DRAFT

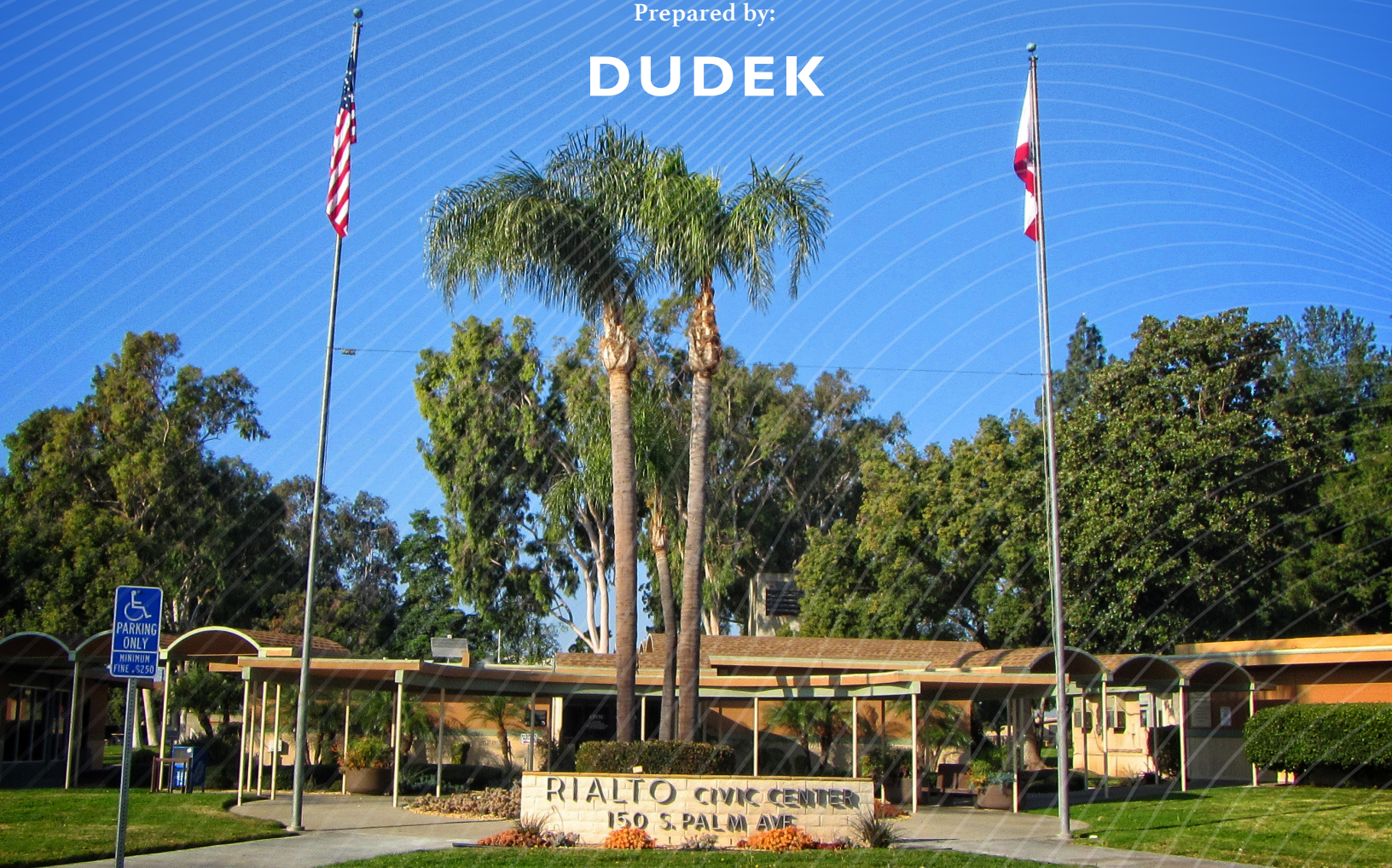
City of RIALTO

Climate Adaptation Plan

City of Rialto, 2021

Prepared by:

DUDEK



1

INTRODUCTION

1 Introduction

This Climate Adaptation Plan (Plan) lays the groundwork to help prepare the City of Rialto (City) and its residents for the expected impacts of climate change, as required by State law. This Plan builds on the City's existing General Plan Safety Element and Local Hazard Mitigation Plan to evaluate Rialto's vulnerabilities and capabilities and propose policy around four climate-related hazards: air pollution, extreme heat, wildfire, and flooding. These hazards were selected because they currently threaten the health and safety of Rialto residents and are the most likely to get worse as a result of climate change. This Plan pays particular attention to addressing the needs of those most vulnerable in the community. Specifically, the recommendations provided in this Plan focus on the communities that are already disproportionately exposed to these hazards and are the least able to respond to climate change due to their physiological conditions or socio- economic factors.

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Plan Organization

This Plan includes the following chapters:

Chapter 1- Introduction

This chapter describes the applicable State requirements as they relate to this Plan and provides an overview of Rialto's vulnerable populations and neighborhoods.

Chapter 2- Public Engagement

This chapter explains how the community and stakeholders were engaged in the process and how this Plan reflects their priorities.

Chapter 3 – Data Collection and Methodology

This chapter includes an overview of the data sets used, an explanation of each type of dataset (e.g., environmental, economic), a description of the databases used, and an anticipated schedule of updates to those data sets.

Chapter 4 – Vulnerability Assessment

This chapter includes forecasts of each of the four climate-related hazards. It also maps where those hazards are most likely to affect Rialto and which neighborhoods are most vulnerable to these changes.

Chapter 5 – Capability Assessment

This chapter evaluates the City's current capacity to address the four climate-related hazards. This includes an assessment of the City's current policies and programs and how they address each phase of hazard planning (mitigation, preparedness, response, and recovery). This chapter also ranks each hazard by the potential impact to Rialto and the City's ability to meet those impacts, to assess which hazards pose the greatest threat to Rialto. Finally, this section evaluates how well the City's policies address the specific needs of those populations most likely effected by each hazard.

Chapter 6 – Policy Recommendations

This chapter includes policy recommendations to increase the City's ability to adapt to hazards and meet the needs of its vulnerable communities. Each policy recommendation includes a priority level, timeframe, funding sources, cost, performance indicators, and future tracking. These will help the City implement the policies, find outside funding where available, track the effectiveness of the policies, and review their relevancy as climate and State laws change.

Relationship to State Law

This Plan addresses the requirements of two recently adopted State laws: Senate Bill (SB) 1000 and SB 379.

Senate Bill 379

SB 379 requires that Safety Elements of General Plans be reviewed and updated to include climate-related hazards and resilience strategies. This review and update must include a vulnerability assessment and establish goals, policies, objectives, and feasible implementation measures. This Plan will bring the City's Safety Element into compliance with SB 379. The vulnerability assessment is included in Chapter 4 and the goals, policies, and implementation measures are included in the policy recommendations in Chapter 6. These findings will inform future updates of the City's General Plan Safety Element.

Senate Bill 1000

SB 1000, the Planning for Healthy Communities Act, was codified in 2016, and mandates that cities and counties adopt environmental justice elements, or integrate environmental justice goals, objectives, and policies into their General Plans when they update two or more General Plan elements. The notion of environmental justice arose out of the social and environmental movements of the 1960s and 1970s based on the fact that polluting facilities were being located in neighborhoods that were mostly minority or low income.

According to the SB 1000 Implementation Toolkit, Planning for Healthy Communities, low-income residents, communities of color, tribal nations, and immigrant communities have disproportionately experienced some of the greatest environmental burdens and related health problems throughout the history of the United States.

This inequity is the result of many factors, one of which results from political and economic decisions to pattern development that concentrates pollution and environmental hazards in certain communities. Environmental justice seeks to remedy this imbalance, based on the democratic values of fairness and equity.

Environmental Justice Concerns:

- Factories and warehouses
- Truck and train routes
- Lack of parks and green space
- Limited access to public facilities and goods

SB 1000 and environmental justice is a broad area of public policy that includes climate adaptation but also expands beyond it to encompass health, safety, and economic and environmental burdens. This Plan addresses environmental justice in compliance with SB 1000 as it relates to climate adaptation, as a large portion of Rialto's residents affected by climate change live in disadvantaged or low-income communities. The City will comprehensively address Environmental Justice when the City updates its Housing and Safety Elements.

SB 1000 specifically calls out six topics that must be covered for a General Plan to be compliant with this law. Policies for each of these subtopics must "reduce the unique or compounded health risks in disadvantaged communities."[1]

SB 1000 Required Topics[1]:

- **Reduce pollution exposure**
- **Improve air quality**
- *Promote public facilities*
- Promote food access
- Promote safe and sanitary homes
- *Promote physical activity*

[1] Note: items in **bold** are fully addressed and items in italics are partially addressed in this Plan. Items in regular font are not addressed in this Plan.

Of the six required topics, this Plan addresses air pollution exposure in vulnerable communities, as air pollution is one of the four climate-related hazards. Policies in this Plan are designed to meet the needs of community members living in census tracts that are designated as disadvantaged and are the most vulnerable to air pollution hazards, such as those living within 500 feet of a designated truck route.

This Plan partially addresses the equitable use of public facilities, including parks, public transportation, active transportation corridors, and public facilities activated during hazard events. This is achieved through the capability assessment provided in Chapter 5 and the policy recommendations in Chapter 6 by consistently evaluating the equity of services and prioritizing projects that benefit those most likely affected by climate change.

This Plan, however, does not include a full equity and service analysis of all public facilities, which would need to be completed as part of a more holistic effort. Additionally, this Plan builds on the Active Transportation Plan and Safe Routes to School Plan to create active transportation corridors that are resilient to the four climate-related hazards.[2] While this Plan only supports active transportation, the Active Transportation Plan and Safe Routes to School Plan are both important components of Rialto's environmental justice strategy.

Rialto's Vulnerable Populations and Neighborhoods

Vulnerable communities are likely to be affected more profoundly by the effects of climate change because of current pollution levels in those communities or socio-economic factors that make it more difficult for them to respond to the impacts of climate change. This is not a finding of victimhood, but a recognition that many communities have experienced historical and systemic discrimination, exclusion, and marginalization, and it is important to recognize these barriers and include the specific needs of these communities in this Plan. Nothing about an individual's race, ethnicity, gender identity, sexual orientation, age, social class, physical ability or attributes, religious or ethical values system, national origin, immigrant status, linguistic ability, or ZIP code makes them inherently vulnerable.

[1] Senate Bill 100.

[2] These plans have not been formally adopted by City Council.

Vulnerable Populations and Neighborhoods

Instead, this Plan is acknowledging vulnerability as an assessment of the system's deficiencies, rather than as a judgment of any person or neighborhood. This Plan will serve every resident of Rialto; however, the actions taken to make Rialto safer and stronger will prioritize identifying and addressing the greatest vulnerabilities.

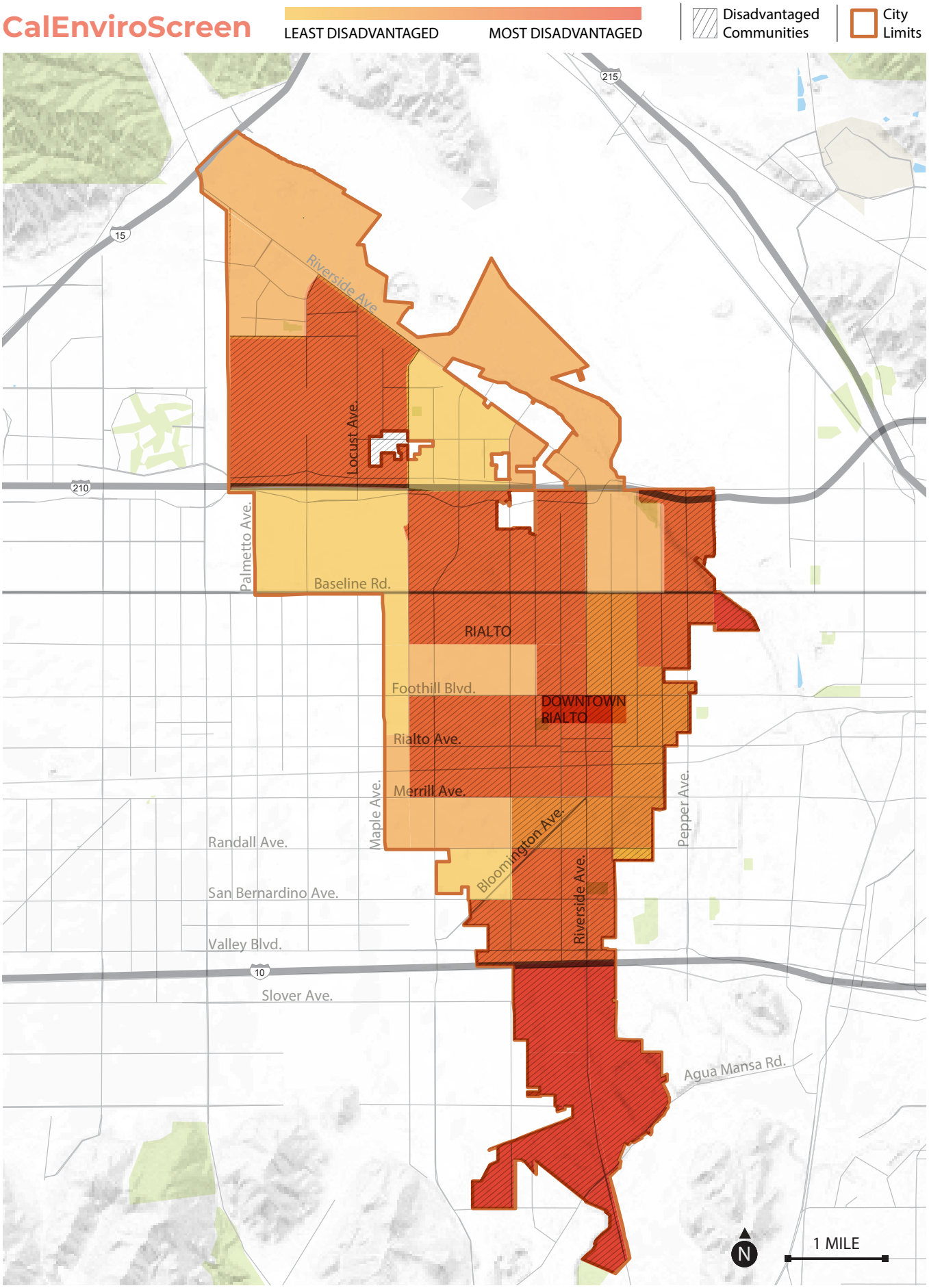
In Rialto, 70% of people live in census tracts that are considered disadvantaged communities (DAC).[3] A census tract is considered disadvantaged based on its pollution burden and sensitive populations. Pollution burden is a measure of environmental hazards, such as water quality and exposure to high traffic roadways, whereas sensitive populations are socio-economic factors that include health, income, and language data. The combined score measures those communities who are most exposed to pollution and are most likely to not have the resources to respond to these threats. If this combined score is higher than 75% of scores in California, that census tract is considered disadvantaged.

As shown in **Figure 1-1**, many communities throughout Rialto are considered disadvantaged; however, as further illustrated in Figures **1-2** and **1-3**, the pollution burden is concentrated in the northern and southern areas of Rialto near industrial land uses, and sensitive populations are concentrated toward the middle of Rialto. To address these differences, policies that focus on reducing pollution should be prioritized in those areas currently experiencing the highest levels of pollution, whereassocial support services should be focused to best serve sensitive populations. The specific pollution exposures and social vulnerabilities are explored for each climate-related hazard in the vulnerability assessment in Chapter 4.

The California State Legislature has set aside grant funding opportunities for areas of California that are considered disadvantaged. The policy recommendations in Chapter 6 highlight these opportunities for Rialto by identifying where specific policies and projects are most applicable, eligible, and competitive for such funding.

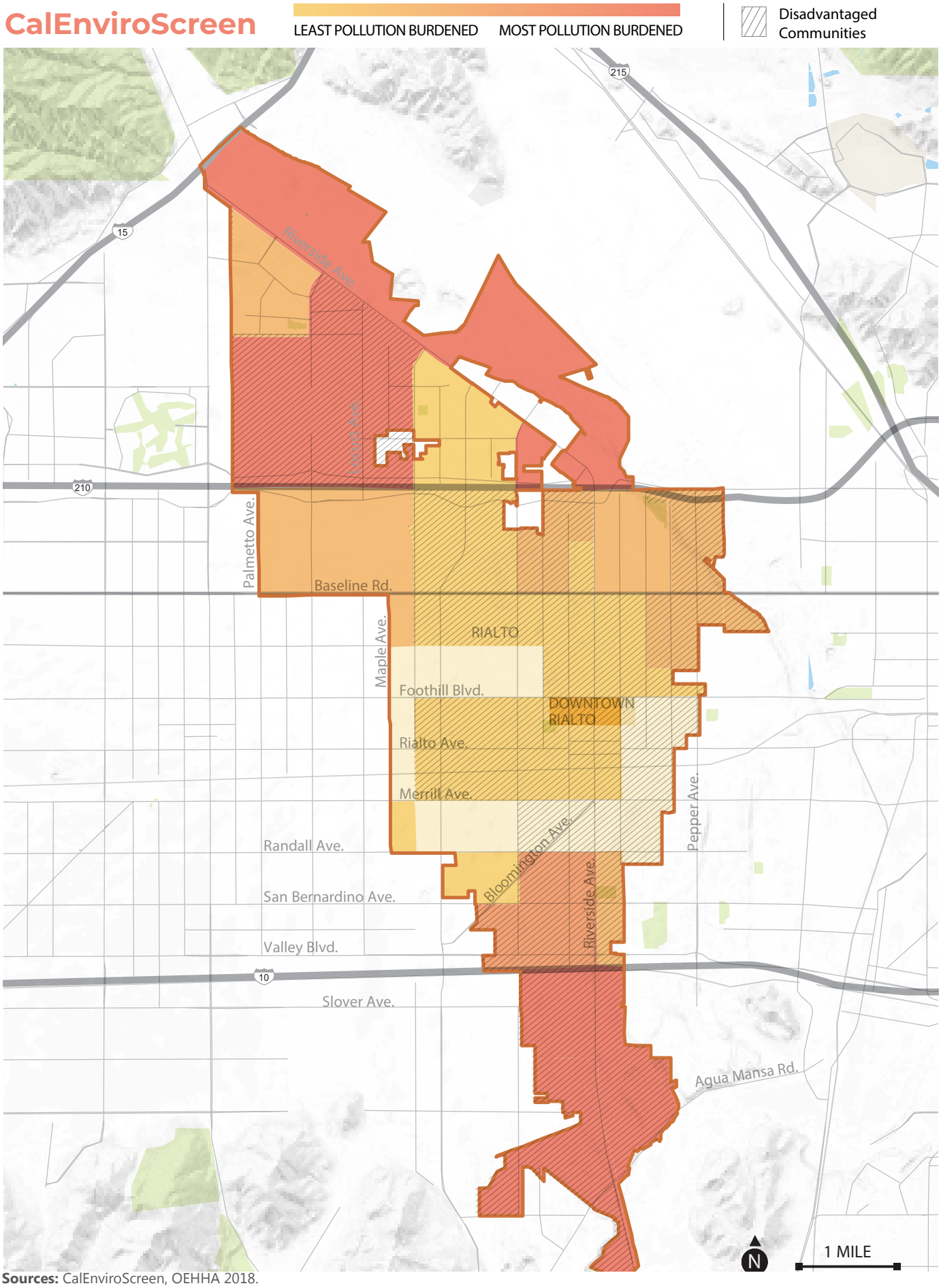
[3] By state definition, a DAC is a community whose median household income is less than 80% than that of the statewide median household income.

Figure 1-1 Disadvantaged Communities in Rialto



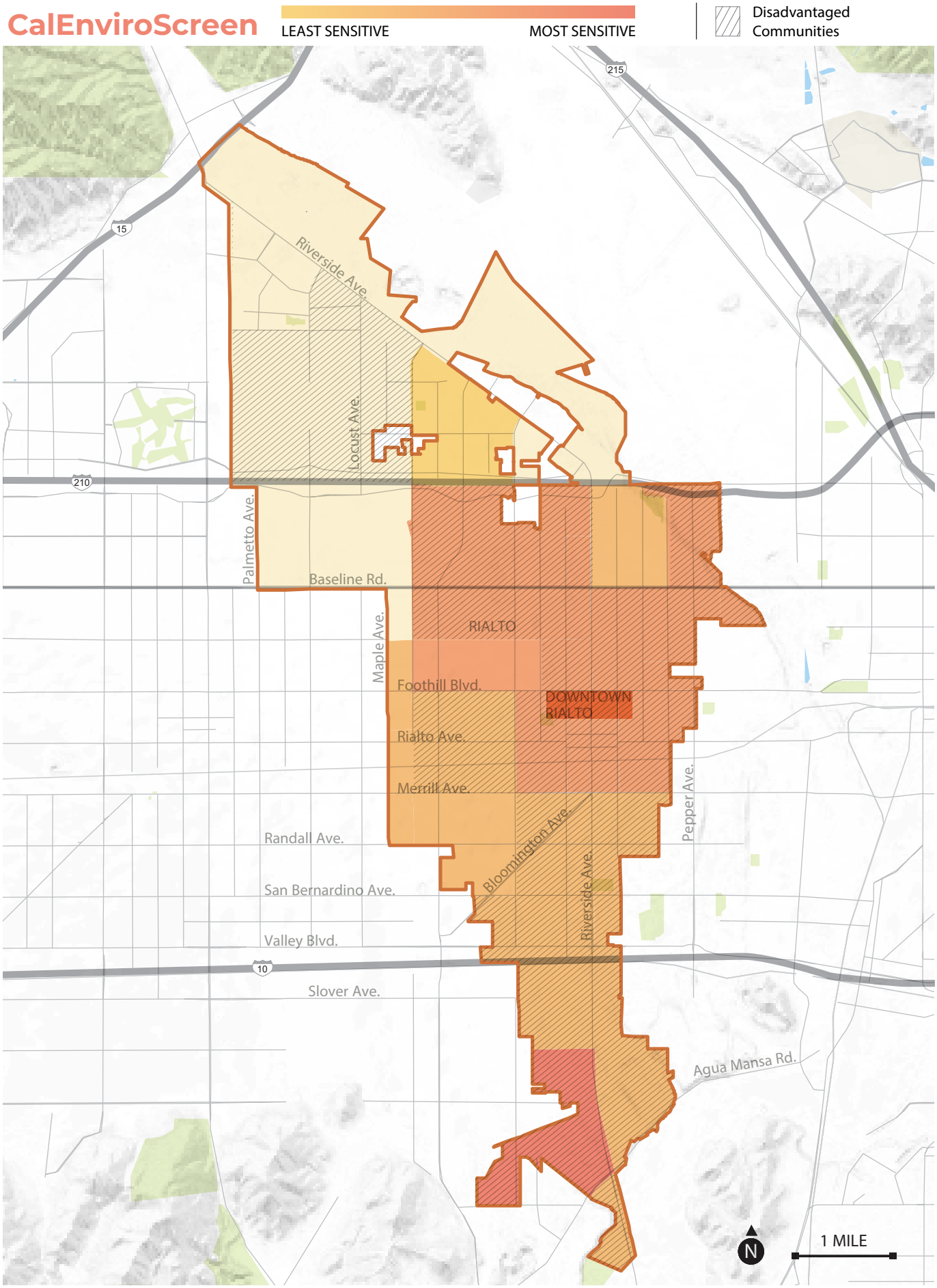
Sources: CalEnviroScreen, OEHHA 2018.

Figure 1-2 Pollution Burden in Rialto



Sources: CalEnviroScreen, OEHHA 2018.

Figure 1-3 Sensitive Populations in Rialto



Sources: CalEnviroScreen, OEHHA 2018.

2

COMMUNITY ENGAGEMENT STRATEGY AND RESULTS

2 Community Engagement Strategy and Results

This chapter details community engagement strategies and input received from members of the community. It discusses both general priorities and specific recommendations from data collected during virtual meetings, polls and surveys, and community events.

An effective community engagement strategy is a crucial tool for fully understanding the specific desires and needs of a community, and what community members envision for their future. It is also an effective tool for creating policy recommendations that reflect the needs of the people who live, work, and play in the community.

This planning effort was conducted, in part, during the COVID 19 pandemic, and many segments of the engagement strategy were designed to be virtual in order to adhere to physical distancing guidelines and protect the health and safety of the community. The community engagement strategy was designed to meaningfully engage a broad set of community members and experts throughout development of the Rialto Climate Adaptation Plan (Plan). The strategy was successfully implemented using a wide range of in-person events, virtual methods, and online tools. The outreach results from the Active Transportation Plan and Safe Routes to School plan, both of which were completed before the COVID 19 pandemic, were also reviewed and included where applicable. The engagement strategy also included regular meetings with a Technical Advisory Committee of local and regional stakeholders and agency staff to ensure the recommendations could be implemented.

Key components of the engagement strategy included model-building workshops, a public survey, a virtual walking tour, and working closely with local and regional stakeholders. Events were advertised on the City of Rialto's (City) website and emailed to interested stakeholders. The virtual model workshops were conducted by bilingual staff and advertised in both English and Spanish.

Model Building

Four model-building workshops were held as part of the planning effort. The first model-building workshop was held in person at the 2019 Bike Rodeo. Participants marked on a large map of Rialto where they experienced air pollution, heat, and flooding. Community members also interacted with a model of downtown Rialto and used sticky notes to indicate their ideas to improve downtown.

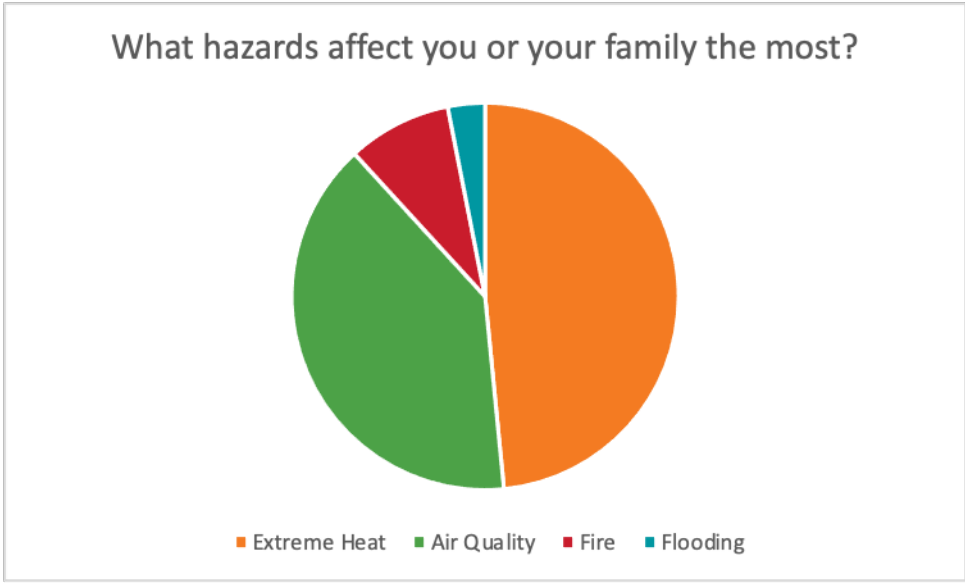
The second and third model building workshops occurred in May 2021 over a virtual meeting to adhere to physical distancing guidance. Participants were asked to describe their favorite memories, and then apply those values for what they would like Rialto to look like in the future. Using household objects, participants built their ideal Rialto. Workshop participants desired more trees and edible plants in the community to reduce heat and air pollution, as well as provide food. Community members also desired shared public spaces, such as parks, to socialize and relax.

The final model building activity occurred in June 2021 at the Rialto Farmers Market. Approximately 50 people participated. Participants had broad ideas for the future of Rialto including improving trees and shade, including roof top gardens. Many residents also wanted increased water, including splash pads in parks and rainwater collection gardens. Education and community was also a consistent theme, residents saw the Plan as an opportunity to add learning opportunities to parks and events to increase civic identity and community cohesion.

Online Survey

An online public survey was available on the City's website. Participants were asked what hazards affect their family, how those hazards have affected them, and what potential solutions they would like to see implemented. The survey was completed by 162 people from September 2019 through June 2021. The online survey was available in English and Spanish and advertised on the City's website. Survey respondents were most concerned about extreme heat and air pollution (see **Figure 1**).

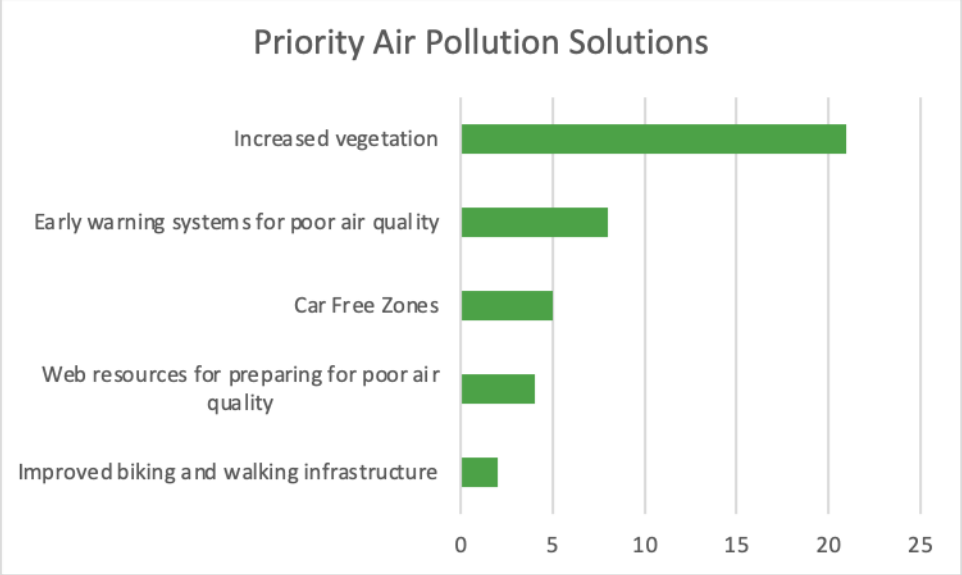
Figure 1. Online Survey Results



Air Pollution

Survey respondents felt that air pollution affected their short- and long-term health, and made it difficult to be outside. Survey respondents strongly favored increased vegetation to address air pollution.

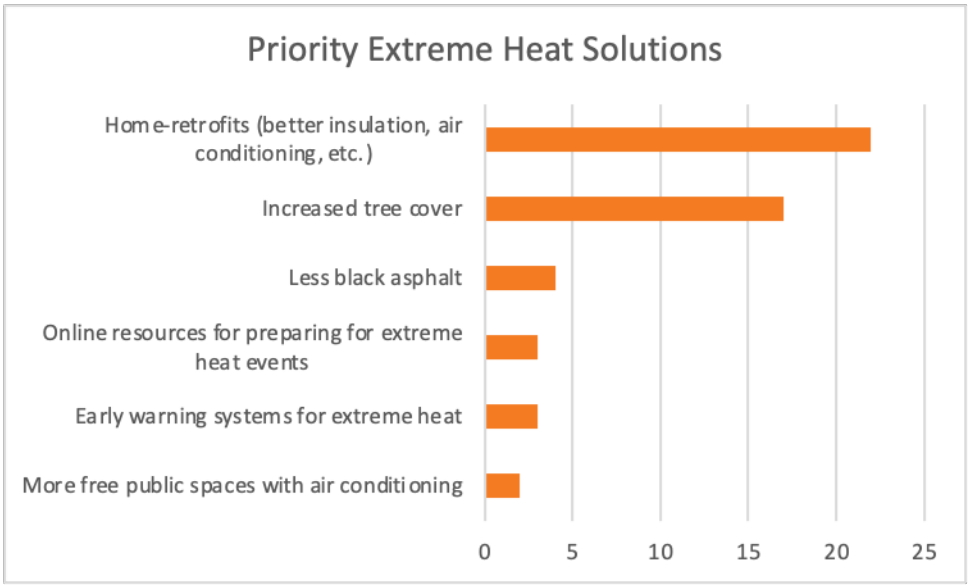
Figure 2. Air Pollution Solutions



Extreme Heat

Survey respondents indicated that they had access to air conditioning but could not afford to run it as often as they would like. Respondents also felt that extreme heat made it difficult to walk and bike around the community. Survey respondents strongly favored home retrofits to reduce indoor temperatures, closely followed by increased vegetation.

Figure 3. Extreme Heat Solutions



Wildfire

Few residents felt threatened by wildfire, but those who did were most concerned about losing their home, and secondarily concerned they could not evacuate. Respondents clearly favored drought-resistant vegetation.

Flood

Few residents felt threatened by flood and had mixed personal experiences with flood. Respondents strongly favored limiting development in flood-prone areas and relocating existing development in flood-prone areas.

Technical Advisory Committee

The Plan team met with the Technical Advisory Committee three times to share updates and generate feedback. These meetings occurred in September 2019, January 2020, and May 2021. Technical Advisory Committee participants wanted to ensure that the Plan was consistent and leveraged previous work and plans done by the City, including recent efforts to make it safer to walk and bike around Rialto. Technical Advisory Committee members were interested in expanding existing state and federal programs to the City, such as Leadership in Energy and Environmental Design (LEED) practices and low-income weatherization. Staff members also highlighted the importance of maintenance costs and procedures, and recommended some hardscape solutions, such as shade structures. Participants also identified potential implementation strategies, including using City staff to enforce standards and distribute supplies.

Summary

Improved ability to combat all hazards in Rialto was consistently mentioned at all community outreach events. Extreme heat and air pollution were the hazards people were most concerned about, but residents also suggested nature-based solutions for floods and wildfires. Using grant funds to fund programs, such as low-income weatherization, also had broad support.

3

DATA COLLECTION

3 Data Collection

Data on climate change, socio-economics, and transportation was used in the Rialto Climate Adaptation Plan (Plan) to understand where climate change is affecting Rialto and where people most vulnerable to climate change-related hazards live. This data helped identify and locate project recommendations so that the Plan can meet the specific needs of the community. Additionally, in Chapter 6, Goals, Policies, and Actions, each policy includes data to track to see if the policy is effective and still relevant. This chapter explains each piece of data used in the Plan, where it was collected from, how it was used, and when it will need to be updated.

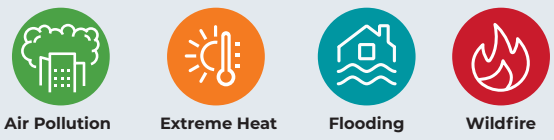
Data collected for the Plan is categorized by data source and includes the following information:

Data Name: This is the short name for the data and the name of the file as it is stored by the City of Rialto (City).

Data Description: This describes what is included in the data and what it is meant to show and measure.

Spatial Nature of Data: This describes the shape of the data. Data in general can be classified as points, polygons, census tracts, and parcel-level data. Points are single dots on a map representing X,Y coordinates. Polygons are unique shapes drawn by agencies to illustrate the physical location and shape of a physical or environmental structure. Census tracts are also polygons, but related to the same tracts as designated by the U.S. Census Bureau. Similar to census tracts, parcels are shapes that refer to legal lots within Rialto.

Applicable Hazards: This refers to which hazard the data is related to.



Implementation Measures: This identifies which policy recommendations in Chapter 6 utilize this data for tracking the success and relevance of that action.

Cal-Adapt

Cal-Adapt is a collection of climate change forecasts for California. Data from Cal-Adapt is used to understand how climate change may affect communities at the local level (Table 3-1). The data included in Cal-Adapt was last updated in 2018 as a result of the Fourth Climate Change Assessment. It is unknown when the Fifth Climate Change Assessment Report will be published; however, as a result of Executive Order S-03-05, California Climate Change Assessments have been produced every 3–5 years since 2006.[1]

Table 3-1 Cal-Adapt Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Extreme Precipitation	Daily climate projections for California generated to support climate change impact studies for California's Fourth Climate Change Assessment. The data, derived from 32 coarse-resolution (~100 km) global climate models from the CMIP5 archive, was bias corrected and downscaled using the Localized Constructed Analogues (LOCA) statistical method. The data covers 1950–2005 for the historical period and 2006-2100 (some models stop in 2099) for two future climate projections.	Cal-Adapt Grid1		3.2b, 4.1, 4.2a, 4.2b, and 7.2
Wildfire Simulations for California's Fourth Climate Change Assessment	Wildfire scenario projections produced by Dr. LeRoy Westerling at the University of California, Merced, using a statistical model based on historical data of climate, vegetation, population density, and wildfire history coupled with regionally downscaled LOCA climate projections.	Cal-Adapt Grid		4.2a, 4.2b, and 7.1

Source: CEC 2019.
Note: [1] The Cal-Adapt grid is at a resolution of 1/16 (about 6 km, or 3.7 miles).

[1] State of California 2021

California Department of Public Health

The California Department of Public Health has developed climate change and health indicators, narratives, and data through the California Building Resilience Against Climate Effects Project. This project is meant to provide local health departments and partners tools to better understand the people and places in their jurisdictions that are more susceptible to adverse health impacts associated with climate change. This data was created using a combination of 2010 census data and the National Land Cover Database **(Table 3-2)**. This data is continually updated by the California Department of Public Health as new data becomes available. An update on the data identified here will likely come as the 2020 census data is released.

Table 3-2 California Department of Public Health Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Park Access	Percentage of the population living within walkable distance (0.5 miles) of a park, beach, or open space greater than 1 acre in percentiles relative to the State of California.	Census Tract		Not applicable
Tree Canopy	Percentage of land with tree canopy (weighted by number of people per acre) in percentiles relative to the State of California.	Census Tract		1.1, 1.2, 2.2b

Source: PHASC and VCUCSH 2019.
Note: Park access is not used for tracking implementation for projects, as new parks are not included in this plan; however, park access was an important variable in assessing localized sensitivity to air pollution, as outlined in Chapter 4.

California Department of Forestry and Fire Protection

Data from the California Department of Forestry and Fire Protection on Fire Hazard Severity Zones was collected for use in this plan. This data identifies areas within Rialto that are at a higher likelihood of fire exposure based on potential fuels over a 30–50 year time horizon (Table 3-3). This spatial data is used for specific regulations pertaining to California Building Code and property sale, as well as local planning. The most recent data used in this plan is from 2011.

Table 3-3 CAL FIRE Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
CAL FIRE Fire Hazard Severity Zone Map	Very High Fire Hazard Severity Zones are based on data and models of potential fuels over a 30-50 year time horizon and their associated expected fire behavior, and expected burn probabilities. They visualize the likelihood and nature of vegetation fire exposure (including firebrands) to buildings.	Polygon		4.2 and 7.1a

Source: CAL FIRE 2020.
Note: CAL FIRE = California Department of Forestry and Fire Protection.

California Heat Assessment Tool

California Heat Assessment Tool (CHAT) was funded by the California Natural Resources Agency as part of the State's Fourth Climate Change Assessment. This tool was developed to better understand changes in the public health implications of extreme heat waves. CHAT was created in 2018 and will likely be updated or replaced when California's Fifth Climate Change Assessment is published. The data from CHAT was used in the plan to forecast the likely public health impacts of extreme heat in Rialto in the future **(Table 3-4)**.

Table 3-4 CHAT Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Projections for Heat Health Events	A Heat Health Event (HHE) is any event that results in negative public health impacts, regardless of the absolute temperature. Each local area has a unique HHE specific to its climate and the historical sensitivity of people in that area to past heat events. Historical HHEs were collected and future HHEs were projected.	Census Tract		1.1, 1.2, 3.1., 3.2, 4.1c, and 5.2c

Source: CHAT 2018.

California Communities Environmental Health Screening Tool

California Communities Environmental Health Screening Tool (CalEnviroScreen) is a screening tool created by the Office of Environmental Health Hazard Assessment. CalEnviroScreen identifies communities by census tract that are disproportionately exposed to and vulnerable to pollution and climate change. CalEnviroScreen collects data from a variety of sources and compares all the census tracts in California **(Table 3-5)**.[2] CalEnviroScreen was last updated in 2018 and will likely be updated as 2020 census data becomes available.

Table 3-5 CalEnviroScreen Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Asthma Rates	The number of asthma emergency department visits per 10,000 people for the years 2011–2013.	Census Tract		2.2

Source: OEHHA 2018.

[2] Many pieces of data included in this plan are included in CalEnviroScreen as well as their original sources. CalEnviroScreen rankings which compare census tracts were used in this plan to highlight indicators that were significant on a Statewide scale and may be eligible for grant funding.

City of Rialto

Data was provided by various City departments. The data varies in when it was created and when it will likely be updated. Land use and zoning data, for example, will have a higher data turnover as land use and zoning designations change. Conversely, data tied to specific plans, like safe routes to school, will be updated in conjunction with plan updates. Much of the City's data is related to local infrastructure and public facilities (Table 3-6).

Table 3-6 City of Rialto Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Tree Inventory	Data including the age, location, and species of City-owned trees	Point Data		1.2, 2.3b

Source: City of Rialto 2019.

The City may want to start collecting additional data to track the implementation of the plan. The data identified in Table 3-7 could be collected. The related implementation measures are detailed in Chapter 6 and detailed funding sources that could help pay for data collection are included in Table 6-1.

Table 3-7 New Data Potentially Collected by the City

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Code RED	This could include the number of participants and their preferred language	Non-GIS		5.1a
City Fleet	This could include the average fuel economy and age of City-owned vehicles	Non-GIS		2.1a
Electric Vehicle Chargers	This would include any new public electric vehicle chargers and how often they are used	Point Data		2.1b
Number of Children Walking to School	This can be survey data by school as a safe routes to school project is implemented or remote bike and pedestrian counts.	Point Data		1.1

Note: GIS = geographic information system.

Department of Motor Vehicles

The California Open Data Portal is the official public source for government data. The California Department of Motor Vehicles contains the Vehicle Fuel Type County by Zip Code dataset (Table 3-8). This dataset breaks down the type, make, year produced, and number of vehicles sorted by zip code.

Table 3-8 Department of Motor Vehicles

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Vehicle Fuel Type County by Zip Code	This includes the number of vehicles by type, make, and year produced.	Zip Code		2.1c

Source: California Open Data Portal 2020.

Federal Emergency Management Agency

The Federal Emergency Management Agency Flood Map Service Center is the official public source for flood hazard information produced in support of the National Flood Insurance Program. Federal Emergency Management Agency Flood Plain Maps are continually updated through a variety of processes, and is updated regularly.[3] This data has informed the flood exposure section of the vulnerability assessment and the recommendations for any flood-related implementation measures (Table 3-9).

Table 3-9 Federal Emergency Management Agency Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Flood Hazard Areas	Zones that are projected to flood under the conditions of a 100-year or 500-year storm event.	Polygon		4.1, 4.2

Source: FEMA 2019.

Omnitrans

Omnitrans is the public transit agency serving the San Bernardino Valley. Omnitrans carries approximately 11 million passengers each year throughout its 480-square-mile service area, covering 15 cities and portions of the unincorporated areas of San Bernardino County. Major destinations within the Omnitrans service area include transportation centers, medical centers, educational facilities, shopping malls, business parks, and community centers. This data has identified all of the bus stops in Rialto sorted by average ridership, shelter type, and sidewalk conditions (Table 3-10).

Table 3-10 Omnitrans Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Omnitrans City of Rialto Bus Stops	This data includes a breakdown of all bus stops in Rialto by average ridership, shelter type, and sidewalk conditions.	Point		3.1

Source: Omnitrans 2020.

[3] FEMA 2019

San Bernardino County Transit Authority

The data on evacuation routes was provided by the San Bernardino County Transit Authority per request in the summer of 2019 (Table 3-11). Each of these was created by the San Bernardino County Transit Authority and is unlikely to drastically change without major infrastructure projects or land purchases. When creating plans using these sets of data in the future, requesting updated versions of this data is recommended. Evacuation routes were used to map as part of the critical infrastructure map.

Table 3-11 San Bernardino County Transit Authority Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
Evacuation Routes	This data includes major corridors and the SBCTA signal synchronization work.[1]	Linear and Point data		4.2c

Source: SBCTA 2019.
Note: SBCTA = San Bernardino County Transit Authority.
[1] This data should not be taken literally as specific evacuation routes because evacuation routes are fluid depending on the location and type of hazard experienced.

Transportation Injury Mapping System

The Transportation Injury Mapping System has been developed over the past 5 or more years by SafeTREC to provide access to California collision data (Table 3-12). This data is updated annually.

Table 3-12 Transportation Injury Mapping System Data

Data Name	Data Description	Spatial Nature of Data	Applicable Hazards	Implementation Measures
SRTS Map Viewer	This data includes types of collisions, collision severity, and summaries by years. This data is presented as point data.	Point data		1.1
ATP Maps & Summary Data	This data includes types of collisions, collision severity, and summaries by year. This data is presented through a heat map or hex grid indicated by collision intensity.	Heat Map		1.2

Source: TIMS 2021.

4

VULNERABILITY ASSESSMENT

4 Vulnerability Assessment

Senate Bill 379 requires local governments to include vulnerability assessments in the Safety Elements of their General Plan. This includes an assessment of the geographic areas that are affected by each climate-related hazard. Senate Bill 1000 requires local governments to address environment justice in their General Plans. Addressing environmental justice is also an important component of this Rialto Climate Adaptation Plan (Plan), and requires, in part, identifying communities that are considered disadvantaged and more vulnerable to changes in the environment due to pre-existing pollution, physical health challenges, socioeconomic status, or historic disinvestment.[1] This vulnerability assessment describes the degree to which Rialto's communities, structures, and people, particularly in the most vulnerable areas, are at risk to climate-related hazards including air pollution, extreme heat, flood, and wildfire.

[1] CEJA and Placeworks 2017.

CLIMATE CHANGE FORECASTS

Climate change refers to long-term changes in climate indicators such as temperature, precipitation, fires, and floods. Exact predictions of the effects of climate change do not exist due to uncertainty in estimating future emissions and developing climate science; however, forecasted trends and data from recent years are available. The **Intergovernmental Panel on Climate Change (IPCC)** has created multiple emission scenarios as a reaction to the uncertainties of climate change.

Representative Concentration Pathway (RCP) 4.5 and 8.5 are the two scenarios generally used today when modeling for climate change.2 RCP 4.5 is a low emissions scenario that assumes global greenhouse gas (GHG) emissions increase until 2050 and then steadily decrease to 2000 levels over 30 years, where emissions stabilize. This scenario assumes that there are both technological improvements and global policy that can curb emissions growth by 2050. RCP 8.5 is a high-emissions scenario that assumes continued global GHG growth until 2100, when GHG emissions stabilize at rates three times higher than emissions levels in the year 2000. By comparing the expected impacts from these two scenarios, cities can assess which hazards are more likely to occur and when. It also helps them to better assess their risk from climate change in an uncertain future. RCP 4.5 generally results in less change and fewer catastrophic hazards than RCP 8.5; however, each scenario forecasts similar impacts between 2020 and 2040. Both scenarios will be analyzed using **Cal-Adapt** and the California Heat Assessment Tool. These are two tools created and maintained by the State of California to predict local climate-related hazards.

[2] NOAA, n.d.

EXPECTED CLIMATE CHANGE IMPACTS

Climate change occurs when solar energy is trapped in the atmosphere by GHGs. Climate change will affect all places differently, but in general it will make existing hazards occur more often and be more extreme. Rialto is forecasted to experience more frequent and longer heat waves, an increase in air pollution, more regional wildfires, and more frequent and intense floods.

How communities experience climate change depends on their natural resources, infrastructure, social makeup, and other factors. This means that climate change–related hazards have the ability to **disproportionately impact** specific vulnerable people, communities, and structures. Vulnerable people can refer to those who struggle with existing health issues or a lack of economic resources required to adapt.

KEY TERMS

IPCC: The United Nations authority on the science of climate change. This panel is made up of global experts on climate science. They create assessments on the state of knowledge surrounding climate change. These assessments are meant to inform policymakers of climate change implications, risks, and adaptation and mitigation options.

RCP: GHG emissions scenarios.

Cal-Adapt: A tool overseen by the California Energy Commission that synthesizes climate change research. It provides communities with a small-scale spatial interpretation of climate change for various hazards (CEC 2019).

Disproportionate Impact: Causing more intense or frequent impacts to certain places, people, or assets.

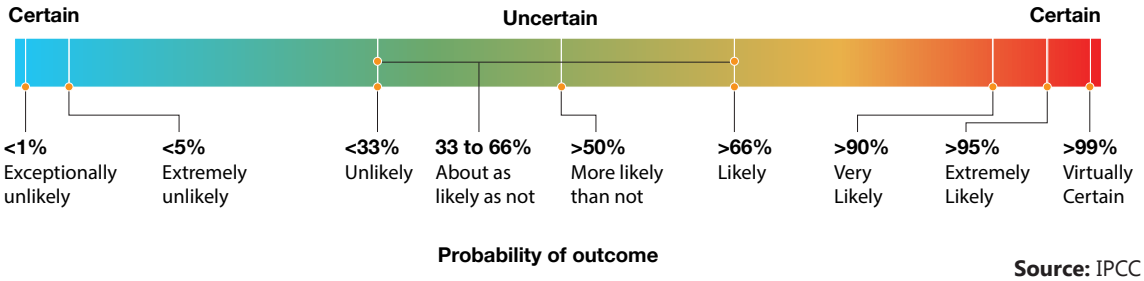
Although the State can designate a community as vulnerable, specific people living in any community may also be vulnerable to hazards. Some people may be vulnerable to only one hazard while others may be vulnerable to many. For this reason, this vulnerability assessment looks at each climate-related hazard individually and analyzes the specific characteristics that affect a person's ability to protect themselves from and respond to that hazard.

Each hazard section in this chapter includes spatial analysis of **exposure and sensitivity** to hazards. Both of these factors play their part in how people experience hazards and what solutions to pursue in relation to each. Various sources were used to determine areas of high risk for exposure and areas with higher sensitivity, including Federal Emergency Management Agency flood data, California Department of Forestry and Fire Protection zones, Cal-Adapt, California Community Environmental Health Screening Tool, **California Healthy Places Index**, and census data.

RISK AND ONSET

Some hazards are more likely to affect Rialto based on how fast and intense the forecasted change is and how certain scientists are about that forecast. Each climate hazard's potential impact in Rialto is described below, along with the certainty level, timeframe, and secondary impacts. When discussing the level of certainty that global scientists have about the likelihood of an impact occurring, terms such as "extremely likely" are used to illustrate the probability of that impact occurring. Each term used in this assessment and its associated probability is shown in **Figure 4-1**.

Figure 4-1 Measuring Climate Change Certainty



Source: IPCC 2013

KEY TERMS

Exposure: The frequency and degree to which a community or person experiences a stressor or hazard. This is often not distributed evenly across an area.

Sensitivity: The degree to which a community or person is impacted by a stressor or hazard. Sensitivity to climate change impacts can be in the form of health, societal, or economic stressors.

California Healthy Places Index: A tool created by the Public Health Alliance of Southern California that uses life expectancy predictors to determine the livability of a location. It uses scores for each census tract community condition; this allows for easy comparisons across California (PHASC and VCUCSH 2019).

SHOCKS AND STRESSORS

In assessing Rialto's vulnerability to climate change, both shocks and stressors need to be evaluated. Shocks are sudden or acute events that threaten or impact Rialto's immediate well-being. These may include floods, heatwaves, or wildfire. Stressors are daily or chronic challenges that weaken natural, built, or human resources over time. Examples include aging infrastructure, inequity, and homelessness. Stressors can amplify the effects of shocks when they occur, which especially impacts **vulnerable populations.** The programs and policies suggested in this Plan are meant to build **resilience** to aid in overcoming these shocks and stressors.

VULNERABILITIES

People

The effects of climate change do not affect people equally. Children, pregnant women, older adults, and those with certain preexisting conditions are considered to be more vulnerable because, among other factors, they are more likely to fall ill from climate-related public health events due to their physical conditions. People with fewer economic resources, limited mobility, lack of access to transportation, lower English language proficiency and education, and uncertain citizenship can also be considered vulnerable. This is because these groups have fewer resources with which to adapt, evacuate, or access information.

Disadvantaged Communities

Disadvantaged communities refer to areas that are disproportionately burdened by, and vulnerable to, multiple sources of pollution compared to other areas in California. According to the California Environmental Protection Agency, communities may be identified as disadvantaged using multiple factors such as poverty and unemployment rates, air quality, and proximity to contaminated waste sites.

A mapping tool provided by the California Office of Environmental Health Hazard Assessment, **CalEnviroScreen**, was used to display this data by census tract in Rialto. According to CalEnviroScreen, much of Rialto is considered disadvantaged, including 17 out of 29 census tracts within city limits (**see Figure 4-2**). Disadvantaged communities must be included in vulnerability assessments when updating a General Plan or Local Hazard Mitigation Plan. There are also grants specifically available to these communities to help them meet the requirements of Senate Bill 1000 and increase their ability to adapt to climate change.

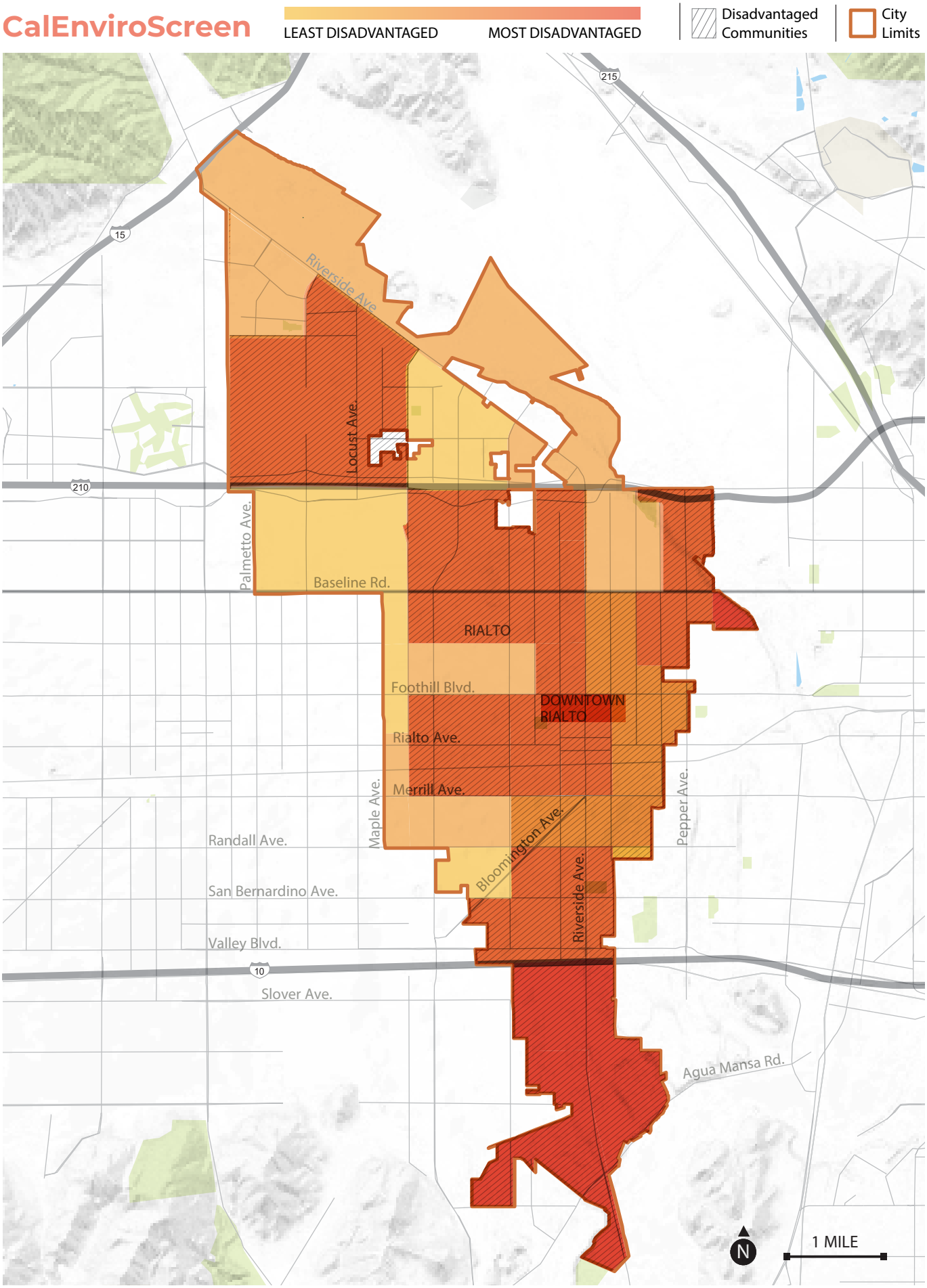
KEY TERMS

Vulnerable populations: Vulnerability in this document is not meant to be a projection of victimhood or judgment, but rather an acknowledgment that the system has been and currently is deficient for certain people, communities, and structures. Vulnerability is a fluid term, and aspects such as health indicators, historic community disinvestment, and exposure to pollution can contribute to it.

Resilience: A community's ability to respond to hazards. In this Plan, resiliency refers specifically to responses to climate change impacts and the ability to thrive in a changing environment.

CalEnviroScreen: CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution and where people are often especially vulnerable to pollution's effects. CalEnviroScreen ranks communities by census tract based on data that is available from State and Federal government sources. Those census tracts which are above the 75th percentile on CalEnviroScreen are considered disadvantaged and are most vulnerable to climate change. This Plan uses CalEnviroScreen 3.0, which was updated in June 2018.

Figure 4-2 Disadvantaged Communities in Rialto



Source: CalEnviroScreen

AIR POLLUTION

Forecast

Climate models do not forecast changes in air quality; however, based on known chemical reactions and extreme heat and wildfire models, scientists can predict how air pollution is expected to increase due to climate change. Climate change is projected to cause more ozone production (fine particulate matter), increase regional wildfire frequency and intensity, and create more allergens, which all result in decreased air quality. Health problems associated with increased air pollution may lead to more school absences, medication use, doctor visits, and hospital admissions.

Ozone

Ground-level ozone is an air pollutant involved in the creation of smog. Ozone is created through a reaction involving sunlight and other pollutants. Due to the increase in extreme heat events, photochemical reactions that form ground-level ozone will increase.[3]Some main contributors to the pollutants that form ground-level ozone in Rialto are cars, truck traffic, and industrial processes. Ground-level ozone can cause health issues including, but not limited to, difficulty breathing, coughing, inflamed airways, asthma attacks, and chronic obstructive pulmonary disease.[4]

The impact of ozone can be reduced by using trees to naturally filter pollutants in the air. Trees also combat the **urban heat island effect** (**Figure 4-3**), reducing the high temperatures necessary to create ozone. Ozone levels can also be reduced by reducing car trips.

Wildfire Smoke

Wildfires in Rialto directly threaten life and property and are described below; wildfires outside of Rialto can cause smoke and ash that affect the air quality locally. The increase in frequency of drought, overall temperatures, and fire frequency and intensity is expected to cause more smoke.[5] Smoke from wildfires can cover long distances and contains various pollutants such as fine particles, carbon monoxide, and nitrogen oxides. Anytime wildfires burn, these pollutants can cause short- and long-term heart and lung diseases.[6]

Smoke in the air is a hazard that can be reduced by vegetation acting as air filters. Health impacts can be prevented by staying inside or wearing specific masks called particulate respirators.

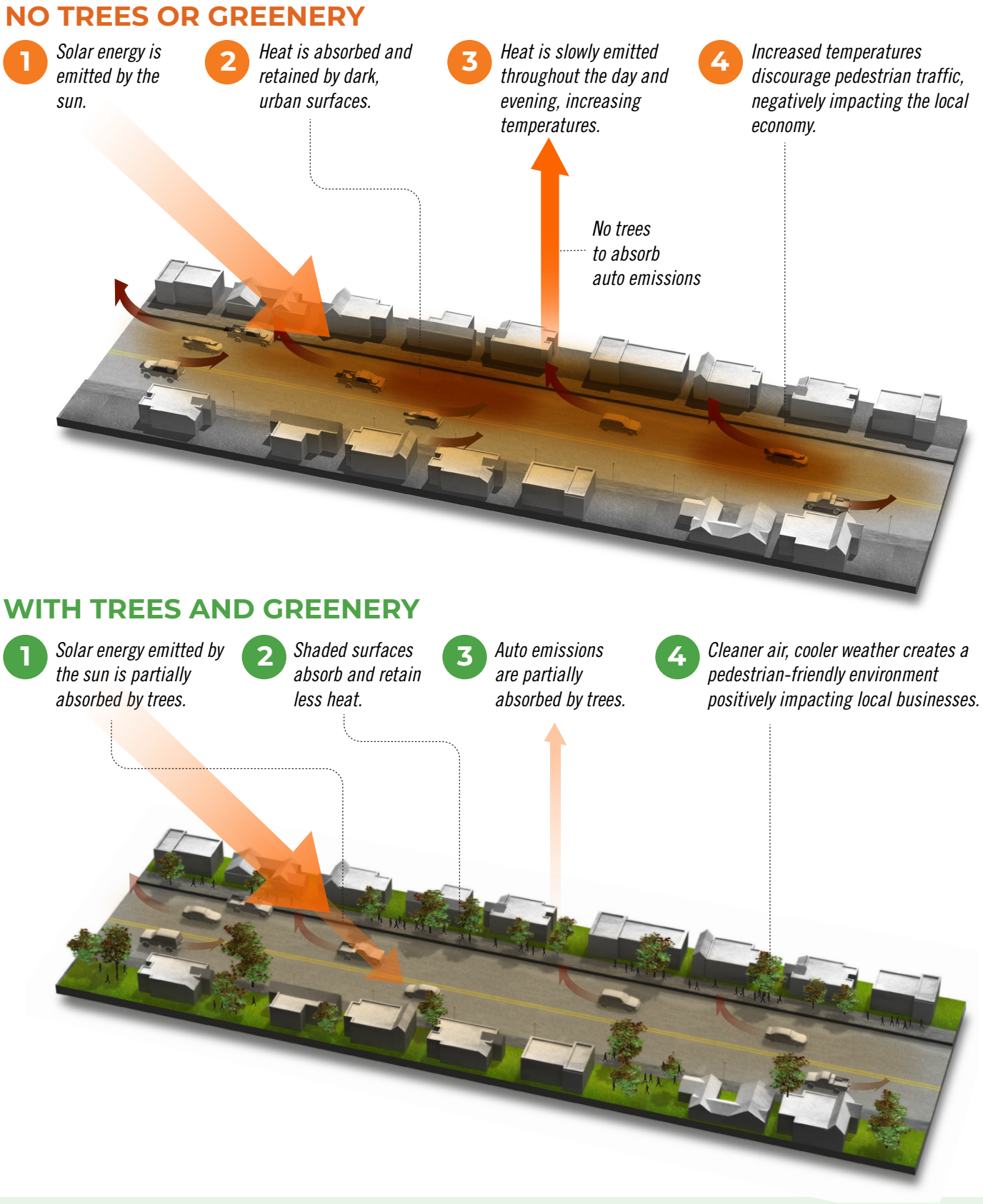
Allergens

With warmer seasonal air temperatures due to climate change, flowering time can lengthen and result in more pollen. This has the potential to increase allergic reactions and asthma attacks.[7]

Pollen is natural and its occurrence may be difficult to alter quickly, but there are some localized solutions. The use of low-allergy plants (plants which are insect-pollinated, have short bloom periods, or emit sticky pollen) can lower pollen levels over time. Planting seed-producing female trees instead of pollen-producing male trees can also lower pollen levels. Additionally, pollen hot-spots can be prevented by ensuring that trees of the same species are spaced apart.

[3] CDC 2016.
[4] EPA and CDC 2016.
[5] Solomon 2018.
[6] EPA 2017.
[7] CDC 2014.

Figure 4-3 Urban Heat Island Effect



KEY TERMS

Heat-island effect: Impermeable, dry surfaces heat up 50°F–90°F hotter than the air on sunny, summer days. At night these surfaces slowly transfer heat to the air, which can make air temperatures on average 1.8°F–5.4°F warmer than other areas (EPA 2017).

Risk and Onset

Local and regional emissions are the main driver of local air quality. If local emissions from cars and trucks remain high, increased temperatures are expected to increase air pollution. Local air pollution emissions are higher in Rialto and the surrounding areas due to the high number of truck trips in the region as a result of industrial and warehouse uses. This is considered an existing environmental justice issue.

Shocks

Communities already exposed to air pollution are considered more vulnerable to climate change impacts linked to poor air quality. Exposure to air pollution was determined using a variety of factors, including the California state percentile of ozone, diesel particulate matter, active commuters, tree canopy, park access, and outdoor workers. **Figure 4-4** illustrates the census tracts in Rialto that are currently experiencing the most exposure to air pollutants.

RISK AND ONSET FACTORS

Certainty: Low. Heavily dependent on changes to local emissions.

Timeframe: Near (0–5 years). Dependent on local emissions, temperature and wind, and external factors such as wildfires.

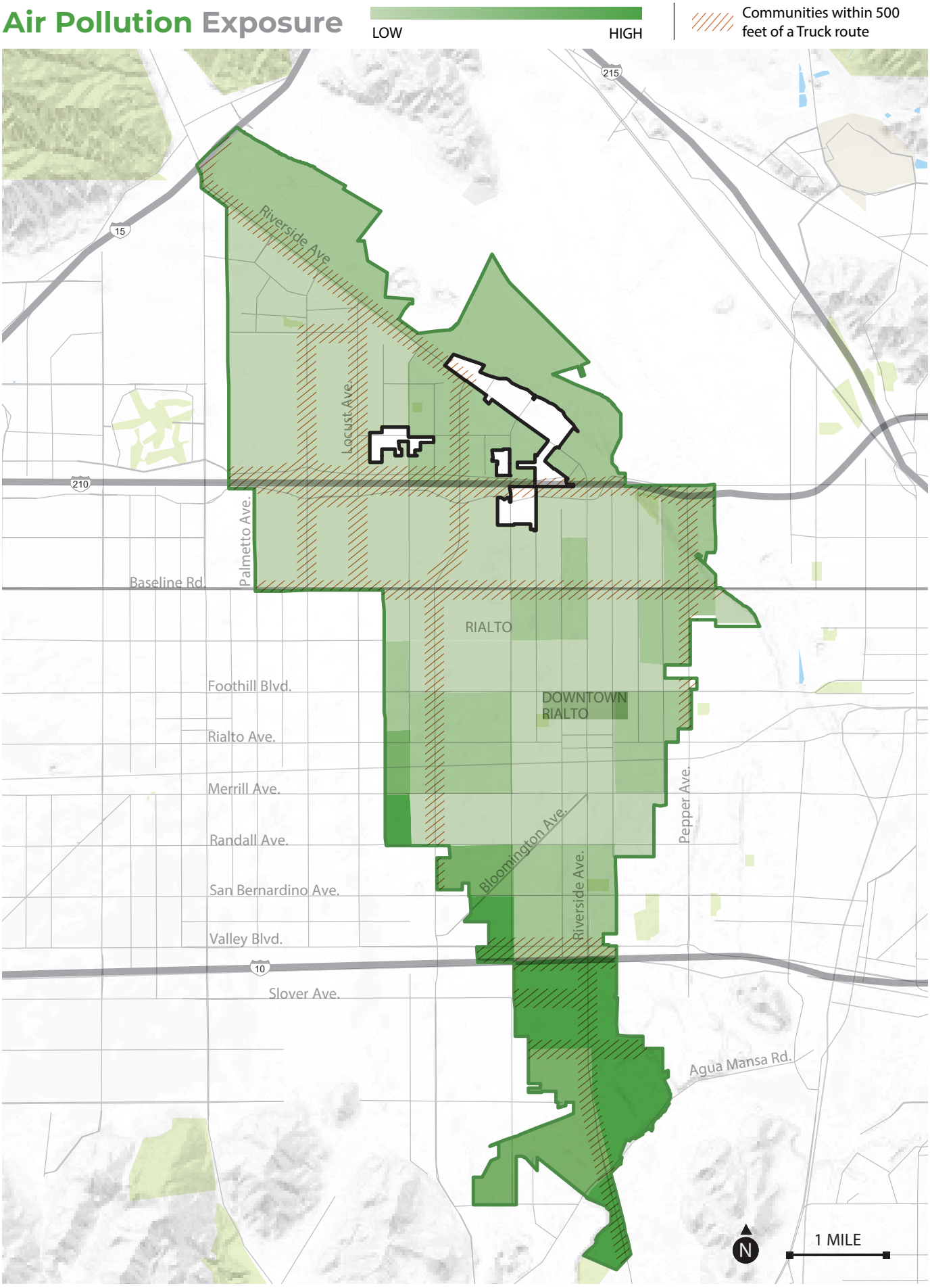
Secondary Impacts: None

Stressors

Communities with existing health conditions worsened by air pollution are considered more vulnerable to the air pollution impacts from climate change. Factors leading to sensitivity to poor air quality include asthma rates, children under five, adults over 65, low birthweight rates, healthcare access rates, and people who work outdoors. **Figure 4-5** illustrates the census tracts in Rialto that are the most sensitive to air pollution.

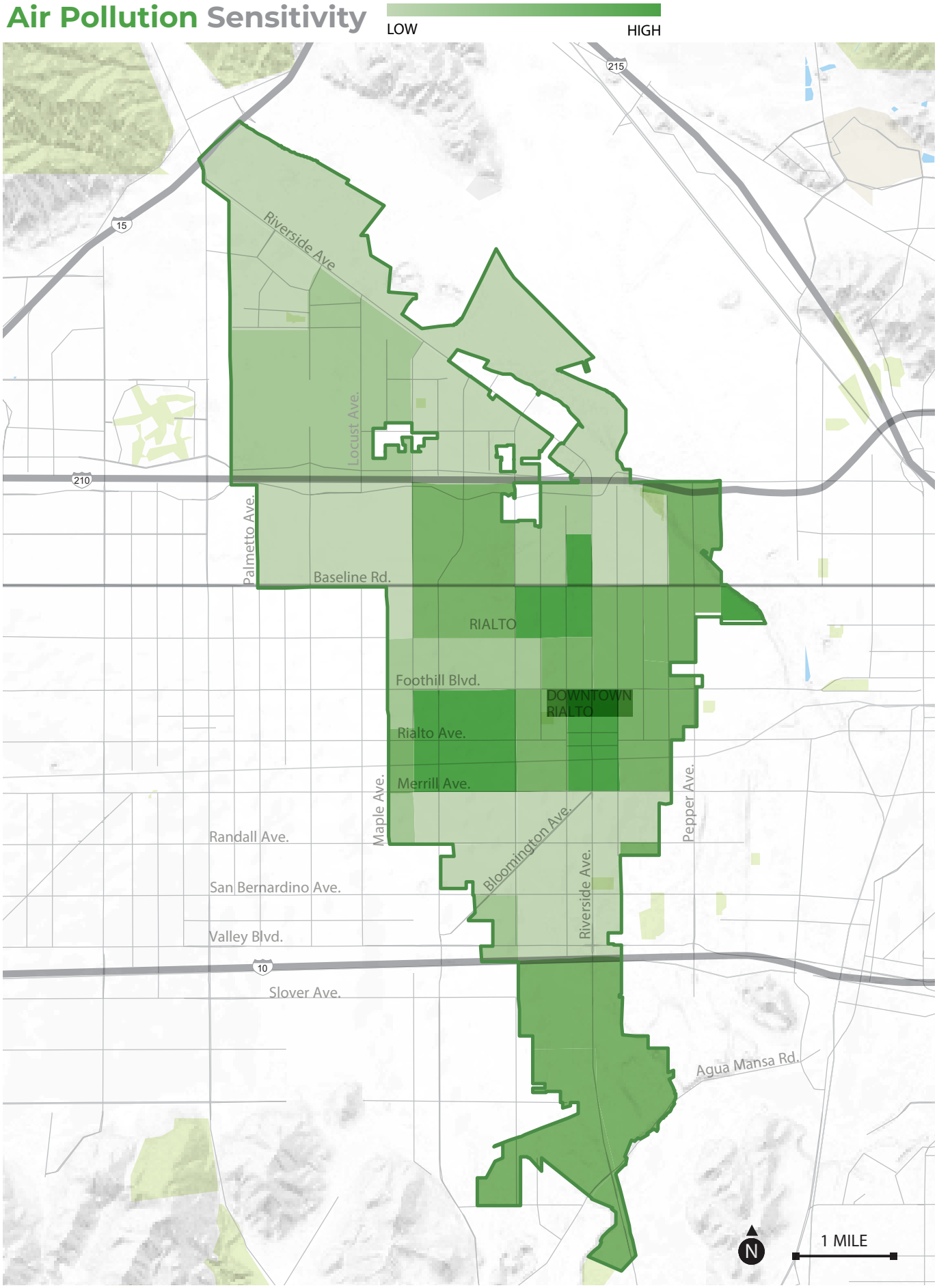
Communities already exposed to air pollution, coupled with existing health conditions worsened by air pollution, are considered more vulnerable to climate change impacts linked to poor air quality.

Figure 4-4 Community Exposure to Increased Air Pollution



Source: OEHHA 2018. PHASC and VCUCSH 2019. US Census Bureau 2019

Figure 4-5 Community Sensitivity to Increased Air Pollution



Source: OEHHA 2018. PHASC and VCUCSH 2019. US Census Bureau 2019

EXTREME HEAT

Forecast

Historically, Rialto has experienced four extreme heat days per year (1961–1990). This is forecasted to drastically increase by mid-century to more than 20 extreme heats days per year.[8] Extreme heat is the deadliest weather-related hazard, as it often results in **heat health events.**[9] Populations that can be sensitive to extreme heat include those under the age of five, above the age of 65, or lacking air conditioning. This means they can encounter heat stroke or other health impacts at lower temperatures than the general public, and therefore experience more extreme heat events per year than others. **Figure 4-6** presents the number of projected extreme heat health events from 2011 to 2060.

Risk and Onset

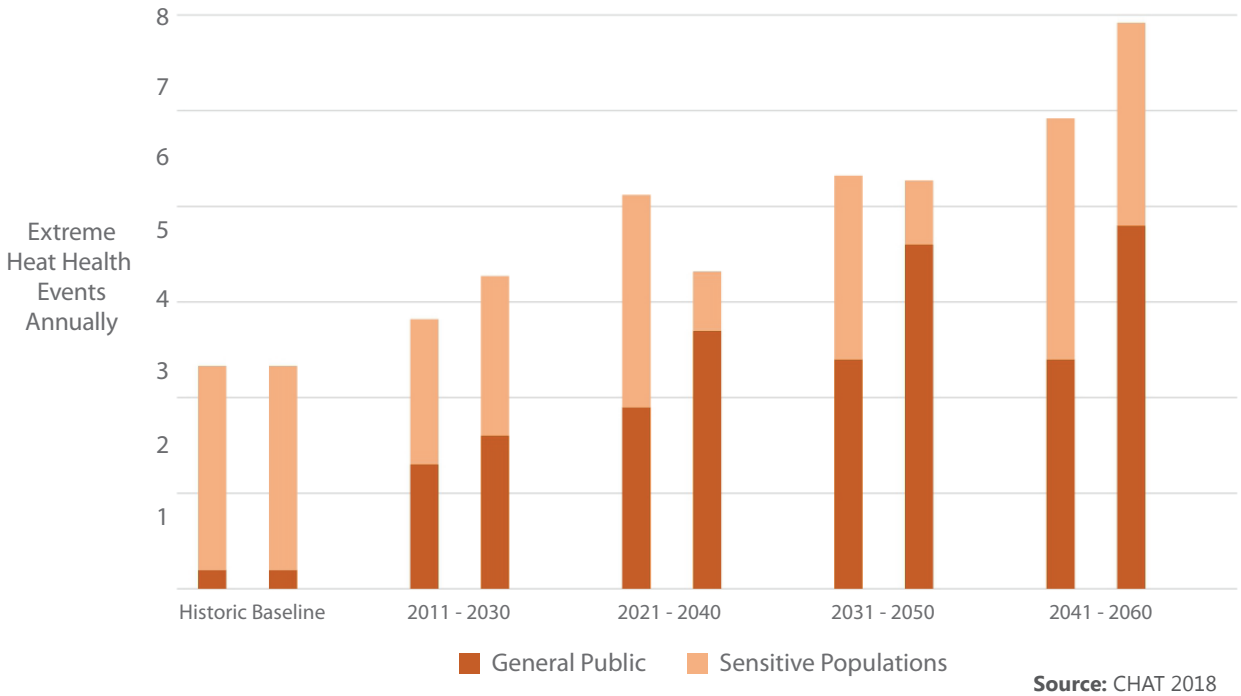
Global climate scientists are virtually certain that there will be more hot days and fewer cold days as global temperature continues to rise. It is very likely that heat waves will occur with a higher frequency and duration.[10]

[8] CEC 2019.

[9] EPA and CDC 2016.

[10] IPCC 2014.

Figure 4-6 Projected Annual Extreme Heat Health Events in Rialto RCP 4.5/ 8.5



Source: CHAT 2018

Notes: Data reflects sections of the City north of I-10, as the majority of land uses south of I-10 are industrial. Historic baseline is derived from hospital visit data is 2005–2013.

KEY TERMS

Heat health events: Heat waves that result in a significant amount of emergency room visits. Heat health events are a measure of emergency room visits and not temperature, and therefore can be different for different groups of people, such as the elderly.

Regionally, inland areas such as Rialto are expected to see a larger increase in extreme heat than coastal areas. Additionally, regional hospital admissions for heat-related illnesses have increased in the past decade.[11]

RISK AND ONSET FACTORS

Certainty: High

Timeframe: Near (0–5 years)

Secondary Impacts: Air Pollution, Wildfires

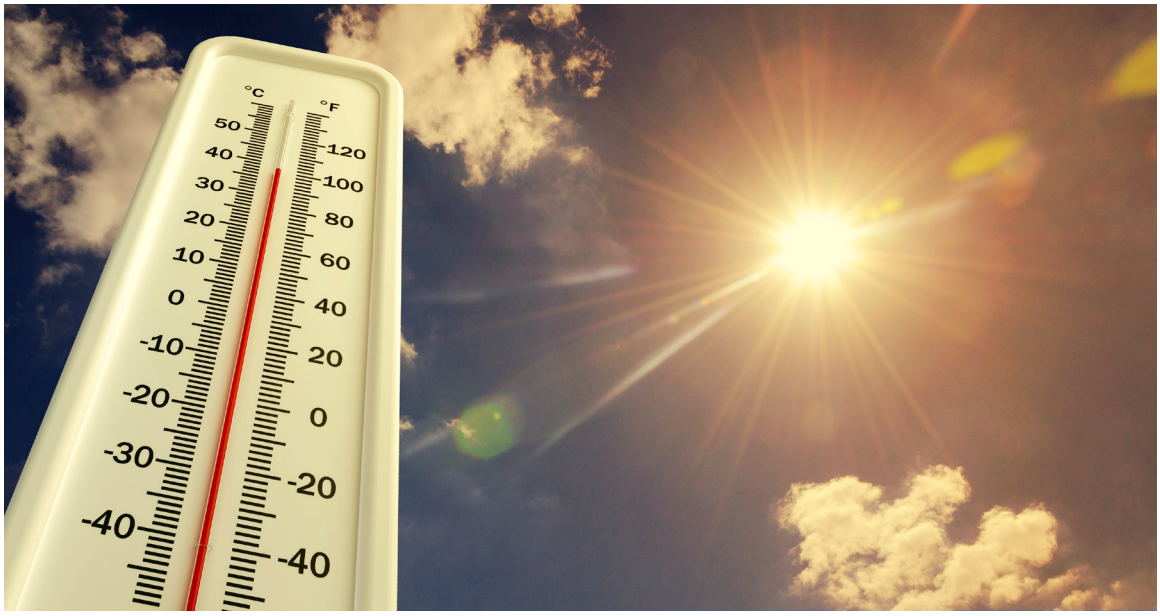
Shocks

There are multiple localized environmental factors that determine the amount of exposure to extreme heat a community will have. Rialto is in an urban setting with asphalt and other non-natural surfaces. This can create a heat-island effect, making it hotter during the day and unable to cool off after the sun goes down. This makes it easier for extreme heat events to occur and allows less time for recovery at night. The amount of tree cover contributes to exposure. Communities with high numbers of people who spend a lot of time outside (such as people who walk or bike to work or outdoor workers) also have higher exposure to extreme heat. **Figure 4-7** displays the exposure to extreme heat for communities within Rialto.

Stressors

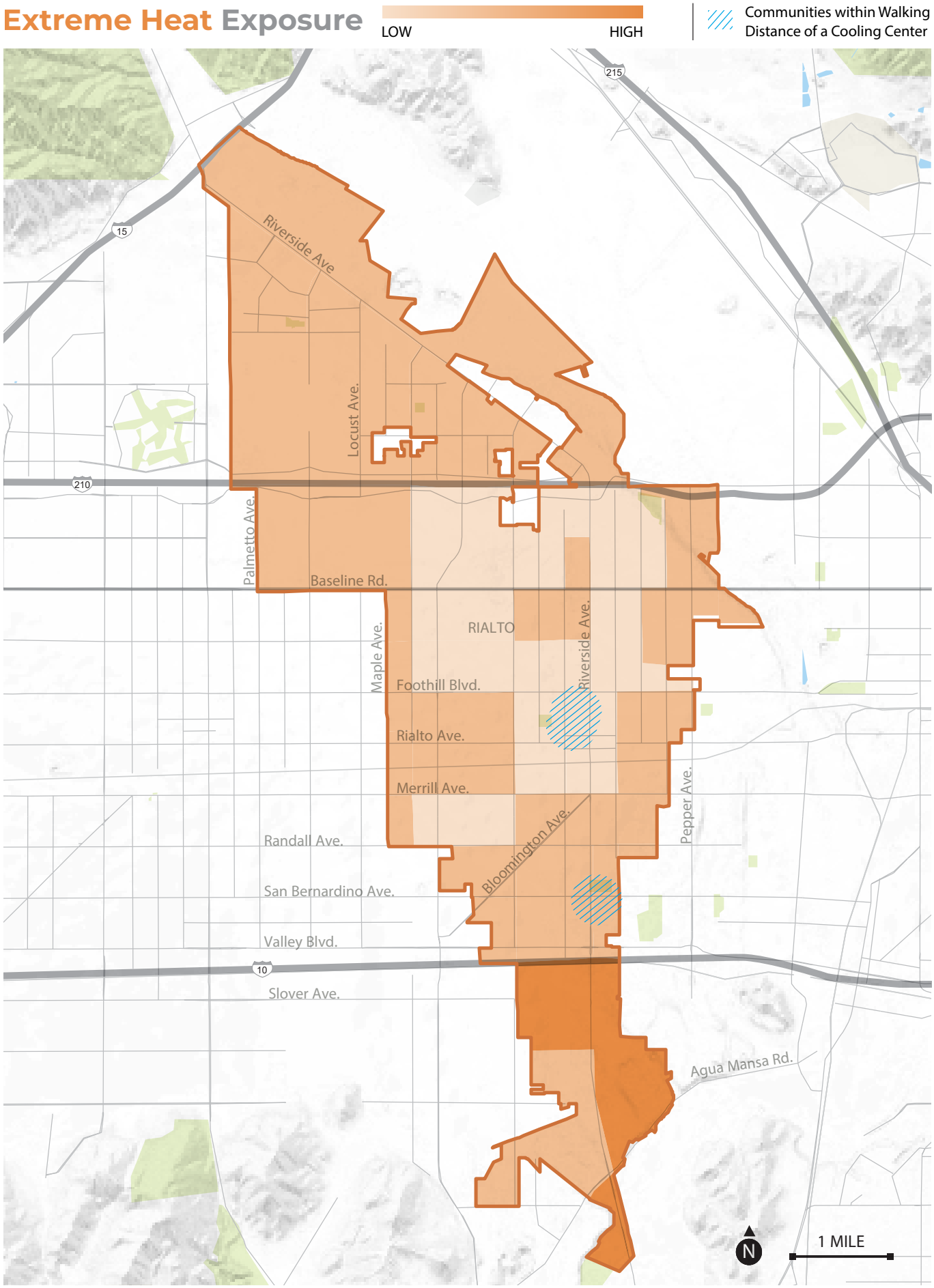
Sensitivity to extreme heat was calculated using physiological factors such as low birthweight and the percentage of young children and older adults in a community. Economic factors related to the availability of air conditioning within homes were also accounted for. This led to an extreme heat sensitivity map of Rialto, which can be seen in **Figure 4-8**.

[11] Hall et al. 2018.



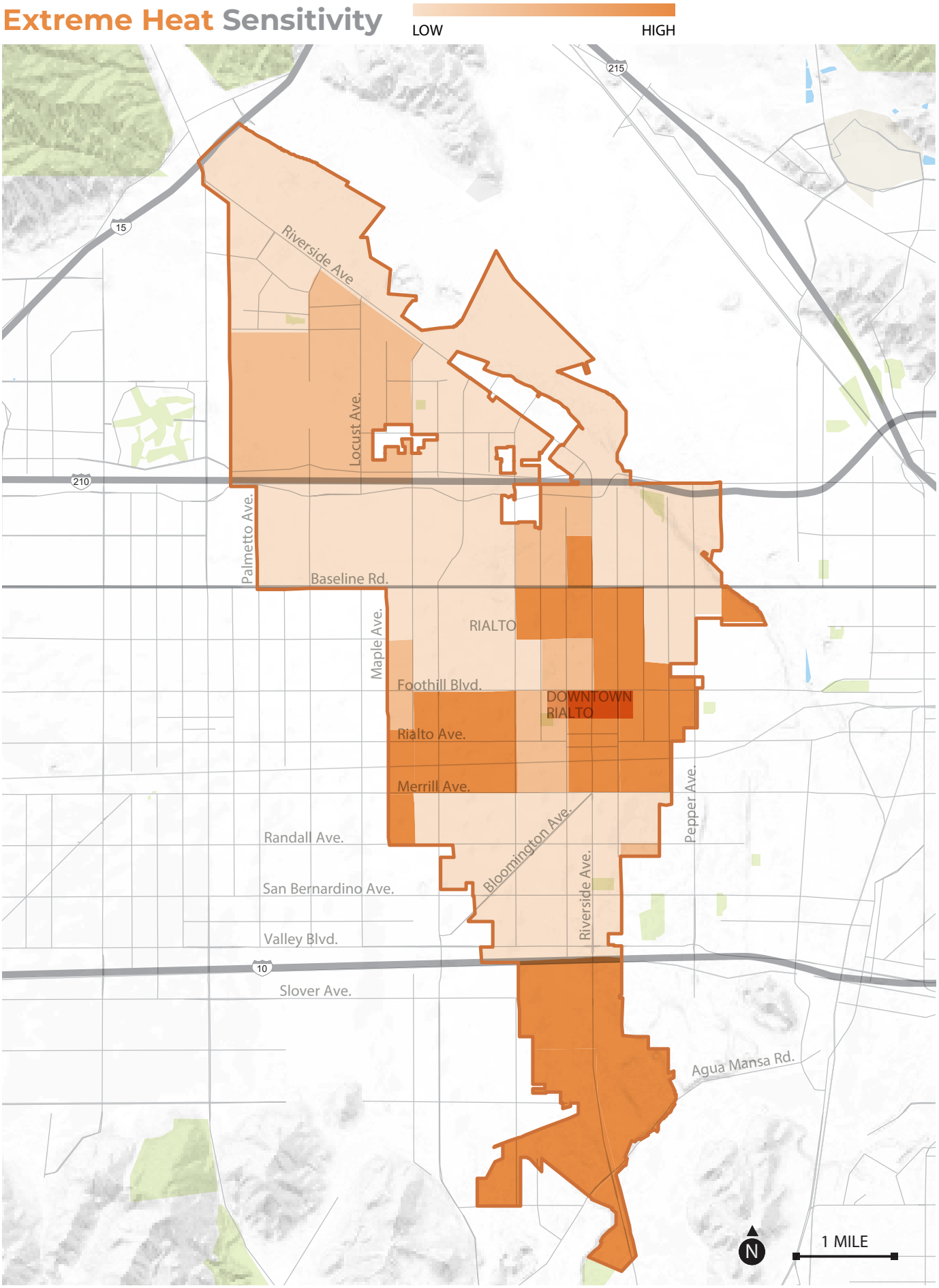
Extreme heat is the deadliest weather-related hazard, often resulting in health incidents such as heat stroke or even death – Rialto's urban setting can exacerbate these events by creating heat islands where daytime temperatures are increased and nighttime cooling is negated.

Figure 4-7 Community Exposure to Extreme Heat



Sources: OEHHA 2018. PHASC and VCUCSH 2019. US Census Bureau 2019.

Figure 4-8 Community Sensitivity to Extreme Heat



Sources: OEHHA 2018. PHASC and VCUCSH 2019. US Census Bureau 2019.

FLOODING

Forecast

Flooding is expected to increase in Rialto over the next century due to an increase in the number of extreme precipitation events. Average precipitation this century is predicted to remain the same as precipitation from the late 20th century. However, the intensity of extreme precipitation events in Rialto is projected to rise through the end of the century.[12]

Risk and Onset

Global climate scientists expect that extreme precipitation events will very likely become more intense and more frequent. At the same time, average annual rainfall will likely decrease.[13] It is anticipated that extreme flood events will increase in Rialto, which means that Rialto will experience larger floods more often.

Exposure

Figure 4-9 shows the areas of minimal flood risk and the **100- and 500-year flood plains**. It should be assumed that these areas will be flooded more frequently.

RISK AND ONSET FACTORS

Certainty: High

Timeframe: Long (50-100 years)

Secondary Impacts: Landslides

The majority of flooding impacts are likely to stay within the current 100- and 500-year flood plains boundaries; however, these areas are likely to experience intense 100- and 500-year floods more often than those intervals. Areas of minimal flood risk could still experience localized flooding if the stormwater infrastructure is inadequate.

Sensitivity

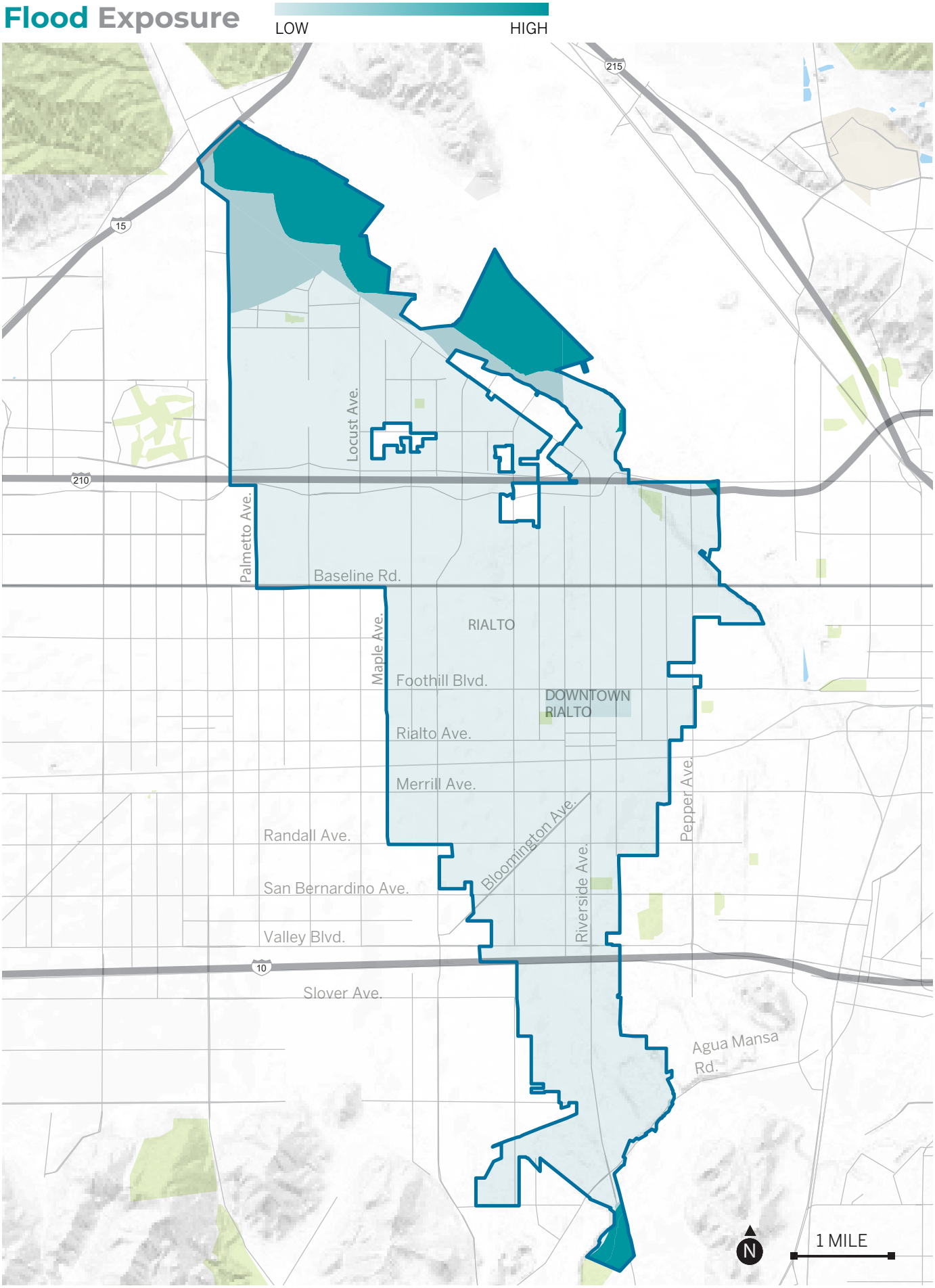
Flooding is the second most deadly weather-related hazard in the United States, which can be attributed mostly to drowning. Other effects can include building damage, mold, and respiratory damage.[14]Factors that make people sensitive to flooding are related to their ability to evacuate or escape the flood. This analysis includes characteristics such as linguistic isolation, automobile access, and age (young children and older adults). **Figure 4-10** displays these sensitivities in Rialto.

[12] CEC 2019.
[13] Hall et al. 2018.
[14] CDC 2014.

KEY TERMS

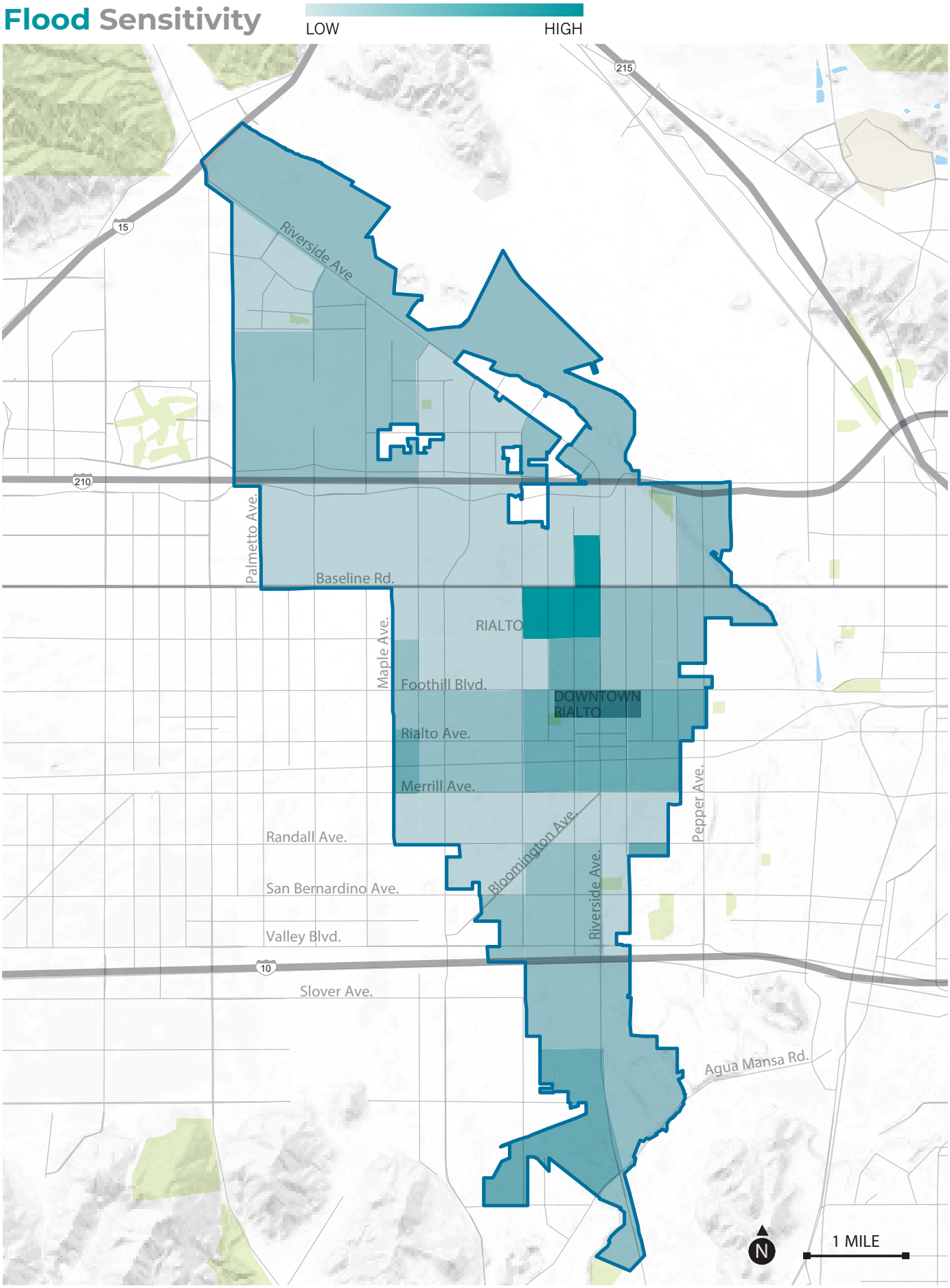
100- and 500-year flood plains: Flood plains are determined by the Federal Emergency Management Agency. A 100-year flood plain is an area with a 1% chance of flooding annually, while 500-year flood plains have a 0.2% chance of flooding annually.

Figure 4-9 Community Exposure to Flooding



Source: FEMA 2016.

Figure 4-10 Community Sensitivity to Flooding



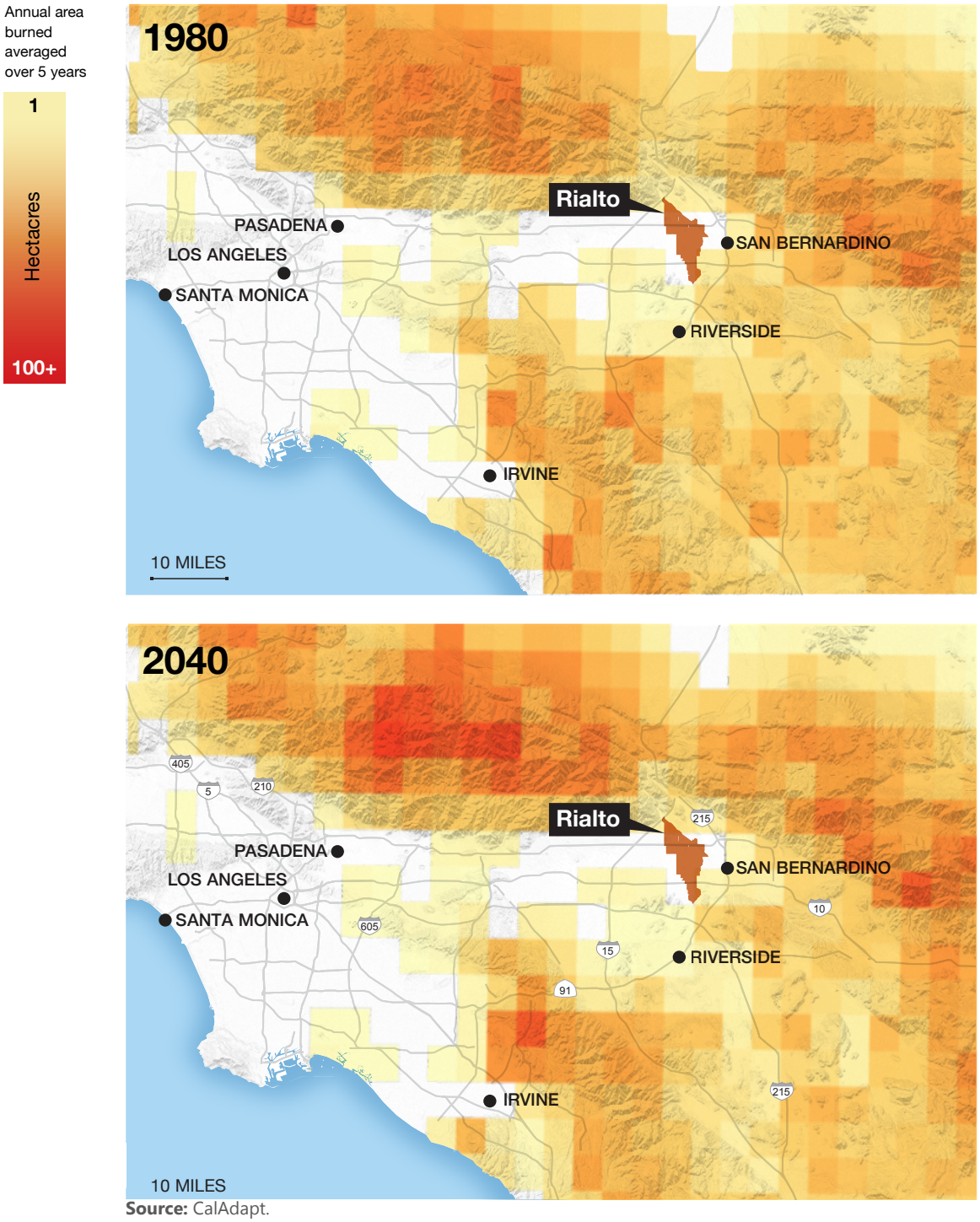
Source: FEMA 2016.

WILDFIRE

Forecast

Fire poses threats to human health, property, and infrastructure separate from its impacts on air quality. Within city limits, wildfires are expected to decrease from their frequency in the late twentieth century; however, wildfires in the surrounding wildlands in San Bernardino County are forecasted to increase. The forecasted annual average area burned in Rialto and San Bernardino County is illustrated in **Figure 4-11.**

Figure 4-11 Annual Average Hectares Burned



Source: CalAdapt.

Risk and Onset

Global climate scientists have a medium confidence that climate change has a minor contribution to increased wildfire frequency, duration, and burnt area in the Western United States.[15] Fluctuations in rainfall are also expected to increase wildfire by encouraging vegetation growth in wet years, which creates more fuel during prolonged droughts, drying out these landscapes and creating potential firestorm conditions. Additionally, wildfire threat outside of Rialto can lead to planned power outages in Rialto.

RISK AND ONSET FACTORS

Certainty: Medium

Timeframe: Long (50-100 years)

Secondary Impacts: Air Pollution, Landslides

Shocks

Within Rialto, certain areas have higher risk for wildfire than others due to various geographic traits such as dead or dying vegetation, topography, prevailing winds, and more. The northern portion of Rialto has the highest current wildfire risk, although this may change in the future. Additionally, tank farms in the south end of Rialto, although outside of a high fire severity zone, are surrounded by brush and are considered to be a fire risk by the Rialto Fire Department.

Santa Ana Winds are also a contributor to wildfires in Southern California. The strong, extremely dry winds can add to wildfire conditions and carry embers. No significant trends in intensity, duration, or frequency were found in the past 60 years. However, it is still unclear if and how climate change will impact Santa Ana Wind events moving forward.[16]

Figure 4-12 displays the **Wildfire Severity Zones** and tank farms across Rialto.

Stressors

When a wildfire occurs there are certain characteristics that make a person more at risk of being hurt or dying due to an inability to evacuate. Factors contributing to the ability to evacuate include car access, linguistic isolation, and age. **Figure 4-13** displays these sensitivities in Rialto.

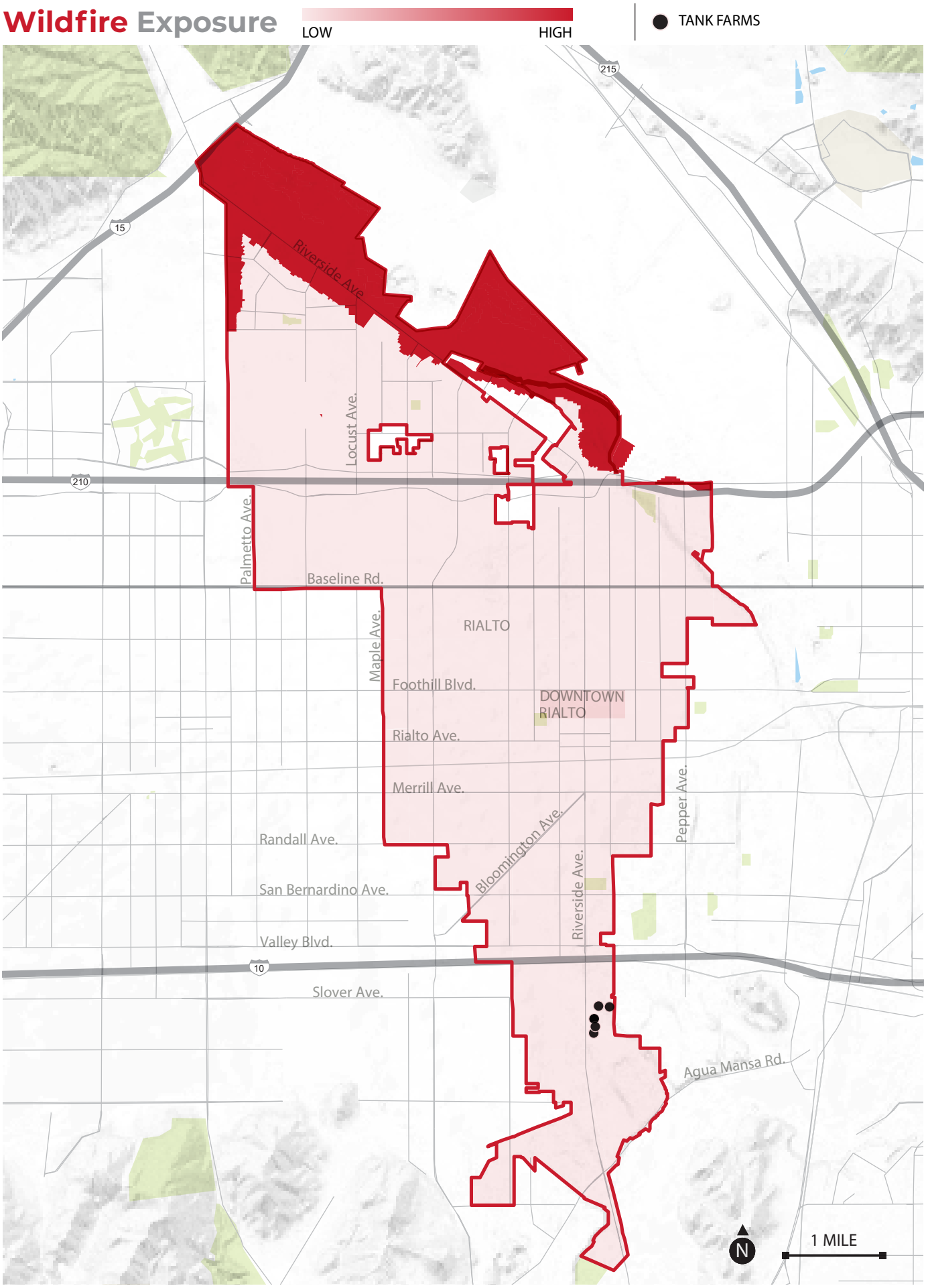
[15] IPCC 2014.
[16] Hall 2018.

KEY TERMS

Santa Ana Winds: These are prevailing winds which can occur from October to April. Cool, dry air flows downhill from the higher altitudes of the Sierra Nevada toward Southern California and the Pacific Ocean.

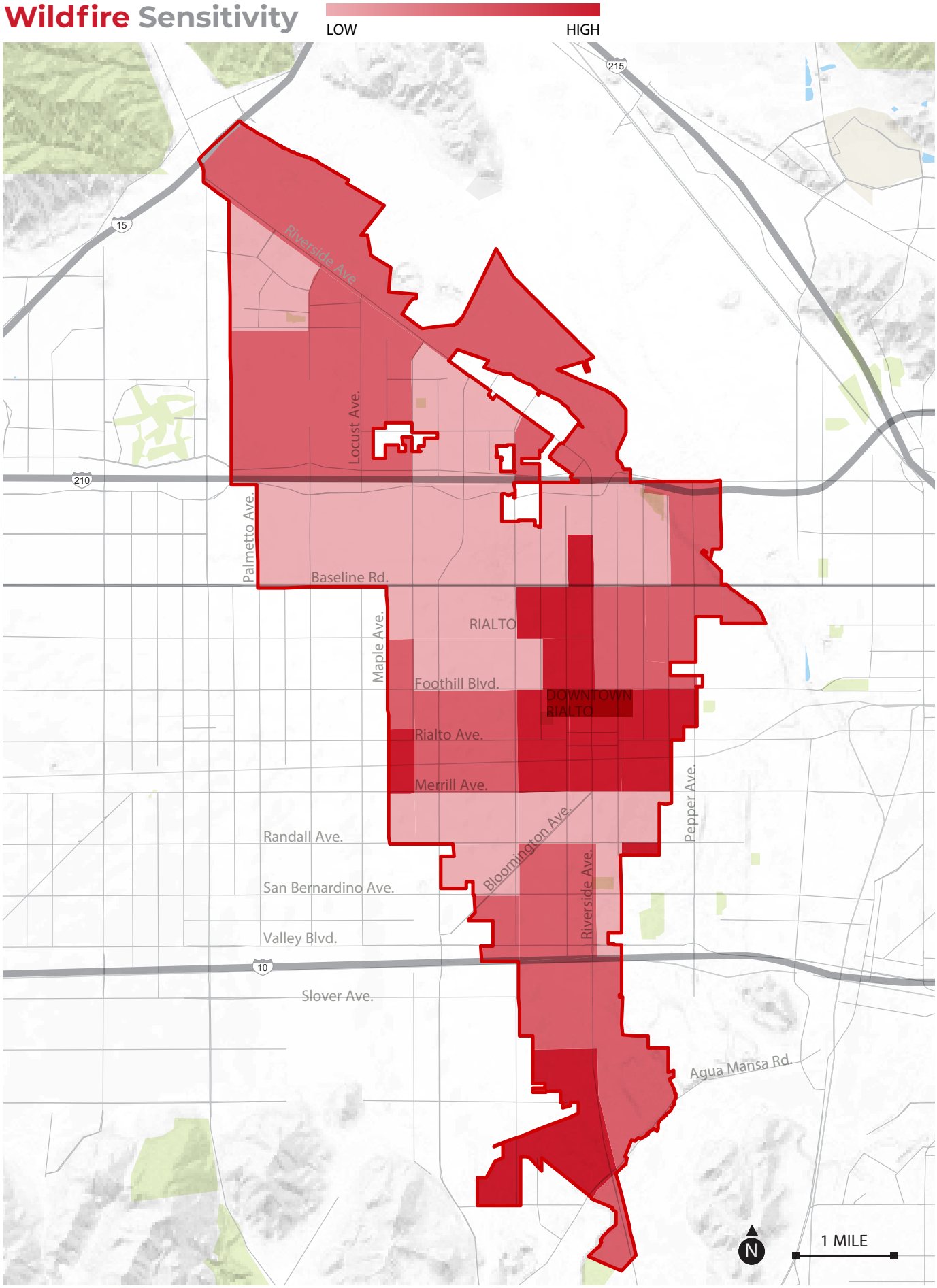
Wildfire Severity Zones: Wildfire Severity Zones display the likelihood that an area will burn over a 30- to 50-year period. These zones are a reflection of the California Department of Forestry and Fire Protection evaluation of the physical conditions in Rialto, without considering modifications such as fuel reduction efforts. Being in a hazard zone does not always mean being at high risk, due to possible mitigation efforts, and not being in a hazard zone does not guarantee safety.

Figure 4-12 Community Exposure to Wildfire



Source: CAL FIRE FRAP 2007.

Figure 4-13 Community Sensitivity to Wildfire



Source: CAL FIRE FRAP 2007.

INFRASTRUCTURE

Infrastructure is another aspect of this vulnerability assessment. Certain structures and facilities are considered more essential in emergency situations. Infrastructure assessed here includes emergency facilities, public facilities, blackouts, evacuation routes, and residential zones, shown in **Figure 4-14**.

Emergency Response Facilities

Emergency response facilities are those activated during an emergency and used to respond to the hazard. In Rialto, there are four fire stations, three of which are near or north of State Highway 210, which aligns with where Rialto's highest fire hazard severity zones are located. The most southern of the four stations is located in central Rialto, on Rialto Avenue. The City is constructing Fire Station 205 on Willow Avenue to better service the residents in south Rialto. There is a centrally located police station in Rialto located on Rialto Avenue.

Critical Public Facilities

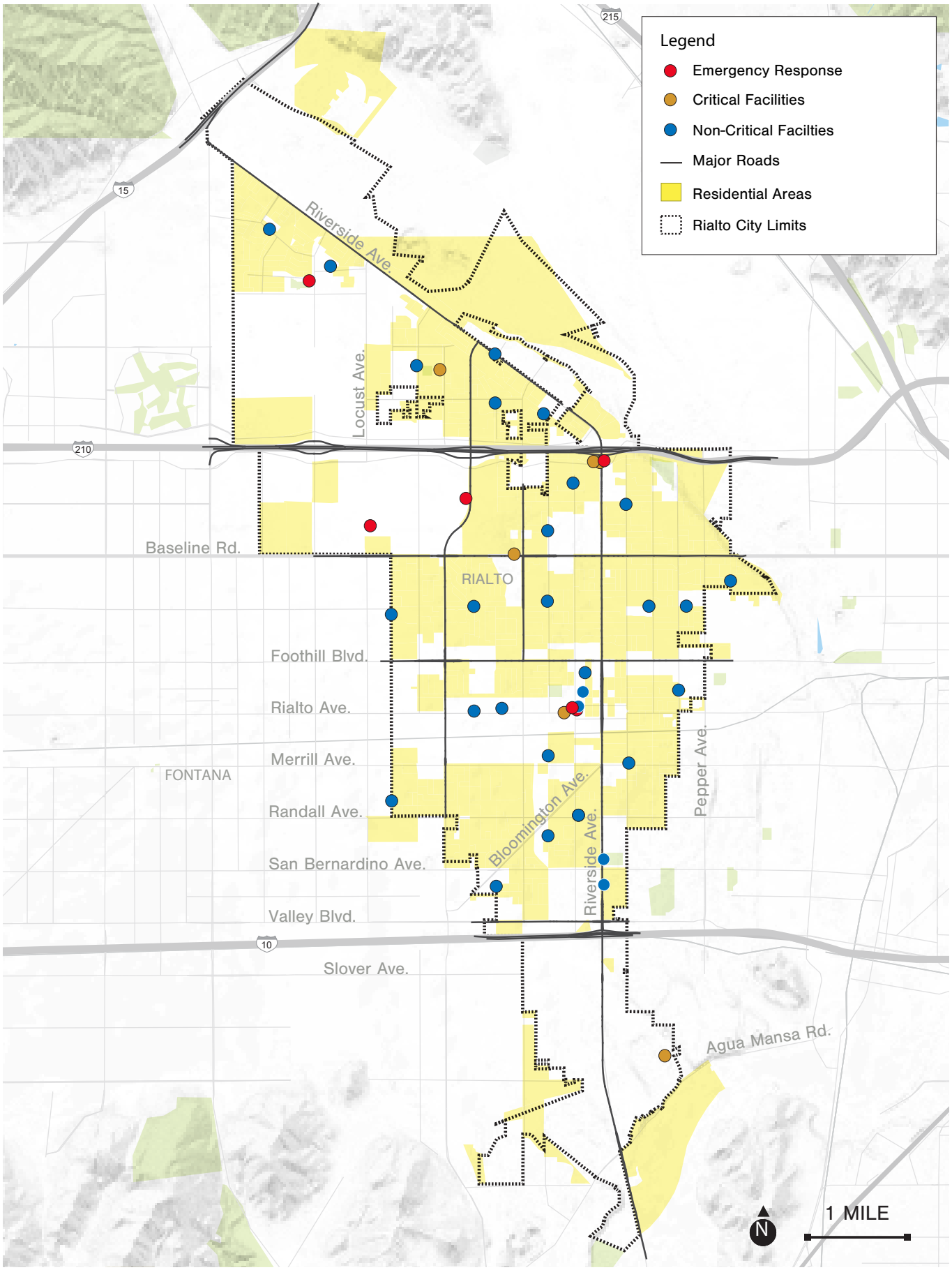
Critical facilities are places essential to the function of the City or public buildings that can be used to gather people and equipment during hazard response and recovery. City hall and various City offices, the wastewater treatment plant, public works yard, and water reservoirs are also considered critical to the function of the City and are located across Rialto. No hospitals are located within City limits, but four hospitals are located close to Rialto.

Non-Critical Public Facilities

Non-critical facilities are those that can be used in hazard recovery to gather resources, distribute information, or serve as shelters. These are generally flexible facilities that can be activated and would likely not all be used at once during a hazard event. Non-critical facilities can also serve as cooling facilities that provide air conditioning during extreme heat events. Some non-critical public facilities include: 23 schools, a library, a community center, a senior center, and a fitness center. In the event of a disaster requiring shelter, the Rialto Unified School District would coordinate with City staff regarding availability of shelters.

Figure 4-14 Community Infrastructure

Infrastructure



Energy Infrastructure and Blackouts

In the event of high wind events, the local power provider, Southern California Edison, will shut off power to reduce the risk of downed lines causing fires. Similarly, extreme heat events and the power demand from air conditioning can cause brown and black outs. Seniors and people who depend on power for medical devices or medicine can be especially vulnerable to these power outages.

Evacuation Routes

In the event of an extreme fire, flood, or other circumstances, evacuation may be necessary. In order to preserve the lives of Rialto residents, it is important to ensure that the routes used for evacuation are unobstructed and in good condition.

However, evacuation routes are not defined by the City prior to emergencies due to their dynamic nature based on the location of disasters. Instead, the San Bernardino County Transit Authority has supplied highways and major roads which could be designated as evacuation routes in the event of an emergency.

Residential Zones

Another important aspect of City infrastructure includes areas primarily devoted to residential use. Homes require attention to be as resilient as possible to the hazards mentioned in this Plan. Residential zones cover much of Rialto, with 35,037 dwelling units present, according to the 2010 Rialto General Plan.

5

CAPABILITY ASSESSMENT

5 Capability Assessment

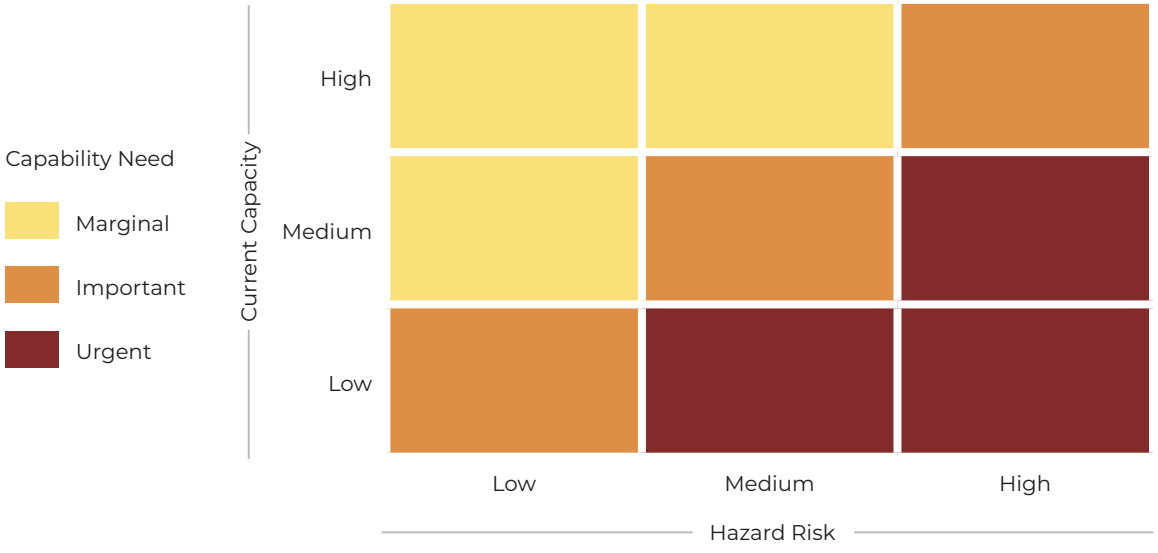
This chapter outlines the current capacity of the City of Rialto City) to **adapt** to climate change. Understanding the City's current capacity provides a foundation upon which to build and strengthen the City's climate adaptation initiatives and integrate them into the City's existing plans, programs, and projects to minimize cost and streamline implementation, thus reducing the City's vulnerability to the impacts of climate change and building a **resilient** Rialto. This capability assessment builds on Chapter 4, Vulnerability Assessment, and analyses the City's capacity, though existing plans and programs, to adapt to the four climate-related hazards (air pollution, extreme heat, flood, and wildfire). This analysis is combined with the hazard forecast from the Vulnerability Assessment to determine the City's local capability need. The local capability need ranks the urgency of each hazard as either urgent, important, or marginal based on the intersection of the hazard risk and the current capacity to reduce the risk (see **Figure 5-1**). Finally, this assessment explores the City's capability as it relates to the vulnerable populations identified in the Vulnerability Assessment by analyzing how well the current plans and programs relate to the specific needs of those populations.

KEY TERMS

Adaptation: a community's ability to reduce the risk to human life, property, and natural resources to the effects of climate change

Resilience: a community's ability to recover from hazard events.

Figure 5-1 Capability Need



Current Capacity

The current community capacity was evaluated by reviewing the City's current plans, programs, and projects and reaching out to the community and stakeholders. Current planning documents were assessed for their existing model policies. A model policy is one that is clearly linked to a hazard, easily interpreted, and measurable in achieving one of the four phases of building community adaptation and resilience **(mitigation, preparedness, response, and recovery)** (see **Figure 5-2**). Current programs and projects were selected for their applicability to climate adaptation and were assessed by how they integrate best practices and address the needs of the vulnerable populations they serve.

KEY TERMS

Hazard events occur in four connected phases: A resilient community experiences these phases in a cycle, building on each event to make a stronger and more equitable community by using recovery as an opportunity to mitigate, prepare, and respond to the next hazard event (see **Figure 5-2**).

Mitigation includes actions taken before a disaster to minimize the impact of a hazard event. This could include planting trees to reduce the impact of extreme heat events.

Preparedness includes the development and increase of the capacity of a community to respond to hazards. This could include public outreach in preparing for disasters.

Response includes all actions taken as an immediate response to a hazard event. This can include actions taken as a response to an anticipated disaster such as a warning system.

Recovery includes restoring community functions and usually corresponds to mitigation. This could include rebuilding community buildings to the most updated fire and flood codes.

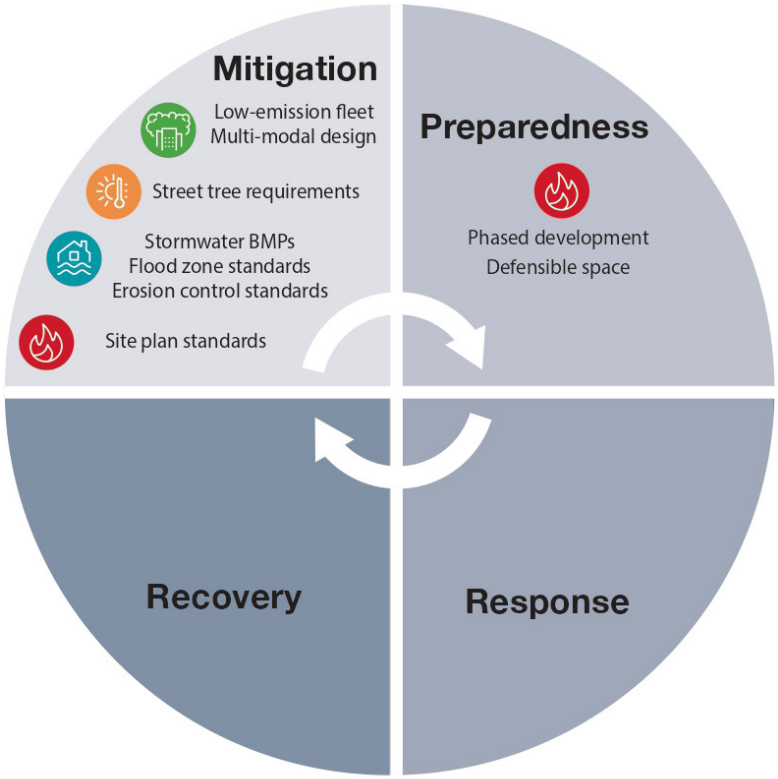
(FEMA 2007)

LOCAL PLANS

As part of this capability assessment, local and regional plans were reviewed for effective local policy already in place that can be built upon in this climate adaptation plan (plan). The following plans were reviewed as part of this Rialto Climate Adaptation Plan (Plan): Rialto General Plan, Rialto Local Hazard Mitigation Plan, Rialto Active Transportation Plan, and San Bernardino County Transit Authority (SBCTA) Climate Resilient Transportation Infrastructure Guidebook (Guidebook). A summary of the existing model policies in each of these plans is illustrated in **Figures 5-2** through **5-5**. The full text of each policy is provided in Appendix A. Each policy is placed within the phase of hazard planning it best addresses, and the applicable hazards are identified for each policy by their icons (see side bar). Not all plans will address each phase, as the plans work together to create an adaptive and resilient community

Figure 5-2 Four Phases of Hazard Planning

Figure 5-3 Rialto General Plan Capability Assessment



Hazards

- Air Quality
- Fire
- Flood
- Extreme Heat

Figure 5-4 Rialto Local Hazard Mitigation Plan Capability Assessment

Figure 5-5 Rialto Active Transportation Plan Capability Assessment

Local Programs

This capability assessment includes an in-depth review of the City's applicable programs and projects, including model examples of **green infrastructure, gray infrastructure,** and **access**. Each program is reviewed for how it responds to each hazard and integrates best practices. Similar to local plan policies, not all programs will comprehensively address each hazard, as programs collectively work together to create an adaptive and resilient community.

KEY TERMS

Green Infrastructure is the use of nature in cities to provide services such as shade, stormwater retention, and air filtration. Common elements of green infrastructure are trees, bioswales, community gardens, and parks.

Gray Infrastructure is the traditional built environment including roads and buildings.

Access is the ability of people to move around the City without cars. This section focuses on access to public transportation.

GREEN INFRASTRUCTURE

Rialto's street trees are some of the most important pieces of green infrastructure. The City currently manages approximately 23,000 trees on public streets and parks. Street trees filter out air pollution, provide shade on hot days, and provide drainage areas along streets for rainwater. A tree inventory's level of resilience to changing climate conditions and protecting residents from extreme heat and air pollution is attributed to several factors. Species diversity is one indicator of the level of resilience a tree population has against changing climate conditions, droughts, pests, and diseases. Another indicator of a healthy and resilient urban forest is the age distribution of trees. A tree inventory that is closer to the ideal range will have a balance of mature trees, middle-aged and young trees with the majority of their useful life left, and immature trees that are being planted to replace removed trees and expand the urban forest.

Air Pollution

Street trees and any form of greenery offer the benefit of being a natural air filter for many air pollutants. Odors and gasses can be filtered through the process of photosynthesis, while particulates can be dampened by bark or leaves.

Extreme Heat

Street trees offer valuable shade for people walking and biking and combat the urban heat island effect.

Flooding

Green infrastructure such as bioswales, trees and shrubs are all tools to mitigate flooding. Bioswales allow for retention of floodwaters. Trees, shrubs and vegetation contained within bioswales all allow for quicker recovery from flooding by consuming water. Additionally, trees and shrubs have the ability to catch rain as it falls. This lessens the intensity of flooding by extending the amount of time that the rain is falling.

Wildfire

In regard to hazards, the urban forest's benefits are focused on air pollution, extreme heat, and flooding. Greenery is generally fuel for wildfires; however, some trees and shrubs are more fire resistant than others. Understanding and mitigating for wildfires is key when developing a robust urban forest.

GRAY INFRASTRUCTURE

The City's Cooling Center program is its most robust use of public space for hazard response. Typically, cooling centers are public spaces with air conditioning where local residents can escape the heat on hot days; however, cooling centers are also often important public spaces that can host information about preparedness, provide shelter or other resources during a hazard event, and provide social services when recovering from a hazard event. Rialto has three cooling centers: the Rialto Library, the Rialto Community Center, and the Rialto Senior Center, which were assessed for their capacity to respond to each of the four climate hazards.

Air Pollution

Cooling centers are not currently activated during hazardous air days.

Extreme Heat

To assess the capability to respond to extreme heat, each of the cooling centers were compared to the California Office of Emergency Services Cooling Center Checklist as adopted by the SBCTA Guidebook. Assessments of each of these centers is included in Table 5-1.

Flood and Wildfire

Cooling centers are not currently activated during flood or wildfire events; however emergency operations could decide to utilize any number of public facilities to achieve quick and effective response and recovery.

Table 5-1 Cooling Center Assessment

IMPORTANT CRITERIA			
CRITERIA	**Rialto Library**	**Rialto Community Center**	**Grace Vargas Senior Center**
Air conditioning or equivalent *(temperature maintained at 79°)*	**Yes;** *Details*	**Yes**; *Details*	**Yes;** *Details*
Accessible to people with access and functional needs/ADA compliant	**Yes;** *Details*	**Yes;** *Details*	**Yes;** *Details*
Ample seating appropriate to the jurisdiction	**Yes;** *Details*	**Yes;** *Details*	**Yes;** *Details*
Public restrooms accessible to people with access and functional needs	**Yes;** *Details*	**Yes;** *Details*	**Yes;** *Details*
Access to potable water (*drinking fountain, etc.)*	**Yes;** *Details*	**Yes;** *Details*	Yes; *Details*
Access to 911 services *(payphone)*	*Details*	*Details*	*Details*
Publicly advertised	**Yes;** *Details*	**Yes;** *Details*	**Yes;** *Details*
Parking Access	**Yes,** *off-street parking on West 1st St. and South Palm Ave.*	**Yes;** *off-street parking between North Willow Ave. and North Palm Ave*	**Yes;** *off-street parking is available on site*
Proximity to public transit	**Yes;** *0.2 miles from a bus stop on North Riverside Avenue and 1st Street*	**Yes;** *0.2 miles from a bus stop on North Riverside Avenue and 1st Street*	**Yes;** *close proximity to south-bound stop at South Riverside Ave and Senior Ave. 0.2 miles from north-bound stop at South Riverside Ave and Value Center; however, North Riverside Ave. is a wide and unshaded street*
RECOMMENDED CRITERIA			
Back-up generators	*Details*	*Details*	*Details*
Secure, *facility has security service*	*Details*	*Details*	*Details*
Communications, *phone (including TDD/TTY), internet access, sign language interpreters*	*Details*	*Details*	*Details*
Child friendly *with materials for children to play with while at the cooling cen*ter	**Yes**	*Details*	*Details*
Medical personnel *such as nurses and/or aides*	**No**	*Details*	*Details*
24-hour, 7 days a week operation	**No,** *partial hours on Monday – Saturday, closed on Sundays*	**No,** *open from 7:00 a.m. to 6:00 p.m. Monday – Thursdays. Closed Friday, Saturdays, Sundays, and most major holidays*	**No,** *Open 8:00 a.m. to 5:00 p.m. Monday – Thursday, and 8:00a.m. to 4:00 p.m. on Fridays. Closed weekends*
Large capacity	*Details*	*Details*	*Details*
Personnel assistance services *for people with access and functional needs*	*Details*	*Details*	*Details*
Available televisions, books, games	*Yes; Details*	*Details*	*Details*
Transportation *for those lacking their own, including wheelchair accessible services*	*Refer to flexible transportation discussion*		
Follow-up procedures *for those in need of additional services (health care, social services, etc.)*	*Details*	*Details*	*Details*
Area for pets	*Details*	*Details*	*Details*
Veterinary resources *available if needed*	*Details*	*Details*	*Details*

Source: SBCTA and WRCOG (San Bernardino County Transit Authority and Western Riverside Council of Governments). 2019. Climate Resilient Transportation Infrastructure Guidebook. http://www.wrcog.cog.ca.us/DocumentCenter/View/7230/Climate-Resilient-Transportation-Infrastructure-Guidebook.
CalOES (California Office of Emergency Services). 2014. Contingency Plan for Excessive Heat Emergencies. https://www.caloes.ca.gov/PlanningPreparednessSite/Documents/ExcessiveHeatContingencyPlan2014.pdf.

Public Transportation

FIXED TRANSIT SERVICE

Rialto is well served by **fixed transit service** in the residential portions of Rialto north of Interstate 10. As shown in Table 5-2, almost all residents in Rialto live within a 15-minute walk of a bus stop, and residents living disadvantaged communities are more likely to live within a 5- or 10-minute walk of a bus stop. The few pockets of Rialto that are outside of a 15-minute walk to a transit stop include distribution centers and small residential areas. As shown in **Figure 5-6**, Riverside Avenue is the primary north–south transit corridor, and Baseline Road, Foothill Boulevard, Merrill Avenue, and San Bernardino Avenue serve as east–west transit corridors through Rialto. Reduced fares are available for students, seniors, veterans, and people with disabilities.[2]

KEY TERM

Fixed transit service: Buses or rail which operate on regular routes and schedules.

Table 5-2 Fixed Transit Service Access

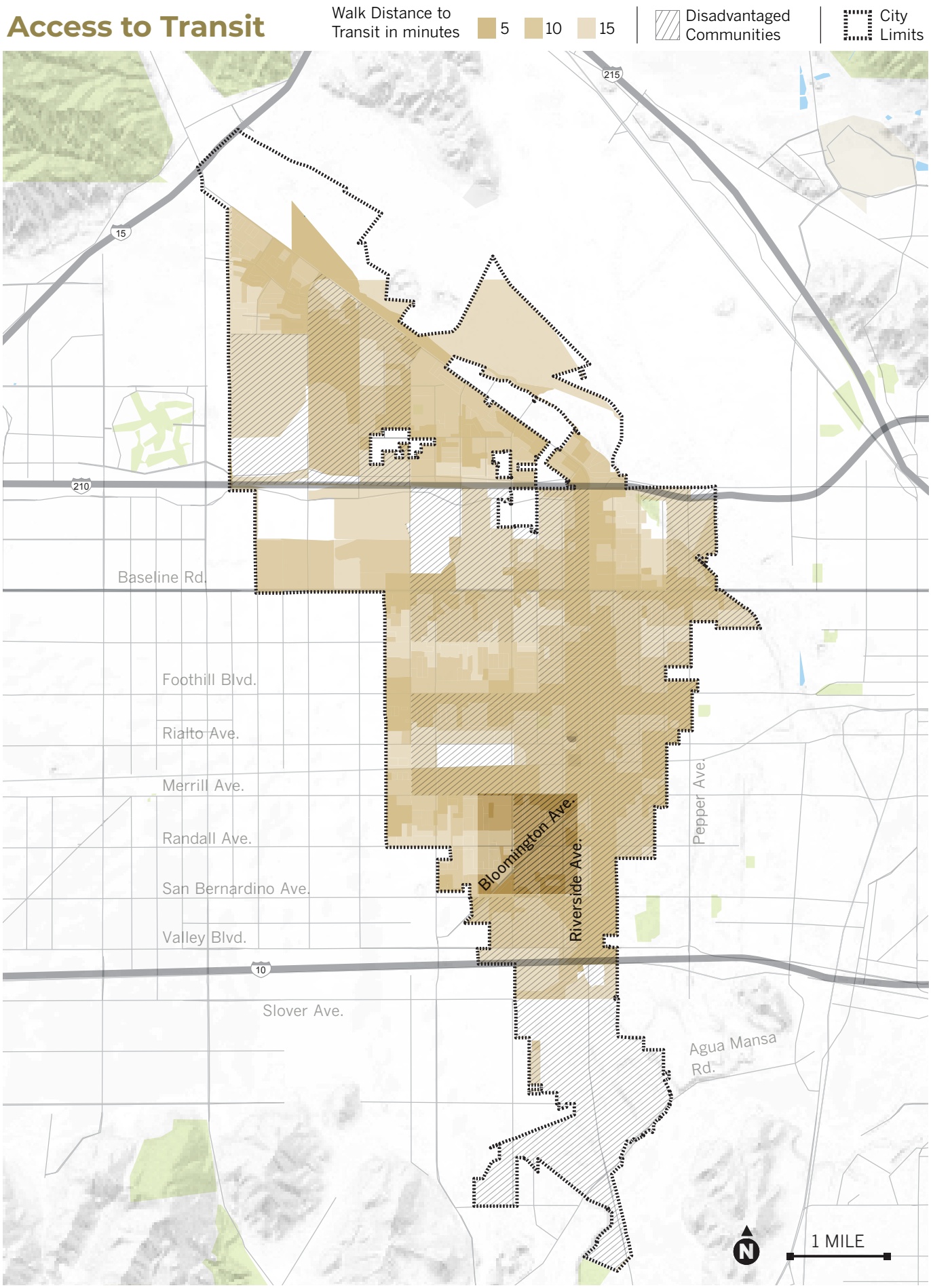
Distance to Transit	All Residents	DACs
	Percentage of residents	
5 Minutes	37%	42%
10 Minutes	80%	85%
15 Minutes	98%	98%

Source: Foti, F., Waddell, P., & Luxen, D. 2012. A generalized computational framework for accessibility: from the pedestrian to the metropolitan scale. In Proceedings of the 4th TRB Conference on Innovations in Travel Modeling. Transportation Research Board. OEHHA (Office of Environmental Health Hazard Assessment). "CalEnviroScreen 3.0." Oehha.ca.gov. June 2018. Accessed August 22, 2019. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

Note: DACs = disadvantaged communities

2 Omnitrans. 2019a. "Reduced Fare Requirements." https://omnitrans.org/getting-around/fares-passes/reduced-fare-requirements/.

Figure 5-6 Access to Fixed Transit



Source: CalEnviroScreen

FLEXIBLE TRANSIT SERVICE

Omnitrans, which provides fixed transit service in the San Bernardino Valley, also provides a flexible paratransit service called "Omnitrans Access Service." Omnitrans Access Service operates a curb to curb shuttle. This paratransit service area is within 0.75 miles of fixed bus routes, which covers most of Rialto, except for large industrial areas south of Interstate 10. Omnitrans Access Service is available during the same periods as fixed route service. Reservations must be made at least 1 day in advance.[2]

KEY TERM

Flexible paratransit provides transit service for those who are unable to independently use the fixed route service and is a mandated service by the Americans with Disabilities Act.[3]

2 Omnitrans. 2019b. "Access/ADA Services." https://omnitrans.org/getting-around/transit-services/access-ada-services/.

3 An individual is considered "unable to independently use the fixed transit system" if they meet one of the following characteristics: (1) Any individual with a disability who is unable, as the result of a physical or mental impairment (including a vision impairment), without the assistance of another individual (except the operator of a wheelchair lift or other boarding assistance device), to board, ride, or disembark from any vehicle on the system that is readily accessible to and usable individuals with disabilities. (2) Any individual with a disability who needs the assistance of a wheelchair lift or other boarding assistance device and is able, with such assistance, to board, ride and disembark from any vehicle that is readily accessible to and usable by individuals with disabilities if the individual wants to travel on a route on the system during the hours of operation of the system at a time, or within a reasonable period of such time, when such a vehicle is not being used to provide designated public transportation on the route. (3) Any individual with a disability who has a specific impairment- related condition that prevents the individual from traveling to a boarding location or from a disembarking location on such system.

EMERGENCY TRANSPORTATION

Air Pollution

There is no emergency transportation provided during hazardous air days.

Extreme Heat

During extreme heat events when temperatures climb above 100°F, residents can call the "Cool Line." This is a phone line provided by the City that will set up free transportation to a cooling center from anywhere within city limits.

Flood and Wildfire

In the event of a fire or flood requiring evacuation, Omnitrans maintains cooperation with the Operational Area's Emergency Operations Center to help facilitate effective coordination of service and information flow among all responding agencies and local governments within the region. Rialto is within the Operational Area that communicates with the City of San Bernardino's Emergency Operations Center. Omnitrans' actions follow their Safety, Security, and Emergency Pre- paredness Plan during the planning, response, and recovery phases of an emergency or disaster impacting Omnitrans operations. Actions during flood or wildfire evacuation are considered a Mutual Aid understanding, meaning that the governor, through the California Office of Emergency Services and its Mutual Aid Regions, is in charge of provisioning and redirecting necessary State aid or supplies.

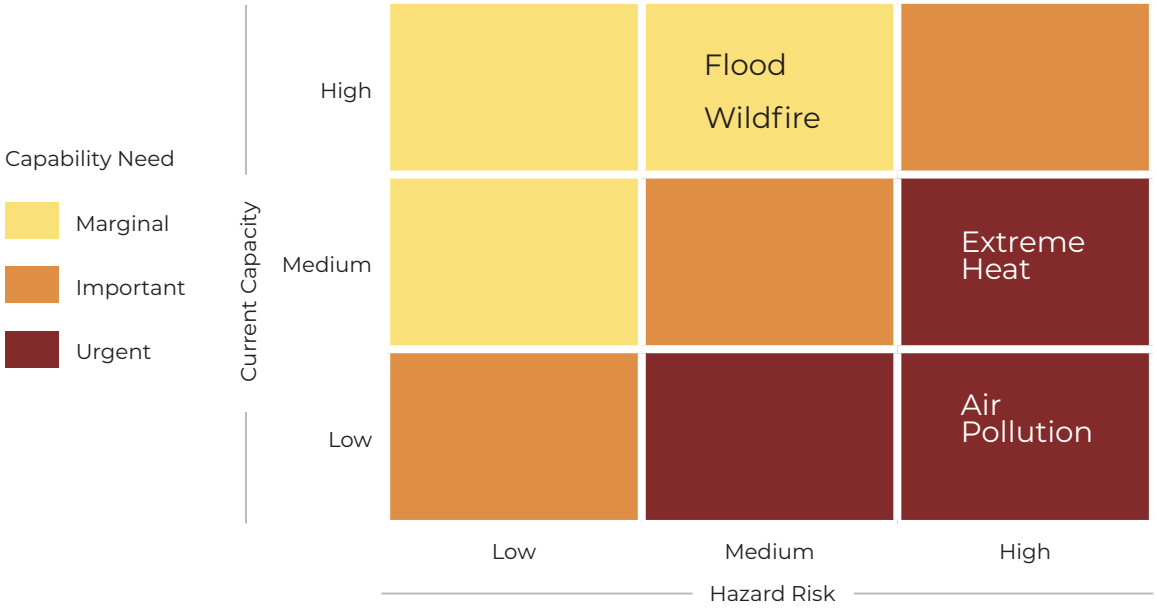
During an incident or emergency, Omnitrans Emergency Operations Center Public Information Officer coordinates with the City of San Bernardino's Public Information Officers or other Public Information Officers to communicate pertinent information through the chain of command.

Community Capability

CITYWIDE SCORES

To identify where the community lacks adaptive capacity and prioritize the types and extent of adaptive capacity measures needed, each hazard was assessed for both the level of risk that it poses on Rialto and the community's current capacity to endure the risk based on the analysis of the City's existing policies and programs. Each hazard risk was determined by how certain scientists are about its potential impact, how soon the impact is anticipated to occur, the level of disruption the hazard poses to normal life, and, most importantly, how deadly the hazard is. A detailed assessment of each hazard risk is included in the Vulnerability Assessment. The current capacity was determined by how effective the current local policies and programs (outlined in previous sections) are in addressing the climate hazard in all four phases of hazard planning. These rankings are displayed in **Figure 5-7**.

Figure 5-7 Community Capability Matrix



AIR POLLUTION

Hazard Risk

Air pollution in Rialto has the potential to negatively affect the long-term health of the residents of Rialto. Air pollution is a secondary impact of climate change, made worse by increased wildfires and extreme heat. Climate change will make air pollution worse where there are already high levels of air pollution. For instance, longer warm seasons can mean longer pollen seasons, which can increase allergic sensitizations and asthma episodes; higher temperatures associated with climate change can also lead to an increase in ozone, a harmful air pollutant. While the future level of air pollution will depend, in part, on State laws mandating such things as fuel efficiency and electrification of cars and trucks, the current air quality in San Bernardino is the worst in California and it threatens the health of residents. Therefore, the hazard risk from air pollution has been determined to be **high**.

Current Capacity

Air pollution is a unique hazard that is slow moving and often included in non-hazard related plans, such as transportation plans that focus on reducing car trips to promote healthy communities where people can walk and bike or climate action plans that focus on meeting statewide greenhouse gas reduction targets. For this reason, air pollution is currently addressed only in the mitigation phase of hazard planning in current City plans (see **Table 5-3**). Specifically, in the Rialto General Plan, transportation emissions are addressed by policies requiring transportation demand management for new developments and replacing the current City fleet with lower-emission vehicles. The General Plan and development standards also include street tree requirements, which can assist in filtering out air pollution. City implementation plans also include strategies to reduce driving, which have the added benefit of reducing air pollution caused by vehicles. For example, the City of Rialto's Safe Routes to School Program recommends multimodal infrastructure that would provide safe alternatives to driving in order to get to/from school, thus mitigating transportation emissions. Policies for reducing air pollution are also included in regional guidance documents. For example, the SBCTA Guidebook addresses land use planning best practices for transportation corridors.

Since air pollution and hazardous air pollution events are not addressed comprehensively for each of the four phases of building community adaptation and resilience from both a policy and programmatic assessment, City adaptive capacity has been deemed **low**.

Table 5-3 Air Quality Capacity

Current Capacity	Four Phases of Hazard Planning			
	Mitigation	*Preparedness*	*Response*	*Recovery*
Local Plans				
Rialto General Plan	● ●			
Rialto Local Hazard Mitigation Plan				
Rialto Active Transportation Plan				
SBCTA Guidebook	●			
Programs				
Street Trees				
Cooling Centers				
Transportation				

Future Capability Need

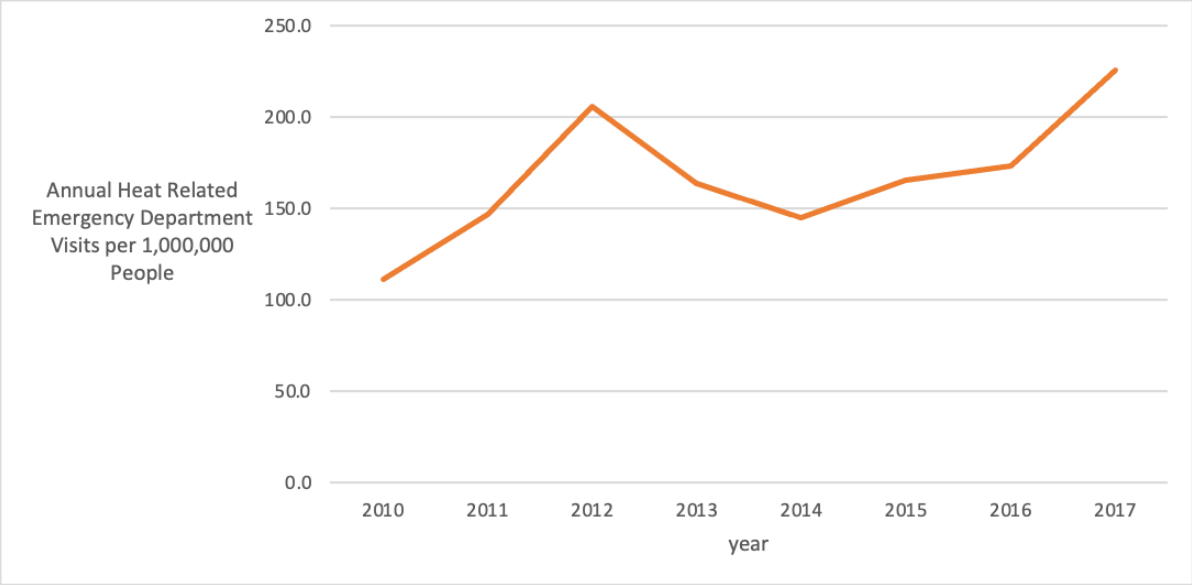
While air pollution is addressed indirectly in current City plans, the City can adopt more targeted policies to reduce air pollution that address heavy truck traffic and extreme heat. In the General Plan there are no goals directly addressing air quality; this should be updated to emphasize the importance of clean air and include policies and actions that work to reduce local air pollution. The Multi-Hazard Mitigation Plan, which is updated periodically, should be expanded to include planning around what to do during extremely hazardous air quality days due to nearby fire, allergens, or other causes. In regard to the City's local programs, adding greenspace and tree canopy in an equitable way can create natural air filtration more holistically and effectively throughout Rialto. Due to the current air quality concerns and limited policies and programs related to hazardous air pollution events and related health impacts, the future capability need is determined to be **urgent**.

EXTREME HEAT

Hazard Risk

Hot days are a regular occurrence in Rialto, and anyone in the community could fall victim to illnesses related to extreme heat including, but not limited to, heat stroke. Occurrences of heat stroke have been increasing countywide since 2010 (see **Figure 5-8**). Historically, there have been an average of four extreme heat days a year between 1960 and 1990; this is forecasted to increase to 16 extreme heat days a year between 2020 and 2040 (CEC 2019). The most prominent risks during extreme heat events are health related; however, the potential for power outages also increases, which could exasperate health problems and may contribute to other hazards, such as wildfire. Impacts of additional extreme heat events are already being seen, and with extreme heat being the deadliest hazard, potential impacts are **high**.

Figure 5-8 Annual Heat Related Emergency Department Visits



Current Capacity

The City has only directly addressed extreme heat in a limited capacity in local planning documents; however, the City operates multiple programs that respond to extreme heat events (See **Table 5-4**). The Rialto General Plan requires street trees, which provide shade for sidewalks. The City also operates three cooling centers in Downtown Rialto. The hours of these cooling centers are expanded during extreme heat events and a free shuttle is provided for those who cannot reach a cooling center on their own. However, many extreme heat programs only operate if the temperature reaches 100°F, while many vulnerable populations can have adverse health effects at lower temperatures. The SBCTA Guidebook promotes shade protection at transit stops, cooling centers, and adjustments to asphalt binder grades for future temperature projections.

Since extreme heat is not directly addressed in any plans, but the City does operate a comprehensive cooling center program, City adaptive capacity has been deemed **medium**.

Future Capability Need

Table 5-4 Extreme Heat Capacity

Current Capacity	Four Phases of Hazard Planning			
	Mitigation	*Preparedness*	*Response*	*Recovery*
Local Plans				
Rialto General Plan	●			
Rialto Local Hazard Mitigation Plan				
Rialto Active Transportation Plan				
SBCTA Guidebook	● ● ●		●	
Programs				
Street Trees				
Cooling Centers			●	
Transportation			●	

Current City plans address extreme heat through use of street trees; however, given the hazard risk, the City could expand these mitigation policies to include the recommendations in the SBCTA Guidebook. The City also currently lacks preparedness or recovery programs for extreme heat. Similar to air pollution, extreme heat should be added to the Multi-Hazard Mitigation Plan. Due to the pressing nature of the current extreme hazard and limited policies related to extreme heat event and related health impacts, the future capability need is determined to be **urgent**.

FLOOD

Hazard Risk

Flooding is very likely to increase as a result of climate change. Higher intensity precipitation is a secondary impact caused primarily by increased air temperatures; therefore, this impact will take longer to become evident and will intensify over time. Flood zones in Rialto cover only portions of the northeastern and southeastern city limits. Flood impacts are expected to be limited to these areas; however, this still poses a serious economic risk to the City where industrial facilities are at risk. Therefore, the hazard risk from air pollution has been determined to be **medium**.

Current Capacity

Flooding has been addressed in a wide range of City planning documents (see **Table 5-5**). The General Plan has created flood zone and erosion control standards, as well as identified stormwater best management practices. The Municipal Code has created procedures for anchoring and the use of Federal Emergency Management Agency (FEMA) construction materials and methods. Additionally, it has created floor height requirements, lowest floor use and design restrictions, and encroachment limitations. The Multi-Hazard Mitigation Plan instigated the installation of storm drains in accordance with the Rialto Storm Drain Master Plan. Lastly, the SBCTA Guidebook promoted the installation of green stormwater infrastructure such as permeable pavement and bioretention areas and bioswales. The SBCTA Guidebook also proposed preparations to prevent bridge scour and design and operation strategies to facilitate evacuation. Since flooding is consistently addressed in plans through all phases of disaster, City adaptive capacity has been deemed **high**.

Table 5-5 Flood Capability

Current Capacity	Four Phases of Hazard Planning			
	Mitigation	*Preparedness*	*Response*	*Recovery*
Local Plans				
Rialto General Plan	● ● ●			
Rialto Local Hazard Mitigation Plan	●	●	● ●	●
Rialto Active Transportation Plan				
SBCTA Guidebook	● ●	●	●	
Programs				
Street Trees				
Cooling Centers				
Transportation				

Future Capability Need

While many measures within the General Plan, Multi-Hazard Mitigation Plan, and Municipal Code address flooding, additional policies that target the specific needs of vulnerable populations could be improved. Many standards refer to the 100-year flood zone, but with new information regarding climate change, the City should consider changing these standards to the 500-year flood zone as flooding is expected to become more common in the area between the 100- and 500-year flood zones. Many of the measures currently being taken by the City are mitigation efforts, and as a result, the efforts surrounding preparedness, response, and recovery for flooding should be expanded. Due to the comprehensive planning around flooding and limited geographic scope of flood impacts, the future capability need is determined to be **important**.

WILDFIRE

Hazard Risk

Developed areas such as Rialto have a lower fire risk than the rural areas in the mountains where regional wildfires usually begin. A portion of land in northern Rialto is located in a high fire severity zone, while the rest of Rialto is not. The primary wildfire risk is planned power shutoffs, or wildfires in surrounding areas creeping into city limits. Should a wildfire occur, it is most likely to impact the health of portions of the population in the northern region of Rialto, as well as those unable to evacuate. In the aftermath of a fire, economic losses have the potential to be extremely large. Due to the uncertainty of how wildfire could affect the City in the future and recent planned power shutoffs, the hazard risk from wildfire is determined to be **medium**.

Current Capacity

Wildfire is addressed in multiple City plans (see **Table 5-6**). The Rialto General Plan addresses fire through site plan standards and development phasing that requires maintaining defensible space. It also has policies that promote fire education. The Rialto Multi-Hazard Mitigation Plan mitigates the chance of fire through a Weed Abatement Program and educates the public and youth about fire safety through a newsletter and Juvenile Fire Setter Program. The SBCTA Guidebook recommends culvert sizing for post-wildfire flows and using fire resistant materials for drainage facilities. It also emphasizes maintaining defensible space around critical assets and creating design and operations strategies to facilitate evacuation.

Multiple City programs address the risk of planned power shutoffs. Each cooling center is equipped with a backup generator, which can provide community members with a place to access power and communica- tion facilities when local residents are without power. Since wildfire is consistently addressed in plans and local programs, City adaptive capacity has been deemed **high**.

Table 5-6 Wildfire Capability

Current Capacity	Four Phases of Hazard Planning			
	Mitigation	*Preparedness*	*Response*	*Recovery*
Local Plans				
Rialto General Plan	🔥	🔥🔥		
Rialto Local Hazard Mitigation Plan	🔥	🔥🔥	🔥🔥	
Rialto Active Transportation Plan				
SBCTA Guidebook	🔥🔥	🔥	🔥	
Programs				
Street Trees				
Cooling Centers				
Transportation				

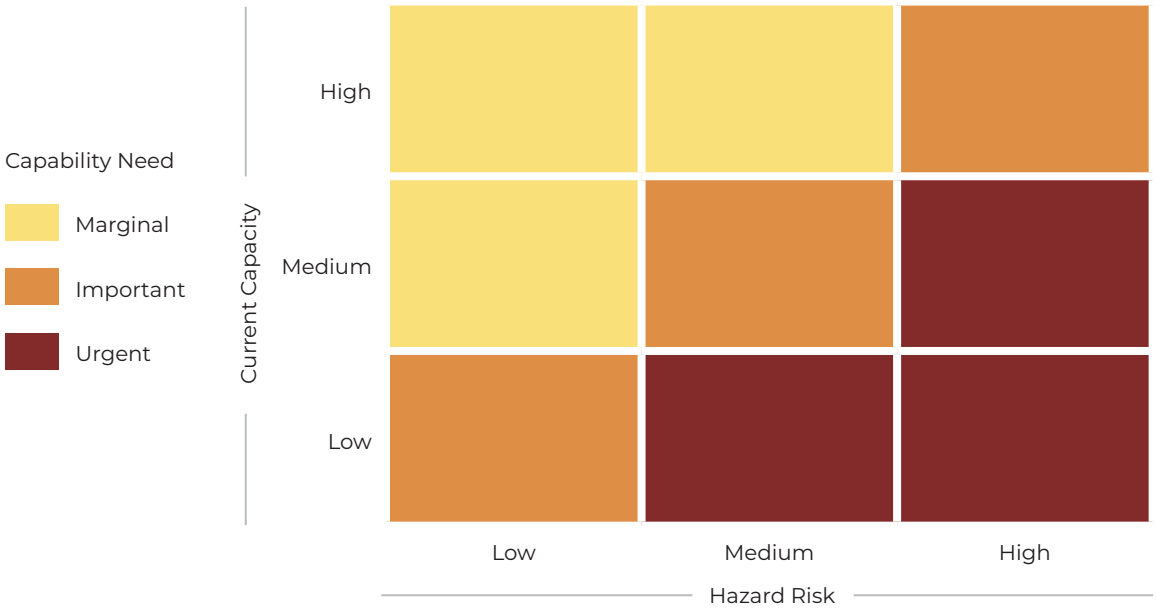
Future Capability Need

The policies in place regarding wildfire are fairly comprehensive; however, the specifics of the policies could potentially be enhanced to make them more enforceable and effective. A grant program for residents to retrofit their homes to be more fire-safe could also be explored. Additionally, while the mitigation, prepared- ness, and response phases are all well covered in local planning documents, recovery efforts should be more robust to address the needs of the community, should a wildfire actually occur. Therefore, the future capa- bility need was determined to be **important**.

Equity Assessment

As discussed in the Vulnerability Assessment, hazards can disproportionality effect vulnerable populations that may have a more difficult time responding to hazard events because of age, language barriers, income, housing, or other characteristics. To address these differences, **Figure 5-9** compares the citywide scores above to an equity score. An equity assessment evaluates the City's capacity, similar to the capability scores above, but focuses specifically on how well the City's current policies address the specific needs of those most vulnerable to hazards.

Figure 5-9 Community Capability Equity Matrix



Air Pollution

Table 5-7 includes each vulnerable population included in the Vulnerability Assessment, why they are considered vulnerable to air pollution, the specific local policies and programs that address this vulnerability, and any policy and programmatic gaps.

Table 5-7 Air Pollution Equity Capability Assessment

Population	Vulnerability	Local Policy Considerations	Policy Gaps
Older adults	Older adults often have weaker lungs and other pre-existing health conditions that make them more susceptible to air pollution.	• Discounted transit passes	• Placement of age restricted housing • HEPA filters in existing homes of seniors • Senior centers • Senior transportation
Young Children	Young children have developing lungs and are more susceptible to air pollution	• Discounted transit passes	• CIP around school • Safe routes to school with vegetation buffers • Park placement in neighborhoods with young children near freeways or truck routes
People with pre-existing conditions	Various pre-existing conditions, such as asthma, can be irritated by worse air pollution.		• Project prioritization in neighborhoods with elevated asthma rates
Active Commuters	People who walk or bike to work are exposed to air pollution on a daily basis.		• Vegetation buffers on key transportation routes and around transit

Extreme Heat

Table 5-8 includes each vulnerable population included in the Chapter 4 assessment, why they are considered vulnerable to extreme heat, the specific local policies and programs that address this vulnerability, and any policy gaps.

Table 5-8 Extreme Heat Equity Capability Assessment

Population	Vulnerability	Local Policy Considerations	Policy Gaps
Older adults	Older adults often have pre-existing health conditions that make them more susceptible to extreme heat.	• Cooling centers	• Home retrofits • Senior transportation to cooling centers
Young Children	Young children are not fully developed physiologically and this causes them to be more susceptible to extreme heat.	• Shaded parks	• Shade trees around school • Safe routes to school with shade trees • Kid-friendly cooling centers • Home Retrofits
People with pre-existing conditions	Various pre-existing conditions can reduce a person's ability to respond to extreme heat.	• Cooling centers	• Home retrofits
Those Without Air Conditioning	People who lack air conditioning are susceptible to extreme heat because they are less able to cool themselves within their own homes during extreme heat events.	• Cooling Centers	• Home retrofits
Active Commuters	People who walk or bike to work are exposed to extreme heat on a daily basis.		• Shaded routes to transit

Flood and Wildfire

Table 5-9 includes each vulnerable population included in the Chapter 4 assessment, why they are considered vulnerable to flooding and wildfire, the specific local policies and programs that address this vulnerability, and any policy and programmatic gaps. Flooding and wildfire are combined here because the susceptible populations are identical for the purposes of evacuation and economic responses.

Table 5-9 Flooding/Wildfire Equity Capability Assessment

Population	Vulnerability	Local Policy Considerations	Policy Gaps
Older adults	Older adults often are less mobile, which makes them less able to evacuate and therefore more susceptible to flooding and wildfire.	• Cooling centers	• Know your neighbor programs
Young Children	Young children are reliant on adults to evacuate, which makes them more susceptible to flooding and wildfire.	• Shaded parks	• School based evacuation training
People without cars	Households that do not have a car have less capacity to evacuate, making them more susceptible to flooding and wildfire.	• Cooling centers	• Shuttles for evacuation
Limited English speakers	Limited English speakers may have difficulty understanding and responding to conventional calls for evacuation, making them susceptible to flooding and wildfire.	• Cooling Centers	• Evacuation notices in multiple languages
Renters	Renters are more susceptible to flooding and wildfire than homeowners due to renters insurance oftentimes not covering floods, and federal aid for floods and wildfires going more predominantly to homeowners.		• Renters insurance education • Relocation assistance

6

GOALS, POLICIES, AND ACTIONS

Goals, Policies, and Actions

This chapter builds on Chapter 4, Vulnerability Assessment, and Chapter 5, Capability Assessment, and provides goals, policies, and actions to build adaptive capacity and increase resilience to climate change related impacts in Rialto. This chapter is organized by each of the four planning phases for each hazard as outlined in the Capability Assessment (mitigation, preparedness, response, and recovery). The plans of the City of Rialto (City) are strong with respect to hazard mitigation and preparedness. The following recommendations are intended to augment mitigation and preparedness policies in the existing General Plan and Local Hazard Mitigation Plan and address more fully the recovery and response components of disaster planning that are essential for achieving a more resilient community. As discussed in the Capability Assessment, of the four hazards analyzed (air pollution, extreme heat, flooding, and wildfire), the City is least prepared for extreme heat and air pollution, even though those are the most common and often deadliest hazards in Rialto.

Many policies in this chapter work to address multiple hazards (as shown by hazard icons). For example, the measures to improve air quality correlate closely with those for extreme heat.

Policies and actions that achieve co-benefits are called out in this chapter in order to prioritize their implementation. Special attention is also given to addressing policy gaps for responding to the needs of Rialto's most vulnerable, including older adults, young children, people with pre-existing conditions, and those with special needs and circumstances.

Mitigation

The following goals, policies, and actions focus on mitigating hazards before they happen. This section is designed to strengthen the City's capacity to lessen the impact of hazardous air days, extreme heat events, regular flooding, and wildfire in the surrounding wildlands.

Goal 1: *Streets that are safe and comfortable to walk and bike through.*

Policy 1.1: *Safe Routes to School.* Prioritize Safe Routes to School (SRTS) in areas most affected by extreme heat and air pollution.

Implementation Action 1.1a: N. Acacia Avenue SRTS. Implement N. Acacia Avenue (Segment 20) SRTS Plan. Explore options to increase tree cover along route.

Implementation Action 1.1b: N. Apple Avenue. Implement N. Apple Avenue (Segment 9) SRTS Plan. Explore options to increase tree cover along route.

Implementation Action 1.1c: N. Eucalyptus Avenue Implement N. Eucalyptus Avenue (Segment 28) SRTS Plan. Explore options to increase tree cover along route.

Implementation Action 1.1d: Willow Avenue. Implement Willow Avenue (Segment 11) SRTS Plan. Explore options to increase tree cover along route.

Implementation Action 1.1e: Etiwanda Avenue. Implement Etiwanda Avenue (Segment 19) SRTS Plan. Explore options to increase tree cover along route.

Implementation Action 1.1f: W. Rialto Avenue. Implement W. Rialto Avenue (Segment 24) SRTS Plan. Explore options to increase tree cover along route.

Policy 1.2: *Cool Corridors.* Create shaded and safe corridors between transit stops and important community services, including cooling centers, job centers, and residential areas where people depend on transit.

Implementation Action 1.2a: Riverside Avenue. Implement bikeway improvements, as outlined in the Active Transportation Plan (ATP), with shade improvements where the right-of-way allows. Add parklets with mature trees along the route.

Implementation Action 1.2b: Willow Avenue. Implement bikeway improvements, as outlined in ATP. Focus shade and air quality improvements where the route approaches Foothill Boulevard and the library.

Implementation Action 1.2c: Pepper Avenue. Implement bikeway improvements, as outlined in ATP. Improve shade and air quality throughout the corridor.

Goal 2: *A community with clean air.*

Policy 2.1: *Low-Emission Vehicles.* Increase the use of low-emission and electric vehicles where feasible.

Implementation Action 2.1a: Low-Emission Public Vehicles. Identify classes of vehicles in the City's fleet that should be replaced by fuel efficient or electric vehicles.

Implementation Action 2.1b: Public Charging Facilities. Install public electric vehicle charging stations at City offices and facilities.

Implementation Action 2.1c: Low-Emission Vehicles for Low Income Households. Connect low-income households to programs that provide large financial incentives to provide low-emission vehicles.

Policy 2.2: *Truck Routes.* Prevent truck routes from disproportionately impacting disadvantaged communities.

Implementation Action 2.2a: Clean Air Homes. Pursue grant funding to install MERV-13 Air filters in existing homes and schools within 500 feet of a truck route.

Implementation Action 2.2b: Clean Air Vegetation Barriers. Invest in vegetation barriers in residential communities within 500 feet of an existing truck routes. Pilot programs along Cedar Avenue, Pepper Avenue, and Baseline Road should be explored.

Implementation Action 2.2c: Clean Air Development. Create a clean air checklist for new development of sensitive land uses. This checklist should include landscaping, ventilation systems, double-paned windows, setbacks, and barriers..

Policy 2.3: *Diverse Urban Forest.* Adopt an Urban Forestry Master Plan or updated planting list to encourage greater species diversity.

Implementation Action 2.3a: Increase Residential Trees. Develop a free residential yard tree program that distributes 500 trees a year to Rialto residents. Prioritize homes in disadvantaged communities.

Implementation Action 2.3b: Diverse Public Forest. Maintain no more than 5% of one species, 10% of one genus, and 20% of one family in the City tree inventory.

Goal 3: *A built environment resistant to extreme heat.*

Air Quality
Flood
Extreme Heat
Fire

Policy 3.1: *Hydration Stations.* Provide working touchless water refill stations at public facilities, parks, and bus shelters.

Implementation Action 3.1a: Park Water Stations. Identify parks in disadvantaged communities with sufficient plumbing infrastructure to install water stations, and pursue grant funding to install them.

Implementation Action 3.1b: Bus Stop Hydration Stations. Work with Omnitrans to identify bus stops with high levels of ridership and sufficient plumbing infrastructure to install water stations, and pursue grant funding to install them.

Air Quality
Flood
Extreme Heat
Fire

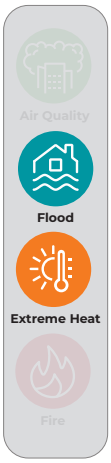
Policy 3.2: *Cool Buildings.* Adopt building and maintenance standards that reflect the regional best practices in reducing urban heat island effect.

Implementation Action 3.2a: Cool Roofs. Require roof replacements on public and private buildings to meet the SRI values of LEED Version 4.

Implementation Action 3.2b: Cool Pavement. Explore the installation of permeable pavers in areas with regular flooding during maintenance and repaving.

Implementation Action 3.2c: Low-Income Weatherization. Advertise weatherization programs in public space and public events. Partner with Southern California Edison and other appropriate partners to ensure that the most vulnerable residents have information about air conditioning assistance for medically vulnerable and weatherization for low-income populations.

Goal 4: *Public infrastructure resistant to climate hazards.*



Policy 4.1: *Flood-Proofed Infrastructure.* Assess infrastructure and maintenance standards to withstand current and forecasted localized flooding events.

Implementation 4.1a: Resilient Sewer Systems. Inventory all sewer pump stations in a 100- and 500-year flood plain. The City should use this inventory to identify priority facilities for upgrading to be flood resistant.

Implementation 4.1b: Reduce Regular Road Flooding. Encourage permeable pavement and bioswales in areas in the 100- and 500-year flood zones, areas with less than 50% permeable area, and on streets that flood regularly.

Implementation 4.1c: Green Streets. Develop a green streets program to support a sustainable approach to stormwater, drainage, groundwater recharge, and landscaping and incorporate green streets standards and guidelines in all streetscape improvements.

Policy 4.2: *Fire-Proofed Infrastructure.* Retrofit Infrastructure to be resistant to wildfires.

Implementation 4.2a: Large Culverts for Post-Wildfire Flows. Resize culverts in the 100- and 500-year flood plain to accommodate wildfire flows during regular maintenance. Prioritize culverts that require increased debris cleaning during the rainy season.

Implementation 4.2b: Fire-Resistant Culverts. Replace plastic culverts with fire-resistant materials such as reinforced concrete pipe and steel in High Fire Severity Zones.

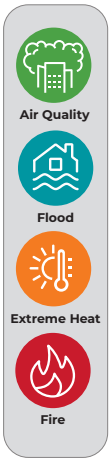
Implementation 4.2c: Climate-Resilient traffic signals. Create and implement a plan that identifies important traffic signals along evacuation routes to replace with climate-resilient traffic signals.

Implementation 4.2d: Backup Power. Pursue funding for generators at the three cooling centers: Rialto Library, Rialto Community Center, and Grace Vargas Senior Center.

Preparedness

The following goals, policies, and actions focus on preparing residents and City facilities for hazard events. This section is designed to strengthen the City's capacity to inform residents of hazard risks and create places where people can shelter and access resources during hazard events.

Goal 5: *A community prepared for disasters.*



Policy 5.1: *Inform and Assist At-Risk Community Members.* Provide culturally relevant preparedness education and notification.

Implementation 5.1a: Multi-Lingual Emergency Notifications. Expand the CodeRED notifications to include Spanish.

Implementation 5.1b: Neighborhood Based Response. Convene and regularly train neighborhood-based emergency response teams (e.g., CERT), incorporating climate change response and recovery. Ensure CERT recruiting includes a diverse set of community members and leaders.

Implementation 5.1c: Outreach to Local Schools. Work with local schools to create age-appropriate preparedness classes. Prioritize schools in disadvantaged communities.

Implementation 5.1d: Disaster Kits. Work with local places of worship and local non-profits to create disaster kits for families in disadvantaged communities. This should include disaster supplies and guidance on how to collect and store important documents.

Policy 5.2: *Retrofit Community Centers to Increase Resilience During a Hazard Event.* Increase the capacity of public facilities to provide shelter and services during hazard events.

Implementation 5.2a: Emergency Cooling Centers. Expand hours of operation of cooling centers when the temperature exceeds 100°F and during hazardous air days.

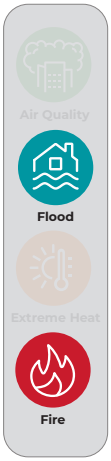
Implementation 5.2b: Establish Resilience Centers. Supply cooling centers with refrigerators for storing medicine, backup water supplies, and social services information in multiple languages. Establish locations to provide disaster planning assistance and supplies, which can develop backup power sources in the event of a power outage.

Implementation 5.2c: Homeless Shelters Availability During Hazardous Events. Coordinate with agencies and organizations that provide homeless services to provide shelter during hazardous conditions and severe weather events. These emergency shelters should provide information about hazardous events and basic supplies such as insect repellant and hygiene supplies that can increase the adaptive capacity of individuals experiencing homelessness.

Response

The following goals, policies, and actions focus on providing emergency services and responding to hazards. This section is designed to strengthen the City's capacity to provide emergency response services to all members of the community.

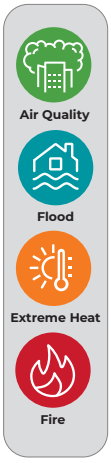
Goal 6: *Emergency response designed to serve a range of community needs.*



Policy 6.1: *Emergency Operations Center.* Ensure the Emergency Operations Center (EOC) has adequate capacity to respond to hazard events.

Implementation 6.1a: EOC Technology. Periodically review technology used to support the EOC to ensure systems are updated and effective, including City GIS.

Implementation 6.1b: EOC Equipment. Update EOC equipment and supplies as necessary to ensure effectiveness.



Policy 6.2: *Special Needs Populations.* Include provisions for special needs populations and communities with low rates of car ownership in emergency response procedures.

Implementation 6.2a: Vulnerable Population Registry. Develop a voluntary vulnerable population registry and subsequent priority list to help responders better provide services and meet the needs of those most in need.

Implementation 6.2b: Emergency Shuttle. Explore the possibility of partnerships for providing an emergency evacuation shuttle service.

Implementation 6.2c: Know Your Neighbor Program. Coordinate a Know Your Neighbor Program where community leaders and neighbors provide resources and check in on vulnerable populations during hazard events where people shelter at home.

Implementation 6.2d: Regular Needs Assessment. Regularly meet with community leaders that represent special needs populations, including seniors, to maintain continuous two-way communication. This should include surveys and other needs assessments to refine notification and response policies.

Recovery

The following goals, policies, and actions focus on recovering from hazard events and rebuilding stronger to avoid repetitive losses. This section is designed to strengthen the City's capacity to provide clear codes and standards for post-disaster recovery.

Goal 7: *A community that builds back stronger.*

Policy 7.1: *Fire-Resistant Code.* Require and enforce standards that create a more fire-safe community.

Implementation 7.1a: Wildfire Retrofits. Require structural hardening retrofits when existing structures in the High Fire Hazard Severity Zone are redeveloped more than 50%, consistent with the standards in the most current version of Chapter 7A of the California Building Code or other resources (Section 5.2.2.1). Structural retrofits may include, but are not limited to, the following:

- Class A roof system
- Ember-resistant vents
- Plugging of all openings to prevent ember intrusion
- Multi-paned windows with at least one or both panes tempered
- Noncombustible, ignition-resistant-compliant exterior siding and decks
- Automatic closing exterior doors
- Battery backup for garage door opener (works when power is out)

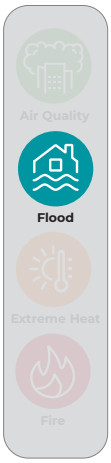
Implementation 7.1b: Maintain Emergency Evacuation Routes. Ensure that street widths, paving, and grades can accommodate emergency vehicles. Also continue to require 30 feet of vegetation management on all street segments without improved lots.

Policy 7.2 *Landscape Standards in Wildfire Hazard Severity Zones.* Increase the survivability of homes in the High Fire Hazard Severity Zone through the adoption of defensible space standards and landscape guidelines.

Implementation 7.2a: New Landscaping Requirements: Adopt a High Fire Hazard Severity Zone Landscape Requirements document for defensible space, including a prohibited plant species list.

Implementation 7.2b: Vacant Lot Enforcement: Start a vacant lot enforcement program for High Fire Hazard Defensible Space Requirements on undeveloped and developed properties within the High Fire Hazard Severity Zone.

Implementation 7.2c: Weed Abetment: Continue to implement the City's weed abatement program in Fire Hazard Severity Zones.



Policy 7.3: *Flood Plain Standards. Require and enforce standards that create a more flood-safe community.*

Implementation 7.3a: Flood Resistant Critical Facilities. Design new critical facilities to minimize potential flood damage. Such facilities include those that provide emergency response such as fire stations, police stations, civil defense headquarters, utility lifelines, and ambulance services. Such facilities also include those that do not provide emergency response but attract large numbers of people, such as schools, theaters, and other public assembly facilities with capacities greater than 100 people.

Implementation 7.3b: Floodplain Regulations. Regulate new development for flood protection in accordance with State requirements for 200-year floods and federal requirements for 100-year floods.