Climate Change Vulnerability Assessment for Lane County, Oregon

Draft – January 25, 2022

This report prepared by the Lane County Climate Equity and Resilience Taskforce with the assistance of the Geos Institute's Climate Ready Communities program.

GEOS INSTITUTE

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More information about this project can be found at https://lanecounty.org/government/county_departments/public_works/climateplan and https://www.beyondtoxics.org/work/climate-justice/lane-climate-equity-and-resilience-task-force/

Lane County is embarking with community partners on an effort to understand the causes and impacts of climate change in order to take action.

Executive Summary

Lane County is already experiencing climate-driven changes including higher temperatures, reduced snowpack, increasing wildfire and smoke events, and more extreme storms.

As changes in climate continue, residents can expect increasing severity and frequency of extreme heat and wildfire, larger storms with more precipitation, more prolonged periods of drought, declining snowpack, and significant changes to the forests, rivers, coastal areas, and other natural features in and around Lane County.

In response to this climate reality, Lane County is embarking with community partners on an effort to understand the causes and impacts of climate change in order to take action that reduces the greenhouse gas emissions that are fueling the crisis, while taking steps to build resilience in the face of those changes to protect communities and residents within the county.

Specifically, Lane County and the Geos Institute have partnered with the NAACP and Beyond Toxics to develop and support the Lane Climate Equity and Resilience Task Force (CERTF). This Task Force is charged with identifying climate vulnerabilities and developing resilience strategies using a community-led process.

Information provided in this vulnerability assessment shows how community members participating in the stakeholder workshop see Lane County and its residents affected by climate change now and in the future. This document will serve as the foundation for efforts by the CERTF to develop ecologically sound and socially equitable climate resilience strategies as part of Lane County's Climate Action Plan process.

Methods

Geos Institute completed a Climate Trends Primer and Community Primer and supported the CERTF in hosting a community stakeholder workshop to identify and prioritize vulnerabilities in Lane County in five community systems:

- Built (buildings, roads, bridges, etc.)
- Natural (forests, rivers, wildlife, etc.)
- Cultural (Tribes, immigrant communities, local customs and historical practices)
- Economic (tourism, business, industry, etc.)
- Human (health, emergency response and preparedness, education)

Climate Vulnerabilities

The following vulnerabilities are presented in priority order as determined by the workshop participants:

Housing supply issues due to climate refugees
Farming and forestry threatened by drought, temperature variability, and wildfire
Threats to the availability, reliability, and capacity within the power grid
Increase in drought stress on plants and wildlife
Reduced ability to produce food in rural areas
Damage to electrical infrastructure due to wildfire
Cost of living increases leading to financial and housing instability
Marine fishing industry and food systems damaged by ocean acidification
Coastal communities threatened by sea level rise
Health risks from reduced air quality and smoke
Threat of wildfire on homes and businesses
Increase in demand for water
Loss of marine life due to ocean acidification
Decrease in water available for natural systems
Health risks from extreme heat
Increasing demands on public safety and social service providers creates more competition for resources
Groundwater sources drying up
Indigenous communities unable to access or manage traditional resources
Species loss as ecosystems transition
Increase in chronic and communicable diseases
Schools closed due to extreme heat and smoke
Increase in demand for energy
Higher rates of stress/mental health concerns leading to an increase in crime/violence

Damage to drinking water from wildfire

Toxic algal blooms threatening drinking water

Reduced ability to reforest after natural disasters due to high temperatures/drought

Supply chain breakdowns and price increases due to disruption

Reduction in ability to generate hydropower

Increase in risk to emergency communication infrastructure

Decreased potential for self-sustainability and ability to grow food

Air quality risks increase for walkers, cyclists, and bus riders

Increase in unemployment due to climate migration

Difficulty meeting greenhouse gas targets

Increase in risk to wildlife habitat due to wildfire

Reduced soil health in forest ecosystems

Existing lack of personal emergency preparedness made worse

Outdoor workers at risk from smoke, heat, and wildfire

Loss of skilled workforce as people move away

Impacts to middle housing stock

Health risks from reduced water quality in wells

Issues relating to low-income households accessing renewable energy made worse

Older levees at risk of failure

Stormwater infrastructure at risk from larger storms

Increase in salinity of coastal watersheds

Increase in urban waste runoff in rivers from floods and wildfires

Existing lack of emergency evacuation plans made worse

Increase in costs for property and liability insurance

Existing limitations in energy transmission are made worse

Reduced ability to access culturally relevant foods and other resources

Essential services at risk due to flooding

Bridges and culverts at risk of failure due to flooding

Risks to internet access and reliability

Increase in landslide risk to natural systems

Reduced ability to hold ceremonies and community events

Decrease in job stability

Price impacts on lumber and other building materials

Flood risk to transportation infrastructure

Transit travel times may increase

Loss of health insurance coverage due to disruptions in employment

Decline in tourism and recreation due to severe conditions

Damage to sewer infrastructure from wildfire

Dams unable to hold back larger storms

Increase in injuries due to extreme events

Conclusion

While this list of vulnerabilities is daunting, important work is underway. Developing strategies to address the climate vulnerabilities identified in this report is part of the larger climate planning effort underway through the Lane County Board of Commissioners. That effort includes both adaptation (adapting to changing conditions) and mitigation (reducing greenhouse gas emissions) strategies. By creating these strategies in concert, Lane County and its community partners can implement strategies that have many benefits to people and nature. Robust climate change solutions are positive strategies for the whole community.

Introduction

Lane County, Oregon, spans diverse landscapes over an area of 4,553 square miles and is home to over 380,000 residents[1]. Communities range from the large urban core of Eugene/Springfield to smaller communities that dot the landscape through the forested areas all the way out to the Pacific Coast.

The boundaries of the county include all or part of 9 watersheds and segments of three large rivers – the Willamette, McKenzie, and Siuslaw – flow through the county. Natural beauty and the benefits of intact natural systems are paramount to urban and rural residents alike.

Lane County is already experiencing climate-driven changes including higher temperatures, reduced snowpack, increasing wildfire and smoke events, and more extreme storms.

As changes in climate continue, residents can expect increasing severity and frequency of extreme heat and wildfire, larger storms with more precipitation, more prolonged periods of drought, declining snowpack, and significant changes to the forests, rivers, coastal areas, and other natural features in and around Lane County.

These changes are expected to become increasingly severe over the course of this century. However, many of the most severe impacts, particularly those anticipated for later in the century, can be avoided if communities across the U.S. and worldwide reduce greenhouse gas emissions quickly and aggressively.

In response to this climate reality, Lane County is embarking with community partners on an effort to understand the causes and impacts of climate change in order to take action that reduces the greenhouse gas emissions that are fueling the crisis, while taking steps to build resilience in the face of those changes to protect communities and residents within the county.

Many of the most severe impacts can be avoided if communities across the U.S. and globe reduce greenhouse gas emissions quickly and aggressively.

Specifically, Lane County and Geos Institute have partnered with the NAACP and Beyond Toxics to develop and support the Lane Climate Equity and Resilience Task Force (CERTF). This Task Force is charged with identifying climate vulnerabilities and developing resilience strategies using a community-led process.

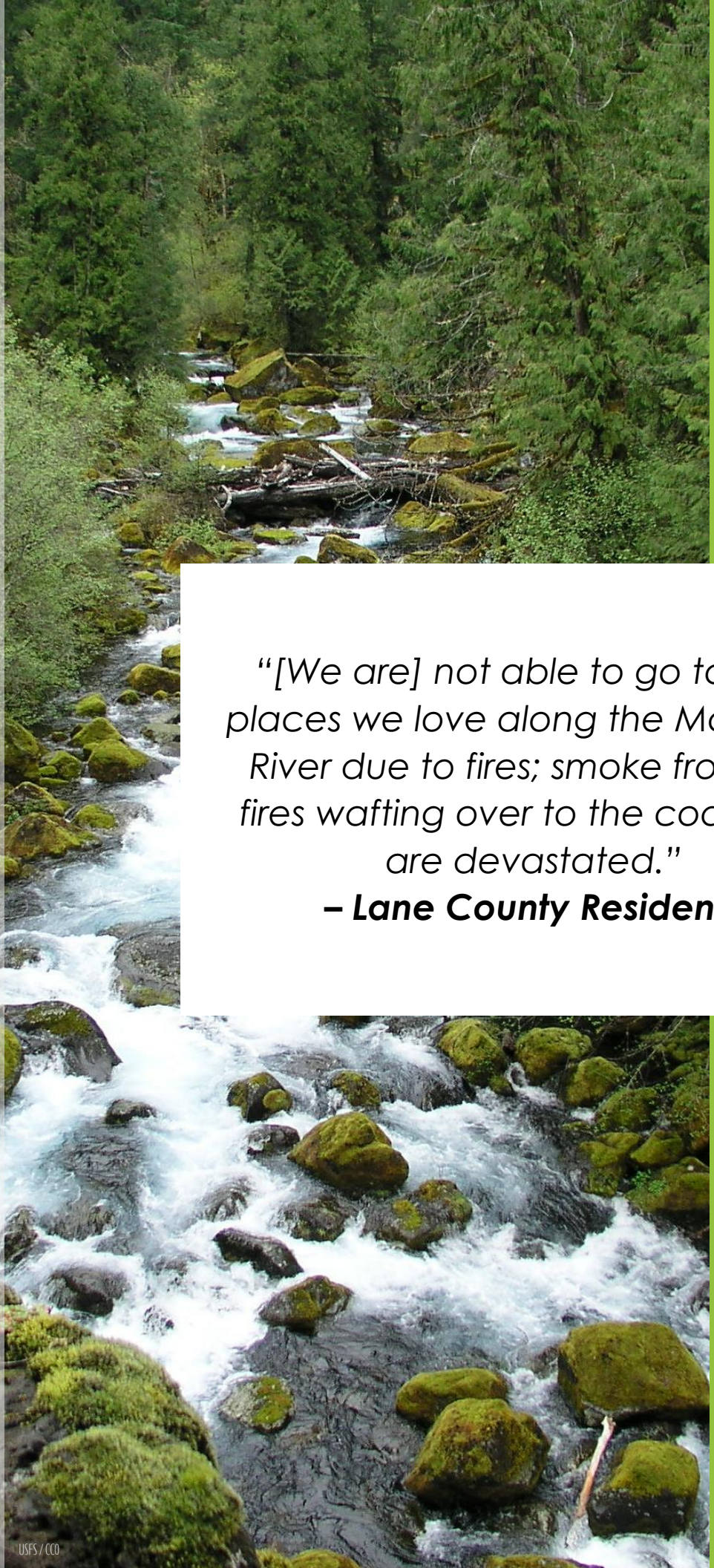
Lane County Today

Participants in the Stakeholder Workshop were asked: What is one word that describes your community?

Information provided in this vulnerability assessment shows how community members participanting in the stakeholder workshop see the impacts of climate change to Lane County and its residents now and in the future. It pays particular attention to populations and communities most at risk and centers their needs. Vulnerabilities are identified and prioritized in this document using a social equity lens. This document will serve as the foundation for efforts by the CERTF to develop ecologically sound and socially equitable climate resilience strategies as part of Lane County's Climate Action Plan process.

A special thank you to the members of the original Lane Climate Equity and Resilience Task Force, listed below in alphabetical order by first name:

Adria Godon-Bynum	Erick Oshel
Alexandra Corvello	George Beverly Jr.
Andrew Pardi	Haley Case Scott, Chair and Facilitator
Bonnie Dominguez	Juan Serpa Munoz
Camas Banks	Mike Allen
David Oaks	Raj Vable
Dylan Plummer	Rico Perez
Eloise Navarro	Silver Mogart



"[We are] not able to go to the places we love along the McKenzie River due to fires; smoke from the fires wafting over to the coast. We are devastated."

– Lane County Resident

USFS / CCO

Whole Community Resilience examines five community systems

Methods

Whole Community Resilience

Climate change affects all systems and the residents within a community. Therefore, it is important to develop strategies that work across different sectors and create co-benefits, while strengthening existing and developing new partnerships. Whole Community Resilience is a framework that ensures collaborative and cohesive solutions to climate impacts. Without Whole Community Resilience, many impacts are simply shifted from one population or sector to another. Those who are already most vulnerable to change often bear the brunt of the impacts.

Whole Community solutions to climate change work collaboratively across five major systems:

- Built (buildings, roads, bridges, etc.)
- Natural (forests, rivers, wildlife, etc.)
- Cultural (Tribes, immigrant communities, local customs and historical practices)
- Economic (tourism, business, industry, etc.)
- Human (health, emergency response and preparedness, education)

Stakeholder Workshop

Vulnerabilities to the five major community systems in Lane County (economic, built, natural, cultural, and health and emergency services) were assessed during two, half-day workshops held virtually by Zoom on June 16 and June 23, 2021. This workshop brought together local stakeholders from diverse sectors of the community with technical experts who manage community systems. Particular emphasis was placed on engaging people who represent under-resourced populations within Lane County who have lived experiences with these community systems.

Scientific information about the future climate conditions in Lane County was presented based on the Climate Trends Primer completed by the Geos Institute. Participants were then moved into breakout groups by community system and asked to identify impacts that are already underway and those that are expected to affect people and resources in the future. Information from the community survey was used to seed each of these discussions (see Appendix A).

Participants identified specific impacts already occurring or expected to occur in the future. For each identified impact to the community (including people, resources, and culture), the following information was collected:

- **Exposure** – The specific climate trend or projection that is already causing or is expected to cause the impact
- **Timeframe** – When the impact is expected to occur in Lane County
  - Near-term = current to 2030s
  - Mid-term = 2040s to 2060s
  - Long-term = 2070s to 2090s and beyond
- **Certainty** – (High, Medium, or Low) How certain we are that the impact will occur, given our current knowledge of climate change projections and our understanding of the people or resource being impacted
- **Sensitivity** – (High, Medium, or Low) Given our understanding of the specific sector for each given impact, how great of an impact is expected (e.g. how disruptive is it, how serious are the consequences, and how much overall change is expected?)
- **Adaptive Capacity** – (High, Medium, or Low) Whether there are already existing resources, programs, or policies in place to protect people or to respond to the changes with little disruption
- **Focal Populations** – The specific neighborhood, population, area, or category of resources or people that are expected to be especially affected by the impact, as well as any that are expected to be buffered due to special circumstances
- **Other Stressors** – Additional and ongoing stressors to the population or resource to be affected
- **Secondary Vulnerabilities** – Other potential responses to or effects related to climate change that are likely to affect the impact under consideration.

Once specific impacts to the community were assessed, they were ranked within each breakout group based on their relative level of vulnerability. Impacts expected in the near-term with high sensitivity and low adaptive capacity were classified as high vulnerability. Those expected to occur over longer time frames, with lower sensitivity, and/or higher adaptive capacity were classified as low or medium vulnerability.

Workshop participants then ranked vulnerabilities across all five community systems. That community-wide ranking is available at the end of this report. Most impacts identified in this vulnerability assessment are important to address, but some actions are more urgent than others, which is reflected in the ranking.

Lane Community Climate Survey

The Lane Community Climate Survey was conducted by the Lane Climate Equity and Resilience Task Force (CERTF), Beyond Toxics, and NAACP Eugene/Springfield, with assistance from the Geos Institute. The community survey was available to the public in both English and Spanish from May 2021-June 2021.

The survey was shared on multiple websites and social media outlets, and via email. Paper surveys were also distributed and collected by task force members throughout Lane County.

Survey results were reviewed by members of the CERTF, Beyond Toxics and NAACP Eugene/Springfield staff members, and Geos Institute. Survey results were used to help the CERTF understand how climate change is impacting communities in Lane County and to provide insight on how we can best prepare for its impacts. Survey results were also used to inform the Lane Climate Change Vulnerability Assessment Workshop that was held in June 2021.

See Appendix A for a summary of the community survey.

Climate Change Trends and Projections

Climate change is affecting communities and natural resources around the globe. The overall conditions that residents of Lane County experience will continue to change in coming decades. In 50 years, for example, climate conditions in Eugene will be similar to today's Sacramento (6.6° F hotter and 40% drier)[2].

These changes are expected to have dramatic impacts on the residents of Lane County. Some of the climate risks Lane County is facing include loss of snowpack and water storage, larger extreme storms and more flooding, larger wildfires, increasing incidence of heat waves, disease outbreaks, and dramatic declines of fish, wildlife, and plant species.

Lane County's Climate is Already Changing

Lane County, like the rest of Oregon, has already experienced substantial warming and other climate impacts.

Temperature – Lane County has warmed about 1° F compared to the baseline average (1961-90). Over the last 40 years, Lane County has warmed by about 0.2° F per decade (Fig. 1).

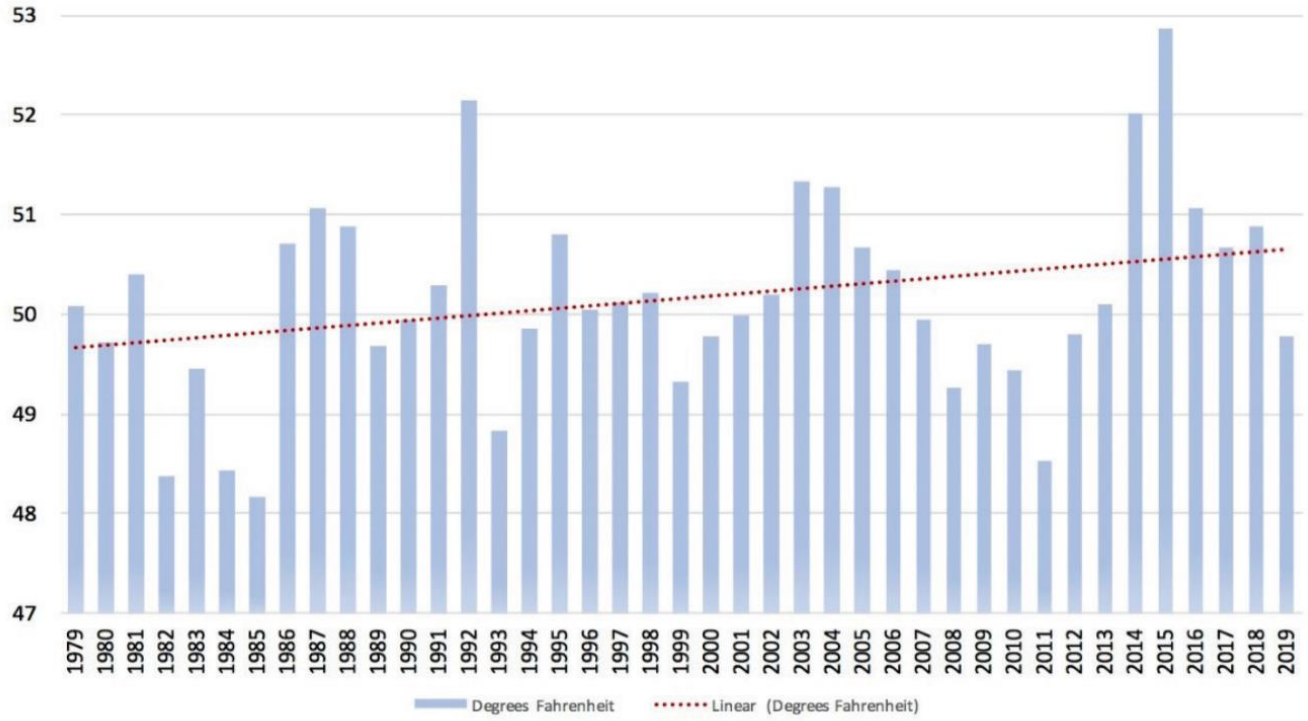


Figure 1. Average annual temperature (in degrees Fahrenheit) from 1979-2019 across Lane County. Data from www.climatetoolbox.com.

Future Climate Change in Lane County

Atmospheric scientists created models that help us predict future climate. Global Climate Models (GCMs) adjusted to local scales were assessed to determine how Lane County will be affected. Lane County is projected to warm by 4-7° F by the 2050s and 7-10° F by the 2080s if emissions are not quickly and aggressively reduced at global scales. If emissions are reduced, warming could be limited to 3-5° F by the 2050s and 4-6° F by the 2080s (Fig. 2).

Emissions: Continued Business-as-Usual (RCP 8.5)

Climate Variable	Baseline (1971-2000)	Mid-century (2040-69)			Late-century (2070-99)		
Temperature		low	mean	high	low	mean	high
Annual	49° F	+4°	+5°	+7°	+7°	+8°	+10°
Summer	62° F	+5°	+7°	+9°	+7°	+11°	+14°
Winter	39° F	+3°	+5°	+6°	+6°	+7°	+9°
Extreme max.	100° F	+4°	+6°	+9°	+7°	+10°	+14°
Frost free days	267 days/yr.	+33	+44	+56	+54	+65	+75
Frost free period	175 days	+45	+64	+85	+79	+102	+126
Precipitation							
Annual (% change)	64 inches	+10%	+2%	-6%	+12%	+4%	-4%
Summer (% change)	4 inches	-2%	-21%	-39%	-1%	-23%	-45%
Winter (% change)	27 inches	+18%	+7%	-3%	+24%	+11%	-2%
Snowfall (% change)	5 inches	-47%	-58%	-69%	-67%	-76%	-85%
Drought Stress							
Hargreaves climatic moisture deficit	14 inches	+19%	+34%	+49%	+32%	+45%	+59%

Emissions: Aggressive Reductions (RCP 4.5)

Climate Variable	Baseline (1971-2000)	Mid-century (2040-69)			Late-century (2070-99)		
Temperature		low	mean	high	low	mean	high
Annual	49° F	+3°	+4°	+5°	+4°	+5°	+6°
Summer	62° F	+3°	+5°	+7°	+4°	+6°	+8°
Winter	39° F	+3°	+4°	+5°	+3°	+4°	+6°
Extreme max.	100° F	+1°	+5°	+8°	+2°	+6°	+10°
Frost free days	267 days/yr.	+26	+35	+44	+31	+42	+52
Frost free period	175 days	+31	+48	+64	+40	+60	+79
Precipitation							
Annual (% change)	64 inches	+5%	+1%	-3%	+10%	+3%	-4%
Summer (% change)	4 inches	-4%	-20%	-36%	0%	-18%	-36%
Winter (% change)	27 inches	+14%	+6%	-2%	+17%	+7%	-2%
Snowfall (% change)	5 inches	-35%	-48%	-62%	-44%	-55%	-66%
Drought Stress							
Hargreaves climatic moisture deficit	14 inches	+15%	+26%	+38%	+15%	+30%	+46%

Figure 2. Historical change data from www.climatetoolbox.com. Future projections from ensemble of 12 Global Climate Models available at http://tinyurl.com/ClimateNA.

Climate Projections

- 4-7° F warmer by 2050s; 7-10° F warmer by 2080s
- 47-69% less snowfall by 2050s; 67-85% less by 2080s
- 31 more days per year over 90° F by 2050s; 58 more by 2080s
- 19-49% more drought stress by 2050s; 32-59% more by 2080s

Land, Air, and Water

- Lower water availability, especially in summer months
- Degradation of wetlands, riparian areas, and meadows
- Further declines in salmon populations
- Loss of marine life due to warmer and more acidic water
- Declining biological diversity and loss of high elevation species

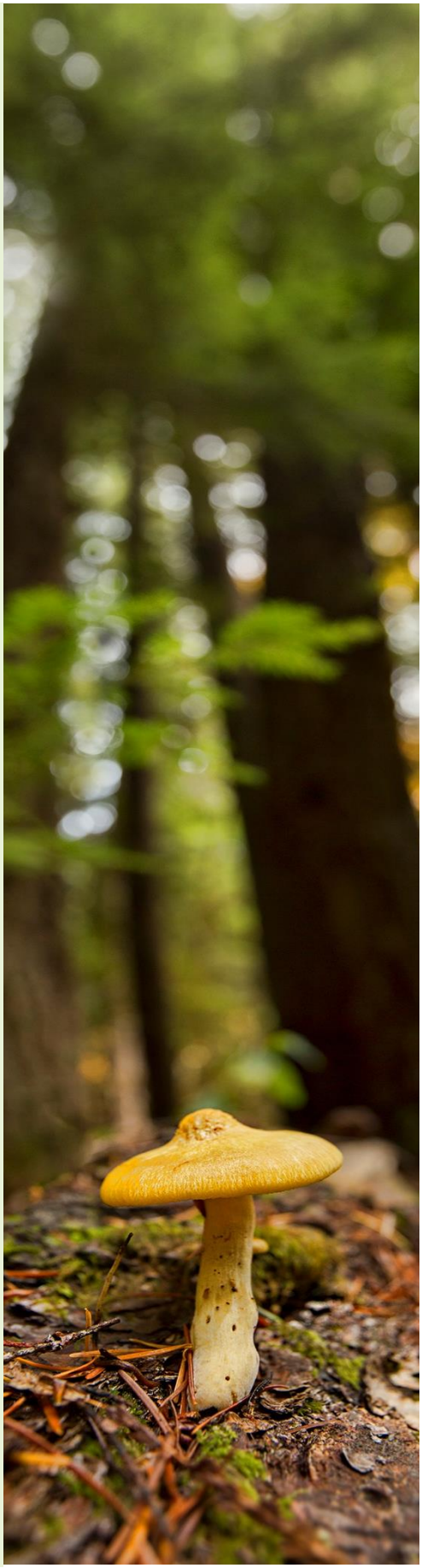
Social and Economic

- Increasing risk of property loss from wildfire
- Water supplies stressed from snowpack declines, drought, and increasing demand
- Declines in timber production
- More prevalent disease affecting people and livestock
- Increasing stress to emergency response systems and personnel
- Infrastructure damage from sea level rise

Potential Benefits

- Lower demand for home energy for heating in colder months
- Longer growing season for some agricultural operations

More detailed information is available through the Climate Trends Primer for Lane County, Oregon.



Urban Heat Islands

Urban areas are at even higher risk from climate change. Infrastructure, such as buildings and roads, absorbs and re-emits the sun's heat more than areas that have more trees and rivers[3]. The loss of canopy cover and use of asphalt and other materials that trap heat can cause urban areas to be 10-20 degrees warmer than surrounding rural areas during a heat wave.[4]

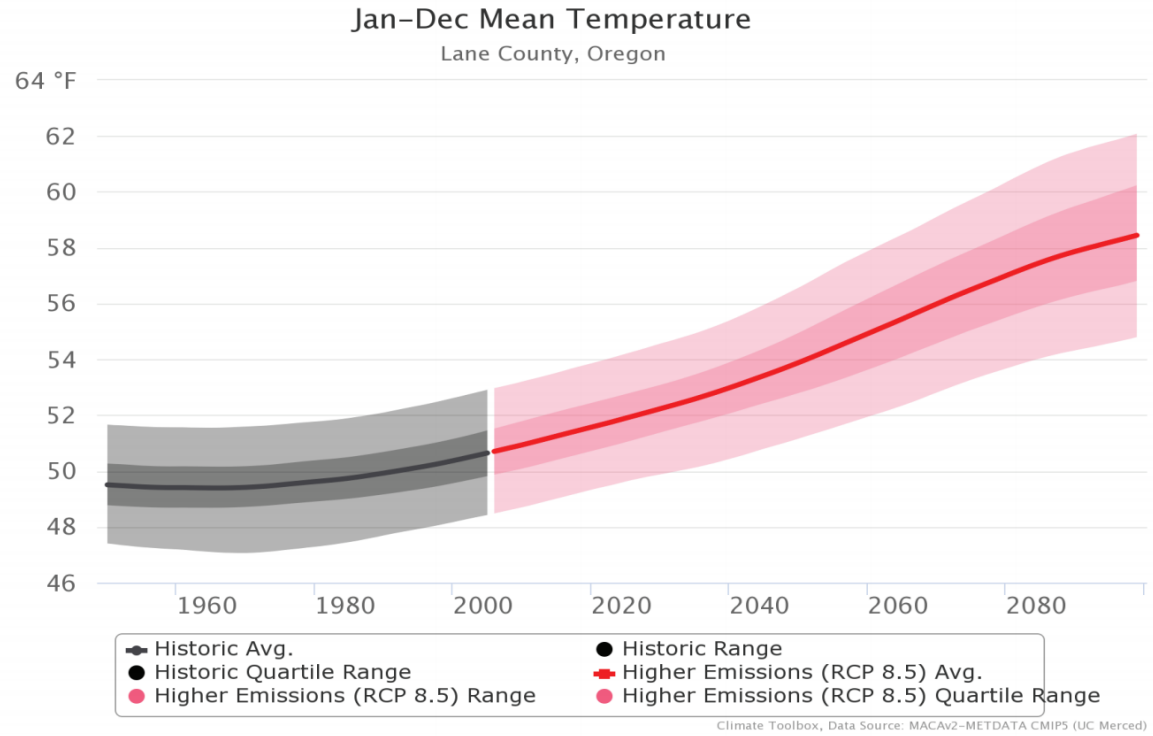


Figure 3. Average annual temperature across Lane County from 1940-2000 (observed) and projected out to 2100 (modeled). Graph from www.climatetoolbox.com.

Figure 4. Average number of days per year in Eugene over 90°F and 100°F, assuming continued higher emissions. Graphic from www.climatetoolbox.com.

Precipitation

Precipitation projections vary among the different models, with some showing wetter conditions and others showing drier conditions. Overall, average precipitation may not change significantly, but the timing and type of precipitation could change dramatically. Wetter winters and drier summers are likely, and at higher elevations snow is expected to shift to rainfall.

Streamflow

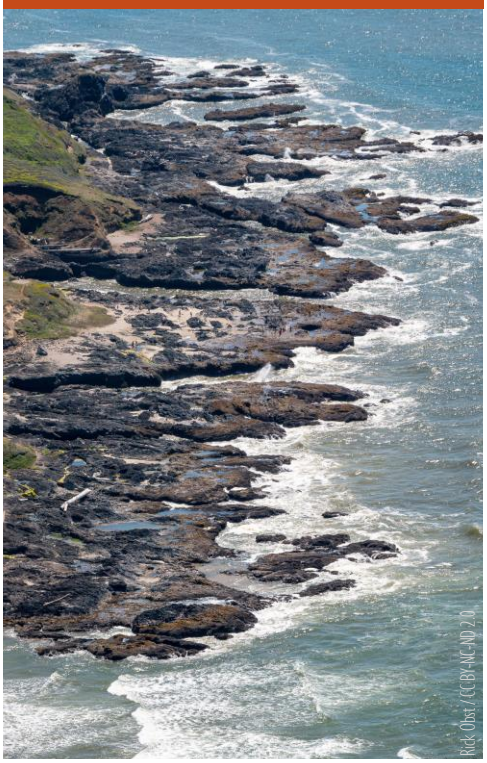
Historically, precipitation at higher elevations fell as snow during winter and spring. Melting snowpack resulted in a surge in springtime streamflow. As more precipitation falls as rain instead of snow, streamflow during winter is expected to increase, but spring and summer flows could decline precipitously.

Wildfire

As vegetation and climate conditions change, wildfire frequency, size, and severity are all expected to change over time. Wildfire is expected to continue to increase over the near term as temperature and drought stress increase with climate change. Once existing vegetation burns and/or is replaced with other vegetation types, however, wildfire may decline again. The timeframe for this transition is not well understood.

Sea Level Rise

Lane County encompasses 30 miles of the Oregon coastline.[5] Sea level rise projections vary substantially from one model to the next. Sea level rise of 4 feet would result in significant flooding to parts of Florence, Dunes City, and the Oregon Coast Highway (101) especially north of Florence where it hugs the coast.



Climate Change Vulnerabilities in Lane County

The following sections describe the climate change vulnerabilities in Lane County across five community systems:

- Health and Emergency Services
- Natural Systems
- Infrastructure
- Business and Economy
- Culture

"I first started to notice a few years ago that the summers were hotter and starting earlier. Winters were cold, but not as cold. It felt like I kept saying 'This is weird. It used to not be quite like this.'"

– Lane County Resident

Health and Emergency Services

National Guard photo by John Hughel, OR Military Department / CC BY 2.0

Existing health threats in Lane County are expected to be exacerbated with climate change, while new and emerging threats emerge over time. Extreme events are already occurring more frequently, and emergency services will be increasingly taxed.

Cost of Living

There is significant concern about increasing cost of living for Lane County's low-income residents due to climate change. Increasing costs may come from a variety of climate-related situations, including the need to air condition homes in the summer, address climate impacts to health, prepare for emergencies, and manage through economic disruptions. This vulnerability may well be exacerbated in Lane County due to significant in-migration due to climate change, which is likely to push housing costs higher.

"Climate change is among the greatest health risks of the 21st Century. Rising temperatures and more extreme weather events cost lives directly, increase transmission and spread of infectious diseases, and undermine the environmental determinants of health, including clean air and water, and sufficient food."

— World Health Organization

Public Safety Impacts

Violence and domestic disputes are known to increase during extreme heat and other major climate disruptions. Higher temperatures increase irritability and hostility, which can lead to violence and domestic abuse. In addition, economic disruptions due to events, such as wildfires, extreme heat, or floods, can cause disruptions to entire generations. The influx of people from outside a region also creates conflict that can lead to violence.[6]

Health Risks from Extreme Heat

Mortality associated with heat waves can be higher in areas, like Lane County, that typically have not experienced severe heat because people, homes, and workplaces are not acclimated and protections (shade, air-conditioning, etc.) are not in place. This reality was evidenced when the heat dome passed over the Pacific Northwest in the summer of 2021. Populations most vulnerable to severe heat include infants, elderly residents, outdoor workers, homeless people, those taking certain medications, and low-income residents who do not have air conditioning.

Increasing Demands on Public Safety and Social Service Providers

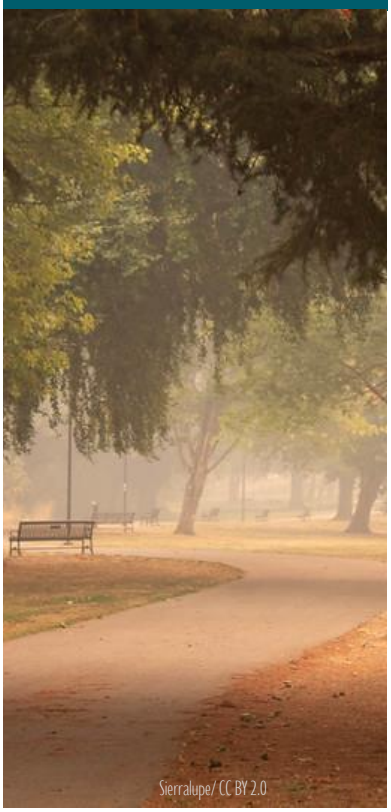
Workshop participants identified the reality that public safety and social service assistance needs already exceed current capacity. And additional strain on those systems will widen the gap. An influx of permanent climate migrants or shorter-term climate refugees could exacerbate this issue even more. Recurring disasters could overwhelm the current capacity. Vulnerable populations include elderly residents, people who live in flood-prone areas, non-English speaking populations, people without health insurance, homeless populations, and those with already compromised health.

Stress and Mental Health

Mental health impacts from climate change are expected to develop gradually and accumulate over time in areas exposed to significant climate hazards. Exposure to extreme events can cause displacement, instability, lack of access to support services, and loss of employment or possessions, all of which affect mental health. Mental health impacts tend to be more pronounced in situations of repeated exposure over time and can lead to increased violence and crime in a community. Workshop participants identified that Lane County already has a gap in mental health services. Additional strain caused by climate change is likely to widen that gap between mental health care demand and the capacity of mental health care programs.

Wildfire and Smoke

Recent large fires in Lane County and surrounding areas illustrate the County's increasing vulnerability to wildfire itself as well as wildfire smoke. Particulate pollution is linked to premature death, respiratory illnesses, and increased hospital visits, particularly for people with underlying health concerns. More frequent and larger wildfires, longer fire seasons, a growing population in fire-prone areas, the need to complete more fire prevention work, and climate refugees and migrants will strain the emergency preparedness and response systems currently in place.



Disadvantaged populations

Some populations, particularly those that have low-income and/or are communities of color, are more likely to be exposed to extreme events and experience serious climate impacts than others. At the same time, they are less likely to have access to the resources needed to address those increasing threats.

Identified Vulnerabilities: Health and Emergency Services

The vulnerability assessment process identified the following health and emergency services-related vulnerabilities to Lane County:

HIGH

- Health risks from extreme heat
- Increase in chronic and communicable diseases
- Housing supply issues due to climate refugees
- Health risks from reduced water quality in wells

MEDIUM-HIGH

- Cost of living increases leading to financial and housing instability
- Increasing demands on public safety and social service providers creates more competition for resources
- Higher rates of stress and mental health concerns leading to an increase in crime and violence
- Health risks from reduced air quality and smoke
- Decreased potential for self-sustainability and ability to grow food
- Existing lack of emergency evacuation plans made worse
- Existing lack of personal emergency preparedness made worse
- Increase in injuries due to extreme events

MEDIUM

- Loss of health insurance coverage due to disruptions in employment

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Natural Systems

Lane County encompasses 4,553 square miles and spans a geography that includes diverse landscapes from the inland mountains and valleys to the Pacific coast. The County is home to sections of the Willamette, McKenzie, and Siuslaw rivers.

The natural environment is a key element in the quality of life the people of Lane County enjoy. Outdoor recreational activities are very important to the community. Natural systems provide services that protect communities and provide resources. For example, intact meadows and riparian areas act as sponges as snowpack melts, holding water at higher elevations rather than allowing it to cause flooding to communities downstream. Services that intact natural systems provide for communities in Lane County include, but are not limited to:

- timber production
- water filtration
- water supply
- flood abatement
- pollinators for agriculture
- lower fire risk in mature forests

Intact natural systems can reduce the impacts of extreme events, such as floods, fire, and drought, on local communities. Because of this, forest and ecosystem management to maximize natural function is increasingly becoming a priority.

The vulnerability assessment process identified the following natural systems-related vulnerabilities to Lane County.


Rick Obst / CC BY-NC 2.0

Water Availability

Two primary areas of concern include increasing drought stress to local forests and rivers as precipitation becomes less predictable, and reduced availability of water for natural systems at certain times of the year due to changing snowpack melt. Population increases will exacerbate this situation as more water is needed for the developed, urban areas of Lane County.

Loss of Marine Life due to Acidification

Shellfish and ecosystems that depend on them are at risk from ocean acidification caused by climate change. The impacts to the communities of Lane County, particularly those in geographic proximity to the coast, include economic, cultural, and recreational.

Indigenous Resources

Lane County's Indigenous and Tribal communities are likely to be increasingly unable to access or manage traditional resources from natural systems that are key to their cultural traditions. Specific examples can be found in oak savannah ecosystems, and in the management of salmon, lamprey, and medicinal plants. Stress to marine species that are culturally relevant are also a concern.

Species Loss

As ecosystems transition due to changing climate conditions, including increasing temperatures and the changing nature of snowpack and runoff, some species will be lost. Increasing wildfire risk compounds the strain on forest ecosystems, while increasing ticks and other disease vectors will strain wildlife populations. Increasing salinity of coastal watersheds due to sea level rise is also expected to have significant impacts on native species in those watersheds.


Rick Bohn USFWS / CC BY 2.0

Degradation of Natural Systems

Studies indicate that changes in local climate conditions will occur on a faster time scale than species and ecosystems are able to shift or adapt. Overall, natural systems are expected to become degraded by climate change, with some specific species and habitats especially vulnerable. These include wetlands, riparian areas, meadows, high elevation species, and species highly dependent on cold waterways or snow.

Larger storms and increasingly severe wildfire are expected to exacerbate the problem of urban waste runoff in rivers throughout Lane County and increasing landslide risk, particularly in watersheds near the coast. While many natural systems benefit from some level of flooding, repeated severe floods can cause erosion and degrade riparian areas. Streams with culverts, roads, and other structures may be especially vulnerable to damage.

In Lane County, workshop participants were concerned about reduced soil health in forest ecosystems as well as the impact of higher temperatures and drought on the ability to reforest after natural disasters.

"Years ago, I noticed that the winters were getting warmer and the killing of fleas and ticks wasn't happening like it used to. It didn't rain like it used to in the spring. Then my oaks started to die as things got warmer, followed by the wildfires last fall. It is all very scary."

– Lane County Resident

David Geitgey Sierralupe / CC BY-NC 2.0

Identified Vulnerabilities: Natural Systems

The vulnerability assessment identified the following natural systems vulnerabilities to Lane County:

HIGH

- Increase in drought stress on plants and wildlife
- Loss of marine life due to ocean acidification
- Decrease in water available for natural systems
- Reduced ability to reforest after natural disasters due to high temperatures and drought
- Increase in risk to wildlife habitat due to wildfire

MEDIUM-HIGH

- Indigenous communities unable to access or manage traditional resources
- Species loss as ecosystems transition
- Reduced soil health in forest ecosystems
- Increase in salinity of coastal watersheds
- Increase in urban waste runoff in rivers from floods and wildfires
- Increase in landslide risk to natural systems
- Increase in ticks and other disease vectors for wildlife

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Infrastructure

Given the many communities of all sizes that make up Lane County, infrastructure systems covered in this vulnerability assessment include electric, water, wastewater, and energy utilities as well as roads, bridges, public buildings, homes, and businesses. Infrastructure in most places is built based on building codes that are designed for that particular local climate in terms of temperature, precipitation, snowpack, and other factors. As climate change continues to unfold, the communities of Lane County may find that existing standards are inadequate to meet safety and basic functioning needs.

Some increasingly common infrastructure failures associated with climate change include inadequate stormwater infrastructure leading to road failure and water contamination during extreme precipitation events; dry wells due to drought; schools shut down for lack of air conditioning during extreme heat events; and toxic algae contaminating municipal water supplies, particularly in low water years. In areas with particularly mild climates, homes, schools, businesses, and government buildings often do not have HVAC systems, but increasing heat and smoke from wildfires is driving the need for widespread installation of those systems.

In this vulnerability assessment process, workshop participants were placed into the following breakout groups within the infrastructure system: water, transportation, energy, and buildings.

Water and Wastewater Systems

Increasing demand for water – Changes in snowpack and timing of runoff, higher temperatures, and climate migration are all likely to drive an increase in the demand for water for residents, agriculture, and the environment.

Groundwater sources drying up – The potential for greater droughts, higher temperatures, and changes in snowpack and runoff may lead over time to reduced water availability for communities and individual residents who rely on well water. A related concern is saltwater intrusion in wells along the coast. More research is needed regarding the groundwater sources that supply parts of Lane County with drinking water.

Damage to drinking water supplies from wildfire – The impacts of wildfire on surface drinking water sources will increase as the extent of wildfire increases in the coming years. These impacts generally involve sediment, ash, and in urban watersheds, toxic materials from burned homes and businesses.

Toxic algal blooms threaten drinking water – Changes in snowpack and the timing of runoff, along with more extreme droughts, increase the likelihood of toxic algal blooms. The ability for water treatment facilities to adequately address toxic algal blooms will be key to determining and addressing this vulnerability in the future.

Identified Vulnerabilities: Water Infrastructure

The vulnerability assessment identified the following water-related vulnerabilities to Lane County:

HIGH

- Dams unable to hold back larger storms

MEDIUM-HIGH

- Increase in demand for water
- Groundwater sources drying up
- Older levees at risk of failure

MEDIUM

- Damage to drinking water from wildfire

MEDIUM-LOW

- Toxic algal blooms threatening drinking water
- Stormwater infrastructure at risk from larger storms
- Damage to sewer infrastructure from wildfire

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Transportation

Increasing risk to emergency communication infrastructure – Evacuation situations can result from wildfire, extreme storms, flooding, and other disasters. With increasing disruption comes the potential for communication infrastructure, which is needed to safely evacuate people, to be damaged by the disruption itself. This is particularly true in rural areas of Lane County.

Air quality risks increase for walkers, cyclists, and bus riders – Higher temperatures and wildfire smoke will increase the health risk to those who walk, cycle, or use public transportation in Lane County. This could discourage those modes of transportation, encouraging residents back toward single occupancy vehicles and threatening the ability to meet greenhouse gas emission targets.

Bridges and culverts at risk of failure due to flooding – Increasing likelihood of flood brings increased risk as major flooding events bring volumes of water and debris that can severely damage bridges and culverts. Culvert failures can have a particularly severe impact on native fish runs.

Flood risk to transportation infrastructure – Some parts of Lane County, such as Cushman near Hwy 126, Glenwood, Riverbend Hospital, downtown Springfield, and Hwy 101, already see regular flooding. Shared use paths along rivers, including Fern Ridge Path, Alton, and Baker Park, will experience more flood damage due in the future. Poorly maintained forest roads add to the difficulties in areas at high risk for landslides during extreme storms.

Identified Vulnerabilities: Transportation Infrastructure

The vulnerability assessment identified the following transportation system vulnerabilities to Lane County:

HIGH

- Flood risk to transportation infrastructure

MEDIUM-HIGH

- Increase in risk to emergency communication infrastructure
- Air quality risks increase for walkers, cyclists, and bus riders

MEDIUM

- Bridges and culverts at risk of failure due to flooding

MEDIUM-LOW

- Transit times may increase
- Road buckling due to extreme heat

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

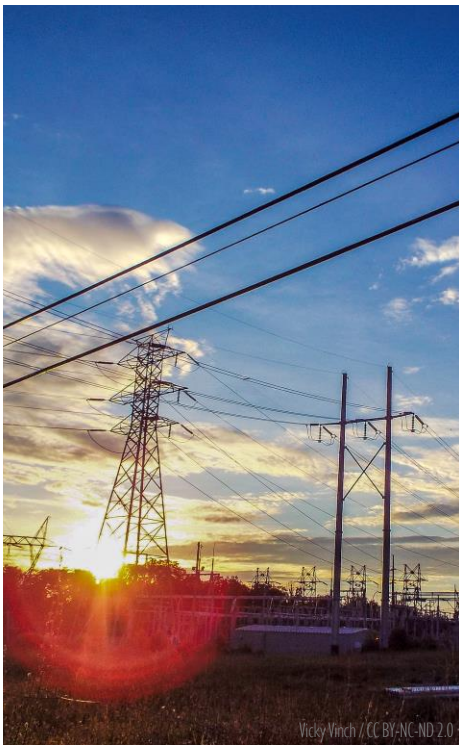
Energy

Threats to the availability, reliability, and capacity within the power grid – Extreme weather events may lead to power shortages as residents pull larger amounts of energy to cool or heat their homes. Severe storms, flooding, and wildfire will disrupt power supplies for residents, businesses, and local governments across the County. This is a particular issue for people who are medically vulnerable.

Damage to electrical infrastructure due to heat and wildfires – A particular concern of those who live in rural parts of Lane County, or in the wildland-urban interface, is the potential damage to electrical infrastructure, particularly due to wildfire. Wildfire events can create long-lasting power outages as workers replace lines downed during the event.

Increasing demand for energy – Extreme weather, especially extreme heat, along with increasing population is expected to increase the demand for energy. In addition to this creating potential issues for the electric utilities, there is also concern that increasing demand will drive energy costs up. Increasing energy costs are particularly problematic for low-income people and seniors on fixed incomes. Increasing demand for energy is also likely to threaten the ability to meet greenhouse gas targets.

Reduction in ability to generate hydropower – Lane County is served by several electric utilities that rely on hydropower. There is concern about the impact of drought and earlier snowpack runoff on Bonneville Power's ability to generate needed hydropower.



Identified Vulnerabilities: Energy Infrastructure

The vulnerability assessment identified the following energy system vulnerabilities to Lane County:

HIGH

- Threats to the availability, reliability, and capacity within the power grid

MEDIUM-HIGH

- Damage to electrical infrastructure due to wildfire
- Issues relating to low-income households accessing renewable energy made worse
- Existing limitations in energy transmission are made worse

MEDIUM

- Increase in demand for energy
- Reduction in ability to generate hydropower
- Difficulty meeting greenhouse gas targets

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Buildings and Other Infrastructure

Coastal communities threatened by sea level rise – Old town Florence on the coast and homes on the beach and along the Siuslaw River are threated by sea level rise and the storm surge that accompanies it. Given the extent of the risk to infrastructure, and the timeline required for major infrastructure projects, this vulnerability is a high priority even though impacts are not expected in the short-term.

Threat of wildfire on homes and buildings – This is a particular concern for rural residents of Lane County as well as those living in the wildland-urban interface in larger communities. Recent fire behavior points to the risk increasing for urban communities as well given that fires that begin as wildland fires can become structure fires when they arrive in an urban area.

Schools closed due to extreme heat and smoke – Because of the generally mild climate in the region, many school districts in Lane County do not have HVAC systems capable of handling extreme heat and wildfire smoke events. This is particularly the case in more rural communities. The age of infrastructure in some of these districts makes upgrading HVAC systems more difficult and expensive.

Impacts to middle housing stock – In-migration and the loss of middle housing to natural disasters, such as wildfire and flooding, will increase demand for housing for low to moderate income families. The current stock is already below what is needed.

Essential services, such as hospitals, at risk due to flooding – This is a particular concern in the event of a flood that increases the demand for emergency services to assist residents.

Risks to Internet access and reliability – In the event of a major disruption, loss of Internet access will be a significant problem particularly for people in underserved areas who do not have adequate and reliable Internet access already.

Price impacts on lumber and other building materials – Wildfire and other disruptions can drive demand for lumber and other building materials while also disrupting supply chains. Increasing prices for building materials make it more difficult to address the need for middle housing.

Identified Vulnerabilities: Buildings and Other Infrastructure

The vulnerability assessment identified the following building and other infrastructure vulnerabilities to Lane County:

HIGH

- Threat of wildfire on homes and businesses
- Impacts to middle housing stock
- Risks to Internet access and reliability

MEDIUM-HIGH

- Coastal communities threatened by sea level rise
- Schools closed due to extreme heat and smoke

MEDIUM

- Essential services at risk due to flooding
- Price impacts on lumber and other building materials

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Business and Economy

There are twelve cities in the County including the Eugene/Springfield metropolitan area, which comprises the second-largest urban area in Oregon. There are also eight smaller cities and thirty-five unincorporated communities. Land ownership across the county is largely split between private ownership and federal or state ownership. Many of the lands outside the metro area and communities are devoted to private forestry operations and farming.[7]

With a diverse physical landscape and a mix of larger cities and rural areas, Lane County's business environment and economy is equally diverse. As of 2019, workers in Lane County were employed in the following industries[8]:

Education, health care, and social assistance	25.9%
Retail trade	13.2%
Arts, entertainment, recreation, accommodation, and food	10.6%
Manufacturing	10.1%
Professional, management, administration, waste management:	10.0%
Construction	5.6%
Finance and insurance, and real estate	5.2%
Other services	4.8%
Transport, warehousing, and utilities	3.9%
Public administration	3.6%
Wholesale trade	3.0%
Agriculture, forestry, fishing and hunting, and mining	2.3%
Information	1.6%

Farming and forestry threatened by drought, temperature variability, and wildfire – Higher temperatures, extreme heat, wildfire, reduced soil moisture, increasing pest thresholds, and changes to snowpack and runoff will stress existing agricultural and timber operations. This will impact migrant workers, local food production, and local enterprises that export these products.

Marine fishing industry and food systems damaged by ocean acidification – Ocean acidification will reduce the amount of marine resources that can be harvested and increase costs. Coastal economies are particularly vulnerable, but restaurants and other industries further inland that rely on ocean harvest may also be affected.

Supply chain breakdowns and price increases due to disruption – In an increasingly inter-related global economy, disruptions in one area will often disrupt supply chains that cause economic problems in other regions. This is particularly true for manufacturers, small business owners, retailers, and construction companies.

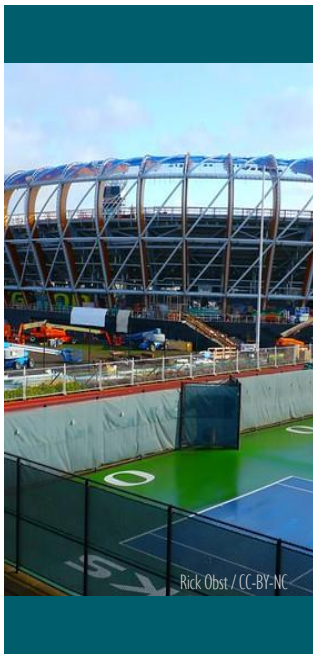
Increasing unemployment due to climate migration – As the population of Lane County increases, there is concern that there will be an increasing gap between those who need employment and employment opportunities available. There may also be a mismatch between the skills of those coming into the county and the skills needed by existing enterprises.

Outdoor workers at risk from smoke, heat, and wildfire – Increasing smoke and heat events may severely disrupt the productivity of outdoor workers in fields, such as construction, agriculture, landscaping, forestry, and recreation. Those employment disruptions are likely to cause instability in families, particularly for low-income workers. Businesses may experience higher turnover of workers in this situation along with increases in workers compensation claims.

Increased costs for property and liability insurance – Property and small business owners in high-risk areas are likely to experience increases in the cost of insurance. In some areas, insurance may simply not be available in the future. This development may make it untenable for small businesses to maintain their operations and property owners to continue to live in certain areas.

Tourism and recreation declines due to severe conditions – Tourism and outdoor recreation are major economic drivers in Lane County. Increasing disruption from extreme weather, wildfire, and smoke are likely to damage those economies.

Reduced enrollment at University of Oregon – There is a particular concern for businesses that serve U of O students if in-person enrollment does not recover to earlier levels or is affected by continued natural disruptions.



Identified Vulnerabilities: Business and Economy

The vulnerability assessment identified the following economic vulnerabilities to Lane County:

HIGH

- Outdoor workers at risk from smoke, heat, and wildfire
- Decline in tourism and recreation due to severe conditions

MEDIUM-HIGH

- Farming and forestry threatened by drought, temperature variability, and wildfire
- Marine fishing industry and food systems damaged by ocean acidification
- Supply chain breakdowns and price increases due to disruption
- Reduced enrollment at University of Oregon

MEDIUM

- Increase in unemployment due to climate migration
- Increase in costs for property and liability insurance
- Decreased job stability
- Loss of skilled workforce as people move away

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Culture

Theresa Hogue / CC BY-SA 2.0

Lane County sits on the traditional homelands of the Kalapuya, Winefelly, Yoncalla, Chelamela, the Coos, Lower, Umpqua and Siuslaw, Chafan, Mohawk, Confederated Tribes of Siletz Indians, and the Confederated Tribes of Grand Ronde Indians.[9]

Today, there are no tribally-owned or managed lands within the boundaries of Lane County. However, native culture continues to play an important role in Lane County as native people continue to access and use natural resources and sites for traditional practices.

The University of Oregon is home to the oldest student-organized pow wow in Oregon. The Native American Student Union Mother's Day Powwow "…is one of the premier cultural events of the year, drawing hundreds of dancers, drummers, singers, artisans, chefs, and spectators from across the state and around the region."[10]

University of Oregon Mother's Day Powwow, courtesy UO Communications

There are various locations and characteristics that help define the culture in what is now Lane County including:

- Twenty historic covered bridges - 14 of which are still operational today
- Bohemia Mines
- Coastal Sand dunes
- Darlingtonia Botanical Wayside
- Fern Ridge Reservoir
- Heceta Head Lighthouse
- Hult Center for the Performing Arts
- Lane Community College
- University of Oregon
- Mckenzie Pass
- Sea Lion Caves
- Pac-12 Sports Events
- Vineyards and Wineries
- Numerous Lakes
- The Willamette River, Siuslaw River, and McKenzie River
- Willamette Pass Ski Area

Reduced ability to produce food in rural areas – The same impacts expected to impact agricultural and forest systems are expected to make it more difficult for residents to engage in self-sustaining food production practices, which are a cultural norm in rural areas of Lane County. It is likely that rural residents will be able to adapt relatively easily by selecting different plants to grow.

Reduced ability to access culturally relevant foods and other resources – Local Indigenous cultures use a variety of plants and animals, such as eel, salmon, native berries, maiden hair fern, sweet grass, and bear grass, in their cultural practices. These resources are specific to their traditions and not easily replaced in those traditions by similar plants and animals.

Reduced ability to hold ceremonies and community events – The ability of both Indigenous and other groups in Lane County to hold culturally important ceremonies and community events will be impacted by extreme heat, wildfire smoke, and drought, particularly in the summer months.

Identified Vulnerabilities: Culture

The vulnerability assessment identified the following cultural vulnerabilities to Lane County:

HIGH

- Reduced ability to access culturally relevant foods and other resources

MEDIUM-HIGH

- Reduced ability to produce food in rural areas
- Reduced ability to hold ceremonies and community events

Note: Overall vulnerability ranking is determined from the combined scores for time frame, sensitivity, and adaptive capacity.

Prioritization of Vulnerabilities

Each vulnerability identified in this assessment has been ranked according to timeframe, sensitivity, and adaptive capacity to assess the impact of climate change related to that vulnerability. However, this is just one part of the process of prioritizing vulnerabilities. The other is for the community to combine this assessment with a conversation about what is most important for the community to protect as climate conditions change.

After the workshop, participants were asked to rank vulnerabilities across all five community systems. The result of that ranking process is the following vulnerabilities listed by highest rank to lowest rank. Vulnerabilities that received no votes by workshop participants are not included on this list.

Housing supply issues due to climate refugees
Farming and forestry threatened by drought, temperature variability, and wildfire
Threats to the availability, reliability, and capacity within the power grid
Increase in drought stress on plants and wildlife
Reduced ability to produce food in rural areas
Damage to electrical infrastructure due to wildfire
Cost of living increases leading to financial and housing instability
Marine fishing industry and food systems damaged by ocean acidification
Coastal communities threatened by sea level rise
Health risks from reduced air quality and smoke
Threat of wildfire on homes and businesses
Increase in demand for water
Loss of marine life due to ocean acidification
Decrease in water available for natural systems
Health risks from extreme heat
Increasing demands on public safety and social service providers creates more competition for resources
Groundwater sources drying up
Indigenous communities unable to access or manage traditional resources
Species loss as ecosystems transition

Increase in chronic and communicable diseases

Schools closed due to extreme heat and smoke

Increase in demand for energy

Higher rates of stress/mental health concerns leading to an increase in crime/violence

Damage to drinking water from wildfire

Toxic algal blooms threatening drinking water

Reduced ability to reforest after natural disasters due to high temperatures/drought

Supply chain breakdowns and price increases due to disruption

Reduction in ability to generate hydropower

Increase in risk to emergency communication infrastructure

Decreased potential for self-sustainability and ability to grow food

Air quality risks increase for walkers, cyclists, and bus riders

Increase in unemployment due to climate migration

Difficulty meeting greenhouse gas targets

Increase in risk to wildlife habitat due to wildfire

Reduced soil health in forest ecosystems

Existing lack of personal emergency preparedness made worse

Outdoor workers at risk from smoke, heat, and wildfire

Loss of skilled workforce as people move away

Impacts to middle housing stock

Health risks from reduced water quality in wells

Issues relating to low-income households accessing renewable energy made worse

Older levees at risk of failure

Stormwater infrastructure at risk from larger storms

Increase in salinity of coastal watersheds

Increase in urban waste runoff in rivers from floods and wildfires

Existing lack of emergency evacuation plans made worse

Increase in costs for property and liability insurance

Existing limitations in energy transmission are made worse

Reduced ability to access culturally relevant foods and other resources
Essential services at risk due to flooding
Bridges and culverts at risk of failure due to flooding
Risks to internet access and reliability
Increase in landslide risk to natural systems
Reduced ability to hold ceremonies and community events
Decrease in job stability
Price impacts on lumber and other building materials
Flood risk to transportation infrastructure
Transit travel times may increase
Loss of health insurance coverage due to disruptions in employment
Decline in tourism and recreation due to severe conditions
Damage to sewer infrastructure from wildfire
Dams unable to hold back larger storms
Increase in injuries due to extreme events

Conclusions

Kathy D / Used with permission

Lane County is joining communities around the U.S. and world in developing strategies to address the impacts associated with climate change. Due to greenhouse gas emissions already released into the atmosphere in years past, current trends associated with larger and more extreme storms, droughts, and wildfires are expected to continue for many decades.

If emissions are quickly reduced, however, many of the more extreme impacts can be avoided. As Lane County and the communities within it prepare for significant environmental, social, and economic changes, it will be important to center the needs of residents who are already disadvantaged due to racial inequities, low-income, disability, or other circumstances. These residents will be disproportionately impacted by climate change and will need strategies put in place that explicitly address social equity in relation to building climate resilience.

Maintaining and restoring the integrity of natural systems is also critically important for climate resilience. Natural systems, particularly healthy forests, can buffer communities in Lane County from wildfire and flood impacts as climate conditions change.

Developing strategies to address the climate vulnerabilities identified in this report is part of the larger climate planning effort underway through the Lane County Board of Commissioners. That effort includes both adaptation (adapting to changing conditions) and mitigation (reducing greenhouse gas emissions) strategies. By creating these strategies in concert, Lane County and its community partners can implement strategies that have many benefits to people and nature. Robust climate change solutions are positive strategies for the whole community.

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Appendix A: Lane Community Climate Survey Results

Executive summary:

In May 2021, the Lane Climate Equity and Resilience Task Force (Task Force) launched the Lane Community Climate Survey (LCCS). The LCCS is developing climate equity and resilience recommendations to help shape the County's climate action plan. The survey questions focused on identifying the concerns around climate change and the priorities of community members who live and work in Lane County.

The Task Force used these results to help shape their Climate Change Vulnerability Assessment workshop that was held in June 2021. These results will also be used to help inform the Task Force's upcoming strategy development workshop in September 2021 and other outreach efforts.

Survey Respondents:

How many people took the survey: 349

Where a majority of the survey takers live: Out of the 349 survey takers, 235 included their zip code where they spend most of their time.

- **EUGENE - 60.85%**
  - 97405: 59 respondents
  - 97402: 31 respondents
  - 97401: 26 respondents
  - 97404: 17 respondents
  - 97403: 8 respondents
  - 97408: 2 respondents
- **FLORENCE - 22.55%**
  - 97439: 53 respondents
- **SPRINGFIELD - 6.38%**
  - 97477: 10 respondents
  - 97478: 5 respondents
- **VENETA - 1.7%**
  - 97487: 4 respondents
- **COTTAGE GROVE - 1.28%**
  - 97424: 3 respondents
- **VIDA - 1.28%**
  - 97488: 3 respondents
- **CRESWELL - .85%**
  - 97426: 2 respondents
- **JUNCTION CITY - .85%**
  - 97448: 2 respondents
- **WESTFIR - .43%**
  - 97492: 1 respondent
- **LEABURG - .43%**
  - 97489: 1 respondent
- **WALTON - .43%**
  - 97490: 1 respondent
- **YONCALLA - .43%**
  - 97499: 1 respondent
- **NOTI - .43%**
  - 97461: 1 respondent
- **MABEL - .43%**

- 97454: 1 respondent

- **SILTCOOS - .43%**
  - 97493: 1 respondent
- **CORVALLIS, OR - NOT IN LANE COUNTY**
  - 97330: 1 respondent
- **YACHATS, OR - NOT IN LANE COUNTY**
  - 97498: 1 respondent
- **FULTON, CA - NOT IN LANE COUNTY**
  - 95439: 1 respondent

Lane Community Climate Survey

The Lane Community Climate Survey was developed and conducted by the Lane Climate Equity and Resilience Task Force (CERTF), Beyond Toxics and NAACP Eugene/Springfield staff members, and GEOS Institute. The community survey was available to the public from May 2021-June 2021. Both English and Spanish versions of the survey were available to the public.

The survey was shared on multiple websites, social media, and email. Paper surveys were also distributed and collected by task force members throughout Lane County.

Survey results were reviewed by members of the CERTF, Beyond Toxics and NAACP Eugene/Springfield staff members, and GEOS Institute. Survey results were used to help the CERTF understand how climate change is impacting our communities and to provide insight on how we can best prepare for its impacts. Survey results were also used to inform the Lane Climate Change Vulnerability Assessment Workshop that was held in June 2021.

Background:

Beyond Toxics and the NAACP Eugene/Springfield are working with the Lane County Public Works Department regarding their Climate Action Plan and Climate Advisory Committee (CAC). Lane County, Beyond Toxics, and the NAACP Eugene/Springfield agree to work cooperatively to ensure that the CAC has diverse representation, and that climate actions developed by County staff and approved by County's Board of Commissioners are equitable and address the needs of all Lane County communities.

Beyond Toxics and the NAACP has developed a Climate Equity and Resilience Task Force, which is composed of community representatives and stakeholders who live and work with diverse and underrepresented communities in Lane County, to ensure that the climate actions developed by County staff and approved by its Board are equitable.

This Task Force is working concurrently on both mitigation and resilience planning processes to ensure that the needs of all Lane County communities are represented and addressed. Through the Task Force, strategies and actions will be developed in both processes to address climate change and ensure equity for the following

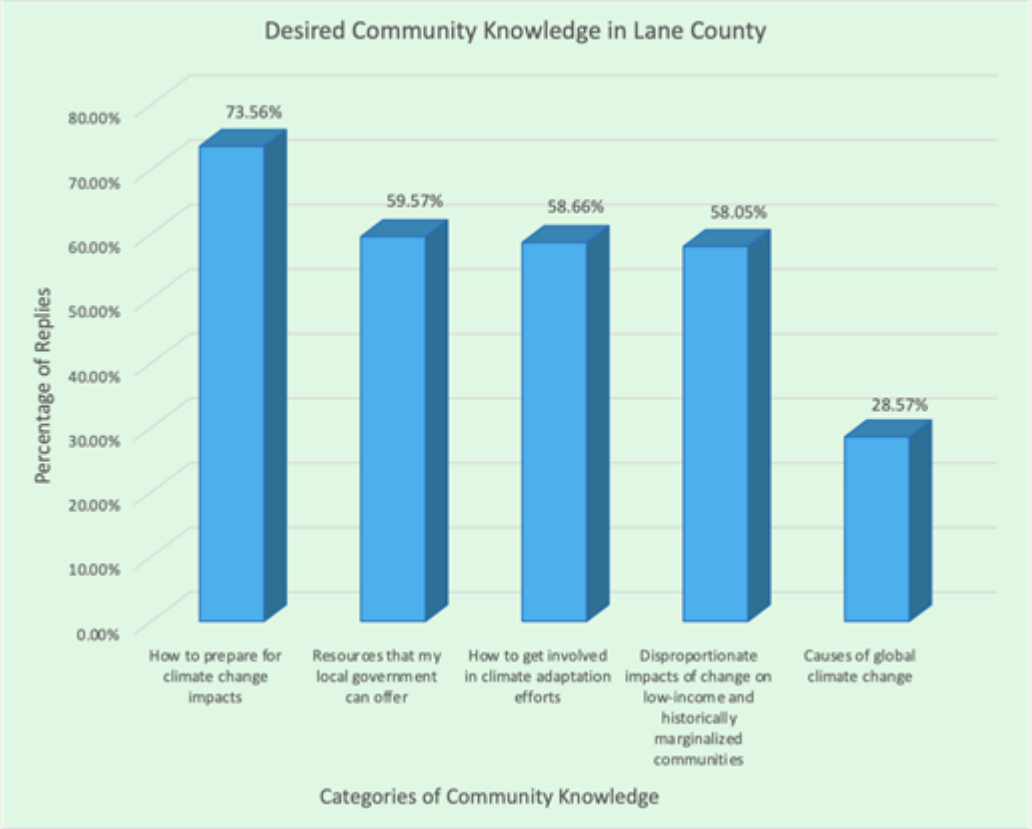
communities: Low-income and working populations; Black, Indigenous, and People of Color; Immigrant Communities; Mental Health and Disability Representatives; LGBTQ Communities; Rural Communities

Survey Results

Note: Both the results from the English and Spanish versions of the survey are included in the graphs and comments.

Question 1

Community members want to learn more about the following



Trends in the comments

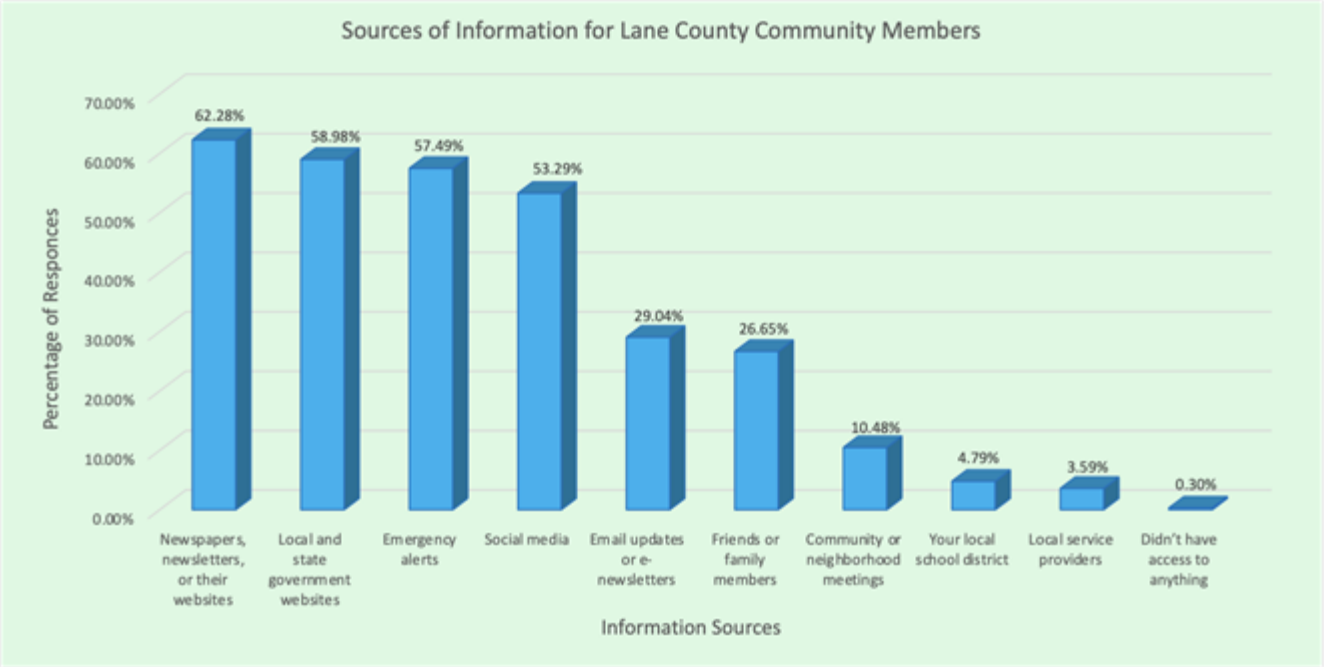
Many people mentioned a desire to learn about the impacts of climate change on coastal communities, specifically Florence, OR. Coastal communities are specifically interested in the impacts of sea-level rise. In addition, there is a want for education surrounding the governmental role in climate change mitigation. This includes actions currently being taken by the government, as well as actions that need to be taken to further promote change. Another common point of education is a need to understand how individuals can work together within their communities to help those affected by climate change. People want to learn more about actions they can take to minimize climate change in their daily lives. For example, local alternatives to wasteful vendors such as Amazon, and recycling options in each county. People are also curious about how we can help the natural environment, specifically forests and

riparian life, as well as the decline of bird and other wildlife populations. The last point of commonality in the comments was a desire for the community to understand the most effective ways to educate climate change deniers.

Notes: 20 people skipped this question

Question 2

During climate emergencies (such as the September 2020 Holiday Farm Fire), community members got their information from the following:



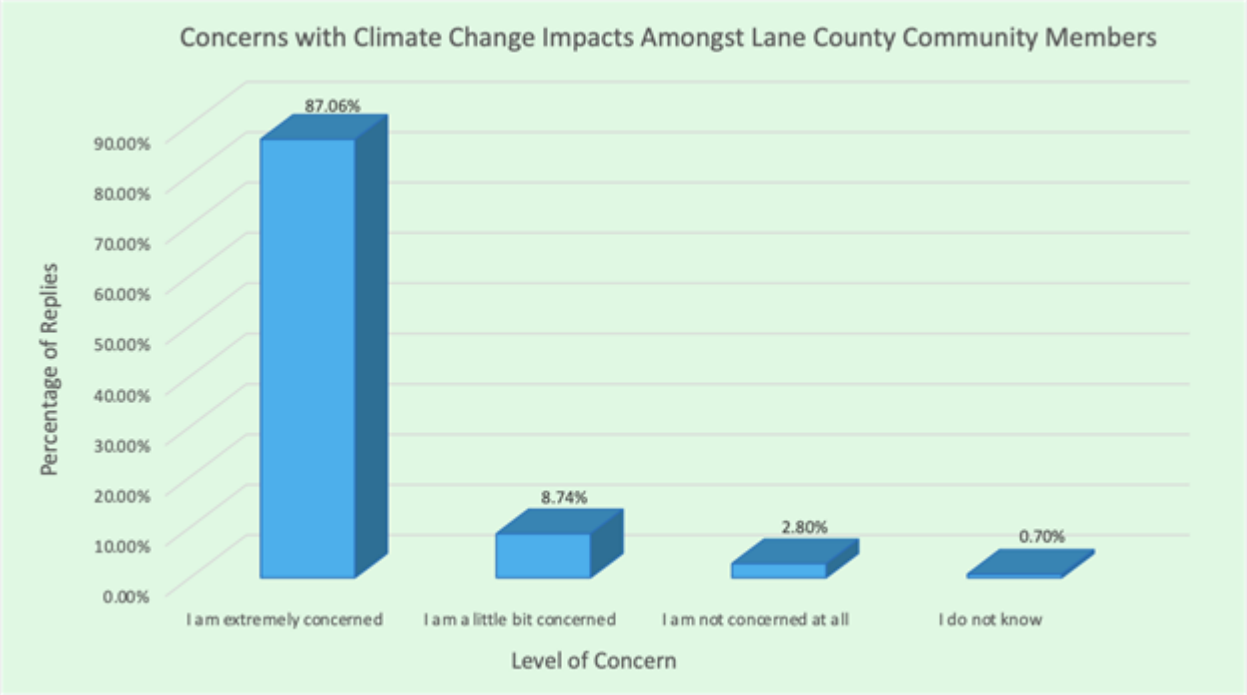
Trends in the comments

In addition to the information sources listed above, many people listed their main information sources as scientific journals and nonprofit websites. The local news station Channel 9 was also mentioned various times, as well as the local radio stations KLCC and KEPW.

Notes: 15 people skipped this question

Question 3

How concerned are you about the climate change impacts mentioned above?



Overall trends in the comments:

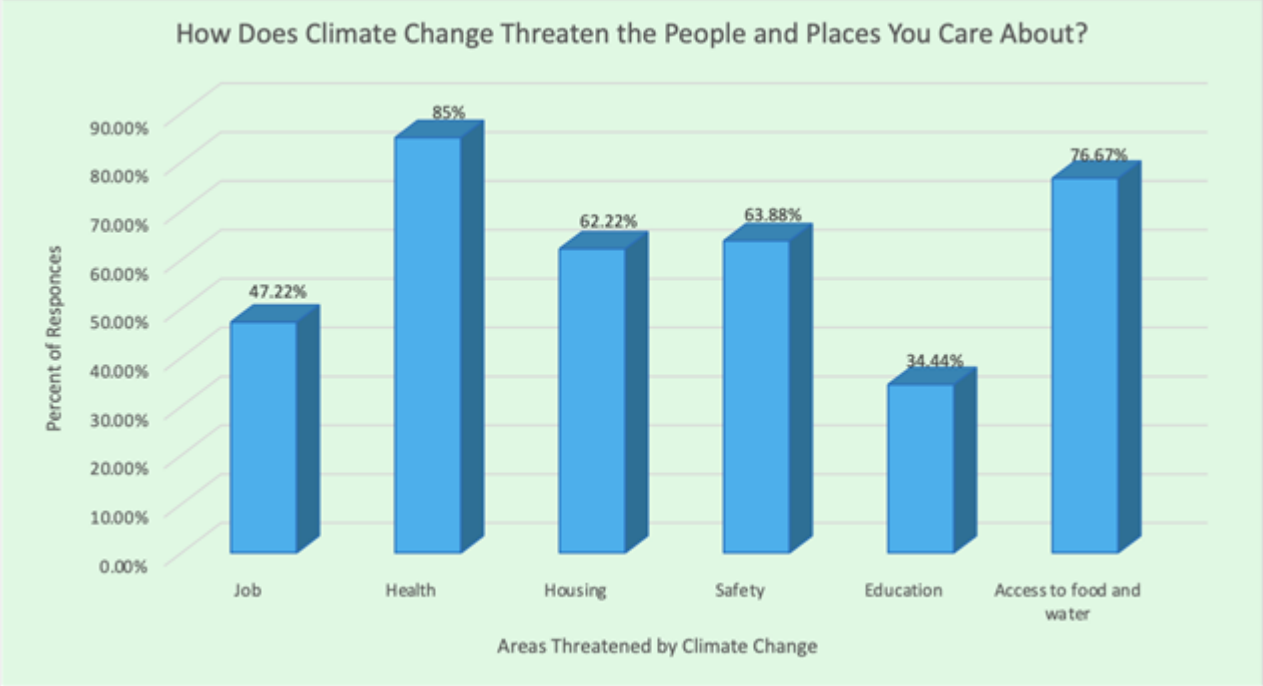
Multiple respondents had issues with the wording of this question. These respondents felt that the wording of the question did not establish a clear baseline for a level of concern. There was no clear model described on which the question is based, or a source of projections on which the respondents could base their level of concern. In addition, the response options did not provide enough range for the respondents to fully express their levels of concern.

There were 2 particular areas of concern mentioned in the comments. The first concern was water availability. There is concern that the water availability will decrease, so people will not be able to water their gardens. Furthermore, there is concern that large corporations purchasing water rights will increase water prices and decrease water availability. The second concern is that Lane County is not prepared enough for fires. There is a concern that poor forest management is going to lead to an increase in fire frequency and intensity.

Notes: 66 people skipped this question

Question 6

How does climate change threaten the people and places that you care about?



Overall trends in the comments:

Jobs

47.22% of people who answered this question are concerned about the way climate change threatens their jobs. Specifically, people are concerned about changes in job supply and demand due to climate change. The concern is that climate change will negatively impact the economy, therefore harming all jobs. There is also a large concern for outdoor workers. During heat waves or periods where there is a high concentration of smoke or smog in the air, the conditions are very dangerous. Local farmers are especially susceptible to these changes because they are constantly working outdoors and their products are reliant on the composition of the air in which they are surrounded. Lastly, teachers are worried about their students. Climate change may cause a decrease in outdoor activities for students which will impact their education.

Health

85% of people who answered this question are concerned about the way climate change threatens their health. The most common concern is the impact of the reduced air quality on our respiratory systems. This will have an especially large impact on those with asthma, however, there may be long-term impacts on respiratory systems due to pollution and smoke inhalation. Another common concern is the impact of the heat on our health. As mentioned above, high heat can cause very dangerous conditions for those who are spending large amounts of time outside. The

changing climate may also cause new diseases to form in the Pacific Northwest. Mental health is another large concern based on the survey comments. Many are worried about the anxiety caused by the climate crisis and the impact it will have on the overall mental health of the community.

Housing

62.22% of people who answered this question are concerned about the way climate change threatens their housing. The largest concern surrounds the housing crisis currently taking place in Oregon. Climate change makes this crisis more urgent than ever, as the environment becomes more inhospitable. In addition, climate change could cause housing to become more unaffordable, creating a positive feedback loop between the housing crisis and the changing climate. Climate change may also lead to an increase in Refugee populations which may in turn lead to an increase in the amount of unhoused people in Oregon. Lastly, there is an increased risk of fire/flooding damage to homes as the climate changes.

Safety

63.88% of people who answered this question are concerned about the way climate change threatens their safety. The largest concerns are related to the increase in frequency of wildfires in Oregon. Many mentioned how poor forest management can lead to landslides or more intense wildfires. Furthermore, there is a worry about wildfires reaching urban boundaries. There is an overall concern that outdoor safety will decrease dramatically as the climate continues to change. Many respondents specified how this category is directly related to the health category, so many of those concerns are also applicable to this section.

Education

34.44% of people who answered this question are concerned about the way climate change threatens their education. Children may lose opportunities for outdoor education, and people are worried about wildfires once again delaying or cancelling school. In addition, many believe that there should be more readily available access to information surrounding climate change and how it may begin to impact everyday life.

There is also consensus of a clear lack of adequate education surrounding climate change among the Eugene/Lane County population. Many are curious to learn more about how to properly educate those who believe climate change is a hoax. There is a lack of hope among younger generations, and decreasing motivation because of the anxiety of the climate crisis. One survey respondent said "Why get a masters, lol, the planet is dying". People are not desiring to further their education because they believe it will be of no help, as they are feeling an impending doom.

The last common concern is the decrease of accessibility and affordability of education due to the economic fluctuations related to climate change. According to a survey respondent,

My fear is that with an influx of both marginalized and affluent/white groups escaping climate catastrophe, the public/private dualism of our education system will become increasingly prevalent and lead to further systemic injustices. We need to pour much more funding into public education and make sure that representatives of every group in our communities have some autonomy (faculty & board positions) over how our young are educated.

Climate change will have a profound impact on our education system and adapting to these impacts will likely ripple into race and class relations.

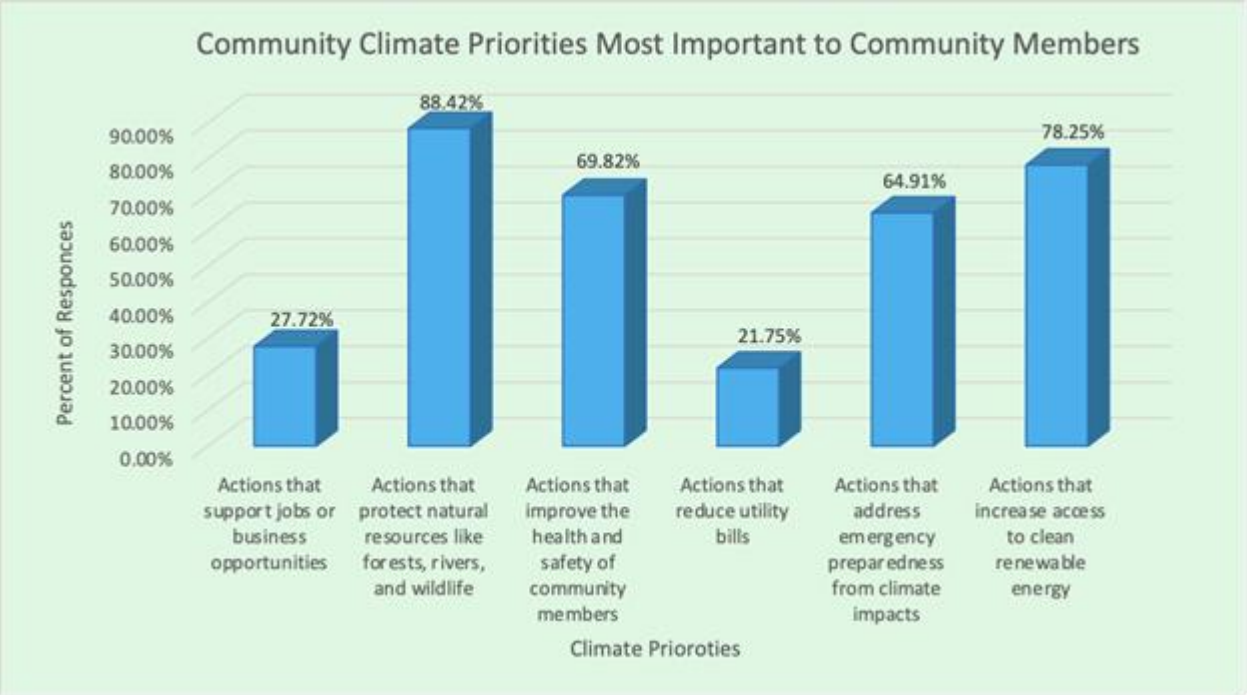
Access to food and water

76.67% of people who answered this question are concerned about the way climate change threatens their access to food and water. The most common concern was that severe droughts threaten access to water. There were also many concerns regarding food security of the general population. Respondents believed that the industrial food systems are too fragile, and will not be able to produce enough food given the changes the environment will be facing. This could lead to possible crop failures or a reduction in food choices at stores. A reduction in food choices is already being seen by some survey respondents. Lastly, some mentioned there has been a difficulty going grocery shopping on bad smoke days, as it is difficult to breathe.

Notes: 169 people skipped this question

Question 8

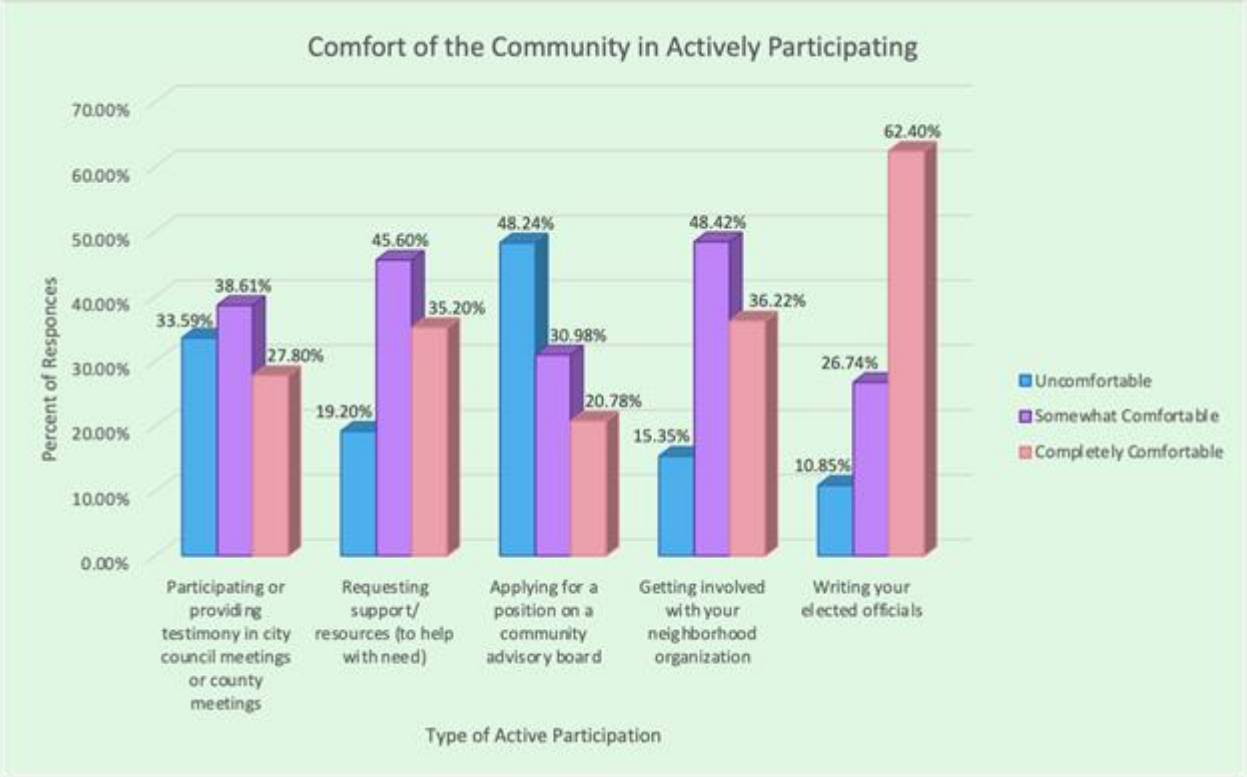
The Task Force wants to identify a set of community climate priorities. To do so, we want to know which of the following benefits are most important to you.



Notes: 64 people skipped this question

Question 9

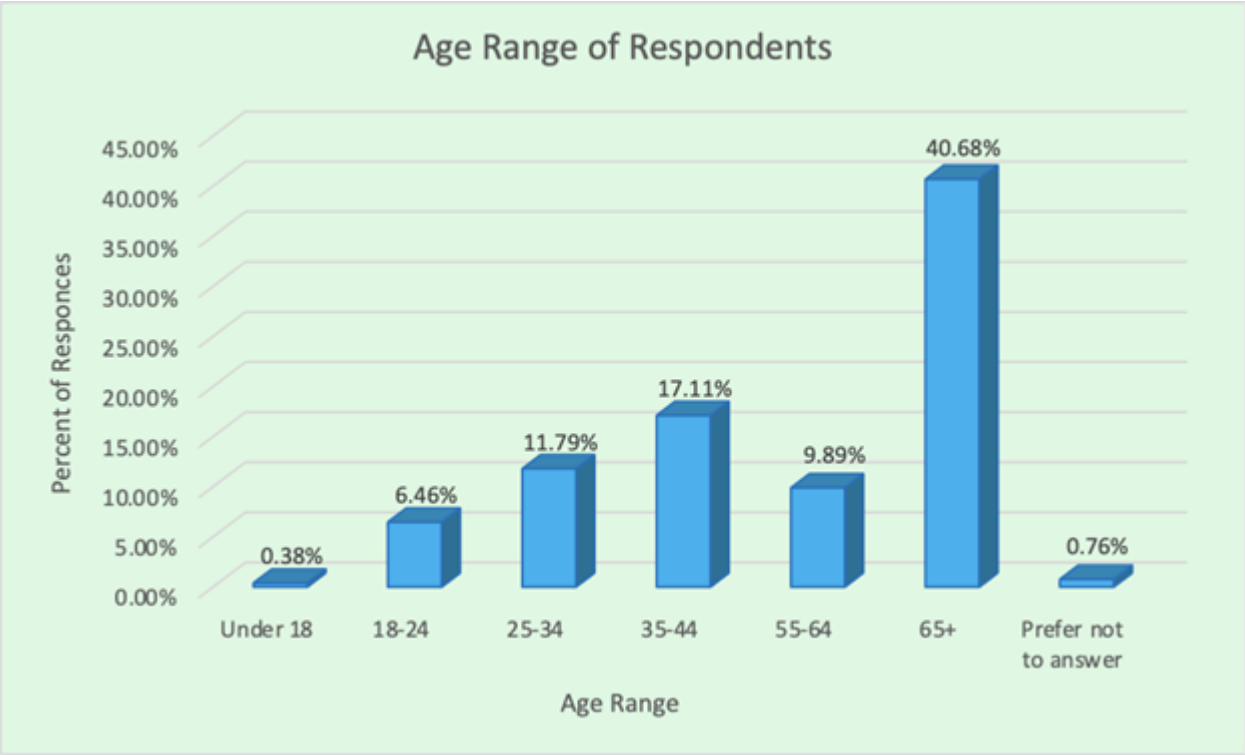
How comfortable do you feel doing the following? [Please rate on a scale of 1-3, 1 = uncomfortable, 2 = somewhat comfortable, 3 = completely comfortable]



Notes: 90 people skipped this question

Question 12

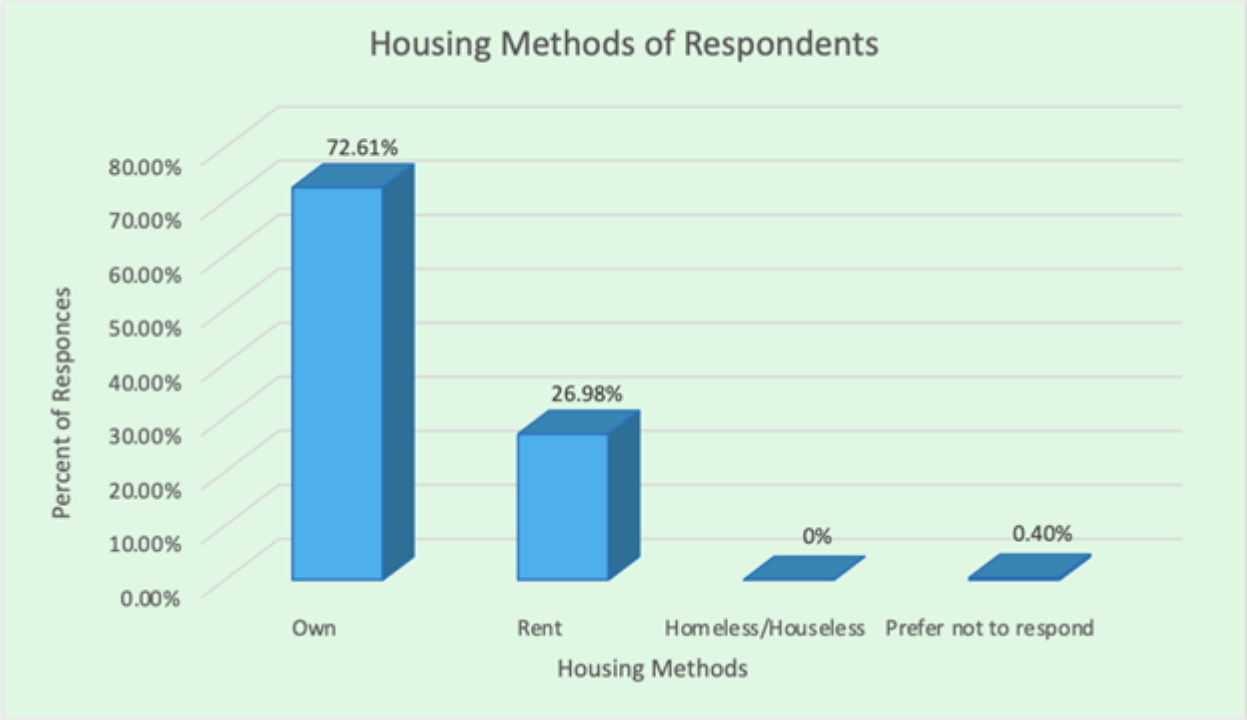
What is your age?



Notes: 86 people skipped this question

Question 13

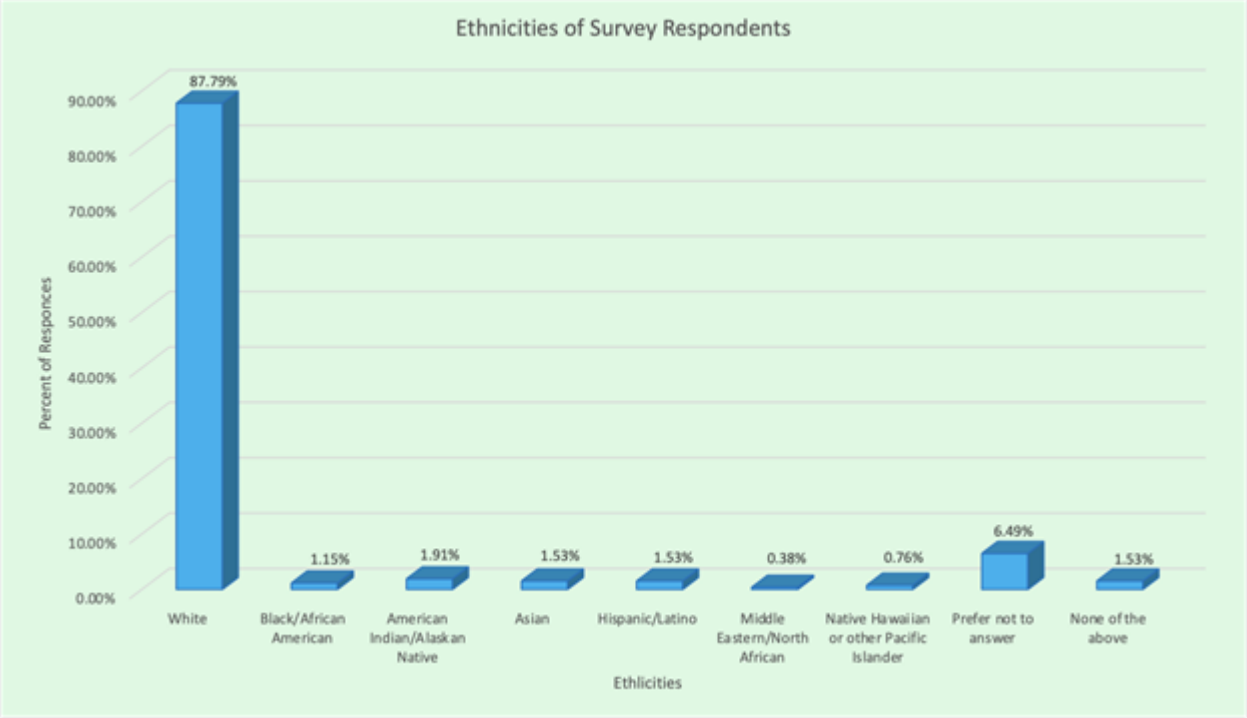
Do you own or rent your own home?



Notes: 83 people skipped this question

Question 14

How do you identify? Select all that apply.



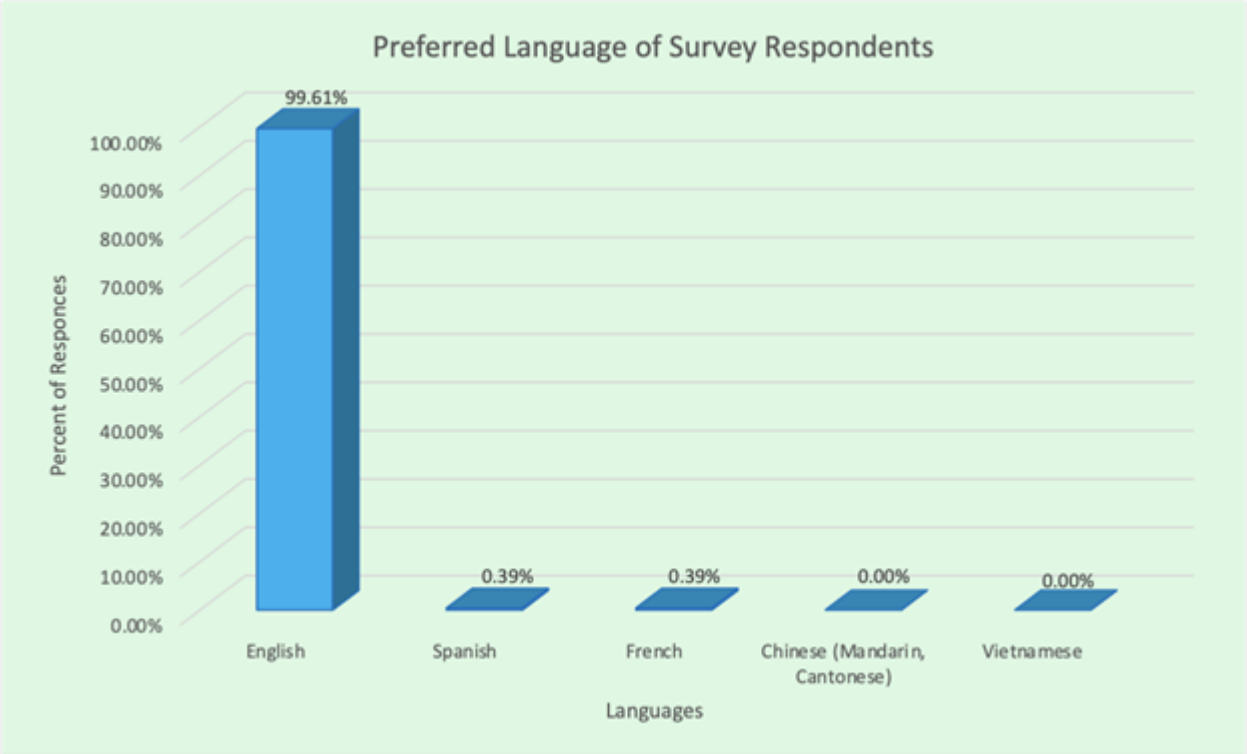
Overall trends in the comments

People listed their ethnicities. The two ethnicities that were not included in the survey but were specified in the comments were Ashkenazi and Mexican Indigenous.

Notes: 87 people skipped this question

Question 16:

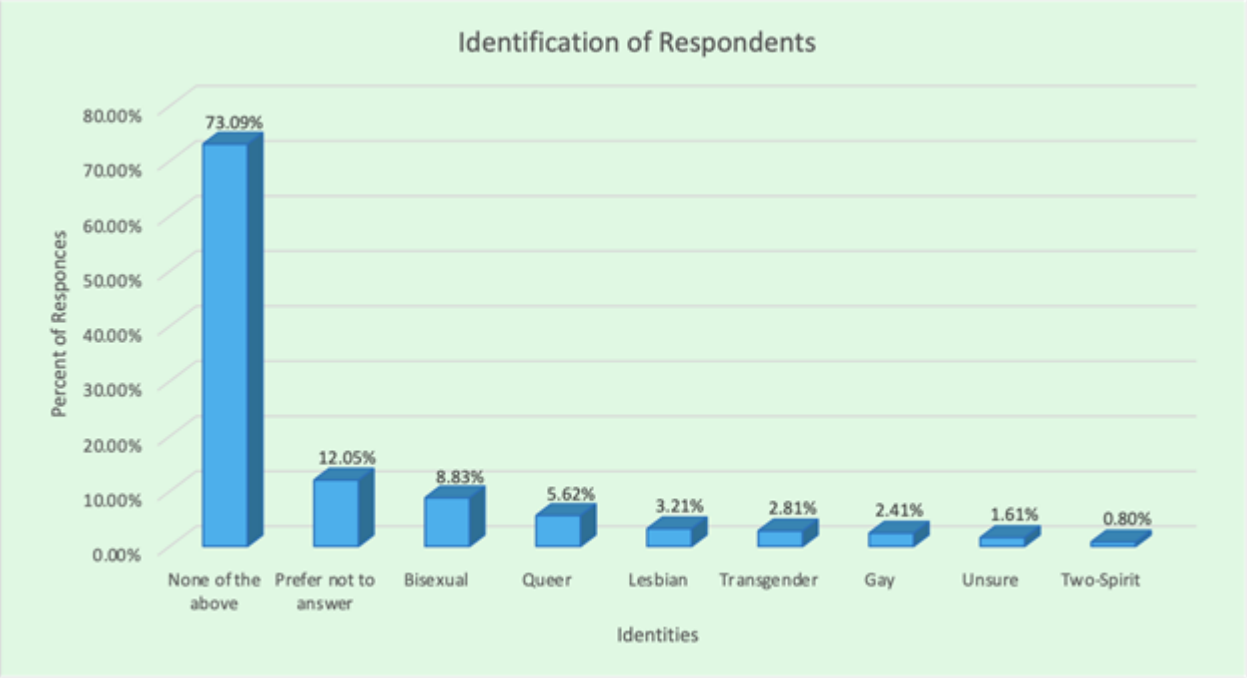
What is your preferred language?



Notes: 90 people skipped this question; the only comment/response in the "other" section was someone specifying that their first language is French, so I added it to the graph

Question 17

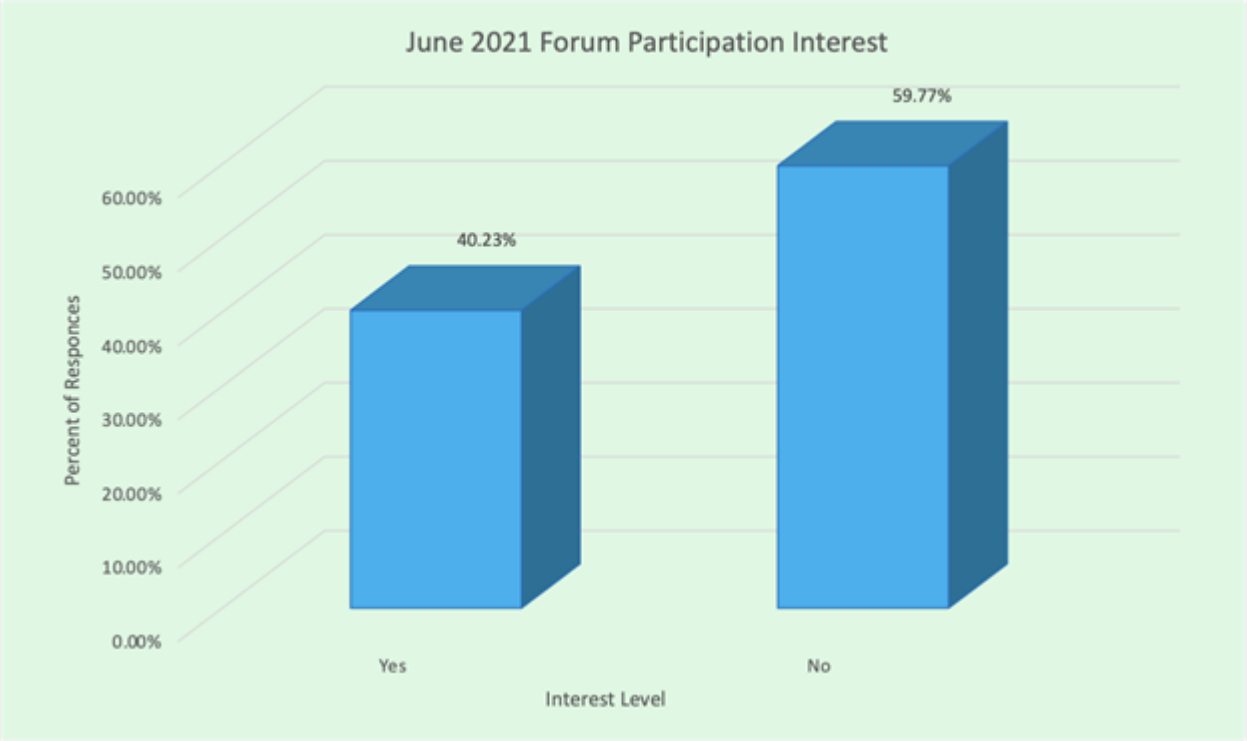
Do you identify as any of the following?



Notes: 100 people skipped this question

Question 18

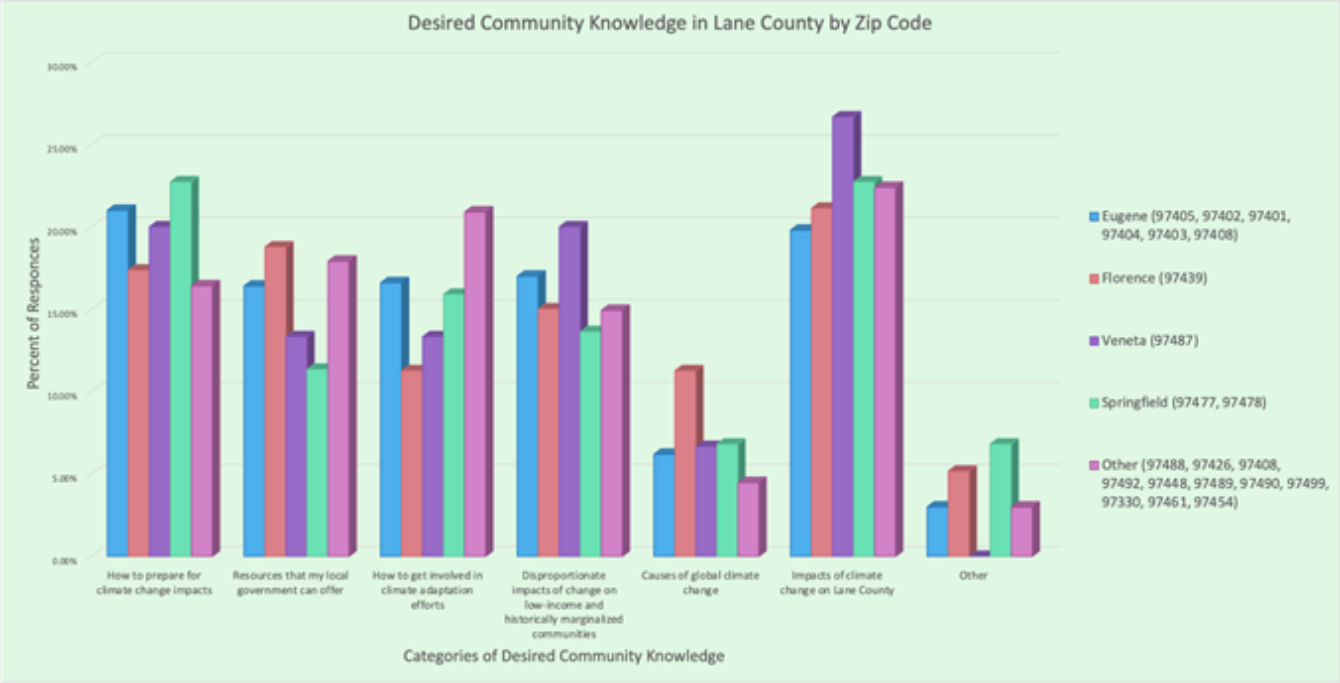
Are you interested in participating in a community forum in June 2021?



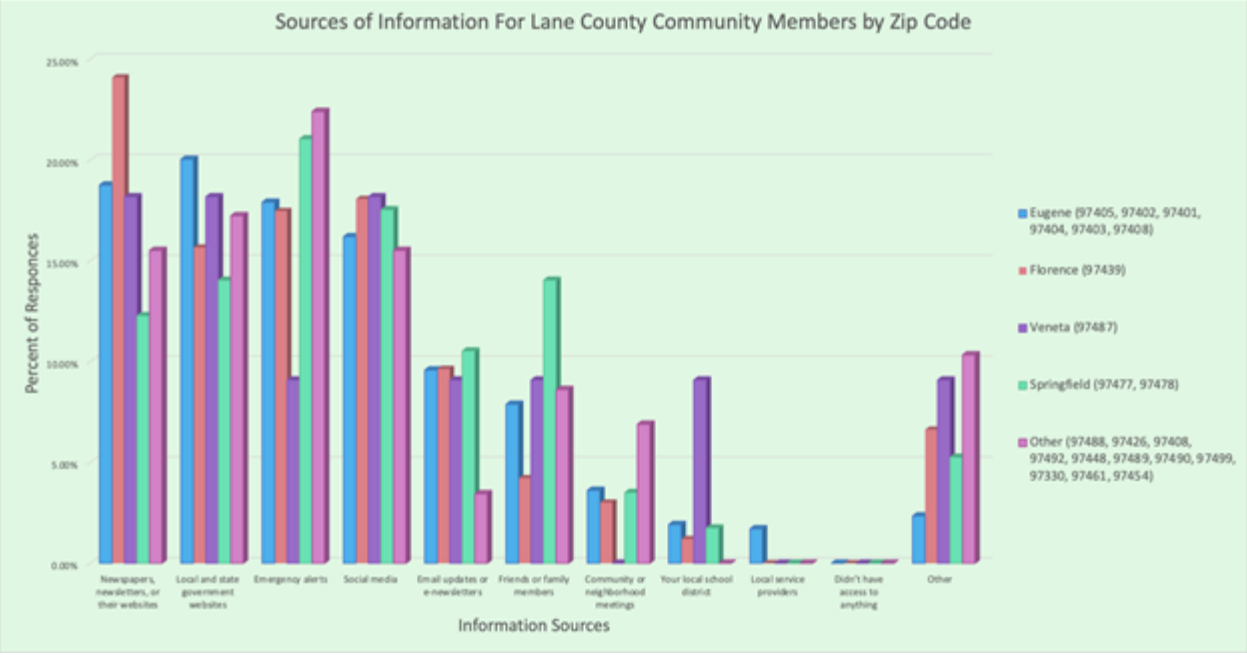
Notes: 93 people skipped this question

Survey Results by Zip Code

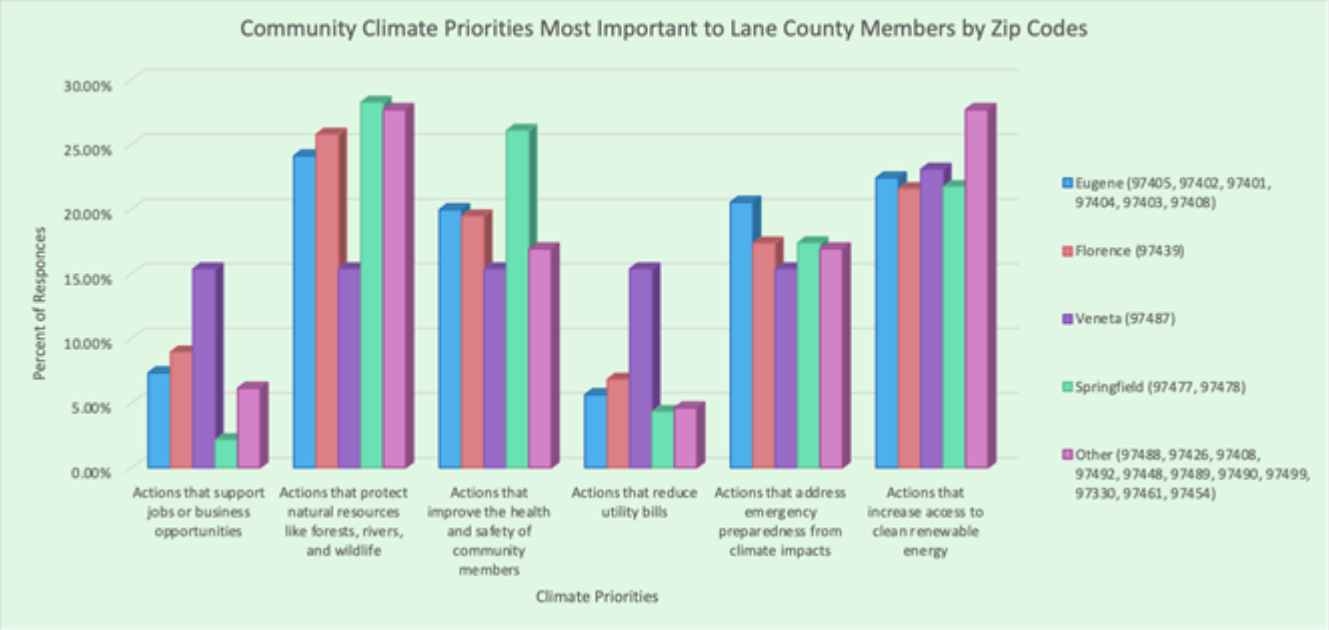
Question 1



Question 2



Question 8



Question 9