effective.

The City can begin building flood resilience by strengthening the built environment. In Antioch, a scenario in which high tide is combined with a large storm is expected to cause more widespread flood damage. Porous pavements can absorb stormwater to mitigate flood impact. Testing of porous pavements has shown that they can absorb up to 90% of stormwater runoff.[24] Bioswales, rain gardens, and other examples of green infrastructure can also help absorb rainwater and reduce flood impact.

Coastal flooding along the Delta and the San Francisco Bay shorelines will have regional effects. Regional flooding affects Antioch most clearly through economic disruption. Important transportation infrastructure, such as coastal rail lines and highways, are at risk of disruption. Job sites along the Delta coastline may become

[23] Adapting to Rising Tides Flood Projections
[24] EPA Urban Heat Island Compendium of Strategies

impossible to access. By continuing to work with regional partners, such as Adapting to Rising Tides and the Delta Stewardship Council, the City can ensure that it is prepared for the potential economic fallout associated with severe flooding in the Delta-Bay area.

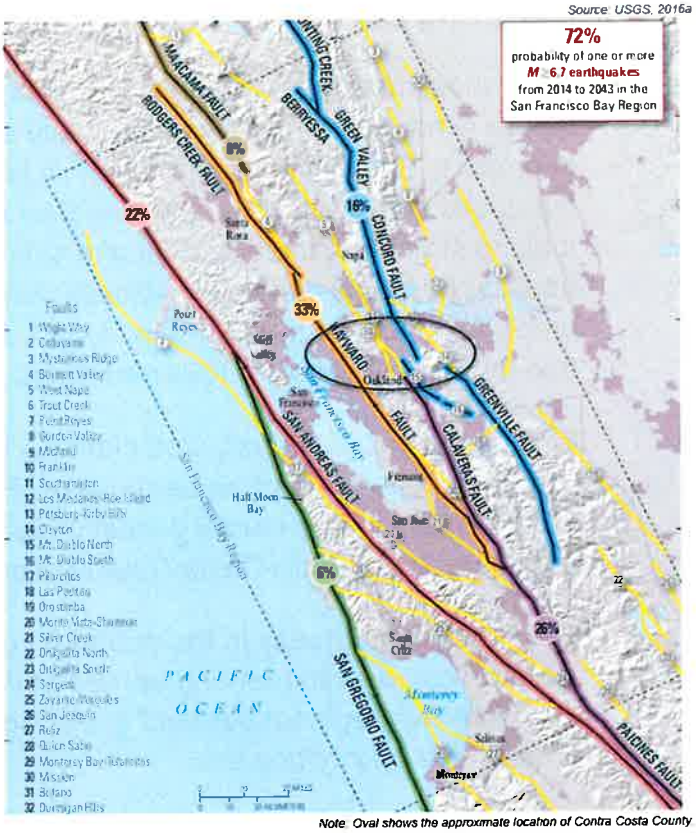
Proposed Actions

1. Take flood areas into consideration when proposing new development
    a. Require flood management proposal when development is proposed in flood-prone area
2. Expansion of green infrastructure for stormwater management purposes
    a. Explore inclusion of bioswales and other stormwater management infrastructure in flood-prone areas as a part of the Urban Forestry Plan
    b. Work to restore wetlands and historic watersheds in Antioch, which can help reduce flooding, filter pollutants from contaminated stormwater, and sequester carbon dioxide.
3. Coordinate with regional agencies to create readiness plans in case of emergency.
    a. Coordinate regionally with groups such as Contra Costa Transportation Authority (CCTA) and Tri Delta Transit to ensure transportation continuity in emergency situations.
    b. Coordinate regionally with housing and development agencies to prepare for potential housing stresses caused by flooding.
4. Continue participation in the Adapting to Rising Tides Initiative and in Delta Stewardship Council's *Delta Adapts* project, which will include comprehensive flood mapping.

Earthquake

Analysis provided by the United States Geological Survey (USGS) suggests a high likelihood that the Bay Area will experience an earthquake by 2050. The Hayward Fault is the most likely to experience an earthquake, while the Greenville fault is projected to be the most destructive for Antiochin a 7.0 earthquake event. While not located directly along a particular fault line, Antioch remains susceptible to destruction from earthquakes along numerous fault lines. Probable damages in Antioch from a 7.0 Earthquake from any of the nearby fault lines range from over $200,000,000 (Calaveras) to nearly $540,000,000 (Greenville).[25]

Source: USGS, 2016a



Note: Oval shows the approximate location of Contra Costa County

Summary of the Effects of Climate Change on Earthquakes

- Soil saturation and liquefaction in the case of earthquake, leading to **higher risk of landslide** and **potential of contamination of groundwater supply**
- **Increased risk of dam failure** due to seismic events and changing water patterns

Most Vulnerable Communities

- Low-income residents living in at-risk buildings
    - Households without earthquake insurance (only 10% of homeowners and 5% of renters have an earthquake policy)[26]
- Populations that rely on at-risk transportation routes
    - The Pittsburg-Antioch highway and State Highway 4 are both considered to be at-risk to earthquake due to liquefaction risk[27]
- Disabled and elderly populations that may have difficulty evacuating
- Populations without automobile access
- Non-English speaking populations

[25] CCC Hazard Mitigation Plan Volume II
[26] Bay Area White Paper on Earthquake Residential Damage and Displacement
[27] CCC Local Hazard Mitigation Plan

Adapting to the Earthquake Hazard

Earthquake resilience requires the **ability to prepare, react, and rebuild.** Earthquakes can be among the most damaging natural disasters, both in the cost of human lives and in property destruction. Preparation includes community engagement, such as informing the public on hazard risks and how they can prepare for earthquake occurrence and making structures more earthquake safe. Prioritizing older structures and multifamily housing buildings can be an efficient use of potential retrofit funds. Successful preparation makes the ability to react, due to heightened public awareness, and rebuild, due to the destruction of fewer buildings, significantly easier.

Earthquake resilience requires planning but is also dependent on the reaction in the immediate aftermath of an earthquake. Plans for the interim housing of people of have lost their homes is a crucial aspect of earthquake planning. The City can work with regionally with Contra Costa County to pool resources in the interim housing process.

The rebuilding process in the aftermath of an earthquake can be a costly one and requires coordination among entities at the regional and state level. The City of Antioch can work with regional partners at the County to ensure that the rebuilding process doesn't end on city borders.

Proposed Actions

1. Conduct analysis of the housing stock for earthquake vulnerability
    a. Focus efforts on multifamily structures that house many people
    b. Research retrofit programs for at-risk structures
2. Develop plans for post-earthquake housing and recovery with the Office of Emergency Services (OES)
    a. Determine short-term shelters and interim housing
    b. Explore transportation options for evacuation
3. Build earthquake resilience into development code for new upgrades and new development
    a. Require qualifying buildings to have shelter-in-place credentials in order to build interim housing capacity in earthquake aftermath
    b. Promote use of PACE financing to homeowners for earthquake safety retrofit
4. Increase community outreach on preparation for earthquake and recovery plans
5. Coordinate with people in the County involved in regional transportation and housing to ensure continuity in emergency situations
        i. Contra Costa County Office of Emergency Services

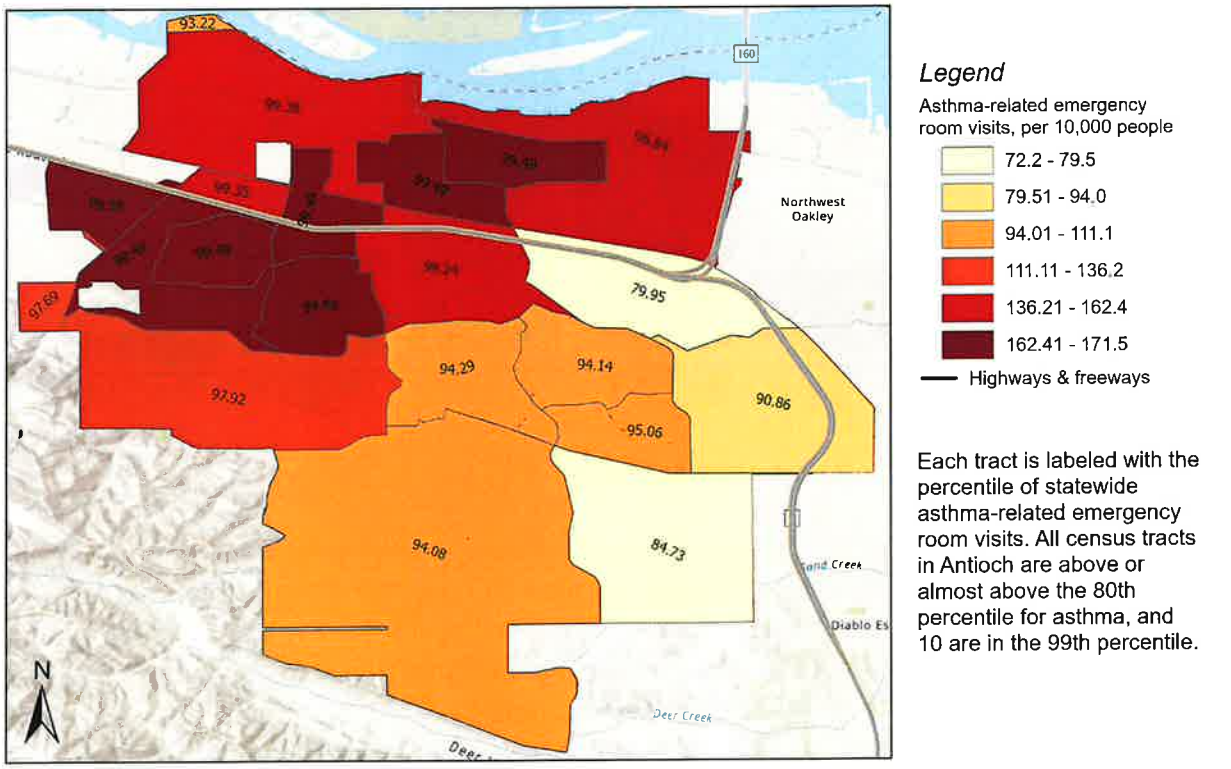
ii. Contra Costa Transportation Agency (CCTA)

iii. Contra Costa County Housing Authority

Air Quality

According to multiple studies, including the Local Hazard Mitigation Plan, Antioch is not considered to be at risk of wildfire. However, Antioch's proximity to many high-risk areas in Northern California means the city remains at risk of poor air quality due to wildfire smoke. Residents with cardiovascular and respiratory conditions, such as asthma, are at the highest risk when air quality is poor. According to CalEnviroScreen 4.0 data released in 2024, Antioch has some of the highest rates of hospitalization for asthma in California[28]. Every census tract in Antioch is in at least the 75th percentile of asthma-related emergency room visits. 12 of the 20 tracts are in or above the 97th percentile. Due to Antioch's high rates of asthma and cardiovascular disease, especially high in low-income areas, health issues related to wildfire smoke are likely to increase as instances of wildfire become more common.

Asthma rates in Antioch, California by census tract



Each tract is labeled with the percentile of statewide asthma-related emergency room visits. All census tracts in Antioch are above or almost above the 80th percentile for asthma, and 10 are in the 99th percentile.

[28] CalEnviroScreen 4.0 Report - Cal OEHHA

Apart from wildfire smoke, automobile traffic can have major effects on air pollution. Antioch is bisected by Highway 4, which has 8 lanes and often sees hours of heavy traffic during the morning and evening commutes. Vehicles produce what the EPA defines as near-roadway air pollution (NRAP) that occurs "within a few hundred meters — about 500-600 feet downwind from the vicinity of heavily traveled roadways or along corridors with significant trucking traffic or rail activities." NRAP comes from vehicle tailpipe emissions, the mechanical degradation of brake, tire, and roadway particles, along with the resuspension of road dust. The main pollutants caused by vehicle traffic are particulate matter ($PM_{2.5}$ and PM_{10}), nitrogen oxides, and volatile organic compounds (VOCs). NRAP can infiltrate homes via natural ventilation (e.g. open windows and doors), mechanical ventilation (active exchange of air through heating and cooling systems), and infiltration (cracks in walls, window joints, etc.). People of color are more likely to live in areas with high traffic burdens, according to analysis conducted by the Union of Concerned Scientists[29].

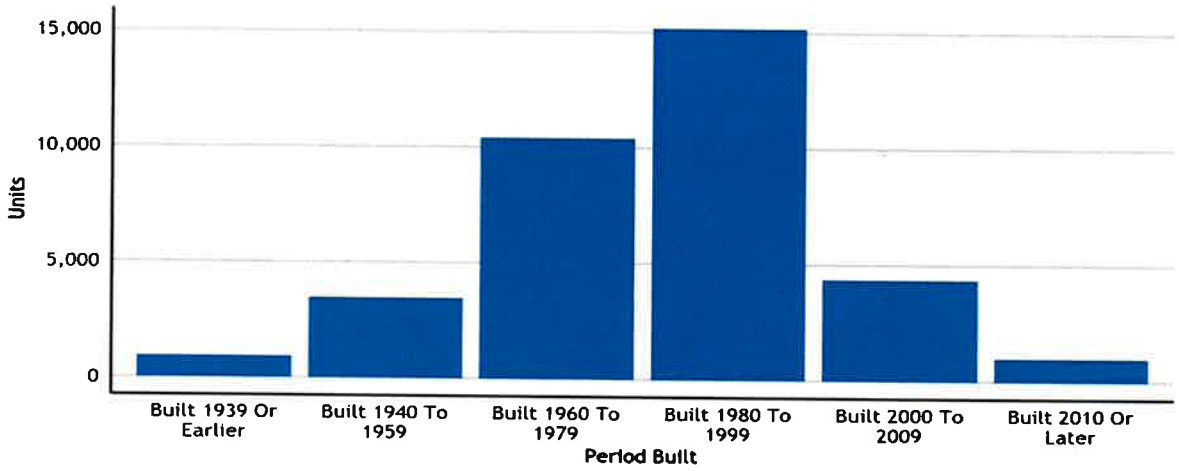


Figure 2-23 Housing Units by Year Structure Built

Universe: Housing units
Source: U.S. Census Bureau, American Community Survey 5-Year Data (2015-2019), Table B25034.

Most of Antioch's housing stock was built before 1999, meaning that thousands of homes in the city are approaching the 30-year age benchmark. Typically, housing over 30 years old needs high levels of rehabilitation and upgrade work to maintain health and safety standards. Analysis conducted in the Antioch 2023-2031 housing Element shows that most of these older homes are located in the Northwestern portions of the city, which includes the neighborhoods included in the federally defined Environmental Justice neighborhoods.[30] These older stock homes are likely to have poor insulation and air circulation. As these homes continue to age, the likelihood of deteriorating insulation and circulation and the buildup of toxins increases. As a result, smoke generated from

[29] Union of Concerned Scientists, 2019
[30] Antioch Housing Element

increased wildfire occurrence could degrade indoor air quality, and pollutants from vehicle traffic could accumulate in homes. Poor insulation and air circulation also encourages indoor heat buildup on hot days that can result in heat cramps, heat exhaustion, and heat stroke.

Summary of the Effects of Climate Change on Air Quality

- **Increase in air pollution** and associated health effects due to wildfire smoke
- Increased temperatures that encourage **higher levels of pollutant concentrations**
- Air pollution and GHG emissions **tied to dependency on single-occupancy vehicles**

Most Vulnerable Communities

- Low-income communities
  - Populations without health insurance
  - Populations that live in poor housing stock (old, poor air circulation, pollutant heavy)
- Outdoor Workers
- Community members with respiratory conditions such as asthma or bronchitis
- Populations that rely on active transportation
- Elderly and children
- Pregnant women

Adapting to Poorer Air Quality

Improving air quality in Antioch requires addressing pollution shocks and baseline air pollution.

Within the context of air quality shocks, such as wildfire events, maintaining indoor air quality is a public health priority. In response to the COVID-19 pandemic, the City upgraded facilities to MERV-14 rated air filters to mitigate the spread of airborne diseases such as COVID. These filters also effectively filter up to 95% of particles, according to the EPA, giving city facilities the ability to act as clean air centers if necessary.[31] Places designated as cooling centers can also be expanded to being clean air centers by recycling clean air throughout the building. The city can work with local

[31] U.S. EPA, 2024

community centers such as churches and schools to find grant funding for air filter upgrades.

Maintaining indoor air quality in homes remains important as well. Effective insulation and upgrades in homes can also keep unhealthy air from getting indoors. In that sense, a home weatherization program can also help against poor air quality. Indoor plants can also support indoor air quality by filtering pollutants. Reducing road traffic and encouraging drivers to switch to zero-emission vehicles (EVs) will also help combat air pollution from traffic.

Increasing plant life in the built outdoor environment can also support adequate air quality. Trees and vegetation help absorb air pollutants and clean the surrounding air. A study in Washington D.C. estimated that its trees removed 619 tons of air pollution every year. The benefits of this pollution reduction were estimated at $26 million.[32] A Philadelphia study estimated that its trees removed 513 tons of air pollution every year ($19 million).[33] The development of an Urban Forestry Plan can help the city of Antioch maximize cost-benefits from expanding tree and vegetation cover.

A long-term outlook on air quality requires the inclusion of strategies that take into account constant sources of air pollution. The City of Antioch can explore the possibility of working with the Bay Area Air Quality Management District (BAAQMD) to install air quality monitors in the community to better understand the localized air pollution burdens. In the meantime, a transition away from combustion engine transportation toward alternative transportation and electric vehicle adoption can help reduce pollution from transportation sources. ICE automobiles release pollutants such as hydrocarbons, nitrogen oxides, and particulate matter that contribute to air pollution. The City can support policies that encourage the transition away from single driver combustion engine vehicles and improve baseline air quality in the Antioch community.

Proposed Actions

1. Provide program to offer low-cost or no-cost insulation upgrades in homes
2. Ensure all cooling centers have ability to close off outside air and recycle interior air during poor air quality days.
3. Ensure that affordable housing projects use quality insulation and have ability to close off HVAC to outside air during poor air quality days.

[32] I-Tree, 2015
[33] Nowak, *et al.*, 2016

4. Develop Urban Forestry Plan to strategically and equitably expand trees and green infrastructure in the city
5. Support the expansion of alternative transportation and electric vehicle infrastructure to reduce pollution from exhaust pipes

Energy Insecurity

Since 2010, power shutoffs in California have increased by over 50%, even as California has recovered from the Great Recession. Energy bills constitute up to 41% of income for low-income families in California, and between 19% and 28% of utility customers in California are energy insecure. In 2016, 14% of PG&E customers received unique 48-hour disconnection notices.[34] Already substantially higher than the national average (see table), Bay Area energy costs are likely to increase in the summers as temperatures rise and Air Conditioning becomes necessary. Energy security and affordability will become a priority for Antioch government and utilities to address as pressure on the grid mounts. Shutoffs disproportionately impact low-income neighborhoods and communities of color.

Already substantially higher than the national average (see table[35]), Bay Area energy costs are likely to increase in the summers as temperatures rise and air conditioning becomes necessary. Already, over 90% of respondents in the Climate Action Survey responded that energy bills were at least sometimes too high, with 60% of respondents indicating that energy bills were at least usually too high. Energy security and affordability will become a priority for the City and utilities to address as pressure on the grid mounts.

Antioch has been relatively unaffected by PG&E's Public Safety Power Shutoffs (PSPS). However, as fire risk continues to increase, more people will likely be cut off from the electrical grid. Preparations for PSPS occurrences can help increase energy security across the community.

[34] TURN, 2018
[35] Bureau of Labor Statistics, 2024

Average prices for gasoline, electricity, and utility (piped) gas, San Francisco-Oakland-Hayward Metropolitan Statistical Area compared to U.S. average prices, not seasonally adjusted

Year and month	Gasoline per gallon		Electricity per kWh		Utility (piped) gas per therm	
	United States	San Francisco area	United States	San Francisco area	United States	San Francisco area
2023						
March	$3.66	$4.99	$0.17	$0.33	$1.49	$2.14
April	3.839	5	0.165	0.332	1.413	1.772
May	3.794	4.926	0.165	0.332	1.385	1.7
June	3.821	4.932	0.17	0.33	1.371	1.756
July	3.842	4.956	0.169	0.349	1.395	1.809
August	4.064	5.226	0.17	0.349	1.402	1.865
September	4.107	5.616	0.171	0.354	1.377	2.041
October	3.91	5.664	0.169	0.35	1.388	2.211
November	3.623	5.165	0.168	0.35	1.442	2.081
December	3.411	4.799	0.169	0.35	1.429	2.245
2024						
January	3.353	4.745	0.173	0.412	1.452	2.433
February	3.486	4.687	0.173	0.412	1.465	2.412
March	3.707	5.082	0.174	0.413	1.429	2.189

Summary of the Effects of Climate Change on Energy Insecurity

- Expansion of necessary air conditioning and residential cooling strategies
    - Vulnerable populations may experience financially crippling energy costs
- Increased intensity of storms and increased wildfire occurrences create threats to electrical grid that could lead to more power shutoffs

Most Vulnerable Communities

- Low-income households
    - Households with high housing cost burden
    - Households that struggle paying energy bills
- Populations with health conditions that require access to electricity for life-saving devices

Supporting Energy Security

Reducing energy costs for financially burdened households can be accomplished in several ways. Energy insecurity can be addressed proactively. When households and businesses upgrade appliances and systems to energy efficient alternatives, there is less strain on the grid. Supporting low-income energy efficiency improvements is a City priority.

Energy insecurity can also be addressed reactively. The City can support the expansion of battery storage for electricity use. This can enhance resilience to power shutoffs and reduce carbon emissions. Battery storage can help support energy security by providing reserves of electrical energy. Pairing battery storage with solar energy allows households and businesses to collect solar energy during the day and store it for a later time. This allows solar energy gathered during the day to be used in the evenings, when energy use is collectively at its highest levels and solar panels are not collecting energy. Battery storage and solar power can provide resilience and energy security during power outages.

Expansion of microgrid use can also help provide energy security and work with previously mentioned technologies to generate and store energy. A microgrid is a grid distinct from the central grid that can typically connect with the central grid or operate independently in "island" mode.[36] As microgrid technology continues to improve, the City will explore ways to incorporate microgrids into the energy system along with solar energy and battery storage technologies. There are traditional and community microgrids, and both may be feasible in Antioch, according to a study by graduate students at Presidio Graduate School conducted in 2024.

[36] Contra Costa Energy Connections: An Assessment of Microgrid Development Opportunities in Antioch, California, 2024

Feature	Community Microgrid	Traditional microgrid
Scale	Spans an entire substation grid area, benefitting thousands of customers.	Covers a single customer location or a small number of adjacent locations.
DER location	Usually installed in front of the meter (on the side of the electric grid).	Usually installed behind the meter (on the owner's property)
Cost	Lowers costs by identifying optimal DER locations, deploying DER more broadly, and providing scalability.	Maximizes benefits for a single customer and does little for the grid. Replicating is very expensive.
Resilience, security	Provides indefinite backup power to prioritized loads that are critical to an entire community.	Provides limited backup power to only a single location or customer.
Scalability	Enables easy replication and scaling across any distribution grid area.	Requires tedious work to implement at each individual location.

[37] The City is working with regional partners to conduct an energy infrastructure analysis, which will highlight opportunities for microgrids. Through the Northern Waterfront Economic Development Initiative, the City of Antioch can continue its work with regional partners to receive grant funding for technical assistance. Microgrids have substantial potential to increase energy security and resilience in the Antioch community.

Proposed Actions

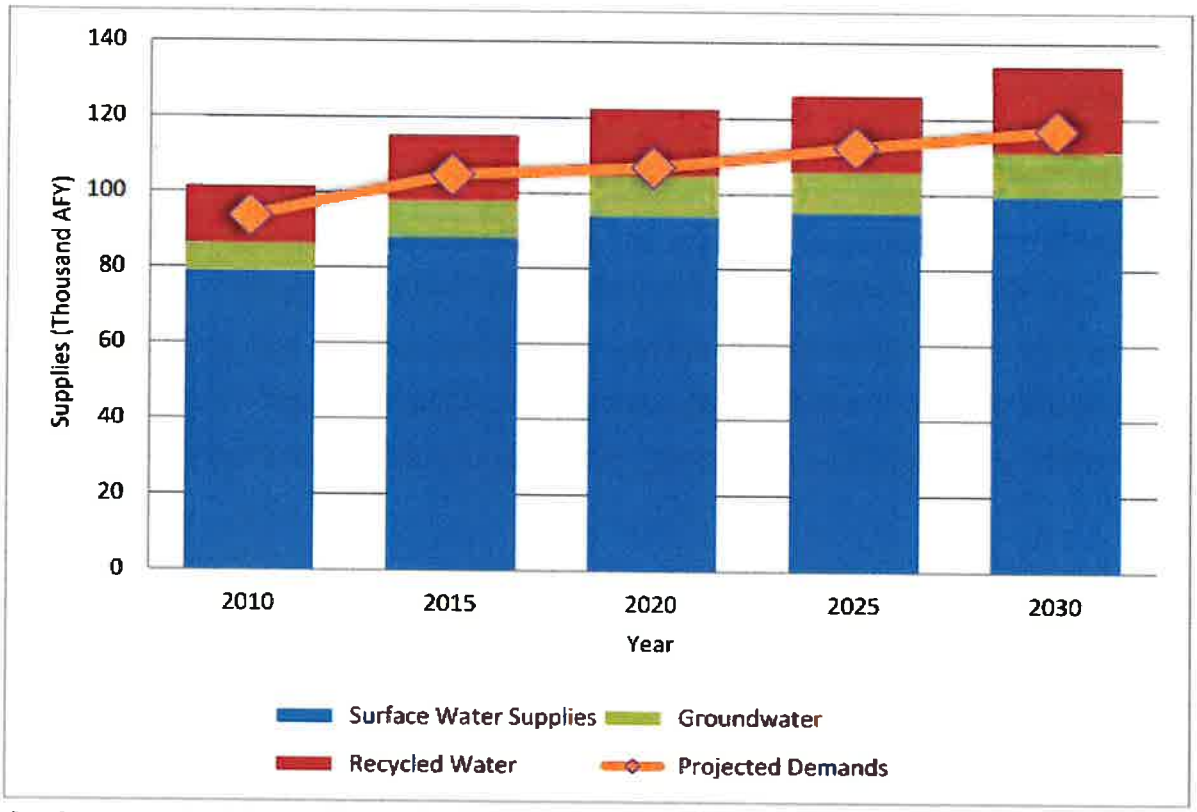
1. Explore the potential of alternate energy generation and storage technologies
    a. Work regionally to conduct a Microgrid Feasibility Report
2. Explore incorporation battery energy storage technologies with solar installation
3. Explore ways to expand energy saving financing to low-income residents
4. Expand weatherization and energy efficiency upgrades in low-income homes

[37] Clean Coalition

Drought

As temperatures increase, Antioch's water supplies are likely to be increasingly strained. California has already endured two droughts so far this century, and more are expected to follow. The average Sierra Nevada snowpack, which supplies much of California's water, is expected to decline up to 19% by 2050, and up to 83% by the end of the century[38]. Rising sea levels, meanwhile, are expected to increase the salinity of Delta water, further reducing Antioch's access to potable water. The Delta is the primary water source for Antioch, and lack of access to Delta water would present a major challenge to water security.

Lack of water also affects food production. Climate change is projected to reduce agricultural production of grapes and almonds by 20% by midcentury, and by 2030 California could lose up to one million acres of agricultural land.[39] These decreases in production, in a business-as-usual situation, could push food prices up, stressing already resource-burdened communities.



Antioch Water Projections from the East Contra Costa County Regional Water Management Plan[40]:

[38] Bay Area Climate Change Regional Report – California's Fourth Climate Change Report
[39] CalCAN. Climate Threats to Agriculture
[40] East Contra Costa County Regional Water Management Plan, 2019

Summary of the Effects of Climate Change on Water Availability

- Significantly reduced average snowpack due to higher temperatures and increasing frequency and severity of drought
- Unclear precipitation patterns and unpredictable water availability
- Salinification of Delta water due to the combination sea level rise and loss of fresh water from snowpack
- Increased evaporation from reservoirs due to higher temperatures
- Higher water demand due to higher temperatures, particularly in summers
- Potential increase in food costs due to lower agricultural yields

Most Vulnerable Communities

- Low-income communities
    - Households that struggle to pay utility bills
- Households that are food-insecure and without consistent access to healthy, nutritional food
- Health burdened populations

Adapting to Drought Conditions

The City of Antioch has already begun taking actions to prepare for drought. The City is currently constructing a desalination plant to adapt to higher salinity in the Delta. As the snowpack shrinks, the desalination plant will provide large-scale water supply reliability as Delta water becomes saltier and less potable.

Water conservation is critical to adapting to drought and drought-like conditions. Implementing drought-resistant landscaping strategies and planting vegetation that does not need much water to survive can take pressure off water use for landscaping purposes. Successful outreach that encourages responsible water use in homes can reduce water use on a large scale. However, more creative uses for wastewater exist as

well. Sustainable Contra Costa has designed programs that educate homes on how to recycle water from sinks and showers and repurpose it as toilet and irrigation water.

On a larger scale, the City of Antioch can work with Contra Costa Water District (CCWD) to ensure continued water supplies in times of severe drought, increase conservation for customers, and develop programs that enhance water recycling capacity.

Proposed Actions

1. Identify the possibility and reliability of under-utilized water supplies.
    a. Explore possibilities of expanding use of recycled water.
    b. Explore rainwater harvesting and storage possibilities.
2. Encourage and require water conservation.
    a. Develop clear communication to residents as to when drought policy will go into effect.
    b. Work with Sustainable Contra Costa to promote water recycling in homes.
3. Complete desalination plant and bring online.
4. Explore potential for water-efficient urban agriculture to strengthen food security.
5. Increase use of drought-resistant landscaping, including native plants.
    a. Conduct community outreach to expand knowledge of the benefits of native plants and drought-resistant landscaping.
    b. Support the native plant ordinance in City Council to encourage drought-resistant landscaping.

Mitigation

To mitigate the worst effects of climate change, Antioch must develop effective strategies to curb greenhouse gas emissions. If emissions continue at their current pace (a "business as usual" scenario), the effects of climate-change related natural hazards will worsen. To mitigate the effects of these hazards, the City of Antioch can continue to develop programs and policies that encourage the reduction of greenhouse gas emissions.

The State of California has set ambitious goals for achieving a carbon neutral society and zero net energy (ZNE). The State has laid out plans for California to reduce greenhouse gas emissions to 40% of 1990 levels by 2030. In 2022, the State passed AB 1279, which lays out goals to reduce anthropogenic GHG emissions to 85% below 1990 levels and achieve carbon neutrality by 2045.[41]

The 2011 Community Climate Action Plan (CCAP) explored Antioch's greenhouse gas emissions goals and has driven action leading up to the Climate Action & Resilience Plan (CARP). In 2017, Antioch had already achieved its goal of reducing emissions to 25% below 2005 levels by 2020. Much of the progress to this reach this goal can be attributed to the implementation of State policy. Since 2017, emissions have continued to decline slightly. Over the next 5 years, Antioch has the chance to be a climate leader by taking bold action to reduce emissions and help California meet its goals of low emissions and carbon neutrality.

This section explores Antioch's greenhouse gas emissions and explains the forces behind the achievement of CCAP goals, and outlines policies, programs, and partnerships that can help Antioch work toward its short and long-term goals.

[41] California Priority Climate Action Plan, 2024

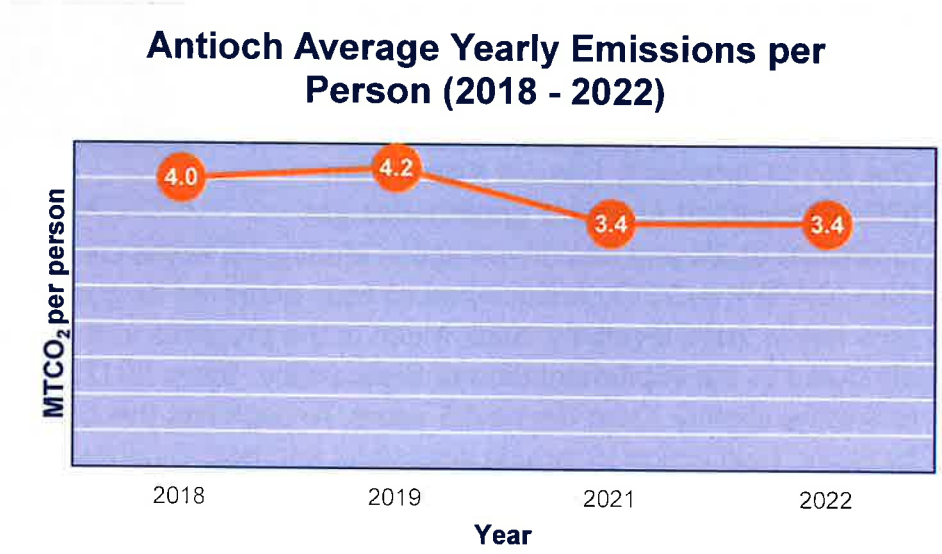
Understanding Antioch's Emissions Status

The City has tracked its greenhouse gas emissions beginning with an inventory for 2005. This is an essential step in understanding how much progress the City's policies and programs are making towards the goal of carbon neutrality. Greenhouse gas inventories are also crucial to identify additional further opportunities for funding and programs that might reduce emissions in specific sectors.

GHG Inventories

Since 2007, Antioch has been a member of ICLEI (Local Governments for Sustainability), providing the City of Antioch with support on environmental initiatives. ICLEI provides the ClearPath emissions inventory tool, which was used to conduct the emissions inventories for 2018, 2019, 2021, and 2022. Inventories for 2005, 2010, and 2015 were conducted in ClearPath and compiled into a spreadsheet in Placeworks, another inventory tool.

For the 2018, 2019, 2021, and 2022 GHG inventories, the City used Google Environmental Insights data to track emissions from transportation and mobile sources. The switch in inventory method has led to possible discrepancies in the data when comparing GHG emissions from 2017 to 2018. This plan attempts to account for that by looking at energy usage and VMT alone from year to year.



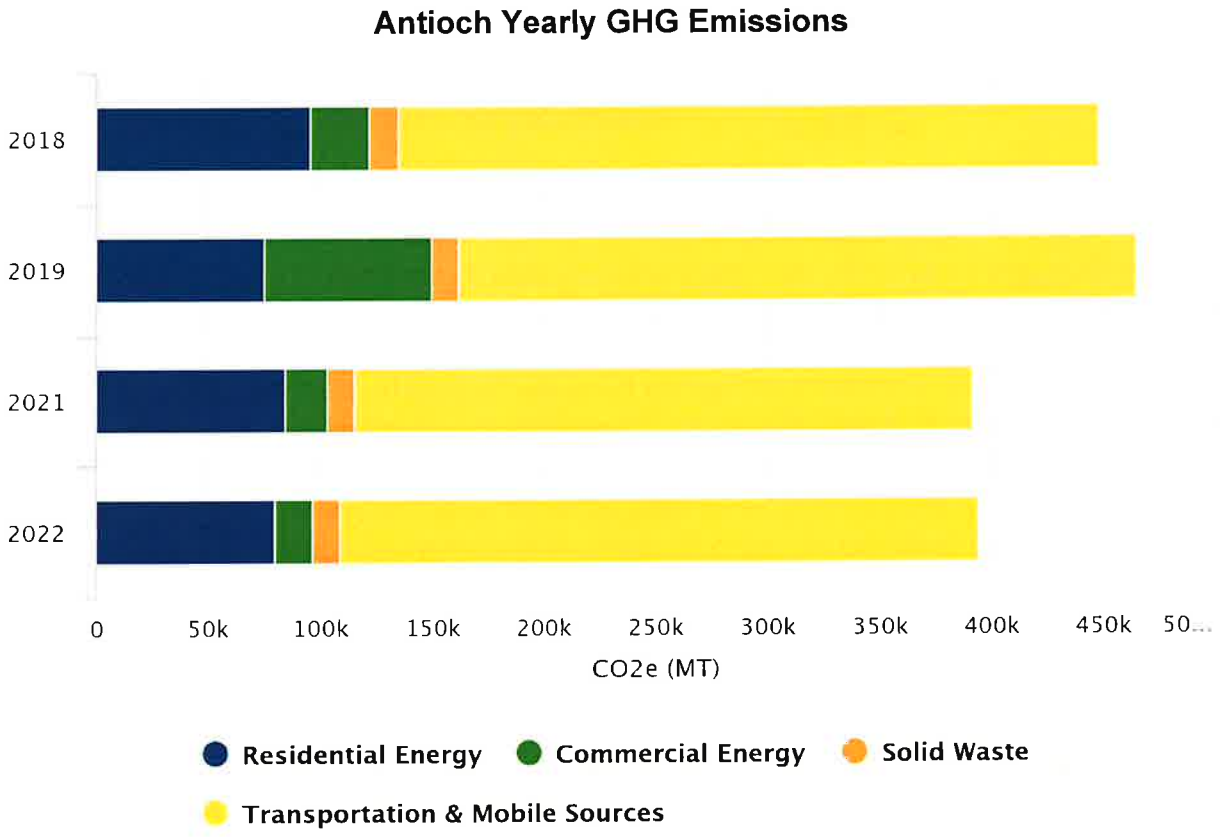
In the 2011 Community Climate Action Plan (CCAP), the City of Antioch laid out a goal of 25% greenhouse gas reduction of 2005 levels by 2020. Since the first community emissions inventory (2005) Antioch has experienced approximately a 25% decrease of direct emissions.[42] This development has occurred while Antioch's population has increased, reducing the per capita direct emissions from approximately 5.03 $MTCO_2$ to 3.36 $MTCO_2$ from 2005 to 2017, a 33% decrease. Per capita emissions have continued to

[42] PlaceWorks Greenhouse Gas Inventory

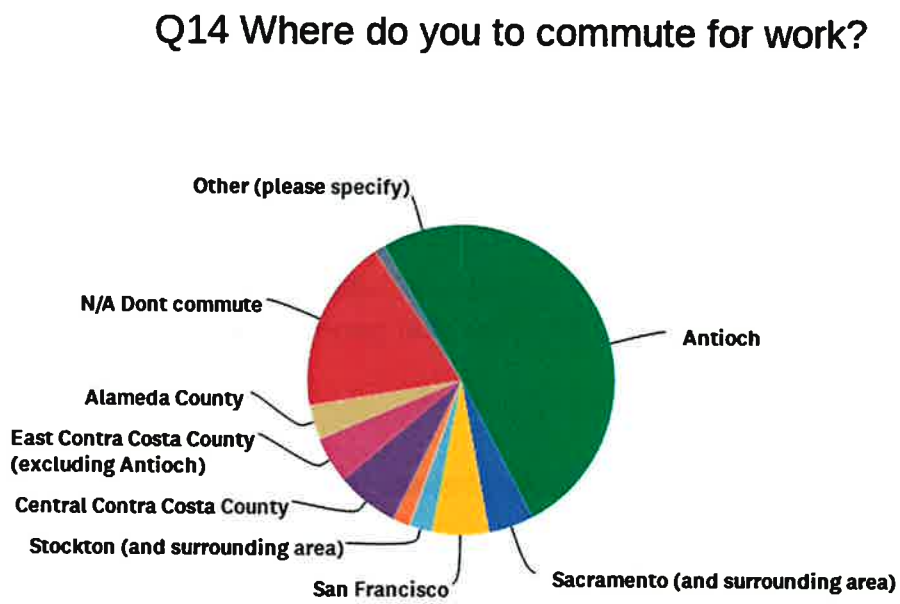
drop marginally since 2018, while the population has increased, but the community must do more to lower emissions much more.

Reaching emissions reductions targets in 2017 was a step in the right direction. Much of Antioch's emissions reductions, however, were driven by state policy and regulation. Despite the achievement of reaching previous emissions reduction targets, Antioch has a long path toward achieving carbon neutrality. Antioch is ready to continue that process.

The following sections break down how Antioch's emissions status has changed from 2018 through 2022. These insights can help inform the next generation of Antioch's emissions reductions targets.



Transportation



Transportation produces the most emissions in Antioch by far. Since 2018, transportation-related emissions, including those from passenger vehicles, commercial vehicles, off-road vehicles, BART, and Tri-Delta Transit buses, have accounted for well over 50% of all GHG emissions in the City.

The high share of transportation emissions in Antioch is not a surprise. As a bedroom community, many community members are only able to conveniently commute to their jobs and responsibilities with automobiles.

Antioch's transportation-related emissions have decreased by approximately 13% since 2005. This decrease is largely due to improvements in fuel economy standards, mandated through California state legislation, since 2005. The number of vehicle miles travelled (VMT) has remained more or less constant over the years. Reducing the total VMT is a priority to continue reducing Antioch's transportation-related emissions.

Mitigating transportation emissions

Because transportation makes up most Antioch's greenhouse gas emissions, reducing emissions from transportation is a top priority.

Two primary ways that the Antioch community can address transportation emissions are by encouraging the shift away from single occupancy vehicles to other forms of transportation (known as **mode shift**) and encouraging and facilitating the use of low-emission and no-emission electric vehicles. Mode shift addresses how people get around, while transportation electrification attempts to reduce the emissions from the most heavily emitting transportation options, single occupancy combustion engine vehicles.[43] Antioch residents and workers commute and travel to many different locations, at different times, for different reasons. Antioch's transportation systems strive

[43] Northern Railway Co

to accommodate people's needs, while beginning to transform them to support a sustainable and affordable future.

Mode Shift

The goal of transportation mode shift is to reduce the total Vehicle Miles Travelled (VMT) by the Antioch community. By transforming travelling habits, the Antioch community can substantially reduce its carbon footprint. Moving away from single-occupancy vehicle trips and instead opting to walk, bike, or take public transportation somewhere is one of the most substantial sustainability choices an Antioch resident can make. Even carpooling can have a substantial impact on emissions by taking additional cars off the road.

The City of Antioch must support the development of infrastructure that improves the convenience of sustainable transit options so that residents are encouraged and empowered to move away from single-occupancy ICE vehicles. The infrastructure currently in place does not support widespread use of public transit and active transportation. Strategically expanding bus and bicycle infrastructure to serve areas that do not currently have effective access to these services is a city priority.

Increasing bicycle infrastructure is one way to expand viable alternatives to single occupancy vehicles. Many opportunities exist for the City to increase the cohesion, safety, and comfort of the bike network. Currently, the Antioch bicycle network lacks a safe bicycle route going in the north-south direction. Additionally, much of the existing bike infrastructure shares the road with high-speed vehicle traffic, creating dangerous conditions for cyclists. Building safer, more convenient bike networks that connect BART, downtown Antioch, and commercial centers with a north-south trail or road would allow more people to get to their destinations safely and quickly. Providing safe and secure parking options for bicyclists in these locations significantly enhances the attractiveness of biking, especially in areas that are perceived to have higher crime rates. Grant opportunities exist to fund bicycle infrastructure improvement projects. Combining the necessity of connecting the bike network for transportation purposes and the opportunities to build bicycle-based recreation at Black Diamond Mines and the Dow Wetland area could increase the grant options by looking into recreation-based funding as well.

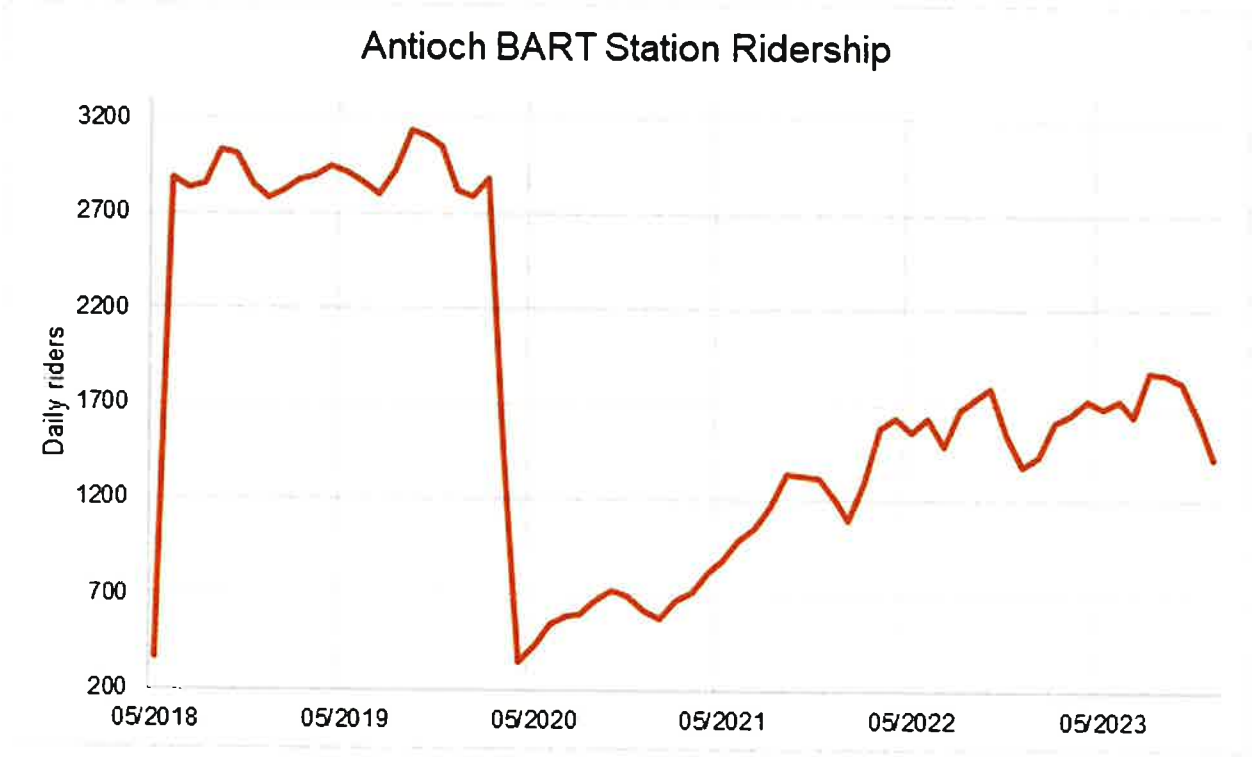
The City can work with community organizations like Bike East Bay to improve residents' confidence and skills as cyclists. Bike East Bay supports the idea of "mobility justice," the belief that everyone has the right to move freely, safely, and joyfully through their community. The organization hosts classes throughout the East Bay that teach residents how to ride bikes, handling skills, tips for riding bikes in urban environments, and more. The City is constructing a "bicycle garden" at Prewett Park in conjunction with the CCTA where residents can practice riding bikes and become more comfortable with

navigating streets on a bike. Spaces like these present the perfect space to host workshops with Bike East Bay for youth, adults, and families.

The City can continue to take action to improve the experience of walking as a mode of transportation. 122 trees have been planted in Antioch over the past three years as part of annual Arbor Day celebrations since 2022. These trees provide shade relief, cleaner air, and a more beautiful environment for pedestrians. The City can continue to host these Arbor Day events and encourage local organizations to host their own tree-planting efforts through grant-funding opportunities. Efforts should be focused in areas of Antioch with low tree-canopy cover. These are traditionally lower income and socially vulnerable areas of the City, so efforts here would increase equity and resilience.

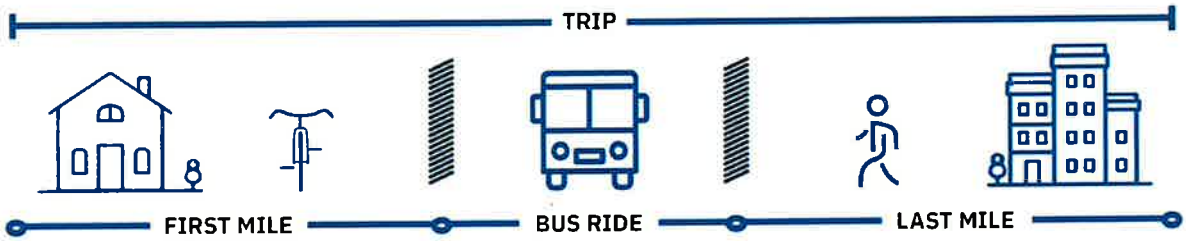
Public Transportation

Public transportation ridership decreased sharply in 2020 as a result of the COVID-19 pandemic. This occurred only two years after Antioch's BART station opened in 2018, which had seen steadily increasing ridership up until March of 2020. Recently as the worst of the pandemic has passed and social distancing measures have been relaxed in the Bay Area, ridership at the Antioch BART station has increased but has not fully recovered to pre-pandemic levels.



Tri Delta Transit buses saw a similar drop-off due to COVID-19, but ridership has continued to increase as well. Antioch and Tri Delta Transit can work together to foster

ridership by encouraging more frequent bus service and by filling service gaps. One way this is being addressed is through the Tri-My-Ride program, an on-demand shuttle service that picks riders up anywhere they want within a service zone. This rideshare program is an affordable, convenient way to address the first-mile-last-mile issue that often plagues transit services.



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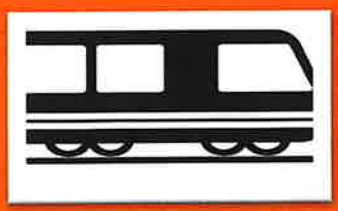
Many survey respondents highlighted the need for easier access to BART and improved service, including more frequent trains. Following system-wide scheduling changes in 2022, BART trains arrive in Antioch every 20 minutes, up from every 15 minutes. The Yellow Line west of Pittsburg/Bay Point in the East Bay has trains coming every 10 minutes. While more DMU trains for the extension-BART line would be expensive, they would be a worth while investment for Antioch riders who want the option of public transit but are faced with infrequent, inconvenient train schedules.

High Priority Action: Making the BART Station more accessible for residents and workers is a City priority. The majority of survey respondents (80%) consider expanded access to BART a high or medium need. The demonstrated interest in BART suggests that ridership could be significantly higher. Barriers to BART access include the remote location of the station in relation to commercial centers in the City, difficult access for pedestrians and cyclists, and infrequent train service.

In 2021, BART added 850 new parking spots at the Antioch Station. This increased access to BART for daily commuters by eliminating the monthly parking waiting list. Additionally, there are extremely affordable bike lockers at the station for commuters to utilize throughout the day.

To continue facilitating transportation mode shift, the City of Antioch should develop a Mobility Plan to more closely examine the ways Antioch can support BART accessibility in the community.



Proposed Actions:

1. Develop a Mobility Plan for Antioch.
2. Expand bicycle ridership.
    a. Implement bike lockers at Antioch transportation destinations, such as shopping centers, the Antioch Community Center, and the downtown area.
    b. Improve the safety of bike paths and lanes throughout the city.
    c. Build bicycle paths for north-south routes.
    d. Work with Bike East Bay or similar programs to teach residents bike skills, safety, and confidence.
    e. Work with 511 Contra Costa on programs that encourage bicycling, such as the Summer Bike Challenge.
    f. Explore the possibility of establishing "bike trains" in Antioch for students
3. Increase BART ridership
    a. Increase parking for bikes at BART.
    b. Increase bus to BART connectivity.
    c. Connect bicycle infrastructure with the Antioch BART station.
4. Expand current bus service.
    a. Expand the Tri My Ride program.
    b. Work with CCTA to establish bus lanes on highways to connect regional transportation.
    c. Install shelters at more bus stops to protect from heat, rain, and wind.
    d. Continue to promote Youth summer bus passes.
5. Work to make downtown more accessible by active transportation and public transportation.
    a. Expand bus service from Antioch BART to downtown Antioch.
    b. Continue L street improvements such as implementation of painted bike lanes, bus shelters, and signal timing.
6. Work regionally to encourage telecommuting options when appropriate.
    a. Implement tax incentives that encourage businesses to allow telework.
    b. Help businesses transition to a system in which telework is viable.
    c. Work to improve internet connectivity gaps in low-income neighborhoods.

Transportation Electrification

While transportation mode shift is an important part of reducing greenhouse gas emissions, effective infrastructure is not currently in place to support car-free livelihoods for all Antioch residents. For those who drive, more fuel-efficient alternatives can reduce carbon footprints. As the previous section showed, the Antioch community can achieve significant emissions reductions by lowering the environmental impact of the cars on the road. Investing in lower emission vehicles can also help car users save money and improve the health of the community. Cars with higher gas mileage cost less to fuel, and

electric vehicles require fewer maintenance costs. Electric Vehicles (EVs) also reduce air pollution by eliminating exhaust emissions from combustion engines, which supports environmental health and justice in Antioch.

According to the Contra Costa County Electric Vehicle blueprint, the county's current EV charging infrastructure is at less than 20% of what it needs to be by 2025 in order to support the anticipated trajectory of electric vehicle growth.[33] Increasing EV charging infrastructure in parking lots and on streets can build the capacity for more people to confidently switch to electric vehicles. There are currently between 30 and 40 publicly available EV chargers within Antioch city limits, which is far below the number necessary to reach the County's EV blueprint goals[34]. Prioritizing installation in relatively high traffic areas such as Antioch downtown and other commercial and job centers such as shopping malls will likely have the greatest impact on electric vehicle use. Analysis conducted in the County EV Readiness Blueprint designates

The City of Antioch can support the expansion of electric vehicle growth using multiple tools ranging from zoning policy to permitting and parking requirements. For example, an addition to the California building code that went into effect at the beginning of 2020 requires that EV charging infrastructure be installed for new parking areas and additions to existing parking.[35] In Antioch, the City can provide bonuses for developers in exchange for increasing the levels of EV charging infrastructure. State and regional grant programs can help fund installation of on-street charging infrastructure. The City can pursue a moratorium on construction of new gas stations in Antioch, which has been proposed in City Council. The City can also consider requiring any new construction of gas stations to require the installation of EV chargers.

California passed legislation in 2023 that mandates all new passenger vehicles and light trucks sold in the state be electric by 2035. EV charging infrastructure will need to greatly increase in order to meet that demand.

Consumer perceptions also hinder the expansion of electric vehicle use. Fears about charging during power outages, daily travel range, and high upfront costs associated with electric vehicle purchases regularly prevent people from switching away from combustion engine transportation. Successful public outreach and community engagement can help address consumer barriers to electric vehicle adoption.

Throughout this process of EV expansion, the City will consider cost effectiveness in its decision-making process. Working with electricians, engineers, and construction workers can help the City of Antioch better understand the barriers to increased installation of charging infrastructure.

The City can also begin incorporating electric vehicle charging infrastructure into longer-term resilience planning. Combining electric vehicles with microgrids and backup generators can support EV charging even when the main grid fails. Charged electric

vehicles may also provide power in the case of power failures at home. As battery storage and microgrid become more cost-effective, the City can monitor and examine how electric vehicles can support energy resilience.

Proposed Actions:

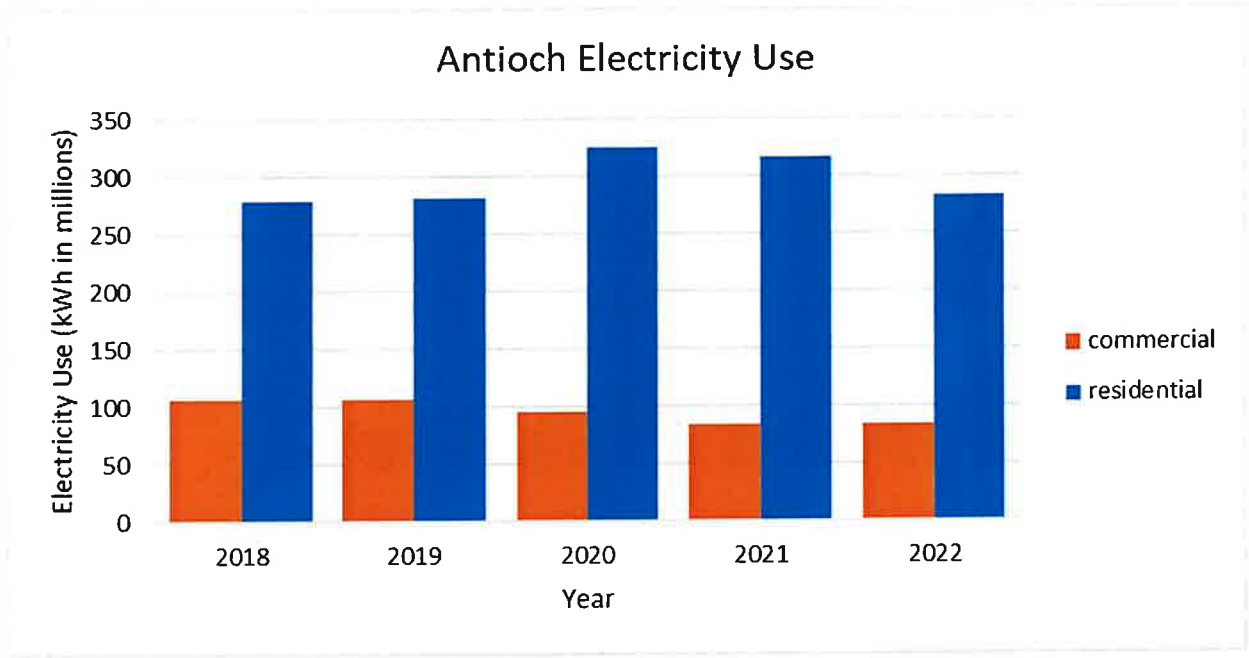
1. Strategically expand EV charging stations
    a. Install charging stations in commercial centers, downtown, and in community centers.
    b. Support residents with financing home charger installation with information about rebates.
    c. Support the installation of EV chargers in multifamily complexes.
2. Provide financial incentives and support outreach for programs and policies that encourage the switch to EV.
    a. Clean Cars for all.
    b. Education on the benefits of electric vehicles.
    c. Special privileges for EV – parking spots.
    d. Provide information on how to navigate finding, qualifying for, and applying to tax rebates for EVs.
3. Implement the purchasing guide for switching the city fleet to EVs by 2029.
4. Continue advocating for a gas station construction moratorium or consider adding the requirement to install EV charging stations at any new gas station.

Energy

The energy sector accounts for the second-highest emissions category in Antioch. These emissions come from energy powering homes, businesses, and city facilities. The two primary energy sources are natural gas and electricity.

Since 2005, substantial progress has been made statewide in reducing emissions from energy sources. In 2022, energy related emissions constituted 38.0% of Antioch's greenhouse gas emissions, down from 41.1% in 2005 and 41.6% in 2010. Residential energy makes up a substantially greater portion of energy use and emissions than commercial energy. Greenhouse gas emissions reductions in the energy sector have been driven by significant decreases in electricity emissions, as the State increases renewable energy generation, and modest decreases in natural gas emissions.

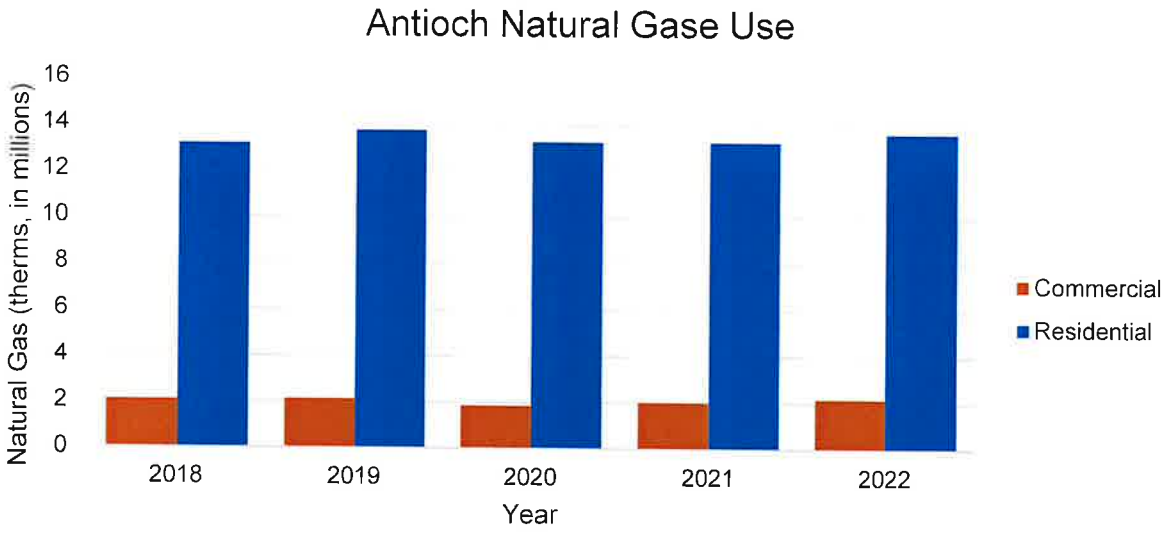
Electricity



While Antioch's total electricity use has remained more or less constant since 2005 except for a notable spike in electricity use in 2020 and 2021, Antioch's electricity-related emissions have drastically decreased. Electricity's share of energy-based greenhouse gas emissions has decreased from 52.7% to 33.3% between 2005 and 2017, with the largest change occurring between 2015 and 2017. In 2018, electricity accounted for 21.4% of total emissions and by 2022 this number dropped to 20.3%. This emissions reduction can be attributed to the decreasing share of carbon-based fuel (such as natural gas) that powers PG&E's electricity. California state law has required that utilities source greater percentages of carbon-free energy as a part of their energy portfolios. In 2023, PG&E announced it had supplied 100% carbon free electricity to customers.[44] Switching appliances from natural gas to electricity will continue to reduce the electricity-related share of emissions as utilities source more carbon-free energy to power electricity.

Natural Gas

[44] PG&E, 2024.



Consumption of natural gas in commercial and residential facilities decreased modestly between 2005-2017, and since 2018 has remained largely steady with a slight uptick in 2022. Electrical appliances have slowly begun to replace natural gas-powered appliances in some homes, and household solar energy projects have also reduced the share of natural gas in total energy use. The California Air Resources Board passed legislation in 2022 that mandated phasing out gas appliances in the State starting in 2030. This law will incentivize homeowners and businessowners to switch to greener appliances, such as induction stoves and heat pumps, through rebates. The City of Antioch can help support this transition through assisting residents with signing up for rebates and continuing to promote organizations such as BayREN.

Mitigating Energy Emissions

Numerous opportunities exist to reduce energy use and to make that energy use more environmentally friendly. Among the possibilities are working to reduce energy demand and encouraging electrification.

Due to California State mandates that require utilities to reduce carbon sources and increase renewable energy sources in electricity production, electrification has the potential to significantly reduce GHG emissions in Antioch. In the past, electricity has largely been generated by carbon-based fuels, such as natural gas. As California requires more renewable and carbon-free energy, the environmental impact associated with generating and using electricity will decrease. Switching from natural gas to electricity under these conditions can result in substantial greenhouse gas emission reductions.

Expansion of household solar installation can continue to reduce the carbon footprint of the Antioch community. Programs such as Sun Shares and Grid Alternatives can help facilitate access to household solar energy. Connecting businesses and programs with residents to secure funding for solar installation can also help Antioch achieve electrification goals. The City of Antioch can support these programs through outreach efforts.

The City of Antioch can also support policies and programs that enhance the capacity of solar generation in homes and businesses. For example, the City of Antioch can encourage or require electric panel upgrades in homes and businesses during major renovations to allow for efficient solar installation in the future. Coupling solar installation with battery storage wherever possible will increase the resilience of solar-based electrical systems.

High Priority Action: Support for Energy Efficiency Improvements

According to BioScience Journal, communities "must quickly implement massive energy efficiency and conservation practices" in order to sufficiently reduce greenhouse gas emissions.[1] Forty-six (46%) percent of Antioch's housing stock was built before 1980, suggesting that there is a high need for energy efficiency improvements.[1] Antioch has been working with Bay Area Regional Energy Network (BayREN) to provide rebates for homeowners to undertake energy efficiency improvements in homes, however Antioch should explore more measures to accomplish widespread energy efficiency projects across the city.

Energy efficiency upgrades can not only facilitate emission reductions, but play an important role in climate resilience. This case is especially true in Antioch, as summer temperatures are expected to be higher and the summer season expected to be longer in the coming years. As cooling and air conditioning costs rise, the community can take actions to remain sufficiently cool and healthy while indoors. Better indoor insulation and circulation also supports better indoor air quality, reinforcing public health. By encouraging energy efficiency improvements, Antioch residents can reduce their carbon footprints, help prepare themselves for future temperature increases, improve indoor air quality, and promote energy security in the community.

The City of Antioch supports Contra Costa County expanding access and participating in the County's Weatherization Program. Home weatherization improves the insulation of a building, which reduces energy use and utility costs.

Residential Energy

Proposed Actions:

1. Energy Efficiency Improvements in homes
    a. Continue outreach for BayREN home improvement rebates
    b. Support Contra Costa County's Weatherization Program to improve indoor temperature control, energy cost control, and air quality in low-income homes

2. Encourage Fuel Switching from natural gas to electricity
    a. Consider a natural gas ban in qualifying new construction
    b. Explore the requirement electric panel upgrades during major renovations or during home sales
    c. Explore the use of battery storage in tandem with solar to increase energy resilience.
    d. Partner with organizations like SunShares and Grid Alternatives to expand solar installation in Antioch homes and businesses with increased awareness for programs with incentives to switch to solar.
3. Expand outreach to landlords and contractors about electrification and its resilience and public health benefits.
4. Continue on bill financing (OBF) and metered energy efficiency.

Commercial Energy

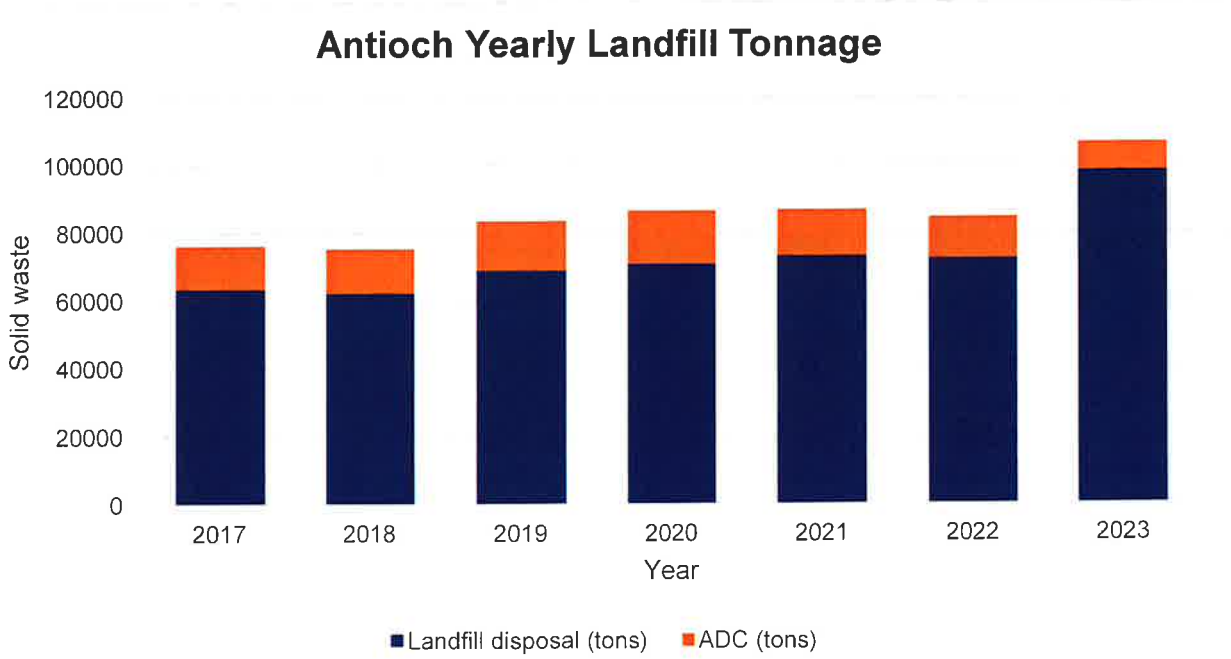
Proposed Actions:

1. Increase participation in the Green Business (SMB program).
    a. Help program conduct outreach.
    b. Consider additional incentives for participation.
2. Encourage energy audits in commercial buildings.
3. Expand participation in BayREN business programs.
4. Expand outreach to business owners and contractors about electrification and its benefits.
5. Incentivize local renewable energy projects.

Waste

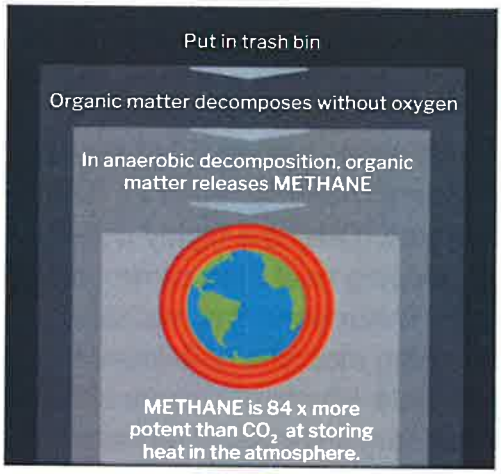
Waste makes up a small fraction (6.1%) of Antioch's greenhouse gas emissions but has the potential for quick impact. Since 2005, the tonnage of total waste has decreased substantially, though most of the reductions were accomplished between 2005 and 2010. As a result, waste related emissions have decreased by nearly 29% since 2005.

The amount of organic waste as a percentage of total waste has declined slightly, reducing emissions from the waste sector. When organic material, such as food waste, decays in the landfill, it releases methane gas. Methane (CH_4) is a highly potent greenhouse gas that is 28 times more powerful at trapping heat than carbon dioxide[45]. However, it does not last as long in the atmosphere. This means that methane emissions cause intense, short-term warming. Reducing methane emissions has been called an "emergency break" to stop the most immediate effects of climate change while the economy shifts away from fossil fuels. To combat landfill-related methane emissions, California passed SB 1383, requiring every jurisdiction to provide organic waste collection services to all households and businesses, beginning in 2022. Antioch's composting program has helped reduce the share of organics in landfill by storing decaying matter in productive soil. Between the legislation of SB 1826 and SB 1383, the California government has committed to reduce the percentage of organics that end up in landfill. This legislation has contributed to the slight decrease in waste related emissions between 2010 and 2017.



[45] U.S. EPA .

EcoCycle Organics Graphics



How does waste contribute to greenhouse gas emissions?

When organic waste is put in the trash bin and joins the landfill, its decomposition lacks oxygen, and leads to methane release. Methane (CH_4) is a short-lived but incredibly potent greenhouse gas in the atmosphere that contributes to climate change.

When organic waste is composted and applied to soil, water and oxygen break down its matter into nutrients that support the healthy growth of plants. These plants, through the process of photosynthesis, then help sequester carbon from the atmosphere and store it in the soil. In making sure organic waste is composted instead of landfilled, the community is not only decreasing the emissions released by waste, but is also building healthy plant life that can further reduce emissions through the photosynthetic process.

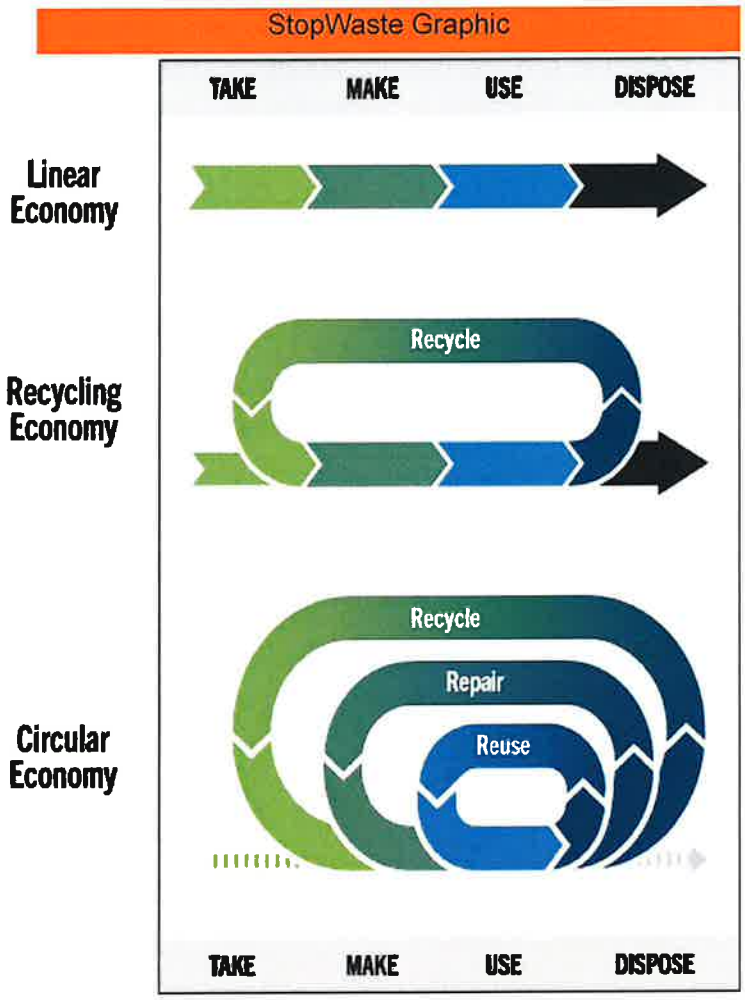
Waste processing can also help create jobs in the community. On average, compost systems create five times the jobs that landfilling systems create.[46] Many of these jobs, in terms of transportation and processing of compost, support a strong local green economy.

Composting can also support urban farming through soil productivity and nutrient enhancement. Diverting compost to urban farms supports the production of healthy, affordable, and local produce that can strengthen community food security, build community togetherness, and reduce greenhouse emissions by reducing landfill and eliminating the transportation emissions associated with shipping food. By connecting urban farming with compost collection, the community can promote healthy diets, reduce greenhouse gas emissions, and contribute to the development of a circular economy.

Mitigating Waste Emissions

[46] EcoCycle

While keeping organic material out of landfills is the City's current focus, there are many opportunities to use discards productively and reduce emissions. Simple actions can make a significant difference, not just in our waste related emissions from landfills, but also in vehicle emissions, litter reduction and utility burden for residents and businesses.



Moving toward a circular economy: Encouraging reducing, reusing, repairing and recycling is a first step to reducing waste and turning it to productive uses.

As we continue to focus on organic material, we can see how this is achieved. CalRecycle estimates that organics makes up 27.4% of Antioch's residential waste in terms of tonnage.[47] Not all of this food can be eaten, but most of it can be put to productive use. Uneaten food and food waste can be "reduced" by buying less unnecessary food, "reused" by donating to food rescue organizations to redistribute edible food that would otherwise be wasted, or "recycled" through residential or commercial composting programs.

In order to move toward a circular economy beyond organics, we must encourage a shift away from single use items, especially those that can't be truly recycled or composted, such as plastics and bioplastics. and The City must prioritize empowering community members to reuse, repair, renew and refresh items instead of discarding and replacing with new items.

Policy Highlights

With updates to the Antioch Municipal Code, the City of Antioch is working to shift how our community addresses discarded material. In 2022, the City updated AMC §6-3 to address the enforcement of SB 1383 and move towards a circular economy. One major

change was to introduce the term, Resource Recovery, which is defined as*: Managing solid waste and sorting them in a manner as to maximize the ability to use discarded material to create valuable products as new outputs. The aim is to reduce the amount of waste generated, thereby reducing the need for landfill space, optimizing the values created from waste and reducing the need to use raw materials in the manufacturing process.*

SB 1383: California passed SB 1383 in 2016 to reduce the emissions of short-lived climate pollutants (such as methane). The state law aims to meet the goal that at least 20% of currently disposed edible food is recovered for human consumption. Penalties for noncompliance of SB 1383 went into effect in 2022. Cities are responsible for paying the fines associated with noncompliance. Expanding participation of Antioch food generators in food rescue programs is crucial in helping Antioch accomplish these goals and avoid penalties.

AB 1826: California state law AB 1826 began requiring businesses to divert organic material from landfills starting in 2016. This was implemented in stages based on a business' level of organic waste generation.

SB 54: On June 30, 2022, Governor Gavin Newsom signed SB 54 (Allen, Chapter 75, Statutes of 2022) : Plastic Pollution Prevention and Packaging Producer Responsibility Act (Packaging EPR) into law to address the impacts of single-use packaging and plastic food ware. This packaging law requires that by 2032 statewide, we reduce single-use plastic packaging and food ware by 25%, recycle 65% of it and ensure that all food ware and packaging is truly recyclable or compostable. The law shifts the burden of plastic pollution from consumers and jurisdiction onto producers by raising $5 billion from industry members over 10 years.

Proposed Actions:

1. Expand awareness and reach of commercial and residential composting program
2. Provide more community outreach into how to correctly sort waste (what should be put in compost, recycling, landfill & what is hazardous waste).
    a. Hire part-time staff to work primarily on outreach for the program with a focus on community events.
3. Examine urban farming as a way to work toward a circular economy through local use of compost generated from local organic waste.
    a. City and Waste Hauler coordinate to provide more frequent community compost giveaway offerings for residents to improve their garden soil health for growing their own food. Currently there is one annual event.

b. City encourages and funds the creation of more community gardens throughout Antioch, especially in low-income, food-insecure neighborhoods that create their own compost from food waste and/or receive free compost from the City's Waste Hauler.

4. Expand food rescue programs
    a. Assist food rescue organizations in working with more restaurants (and other edible food generators) to maximize donation of all edible food.
    b. Partner with homeless shelters to provide food from rescue efforts.
5. Campaign to reduce single-use plastics to reduce waste, plastic pollution and reduce impacts of the plastic lifecycle on climate change.
    a. Increase education efforts to the public on the many ways that plastic is harmful, contributes to climate change and how to use less of it, especially single-use plastic.

Shortcomings of the Greenhouse Gas Inventories

While Antioch's emissions inventory can provide a general overview of emissions, it does not represent a complete picture of Antioch's emissions footprint. Emissions related to water and wastewater, for example, are not included, though they make up less than 1% of the entire inventory. Carbon sequestration, the process of plants removing carbon dioxide from the atmosphere through photosynthesis, is also not included in this inventory. The level of Antioch's carbon sequestration is unlikely to have a major impact on total emission levels.

Consumption Based Inventory

What is included in a consumption-based inventory?

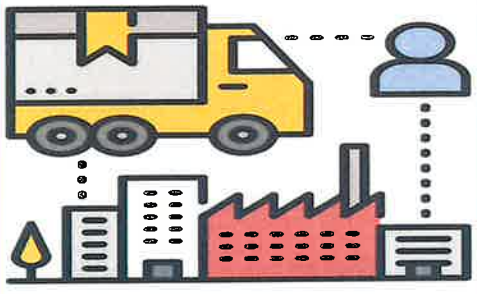
Transportation: Emissions released in the production, shipping, and maintenance of vehicles, the production and refining of gasoline and diesel, and direct emissions from motor vehicle travel, public transportation, and air travel.

Housing: Emissions produced in home construction and maintenance, residential energy and water use, and in the decomposition on household waste

Food: Emissions from the production, processing, packaging, and distribution from all the food consumed by a household

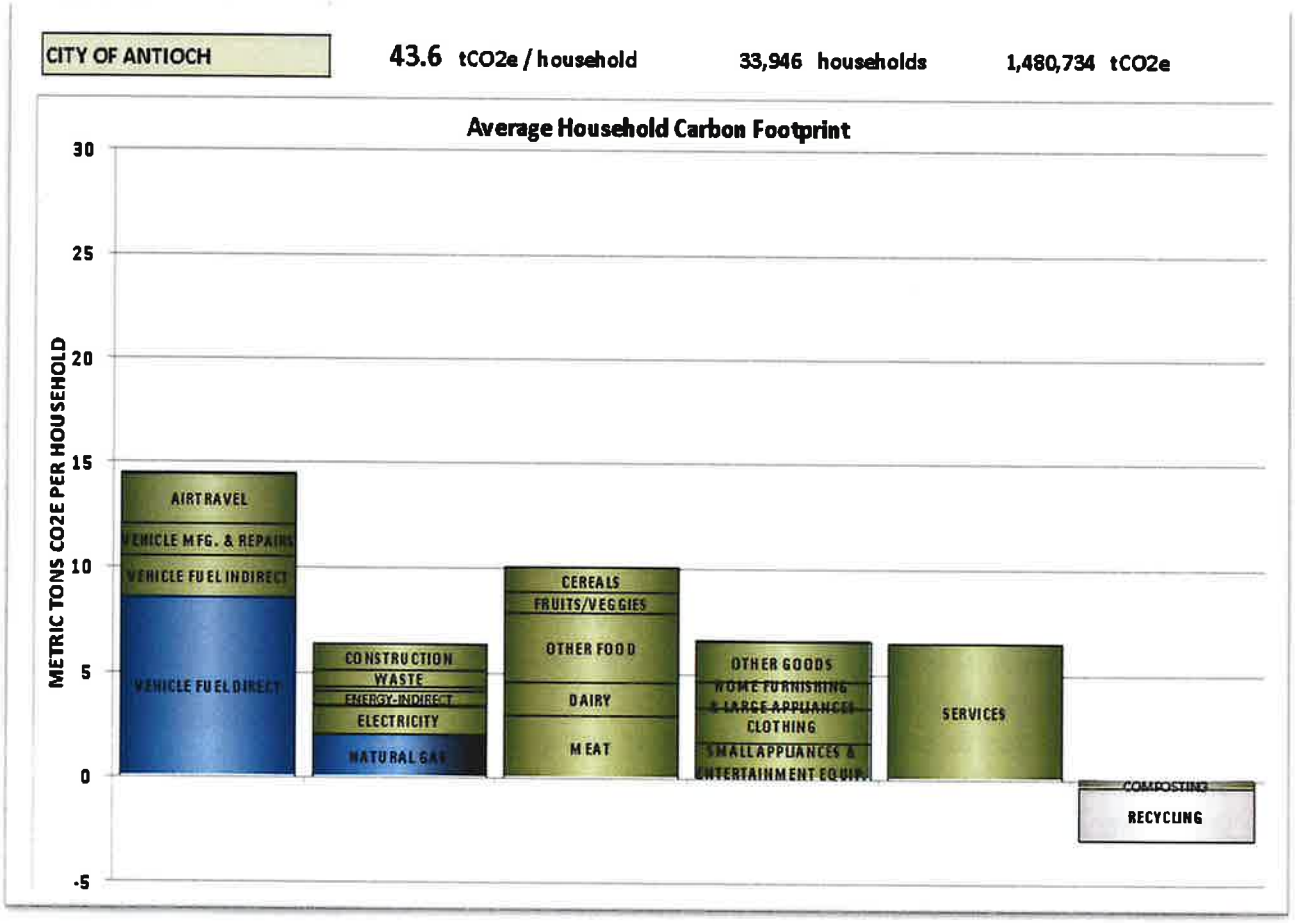
Goods: Emissions released in the extraction of raw materials, production, packaging, and distribution of all consumer goods purchased by a household.

Services: Emissions related to the services consumed by households, such as financial services, health care, education, and communication networks



A basic inventory does not account for consumption-based carbon emissions. Consumption-based emissions are those that are released in the production of all goods that are consumed by a community. Such an inventory was conducted by the CoolClimate Network with help from the Bay Area Air Quality Management District (BAAQMD) for all Bay Area jurisdictions in 2015.[48]

A consumption-based emissions inventory results in far greater CO_2 emissions than an inventory that focuses solely on direct emissions. For example, a television purchased by an Antioch resident would not be included in an inventory of direct or production-based emissions, because the television was not produced in Antioch. However, the industrial emissions from throughout the supply chain that produced the television would still contribute to climate change. A consumption-based inventory captures these emissions within the municipality that purchased the good.



The scale of Antioch's contributions to global greenhouse gas emissions is significantly higher when taking a more holistic approach to a community's carbon emissions. While

[48] CoolClimate Network – Consumption-Based Greenhouse Gas Inventory

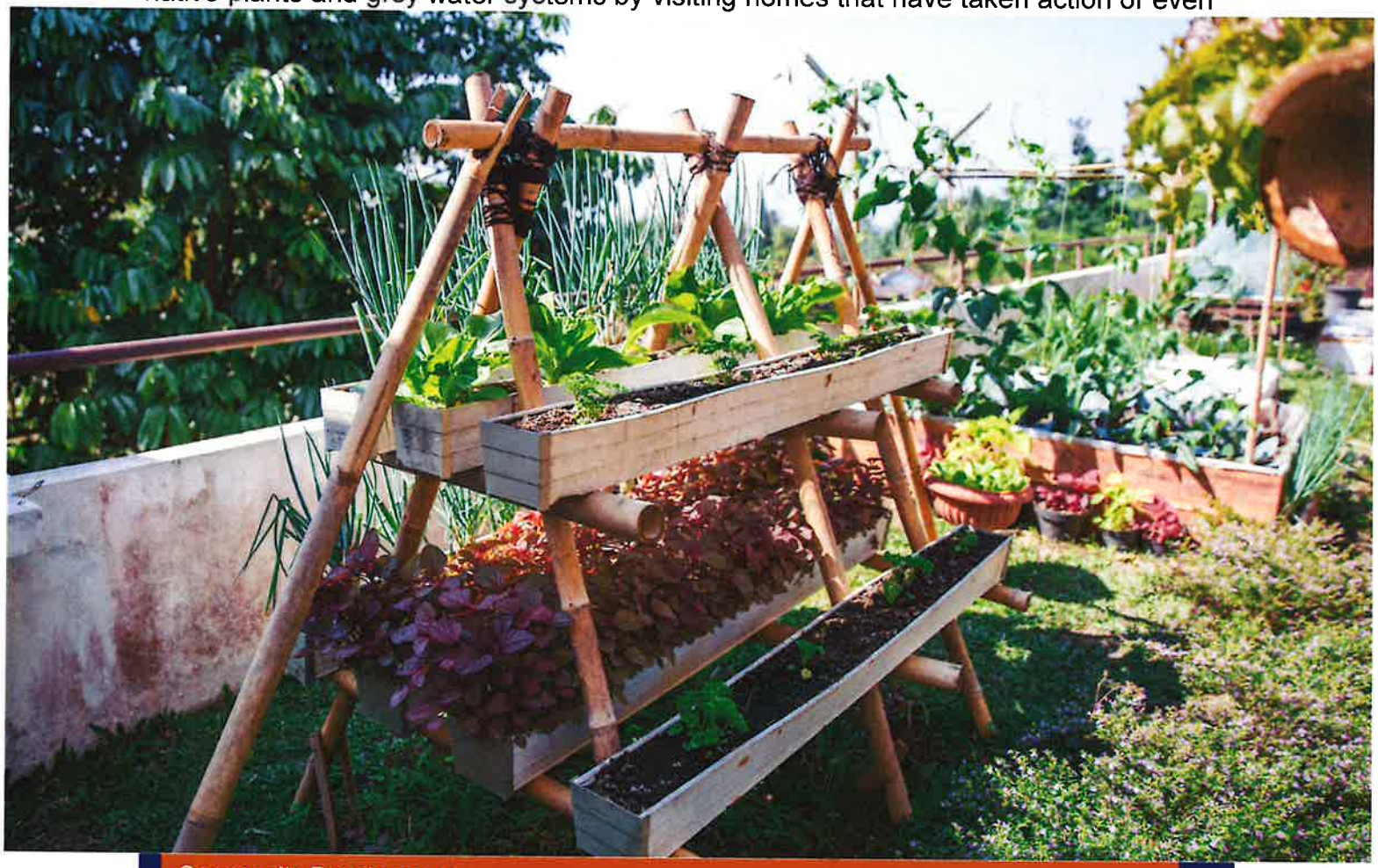
this comes as no surprise, the community can strive to be more conscious about consumption and travel patterns. Purchasing locally produced goods, for example, can lower the emissions associated with the transportation required to move goods across counties, states, and countries, while also contributing to a vibrant local economy. Reducing air travel can also drastically reduce a household's carbon footprint.

Proposed Actions:

1. Encourage residents to buy items second hand whenever possible, to reduce overall emissions from consumption.
2. Support programs such as fix-it clinics, maker spaces, and sharing networks.

Community Development

The final essential component to climate resilience is a strong community. Worsening natural hazards and increasing energy insecurity will not fall equally across Antioch's community. Climate change will disproportionately affect low income and historically marginalized people. Maintaining a commitment to equity and strengthening economic and social systems is necessary to ensure they do not get left behind. Resilient neighborhoods will be able to address these changes and move forward with a vision that supports a livable city. Many of the adaptation and mitigation measures mentioned in previous sections will not be possible or effective without a strong community. Carpools require coordination with neighbors and colleagues, and bike buses rely on trusting neighbors and drivers alike to ensure kids can safely get to school. When a household item breaks, someone who lives in a strong, tight-knit community can borrow one from someone down the street or go to a community center for a fix-it clinic, instead of immediately ordering a new one online. Opportunities to learn more about water conservation and other measures are being offered where residents can learn about native plants and grey water systems by visiting homes that have taken action or even



learning by doing in workshops that install laundry to landscape systems and sheet mulch. To this end, the City of Antioch can support and engage the community to help develop a sustainable local economy and support the financial security of its residents in the face of increasing uncertainty. This section of the Climate Action Resilience Plan (CARP) outlines three broad categories that address the role of community development in resilience: Community Engagement; Workforce Development and Local Economy; and Economic Security.

Community Engagement

Effective communication and outreach between the City of Antioch, its residents, and its workers is necessary to promote resilience. The community cannot effectively adapt to climate change or reduce its carbon footprint if it does not know about the programs and incentives available to do so. While doing outreach with the community to gather input for the CARP, many residents expressed a desire to be more informed about city efforts and programs. Residents have been extremely enthusiastic about participating in the community survey and new organics composting program. The community survey reached over 300 residents, almost double the reach of the first CARP. These are promising signs that there is strong will and concern in the community to address climate change, but residents need the proper tools and information to make effective change. Strong community engagement will be critical in enacting this change. Youth engagement and disaster communication are two key aspects in creating effective community engagement and outreach for climate initiatives.

Youth Engagement

Youth engagement is critical to develop resiliency to climate change, now and in the future. Younger generations will face the brunt of climate change. Antioch students have demonstrated that they are capable of making a difference now and in the future. Antioch High School is partnering with the City of Antioch, Strategic Energy Innovations, and PilotCity to educate students about green engineering and green energy, and to provide students with opportunities for professional experience. Equipped with knowledge and professional experience, Antioch High School students will graduate ready to contribute to a more livable community.

The climate space is a rapidly growing job market. The City of Antioch can encourage AUSD to incorporate topics about climate change, environmental resilience, and green technology into the curriculum with age-appropriate educational material beginning in elementary schools. Antioch High School is already a leader in incorporating sustainability into the curriculum.

The Public Safety and Community Resources Department's Youth Services division has been extremely successful in fostering youth engagement throughout Antioch. The division puts on multiple free events for youth, from the Teen Block Party to family paint nights. The Youth Services division also oversees the Antioch Council of Teens and the Project Springboard Internship program, which give youth leadership and professional development opportunities in the City.

Goals:

- Increase opportunities for high school students to receive professional experience
- Increase opportunities for high school students to gain visibility in the community
- Prepare the next generation of Antioch's leaders for the climate challenge

Proposed Actions:

1. Bike Path Challenge – support students in designing and developing a bike path from Black Diamond Mines Regional Preserve to the downtown waterfront area.
2. Support partnership between local industry and Antioch high schools to facilitate professional experience for students.
3. Expansion of Rising Sun internship opportunities to increase energy efficiency in Antioch while supporting professional development for high school students.
4. Engage the Antioch Council of Teens in the Cleaner Contra Costa Challenge.
5. Expand partnerships with other educational institutions such as Deer Valley High School and Los Medanos College.
6. Encourage AUSD to incorporate climate change and resilience into elementary, middle, and high school curriculum.

Disaster Communication

Effective communication before and during disasters is essential for disaster preparedness and resilience. Results from the 2024 climate survey indicated that residents are more familiar with emergency services and protocol than they were in 2020. However, over 60% of survey respondents are still either not so familiar or not at all familiar with emergency services and protocol in Antioch.

Efforts to expand awareness of hazards in the Antioch community can be accomplished through multiple means. Online outreach through platforms like NextDoor can help give the community access to necessary disaster preparation documents. Mailings on hazard operations can provide opportunities for education to those families without access to broadband. Translation options for non-English speaking populations can help the City reach residents who otherwise would not be able to engage.

To help residents feel more prepared and self-sufficient in the face of a disaster, the City can look into hosting workshops addressing emergency preparedness. These workshops could be hosted in collaboration with FEMA or the Contra Costa County Fire Department and could focus on extreme heat, flooding, or severe storms. These are all hazards that have worsened significantly in the last five years, particularly extreme weather, and almost half of residents said they did not feel adequately prepared to

respond to natural hazards. By increasing community knowledge and preparedness, the City can also save money, time, and resources in the aftermath of emergencies occurring.

Other Outreach & Engagement

Understanding community needs and concerns can help the City develop policies and programs that address these needs and concerns. Successful outreach efforts help develop trust between the Antioch community and city government, which is important in promoting successful climate initiatives and building resilience to hazards. The City established the Public Safety and Community Resources department, which houses the Youth Services, Environmental Resources, Housing and Homelessness, and Violence Prevention and Intervention divisions. These community-focused divisions are working to foster better community engagement and outreach. The Violence Prevention and Intervention division, for example, has been hosting beautification events in some of Antioch's neighborhoods defined as EJ neighborhoods in the EJ element. Litter pickup and pop-up clinic events help prevent pollution and foster a healthier community. These efforts show the community the City of Antioch is committed to them.

Since 2020, as in person events have resumed, the City has increased its outreach efforts at public events. At events such as Arbor Day tree planting and the Bringing Back the Natives tour, the Antioch Environmental Resources team has tabled with information on many programs that can help residents increase their resiliency and sustainability.

The City also hired a Community Engagement Coordinator in 2024, whose role in the community is to

Proposed Actions:

1. Help residents navigate adapting to climate change.
    a. Host workshops for community members to understand how best to prepare themselves and their families for what to do in the event of a natural hazard-related emergency.
    b. Partner with trusted community organizations, such as libraries, to distribute information on hazards and emergency responses.
    c. Establish "office hours" at PSCR to assist residents with applications to weatherization and energy efficiency upgrade programs, have computers available for community members to use.
2. Increase efforts to enhance dialogue between the City of Antioch and the Antioch community.

a. Increase presence at community events to directly interact more often with the Antioch community.

b. Keep the public informed about city goals and projects. Consider development of an open data platform available to the public to increase transparency.

Workforce Development and Local Economy

Sustainable, local businesses provide essential services for the local economy and Antioch community. The Bay Area Climate Assessment warns of regional infrastructure failings in the cases of large-scale flood and earthquake events. Consequences of these major natural disasters may include failings in energy distribution, food distribution, and the energy grid. A robust local business environment can enhance Antioch's self-sufficiency in times of regional emergency.

Support for local business can also help Antioch achieve its greenhouse gas reduction goals. By aligning Antioch's business needs with the education, skills, and expertise of the workforce, residents can significantly reduce commute distances and times. As a bedroom community, 90% of Antioch's employed residents travel to locations outside Antioch to get to work. Antioch commutes reflect these characteristics.[49] Census data indicates that the average commute for Antioch residents is 41 minutes, which is approximately 13 minutes higher than the California average of 28 minutes. In addition, 66.1% of Antioch commutes are done by driving alone to work.[50] This data suggests that local job creation through the combination of local business expansion, retention, attraction, and workforce development could reduce greenhouse gas emissions by changing commute patterns.

Supporting local business and implementing local hire practices can reduce commute times and provide increased opportunities for residents to use alternate forms of transportation. An Antioch resident commuting to San Jose has little choice but to drive to work. An Antioch resident who commutes just two miles can ride a bicycle to work. Even in the case this resident drives to work, the emissions saved from driving two miles instead of seventy miles over the course of a year are substantial.

Local business can also help build community togetherness. If people live and work in the same city, they contribute to their community through their jobs and get to know their fellow residents, which helps build strong neighborhoods that are more resilient if and when disaster strikes.

To address the climate challenge, Antioch will need a workforce capable of taking the necessary actions. Electric Vehicle Charger infrastructure, PV and Electrification efforts,

[49] U.S. Census Bureau
[50] U.S. Census Bureau

HVAC efficiency projects, advanced manufacturing, and green engineering can enhance community livability and resilience. For example, manufacturers and engineers need different skills to work Projections suggest that, by 2026, construction jobs will increase by 18% and electrician jobs will increase by 13% since 2016.[51] The Bureau of Labor Statistics projects that solar PV installers and wind turbine technicians will be the two fastest growing jobs between 2018 and 2028.[52] Training in these occupations can help transform the local economy to one that is both robust and environmentally friendly. Workforce development programs, such as electrician and solar installation training, can promote competitiveness of Antioch workers while supporting the goal of moving Antioch toward an economy that emits less carbon dioxide and other greenhouse gases. The City of Antioch is a member of the Green Empowerment Zone for the Northern Waterfront area of Contra Costa County until January 1, 2028. It was established in 2021. The governing board of this zone helps identify projects and programs that "best utilize public dollars and improve the economic vitality of the Northern Waterfront area of the County of Contra Costa in a coordinated effort to support the development of the clean energy economy."[53] The Green Empowerment Zone supports the development of the aforementioned jobs in Antioch.

Goals:

- Prepare the Antioch workforce for a changing climate
    - Invest in workforce training programs for construction, green building, electricians, mechanics, advanced manufacturing, and PV installers
- Provide opportunities for low-income residents to acquire living wage jobs
- Reduce commuting times for Antioch residents and workers
- Retain and expand small local businesses, which are hubs for jobs, critical infrastructure, and community resilience

Proposed Actions:

1. Establish local preference policies in procurement guidelines.
2. Work with the Northern Waterfront Economic Development Initiative (NWEDI) on strengthening an equitable local green economy with local jobs and effective workforce development programs.

[51] California Employment Development Department
[52] Bureau of Labor Statistics
[53] California Assembly Bill No. 844, 2021

3. Partner with educational institutions to promote green career pathways and provide professional experiences to students in building, planning and conservation.

Economic Security and Equity

The issue of economic security frames many of the issues surrounding climate change. As has been discussed, climate changes are likely to put severe financial strain on Antioch residents. Increased energy demand and water scarcity are expected to raise the costs of these utilities. Increases in utility costs puts financial strain on families to afford other necessities such as housing, particularly when over 50% of Antioch renters are paying at least 35% of their income in rent.[54] The heat-or-eat dilemma already faced by low-income families may soon become a "cool-or-eat" dilemma during the summer months. Damages related to flooding, which will occur in neighborhoods with higher levels of low-income residents, put further strain on household finances and health.

In these ways, Antioch's low-income residents are most vulnerable to the projected effects of climate change. The City should develop the capacity to aid and support low-income neighborhoods in responding to these challenges.

High Priority Action: Urban Farming

Urban farming and home gardens address a multitude of issues related to climate change. It can help provide food security by producing healthy and affordable food for low-income residents, particularly important considering the uncertainty of future food prices.

Using local composting systems can harness the power of waste to enhance the quality of the soil and produce nutrient-rich food. Recycled water, rainwater harvesting, and water storage infrastructure can help urban farms develop resilience to drought by providing consistent water sources.

Urban farming can also cool the Antioch community by decreasing impervious surfaces and reducing the urban heat island effect.

Proposed Actions:

1. Hire low-income community representative to better understand the needs of low-income neighborhoods and more effectively conduct engagement efforts
2. Develop guidelines to encourage urban farming and home gardening in the Antioch community
3. Center equity in consideration of climate policy and programming

[54] U.S. Census Bureau

Implementation and Next Steps

Implementing the strategies and actions outlined within this plan will require significant investments. However, considering the costs of inaction—property damages due to floods, increased utility bills, grid shutdowns, healthcare costs associated with extreme heat and poor air quality, etc.—the benefits of acting become apparent.

The Climate Action Resilience Plan (CARP) lays out strategies to address climate change that can be adopted by anyone in the Antioch community—residents, community organizations, or city staff. The CARP's focus on community resiliency opens up the possibility for federal Community Development Block Grant (CDBG) funding for many of these strategies concerning workforce development, low-income housing, or multi-modal transportation. Funding form the CDBG program will support programs that build community resilience and enhance disaster preparedness. Potential funding from the Coastal Conservancy can help build community capacity by providing outreach support in North Antioch to familiarize people with the consequences of climate change. CBOs in Antioch and the surrounding area can apply for this grant funding to implement actions laid out in the CARP.

Many of the goals and actions laid out in this document can be implemented quickly. Other goals and actions will take many years, and perhaps decades to implement. Approaches for these sets of actions will differ. Funding for longer periods of time can be more volatile, and proof of project success will be important to illustrate. For this reason, it is important that the City establish a monitoring system that tracks actions that contribute to long-term goals. Understanding and learning lessons from implemented programs and policies will help Antioch transform into a sustainable, equitable, and resilient city.

Short-term implementation

Actions that can be implemented quickly and build immediate capacity will have the largest effect in the short-term. Preparing efficient disaster responses and engaging more community members – especially youth – are top priorities for building short-term community resilience. Implementation of small-scale actions that address long-term goals can also have a significant impact in the intersection of resilience and

sustainability. These actions, such as expanding low-income home weatherization projects, increase resilience in the short-term while contributing to the longer-term goals of increasing energy efficiency and reducing emissions from the built environment.

The primary barriers to quick implementation include lack of funding and lack of city staff capacity. For this reason, actions that build staff and community capacity to take action are important in the short-term. Coordinating with regional agencies to pool funds and staff time toward mutually beneficial projects will help accomplish shared goals and build professional relationships.

Long-term implementation

Many CARP goals, especially those that relate to greenhouse gas emission mitigation, cannot possibly be accomplished within the next five to ten years without a substantial change in availability of funding, staff capacity, and community involvement. These goals are processes and transformations that will take a long time to implement and take shape. The shift to zero net emissions (ZNE), for example, is a process that will take many years to achieve but is already underway. The City has adopted a plan to transition the city vehicle fleet to a zero-emission fleet and is working on a plan to install EV supply equipment. In 2023, the new residential organics recycling program was rolled out city-wide to combat short-term climate pollutants and the Environmental Resources Division is working to implement the Resources Recovery Ambassador program, which seeks to empower residents to educate others on proper three-sort waste management.

Antioch can, however, take steps that begin these processes. As the effects of climate change become more apparent, increased capacity – in the form of wider scale urgency and, ultimately, funding – for climate action will likely increase. The City of Antioch can begin by establishing monitoring mechanisms to understand the outcomes of its programs and policies and developing understanding of how to build climate resilience in a community.

2030 Climate Action & Resilience Plan

The 2025 Climate Action & Resilience Plan is the second in a series of Climate Action & Resilience Plans that aim to build long-term resilience in Antioch. The City of Antioch will begin development of the 2030 Climate Action & Resilience Plan in 2029. The 2025 CARP will be completed before the next 5-year Consolidated Plan to ensure that building community resilience maintains its status in the following rounds of CDBG funding. Actions laid out in the 2025 CARP will be monitored and tracked to understand project successes and barriers to better understand how to build climate resilience.

Each CARP will build off the previous editions, and incorporate lessons learned into each new edition.

Summary of Actions

The Climate Action & Resilience Plan (CARP) has outlined many strategies and actions that Antioch can use to move toward a more resilient, sustainable, and equitable community. This section lays all these strategies and actions in one place.

Clarifying the Action Summary Chart

Action summary charts are broken down into five categories: **Transportation, Energy, Waste, Hazard Preparedness, and Community Capacity Building**. Though they are all connected, they each present unique opportunities for action and are categorized separately.

The action summary chart includes four columns: **Action, Partners and Funding, Action Status, and Benefits.** These strategies and actions are used to address the broad goals laid out at the beginning of each section.

Action:

The action column describes strategies and actions to build resilience in the Antioch community. Some strategies have multiple actions that contribute to a greater strategy. Actions and strategies will be **bolded**.

Action status:

- **In Progress** – Actions that have already begun implementation phase
- **Planned** – Actions that are being considered for implementation or have been approved for implementation but have yet to be begun.
- **Long-term Planning** – Actions that require long-term planning or will directly contribute to strategies that require long-term planning

Partners and Funding:

It is not possible for Antioch to become climate resilient without help from outside sources. This column highlights the contributions of different organizations and departments within the City of Antioch that will be primarily responsible for implementation of the action. Funding sources, which also may be partnering organizations, are indicated by *italics*.

Benefits:

Any action laid out in the document is likely to have multiple benefits for the Antioch community. A list of the broadly based benefits is shown below.

- **Mitigation (greenhouse gas emissions reduction):**
  - Reduce vehicle miles travelled (VMT)
  - Reduce the emissions impact of VMT
  - Reduce energy demand
  - Reduce the emissions of energy use
  - Reduce emissions from organics decomposition
  - Increase carbon sequestration (removal from atmosphere)
  - Contribute to a clean (emission-free) local economy
- **Adaptation:**
  - Prepare community for the increased likelihood of hazard occurrence
  - Prepare the built environment for the increased likelihood of hazard occurrence
- **Community Development:** Actions which strengthen community development include those that:
  - Strengthen engagement and dialogue between the City and community
  - Strengthen Antioch's local economy
  - Build unity within the Antioch community
- **Equity:**
  - Provide increased economic opportunity for low-income communities and communities of color
  - Build trust between the City of Antioch and low-income communities and communities of color
  - Improve the health of low-income communities and communities of color
  - Improve the quality of life for unsheltered persons.
- **Public Health:**
  - Improve outdoor and indoor air quality
  - Reduce health events related to extreme heat
- **Resource Conservation:**
  - Improve sustainability by reducing use of finite resources
    - Water
    - Energy
    - Single-use plastics

Hazard Preparedness

Goals:

- Ensure that the Antioch population is prepared for the increasing likelihood of natural hazards.
- Ensure that Antioch's built environment is prepared for the increasing likelihood of hazard occurrence.
- Expand community knowledge of effects of climate change and ensure effectiveness emergency communication systems.

Actions	Partners and Funding	Action Status	Benefits
Increase green infrastructure and reflective surfaces in the built environment. Continue tree planting efforts in areas with low tree canopy cover and high UHI effect. Encourage the use of green roofs in new construction. Encourage the use of cool roofs in new construction. Consider the use of cool pavements when repaving and paving roads in appropriate areas. Determine procurement guidelines for pavements based on Environmental Product Declaration (EPD) when available.		**In progress**	ghg reduction, public health, adaptation
Increase the number of cooling centers. Conduct analysis to determine the best locations for new cooling centers.		**Long term planning**	public health, adaptation
Create guidelines for businesses, schools, and community centers to adjust operations during extreme heat. Support switching to remote work or instruction, and follow State guidelines to ensure workers are not exposed to dangerous conditions outside during heatwaves.		**Long term planning**	public health, adaptation

Flooding

Take flood zones into consideration when proposing new development. Require flood management proposals when development is proposed in flood-prine areas.		**Long term planning**	adaptation, public health

Expand green infrastructure for stormwater management purposes. Explore inclusion of bioswales and other stormwater management infrastructure in flood-prone areas as a part of the Urban Forestry Plan. Work to restore wetlands and historic watersheds in Antioch, which can help reduce flooding and sequester carbon dioxide.		**Long term planning**	adaptation, ghg reduction, community development
Coordinate with regional agencies to create readiness plans in case of emergency. Coordinate regionally with groups such as Contra Costa Transportation Authority (CCTA) and Tri Delta Transit to ensure transportation continuity in emergency situations. Coordinate regionally with housing and development agencies to prepare for potential housing stresses caused by flooding.		**Long term planning**	adaptation, public health
Continue participation in the Adapting to Rising Tides Initiative and in Delta Stewardship Council's Delta Adapts project, which will include comprehensive flood mapping.		**In progress**	adaptation

Earthquakes

Conduct analysis of the housing stock for earthquake vulnerability. Focus efforts on multifamily structures that house many people. Research retrofit programs for at-risk structures.		**In progress**	adaptation, equity, public health
Develop plans for post-earthquake housing and recovery with the Office of Emergency Services (OES). Determine short-term shelters and interim housing. Explore transportation options for evacuation.		**Long term planning**	adaptation, public health
Build earthquake resilience into development code for new upgrades and new development. Require qualifying buildings to have shelter-in-place credentials in order to build interim housing capacity in earthquake aftermath. Promote use of PACE financing to homeowners for earthquake safety retrofit.		**In progress**	adaptation, public health
Increase community outreach on preparation for earthquake and recovery plans.		**Planned**	adaptation, equity, public health

Coordinate with people in the County involved in regional transportation and housing to ensure continuity in emergency situations. Contra Costa County Office of Emergency Services. Contra Costa Transportation Agency (CCTA). Contra Costa County Housing Authority.		**In progress**	adaptation

Air Quality

Provide program to offer low-cost or no-cost insulation upgrades in homes.		**In progress**	adaptation, equity, public health
Ensure all cooling centers have ability to close off outside air and recycle interior air during poor air quality days.		**In progress**	adaptation, public health
Ensure that affordable housing projects use quality insulation and have ability to close off HVAC to outside air during poor air quality days.		**Long term planning**	adaptation, equity, public health
Develop Urban Forestry Plan to strategically and equitably expand trees and green infrastructure in the city.		**Long term planning**	adaptation, equity, public health, ghg reduction
Support the expansion of alternative transportation and electric vehicle infrastructure to reduce pollution from exhaust pipes.		**In progress**	adaptation, equity, public health, ghg reduction

Energy Insecurity

Explore the potential of alternate energy generation and storage technologies. Work regionally to conduct a Microgrid Feasibility Report that builds off initial study conducted in 2024. ADD CCA ACTION ITEM HERE		**In progress**	adaptation, equity, public health, ghg reduction
Explore incorporation battery energy storage technologies with solar installation.		**In progress**	adaptation, equity, ghg reduction
Explore ways to expand energy saving financing to low-income residents.		**In progress**	adaptation, equity, ghg reduction

Drought

Study the reliability of under-utilized water supplies. Explore expanding use of recycled water. Explore rainwater harvesting and storage possibilities at city facilities and at Antioch businesses.		**Long term planning**	adaptation, ghg reduction

Require water conservation. Develop clear communication to residents as to when drought policy is in effect. Work with Sustainable Contra Costa to promote water recycling in homes.		**In progress**	Adaptation, ghg reduction
Complete desalination plant construction to address the salinification of the delta as a result of sea level rise.		**In progress**	Adaptation, ghg reduction
Explore the potential for water=efficient agriculture to strengthen food security.		**Long term planning**	Adaptation, equity, public health
Increase the use of drought-tolerant landscaping, including native plants. Conduct community outreach to improve knowledge of the benefits of native plants and drought-resistant landscaping. Pass the native plant ordinance.		**In progress**	Adaptation, ghg reduction, community development

Mitigation

Transportation Goals:

- Reduce the Vehicle Miles Travelled in the Antioch community through encouraging transportation mode shift
- Reduce the emissions impact of Vehicle Miles Travelled through vehicle electrification

Actions	Partners and Funding	Action Status	Benefits
Develop Mobility Plan. Antioch will conduct a mobility study to examine what the best ways to encourage active transportation and consider ways to better incorporate electric vehicles into the community's transportation network. The City will incorporate strategies that enhance the attractiveness of active transportation, such as increasing tree canopy and enhancing bicyclist and pedestrian safety.	City Manager	**Planned**	public health, ghg mitigation, equity

Expand use of BART. The City of Antioch should work to increase bicycle and automobile parking at BART. Work with Contra Costa County to connect regional bike networks with the Antioch BART station. Increase bus connectivity to BART.	BART, CCTA	**In Progress**	ghg reduction, public health, equity
Invest in bicycle infrastructure. Build more bicycle networks: north-south routes & paths from Black Diamond Mines park. Increase safety of bicycle networks: reduce sharrows (lanes that are shared between motorists and bicyclists) on roads with high speed traffic, increase clearly demarcated bike lanes, and build protected bike lanes with physical barriers between riders and automobiles. Increase bicycle parking: install lockers in destinations such as shopping centers, the Antioch Community Center, and the downtown area.	Engineering, Capital Improvement, Environmental Resources	**In Progress**	ghg reduction, public health, equity
Improve bicycle programming and support residents riding more often. Explore the possibility of "bike bus" programs for elementary and middle schools to foster youth ridership and health. Work with Bike East Bay or similar programs to teach residents bike skills, safety, and confidence. Work with 511 Contra Costa on programs that encourage bicycling, such as the Summer Bike Challenge and StreetSmarts. Antioch will continue outreach support for bicycle use.	511 Contra Costa, CCTA, SCOCO	**In Progress**	ghg reduction, equity, public health
Expand & improve current bus service. Work with Tri Delta Transit to expand the scope of the Tri My Ride program. Work with CCTA to establish bus lanes on highways to connect regional transportation. Install shelters at more bus stops to protect from heat, rain, and wind. Continue to promote Youth summer bus passes.	CCTA	**In Progress**	ghg reduction, public health, equity

Work to make downtown more accessible by active and public transportation. Expand bus service from BART to downtown Antioch. Continue L Street improvements such as the implementation of painted bike lanes, bus shelters, and signal timing.		**In progress**	ghg reduction, equity, community development
Work regional to encourage tele-commuting options when appropriate. Implement tax incentives that encourage businesses to allow telework. Help businesses transition to a system in which telework is viable. Work to improve internet connectivity gaps in low-income neighborhoods.		**Long term planning**	ghg reduction, equity
Improve EV charging infrastructure in Antioch. Install charging stations in commercial centers, downtown, and in community centers. Support residents with financing home charger installation with information about rebates. Support the installation of EV chargers in multifamily complexes.	Antioch Economic Development, CCTA	**In Progress**	ghg reduction, public health
Provide Financial Incentives for residents to switch to EV. Support outreach for programs such as Clean Cars for all. Educate residents on the benefits of electric vehicles. Implement special privileges for EV, such as designated parking spots. Provide information on how to navigate finding, qualifying for, and applying to tax rebates for EVs.	Clean Cars for All, Grid Alternatives	**In Progress**	Equity, ghg reduction
Implement the purchasing guide for switching the city fleet to EVs by 2029.	Antioch Public Works	**Planned**	ghg reduction, public health
Continue advocating for a gas station construction moratorium or consider adding the requirement to install EV charging stations at any new gas station.		**In progress**	Adaptation, public health, equity, ghg reduction

Energy Goals:

- Increase fuel switching from natural gas to electricity
- Increase energy security by reducing energy demand

- Reduce the impact of electricity use on greenhouse gas emissions

Actions	Partners and Funding	Action Status	Benefits
Support energy efficiency improvements in homes. Continue outreach for BayREN home improvement rebates. Support Contra Costa County's Weatherization Program to improve indoor temperature control, energy cost control, and air quality in low-income homes.	CBDG, BAAQMD, BayREN, Contra Costa County	**In Progress**	equity, adaptation, ghg reduction, public health
Encourage residential fuel switching from natural gas to electricity. Consider a natural gas ban in qualifying new construction. Require electric panel upgrades in major renovations or during home sales. Explore the use of battery storage in tandem with solar to increase energy resilience. Partner with organizations like SunShares and Grid Alternatives to expand solar installation in Antioch homes and businesses with increased awareness for programs with incentives to switch to solar. Expand outreach to landlords and contractors about electrification and its benefits.	City Council, Planning Comissions, CDBG, SunShares, Grid Alternatives	**Long-term planning, in progress**	ghg reduction, equity, community development
Encourage fuel switching in businesses. Support initiatives such as the Bay Area Green Business program. Help with program outreach. Consider additional incentives for participation. Encourage energy audits in commercial buildings. Expand outreach to business owners and contractors about electrification and its benefits. Consider a natural gas ban in qualifying new commercial construction.	City Council, Planning Comissions, BayREN	**Long-term planning, in progress**	ghg reduction, equity, community development

Waste Goals:

- Begin building the systems to transform Antioch into a low carbon, low waste community and contribute to a circular economy
- Gather community engagement and support for a circular economy

Action	Partners & funding	Action Status	Benefits
Provide more community outreach into how to correctly sort waste. Hire part-time staff to work primarily on outreach for the program with a focus on community events.		**In progress**	ghg reduction, adaptation
Examine urban farming as a way to work toward a circular economy through local use of compost generated from local organic waste. City and Waste Hauler coordinate to provide more frequent community compost giveaway offerings for residents. City encourages and funds the creation of more community gardens throughout Antioch, especially in low-income, food-insecure neighborhoods that create their own compost from food waste and/or receive free compost from the City's Waste Hauler.		**Long term planning**	ghg reduction, adaptation, community development, public health
Expand food rescue programs. Assist food rescue organizations in working with restaurants to maximize donation of all edible food. Partner with homeless shelters to provide food from rescue efforts.		**In progress**	equity, ghg reduction, public health
Campaign to reduce single-use plastics to reduce waste, plastic, and reduce impacts of the plastic lifecycle on climate change. Increase education efforts to the public on the many ways that plastic is harmful, contributes to climate change, and how to use less of it.		**In progress**	equity, ghg reduction, public health
Encourage residents to buy items second hand whenever possible, to reduce overall emissions from consumption.		**Long term planning**	ghg reduction

Support programs such as fix-it clinics, maker spaces, and sharing networks.		**Long term planning**	GHG reduction, community development, equity

Community Development

Goals:

- Strengthen Antioch's social and economic systems to promote resilience
- Remove barriers to economic, political, and social participation for low-income communities and communities of color
- Expand engagement between the City of Antioch and the Antioch community

Action	Partners & funding	Action Status	Benefits
Support partnership between local industry and Antioch high schools to facilitate professional experience for students.		**Long-term planning**	community development
Expansion of Rising Sun Internship opportunities to increase energy efficiency in Antioch while supporting professional development for high school students.		**Planned**	adaptation, ghg reduction, community development
Engage the Antioch Council of Teens in the Cleaner Contra Costa Challenge.		**Planned**	ghg reduction, community development
Expand partnerships with other educational institutions such as Deer Valley High School and Los Medanos College.		**Long-term planning**	ghg reduction, community development
Encourage AUSD to incorporate climate change and resilience into elementary, middle, and high school curriculum.		**Long-term planning**	community development

Help residents navigate adapting to climate change. Host workshops for community members to understand how best to prepare themselves and their families for what to do in the event of a natural hazard-related emergency. Partner with trusted community organizations, such as libraries, to distribute information on hazards and emergency responses. Establish "office hours" at PSCR to assist residents with applications to weatherization and energy efficiency upgrade programs, have computers available for community members to use.		**Long-term planning**	adaptation, ghg reduction, community development
Increase efforts to enhance dialogue between the City of Antioch and the Antioch community. Increase presence at community events to directly interact more often with the Antioch community. Keep the public informed about city goals and projects. Consider development of an open data platform available to the public to increase transparency.		**In progress**	community development , equity
Establish local hire practices in procurement guidelines.		**Long-term planning**	community development
Work with the Northern Waterfront Economic Development Initiative (NWEDI) on strengthening an equitable local green economy with local hire support and effective workforce development programs		**In progress**	ghg reduction, community development
Partner with educational institutions to promote environmental initiatives and provide professional experiences to students in building, planning and conservation		**In progress**	ghg reduction, community development
Hire low-income community representative to better understand the needs of low-income neighborhoodscommunities and more effectively conduct engagement efforts.		**In progress**	community development, equity
Develop guidelines to encourage urban farming and home gardening in the Antioch community.		**Long-term planning**	community development, ghg reduction, equity, adaptation

OLD ACTIONS

Facilitate energy efficiency improvements in homes. Work with organizations such as BayREN provide rebates and other financial incentives to qualifying residents to improve energy efficiency in their homes. **Promote and support these programs**. The City of Antioch is also partnering with Contra Costa County to increase participation in the County's low-income Weatherization Program. **The City can support low-income residents by helping with paperwork and other logistical issues as well as expanding outreach to increase the number of residents participating in this program**.	*CBDG*, BAAQMD, BayREN, Contra Costa County	**In Progress**	▪ Adaptation ▪ Mitigation ▪ Public health ▪ Equity
Consider the potential of alternate energy generation and storage. Conduct a Microgrid Feasibility Study to examine how Antioch can proceed in incorporating microgrids in community and municipal operations. Microgrids, combined with battery storage technology, can increase resilience to future Public Safety Power Shutoffs (PSPS) due to their ability to operate without reliance on the main grid. They can also serve as a backup option during shutoffs related to fire, earthquake, flood, and severe storms. These technologies can be implemented in single family homes as well as smaller multifamily and commercial lots.	Antioch Environmental Resources, Contra Costa County	**Planned**	▪ Adaptation ▪ Equity ▪ Mitigation
Expand Solar Installation in homes and businesses by partnering with organizations like SunShares and Grid Alternatives that provide financial resources and support for solar installation. **Conduct outreach to expand awareness** for programs with financial incentives to switch to solar to increase energy affordability.	*CDBG*, SunShares, Grid Alternatives	**In Progress**	▪ Equity ▪ Community development ▪ Mitigation
Action	**Partners & Funding**	**Action Status**	**Benefits**
Require electric panel upgrades in major renovations to build the capacity for more widespread solar adoption. By requiring electric panel upgrades, the Antioch community provide capacity for future generations to implement scalable household solar energy. Explore potential	City Council, Planning Commission	**Long-term planning**	▪ Mitigation ▪ Adaptation

allocation of transfer tax funds during home sale for electric panel upgrades.			
Encourage newly developed buildings to be 100% electric. In order to move toward a built environment without fossil fuel energy, the City can encourage 100% electrical through requirements on new construction, or through development bonuses for building a 100% electric building.	City Council, Planning Commission	**Long-term planning**	▪ Mitigation ▪ Public health
Increase the amount of reflective and cooling surfaces in Antioch. Cool roofs and pavements can reduce the Urban Heat Island effect and help cool Antioch in the hot season. Tree planting campaigns can lower the urban heat island effect and provide shade in neighborhoods. Prioritize opportunities to cool the City's built environment in areas with more intense urban heat island effect and in areas that are expected to receive high levels of development in the future.	Engineering, Public Works, City Council, Planning Commission	**Long-term planning**	▪ Adaptation ▪ Mitigation ▪ Equity
Encourage fuel switching in homes and businesses. Support initiatives such as the Contra Costa County Green Business Program to encourage energy saving and fuel switching efforts. Support can be achieved through aid in outreach efforts, or through providing additional financial incentives.	SCOCO, Antioch Environmental Resources, *Contra Costa County Green Business Program*	**Planned**	▪ Mitigation ▪ Public health
Explore possibilities for partnership with Community Choice Aggregation (CCA). CCAs source more clean energy than traditional utilities, which helps reduce emissions in energy use. CCAs can also provide valuable funding for clean energy infrastructure projects, such as electric vehicle charging stations and energy storage programs.	Environmental Resources, CCA, City Council	**Planned**	▪ Mitigation ▪ Equity ▪ Community development

Waste

Goals:

- Begin building the systems to transform Antioch into a low carbon, low waste community and contribute to a circular economy
- Gather community engagement and support for a circular economy

Action	Partners and funding	Action Status	Benefits
Expand outreach efforts for the Antioch commercial composting and organics program. The City of Antioch has recently hired a part-time, temporary employee to focus on waste-related issues. The primary role of this employee will be to implement composting collection at local events and city facilities. Should funding continue, this position could also be used to encourage composting in businesses. Republic Services currently has a Recycling Coordinator that works primarily on getting Antioch businesses set up on the organics program and increasing their waste diversion efforts.	Environmental Resources, Republic Services	**In Progress**	▪ Mitigation ▪ Community development ▪ Resource Conservation
Decrease use of non-recyclable/compostable single use disposables. Single use disposables, items that are used once and then thrown away, are widespread in the Antioch community. In order to move toward a circular economy, the City can **encourage or require use of compostable and recyclable materials**.	City Council	**Planned**	▪ Pollution Reduction ▪ Resource Conservation
Create a Sustainable Purchasing Information Guide to inform future City of Antioch procurement. Such a guide would help the City lead the effort of moving toward a low-waste, low-carbon economy. The City could also distribute the guide to the community to encourage sustainable purchasing by the Antioch community.	Antioch Facilities Dept., Environmental Resources	**Planned**	▪ Mitigation ▪ Resource Conservation
Conduct outreach on sustainable purchasing in the Antioch community. The City of Antioch will continue to expand digital and in person outreach to encourage sustainable purchasing in the community. Expand workshops, social media posts, and community organization supporting community consumption of low-waste, low-carbon goods.	Environmental Resources	**In Progress**	▪ Mitigation ▪ Resource Conservation
Action	**Partners and funding**	**Action Status**	▪ **Benefits**
Expand food rescue programs. Partner with organizations such as the White Pony Express for distribution of food that would otherwise go to waste. The City plans to reach out to organizations that are currently serving the community with food giveaways to determine their needs and feasible expansion. **Work with the**	White Pony Express, Antioch CARE Center	**Planned**	▪ Equity ▪ Adaptation ▪ Mitigation ▪ Community Development

new homeless shelter to provide food for Antioch's unsheltered population.			
Expand recycling of wastewater to productive use. More efficient use of water will be increasingly important as the California climate becomes warmer, drier, and more prone to drought. **Diverting wastewater from shower and laundry drainage to landscaping** can help save water in the case of drought.	SCOCO, Environmental Resources	**Planned**	▪ Adaptation ▪ Resource Conservation

Hazard Preparedness

Goals:

- Ensure that the Antioch population is prepared for the increasing likelihood of hazard occurrence
- Ensure that Antioch's built environment is prepared for the increasing likelihood of hazard occurrence
- Expand community knowledge of effects of climate change and ensure effectiveness emergency communication systems

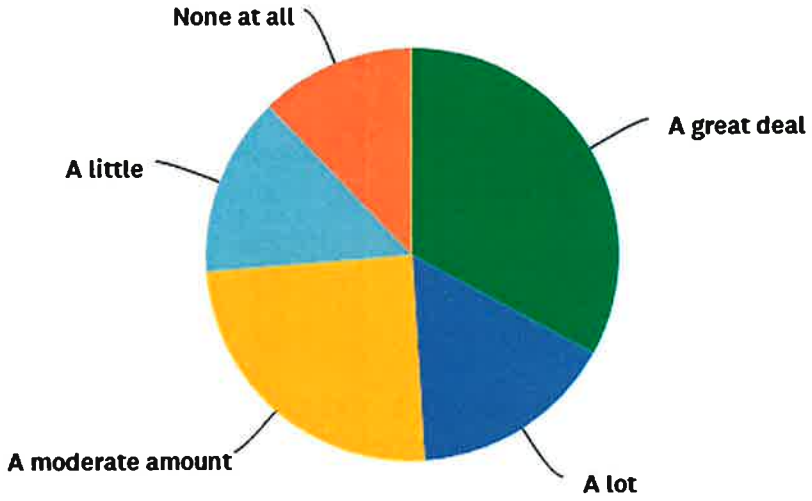
Action	Partners and funding	Action Status	Benefits
Expand community awareness on the risks and effects of hazards/natural disasters within Antioch. Conduct workshops with community organizations to help vulnerable communities prepare for hazards. Focus outreach efforts on flood, earthquake, fire, drought, heat. Ensure that translation services are available to ensure that non-English speaking populations are able to engage with the City's outreach efforts.	*CDBG*, Antioch Emergency Operations Center (EOC)	**Planned**	▪ Adaptation ▪ Community Development ▪ Equity
Plant trees to reduce the impact of extreme heat and contribute to Antioch's carbon and pollution sequestration. Include tree planting in plans to increase bicycle and pedestrian infrastructure, as well as in areas with more intense Urban Heat Island effects and in areas with low levels of tree canopy. **Conduct Urban Forestry Plan to coordinate planting efforts.**	Tree City U.S.A, Antioch Recreation, Environmental Resources	**Planned**	▪ Adaptation ▪ Mitigation ▪ Community Development ▪ Equity
Ensure that effective communication systems are in place in the event of a major hazard occurrence. Use mailings, phone messages, emails, and internet communication to distribute information in multiple languages. Tailor communication strategies to different community groups for greatest response. **Continue to leverage and expand participation in the County's Community Warning System (CWS).**	*CDBG*, Antioch Housing	**In Progress**	▪ Adaptation ▪ Community Development
Install green infrastructure improvements in areas that experience high flood risk to reduce the impact of flooding. Work with organizations such as the Coastal Conservancy and with at-risk	*Coastal Conservancy*, Engineering/Public Works	**Planned**	▪ Adaptation ▪ Mitigation ▪ Equity

communities to determine the best ways to increase flood resilience in the built environment.			
Action	**Partners and funding**	**Action Status**	**Benefits**
Coordinate regionally to ensure transportation continuity in the case of a hazard occurrence. Severe flooding, earthquake, and fire could jeopardize use of important roads, highways, and rail networks. The Pittsburg-Antioch Highway, coastal rail lines, and low lying areas of Highway 4 are most vulnerable to disruption.	CCTA, Tri Delta Transit, BART	**In Progress**	▪ Adaptation
Incorporate future flooding projections into the development process. Require a flood management proposal in the development process in at risk areas. Lack of planning for sea level rise can lead to high levels of property damage in at risk areas.	BCDC, Engineering/Public Works, Community Development, City Council, Planning Commission	**Planned**	▪ Adaptation ▪ Equity
Install high efficiency air conditioning units in low-income housing to prepare the Antioch community for extreme heat hazards. Homes that receive air conditioning units would qualify for home weatherization to offset the increased energy use from air conditioner use.	*CDBG*, Antioch Housing	**Planned**	▪ Equity ▪ Adaptation
Conduct analysis of vulnerable housing structures and develop a retrofit plan to increase earthquake resilience, prioritizing multifamily structures. Consider encouraging retrofits by allowing use of a housing sale transfer tax to fund seismic retrofits.	*CDBG*, Antioch Building	**Long-term Planning**	▪ Adaptation ▪ Equity
Add detail and depth to plans for determining short-term shelters and longer-term rebuilding plans in the case of earthquake. Work with City and County Offices of Emergency Services to further coordinate earthquake response plans.	Antioch OES, Contra Costa County Office of Emergency Services (OES)	**In Progress**	▪ Adaptation ▪ Equity ▪ Community Development
Expand cooling centers to include areas that are not well served by the two current cooling centers. Transition these cooling centers to clean energy supported microgrids to increase greenhouse gas emission reductions and to make Antioch's community more energy resilient. **Ensure that cooling centers also transition to become clean air centers** that can be used in the case of poor outdoor air quality from hazard occurrences such as fire. This goal can be	Antioch Recreation, *CBDG*	**Long-term Planning**	▪ Adaptation ▪ Equity ▪ Mitigation

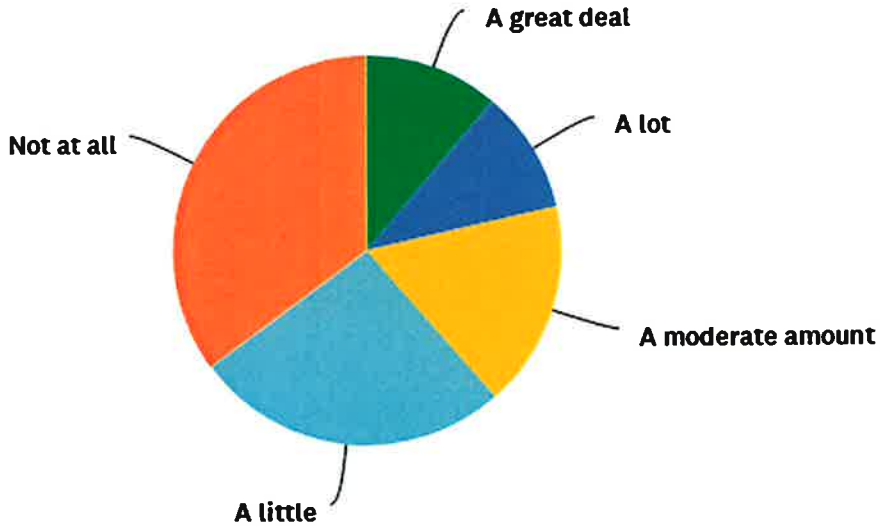
accomplished through ensuring proper indoor air recycling and filtering in cooling centers.			
Action	**Partners and funding**	**Action Status**	**Benefits**
Conduct Urban Forestry Plan to better understand how trees and green infrastructure can help increase the resilience of Antioch's physical environment to climate changes. Urban forestry contributes to carbon sequestration, stormwater management and air pollution removal.	Antioch Public Works, Antioch Recreation, Environmental Resources	**Planned**	▪ Adaptation ▪ Mitigation ▪ Public health
Develop rainwater capturing and storage systems to provide resilience in the case of drought. Encourage the use of rain barrels to provide a backup source of water. Implement rainwater capture systems for large-scale landscaped areas or urban farming practices.	Antioch Community Development	**Long-term Planning**	▪ Adaptation
Complete desalination plant to address the salinification of the Delta and ensure long-term availability of drinking water to Antioch residents.	Capital Improvement	**In Progress**	▪ Adaptation
Encourage reduced water use in community landscaping. Incorporate drought-resistant landscaping into beautification processes, use of efficient irrigation techniques such as drip irrigation, and rainwater storage as ways that the community can reduce water use in landscaping.	SCOCO, CCWD, Antioch Environmental Resources	**In Progress**	▪ Adaptation ▪ Equity

Appendix I: Survey Results

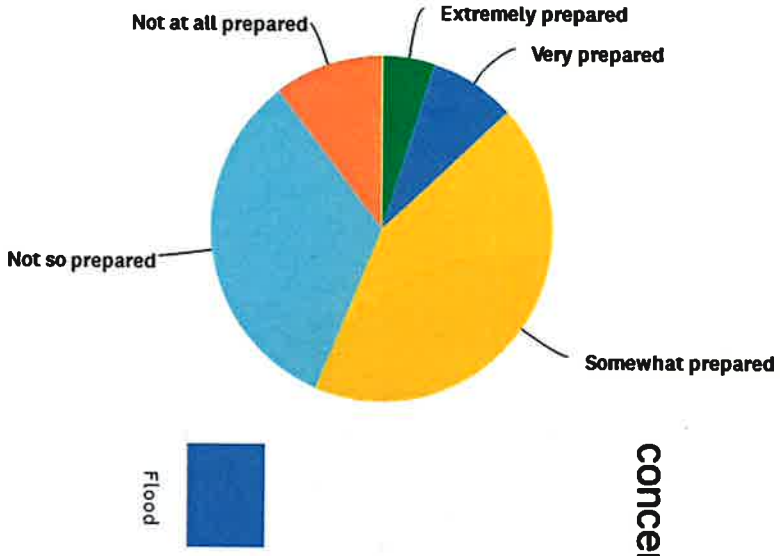
Q1 How worried are you about climate change?



Q2 How engaged are you with Antioch local government?



Q4 How prepared do you feel for an extreme hazard event (fire, earthquake, flood)?



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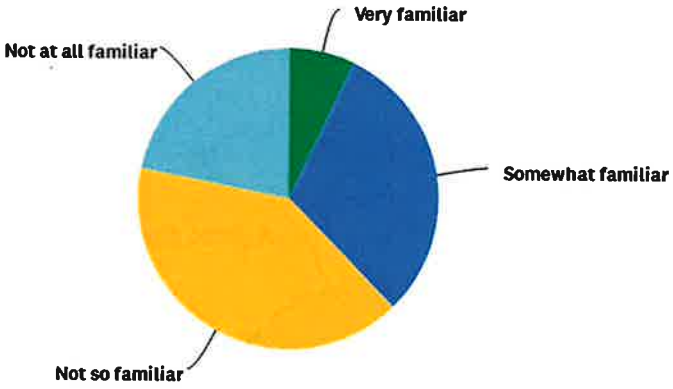
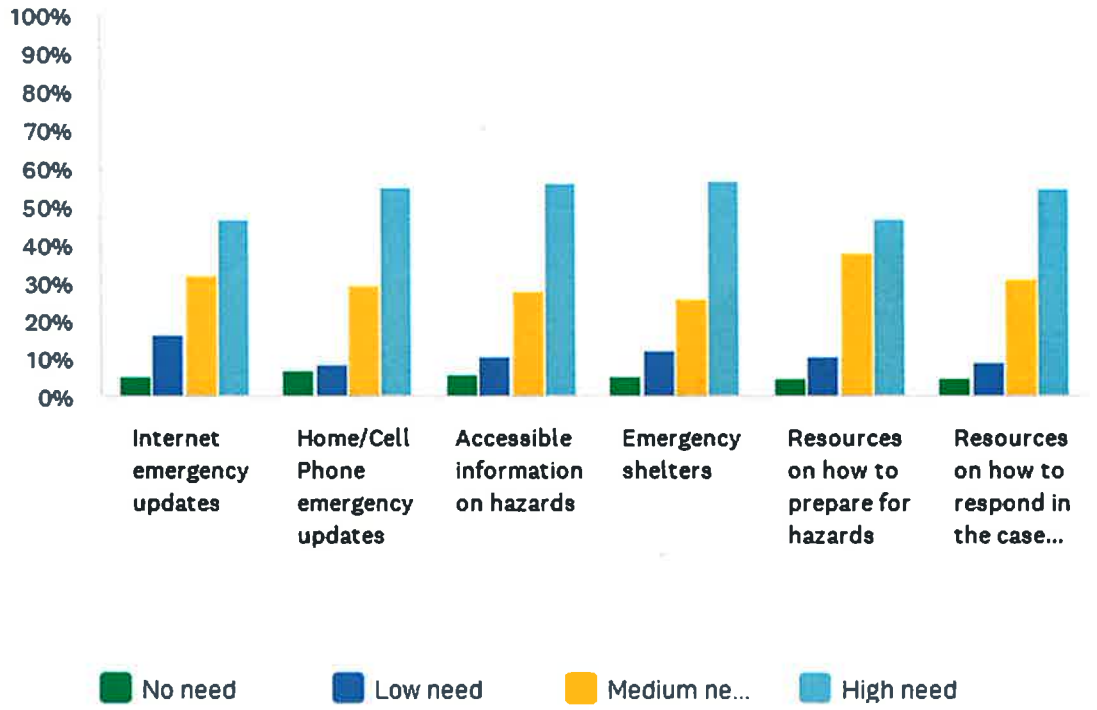
Q5 How familiar are you with emergency services and protocol in Antioch?Link to Office of Emergency Services: https://www.antiochca.gov/police/oes/

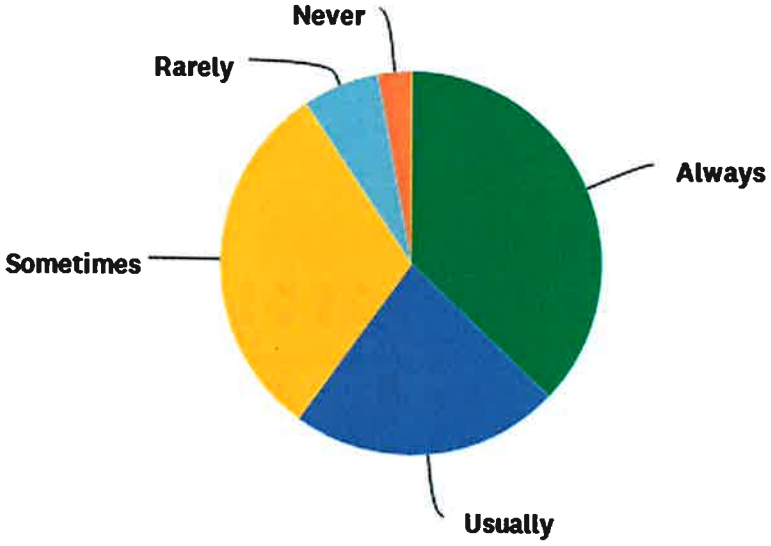


ck all that apply)

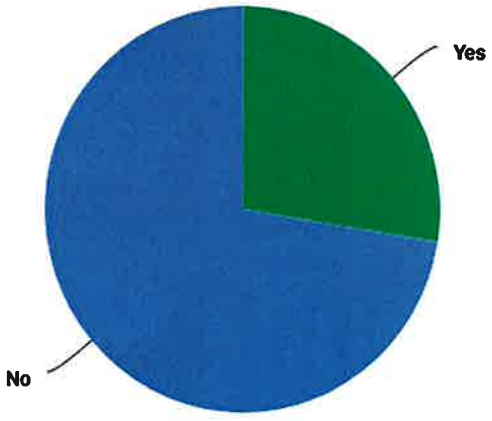
Q6 Please rate the need for the following emergency response items.



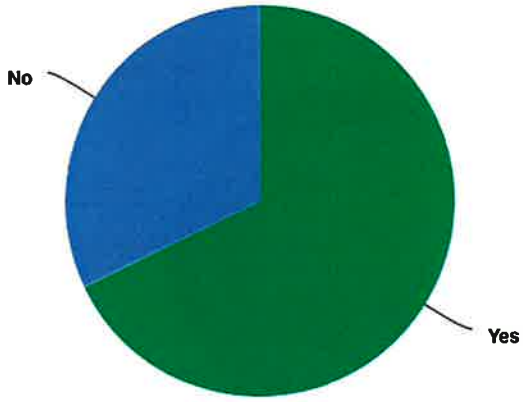
Q7 Do you feel like your energy bills are too high?



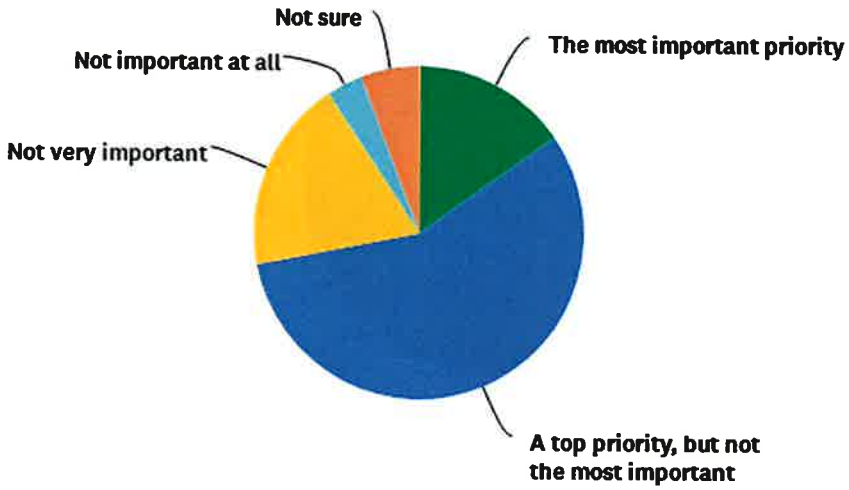
Q8 Are you aware of organizations, such as the Bay Area Regional Energy Network (BayREN), that provide financial help for energy efficiency upgrades at home?



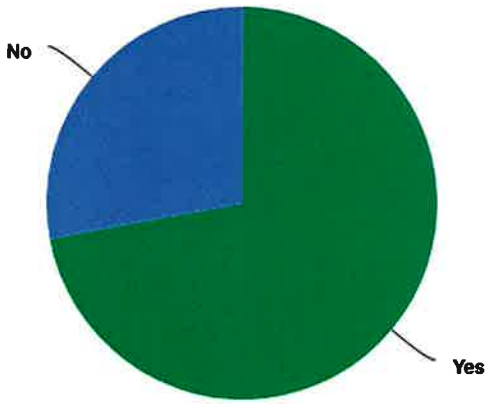
Q9 Would you schedule a home energy efficiency audit if it was free of cost?



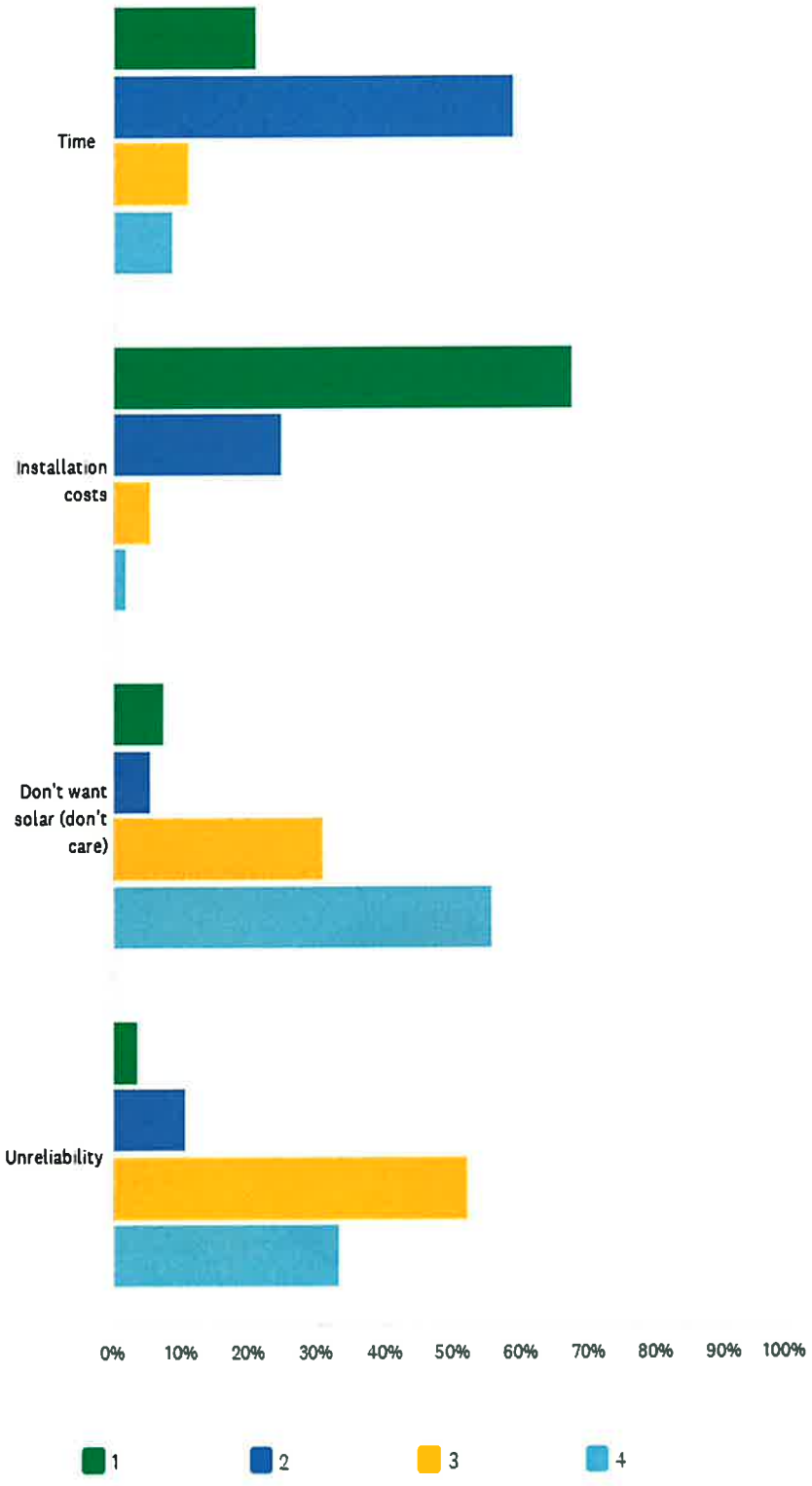
Q11 Please rate the need for expanding solar power in Antioch.



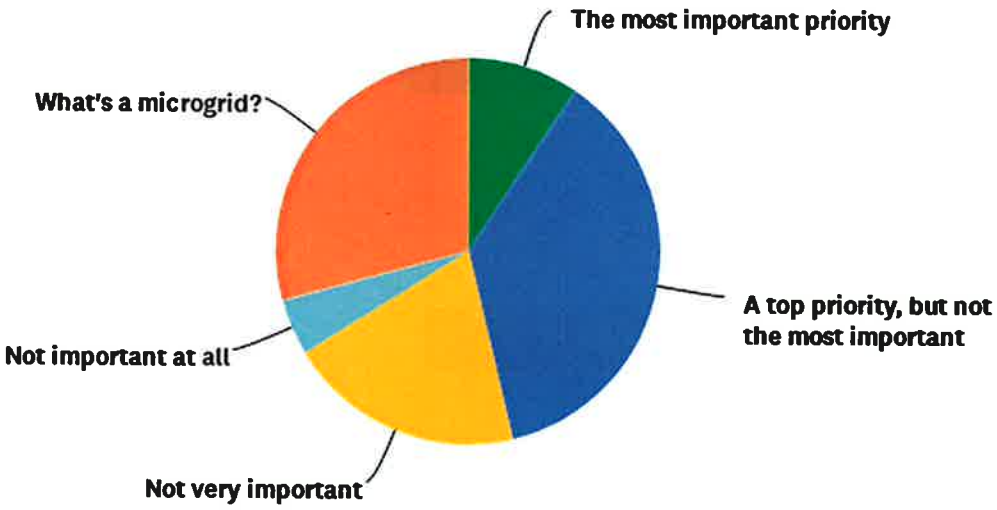
Q10 Would you support Community Choice Aggregation (CCA) in Antioch?



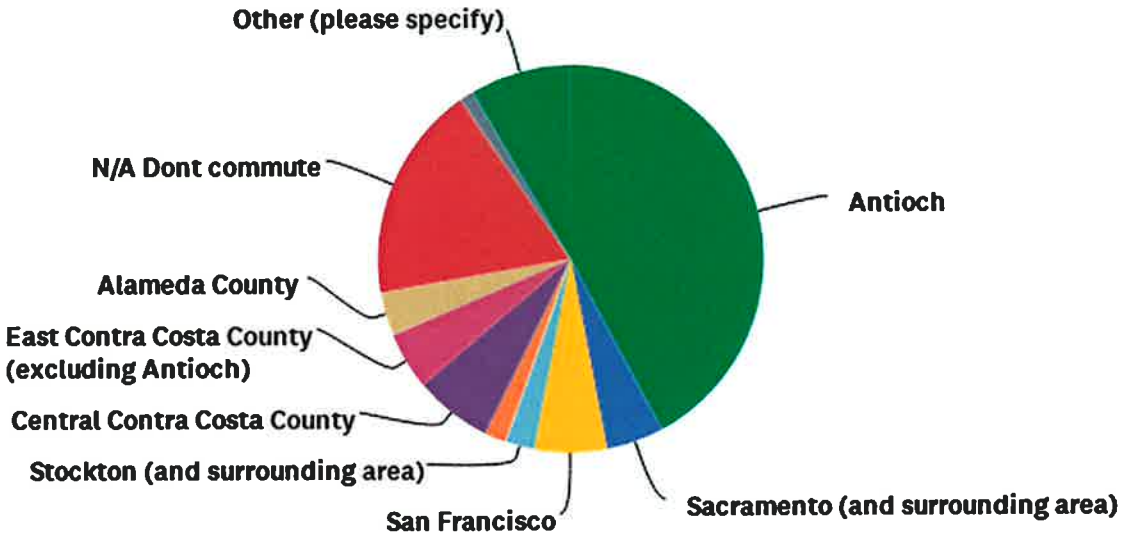
Q12 Please rank (from top to bottom) your biggest barriers to switching to solar power.



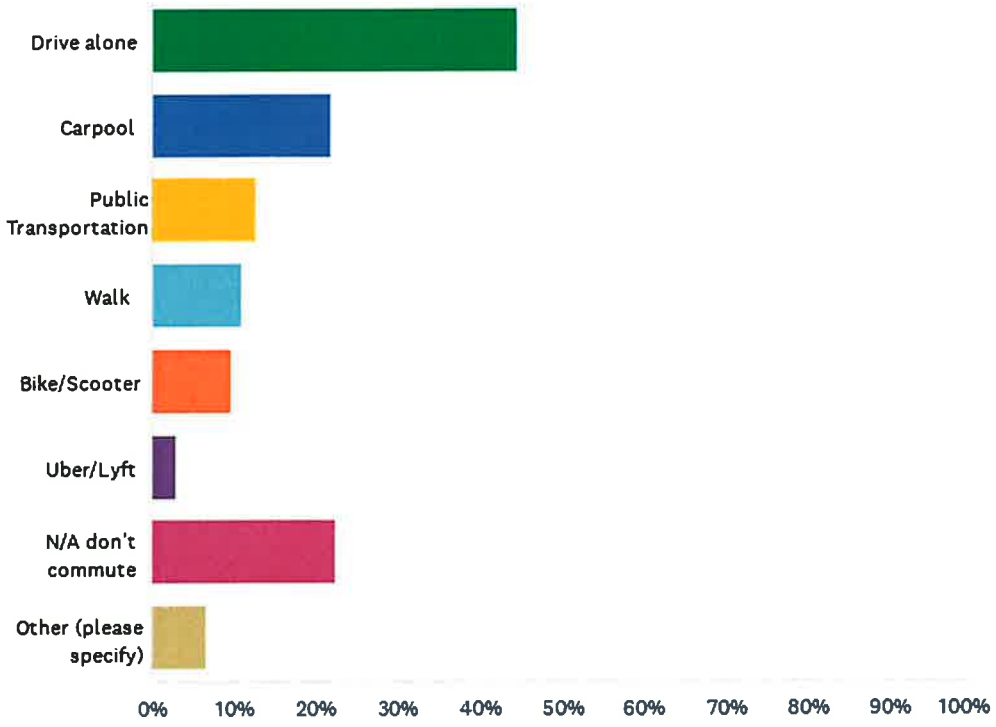
Q13 Please rate the need for expanding microgrid use in Antioch.



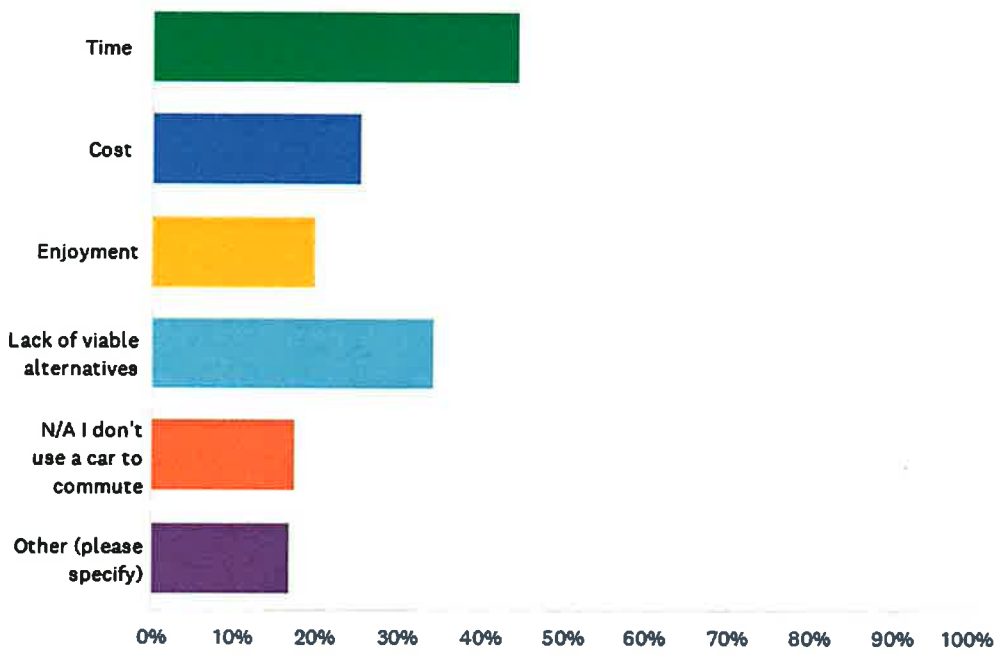
Q14 Where do you to commute for work?



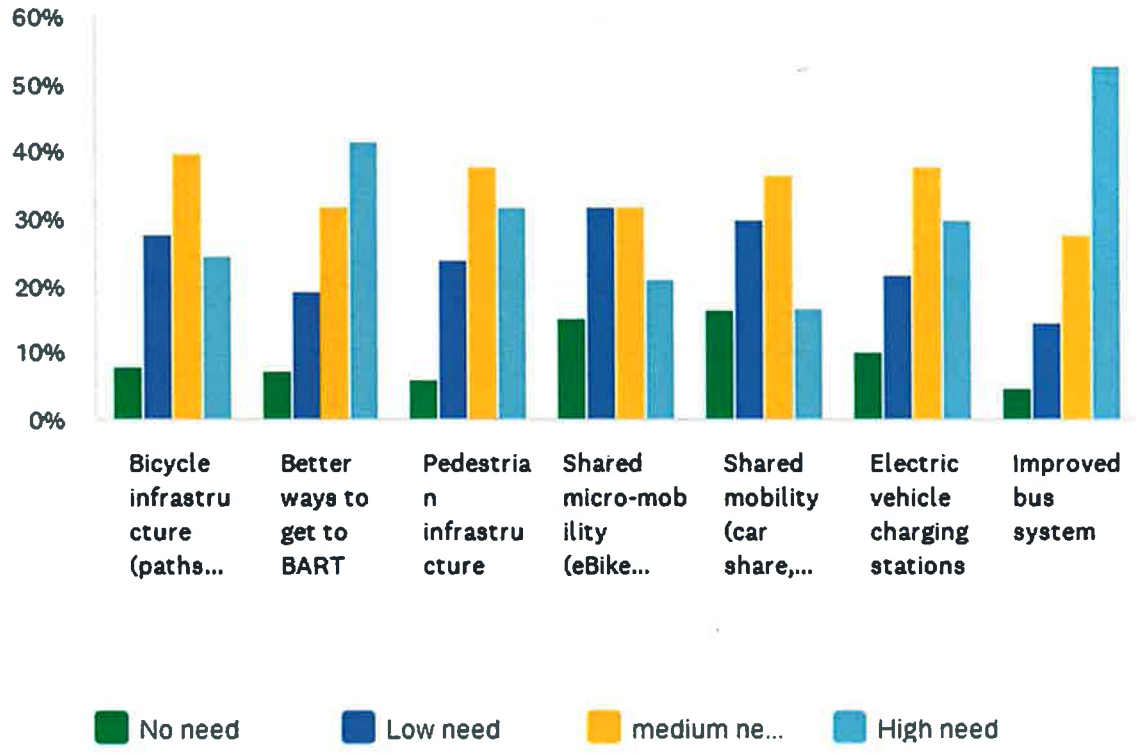
Q15 How do you usually get to work? (Select all that apply)



Q16 Please select the biggest barriers you face from switching away from car use (Select all that apply)



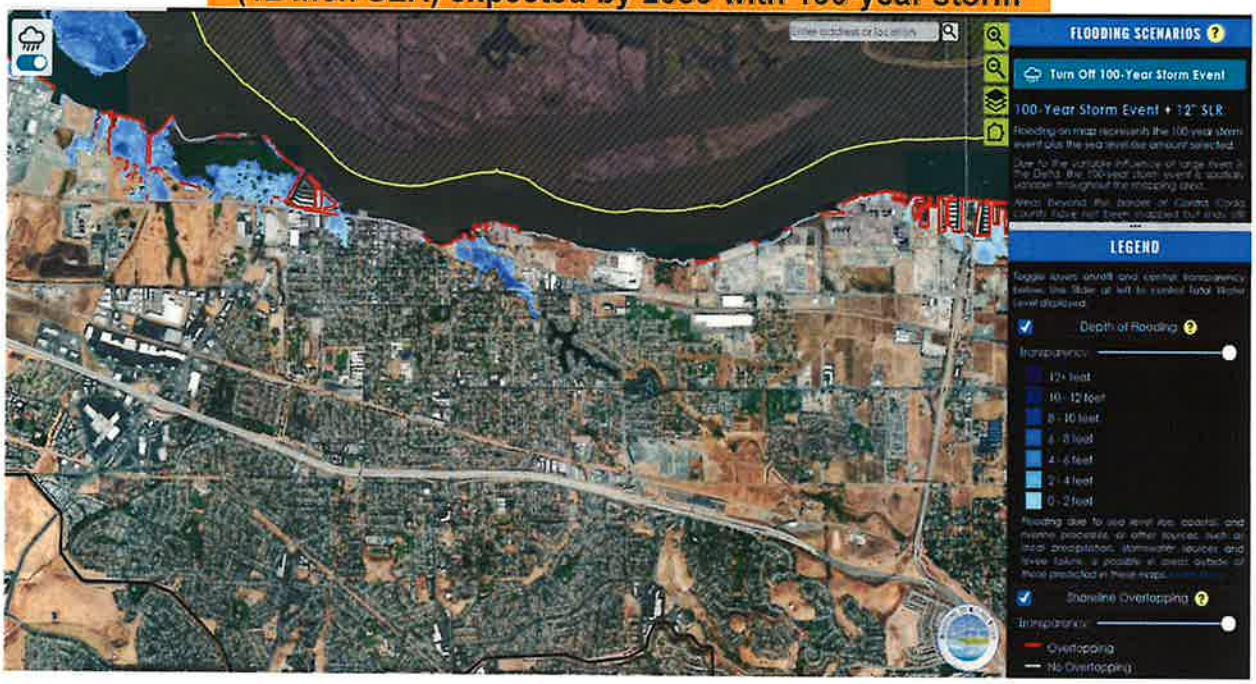
Q17 Please rate the following alternative transportation needs for Antioch



Appendix II: Hazard Mapping

Flood Mapping

(12 inch SLR) expected by 2030 with 100-year storm



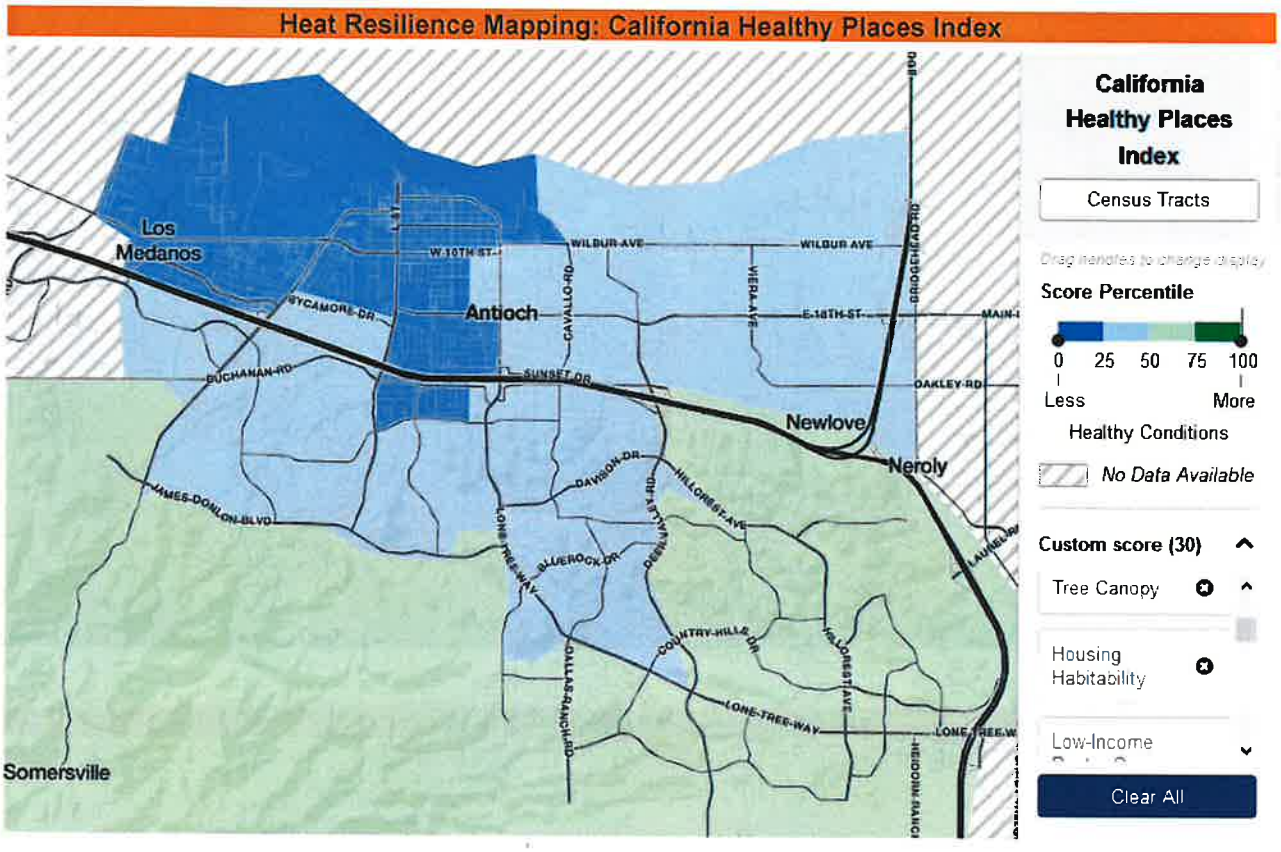
(24 inch SLR) expected by 2050 with 100-year storm

(83 inch SLR) expected by 2100 with 100-year storm

BCDC Flood Vulnerability Mapping

- Highest social vulnerability
- High social vulnerability
- Moderate social vulnerability

Heat Resilience Mapping



Note: This mapping represents an *overview* of current heat resilience in Antioch. Color represents the resilience percentile of the census tract relative to the state average. Vulnerability score is created from a number of indices including but not limited to:

- Percent Above Poverty
- Percent Employed
- Median Household Income
- Automobile Access
- Park Access
- Tree Canopy
- Housing Habitability
- Housing Burden
- Health Insured Adults
- Outdoor Workers
- Health Conditions (asthma, cardiovascular conditions)

Appendix III: Get Involved

The Cleaner Contra Costa Challenge is an interactive online platform that helps you contribute to a more sustainable community. The platform tracks your carbon footprint and provides 50+ actions that you can take to reduce your carbon footprint, save you money, and support a healthier, sustainable future.

Every action earns you points that may earn you a prize! Form a team or join a community group and help create a more sustainable future with friends and family!

Join the Challenge today!

RESOLUTION 2024/172

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANTIOCH ADOPTING THE 2025-2030 CLIMATE ACTION AND RESILIENCE PLAN OUTLINING THE POTENTIAL ACTIONS TO REACH THE GHG REDUCTION TARGETS SET BY RESOLUTION 2009/57

WHEREAS, there is a consensus among the world's leading scientists that global warming caused by human emission of greenhouse gases is among the most significant problems facing the world today;

WHEREAS, documented impacts of climate change include, but are not limited to, increased occurrences of extreme weather events (i.e., droughts and floods), rising sea levels, threats to global food and water supplies – all of which have an economic impact on communities and their local governments;

WHEREAS, the State of California has mandated statewide reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050;

WHEREAS, pursuant to Resolution No. 2009/57 dated June 23, 2009, the City of Antioch adopted Greenhouse Gas reduction targets by reducing overall carbon emissions by 25% (1990 levels) by 2020 and 80% reductions by 2050 as mandated by the Global Warming Solutions Act of 2006 AB-32;

WHEREAS, cities have a unique role to play in reducing greenhouse gas emissions and preparing for the impacts of climate change through their local jurisdiction over policy areas such as housing, air quality, land use planning, transportation, zoning, forest preservation, water conservation, and wastewater and solid waste management;

WHEREAS, the economic arguments for implementing climate solutions are compelling, from the near-term economic gains of energy efficiency to the long-term climate stabilization that can prevent irreparable harm from catastrophic climate change impacts;

WHEREAS, many cities throughout the nation, both large and small, are reducing emissions and pollutants through programs that provide economic and quality of life benefits such as reducing energy bills, preserving green space, implementing better land use policies, improving air quality, promoting waste-to-energy programs, expanding transportation and work choices to reduce traffic congestion, and fostering more economic development and job creation through energy conservation and new technologies;

WHEREAS, the City has conducted community outreach including community workshops and surveys to solicit ideas and comments from the community regarding climate protection in Antioch;

WHEREAS, the Public Safety and Community Resources Department has prepared the Draft 2025-2030 Climate Action and Resilience Plan and made it available for review by the public and interested agencies and organizations; and

WHEREAS, the City has aligned this plan with the City's 2025-2030 CDBG Consolidated Plan in an effort to ensure that our most vulnerable are prepared for future stressors.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Antioch hereby adopts that the proposed 2025-2030 Climate Action and Resilience Plan incorporated by reference and attached as Exhibit A.

* * * * * * *

I HEREBY CERTIFY that the foregoing resolution was passed and adopted by the City Council of the City of Antioch at a regular meeting thereof, held on the 26th day of November, 2024 by the following vote:

AYES: Council Members District 1 Torres-Walker, Mayor Pro Tem (District 4) Wilson, and Mayor Hernandez-Thorpe

NOES: Council Member District 3 Ogorchock

ABSTAIN: None

ABSENT: Council Member District 2 Barbanica

for **ELIZABETH HOUSEHOLDER**
CITY CLERK OF THE CITY OF ANTIOCH