



SECTION 2

PREPARING FOR  
CLIMATE CHANGE

This section identifies climate actions aimed at helping Tualatin prepare and be resilient to the physical impacts of climate change. These actions represent important next steps to ensure that those who live, work, learn, and play in Tualatin are able to thrive.

Reducing carbon emissions (also known as “climate mitigation”) is the most important action we can take to decrease the harmful effects of climate change. The faster we reduce emissions, the more we reduce the rate and scale of the changes coming. However, focusing our efforts on reducing emissions alone is no longer an option.

Oregon is already experiencing rising temperatures, long-term declines in snowpack, increasing wildfire risk, and other measurable environmental changes consistent with the effects of rising carbon emissions. These changes are expected to accelerate in the coming decades, leading to potentially significant impacts on the region’s health, infrastructure, environment, and economy. As a result, we must prepare for and adapt to the impacts of a changing climate (“climate resilience”) even as we work in partnership with other communities and state and federal leaders to reduce carbon emissions.

This section identifies 61 climate preparedness actions to help Tualatin prepare for the impacts of climate change and increase climate resilience. The preparedness actions included in this section were selected to address concerns of local impacts of climate change raised by community members and partner agencies who engaged with the City as a part of the planning process.

Through public engagement, the project team listened to community members who live, work, learn, and play in Tualatin and worked to create a plan that responds to community member needs and concerns.

## WHAT IS CLIMATE RESILIENCE?

Resilience is a broad concept that can apply to individuals, communities, and social, economic, and environmental systems. Resilience is the capacity to cope with a hazardous event or long-term trend in ways that maintain essential identities, functions, and structures while also maintaining the capacity to learn, adapt, and/or transform. (Adapted from IPCC 2014)

## WHAT WE HEARD

Community members reported feeling most concerned about:

- Needing to stay home or indoors and/or not being able to get to work or school safely due to smoke, extreme heat, and winter storms
- A potential loss of income from being unable to get to work safely
- Feelings of isolation or depression
- Power outages during extreme weather events

The project team also engaged stakeholders from state and local agencies, the energy utilities that serve Tualatin, non-profits, and businesses.

## WHAT WE HEARD

Key takeaways from the adaptation-focused stakeholder meetings included the importance of building trust and relationships in the community and the need for more public refuge to keep people and animals safe during extreme weather events.

The focus on climate resilience reflects a growing recognition that climate change is accelerating and that living comfortably with the physical changes brought on by climate change will necessitate taking action through proactive planning, coordination, investment of money and resources, and information sharing within and between local agencies and community members.

## CLIMATE IMPACTS IN TUALATIN

This section is intended to help readers understand the local impacts of climate change and the impact that our actions (or inactions) can have to ensure that Tualatin can become a more environmentally active and inclusive community with a thriving and diversified economy. Where possible, we share what the differences in future physical conditions will be if we and the rest of the world take action to reduce emissions (strong climate action scenario) compared to if we do not take action (no climate action scenario). For more, in-depth information about how climate change will impact Tualatin, see Appendix 1: Future Physical Conditions and Climate 101 - Technical Reader.

Climate change will impact historically underserved communities first and worst. Devoting resources to engage with, listen to, and better serve these communities moving forward will be an important commitment.

### Heat

It's going to get hotter. Without climate action, Tualatin is likely to **experience a summer climate much like California's Sacramento Valley** (Figure 5) by 2080. The number of days over 90 degrees every summer are expected to increase dramatically: **from a historical average of 6 to nearly 60 by the end of the century.** In contrast, **if the world takes strong climate action, we can constrain the number of hot days to under 30.**

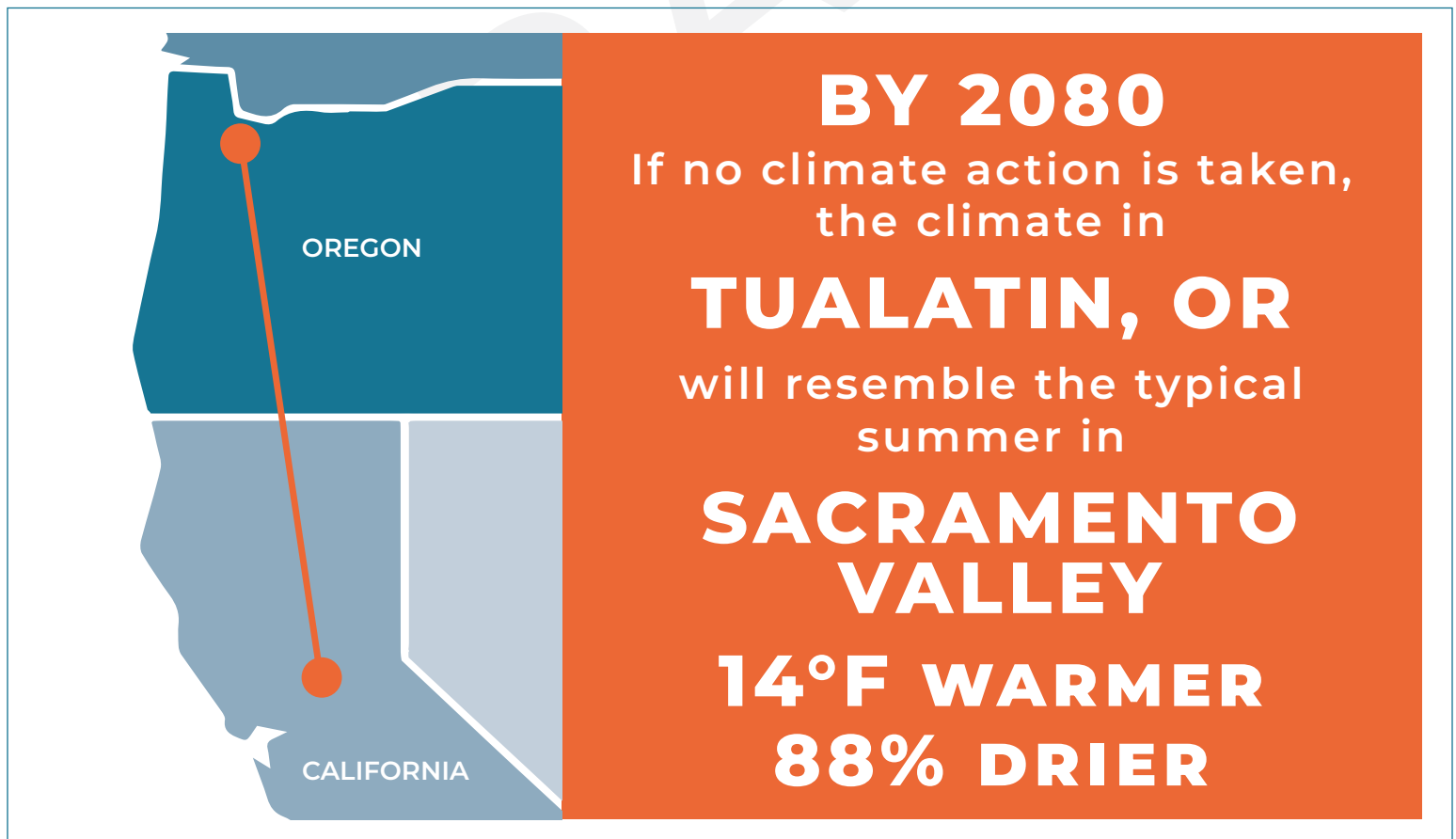


FIGURE 5: Without climate action, Tualatin's climate will feel like Sacramento Valley California's current climate.

According to the [Statesman Journal](#), Oregon continued its pattern of historically hot temperatures in 2022, recording the 10th warmest year on record. Of the 13 hottest years recorded in Oregon, nine have come since 2000 and seven have come since 2010.

We've already begun to experience hotter summers in Tualatin. In June 2021, the Pacific Northwest experienced an extreme heat wave or 'heat dome' event. Heat records were broken across the region, as temperatures soared as high as 118 degrees Fahrenheit. Portland saw a record high temperature of 116 degrees F. Hundreds of people died across the Pacific Northwest, including 96 Oregonians.

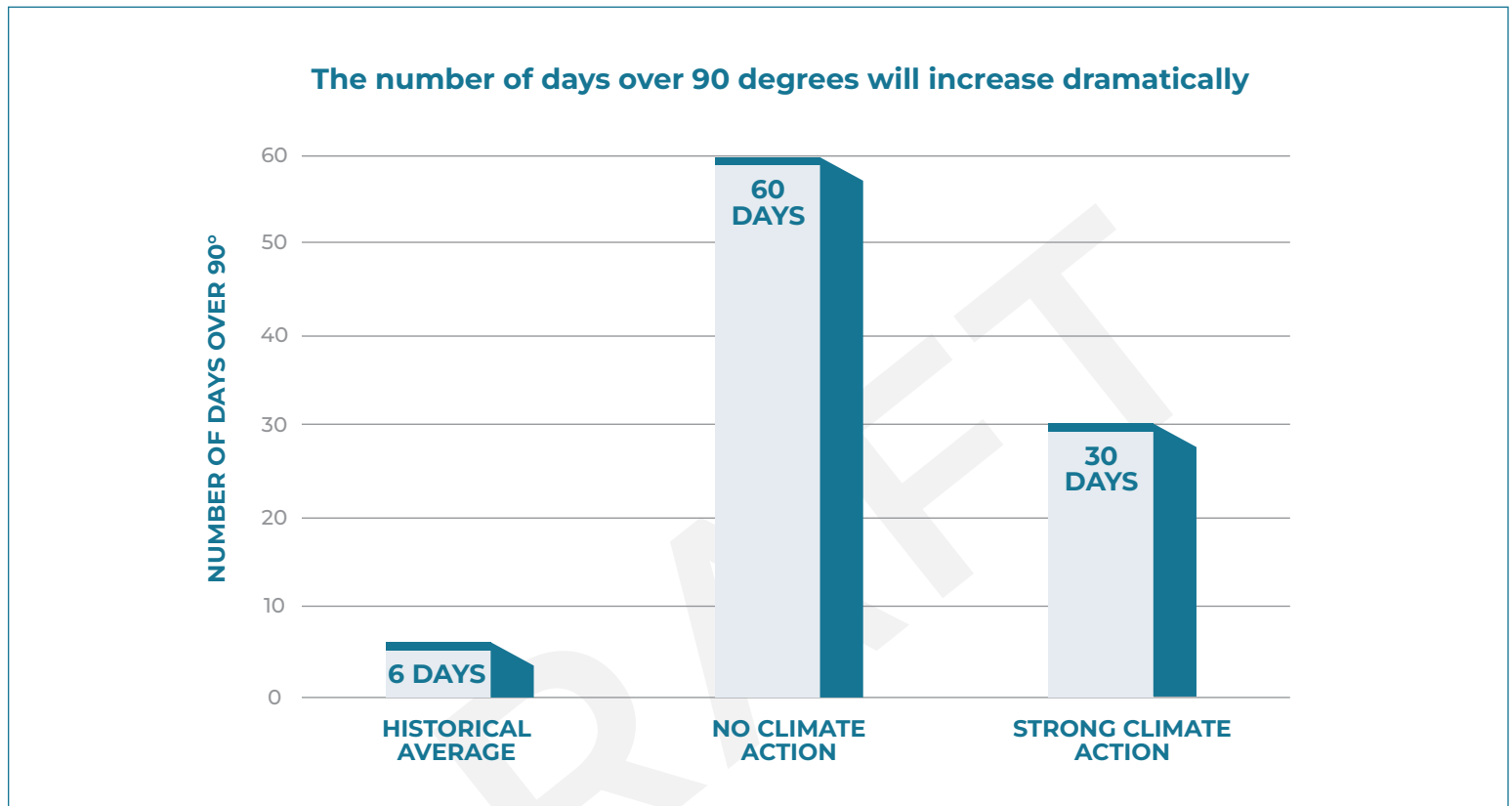


FIGURE 6: By taking strong climate action, we can help to limit the number of days over 90 degrees to 30 days each year. Without climate action, there will be about 60 days over 90 degrees each year.

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“The heat has restricted us to certain times of day when we can comfortably go outside the house in the summer time. Our air conditioner use is definitely up.”

- Tualatin resident

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## Fire and smoke

While Tualatin is not at a high risk for forest fires, we are at risk of smoke events from fires happening in the region. We are already seeing the devastating effects, as shown in Figure 7 (recent fire conditions), with fires around Tualatin increasing steadily in the last few years. Under the no climate action scenario, the current average of 10 days of extreme fire danger in the Portland metropolitan region will double to 20 by the end of the century. Strong climate action can decrease the number of extreme fire danger days to 17.

Wildfire smoke is expected to increase with wildfires, not just in nearby forests, but across the West. Winds carry smoke from elsewhere in Oregon, surrounding states, and even down from Canada where it settles in the valley. Smoke can cause and exacerbate numerous health conditions like acute respiratory disorders such as asthma, as well as cardiovascular disease.

The 2020 wildfire season demonstrated this when the international air quality monitoring website [IQAir.com](https://www.iqair.com) ranked Portland as number 1 for worst air quality among the world's cities in September 2020 – worse than notoriously polluted spots in countries such as India, China and Israel ([NPR/OBP](#)).

“The wildfires from 2021 were heartbreaking and scary. With the fire approaching Oregon City, I got to the point where I started documenting items in my house for insurance purposes and packing a go-bag. It was a very scary time.”

- Alexis, Tualatin resident

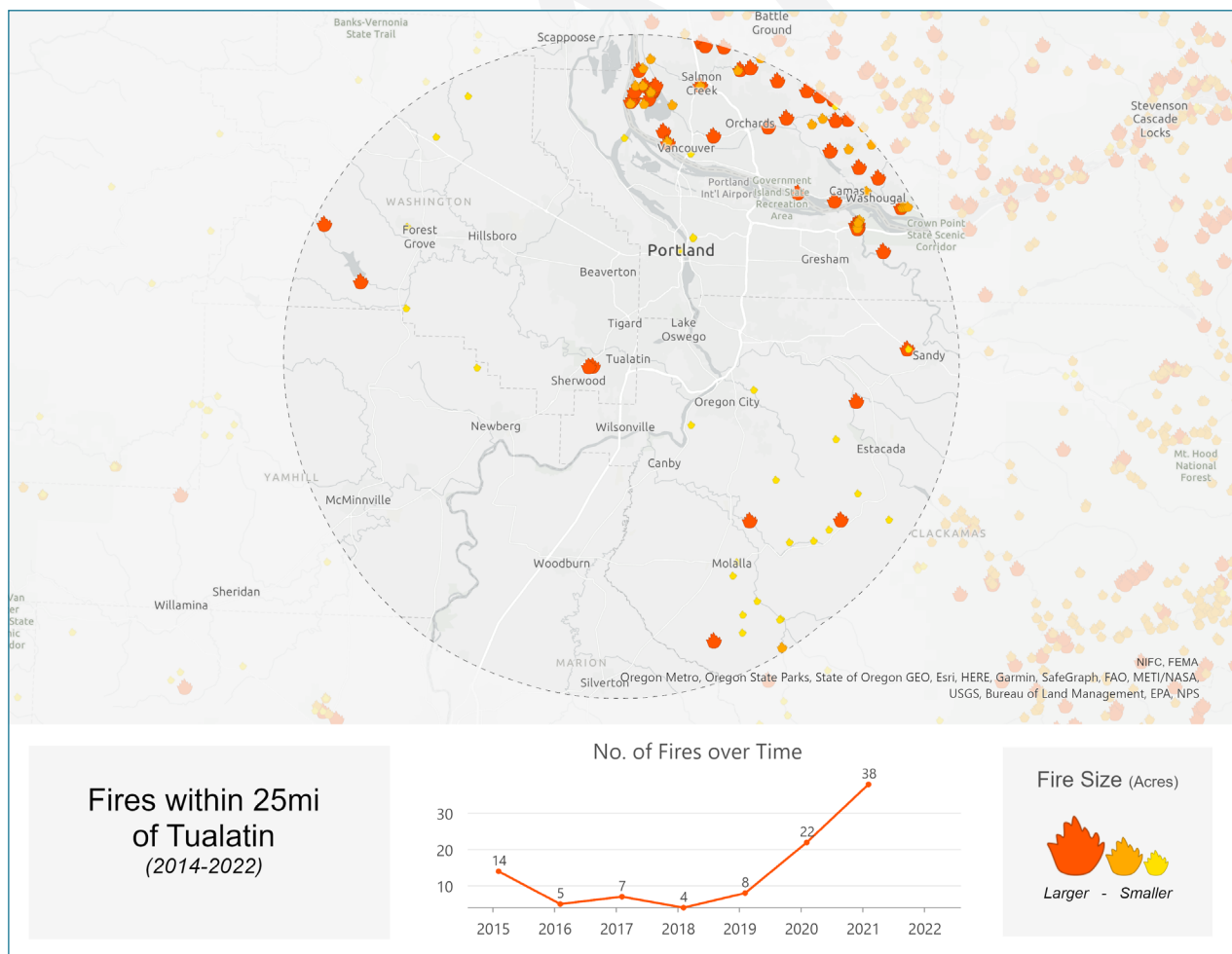


FIGURE 7: Recent wildfire conditions around Tualatin

## Precipitation and flooding

Overall, annual rainfall quantities will remain nearly unchanged for Tualatin. The most noticeable change will be an increase in atmospheric rivers (also known as “rivers in the sky”), weather systems that bring large storms with heavy precipitation in short periods of time. See Figure 8 for a visual explanation of atmospheric rivers.

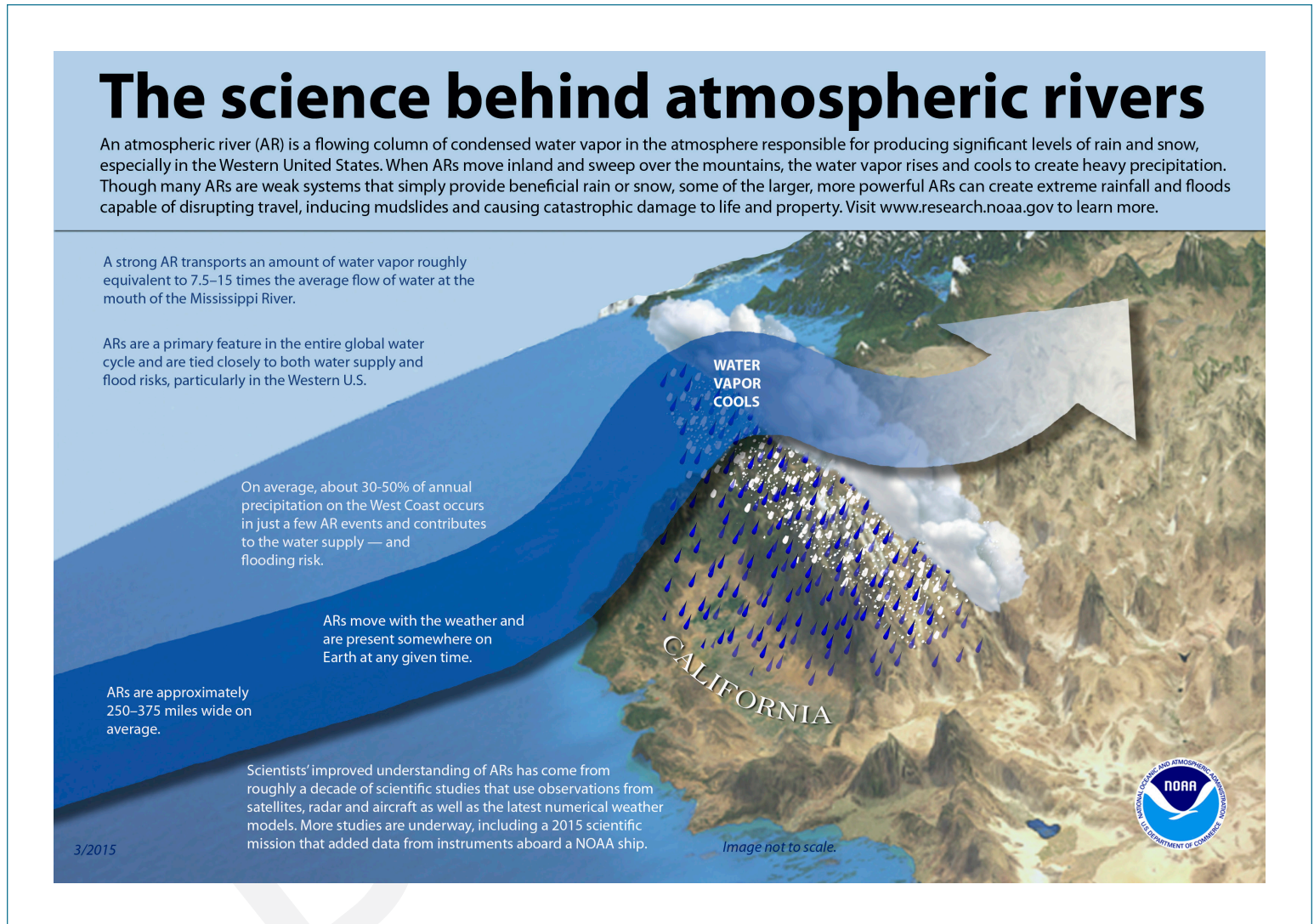


FIGURE 8: Atmospheric rivers

In the future, however, increased severity of rain events is likely to increase the likelihood and severity of flooding. The increased chance means that the blue area, which currently floods every hundred years or so, will likely see flooding much more often, every 20 to 50 years.

Flooding can have significant impacts on people's health and safety, particularly in the immediate aftermath of a flood. Floodwaters can carry harmful contaminants, such as bacteria, viruses, and chemicals, which can pose a health risk to those exposed to them. Exposure to contaminated floodwaters can cause skin infections, gastrointestinal illness, and respiratory issues. Additionally, floodwaters can hide hazards such as sharp objects, debris, and downed power lines, making it dangerous to walk or drive through flooded areas.

Additionally, this may mean that more people in Tualatin need to purchase flood insurance. It is likely that all of the places shown in pink on the map will need flood insurance, and that the premiums for those in the blue places will increase.

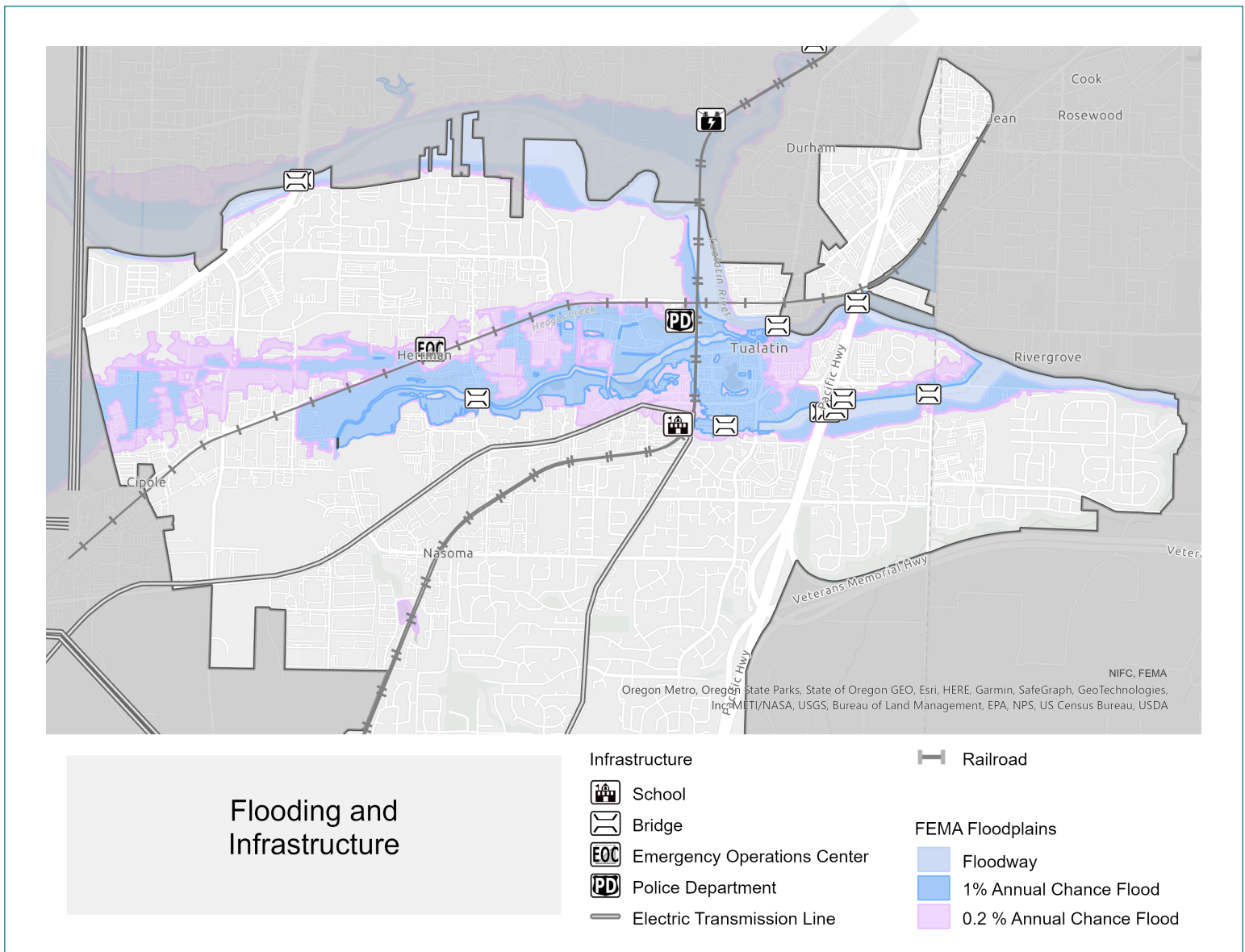


FIGURE 9: Tualatin's current flood map

## THE 1996 FLOOD

Tualatin is no stranger to extreme flooding. Take the February 1996 flood, for example, in which floodwaters rose to 126.3 feet above sea level and buried downtown Tualatin under 7 feet of water. At least 29 homes, 97 multi-family units, and 85 commercial/industrial buildings in Tualatin were affected and many homeowners residing along the river were also forced to evacuate.

Volunteers, City staff, Tualatin Valley Fire & Rescue, and Federal Emergency Management Agency (FEMA) personnel joined together to evacuate neighbors, fill and distribute sandbags, and support one another. Eventually, the water receded, leaving water damage and debris in its wake. Flooding events are becoming more frequent and intense due to climate change, leaving the downtown area at heightened risk unless action is taken to prepare for these events and reduce risk. Click here to read the full [Tualatin Times article](#).



FIGURE 10: Photos of Tualatin's downtown area during the 1996 flood.



## Health impacts

Climate impacts have and will continue to impact human health. For example, we can expect more extreme heat to result in an increase in heat-related conditions, such as heat exhaustion and infectious diseases such as West Nile, Lyme, and fungal diseases. Furthermore, heat affects human health through increased stress and has been linked to increased violence in some populations. Pregnant people, people who work outdoors, the elderly, and people without access to air conditioning are at an increased risk for heat stroke and other heat related conditions.

For example, smoke from wildfires can cause poor air quality. People with asthma or other respiratory conditions may be more sensitive to and negatively affected by poor air quality. According to the Asthma and Allergy Foundation of America, the burden of asthma in the United States falls disproportionately on Black, Hispanic and American Indian/Alaska Native people. These groups have the highest asthma rates, deaths, and hospitalizations due to structural determinants of health like systemic racism, and social determinants of health, like socioeconomic status and education. See Figure 11 for a comprehensive assessment from the Oregon Health Authority that shows how climate hazards, like poor air quality, can interact with existing stress factors, like access to education, health care, and wealth, to amplify adverse effects on human health.

<b>Climate-related drivers of health: environmental hazards</b>	<b>Stress factors: inequities in social, physical environment, cultural, and economic supports</b>
Heat	Systemic inequities in policies
Infectious disease vectors	
Wildfire	Inequities and unequal investment in social determinants of health (e.g., housing, education, income, wealth, transportation access, food security, income security, access to health care)
Air quality (e.g., pollen, wildfire smoke, smog, ozone)	
Storms, floods, landslides	
Sea level rise	Capacity and adaptive capacity of infrastructure, institutions, and systems to support human health (e.g., culturally specific services, surge capacity of hospitals)
Drought, water insecurity	
<b>Effects on human health</b>	
Hazard-related acute conditions (e.g., heat stroke, asthma attack)	
Hazard-related chronic conditions (e.g., heart disease, diabetes, respiratory illness)	
Infectious diseases (e.g., Lyme disease)	
Mental health conditions	
Adverse pregnancy outcomes	

FIGURE 11: Climate hazards and social stress factors exacerbate negative effects on human health.

# SECTION TWO: STRATEGIES AND ACTIONS

The “Preparing for Climate Change” section identifies actions the Tualatin community can take to adapt to changing climate conditions, like extreme heat, wildfires and smoke, and precipitation and flooding. In this section, actions are categorized by strategy within each of the following three focus areas:



## FOCUS AREA 1 NATURAL SYSTEMS, RESOURCES, & INFRASTRUCTURE

<b>STRATEGY 1.1</b>	Improve the resilience of Tualatin’s natural systems, resources, and infrastructure to extreme heat	13 Actions
<b>STRATEGY 1.2</b>	Improve the resilience of Tualatin’s natural systems, resources, and infrastructure to handle an increase in fire risk and smoke events.	1 Actions
<b>STRATEGY 1.3</b>	Improve the resilience of Tualatin’s natural systems, resources, and infrastructure to handle an increase in heavy precipitation events, flooding, and winter storms.	8 Actions



## FOCUS AREA 2 HEALTH AND SAFETY

<b>STRATEGY 2.1</b>	Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle extreme heat events.	14 Actions
<b>STRATEGY 2.2</b>	Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle more frequent wildfire and smoke events.	4 Actions
<b>STRATEGY 2.3</b>	Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle the impacts of heavy precipitation events and winter storms.	14 Actions



## FOCUS AREA 3 ECONOMIC SHIFTS

<b>STRATEGY 3.1</b>	Improve the resilience of Tualatin’s businesses and workers to extreme heat.	2 Actions
<b>STRATEGY 3.2</b>	Improve the resilience of Tualatin’s businesses and workers to handle an increase in fire risk and smoke events.	2 Actions
<b>STRATEGY 3.3</b>	Improve the resilience of Tualatin’s businesses and workers to handle an increase in heavy precipitation events, flooding, and winter storms.	5 Actions



## FOCUS AREA 1: NATURAL SYSTEMS, RESOURCES, AND INFRASTRUCTURE

### Background

Climate change will put a strain on Tualatin's natural systems, resources, and infrastructure including the plants, animals, trees, the drinking water system, sewer system, stormwater system, and City parks.

As we prepare for hotter summers, wildfires and smoke, and floods, Tualatin infrastructure should be designed to handle higher temperatures and more stormwater, protecting people who spend time outside, and educating the community on how to prepare for climate hazards. The public right-of-way (streets, sidewalks, and land that is controlled by a government entity as opposed to privately owned) is already crowded and may become increasingly congested. This may make it harder to adapt to the impacts of climate change because it can be difficult to find space to provide the underground conduit needed for full electrification and undergrounding more utilities to withstand weather and increased stormwater flows.

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“We’re already seeing the impacts of drought and extreme heat on trees in Tualatin. Native tree species that used to thrive here, like the Western Red Cedar, are now struggling to stay healthy and we’re seeing more and more of these trees die off in our parks and across the city each year.”

- Tom Steiger, Tualatin's Parks Maintenance Manager

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**Strategy 1.1**

**Improve the resilience of Tualatin’s natural systems, resources, and infrastructure to extreme heat**



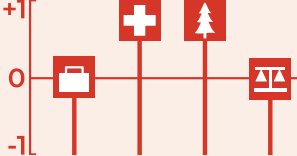


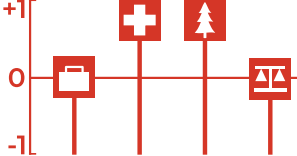
Extreme heat can negatively impact natural systems, resources, and infrastructure by contributing to drought, increasing the likelihood of wildfires, and putting strain on plants and animals. High temperatures can cause asphalt and concrete to expand, leading to buckling, cracking, and other damage to roads, bridges, and other infrastructure. Figure 12 shows how surface temperatures vary based on surface type. Cement, red brick, and blacktop (asphalt) become extremely hot when air temperatures exceed 90 degrees Fahrenheit. This can be dangerous for pets and other animals.

Time	Grass in shade	Grass in sun	Air Temp	Cement	Red Brick	Blacktop
7am	70	74	76	78	78	80
8	72	77	77	80	81	81
9	78	85	88	93	95	89
10	82	86	90	99	105	103
11	85	98	92	105	115	121
12pm	88	100	93	112	125	130
1	90	103	94	115	130	135
2	91	105	95	125	135	140
3	91	105	95	124	134	140
4	89	102	95	118	131	137
5	87	98	93	112	122	131
6	85	96	91	106	110	122
7	83	86	90	100	105	112
8	80	80 (dusk)	87	95	98	103
9	78	78 (dark)	84	90	92	93

FIGURE 12: Surface temperatures vary by surface type.







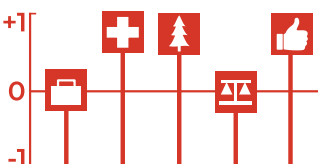


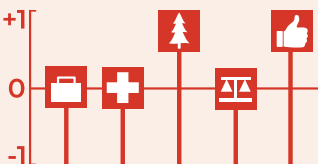
Extreme heat can also cause power outages, particularly if demand for electricity increases as people use air conditioning to stay cool. Power outages can impact critical infrastructure, such as hospitals and pumps in the drinking water system, leading to health and safety concerns. Addressing the impacts of extreme heat on Tualatin’s natural systems, resources, and infrastructure will require investment in information gathering, policy changes, and information sharing.

# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.1.1 Update Tualatin’s approved street tree species list to better withstand climate change.</b> Increased temperatures, drought, fires, precipitation, and extreme weather events are expected. Trees should be selected based on their ability to withstand these changes, their growth rate, and their resiliency to pests and disease. This action must be completed before action 1.1.2.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Public Works and Parks Departments</li> </ul> <p><b>PROGRAM</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Sidewalk/ Street Tree Program</li> </ul>		<p>M A S * &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		
<p><b>1.1.2 Develop and conduct a communications campaign to increase awareness about drought-resistant species and street tree requirements in Tualatin.</b> The campaign should aim to increase awareness of the updated approved street tree list (from action 1.1.1), as well as include information about the City’s tree removal ordinance (TDC Ch. 33) and landscaping with drought-resistant plants to reduce water use. Communications channels could include a resource page on the City’s website and print pieces for what to know about sustainable and resilient landscaping in Tualatin.</p>	<p><b>PROGRAM</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Sidewalk/ Street Tree Program</li> </ul>		<p>M A S * &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Environmental</li> </ul>		

## Key




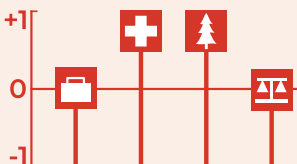
<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.1.3 Conduct a canopy cover study in Tualatin to better understand gaps in canopy cover and identify opportunities to equitably increase shade in Tualatin.</b> The study should include the entire geographical area of Tualatin, including publicly and privately owned properties.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		
<p><b>1.1.4 Maintain or increase canopy cover/shade in parks, along public roadways, and on private property in Tualatin.</b> Consider education and incentives to help achieve this action. Prioritize active transportation mode paths and routes and high equity need areas, such as low-income residential neighborhoods and near child and/or elder car facilities. This action is supported by Strategy 5.2.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Friends of Trees</li> </ul>	 	<p>M A S</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Transportation</li> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>		
<p><b>1.1.5 Continue partnering with the Regional Water Providers Consortium to share educational materials and resources related to water conservation and source water protection.</b> Staff should continue to assist with the development and refinement of print and digital materials, purchase conservation-related materials through the Consortium's annual print order, and distribute these materials to community members at community destinations and events.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Regional Water Providers Consortium</li> </ul>		<p>M A S *</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Environmental</li> </ul>		

**Key**



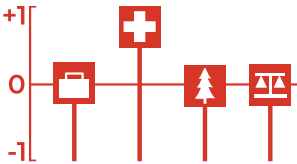



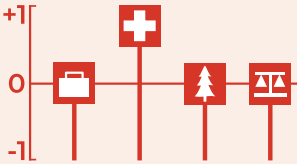





<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.1.6 Consider higher future temperatures when updating Public Works Construction Code, the Development Code, and the Municipal Code</b> to ensure that road, water, sewer, and stormwater infrastructure and new developments are better able to withstand higher temperatures.</p>			<p>M A S</p>   <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Transportation</li> </ul>		

<p><b>1.1.7 Advocate for Clean Water Services to update its stormwater treatment facility species list with species that are able to withstand increased temperatures, drought, occasional snow and ice storms, and fire.</b> The City of Tualatin currently follows the Clean Water Services Low Impact Development Approach Handbook, specifically the Public-Private Plant List for determining which plant species to select and plant in water quality facilities. Some native plant species are under significant threat of extinction (e.g. the Oregon Ash). Discretion should be used when selecting species to plant in water quality facilities to ensure that plants and trees are likely to survive and thrive in changing climate conditions.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Clean Water Services</li> </ul>		<p>M A S *</p>   <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		
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**Key**



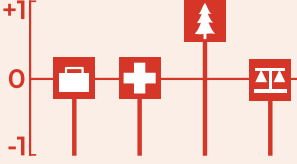



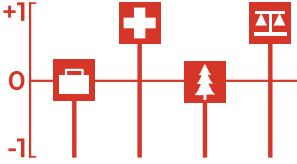



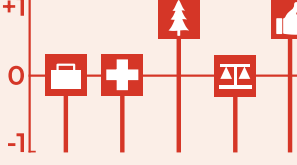
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ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.1.8 Develop parking lot design standards that result in cooler, shaded lots and prevent flooding risks.</b> This could include requiring or providing incentives for cool pavement techniques to reflect heat, increase shade cover from trees and/or solar canopies, and increase drainage, storage, and/or hardscape permeability to better manage influxes of stormwater. This action also supports Strategy 1.3.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Public Works and Community Development Departments</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Transportation</li> </ul>		
<p><b>1.1.9 Create park design standards to increase shade cover, shelter, increase the availability of drinking water fountains and water features in City parks.</b></p>	<p><b>POLICY/PLANNING DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• Parks System Plan</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Environmental</li> </ul>		
<p><b>1.1.10 Work with TriMet and Ride Connection to increase shelter at bus stops.</b> Prioritize efforts in higher equity needs areas of Tualatin. Additional shelter can provide shade in extreme heat events and cover during heavy precipitation events.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• TriMet</li> <li>• Ride Connection</li> </ul>	 	<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Transportation</li> </ul>		

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ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.1.11 Support Clean Water Services in implementing the strategies included in their Thermal Load Management Plan.</b> This program serves to help maintain the Tualatin River Watershed and mitigate the urban heat island effect by providing shade to reduce stream temperatures and diverting effluent through projects like purple pipe.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Clean Water Services</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		
<p><b>1.1.12 Increase access to water for cooling, including rivers, pools, swimming holes, and splash pads.</b> Access issues could include number of locations, availability of transportation to those locations, hours of operation, and/or cost to use facilities.</p>	<p><b>POLICY/PLANNING DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Parks System Plan</li> </ul>	 	<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Gathering Places</li> </ul>	 	
<p><b>1.1.13 Protect and restore the Tualatin River watershed.</b> The Tualatin River and the species that live in and around it are at risk from extreme heat. Protecting and restoring the riparian ecosystem can help to reduce stream temperatures, provide habitat, and provide recreation opportunities for community members.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Friends of Trees</li> <li>• Tualatin Riverkeepers</li> <li>• Tualatin River Watershed Council</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Connected/Informed/Engaged</li> <li>• Gathering Places</li> </ul>		

**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		



## Strategy 1.2

### Improve the resilience of Tualatin's natural systems, resources, and infrastructure to handle an increase in fire risk and smoke events

Natural systems and resources are vulnerable to the devastating effects of wildfires. Fire damage can lead to the loss of habitat and biodiversity and reduced soil and water quality. Fires can also impact infrastructure like roads, bridges, and buildings, causing damage and requiring costly repairs. While fire risk is low within the boundaries of Tualatin, these impacts may be experienced by community members who recreate or travel elsewhere in the Portland metropolitan region and in the state.





Wildfire smoke can have significant impacts on both plants and animals. Smoke can reduce the amount of sunlight that reaches the ground, which can affect the growth and productivity of plants in parks, natural areas, and gardens. It can also damage plant tissues and alter their physiology, making them more susceptible to disease and pests.

Smoke can be harmful to pets, particularly dogs and other pets that spend time outside, since smoke can negatively impact an animal's health and lead to behavioral issues. Wild animals are susceptible too since smoke can cause changes in migration patterns and feeding habits. In addition, the loss of habitat due to fires can lead to a decline in animal populations and biodiversity.

Given the far-reaching consequences of wildfire and smoke on natural systems, resources, and infrastructure, it is important to take action to prepare for fire and smoke events.



# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.2.1 Share resources from Firewise USA via Tualatin Valley Fire &amp; Rescue to increase community access to wildfire preparedness resources.</b>                      The Firewise USA program is a global nonprofit organization that is devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Oregon's Department of Forestry (ODF) manages the program at the state level, and ODF district offices and fire departments manage the program at the local level.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Tualatin Valley Fire &amp; Rescue</li> </ul>		<p><b>M A S</b> </p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>		<p>YES, POLICY DECISION</p>

## Key

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		



## Strategy 1.3

# Improve the resilience of Tualatin’s natural systems, resources, and infrastructure to handle an increase in heavy precipitation events, flooding, and winter storms

Instances of severe flooding happen in Tualatin when large amounts of water inundate low-lying areas within a short period of time. In Tualatin, this typically affects areas like Tualatin-Sherwood Road, the downtown area, and segments of Boones Ferry Road (see Figure 13). This type of flooding is typically caused by heavy rainfall – an event that is becoming more and more likely as the climate changes. The impact of severe flooding can be devastating, causing damage to homes and businesses, disrupting transportation and utilities, and putting residents at risk of injury or death.

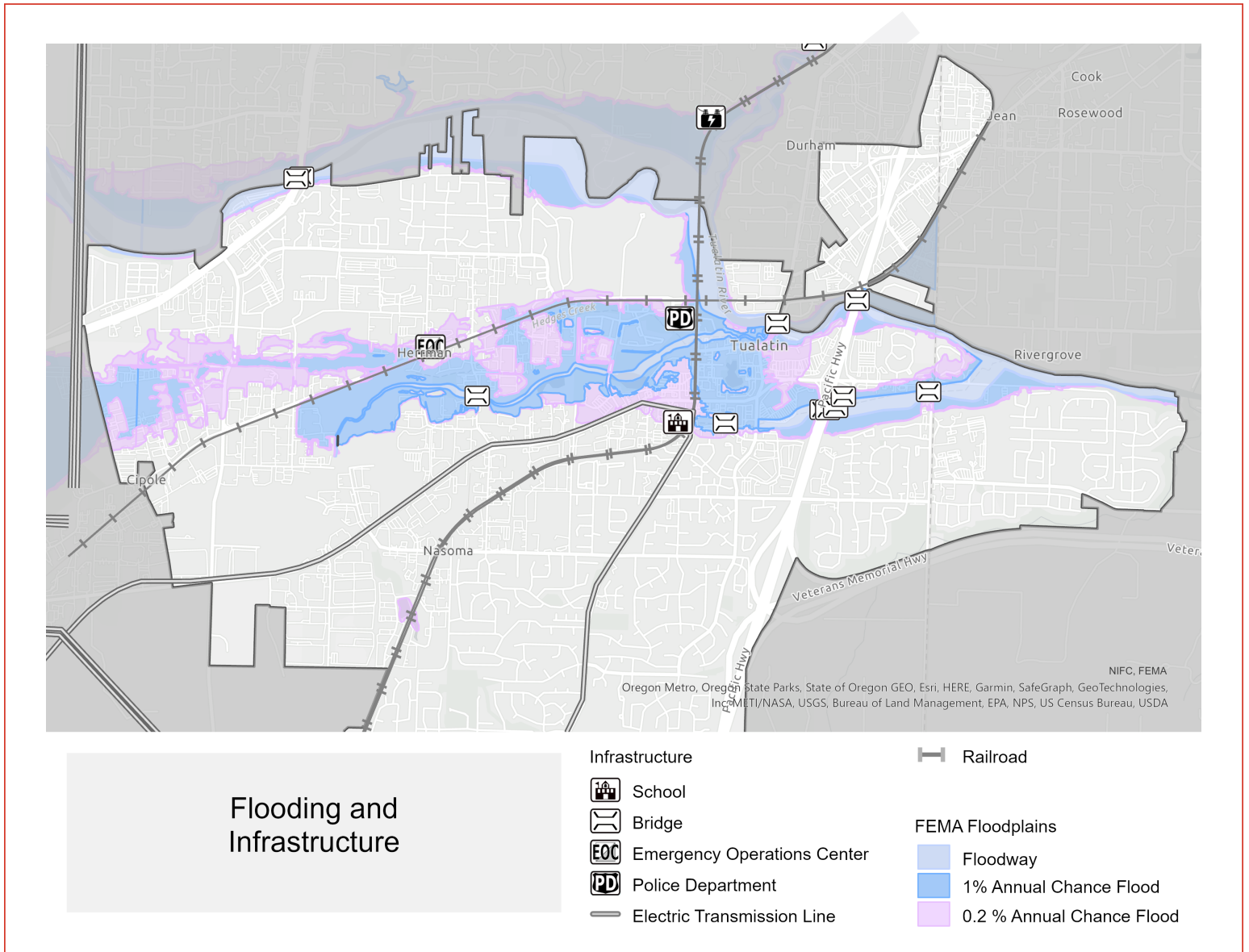


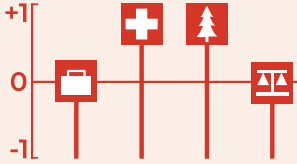




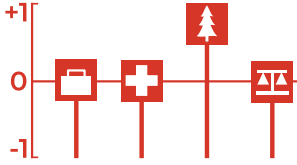



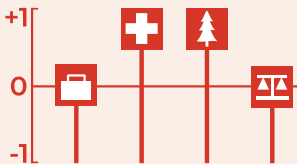



FIGURE 13: Tualatin’s current flood map

# Actions



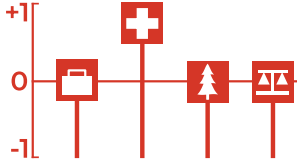

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p>1.3.1 Install backflow prevention devices in City sewer and stormwater systems as necessary to prevent flood damage.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Public Works Department</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		
<p>1.3.2 Encourage property owners to increase drainage, storage, and/or permeability on private properties. One example could be lowering stormwater rates for property owners that certify that they've increased drainage, storage, and/or permeability on their properties.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Clean Water Services</li> </ul>	 	<p>M A S</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Transportation</li> <li>• Environmental</li> </ul>		
<p>1.3.3 Evaluate strategies to reduce flooding in floodprone areas. This could include storage tanks located under parking lots and intersections, larger stormwater facilities, etc. to better manage flood waters and protect infrastructure and people.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Transportation</li> <li>• Environmental</li> </ul>		

## Key

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	



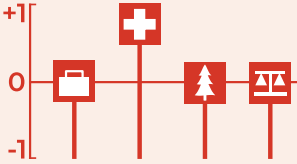


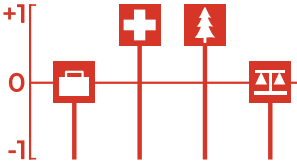

<p><b>1.3.4 Increase flood capacity on publicly owned lands.</b> This could include reviewing and revising the Parks Department's levels of service methodology to be more qualitative or acquiring or alternating public land, including park land, to increase stormwater capacity. Changes to use of park land will require altering the City's charter prohibition on developing infrastructure in parks.</p>	<p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• City charter</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Environmental</li> </ul>		
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<p><b>1.3.5 Increase sustainability of outdoor spaces.</b> Tools could include rain gardens, backyard habitat certification, pollinator pockets, SITES certification, etc. This action also supports Strategies 1.1 and 1.2.</p>	<p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• City charter</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Gathering Places</li> <li>• Environmental</li> </ul>		
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<p><b>1.3.6 Advocate for increased grid resiliency and redundancy to minimize service disruptions as the building and transportation sectors electrify.</b> There are concerns about the increased demand for electricity from buildings and vehicles putting a strain on the electrical grid's capacity and reliability as fossil fuels are phased out. Resiliency and redundancy efforts are needed to support the increased demand for electricity.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Portland General Electric (PGE)</li> </ul> <p><b>PROGRAM</b></p> <ul style="list-style-type: none"> <li>• PGE Smart Grid Test Bed</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p> 		
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**Key**

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>1.3.7 Enhance signage in areas where flooding may occur and wayfinding signage when sections of roadways are likely to be unpassable.</b> The City currently has a list of known roads that tend to flood. Staff should continue to monitor and adjust this list as need arises. Consider developing a signage plan for large flooding events. This action supports Strategy 2.3.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Public Works Department</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Transportation</li> </ul>		
<p><b>1.3.8 Consider constructing large, regional stormwater management facilities to increase stormwater management capacity.</b> Larger facilities provide greater flood mitigation and ease development burden.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Clean Water Services</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Environmental</li> </ul>		

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**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	



## FOCUS AREA 2: HEALTH AND SAFETY

### Background

Climate change will impact the people that live, work, learn, and play in Tualatin. While all individuals will experience the impacts of climate change, some populations, like people with low incomes, people of color, young children, older adults, and people who work outside will likely experience these impacts first and worst due to existing inequities.

### WHAT WE HEARD

Community members reported needing to stay home or indoors and not being able to get to work or school as their top concerns related to climate impacts in Tualatin. People were also concerned about the potential loss of income from not being able to work at full capacity during climate events, feelings of isolation and depression (especially for older community members), loss of electricity, and difficulty breathing or dangerous air quality during smoke events.

Community members also expressed interest in a City-provided resilience kit for households to help people prepare for Tualatin's likely climate hazards. Resilience kits could include information about City resources like the sandbag program to assist with the impacts of localized flooding as well as ways to stay cool at City facilities like the Library and splash pad at the Lake of the Commons. It could also include more general emergency preparedness materials like best practices for storing an emergency supply of water.

The City asked participants what help they needed to cope with the impacts of climate change. The most common suggestions revolved around financial assistance, improving or expanding City services, and information sharing. The City can play a large role in sharing relevant information in a timely manner, particularly in response to extreme weather or emergency events. Religious institutions and community leaders can also help to connect the community to important resources to keep people safe and informed.



In emergencies and extreme weather events, people look to their neighbors, family, and friends for help. Fostering strong relationships between community members and groups within Tualatin, as well as relationships with neighboring communities, is critical to increasing climate resilience in Tualatin.



FIGURE 14: Participants in the Youth-focused climate action workshop in Fall 2022.

## WHAT WE HEARD

Participants in the Youth workshop were very concerned about the wellbeing of those most vulnerable to extreme weather and what they need to cope and survive. Participants were eager to help each other and create community systems of support. Several participants were interested in working with the City to implement portions of the final Climate Action Plan, which could include creating systems for mutual aid and care.

The City acknowledges that barriers, like lack of resources, time, and trust, can impact individuals' abilities to prepare for climate change. It is critical to build trust between the City and communities who have historically been marginalized and underserved. The City currently invests in the Community Emergency Response Team (CERT), a group that is dedicated to informing, training, and linking community volunteers and their neighborhoods to more effectively respond when disasters strike. It would be beneficial to use CERT as a model to continue and expand investment in building relationships with trusted leaders from communities who have historically been excluded to increase the likelihood of successful preparedness efforts across the entire Tualatin community.



FIGURE 15: Members of Tualatin's Community Emergency Response Team (CERT), a community group dedicated to informing, training, and linking community volunteers and their neighborhoods to more effectively respond when disasters strike.



### Strategy 2.1

## Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle extreme heat events

Extreme heat can lead to heat exhaustion, heat stroke, and other heat-related illnesses, particularly among vulnerable populations such as the elderly, young children, and those with pre-existing medical conditions. The additional stress caused by extreme heat can impact people's safety and well-being by leading to more crime, more human-wildlife interactions, and food spoilage.

“The heat dome events over the last few years have shown us that the increased stress caused by extreme heat events often result in an increase in emergency response calls. As police, we recognize the importance of implementing strategies to help community members and officers stay safe during these events.”



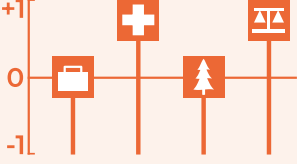

- Greg Pickering, Tualatin Police Chief

Extreme heat also increases the demand for air conditioning and other forms of cooling, leading to increased energy use and carbon emissions.






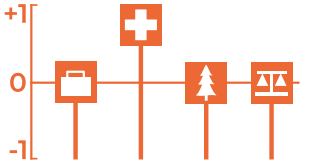

FIGURE 16: Community members cooling off at the splash pad at the Lake of the Commons.

# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.1.1 Update Rental Housing Maintenance Standards (TMC 6-13-040) to include standards for adequate cooling.</b> As of June 2023, TMC 6-13-040 states that, “There shall be a permanently installed heat source with the ability to provide a room temperature of 68 degrees Fahrenheit three feet above the floor, measured in the approximate center of the room, in all habitable rooms.” For example, City of Tempe, AZ’s code (Section 21-34) states that, “Every rental housing unit shall have cooling, under the tenant’s control, capable of safely cooling all habitable rooms, bathrooms and flush toilet rooms located therein to a temperature no greater than 88 degrees, if cooled by evaporative cooling, or 82 degrees, if cooled by air conditioning.”</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Community Development Department</li> </ul> <p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• Tualatin Municipal Code 6-13-040</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>		

## Key


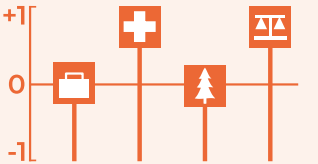



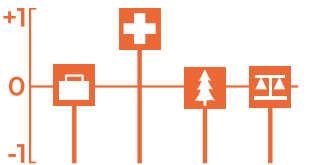


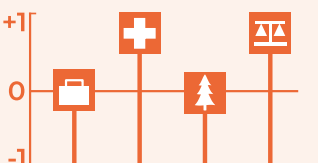

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.1.2 Provide safe and reliable indoor shelters during extreme weather events, including extreme heat, freezing temperatures, and hazardous air quality due to wildfire smoke.</b>            Shelter considerations include accessibility, adequate air filtration during air quality events, places to charge phones, medical devices, and other electronics, and allowing pets. Expand access by increasing shelter hours by partnering with CERT and/ or Washington County to staff shelters and expanding access by partnering with Ride Connection to increase transportation options to and from shelters. Consider additional shelter locations beyond the Library to increase access for community members not located near downtown. This action supports Strategies 2.2 and 2.3.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Community Emergency Response Team (CERT)</li> <li>• Ride Connection</li> <li>• Washington County Emergency Management</li> <li>• Washington County Public Health</li> </ul>		<p><b>M A S</b> </p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Gathering Places</li> </ul>	 	

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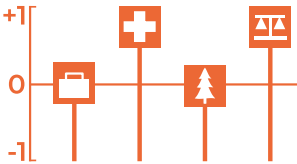







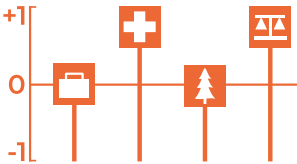
**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.1.3 Provide safe and reliable indoor shelters for Tualatin’s unhoused population during extreme weather events, including extreme heat, freezing temperatures, and hazardous air quality due to wildfire smoke.</b>            Unique considerations for offering shelter to the unhoused include building type, hours of operation, transportation, communication methods, and availability of cots or beds. Shelters must be equipped with adequate air filtration and places to charge phones and devices. Consider options to allow pets at indoor shelters in extreme weather events. This action supports Strategies 2.2 and 2.3.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Washington County Homeless Services</li> <li>• Washington County Emergency Management</li> <li>• City of Tigard</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Gathering Places</li> </ul>		
<p><b>2.1.4 Share information about available shelters in anticipation of and during extreme weather events, including extreme heat, freezing temperatures, and hazardous air quality due to wildfire smoke.</b> Information should be shared through a variety of communications methods (e.g. social media, website, physical flyers, etc.) and should be available in both English and Spanish. This action supports Strategies 2.2 and 2.3.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Gathering Places</li> </ul>		
<p><b>2.1.5 Promote programs that provide low or no-cost air conditioners to residents in need.</b> Target outreach towards low-income residents, people with disabilities, elderly people, and other vulnerable populations.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Oregon Housing and Community Services</li> <li>• Oregon Health Authority</li> <li>• Oregon Department of Energy</li> <li>• Care Oregon</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> </ul>		



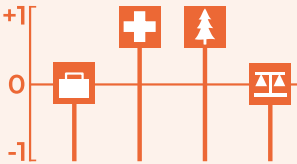






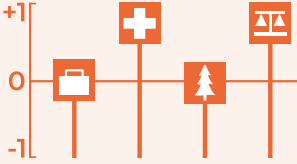
**Key**

MITIGATION ACTIONS	ADAPTATION ACTIONS	SEQUESTRATION ACTIONS	IMPLEMENT	CONVENE	SUPPORT/ADVOCATE	QUICK START	YES, POLICY DECISION
JOBS	HEALTH & SAFETY	ECOSYSTEM & WILDLIFE HEALTH	OPPORTUNITY FOR EQUITY	COMMUNITY ACCEPTANCE	0-5 YRS	6-10 YRS	10+ YRS
						ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.1.6 Promote assistance programs that help residents pay electricity bills to cover the increased need for cooling (or heating, during winter storms) their homes.</b> PGE offers resources like payment plans, payment extensions, bill due date changes, and an income-qualified bill discount program.</p>	<p><b>PROGRAMS</b></p> <ul style="list-style-type: none"> <li>• PGE's Income-Qualified Bill Discount</li> <li>• Low-Income Home Energy Assistance Program (LIHEAP)</li> <li>• Oregon Energy Assistance Program (OEAP)</li> </ul> <p>Washington County residents seeking financial assistance can apply for LIHEAP and/or OEAP via Community Action.</p> <p>Clackamas County residents seeking assistance can apply via Clackamas County Social Services or St. Vincent de Paul.</p>		<p>M A S </p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> </ul>		
<p><b>2.1.7 Promote program options for providing financial assistance to weatherize homes for low-income residents,</b> particularly those who live in dwellings with fewer shared walls (i.e. mobile homes, trailers, or single family homes).</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Energy Trust of Oregon</li> </ul>		<p>M A S </p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Environmental</li> </ul>		
<p><b>2.1.8 Provide information and education on which energy-saving improvements (like heat pumps) people can prioritize to reduce the costs of cooling.</b> Heat pumps can also be used for low-emissions heating of buildings, so this action also supports Strategy 2.3.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Energy Trust of Oregon</li> </ul>		<p>M A S </p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>		



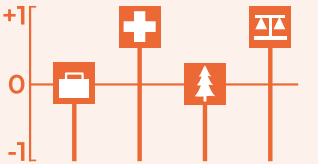


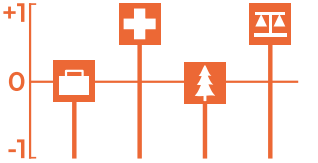



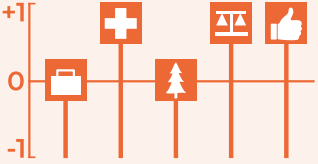
**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.1.9 Actively enforce the City's tree codes.</b> Private trees are subject to TDC Ch. 33 and street trees are subject to TDC Ch. 74. The City could educate and communicate about tree code requirements and/or "fix it tickets" to encourage retaining and replanting trees. A "fix it ticket" refers to a correctable violation of the code where the fee would be waived once the citation is fixed. This action supports Strategy 5.2.</p>	<p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• Tualatin Development Code (TDC)</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Transportation</li> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>		
<p><b>2.1.10 Update the City's tree code to retain or increase tree cover.</b> Private trees are subject to TDC Ch. 33 and public trees are subject to TDC Ch. 74.</p>	<p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• Tualatin Development Code (TDC)</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Transportation</li> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>	 	
<p><b>2.1.11 Share emergency preparedness resources in a free, easy-to-access preparedness kit available in English and Spanish.</b> Preparedness information should relate to extreme weather events due to climate change (like extreme heat, wildfire and smoke, and heavy precipitation and flooding) as well as other disasters like earthquakes. This action also supports Strategies 2.2 and 2.3.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Community Emergency Response Team (CERT)</li> <li>• Washington County Emergency Management</li> <li>• Clackamas County Disaster Management</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		

**Key**

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
							 ALIGNMENT WITH COUNCIL VISION (0-7)

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p>2.1.12 Promote the Energy Trust of Oregon's Landlord Provided Cooling Space Initiative program to provide support for cooling resources at or near multifamily housing properties.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Energy Trust of Oregon</li> </ul> <p><b>PROGRAM</b></p> <ul style="list-style-type: none"> <li>• Landlord Provided Cooling Space Initiative program</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Connected, Informed, Engaged</li> </ul>		
<p>2.1.13 Incentivize developers to abide by the Oregon Residential Reach Code to ensure adequate cooling in new residential developments. As of August 2021, the Oregon Residential Reach code defines a "conditioned space" as a living space that is kept between 55-85 degrees Fahrenheit.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Neighborhoods</li> <li>• Environmental</li> </ul>	 	
<p>2.1.14 Share information about available shelters in anticipation of and during extreme weather events, including extreme heat, freezing temperatures, and hazardous air quality due to wildfire smoke. Information should be shared through a variety of communications methods (e.g. social media, website, physical flyers, etc.) and should be available in both English and Spanish. This action supports Strategies 2.2 and 2.3.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Gathering Places</li> </ul>		

IN PROGRESS

**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	





## Strategy 2.2

### Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle more frequent wildfire and smoke events

Wildfire smoke can have significant impacts on human health, particularly for those with respiratory issues or other pre-existing health conditions. The tiny particles and gases in smoke can penetrate deep into the lungs and cause irritation, inflammation, and other negative health effects. Exposure to wildfire smoke can exacerbate asthma and other respiratory illnesses, increase the risk of heart attacks and strokes, and cause coughing, wheezing, and shortness of breath. It can also worsen existing lung and heart conditions, and increase susceptibility to respiratory infections.

Additionally, prolonged exposure to wildfire smoke can have long-term health impacts, including reduced lung function and an increased risk of chronic respiratory diseases. It is essential for individuals living in areas impacted by wildfire smoke to take precautions, such as staying indoors and using air filters or masks, to protect their health.

Wildfire smoke doesn't impact all populations equally, and it can exacerbate existing inequities in health outcomes. Low-income and historically overburdened communities are often disproportionately impacted by wildfires and their smoke, as they are more likely to have fewer resources to evacuate or protect themselves during a wildfire and/or work outside in unfiltered air conditions. In addition, these populations may have higher rates of pre-existing health conditions, making them more vulnerable to the health impacts of smoke.

Addressing the inequitable impacts of wildfire smoke will require a multifaceted approach that includes reducing the risk of wildfires, improving access to healthcare and other resources, and ensuring that vulnerable populations have the support they need to respond to and recover from wildfires and smoke.



FIGURE 17: Photos from the corner of 108th Ave and Herman Rd. Left: During a wildfire smoke event in 2020. Right: On a clear day in May 2023.

# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.2.1</b> As they become available, promote programs that provide low or no-cost masks and HVAC filters and/or air filtration systems to residents in need. Target outreach towards low-income residents, people with disabilities, elderly people, and other vulnerable populations.</p>			 <p>• Inclusive Community</p>		
<p><b>2.2.2</b> Promote higher standards of air filtration in new builds and renovations to filter out hazardous particles during poor air quality events. Advocate at the state level and consider regulating this through the municipal code.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Community Development Department</li> </ul>		 <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> <li>• Gathering Places</li> </ul>		

## Key

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.2.3 Amplify existing educational materials about fire and smoke preparedness and resilience.</b> Utilize existing resources such as TVF&amp;R’s wildfire preparedness resources and the Oregon Health Authority’s recommendations on wildfire smoke and public health. Update the City’s website and provide timely information via social media and other channels during fire and smoke events.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Tualatin Valley Fire &amp; Rescue</li> <li>• Oregon Health Authority</li> </ul>		<p><b>M A S</b> </p>  <p>• Connected, Informed, Engaged</p>		

<p><b>2.2.4 Amplify existing educational materials from IQAir and the Oregon Health Authority about which building air filters, face masks, and/or respirators are the most effective in filtering out harmful chemicals in wildfire smoke.</b> Share educational materials through standard City Communications channels, and explore other options to get this information to the business community (e.g. include in a Chamber of Commerce newsletter or ask the Business CIO to share it with their members). This action supports Strategy 3.2.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Tualatin Chamber of Commerce</li> <li>• Commercial Community Involvement Organization</li> </ul>		<p><b>M A S</b> </p>  <p>• Connected, Informed, Engaged</p>		
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**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	



## Strategy 2.3

### Increase preparedness and provide resources to help people who live, work, learn, and play in Tualatin better handle the impacts of heavy precipitation events and winter storms



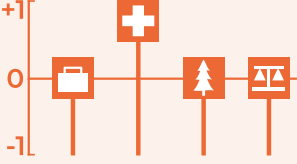


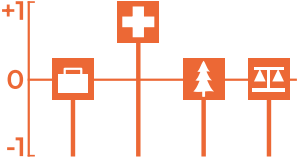
Flooding can have significant impacts on people's health and safety, particularly in the immediate aftermath of a flood. Floodwaters can carry harmful contaminants, such as bacteria, viruses, and chemicals, which can pose a health risk to those exposed to them. Exposure to contaminated floodwaters can cause skin infections, gastrointestinal illness, and respiratory issues. Additionally, floodwaters can hide hazards such as sharp objects, debris, and downed power lines, making it dangerous to walk or drive through flooded areas.

In addition to the immediate health and safety impacts of flooding, there can also be longer-term effects. Floods can lead to the growth of mold and other pathogens, which can cause respiratory issues and other health problems. Floods can also damage water and sanitation systems, leading to a lack of access to clean water and adequate sanitation facilities, which can contribute to the spread of waterborne diseases.

The disruption of daily life brought on by severe flooding can also have mental health impacts, such as stress and anxiety. Tualatin's public transit infrastructure needs to be improved to become better prepared for increased atmospheric river and flooding events. Additionally, it is important to educate and inform community members about flood preparedness, provide material or financial resources to residents, and improve coordination within and between public agencies and utilities.



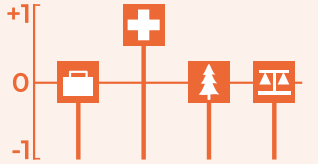


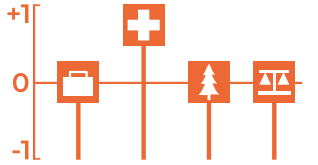


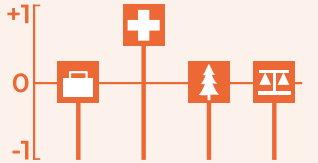


# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.3.1 Improve Tualatin's river level monitoring capabilities.</b> Currently, Public Works staff monitor river levels using data from the Farmington gauge (FRM03), located upstream, and forecast anticipated river levels. The addition of river level forecasting for the river gauge at Community Park would allow for more accurate predictions and a more timely response.</p> <p><i>IN PROGRESS</i></p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• National Oceanic and Atmospheric Administration</li> </ul> <p><b>PLANNING/POLICY DOCUMENT</b></p> <ul style="list-style-type: none"> <li>• Capital Improvement Plan</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		<p>YES, POLICY DECISION</p>
<p><b>2.3.2 Share information at the start of the rainy season each year about the city's free sandbag program to help protect buildings against flooding.</b> Materials should be translated into Spanish and the information should be made available through a variety of communications channels, including but not limited to the City's e-newsletter, social media, and/or flyers in community destinations.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Public Works Department</li> </ul>		<p><b>M A S</b> * &gt;&gt;&gt;</p> 		<p>YES, POLICY DECISION</p>



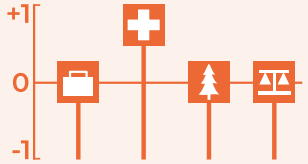



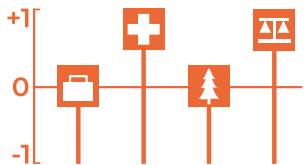


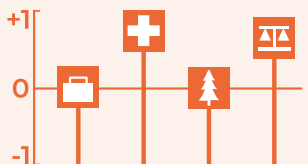
## Key

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	IMPLEMENT	CONVENE	SUPPORT/ADVOCATE	QUICK START	YES, POLICY DECISION
JOBS	HEALTH & SAFETY	ECOSYSTEM & WILDLIFE HEALTH	OPPORTUNITY FOR EQUITY	COMMUNITY ACCEPTANCE	0-5 YRS	6-10 YRS	10+ YRS
						ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.3.3</b> Communicate about the City's flooding emergency response plan to inform community members about what to expect and how to prepare in the event of a major flood. Materials should be translated into Spanish and made available through a variety of communications channels, including (but not limited to) social media, City website, and placing signs near flooded areas to alert people to dangerous areas and detour routes.</p> <p><i>IN PROGRESS</i></p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		
<p><b>2.3.4</b> Communicate with community members in advance of and in response to changing conditions during winter storm or flooding events. The City already communicates about the Snow and Ice Response Plan in advance of winter storm events, and road closures due to flooding so that community members are better able to plan their commutes. Build on the work already being done and strive to make communication targeted, proactive, specific about the event taking place, bilingual, and accessible via multiple communications channels.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> </ul>		
<p><b>2.3.5</b> Host a evacuation/reunification planning workshop and/or share resources on how to plan for evacuation and reunification as part of the CERT preparedness fair.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Community Emergency Response Team (CERT)</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		

**Key**

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.3.6 Advocate for Tigard-Tualatin School District to add bus routes to pick students who live within a mile of TTSD schools up during inclement weather events.</b> These areas are not currently served by school buses, which typically requires these students to walk to school in the cold if schools are open during inclement weather events.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Tigard-Tualatin School District (TTSD)</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		
<p><b>2.3.7 Advocate to TriMet, Ride Connection, and other transit providers to improve public transportation by increasing the frequency of transit service, add more stops, and improve shelter at stops.</b> More frequent and reliable transit service can help people who need or want to use transit feel confident that they will get to where they need to go on time and with less exposure to extreme weather conditions.</p>	<p><b>PLANNING/POLICY DOCUMENTS</b></p> <ul style="list-style-type: none"> <li>• Aligns with the Housing Production Strategy 1, recommendation 1.3b: Identify opportunities to increase transit service.</li> </ul>	 	<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Transportation</li> </ul>		
<p><b>2.3.8 Improve access to the sandbag program</b> by delivering bags to high equity needs areas, setting up multiple fill stations, and/or communicating about the program in multiple languages. Consider partnering with CERT to deliver sandbags.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Community Emergency Response Team (CERT)</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> </ul>		

**Key**

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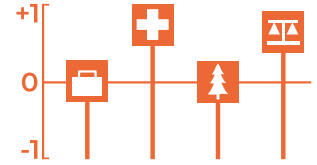
ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
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**2.3.9 Host a clothing drive** to provide blankets and warm winter coats to community members in need during the winter months.



M A S

• Inclusive Community



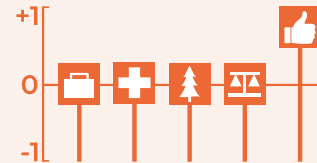
**2.3.10 Provide public education about the purpose of and benefits from stormwater facilities at water quality facility sites.** Educational strategies could include signage at water quality facilities, classroom visits and presentations, and utilizing existing City communications channels.

**STAKEHOLDER**  
• City of Tualatin Community Development and Public Works Departments



M A S

• Connected, Informed, Engaged  
• Environmental



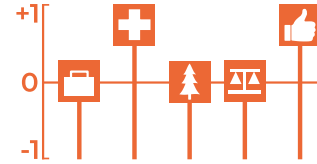
**2.3.11 Quickly restore City services if disruptions occur during and after extreme weather events.** Services include clearing roads of snow, ice, and debris, and repairing broken water, sewer, and stormwater system components. Revisit relevant Public Works planning documents to ensure that the City's response plans prioritize restoring services for vulnerable populations, essential goods and services, and major corridors and workplaces. This action supports Strategy 3.3.

**STAKEHOLDER**  
• City of Tualatin Public Works and Parks Departments



M A S \*



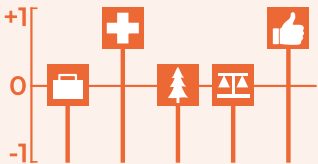
• Economy  
• Transportation  
• Neighborhoods



**Key**

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						ALIGNMENT WITH COUNCIL VISION (0-7)	



ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.3.12 Support utilities in quickly restoring power during and after winter storms by removing administrative barriers and streamlining the permitting process.</b> Many of PGE's powerlines exist as overhead powerlines at this time, and therefore are at risk from exposure to extreme weather events. This action also supports Strategy 3.3. Support PGE's efforts to underground powerlines. This supports Strategies 1.1, 1.2, and 1.3.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>Portland General Electric (PGE)</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>Economy</li> <li>Transportation</li> <li>Neighborhoods</li> </ul>		

<p><b>2.3.13 Change City zoning ordinances to regulate development in the 100-year flood plain.</b> As the frequency and intensity of atmospheric river events that lead to flooding occur, the risk of flooding negatively impacting people and property increases. Limiting new development in flood-prone areas can help to reduce the risk of flood damage and safety issues, leading to cost savings (less damage) and safer communities. This action supports Strategy 3.3.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>City of Tualatin Community Development Department</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>Economy</li> <li>Transportation</li> <li>Neighborhoods</li> <li>Environmental</li> </ul>		
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**Key**

MITIGATION ACTIONS	ADAPTATION ACTIONS	SEQUESTRATION ACTIONS	IMPLEMENT	CONVENE	SUPPORT/ADVOCATE	QUICK START	YES, POLICY DECISION
JOBS	HEALTH & SAFETY	ECOSYSTEM & WILDLIFE HEALTH	OPPORTUNITY FOR EQUITY	COMMUNITY ACCEPTANCE	0-5 YRS	6-10 YRS	10+ YRS
						ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>2.3.14 Change City code to enhance flood resilient development in flood-prone areas.</b> Flood resilient development refers to designing and constructing buildings, infrastructure, and communities in a way that minimizes the risk and impact of flooding. It involves implementing measures that enhance the ability of built environments to withstand and recover from flood events, thereby reducing potential damage and disruption. Examples of strategies related to flood resilient development include requiring elevated foundations, conducting floodplain mapping to identify high-risk areas, and investing in green infrastructure and natural flood management practices. This action supports Strategy 3.3.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Community Development Department</li> </ul>		<p><b>M A S</b> </p>  <ul style="list-style-type: none"> <li>• Economy</li> <li>• Transportation</li> <li>• Neighborhoods</li> </ul>		

DRAFT

**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)
					 10+ YRS		



## FOCUS AREA 3: ECONOMIC SHIFTS

### Background

Climate change will impact the economic system, including the production of materials, supply chain, businesses, workers, and consumers. A long-term business outreach and engagement plan could build on the business engagement that was conducted during the climate action planning process. This could include an annual Climate Action Fair to highlight green career pathways or other trade programs available, while also sharing timely information about climate hazards and preparedness strategies. Affordable and centrally-located workforce housing will continue to be needed to address an on-going issue of insufficient workforce housing options.

While climate change will disrupt the economic system in many ways, it will also provide new opportunities in the region. For example, as the climate warms, the Pacific Northwest may experience increased agricultural yields and a change in the type of crops that thrive here (Figure 18). This could provide opportunities for increased food processing in Tualatin. The Pacific Northwest will experience population growth, leading to a larger available workforce.

### WHAT WE HEARD

Businesses are still recovering from the impacts of the COVID-19 pandemic and labor shortages, often resulting in minimal capacity for businesses to engage on the topic of climate change as they deal with more pressing operational needs. Business leaders expressed interest in learning more about local climate hazards and convening to proactively plan for climate impacts.

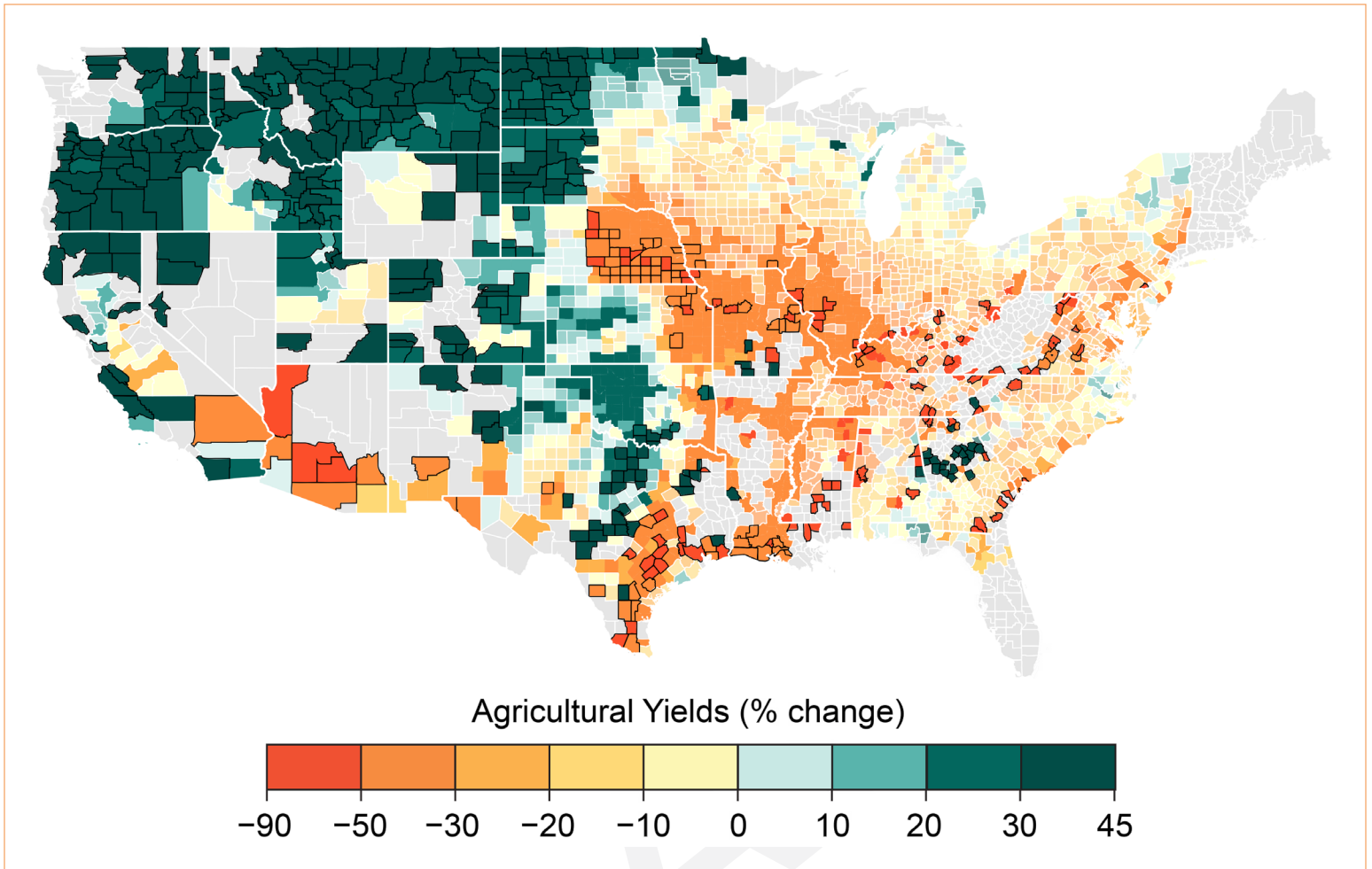


Figure 18: Projected impact of climate change on yields of corn, wheat, soybeans and cotton by the years 2080-2099. Areas where yields are projected to decline (warmer colors) include some of our current important agricultural regions, such as the Corn Belt and California's Central Valley. Agricultural yields are expected to increase in the northwest. Map source: Fourth National Climate Assessment, Figure 7.6 (Source data: Hsiang et al 2017).

## Strategies & actions



### Strategy 3.1

## Improve the resilience of Tualatin's businesses and workers to extreme heat

Extreme heat can have various negative impacts on the economy, including damage to infrastructure and equipment that can lead to significant financial losses. More stringent worker protection rules, like OSHA's heat illness prevention rule, help to protect workers' health by requiring workers to take more breaks in certain heat conditions. Heat-related illnesses can cause absenteeism and increased healthcare costs. These factors can lead to decreased productivity and increased expenses. Moreover, industries such as manufacturing, construction, and food processing can be negatively impacted by extreme heat, leading to reduced economic activity and revenue. Taking action to prepare for extreme heat is crucial to minimizing its impacts on the economy and reducing the risk of negative heat-related impacts.

However, there are also opportunities for some sectors to benefit from hotter temperatures. In the Willamette Valley, hotter temperatures may result in increased agricultural productivity, which may provide an opportunity for more food production and distribution to occur here.

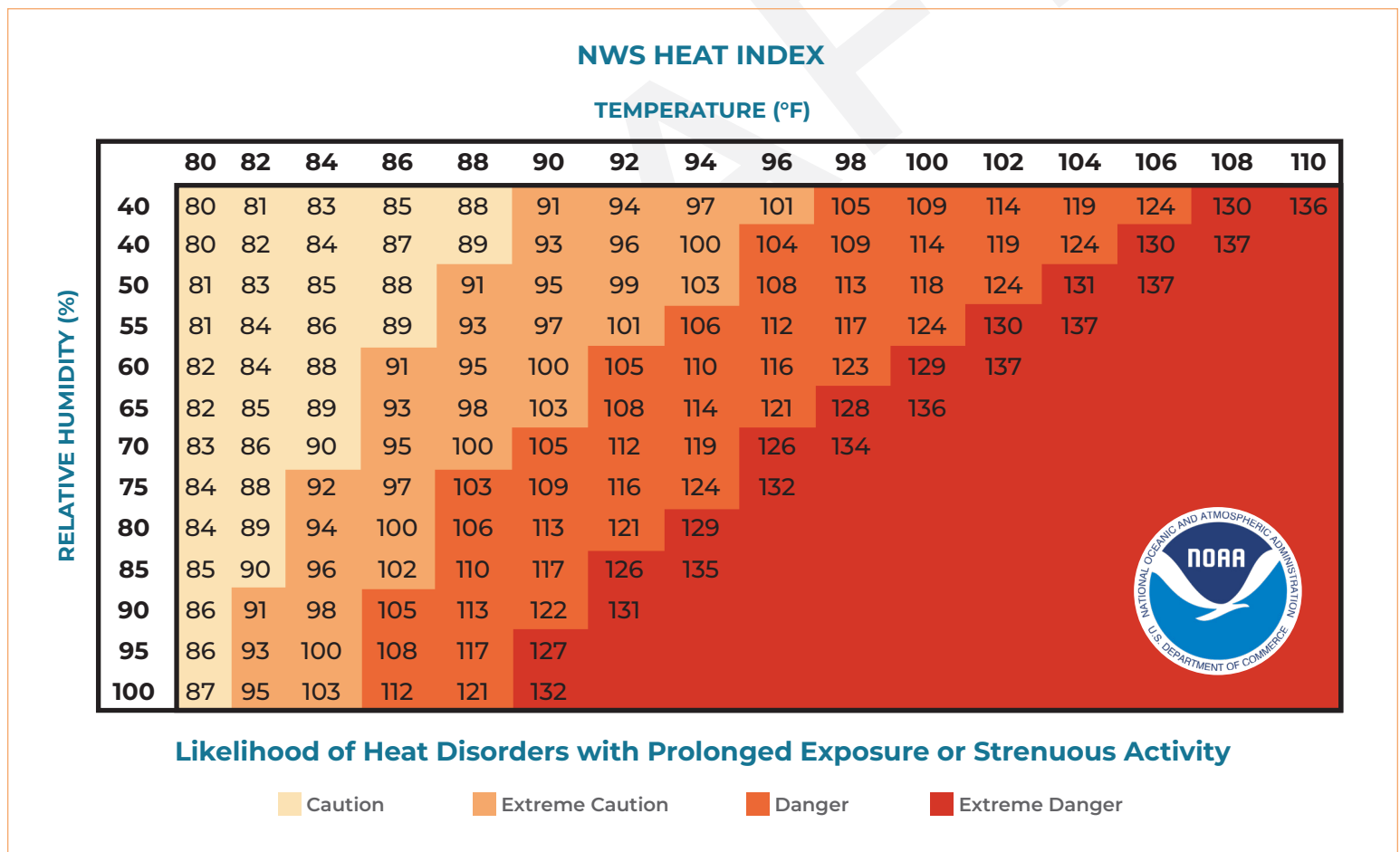


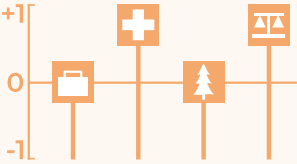


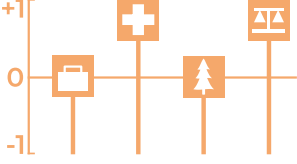



Figure 19: The heat index tells us how hot it might feel outside based on air temperature and humidity. This chart from the National Weather Service shows the likelihood of heat illness occurring with prolonged exposure or strenuous activity under various heat indices.

# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>3.1.1 Advocate for OSHA to create educational toolkits that employers can use to easily understand and communicate about new OSHA rules related to safely working in extreme heat, poor air quality, and other hazardous climate-related conditions.</b> The toolkit should be available in both digital and print formats to improve access. This action also supports strategy 3.2.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Oregon Occupational Health and Safety Administration</li> </ul>		<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> </ul>		
<p><b>3.1.2 Update development code to require more stringent cooling requirements in commercial and industrial buildings that create a lot of heat, such as food processing, cooking, brewing, drying and curing. To incentivize these changes, the City could consider providing grants (like storefront matching grants) or incentives to encourage retail to have permanent cooling and install awnings on storefronts to increase shade and shelter.</b></p>			<p><b>M A S</b> &gt;&gt;&gt;</p>  <ul style="list-style-type: none"> <li>• Economy</li> </ul>		

## Key

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE		 0-5 YRS	
					 6-10 YRS	 10+ YRS	ALIGNMENT WITH COUNCIL VISION (0-7)



## Strategy 3.2

### Improve the resilience of Tualatin's businesses and workers to handle an increase in fire risk and smoke events



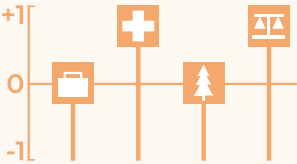



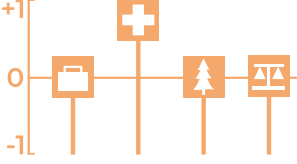
While wildfire risk itself is quite low in most of Tualatin, we will continue to experience the impacts of fires and wildfire smoke that happen in surrounding areas and states. Wildfires and smoke can have significant impacts on businesses and the economy, particularly those that rely on outdoor activities or natural resources. The direct impacts of wildfires, such as the destruction of infrastructure and property, can result in substantial financial losses. The indirect impacts of smoke, such as reduced visibility and health concerns, can cause disruptions in transportation, tourism, and recreation industries, leading to reduced revenue and economic activity. Smoke can also impact agriculture and forestry industries, leading to reduced or damaged crop yields and timber production.

More stringent worker protection rules, like the Occupational Safety and Health Administration's wildfire smoke protection rules, can impact operations by requiring additional monitoring, and communications. Employers are required to provide high-quality masks and/or respirators under severe air quality alert conditions. In addition, the health impacts of smoke can cause absenteeism and increased healthcare costs, leading to decreased productivity and increased expenses for businesses.

The economic impacts of wildfires and smoke can be significant, underscoring the importance of effective management strategies to reduce the risk of wildfires, prepare for smoke events, and minimize impacts of these events on the economy.

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# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p>3.2.1 Develop a financial assistance program to help businesses who are forced to reduce operating hours or close due to wildfire or smoke events.</p>			<p>M A S</p>  <p>• Economy</p>		
<p>3.2.2 Work with the business community to better prepare for supply chain disruptions due to fire and smoke events. The business community continues to feel the impacts from the COVID-19 pandemic, labor shortages, and supply chain disruptions. Some members of the business community expressed that they were unprepared to deal with the impacts of supply chain disruptions due to wildfire and smoke events. Building awareness that these events are likely to become more frequent may help the business community to better prepare for future events.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Chamber of Commerce</li> </ul>		<p>M A S</p>  <p>• Economy</p>		

## Key

<b>M</b> MITIGATION ACTIONS	<b>A</b> ADAPTATION ACTIONS	<b>S</b> SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 6-10 YRS	 10+ YRS	 ALIGNMENT WITH COUNCIL VISION (0-7)







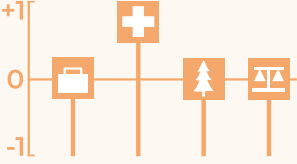


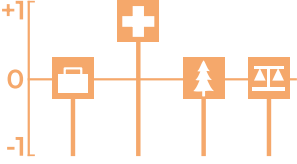
### Strategy 3.3

## Improve the resilience of Tualatin's businesses and workers to handle an increase in heavy precipitation events, flooding, and winter storms

Extreme precipitation and flooding can have significant impacts on businesses and the economy, particularly those that are located in flood-prone areas. The direct impacts of flooding, such as property damage, destruction of infrastructure, and losing business due to a flooding-related closure can result in substantial financial losses. Floods can also cause supply chain disruptions, impacting businesses that rely on the transportation of goods or services through affected areas. Additionally, the health impacts of flooding, such as the spread of waterborne illnesses and mold, can lead to increased healthcare costs and decreased productivity. The economic impacts of extreme precipitation and flooding can be significant, underscoring the importance of effective preparedness strategies to reduce the risk of flooding and minimize its impacts on the economy.



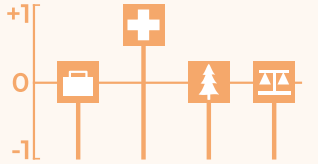



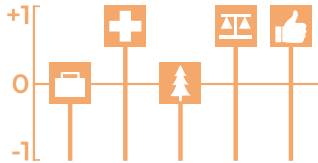



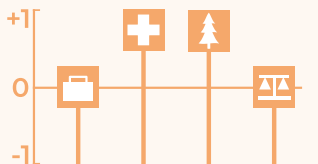


# Actions

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>3.3.1</b> Work with businesses to determine the need for improved external communication in advance of a winter storm or flooding event (e.g. communicate about the City's snow and ice response plan) and in response to changing conditions during a winter storm or flooding event (e.g. any road closures due to flooding), to increase safety and ensure that employees are better able to plan their commutes.</p>			<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> </ul>		
<p><b>3.2.2</b> Coordinate flood response and preparedness workshops with businesses in downtown area.</p>	<p><b>STAKEHOLDERS</b></p> <ul style="list-style-type: none"> <li>• Chamber of Commerce</li> <li>• Business CIO</li> <li>• Community Emergency Response Team (CERT)</li> <li>• Core Area Parking District Board</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> </ul>		

## Key

MITIGATION ACTIONS	ADAPTATION ACTIONS	SEQUESTRATION ACTIONS	IMPLEMENT	CONVENE	SUPPORT/ADVOCATE	QUICK START	YES, POLICY DECISION
JOBS	HEALTH & SAFETY	ECOSYSTEM & WILDLIFE HEALTH	OPPORTUNITY FOR EQUITY	COMMUNITY ACCEPTANCE	0-5 YRS	6-10 YRS	10+ YRS
						ALIGNMENT WITH COUNCIL VISION (0-7)	

ACTION	STAKEHOLDERS, PROGRAMS, & PLANNING/POLICY DOCUMENTS	CITY ROLE	CHARACTERISTICS	CO-BENEFITS	POLICY DECISION
<p><b>3.3.3 Improve businesses' access to sandbag program</b> by delivering bags to flood prone areas, setting up multiple fill stations, and/or communicating about the program in multiple languages.</p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• Community Emergency Response Team (CERT)</li> </ul>		<p>M A S</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> <li>• Economy</li> </ul>		
<p><b>3.3.4 Provide Minority/Women Business Enterprise (MBE/WBE) businesses and small businesses access to alternative power sources, like generators, during power outages.</b> Members of the business community expressed how detrimental power outages can be to their livelihoods and the success of their small businesses. The City could consider purchasing additional generators to have on hand for minority owned and small businesses to 'check out' in the event of a power outage.</p>		 	<p>M A S</p>  <ul style="list-style-type: none"> <li>• Inclusive Community</li> <li>• Economy</li> </ul>	 	
<p><b>3.3.5 Enhance outreach and education through the Private Water Quality Facilities Program.</b></p>	<p><b>STAKEHOLDER</b></p> <ul style="list-style-type: none"> <li>• City of Tualatin Community Development Department</li> </ul>		<p>M A S *</p>  <ul style="list-style-type: none"> <li>• Connected, Informed, Engaged</li> </ul>		

**Key**

 MITIGATION ACTIONS	 ADAPTATION ACTIONS	 SEQUESTRATION ACTIONS	 IMPLEMENT	 CONVENE	 SUPPORT/ADVOCATE	 QUICK START	 YES, POLICY DECISION
 JOBS	 HEALTH & SAFETY	 ECOSYSTEM & WILDLIFE HEALTH	 OPPORTUNITY FOR EQUITY	 COMMUNITY ACCEPTANCE	 0-5 YRS	 6-10 YRS	 10+ YRS
						 ALIGNMENT WITH COUNCIL VISION (0-7)	