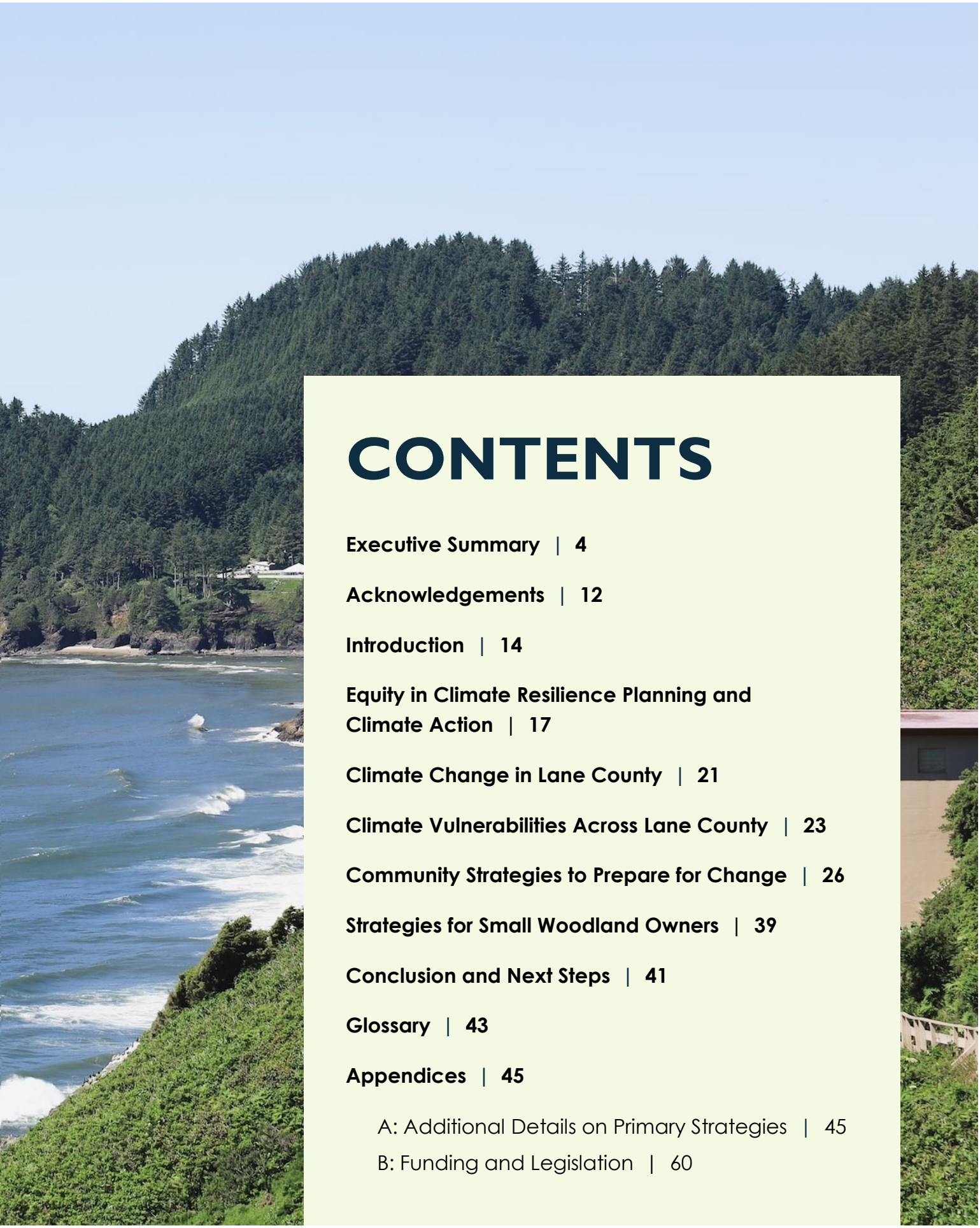
Equitable & Resilient Climate Strategies for Lane County, Oregon

LANE CLIMATE EQUITY AND RESILIENCE

September 1, 2022

BEYOND TOXICS
Leadership For a Clean and Just Oregon



CONTENTS

Executive Summary

This report summarizes the effort over the past two years to understand changing climate conditions across Lane County, identify vulnerabilities specific to frontline communities, and develop solutions that center the needs of those communities. Beyond Toxics has worked in partnership with Lane County throughout this process and is pleased to see that many of the strategies identified in this community-led process have been incorporated into Phase 3 of Lane County's Climate Action Plan.

Beyond Toxics will continue to partner with community members, other organizations, and Lane County to guide implementation of the Climate Action Plan, identify other opportunities to move climate resilience strategies forward, help the community identify emerging climate impacts over time, and lead implementation of strategies that must be led by community organizations. Together, we will ensure a climate resilient future for all who call Lane County home.

Equity

Equity is a bedrock principle of the Climate Equity and Resilience Task Force and a primary driver of this community-led process. It is widely recognized that changing climate conditions disproportionately impact community members who are already struggling due to low-income, historic and current inequities, age, disability, existing medical conditions, and other characteristics. Building climate resilience in an equitable way requires that the needs of these populations be centered in the process of identifying vulnerabilities and developing strategies to address them.

Future Climate Change Projections

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

Climate Vulnerabilities and Community -Driven Strategies

As changes in climate continue, residents can expect increasing severity and frequency of extreme heat and wildfire, larger storms with more precipitation, more

When compared to the historical period (1961-1990)...

By the middle of this century (2040-69), Lane County is expected to experience:

- 4-7° F warmer average temperature
- Approx. 31 more days/yr. above 90° F in Eugene
- 47-69% less snowfall
- Increased drought stress
- Summer days 5-9° F warmer

By the end of this century (2070-99), if emissions are unabated, Lane County is expected to experience:

- 7-10° F warmer average temperature
- Summer days 7-14° F warmer
- Approx. 58 more days/yr. above 90° F and 21 more days/yr. above 100° F in Eugene
- 67-85% less snowfall
- Increased drought stress
- Increased risk of very large wildfires

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 this process, community members reviewed the future climate projections and identified ways in which communities across Lane County would become more vulnerable due to climate change. Once those vulnerabilities were identified, community members developed strategies to address the vulnerabilities that would have the greatest impact on residents, particularly members of frontline communities.

For each vulnerability, the process identified at least one primary strategy and developed additional information, including equity considerations and co-benefits, for that strategy. This report identifies the vulnerability, at least one primary strategy, additional information, and other possible strategies that may be employed to address each vulnerability.

These strategies were submitted to Lane County for consideration in its climate planning process. The community-based strategies that were integrated into the Lane County Climate Resilience Plan are identified below with an asterisk.

Vulnerability	**Strategy**
1. Threat of wildfire to homes and businesses	Strengthen programs to help people reduce wildfire risks to homes and businesses*
2. Higher rates of stress and mental health concerns leading to increased crime and violence due to all climate hazards	Develop community or neighborhood-based support programs*
3. Health risks to the general public (especially those with underlying health conditions) from smoke and extreme heat	Build community resilience hubs for supplies, programs, and resources*
	Develop more emergency health and smoke shelters with transportation assistance to get to the shelters, including education and resource sharing spaces in shelters, libraries, schools, senior centers, faith-based institutions, etc. Investigate the possibility of creating mobile options as well as helping particularly vulnerable residents access free or low-cost air filtration programs.*

Vulnerability	Strategy
4. Health risks to outdoor workers due to wildfire smoke and extreme heat	Ensure protection of and implement support for new worker protections, especially for undocumented workers*
5. Strain on the power grid causing blackouts, brownouts, and health threats due to extreme weather events	Work with utilities to ensure resilient power supply across the county while helping homeowners reduce their energy needs through weatherization and energy efficient electrification of their homes*
6. Existing lack of personal preparedness for emergencies and evacuations made worse due to multiple climate hazards	Develop comprehensive, multi-pronged public engagement programs about emergency preparedness and evacuation procedures*
7. Health risks from reduced water quality in wells due to drought and wildfire	Provide testing assistance and education about well safety for homeowners, particularly in rural communities and especially during drought and after wildfire*
8. Housing supply availability and cost issues due to climate refugees, the existing housing shortage, and the need to repair damage from previous disruptions, especially for low-income and middle housing	Expand housing stock to meet low-income and middle housing needs while making it more resilient.*
9. Decreased potential for self-sustainability and ability to grow own food, especially in rural areas, due to wildfire, drought, and increased heat	Strengthen food security by supporting local food production and distribution while encouraging regenerative, ecologically sound farming practices*
10. Cost of living increases (food, supplies, energy, healthcare, water, etc.) leading to financial and housing instability due to multiple climate hazards	Increase workforce development programs for needed trades, particularly building and construction, to ensure local workers have employment that allows them to be financially stable*
11. Increasing demands on public safety and social service providers due to all climate hazards	Develop community and neighborhood-based programs to support residents, including mental health support programs*

Vulnerability	Strategy
12. Increased costs for property and liability insurance due to wildfire and larger storms	Assist residents with building retrofits, vegetation control, and education regarding existing structures in order to reduce risk*
13. Loss of marine life due to water quality and ocean acidification	Advocate for the maintenance and improvement of coastal wastewater treatment facilities, including septic systems
14. Indigenous communities unable to access traditional resources and hold ceremonies or community events due to multiple climate hazards	Advocate for a Tribal Liaison position at Lane County
15. Schools closed due to extreme heat and smoke	Advocate for school districts throughout Lane County to upgrade infrastructure to maintain air quality in terms of both extreme heat and wildfire smoke
16. Transportation and transit times may increase due to higher demand from a larger population and disruptions from extreme events	Advocate for and support public transportation infrastructure development along high use routes
17. Supply chain breakdowns and price increases due to disruptions particularly affecting construction of low-income and middle housing	Advocate in economic development planning processes for regional and local production of building products (e.g. Cross Laminated Timber)
18. Lack of water access and supply due to reduced snowpack	Advocate for the establishment of alternative water access and storage including backup systems in case of
19. Loss of health coverage due to disruptions in employment caused by multiple climate hazards	Advocate at the Oregon Legislature for immediate access to free or low-cost medical providers through the Oregon Health Plan when employment is disrupted due to natural disasters
20. More injuries and deaths due to all climate hazards	Advocate at the state level for local hazard mitigation plans to address climate change impacts.

Vulnerability	Strategy
21. Farming, ranching, and forestry threatened by drought, temperature variability, and wildfire	Increase funding for local farming and self -sufficiency by increasing the connection between local farmers and the County
22. Existing lack of emergency evacuation plans made worse due to multiple climate hazards	Develop comprehensive public engagement efforts to strengthen emergency evacuation plans and help residents have an emergency preparedness plan in place for themselves and their community

Small Woodland Owner Strategies

How small woodland owners manage their lands has a significant impact on wildfire risk across the county. Building materials will continue to be needed in the region and responsible management of these lands can protect biodiversity as natural systems are also impacted by rapidly changing climate conditions. Possible strategies identified in this process to assist small woodland owners in building climate resilience include:

- Increase education around forestry literacy to the public
- Build community outreach networks and resources for generational foresters and foresters who are in new ownership of forested lands
- Collectivize seedling purchase
- Afforestation for public rights of way
- Allow eco-forestry villages on F-2 land to expand how communities and people have the access to live and work in forests
- Develop a business accelerator for forestry and forestry-related business
- Build workforce development communities at the high school and college levels
- Hire a forestry specialist to write grants, track federal funding opportunities, and develop and implement practices and programs to increase opportunities for carbon sequestration on forest lands in Lane County to address climate risk, while enhancing rural economic health by securing federal and state funding to support local community projects in Lane County
- Prevent land conversion to non-forest uses in County's land use policies
- Develop a calculation for a comparison of cost versus profit from slash burning and biochar
- Seek funding for pilot projects that investigate the efficacy of fireboxes that burn slash on site without open smoke to reduce trucking diesel pollution and improve overall rural air quality
- Provide funding to expand fire prevention, protection, and reforestation

after fire events and management activities

- Incentivize woodland owners to shift away from clear cutting, do pre-harvest cuts, and manage for multi-age stands
- Bring Lane County elected officials to foresters' land to improve understanding of the issues facing forestry enterprises in Lane County
- Manage county park land for increased tree canopy and conservation
- Update the County's Procurement Policy to buy local, ecologically managed lumber and paper products

Next Steps

By identifying a primary strategy and several other options for each of the high priority community vulnerabilities, this document provides many ways in which the community can move forward with the help of local government to build climate resilience.

In the instances where Lane County has integrated a solution identified by the community into its Climate Action Plan, the focus will be on helping the implementation process. Alongside that work, advocacy efforts will be underway with Lane County and other governmental entities to address the remaining high priority vulnerabilities through either the primary strategy or other possible strategy options.

As strategies are implemented and refined, the list of possible strategies included in this report can be revisited to determine if they are needed and worthy of investment.

Methods

Building on the community-led vulnerability assessment completed in 2021, Beyond Toxics and Lane County hosted a Climate Resilience Strategies Workshop on June 25, 2022 at the Hilyard Community Center. Twenty-five community members participated in the workshop, which was facilitated by a team that included staff from the Geos Institute, Beyond Toxics, and Lane County.

Three additional community workshops were held after the initial workshop to engage with and gather feedback and ideas from residents across the geography of the County and in specific communities of interest.

The 26 community members who attended the Vulnerability Assessment workshop, the 61 community members who attended the Strategies Development workshops and discussions, and the 349 community members who answered the survey provided valuable insight and made this community-led process possible.

Acknowledgements

Beyond Toxics acknowledges the support of several organizations and many individuals who contributed to this community-led climate resilience planning process in Lane County.

Beyond Toxics Project Partnership Team

Lisa Arkin, Executive Director

Paige Hopkins, Climate Justice Organizer

Meet Panchal, Environmental Justice Statewide Projects Manager

Haley Case-Scott, former Climate Justice Organizer

Eric Richardson, former Executive Director, Eugene Springfield NAACP

Climate Equity and Resilience Task Force

The following community members throughout Lane County who represent specific populations or geographies helped guide and inform this process. Their help has been invaluable in understanding how different populations in Lane County are impacted by changing climate conditions and how various strategies will impact those residents.

Mike Allen

Camas Banks*

George Beverly Jr.*

Alexandra Corvello*

Bonnie Dominguez*

Adria Godon-Bynum*

Emily Little

Monica McLellan

Jordan Meyers

Eloise Navarro

David Oaks*

Aimée Okotie-Oyekan

Erick Oshel

Andrew Pardi*

Maria Paz

Aguirre Rico Perez*

Dylan Plummer

Yessenia Rodriguez Barriga

Silver Mogart*

Juan Serpa Muñoz*

Raj Vable*

Megan Warner

** indicates member served on the task force only through the climate change vulnerability assessment.*

Lane County

Lane County has been a very supportive partner in the effort to understand the impact of climate change on frontline communities and to center their needs in developing climate resilience strategies to be included in Phase 3 of the County's Climate Action Plan.

Steve Adams, Policy Division Director

Dan Hurley, Public Works Director

Mark Nystrom, Climate Strategist

Cody Kleinsmith, Climate Resilience Analyst

Technical Assistance

Geos Institute provided the process framework through their Climate Ready Communities initiative and direct technical assistance throughout the process.

Tonya Graham, Executive Director

Christina Mills, Operations and Program Manager

Community Members

The 26 community members who attended the Vulnerability Assessment workshop, the 61 community members who attended the Strategies Development workshops and discussions, and the 349 community members who answered the survey provided valuable insight and made this community-led process possible.

Funding for this project has been provided by the Justice40 Capacity Building Fund and Meyer Memorial Trust.

Rick Obst / CC BY 2.0

Introduction

It is widely recognized that changing climate conditions disproportionately impact community members who are already struggling due to low-income, historic and current inequities, age, disability, existing medical conditions, and other characteristics. Building climate resilience in an equitable way requires that the needs of these populations be centered in the process of identifying vulnerabilities and developing strategies to address them.

Lane County understands the need to take action to both reduce greenhouse gas emissions to limit the eventual extent of the climate crisis as well as the need to build climate resilience to protect the communities and natural systems within the county as conditions continue to change. When Lane County announced that it was embarking on a climate planning process, Beyond Toxics recognized the need to ensure that the voices of frontline community members were

heard and their needs acknowledged and addressed in the final plan. This aligned well with Lane County's expressed commitment to equity in the planning process.

This report summarizes the effort over the past two years to understand changing climate conditions across Lane County, identify vulnerabilities specific to frontline communities, and develop solutions that center the needs of those communities. Beyond Toxics has worked in partnership with Lane County throughout this process and are pleased to see that many of the strategies identified in this community-led process have been incorporated into Phase 3 of Lane County's Climate Action Plan.

Lane County's Climate Action Plan is the beginning of a long-term effort to respond to changing climate conditions in ways that build on the existing resilience of frontline communities, strengthen the social fabric that binds us together across Lane County, and protect and restore the natural systems that sustain our communities.

Opportunities are coming online immediately to fund resilient infrastructure projects through the Bipartisan Infrastructure Bill, the Inflation Reduction Act, and other programs. Lane County has also recently added staffing in the Health Department specifically focused on addressing climate impacts to health. These opportunities necessarily drive the initial strategies Lane County has adopted in its plan.

This report is also a roadmap for future community-led efforts to build climate resilience. Lane County strategies exist

within a framework of Act, Support, and Convene. Strategies that can be completed by the County alone fall under Act, while strategies that require some level of community leadership fall under Support or Convene. This structure makes it clear that the community-based work that has been completed to date is just the beginning.

Beyond Toxics will continue to partner with community members, other organizations, and Lane County to guide implementation of the Climate Action Plan, identify other opportunities to move climate resilience strategies forward, help the community identify emerging climate impacts over time, and lead implementation of strategies that must be led by community organizations.

Together, we will ensure a climate resilient future for all who call Lane County home.

Equity in Climate Resilience Planning and Climate Action

Equity is a bedrock principle of the Climate Equity and Resilience Task Force and a primary driver of this community-led process. To ensure a common understanding of the equity lens, the Task Force has defined the following terms.

Environmental Justice

Environmental justice prioritizes impacted and traditionally underrepresented communities and embraces the principle that all people and communities have the right to equal protection and equal enforcement of environmental laws and regulations. Frontline communities are Black, Native American, Indigenous and People of Color communities and immigrant and low-income communities that historically and presently experience the brunt of health, economic

and ecological impacts. They have been made more vulnerable to the consequences of climate change because of factors, such as the legacy of segregation, economic exclusion, and historically biased zoning codes and planning laws, have concentrated toxic polluters and environmental hazards near and within frontline communities.

Climate Justice

Climate Justice is a human rights issue especially for Black, Indigenous, People of Color, and low income communities. These vulnerable communities are the first to experience the negative impacts of climate change, such as heat related illness and death, respiratory illness, infectious diseases, unaffordable rises in energy costs, and extreme natural disasters. Not only do they bear disproportionate burdens from climate change itself, but also from poorly designed policies to prevent climate change and the side effects of the energy systems that cause it. Moreover, those who are most affected are least responsible for the greenhouse gas emissions that cause the problem both globally and within the United States.

Underserved Communities

"Underserved Communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

Racial Equity

Racial equity ensures that everyone has support and access to the resources needed to be successful by identifying and eliminating barriers that prevent the full participation of all underserved communities.

Climate Equity

Climate Equity addresses the historical inequalities suffered by people of color, allowing everyone to fairly share the same benefits and burdens from climate solutions and attain full and equal access to opportunities regardless of their background and identity.

Diversity

Diversity refers to the acceptance of and respect for the variety of similarities and differences among people, including but not limited to gender, gender identity, gender expression, ethnicity, race, Native or Indigenous origin, age, generation, sexual orientation, religious beliefs, marital status, parental status, other family status, socio-economic difference, appearance, language and accent, ability and disability, mental health, education, and nationality.

Inclusion

Inclusion is a dynamic state of operating in which diversity is leveraged and power is shared to create a fair, healthy, and high-performing organization or community. An inclusive environment ensures equitable access to resources and opportunities for all.

Developing Equitable Strategies

During the community workshops, participants used a strategy matrix to develop strategies for each climate vulnerability. The matrix incorporates equity considerations and is designed to help ensure multiple voices are included. For each strategy, workshop participants listed the equity considerations, both positive and negative, and indicated if a particular strategy impacted any frontline communities. Appendix B provides additional details for each primary strategy, including equity considerations.

Workshop participants were asked to consider the following equity considerations for each strategy:

1. **Access** - Does this strategy increase or decrease access to the basic necessities?
2. **Affordability** - Does the strategy increase peoples' ability to afford basic needs?
3. **Cultural Preservation** - Does the strategy preserve cultural resources or customs?
4. **Health & Safety** - Does the strategy improve health and safety of residents?
5. **Power** - Does the strategy empower marginalized groups in leadership and decision-making?

This community partnership and collaboration are at the core of equitable climate resilience planning and ensure that issues of the greatest concern for communities disproportionately impacted by climate change are elevated throughout the process. This report signifies true Community-Driven Climate Resilience planning.

More information

Establishing environmental justice framework of principles for State of Oregon. Senate Concurrent Resolution 17, 81st Oregon Legislative Assembly–(2021) Regular Session. https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/SCR17/Enrolled

10,000 Steps to Environmental and Climate Justice Project ToolKit: Youth and College Leadership Initiative on Environmental and Climate Justice National Association for the Advancement of Colored People. https://naacp.org/resources/10000-steps-environmental-and-climate-justice-project-toolkit

Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (January 20, 2021). https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/

National Association of Social Workers—Diversity, Equity and Inclusion Committee Charter: https://www.socialworkers.org/About/Diversity-Equity-and-Inclusion/Diversity-Equity-and-Inclusion-Committee-Charter

David Geitgey Sierralupe / CC BY 2.0

Climate Change in Lane County

Climate change is affecting communities and natural resources around the globe. The climate conditions that residents of Lane County experience will continue to change in coming decades. In 50 years, for example, Eugene will be similar to today's Sacramento (6.6° F hotter and 40% drier on average). 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. Like all communities, Lane County needs to be prepared for impacts and take action to protect people, property, and nature from climate-related risks.

What can Lane County expect in the future?

By the middle of this century (2040-69), Lane County is expected to experience:

- 4-7° F warmer average temperature
- Summer days 5-9° F warmer
- Approximately 31 more days/yr. above 90° F in Eugene
- 47-69% less snowfall
- Increased drought stress

By the end of this century (2070-99), if emissions are unabated, Lane County is expected to experience:

- 7-10° F warmer average temperature
- Summer days 7-14° F warmer
- Approximately 58 more days/yr. above 90° F and 21 more days/yr. above 100° F in Eugene
- 67-85% less snowfall
- Increased drought stress
- Increased risk of very large wildfires

More information and details about the past and future climate change trends for Lane County can be found in the Climate Change Primer for Lane County, available online: https://www.beyondtoxics.org/wp-content/uploads/2022/03/LaneCountyClimateTrendsPrimer.pdf

.

Rick Obst / CC BY-NC 2.0

Climate Vulnerabilities across Lane County

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, flora, and fauna in and around Lane County.

To build community resilience in the face of those changes within the county, it is important to understand what climate change means to the lives of residents across Lane County. To this end, Lane County and the Geos Institute partnered with the NAACP and Beyond Toxics to develop and support the Lane Climate Equity and Resilience Task Force (CERTF).

This Task Force identified climate vulnerabilities and developed resilience strategies using a community-led process.

On June 16 and 23, 2021, Beyond Toxics hosted a community stakeholder workshop to identify and prioritize vulnerabilities in Lane County across five community systems. More information about these vulnerabilities can be found in the Lane County Climate Change Vulnerability Assessment (https://www.beyondtoxics.org/wp-content/uploads/2022/02/LaneCountyVulnerabilityAssessment_FINAL_February2022.pdf).

Human System

Health, emergency response and preparedness, education

- 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
- 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
- Loss of health insurance coverage due to disruptions in employment

Natural System

Forests, rivers, wildlife, etc.

- 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
- 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

Cultural System

Tribes, immigrant communities, local customs and historical practices

- Reduced ability to access culturally relevant foods and other resources
- Reduced ability to produce food in rural areas
- Reduced ability to hold ceremonies and community events

Built System

Buildings, roads, bridges, etc.

- Dams unable to hold back larger storms
- Increase in demand for water
- Groundwater sources drying up
- Older levees at risk of failure
- Damage to drinking water from wildfire
- Toxic algal blooms threatening drinking water
- Stormwater infrastructure at risk from larger storms
- Damage to sewer infrastructure from wildfire
- Threats to the availability, reliability, and capacity within the power grid
- 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
- Increase in demand for energy
- Reduction in ability to generate hydropower
- Difficulty meeting greenhouse gas targets
- Threat of wildfire on homes and businesses
- Impacts to middle housing stock
- Risks to Internet access and reliability
- Coastal communities threatened by sea level rise
- Schools closed due to extreme heat and smoke
- Essential services at risk due to flooding
- Price impacts on lumber and other building materials
- Flood risk to transportation infrastructure
- Increase in risk to emergency communication infrastructure
- Air quality risks increase for walkers, cyclists, and bus riders
- Bridges and culverts at risk of failure due to flooding
- Transit times may increase
- Road buckling due to extreme heat

Economic System

Tourism, business, industry, etc.

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

Community Strategies to Prepare for Change

Methods and Community Workshop Summary

Building on the community-led vulnerability assessment completed in 2021, Beyond Toxics and Lane County hosted a Climate Resilience Strategies Workshop on June 25, 2022 at the Hilyard Community Center. Twenty-five community members participated in the workshop, which was facilitated by a team that included staff from the Geos Institute, Beyond Toxics, and Lane County.

Participants were placed into four breakout groups, with each group developing strategies to address a set of related vulnerabilities. Multiple strategies were identified for each vulnerability, and the group noted the highest priority strategy before moving on to the next vulnerability.

These strategies were submitted to Lane County for consideration in Phase 3 of its Climate Action Plan, which focuses on developing climate resilience across the county.

Three additional community workshops were held after the initial workshop to engage with and gather feedback and ideas from residents across the geography of the County and in specific communities of interest. The workshops took place:

- **July 21st in Florence**. This workshop had 17 participants who were placed into two breakout groups. Each group identified and prioritized strategies to address five vulnerabilities specifically relevant to coastal communities.
- **August 9th in Oakridge**. This workshop had 11 participants who were placed into two breakout groups. Each group identified and prioritized strategies to address five vulnerabilities specifically relevant to Greater Middle Fork communities.
- **August 16th for small woodland owners throughout Lane County**. Six participants attended, representing foresters in all three bioregions of the county. Good Company facilitated the discussion, which focused on understanding the environmental and economic shifts they are already seeing in their forests due to climate change. Current strategies were discussed along with how those strategies are being adjusted as conditions continue to change.

In addition, Beyond Toxics staff had a qualitative interview with Nurturely, a local non-profit organization in Eugene that promotes equity in perinatal wellness and strengthens cultures of support for infants and caregivers.

Oakridge Community Workshop Participants

Community Strategies

While the Climate Vulnerability Assessment developed in this process identified possible vulnerabilities across five community systems in Lane County, the strategy development phase focused on those vulnerabilities that would directly impact members of frontline communities. For each of these vulnerabilities, the engagement process identified a single high priority strategy along with several other possible strategies.

For each vulnerability listed below, the primary strategy identified by the community is listed first, followed by other possible solutions. The primary strategies that have been integrated into Phase 3 of Lane County's Climate Action Plan are identified by an asterisk. In each instance where the County integrated the community's primary strategy to address a particular vulnerability, other possible solutions can be revisited once the primary strategy has been implemented if there is need for additional action.

See Appendix A for more details, such as responsible person, equity considerations, etc. regarding the primary strategies. Appendix B provides information on legislation and funding opportunities for implementing specific strategies.

Vulnerability

1. Threat of wildfire to homes and businesses

Primary Strategy: Strengthen programs to help people reduce wildfire risks to homes and businesses*

Other possible strategies:

- Improve evacuation planning and communication, especially for rural areas
- Increase programs to help residents promote Firewise and similar programs including incentives and financing programs for landlords to harden their properties from wildfire and other extreme weather events
- Expand sustainable forestry and arborist/landscaping careers in more suburban and urban areas
- Create job training opportunities in wildfire risk reduction for prisoners re-entering the workforce

Vulnerability

2. Higher rates of stress and mental health concerns leading to increased crime and violence due to all climate hazards

Primary Strategy: Develop community or neighborhood-based support programs*

Other possible strategies:

- Address the overarching issue of lack of access to mental healthcare
- Help residents maintain healthy diets and physical health before heat stress
- Increase access to locally grown food
- More CAHOOTS Responders
- Develop community and school-based education programs for mental health support
- Support and develop school-based professionals that support youth experiencing mental/emotional stress.

Vulnerability

3. Health risks to the general public (especially those with underlying health conditions) from smoke and extreme heat

Primary Strategy: Build community resilience hubs for supplies, programs, and resources*

Primary Strategy: Develop more emergency health and smoke shelters with transportation assistance to get to the shelters, including education and resource sharing spaces in shelters, libraries, schools, senior centers, faith-based institutions, etc. Investigate the possibility of creating mobile options as well as improving access to free or low-cost air filtration programs for particularly vulnerable residents (low-income elders, disabled, or medically fragile residents, pregnant people, new parents, and their babies - with recognition of the fact that communities of color may face more barriers and become more vulnerable because of the historically racist policies and exclusion laws in place.)*

Other possible strategies:

- Free or low cost air purifiers to low-income people and rural residents who may not be able to travel to a hub
- Strengthen weatherization programs to make cooling more efficient and less expensive
- Increase heat pump programs for energy efficient cooling
- Strengthen evacuation planning and alleviation of smoke for elders, renters,

Rick Obst / CC BY 2.0

unhoused people, and those living in multistory structures

- Improve access to cooling centers with compensation for staffing
- Stockpile filters, fans, and other necessary supplies to assist renters during heat and smoke episodes
- Develop and fund programs between Lane County Public Health and the County's climate action plan to strengthen the baseline health of pregnant people, new parents, and their infants
- Improve trauma-informed preparedness resiliency education in schools
- Add wildfire smoke to preparedness programs through city government and utilities
- Develop a local government program to fund shade planting and continued tree maintenance, especially in low-income neighborhoods
- Implement smartphone alerts regarding air quality in multiple languages
- Invest in shade planting and water features, especially in low-income neighborhoods

- Retrofit existing public buildings and ensure that air quality is protected in new public buildings
- Research the effects of heat on pregnant people
- Provide more mobile medical clinics
- Improve access to green spaces
- Re-establish school-based health clinics for children and families
- Employ multilingual messaging

Vulnerability

4. Health risks to outdoor workers due to wildfire smoke and extreme heat

Primary Strategy: Ensure protection of and implement support for new worker protections, especially for undocumented workers*

Other possible strategies:

- Change regulations around start times for construction projects during extreme heat events
- Require hazard pay for people who must work outside in those conditions
- Plant trees for shade cooling, ensuring that they are the right trees in the right locations and they are maintained
- Ensure worker protections are upheld in county contracts and create a mandate for companies that partner with the County

Vulnerability

5. Strain on the power grid causing blackouts, brownouts, and health threats due to extreme weather events

Primary Strategy: Work with utilities to ensure resilient power supply across the county while helping homeowners reduce their energy needs through weatherization and energy efficient electrification of their homes*

Other possible strategies:

- Expand vegetation removal and fuels reduction on utility easements
- Develop infrastructure for power storage
- Construct micro grid generation facilities and community solar projects , especially for essential infrastructure and rural communities
- Assist residents, particularly low-income owners and landlords, in weatherizing structures and transitioning to highly efficient electric systems

Vulnerability

6. Existing lack of personal preparedness for emergencies and evacuations made worse due to multiple climate hazards

Primary Strategy: Develop comprehensive, multi-pronged public engagement programs about emergency preparedness and evacuation procedures*

Other possible strategies:

- Provide basic emergency supplies to low-income residents
- Develop or strengthen neighborhood-based emergency preparedness programs, such as CERT. Encourage these programs to support any accessibility barriers, such as language access and financial support if needed.
- Develop multilingual and multicultural emergency preparedness education programs
- Strengthen community networks in rural areas
- Assess potential digital receiver technology solutions
- Assess and expand rural road networks to ensure multiple evacuation routes, including maintenance of dirt roads
- Identify areas in the county with inadequate evacuation plans and assist them in updating their plans
- Conduct annual evacuation and emergency drills (similar to tsunami programs)

Vulnerability

7. Health risks from reduced water quality in wells due to drought and wildfire

Primary Strategy: Provide testing assistance and education about well safety for homeowners, particularly in rural communities and especially during drought and after wildfire*

Other possible strategies:

- Improve filtration systems of utilities that are on municipal wells
- Develop multiple water sources in rural areas for system resilience
- Develop an emergency water supply procedure to respond to contamination
- Convene local or neighborhood scale water coordination groups to test and strategize
- Improve regulation, protection, monitoring and testing of groundwater wells that serve as drinking water sources
- Monitor and plan for saltwater intrusion in coastal wells

Rick Obst / CC BY 2.0

Vulnerability

8. Housing supply availability and cost issues due to climate refugees, the existing housing shortage, and the need to repair damage from previous disruptions, especially for low-income and middle housing

Primary Strategy: Expand housing stock to meet low-income and middle housing needs while making it more resilient.*

Other possible strategies:

- Subsidize affordable housing (see Portland Accessory Dwelling Unit policy for example)
- Increase focus on public/private partnerships to develop needed housing
- Promote development of higher density housing, such as retirement communities, multi-family units, apartment buildings, and Accessory Dwelling Units
- Address zoning issues to allow for higher density housing, especially for small urban communities and rural areas
- Investigate a vacancy tax for those who own vacation rentals or second homes and ensure that those taxes are used in the same geography where the properties are located

Vulnerability

9. Decreased potential for self-sustainability and ability to grow own food, especially in rural areas, due to wildfire, drought, and increased heat

Primary Strategy: Strengthen food security by supporting local food production and distribution while encouraging regenerative, ecologically sound farming practices*

Other possible strategies:

- Incentivize local food production, including culturally relevant food and other resources which help preserve cultural practices and traditions)
- Strengthen educational programs for gardeners and small farmers
- Develop a strategy to increase agricultural production while sequestering more carbon
- Improve regulations for permitting food processing facilities in Lane County
- Help farmers learn how to plant basic crops in sustainable ways
- Support school garden projects
- Incentivize programs to build capacity and support for BIPOC farmers who are new to the agricultural field
- Increase training opportunities with the Oregon Department of Agriculture, OSU Cooperative Extension, and Farm to School

Vulnerability

10. Cost of living increases (food, supplies, energy, healthcare, water, etc.) leading to financial and housing instability due to multiple climate hazards

Primary Strategy: Increase workforce development programs for needed trades, particularly building and construction, to ensure local workers have employment that allows them to be financially stable*

Other possible strategies:

- Increase energy and water conservation programs to reduce utility costs for low-income people, particularly programs that assist landlords where the benefit is seen by the tenants
- Create more localized healthcare and food systems
- Develop programs to help people grow more of their own food (lawn to garden programs, etc.)
- Develop more low carbon or zero emission transportation options from rural areas to larger cities
- Support EV charging stations along the coast, starting with government facilities
- Subsidize affordable housing
- Advocate for activating the Defense Production Act for building material production

Note that there were concerns regarding potential displacement of existing workers by people migrating to Lane County to escape climate impacts elsewhere. To date, the data does not show that this type of displacement is happening in other communities where there is an increase of population due to climate change. However, a strong workforce development program in the county will help address any labor shortages as population increases.

Vulnerability

11. Increasing demands on public safety and social service providers due to all climate hazards

Primary Strategy: Develop community and neighborhood-based programs to support residents, including mental health support programs*

Other possible strategies:

- Increase funding for these services where they already exist
- Proactively plan and scale up existing services with increasing climate hazards in mind
- Prioritize Lane County Public Health resources to aid the impacts on mental and physical health due to climate change
- Secure funding from Oregon Health Authority to provide grants to operate culturally and linguistically specific mobile health units to serve priority populations with histories of poor health or social outcomes.
- Incentivize health care professions to draw more young people to those fields

- Enhance existing emergency services infrastructure, especially in rural areas
- Bring health education and personal resilience programs into schools to support youth

Note that this strategy is related to the implementation of resilience hubs as well, although there are some strategies identified that are specific to the public safety and social services fields.

Vulnerability

12. Increased costs for property and liability insurance due to wildfire and larger storms

Primary Strategy: Assist residents with building retrofits, vegetation control, and education regarding existing structures in order to reduce risk*

Other possible strategies:

- Advocate with the state insurance commissioner regarding regulation of the insurance industry related to property insurance
- Advocate at the state level for green building codes and energy smart programs
- Develop risk reduction programs to address the causes of rate increases
- Provide outreach and education through brokers and community-based organizations
- Assess the possibility of fossil free risk bonds

Vulnerability

13. Loss of marine life due to water quality and ocean acidification

Primary Strategy: Advocate for the maintenance and improvement of coastal wastewater treatment facilities, including septic systems

Vulnerability

14. Indigenous communities unable to access traditional resources and hold ceremonies or community events due to multiple climate hazards

Primary Strategy: Advocate for a Tribal Liaison position at Lane County

Other possible strategies:

- Invite tribal leaders to meet with Lane County to better understand what is at-risk in their communities and develop shared solutions
- Develop outreach and education to non-tribal members regarding the needs of Tribal communities
- Partner with universities through their tribal liaisons and Native American student programs

Vulnerability

15. Schools closed due to extreme heat and smoke

Primary Strategy: Advocate for school districts throughout Lane County to upgrade infrastructure to maintain air quality in terms of both extreme heat and wildfire smoke

Other possible strategies:

- Advocate for increased infrastructure funding for schools from the Oregon Legislature
- Develop mandated curriculum in schools to teach kids about health impacts of wildfire smoke and extreme heat and how to protect themselves and their families

Vulnerability

16. Transportation and transit times may increase due to higher demand from a larger population and disruptions from extreme events

Primary Strategy: Advocate for and support public transportation infrastructure development along high use routes

Chris Phan / CC BY-SA 2.0

Other possible strategies:

- Ensure transit district is considering climate impacts, including in-migration, in their planning
- Encourage mixed-use development and walking/biking friendly neighborhoods
- Organize evacuation routes and live communication during emergencies so that people know what transit options are available to them in real time

Vulnerability

17. Supply chain breakdowns and price increases due to disruptions particularly affecting construction of low-income and middle housing

Primary Strategy: Advocate in economic development planning processes for regional and local production of building products (e.g. Cross Laminated Timber)

Other possible strategies:

- Investigate financing options to address higher upfront costs for desired construction projects
- Advocate for the use of the Defense Protection Act to increase production of building materials manufactured in the U.S.
- Encourage upcycling, recycling, and composting as a key economic development strategy

Vulnerability

18. Lack of water access and supply due to reduced snowpack

Primary Strategy: Advocate for the establishment of alternative water access and storage including backup systems in case of emergency

Other possible strategies:

- Build a more robust and resilient power system to maintain water supply during emergencies
- Help farmers and foresters maintain local water rights
- Build loan or grant program for agriculture and timber lander owners to maintain healthy riparian buffers to keep water cool and flowing year-round
- Develop a loan and/or grant program for small woodland and agricultural land owners to maintain healthy riparian buffers

Vulnerability

19. Loss of health coverage due to disruptions in employment caused by multiple climate hazards

Primary Strategy: Advocate at the Oregon Legislature for immediate access to free or low-cost medical providers through the Oregon Health Plan when employment is disrupted due to natural disasters

Other possible strategies:

- Expand outreach and education about the Oregon Health Plan through brokers and community-based organizations
- Advocate for patient rights to coverage when employment is disrupted
- Ensure bilingual access to information about healthcare coverage

Vulnerability

20. More injuries and deaths due to all climate hazards

Primary Strategy: Advocate at the state level for local hazard mitigation plans to address climate change impacts

Other possible strategies:

- Develop programs to strengthen the social fabric of communities, especially in rural areas
- Build self-reliance during emergencies
- Incentivize work force development and housing for healthcare and emergency responders
- Better training, recruitment, education, and coordination for community and emergency response teams
- Lead fire management efforts with traditional ecological knowledge
- Increase funding for emergency response

Vulnerability

21. Farming, ranching, and forestry threatened by drought, temperature variability, and wildfire

Primary Strategy: Increase funding for local farming and self-sufficiency by increasing the connection between local farmers and the County

Other possible strategies:

- Assist these sectors in getting access to the latest information regarding climate impacts and potential solutions as well as financial assistance for retrofitting their operations
- Identify how related strategies, such as agrovoltaics and biochar, can be integrated into their operations to improve resilience
- Hire an agricultural and soil county coordinator/specialist to write grants, track federal funding opportunities, and develop and implement practices and programs to increase opportunities for agricultural lands in Lane County to address climate risk, while enhancing rural economic health by securing federal and state funding to support local community projects in Lane County

Vulnerability

22. Existing lack of emergency evacuation plans made worse due to multiple climate hazards

Primary Strategy: Develop comprehensive public engagement efforts to strengthen emergency evacuation plans and help residents have an emergency preparedness plan in place for themselves and their community

Other possible strategies:

- Identify areas in the county with inadequate evacuation plans and assist them in updating those plans
- Conduct annual evacuation drills with residents

Photo from Deumling Family / Used with permission

Strategies for Small Woodland Owners

Small woodland owners are a key element of climate resilience across Lane County due to several factors. How small woodland owners manage their lands has a significant impact on wildfire risk, forest health, wildlife habitat, and water quality across the county. Building materials will continue to be needed in the region in response to population growth and wildfire damage, so supporting small woodland owners in managing their lands well will reduce wildfire risk while strengthening local economies. Responsible management of these lands can protect biodiversity in the region as natural systems are also impacted by rapidly changing climate conditions.

Possible Strategies:

Lane County takes an action-based role:

- Develop a business accelerator for forestry and forestry-related business
- Build workforce development communities at the high school and college levels
- Hire a forestry specialist to write grants, track federal funding opportunities, and develop and implement practices and programs to increase opportunities for carbon sequestration on forest lands in Lane County
- Prevent land conversion to non-forest uses in county land use policies
- Develop a calculation for a comparison of cost versus profit from slash burning and biochar
- Seek funding for pilot projects that investigate the efficacy of fireboxes that burn slash on site without open smoke to reduce diesel pollution from trucking and improve overall rural air quality
- Provide funding to expand fire prevention, protection, and reforestation after fire events and management activities
- Incentivize woodland owners to shift away from clear cutting, do pre-harvest cuts, and manage for multi-age stands
- Bring Lane County elected officials to foresters' land to improve understanding of the issues facing forestry enterprises in Lane County
- Manage county park land for increased tree canopy and conservation
- Update the county's procurement policy to buy local, ecologically produced lumber and paper products

Lane County takes a support role:

- Develop workforce training programs that encourage young people to take up careers in sustainable forestry
- Increase education around forestry literacy to the general public
- Build community outreach networks and resources for generational small woodland owners and small those who are in new ownership of forested lands
- Share resources on forestry from the Oregon State University Extension Service
- Collectivize seedling purchase
- Afforestation of public rights of way
- Allow eco-forestry villages on F-2 land to expand how communities and people have access to live and work in forests


Photo from Ben Deumling /Used with permission

Conclusions and Next Steps

By identifying a primary strategy and several other options for each of the high priority community vulnerabilities, this document provides many ways in which the community can move forward with the help of local government to build climate resilience.

In the instances where Lane County has integrated a solution identified by the community, the focus will be on supporting the implementation process. Alongside that work, advocacy efforts will be underway with Lane County and other governmental entities to address the remaining high priority vulnerabilities through either the primary strategy or other strategy options. As strategies are implemented and refined, the list of possible strategies included in this report can be revisited to determine if they are needed and worthy of investment.

Next steps involve multiple pathways of partnership and advocacy. Engagement with the public, particularly those who live in rural communities or are isolated from the larger population centers for

other reasons, will be particularly important in the effort to implement the strategies in the Lane County Climate Action Plan.

Implementation

Lane County has communicated a strong interest in continuing the partnership with Beyond Toxics in the implementation phase. Community participation in implementation will ensure that the needs of frontline communities are centered and met during the process as conceptual strategies are operationalized. Beyond Toxics will help bring community voices to the implementation phase of relevant strategies as identified in the Climate Action Plan.

Funding and technical support from state and federal government programs will be essential for timely implementation of climate resilience strategies. Recent legislation passed in Congress and at the Oregon State Legislature develops assistance programs that must be tapped in the implementation process (See Appendix B).

Advocacy

Lane County's Climate Action Plan focuses heavily on what the Lane County Board of Commissioners can implement themselves or influence with local partners. In the instances where climate vulnerabilities for frontline communities are not yet being addressed in the Climate Action Plan, but fall within Lane County's responsibilities, advocacy will focus on ensuring that those vulnerabilities are addressed, likely using one or several strategies identified in this report.

Primary strategies to address climate vulnerabilities that are of particular importance to the community, but have yet to be included in Lane County's Climate Action Plan, remain on this list for future discussions and planning processes with Lane County.

In addition, several of the strategies identified in this document are the responsibility of other jurisdictions, so advocacy for those strategies will necessarily be focused elsewhere as identified in the strategy titles.

Moving forward with implementation of the community-led strategies that have been integrated into the Lane County Climate Action Plan and continuing to develop the strategies that are not yet included in the plan will help ensure a climate resilient future for the people, communities, and natural systems of Lane County.

GLOSSARY

Biodiversity – The overall number and types of species of plants and animals in a particular place or habitat.

Carbon sequestration – Removing carbon from the atmosphere and storing it in a carbon pool using natural/biological (such as trees, plants, etc), or artificial processes (such as injection into saline aquifers)

Climate Equity – Climate Equity addresses the historical inequalities suffered by people of color, allowing everyone to fairly share the same benefits and burdens from climate solutions and attain full and equal access to opportunities regardless of one's background and identity.

Climate Refugees – People forced to leave their homes due to impacts of climate change, such as sea-level rise, extreme weather events, smoke, and drought.

Energy Efficiency – Reductions in the amount of energy required to provide products and services.

Energy Self-Reliance – The ability to meet all your energy needs with locally produced or generated sources, often renewable energy sources.

Equity – Achieving the same level of opportunity based on variable levels of support and assistance depending on the difference in historical disparity and current need. Some types of equity of concern include racial, economic, social, and intergenerational.

Greenhouse Gas (GHG) – A gas that absorbs infrared radiation (heat) in the atmosphere and contributes to climate change. Greenhouse gases include carbon dioxide, methane, water vapor, nitrous oxide, and others.

Heat Pump - A device that can heat a building by transferring thermal energy from the outside using the refrigeration cycle. Many heat pumps can also operate in the opposite direction, cooling the building by removing heat from the enclosed space into the outside.

Infrastructure – The built environment such as buildings, energy generation and distribution systems, water delivery, storm- and wastewater, floodwalls, roads and highways, bridges, culverts, and many other basic structures.

Resilience – The capacity to recover quickly from disruption or accommodate and positively adapt to or thrive amidst changing climate conditions and hazard events.

Resilience Hubs – Trusted neighborhood locations or facilities where residents can access resources, materials, and support on a regular basis. These hubs are designed to provide services that increase day-to-day resilience as well as providing support during and after extreme events.

Resilience Hubs are designed to shift power from the government to local neighborhoods and dismantle systems of economic and social disparity.

Retrofitting – The addition of new technology or features to older systems. For example a home energy retrofit is the improving of existing buildings with new energy efficiency equipment.

Snowpack – Snow that accumulates. Snowpacks are an important water resource that feed streams and rivers as they melt.

Sustainability – Meeting the needs of the present without compromising the ability of future generations to meet their needs.

Weatherization – Modifying a building to reduce energy consumption and optimize energy efficiency.

Appendix A

Additional Details for Primary Strategies

Strategies with asterisk were included in the County's Climate Action Plan

Vulnerability	**1. Threat of wildfire to homes and businesses**
Primary Strategy	Strengthen programs to help people reduce wildfire risks to homes and businesses*
Co-benefits	Safer neighborhoods
Trade-offs	Time Intensive /labor intensive /cost Less space/more risk of heat increase (Note: This may be an assumption. Much of the research is not saying cut all trees, but trim back and make the structures not likely to ignite.)
Responsible Party	Lane county – Firewise or other Fire Department based programs); Neighborhood associations; Fire departments
Equity Considerations	Low-income homeowners often cannot afford the cost of landscaping and structural improvements that are needed to be done to the home and surrounding yard to prevent likelihood of wildfires. Renters Cost of service Rural (larger properties /even more cost etc.)

Vulnerability	**2. Higher rates of stress and mental health concerns leading to increased crime and violence due to all climate hazards**
Primary Strategy	Develop community or neighborhood-based support programs*
Co-benefits	Better ability to respond to disasters, greater personal resilience, neighborhoods strengthened
Trade-offs	They are expensive to operate, especially if mental health practitioners work there

Responsible Party	Emergency Management Depts (city and county), insurance companies, practitioners
Equity Considerations	Locate them in areas with large proportions of vulnerable people Identify what those people need and provide that first Recognize the need to have these community centers in areas where vulnerable populations feel most comfortable when interacting with government officials
Vulnerability	**3. Health risks to the general public (especially those with underlying health conditions) from smoke and extreme heat**
Primary Strategy A	Build community resilience hubs for supplies, programs, and resources*
Co-benefits	Resilience Centers (or "hubs") can provide services when there is not a natural disaster, which strengthens the community, they can also be the delivery system for many of the other solution suggestions.
Trade-offs	They are often expensive to build and maintain
Responsible Party	Emergency Management Planners (city and county)
Equity Considerations	Location near particularly vulnerable population centers ensures that the regular programming meets the needs of those populations so that trust is built ahead of the disaster. Transportation access to those centers for people who do not own cars
Primary Strategy B	Develop more emergency health and smoke shelters with transportation assistance to get to the shelters, including education and resource sharing spaces in shelters, libraries, schools, senior centers, faith -based institutions, etc. Investigate the possibility of creating mobile options as well as helping particularly vulnerable residents (low-income elders, disabled, or medically fragile residents, pregnant women, new mothers, and their babies) access free or low-cost air filtration programs.*
Co-benefits	Improving physical and mental health for communities Reducing isolation Increase collaborative planning

Trade-offs	Less resources for other projects at same facility
Responsible Party	City or country; Emergency responders; Non-profit social service orgs (trauma healing project, Center for Community Counseling); Land County Public Health
Equity Considerations	Rural opportunities are more limited Shelters need to be in accessible location and be open for convenient hours Prioritize locations near low-income folks

Vulnerability	**4. Health risks to outdoor workers due to wildfire smoke and extreme heat**
Primary Strategy	Ensure protection of and implement support for new worker protections, especially for undocumented workers*
Co-benefits	Health benefits for everyone Cost benefits to employers (less training costs) Knowledge and empowerment to workers
Trade-offs	Potential for increased costs to consumers Impacts in productivity, extended impacts in labor market Disruptions to essential services (harvesting, utility repairs)
Responsible Party	OSHA, non-profits, non-governmental organizations, unions
Equity Considerations	Prioritize undocumented workers and other extra-legal employment systems Urban heat islands may be more affected

Vulnerability	**5. Strain on the power grid causing blackouts, brownouts, and health threats due to extreme weather events**
Primary Strategy	Work with utilities to ensure resilient power supply across the county while helping homeowners reduce their energy needs through weatherization and energy efficient electrification of their homes*

Co-benefits	Fuels reduction on utility easements Micro grid generation facilities Power storage and infrastructure development
Trade-offs	Difficulty of transforming to smaller grid systems
Responsible Party	Local utilities
Equity Considerations	Rural areas – response takes longer (different access based on geography)

Vulnerability	**6. Existing lack of personal preparedness for emergencies and evacuations made worse due to multiple climate hazards**
Primary Strategy	Develop comprehensive, multi-pronged public engagement programs about emergency preparedness and evacuation procedures*
Co-benefits	Positive response creates faster action Mitigates damage Builds empowerment and awareness, improves mental health (less worry) Improves social cohesion Link to rural areas
Trade-offs	Historically – not including all - disabled and those with medical appliances
Responsible Party	Lane County , Cities, Citizen Groups, Homeowners associations, Networks – workers and builders / state/formal funds
Equity Considerations	Making sure to include various forms of emergency communication so everyone has access to the same information

Vulnerability	**7. Health risks from reduced water quality in wells due to drought and**
Primary Strategy	Provide testing assistance and education about well safety for homeowners, particularly in rural communities and especially during drought and after wildfire*

Co-benefits	Maybe improvements to agricultural practices Riparian habitats benefits Preparedness for emergencies more generally Better water conservation practices More local community self-reliance Cost-sharing as neighborhood Improvements to health
Trade-offs	Time sink Cost Behavior Change/adaptation challenges
Responsible Party	Dept. of Environmental Quality, soil and water conservation districts, watershed councils, utilities could contribute to communication and response
Equity Considerations	Rural economic situation – many rural homeowners cannot afford any testing Rural Communities are more likely to face challenges regarding reduced water quality & quantity due to independent water systems Low-income residents are not able to afford higher water rates if the water quality is affected due to wildfire & drought (high costs for water treatment, if it is contaminated) Upstream challenges related to the source of contaminants
Vulnerability	**8. Housing supply availability and cost issues due to climate refugees, the existing housing shortage, and the need to repair damage from previous disruptions, especially for low-income and middle housing**
Strategy	Expand housing stock to meet low-income and middle housing needs while making it more resilient*
Co-benefits	Low income, community, families, seniors Reduced public spending on services More disposable income and family wealth development More individual/community resilience (heat, smoke) Life cycle housing

Trade-offs	Program budget – costly infrastructure solution Land/environment – more land will be used to build housing, which disrupts wildlands Neighborhood characteristics change Impacts on infrastructure from more people
Responsible party	Federal, state, local (bond)
Equity considerations	Social security number needed to qualify - need to incorporate immigrants/undocumented people NIMBY/access to quality services Communities are already at risk due to living in areas that are already considered vulnerable to Climate Change (Ex: Low income and communities of color living in high risk flood zone)
Vulnerability	**9. Decreased potential for self-sustainability and ability to grow own food, especially in rural areas, due to wildfire, drought, and increased heat**
Primary Strategy	Strengthen food security by supporting local food production and distribution while encouraging regenerative, ecologically sound farming practices*
Co-benefits	Creates infrastructure and education, such as training for home food preservation Local seed resources developed for food production resilience Improve regulations for permitting food processing facilities in Lane County Increasing opportunities with Oregon Department of Agriculture and Farm to School Lane County / OSU Cooperative Extension programs would have more participants
Trade-offs	Funding local food infrastructure: Farm - to processing - to distribution Difficulty getting grocery stores to shift away from cheaper food to locally grown (more of an obstacle)

Responsible Party	Dept. of Health and Human Services, Farm Bureau, County, Community Based Organizations, NGOs, Food for Lane County, OSU, UofO, Land owners / growers
Equity Considerations	Multilingual education for home food preservation Potential increase price – local food -> SNAP Subsidy – Farm $ Consider how accessible the tools are to develop regenerative farming practices for rural communities
Vulnerability	**10. Cost of living increases (food, supplies, energy, healthcare, water, etc.) leading to financial and housing instability due to multiple climate hazards**
Primary Strategy	Increase workforce development programs for needed trades, particularly building and construction, to ensure local workers have employment that allows them to be financially stable*
Co-benefits	Jobs for those who are trained Cheaper housing if construction labor is not at such a premium Workforce strengthened for construction firms Unhoused can get homes and jobs More small businesses that are meeting local construction needs Increased ability for existing residents to take advantage of family wage job opportunities as they change over time Corrections to private labor market failures because of change in wages and job opportunities in the public sector Active shaping of future economic growth where it makes the most sense within the county Incentives to current residents to improve their skills Reskilling/people with multiple job skills are more resilient in a changing economy
Trade-offs	Cost, budget, financing Labor market substitution Surplus of labor cuts wages

Responsible Party	Community Colleges, businesses, Lane Workforce Partnership, trades, Bureau of Labor and Industries, K-12 Schools
Equity Considerations	Location – training needs to be where the people who need it the most are located Transport costs – people receiving training may need assistance getting to the training Multilingual and multicultural focus for the training Create a workforce development training program for unhoused people who have the ability or desire to join the building and construction trades. Fair wage pay to all workers in trade jobs. Programs need to be designed so that all can access and participate in terms of race, ethnicity, etc.
Vulnerability	**11. Increasing demands on public safety and social service providers**
Primary Strategy	Develop community and neighborhood-based programs to support residents, including mental health support programs*
Co-benefits	Social cohesion - leverages social capital Mental health benefits Facilitates advocacy efforts Learning about vulnerabilities/better awareness Resilience Hubs build personal resilience and an emergency response capacity within the community Strengthen neighborhood based leadership capacity such as Lane county Community Emergency Response Team
Trade-offs	Social service providers already over-extended, Lane County Public Health Department could provide
Responsible Party	Neighborhood groups in collaboration with official service providers

Equity Considerations	Areas where rentals predominate/high turnover areas Need training on how to build neighborhood system The location needs to be in an accessible place for all community members, especially those who do not have access to cars Build stronger communication networks for people to know how to access the resilience hubs and what they are

Vulnerability	**12. Increased costs for property and liability insurance due to wildfire**
Primary Strategy	Assist residents with building retrofits, vegetation control, and education regarding existing structures in order to reduce risk*
Co-benefits	Reduced risk/mitigation of impacts Lower insurance premiums Increased property value Communities can withstand natural disasters effectively and recover quickly due to healthier homes. Reduced energy use results in reduced emissions Reduced risk to woodland and urban firefighters Reduced firefighting costs
Trade-offs	Upfront costs Labor market effects
Responsible	Federal and state governments
Equity Considerations	Design of subsidy – who will pay for it? No rebates would be unavailable , unless they were provided by the federal or state government Renters would the means to fix their home unless the landlords were willing to pay

Vulnerability	13. Loss of marine life due to water quality and ocean acidification
Primary Strategy	Advocate for the maintenance and improvement of coastal wastewater treatment facilities, including septic systems
Co-benefits	Community cohesiveness; Knowledge building Resource sharing Collaborative understanding
Trade-offs	Disagreements on methods/practices to solve the issues Capacity and funding for join collaboration on a large scale project
Responsible Party	Watershed council, community rights Lane County, Industry leaders in fisheries and tourism, state agencies, tribal nations, community members, municipalities
Equity Considerations	Tribal nation inclusion; Youth inclusion; People at danger of losing their economic livelihood

Vulnerability	14. Indigenous communities unable to access traditional resources and
Primary	Advocate for a Tribal Liaison position at Lane County
Co-benefits	County commissioners would be informed Non-indigenous/non-tribal people would be better informed of decisions by Tribes
Trade-offs	Funding a position requires that the funds not be used elsewhere If Lane County is the one to develop the position, tribal members would not be able to give input on their own work that will impact their cultural resources and events
Responsible Party	Lane County

Equity Considerations	Position should be developed and selected by local tribal representatives Process that defines how the position is heard Meets qualifications to be effective position and given the right to make decisions based on their knowledge of the tribal communities Proper recognition for their work TEK (Traditional Ecological Knowledge)
Vulnerability	**15. Schools closed due to extreme heat and smoke**
Primary Strategy	Advocate for school districts throughout Lane County to upgrade infrastructure to maintain air quality in terms of both extreme heat and wildfire smoke
Co-benefits	Better health overall for kids Creates the possibility of making schools into community resilience hubs/community resource centers for use as emergency smoke and/or heat shelters Economic opportunities for tradespeople Possible reduction in energy use with new air quality technology
Trade-offs	Cost
Responsible Party	School districts, utilities, state/fed/county
Equity Considerations	Funding, etc. disparities between schools – ensure that schools are assessed by need with help going to those with the greatest need Prioritize tribal schools School districts in lower income and/or rural areas may need additional help requesting infrastructure funding in order to afford the infrastructure to maintain high air quality standards
Vulnerability	**16. Transportation and transit times may increase due to higher demand from a larger population and disruptions from extreme events**
Primary Strategy	Advocate for and support public transportation infrastructure development along high use routes

Co-benefits	Reduced transit travel times Traffic safety Fewer greenhouse gas emissions Health benefits from active transportation Air quality improvements
Trade-offs	Limited funding/opportunity costs
Responsible Party	Dept. of Land Conservation and Development, Lane Transit District, municipalities, Lane County
Equity Considerations	Rural areas are already difficult to serve with transit Folks with mobility limitations or existing health issues are at higher risk with longer transit times, especially in smoke and heat events

Vulnerability	**17. Supply chain breakdowns and price increases due to disruptions**
Primary Strategy	Advocate in economic development planning processes for regional and local production of building products (e.g. Cross Laminated Timber)
Co-benefits	More family wage jobs in the woods and in manufacturing Better forest health/lower risk Sequestration benefits from long lived wood products, such as Cross Laminated Timber, to capture and store carbon
Trade-offs	Concerns about tree harvesting Process issues – NEPA, ETL Increased greenhouse gas emissions Infrastructure impacts Emissions – Clean Air Act/Toxics
Responsible Party	Local, State / Federal – Public/Private Partnership

Equity Considerations	Understanding and managing who benefits from the program Rural considerations – how to ensure rural communities benefit from any increase in forest harvest Process pollution impacts (EJ) - where are those impacts and who is affected will be important

Vulnerability	**18. Lack of water access and supply due to reduced snowpack**
Primary Strategy	Advocate for the establishment of alternative water access, including backup systems in case of emergency
Co-benefits	Self-sufficient and resilient water infrastructure as community members rely on their wells for water access Access to clean drinking water all year round. Building a more robust power system to maintain water access; their water supply is dependent on electricity
Trade-offs	Wildfires can threaten the availability of grid power. Access to funding sources to refurbish water infrastructure
Responsible Party	Oakridge Public Works Department, Lane County, Oregon Water Resources Department
Equity Considerations	Need to maintain local water rights Farmers and Foresters, who are taking care of the systems that are providing resources for downstream communities. But the resource allocation is not fair. We need to look upstream.

Vulnerability	**19. Loss of health coverage due to disruptions in employment caused by multiple climate hazards**
Primary Strategy	Advocate at the Oregon Legislature for immediate access to free or low-cost medical providers through the Oregon Health Plan when employment is disrupted due to natural disasters
Co-benefits	Outreach and education through brokers and community-based organizations Patient advocacy Advocacy to Oregon Health Plan

Trade-offs	Bureaucratic red tape Costs
Responsible Party	Health insurance companies, providers, Dept. of Health and Human Services, Employers, NGOs
Equity Considerations	Bilingual access Having enough providers

Vulnerability	**20. More injuries and deaths due to all climate hazards**
Primary Strategy	Advocate at the state level for local hazard mitigation plans to address climate change impacts
Co-benefits	Incentivize workforce development for healthcare workers and emergency responders Better training, recruitment, education, coordination for CERT Traditional Ecological Knowledge could be used in local fire management
Trade-offs	Need more funding for hazard mitigation and emergency response Administrative time
Responsible Party	Lane County CERT, Lane County public health, Peace Health / McKenzie Willamette, State Police; OR Dept. of Transportation, other state agencies EWEB
Equity Considerations	Traditional ecological knowledge (TEK) fire practitioners – bring them into the process Equal Pay to TEK fire practitioners Multilingual Hazard Communications beyond written plans

Vulnerability	**21. Farming, ranching, and forestry threatened by drought, temperature variability, and wildfire**
Primary Strategy	Increase funding for local farming and self-sufficiency by increasing the connection between local farmers and the state

Co-benefits	An increase in sustainable farming methods will lead to healthier farms/ ranches, which will provide more locally sourced food for the community Increase in jobs and soil fertility by clearing out some of the brush and dead trees around farmland Job creation by creating a position dedicated to finding and capturing federal funds
Trade-offs	People may be unwilling to change their farming practices/methods
Responsible Party	State, local government
Equity Considerations	Farms/ranches in unincorporated areas may have issue accessing federal/state funds

Vulnerability	**22. Existing lack of emergency evacuation plans made worse due to multiple climate hazards**
Primary Strategy	Develop comprehensive public engagement efforts to strengthen emergency evacuation plans and help residents have an emergency preparedness plan in place for themselves and their community
Co-benefits	Less worry Faster response Less harm, injury or death More awareness of climate impacts and solutions
Trade-offs	Complacency (more of an obstacle), In order to have a successful public engagement and outreach for emergency evacuations, it requires prolonged commitment and expenses
Responsible Party	Emergency Management departments of Lane County and municipalities in the county
Equity Considerations	People without vehicles will be left out during evacuation Language barrier in terms of information and communication Access to Technology in order to receive emergency alerts

Appendix B

State and federal legislation and potential funding sources

The following information, resources, and legislation provide opportunities for implementation of the recommended strategies at the time this report was published.

Vulnerability: Health risks to the general public (especially those with underlying health conditions) from smoke and extreme heat

Strategy: Develop more emergency health and smoke shelters with transportation assistance to get to the shelters, including education and resource-sharing spaces in shelters, libraries, schools, senior centers, grange halls in rural areas, etc. Investigate the possibility of creating mobile options.

- SB 1536: Emergency Heat Relief for Renters Bill
- HB 4058: Emergency Heat Relief for Communities
- HB 2842 - Healthy Homes Bill
- HB 2475 - Oregon Energy Affordability Act

Vulnerability: Health risks to outdoor workers from smoke and extreme heat

Strategy: Ensuring the protection and implementing support for new worker protections (esp. undocumented workers)

- HCR 203: Declaring legislative intent to address risk to workers due to climate change impacts and climate hazards

Vulnerability: Health risks from reduced water quality in wells /lakes, etc. (focus on rural)

Strategy: Testing assistance/education about well safety for homeowners, particularly in rural communities, especially during drought and after wildfire

- HCR 203: Declaring legislative intent to address risk to workers due to climate change impacts and climate hazards
- SB 1057: Relating to fish supportive measures for hydroelectric projects located within artificial delivery systems; declaring an emergency
- Willamette valley regional climate investments

Vulnerability: Increasing demands on public safety and social service providers due to all climate hazards

Strategy: Develop community and neighborhood-based programs to support residents, including mental health support programs (could be Resilience Hubs – see Urban Sustainability Directors Network)

- Climate investment grant program
- Willamette valley regional climate investments

Vulnerability: Threat of wildfire to homes and businesses

Strategy: Increased programs to help people reduce wildfire risks to homes and businesses

- HB 2222 - Wildfire protection bill
- SB 0762 - Relating to wildfire; and declaring an emergency

Vulnerability: Schools closed due to extreme heat and smoke

Strategy: Outfit schools with infrastructure to maintain air quality

- Bipartisan Infrastructure Law - resilient infrastructure funding

Vulnerability: Transportation /transit times may increase due to higher demand from a larger population and disruptions from extreme events

Strategy: Support transit infrastructure development along high-use routes (including active transportation)

- SB 0071 - Establishes Multimodal Transportation Fund to finance Department of Transportation loans and grants to public bodies and private entities

Vulnerability: Cost of living increases (food, supplies, energy, water, etc.) leading to financial and housing instability

Strategy: Workforce development for trades, particularly building and construction to ensure local workers have employment that allows them to be financially stable

- Cost of living relief package
- SB 799 - Authorizes Public Employees Retirement Board to grant additional cost of living increase to retired members of Public Employees Retirement System and beneficiaries of retired members.
- HB 2966 - Relating to taxation; providing for revenue raising that requires approval by a three-fifths majority. Increases personal income tax rate imposed on taxable income of

more than $100,000 per tax year, or more than $200,000 per tax year in cases of taxpayers filing joint returns.

Vulnerability: Increased costs for property and liability insurance due to wildfire and larger storms

Strategy: Assist residents with building materials, retrofits, and education regarding existing structures in order to reduce risk

- 2021 legislative wildfire investments

Vulnerability: Supply chain breakdowns and price increases due to disruptions particularly affecting construction of low-income and middle housing

Strategy: Regional and local building products production – e.g. CLT (Cross Laminated Timber)

- SB 209 - Prohibits [contractors,] merchants and wholesalers from charging unconscionably excessive prices for essential goods and services during declared abnormal disruption of market.
- $400M housing investment

Vulnerability: Housing supply issues (availability and cost) due to climate refugees and existing housing situation – especially for low-income and middle housing

Strategy: Subsidize affordable housing/Portland Accessory Dwelling Unit policy for example

- HB 2662 - Requires Housing and Community Services Department to develop market study of affordable housing availability for each community in state.
- SB 1582 - Affordable housing bill

Vulnerability: Existing lack of personal preparedness made worse by climate change (multi-hazard)

Strategy: Public engagement about emergency preparedness (multi-pronged)

- Climate Change Response Preparedness and Action Plan
- HB 2687 - Relating to emergency preparedness; and declaring an emergency
- HB 3376 - Relating to emergency preparedness equipment grant program.
    - Specifically for indigenous groups
- HB 2426 - Relating to emergency preparedness; and prescribing an effective date.
- List of enacted state bills as of 2019

Vulnerability: Increasing injuries and deaths due to all hazards

Strategy: Build climate change impacts into local hazard mitigation plans

- HB 2488 - Relating to addressing climate justice through land use planning; declaring an emergency

Vulnerability: Threats to the power grid causing blackouts and health threats

Strategy: Ensure resilient power supply across county working with utilities

- SB 692 - Relating to minimum energy efficiency standards
- HB 2475 - Oregon Energy Affordability Act

Vulnerability: Increase in chronic and communicable diseases due to extreme heat and wildfire smoke

Strategy: Building community resilience centers

- HCR 203 - Declaring legislative intent to address risk to workers due to climate change impacts and climate hazards

Vulnerability: Higher rates of stress and mental health concerns leading to increased crime and violence due to all hazards

Strategy: Develop community/neighbor-based support programs

- HCR 203 - Declaring legislative intent to address risk to workers due to climate change impacts and climate hazards