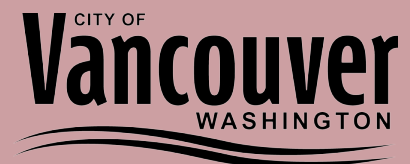


VANCOUVER CLIMATE ADAPTATION STRATEGY

Toulan School of Urban Studies and Planning
Portland State University

Master of Urban and Regional Planning Workshop
Spring 2022



Land Acknowledgement



Prior to the introduction of white settlers to the area currently known as Clark County, this land was cared for by indigenous peoples for thousands of years. At the time that colonization began, this area of Southwest Washington was occupied primarily by the Chinook and Cowlitz tribes. Additionally, countless tribes from across the Pacific Northwest came to this area to trade with one another by using the Columbia River and its adjoining waterways as an intricate network of trade routes. For millennia, these communities thrived while maintaining a balanced, sustainable relationship with the natural world. These values were passed down from generation to generation and are still practiced by indigenous groups today, including the Cowlitz and Chinook. We pay our respects to these peoples, both past and present, by coming together to protect and honor the last legacies of the great natural areas that once dominated this region.¹

Acknowledgements

Hatch Planning thanks the many Vancouver residents and community organizations who provided their experiences and insights around climate adaptation.

Clients

Aaron Lande - Policy and Program Manager

Rebecca Small - Senior Policy Analyst

Portland State University

Dr. Aaron Golub

Stephanie Wright

Community Organizations

Boys and Girls Club of Southwest Washington

Clark College Environmental Action Group

Fourth Plain Forward

Hispanic Metropolitan Chamber of Commerce

League of United Latin American Citizens of

Southwest Washington

YMCA, Clark County

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Dr. C.N.E. Corbin – Portland State University

David Goldberg – City of Seattle

Beth Jarot – City of Tacoma

Scott Johnson – Clark Regional Emergency Services Agency

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Dr. Vivek Shandas – Portland State University

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1. EXECUTIVE SUMMARY

PROJECT CONTEXT

The City of Vancouver (City) is committed to eliminating carbon emissions by 2040. In working towards this ambitious goal, the City recognizes the inequitable impacts of climate change on its communities and past failures to engage those most impacted (by climate change and other pressures) in developing City policy and plans. The City hired Hatch Planning to help provide a strong foundation for its climate adaptation work—which helps residents adjust to climate change-driven events already impacting the community—and center the perspective of those most impacted by climate change.

PROJECT PURPOSE

This report is intended to be used internally by the City to guide climate adaptation policies in conjunction with the Climate Action Plan (see right). Key elements of this report include an analysis of the City’s climate change risks and populations most vulnerable to climate change, a review of best practices from other cities, insights from community engagement, and recommended strategies for supporting climate adaptation.

Climate Action Plan

In summer 2021, City Council directed staff to develop a Climate Action Plan (CAP). The CAP sets a goal for community-wide carbon neutrality by 2040, and specifies strategies for reducing greenhouse gas emissions in order to reach that goal. The CAP is scheduled for adoption by City Council in August 2022, with implementation to begin in 2022–2023.

With a decarbonization target more ambitious than most cities, this plan embodies “moon shot” ambition. Meeting this target will depend on technological advancements yet unknown, and require significant investments by the City.

CHALLENGES AND OPPORTUNITIES

Challenges

Vancouver and its residents face growing threats from climate change risks, especially extreme heat, flooding, and poor air quality from wildfires. While much of the City's current emergency response infrastructure relies on community-based organizations and the Clark Regional Emergency Services Agency, Vancouver is nearing a population size that necessitates greater City provision of emergency response services.

Opportunities

The City's current leadership is motivated to take strong action through the Climate Action Plan and related policies. This is an opportune moment for bold action, with the potential to build on the momentum of the community's COVID-19 response, work with the City's new Diversity Equity and Inclusion director, and build on recent investment in assets such as the City's expanding multimodal transportation system.

CLIMATE ADAPTATION RECOMMENDATIONS

The City of Vancouver should consider and implement climate adaptation strategies in six focus areas to best meet the needs of residents.

1. **Climate-Ready Communities** - Provide essential services for communities to increase resiliency, and expand and increase inclusive access to services. Cultivate community connections to build resilient communities.
2. **Communication and Education** - Increase community-wide awareness of climate adaptation strategies and available resources. Foster communication and collaboration between the City and residents, and among residents and community organizations.
3. **Green Infrastructure** - Bolster green infrastructure in the urban environment that reduces urban heat island effects and mitigates poor air quality. Install green infrastructure in the built environment to increase the resiliency of structures.
4. **Land Use and the Built Environment** - Implement sustainable land use policies to address changing climate conditions. Promote building and development standards for public and private facilities.
5. **Food Security** - Increase equitable access to food in the face of rising food prices and insecurity. Promote self-sufficiency through local food production.
6. **Governance** - Institutionalize climate adaptation strategies among City departments.

2. INTRODUCTION

ABOUT THE TEAM

Hatch Planning is made up of six students in their second year of the Master of Urban and Regional Planning program at Portland State University. The team name was inspired by the Vancouver Trout Hatchery and it alludes to ‘hatching’ new and innovative ideas – a goal the team had when approaching this project. The team is committed to *building social equity by engaging with and lifting up all community members.*



Jodi Mescher

Project Manager

Jodi Mescher is excited about land use and environmental planning. She has experience in grass-roots community engagement, economic development, and transportation planning.



Jenna Cangialosi

Design Lead

Jenna is interested in environmental planning and restoration and in the use of visual layouts to enhance storytelling.



Jai Daniels

Lead Writer and Editor

Jai is focusing on transportation planning and community resilience. She will be working with Fehr & Peers following graduation.



Trevor Luu

Community Engagement Co-Lead

Trevor Luu is focusing on land use, geographic information systems, and active transportation planning. He will be working at Alta Planning + Design following graduation.



Ellen Mickle

Research and Data Analyst

Ellen is interested in economic development, planning and policy that fosters more equitable, climate-resilient communities.



Jamie Shalvey

Community Engagement Co-Lead

Jamie is passionate about creating sustainable and just communities with a focus on affordable housing and climate resilience.

BACKGROUND

PROBLEM STATEMENT

Vancouver and its residents face growing threats from climate change risks, especially extreme heat, flooding, and poor air quality from greenhouse gas emissions and wildfires. Many of the residents that are most impacted by these climate risks have historically been excluded from planning processes. This project will develop climate adaptation strategies for the City of Vancouver that are centered on readying and strengthening Vancouver's most impacted communities while improving citywide resilience, based on community conversations, especially with historically underrepresented community members.

PROJECT PROCESS

The project was completed in five phases: (1) Existing Conditions Analysis and Equity Framing, (2) Best Practices and Policy Research, (3) Community Engagement, (4) Analysis and Recommendations, and (5) Report and Deliverables. The project team developed three memos – an Existing Conditions memo, a Best Practices memo, and a Community Engagement memo – that will be included in the appendix of this report. The existing conditions research, best practices research, and community engagement activities were used to produce this Climate Adaptation Strategy. This strategy will serve primarily as an internal document for the City to be used in tandem with the Climate Action Plan that the City is currently developing. It will focus on short or mid-term strategies for adapting and building community resilience to climate change.

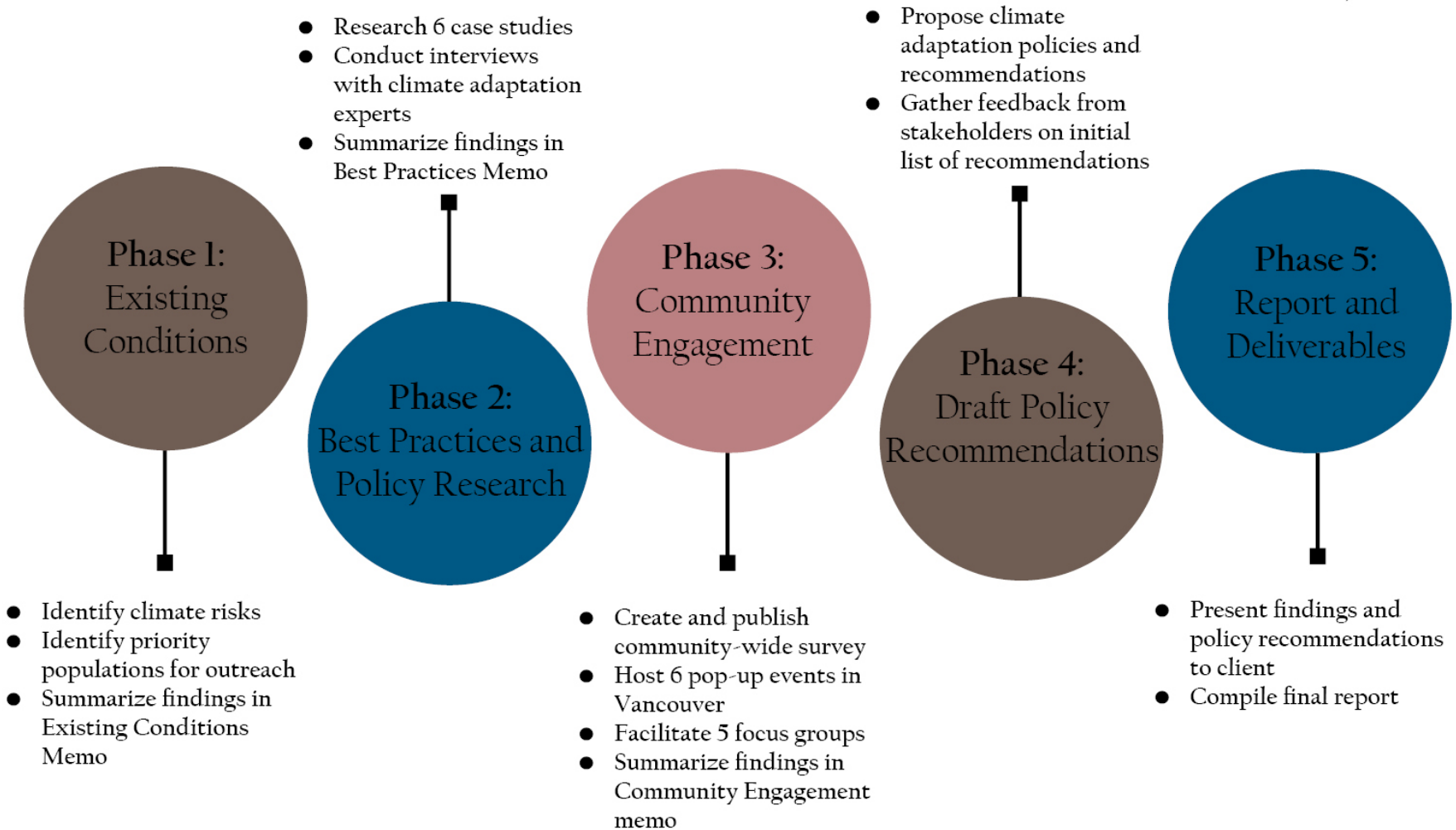
Key Terms

Climate Adaptation: *The process of adjusting to new climate conditions in order to lessen the negative impacts on infrastructure, community assets, and the lives of community members.*

Resilience: *The ability for the city and all people of Vancouver to survive and thrive in the face of worsening climate change risks.*

Frontline Communities: *Community members most vulnerable to the impacts of climate change, as identified in existing conditions research.*

Planning Process



3. EXISTING CONDITIONS



FRAMEWORK FOR ASSESSING RISK

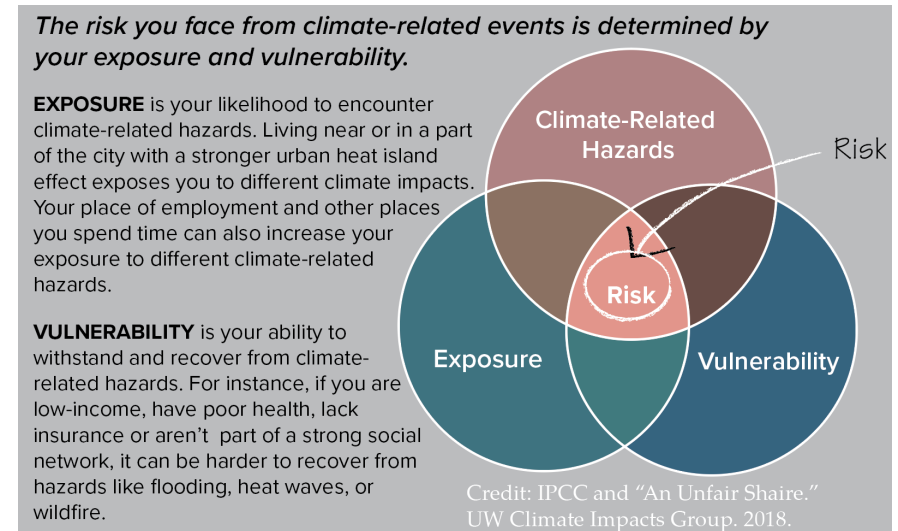
A hazard-vulnerability-exposure conceptual framework is a helpful lens for risk evaluation, and is used by the Intergovernmental Panel on Climate Change (IPCC) and disaster management organizations. For this report, such a framework was used to identify Vancouver’s climate change-related risks and populations expected to be most impacted (see Figure 2).

To begin with, Hatch Planning researchers identified climate hazards expected to have the greatest direct impact on Vancouver, based on client guidance and a 2018 report from the University of Washington’s Climate Impact Group, which modeled what Washington will face if global warming reaches 1.5°C above pre-industrial levels. These hazards include extreme heat, worsened air quality due to greenhouse gas emissions and increased wildfires, and flooding (driven by increases in heavy rainfall, snowmelt, and sea level rise).

Next, factors contributing to increased exposure and vulnerability were identified based on literature review (see Figures 2 and 3). Exposure is the likelihood of encountering a hazard, and is typically determined by one’s place of residence or work, such as living in a part of the city with a stronger urban heat island effect. Vulnerability is “the extent to which an individual or community will be adversely affected when experiencing a climate-related hazard,” and can be increased by different factors such as race and ethnicity.²

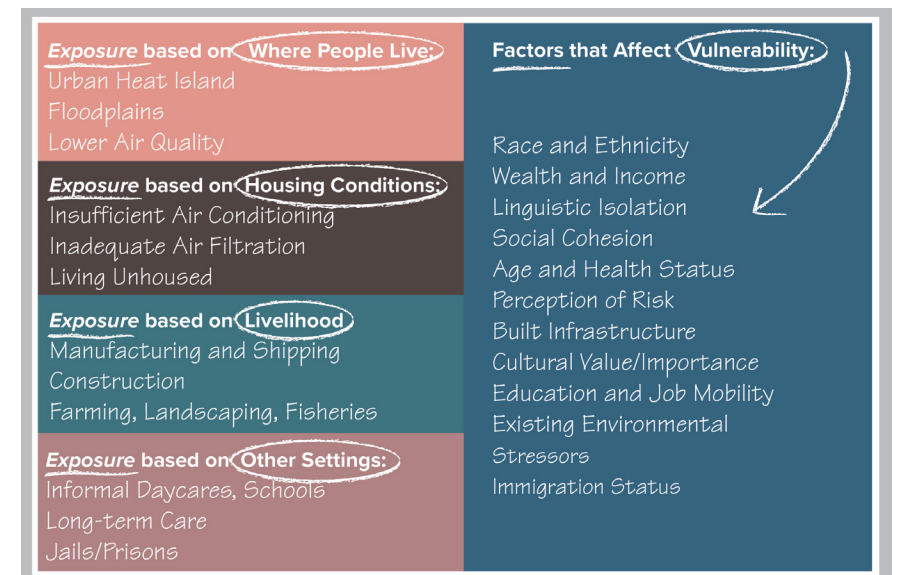
Finally, by analyzing spatial data on demographics and climate change hazards, Hatch Planning was able to identify populations and neighborhoods anticipated to be most at-risk to climate change, so they could be prioritized for community engagement.

Fig. 2. Definitions for exposure and vulnerability.



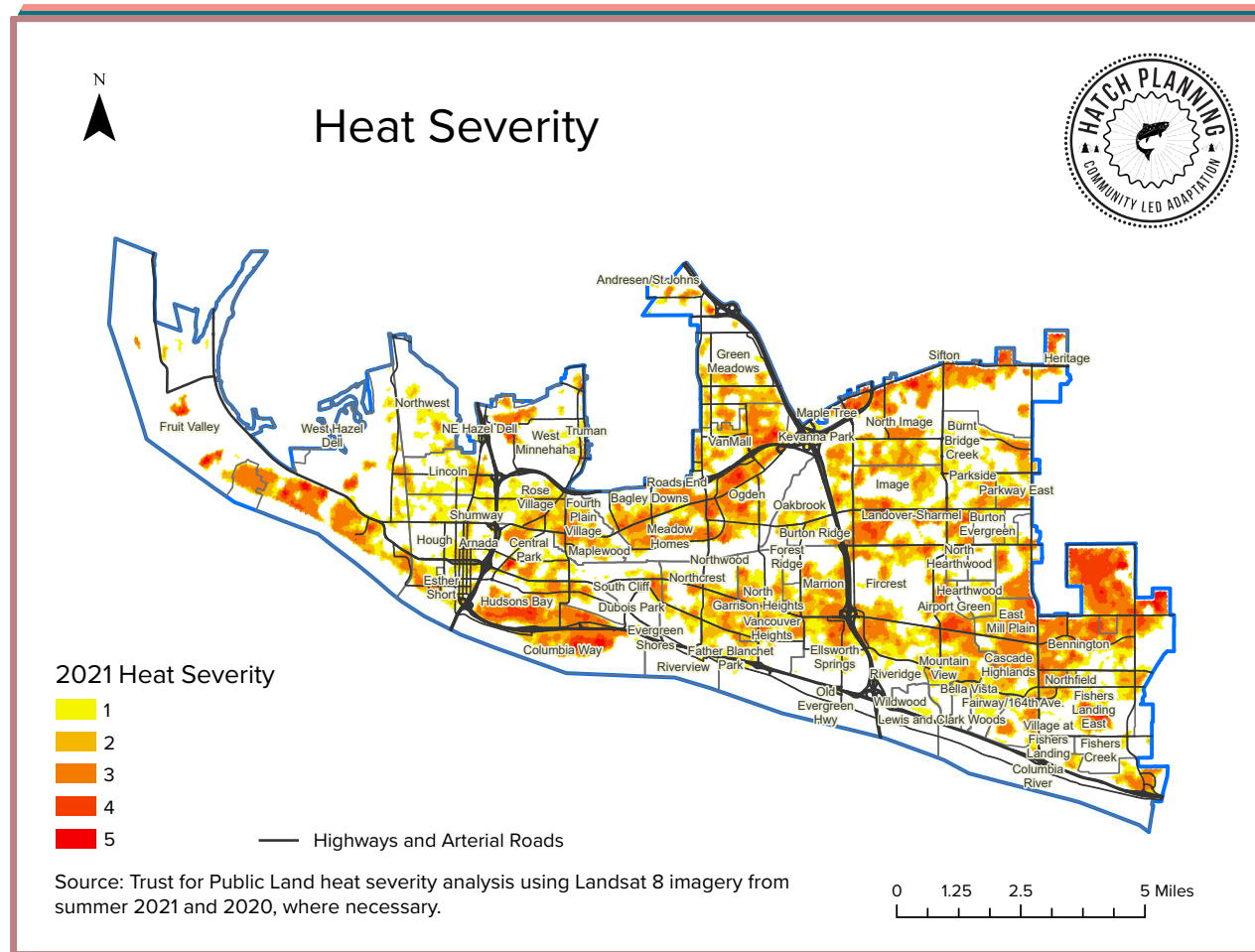
Source: IPCC and “An Unfair Share.” UW Climate Impacts Group, Front and Centered. 2018.

Fig. 3. Populations more exposed to climate-related hazards.



Source: Adapted from “An Unfair Share” UW Climate Impacts Group, Front and Centered. 2018.

EXTREME HEAT

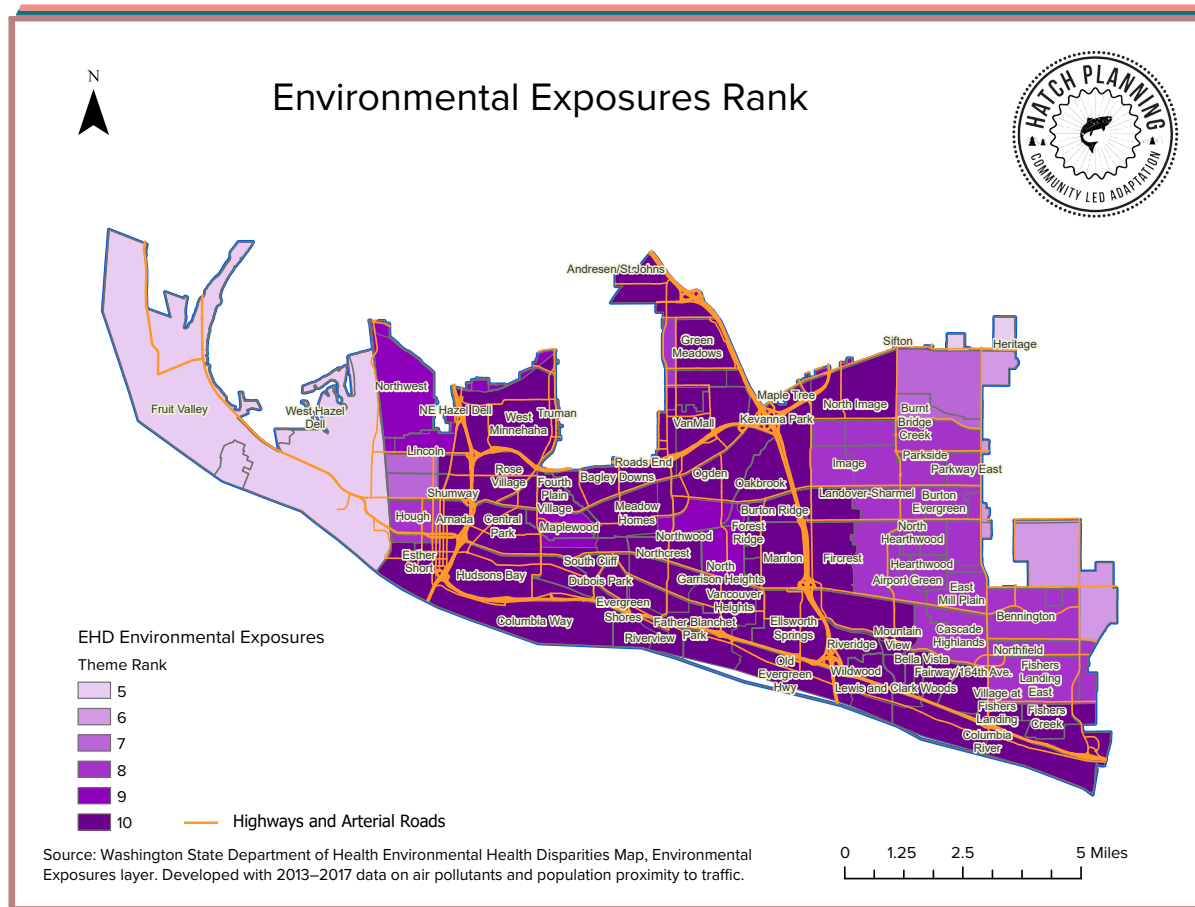


Map 1. Heat Severity Levels

Extreme heat, which is defined differently across jurisdictions and regions, is defined by the Department of Homeland Security as “a period of high heat and humidity with temperatures above 90 degrees for at least two or three days.”³ For this analysis, Hatch Planning used heat severity data from the Trust for Public Land, which they developed from Landsat 8 imagery of surface-level heat from summer 2021 (patched in with 2020 data where necessary). Heat severity

is measured on a scale of 1 to 5, with 1 being a relatively mild heat area (slightly above the mean for the city), and 5 being a severe heat area (significantly above the mean for the city). The hottest neighborhoods in Vancouver are concentrated along major arterial roads, such as Fourth Plain Boulevard and East Mill Plain, and in industrial areas, such as Columbia Way in the south (see Map 1).

POOR AIR QUALITY

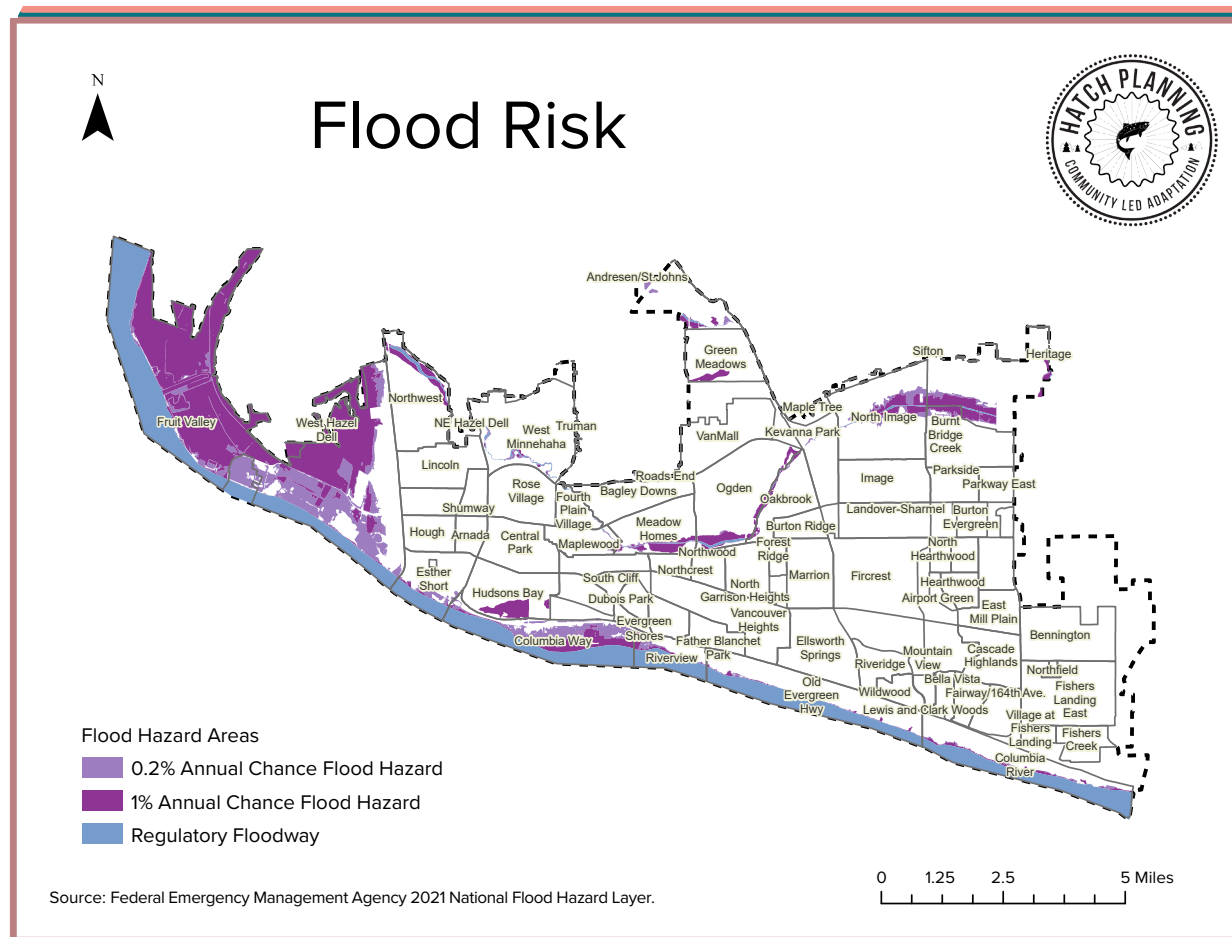


Map 2. Environmental Exposure (or Air Quality) Levels

One measure of poor air quality is the “Environmental Exposures” layer in the Environmental Health Disparities Map, developed by the Washington Department of Health and community partners. Environmental Exposures is a combined ranking of multiple indicators at the census tract level, including NO_x-diesel emissions, ozone concentration, PM 2.5 concentration, population near heavy traffic roadways, and

toxic release from facilities. It uses a 1-10 scale, with 1 signifying low exposure and 10 signifying high exposure to air pollutants. This data set identifies areas with current exposure to poor air quality—expected to only increase with the anticipated rise in wildfires. Most of the city—particularly between Interstate-5 and Interstate-205—already suffers high exposure to a combination of air pollutants (see Map 2).

FLOOD RISK



Map 3. Flood Risk Levels

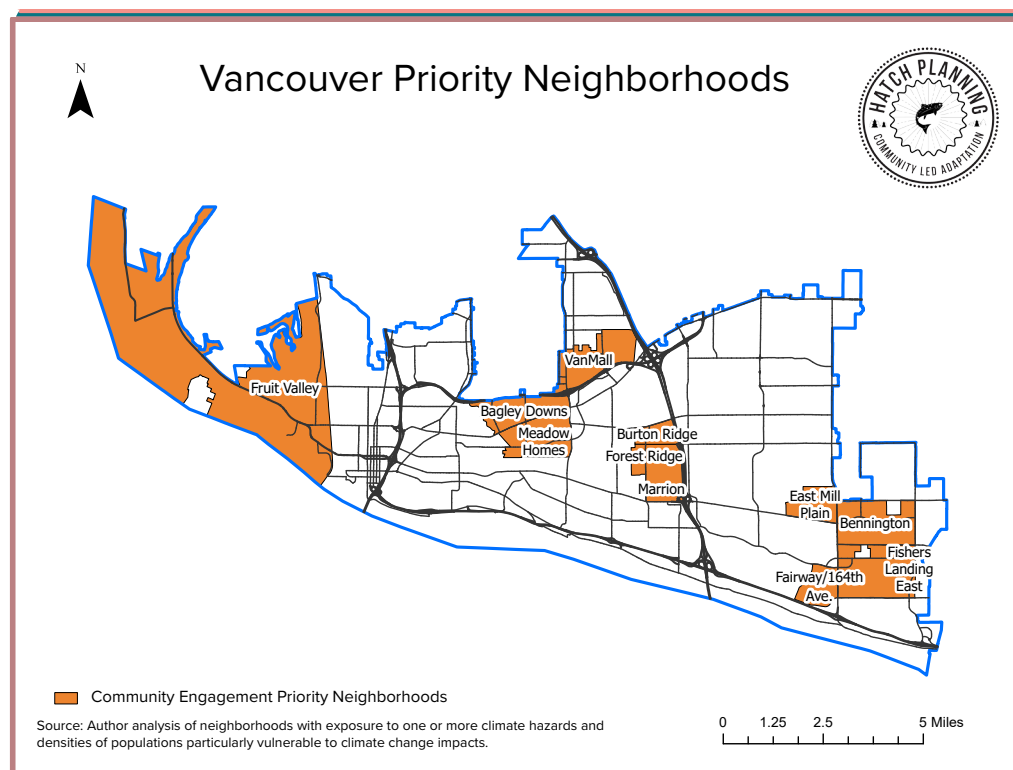
The Federal Emergency Management Agency (FEMA) produces Flood Insurance Rate maps, which identify “Special Flood Hazard Areas” (SFHA), or areas with a one-percent chance of flooding in a given year. Owners of property in the SFHA with federally-backed loans or mortgages are required to purchase insurance through the National Flood Insurance Program (NFIP). This data set only identifies areas prone to “riverine” flooding, though “urban flooding” can happen in

any developed landscape, and is more a function of the built environment.⁴ Urban flooding likely affects more areas of the city, but is harder to predict, with less data available. SFHAs are concentrated in neighborhoods along the Columbia River and Burnt Bridge Creek (see Map 3).

TARGET POPULATIONS FOR ENGAGEMENT

Both demographics and exposure to climate hazards can increase one's risk of experiencing adverse effects from climate change. Map 4 overlays areas of the city with the highest risk of severe heat, poor air quality, and flooding with densities where vulnerable populations reside (detail on the factors behind each neighborhood's selection in Appendix A). This figure was used to target community engagement, though it is recommended the City conduct a comprehensive vulnerability assessment to direct adaptation investments and other work. Vulnerable population groups for this analysis include:

- Communities of color, particularly Hispanic or Latino
- High-poverty groups
- Linguistically isolated groups, particularly Spanish and Russian or Eastern European language-speakers
- Youth, particularly those in informal daycares
- Older adults, particularly those living alone
- Houseless people, including Safe Stay communities
- Manual or outside laborers, especially farmers, landscapers, and trades organizations
- People with disabilities
- Transit-dependent residents



Map 4. Map showing the priority neighborhoods for engagement and ongoing work.



4. BEST PRACTICES

PROCESS

Interviews with City staff, peers, and climate experts were conducted to understand best practices on climate adaptation, funding, and community engagement. Additional detail can be found in Appendix B.

1

Conversations with the following City of Vancouver and Clark County staff described existing plans and policies: Tanya Gray (Performance Analyst, Gene Juve (Emergency Manager), Aaron Lande (Policy & Program Manager), Alicia Sojourner (Director of Diversity, Equity & Inclusion), Rebecca Small (Senior Policy Analyst), Scott Johnson (Emergency Management Division Manager for Clark County), and Anthony Vendetti (Emergency Management Coordinator for Clark County).

2

The team chose to study six climate or community engagement plans or strategies:

- Tacoma Climate Adaptation Strategy (2021)
- City of Santa Monica Climate Action and Adaptation Plan (2019)
- Climate Ready Boston (2016)
- Seattle’s Preparing for Climate Change (2017)
- Shoreline’s Climate Action Plan update (2021–2022)
- Seattle’s Duwamish Valley Action Plan (2018)
- Shoreline’s Climate Action Plan Update (ongoing)

3

The climate adaptation or community engagement experts included:

- Dr. Steve Whitman (Founder and Principal of Resilience Planning & Design LLC)
- Dr. Vivek Shandas (Professor and Climate Researcher at Portland State University)
- Dr. C.N.E. Corbin (Professor at Portland State University)
- Beth Jarot (Green Building Specialist) and Patrick Babbitt (Sustainability Analyst) for the City of Tacoma
- David Goldberg (Strategic Advisor for the City of Seattle)
- Cameron Reed (Shoreline Environmental Services Program Manager)

KEY FINDINGS

1

SHORT TERM RESPONSES

Many of the adaptation strategies reviewed included actions to increase collaboration on emergency response efforts both within and beyond government. For instance, Santa Monica's Climate Action and Adaptation Plan includes an action to integrate climate hazard considerations into existing emergency and natural disaster response programs. Additionally, the Santa Monica Organizations Active in Disaster (SMO Aid)—a coalition of businesses and service organizations committed to preparing for disasters and building a resilient city—has served as an effective partner on emergency response efforts, such as coordinating transport and care for runners exposed to challenging weather conditions during the 2011 Los Angeles Marathon.

2

LONG TERM MITIGATION

All city adaptation strategies reviewed included increased tree canopy as a long term strategy for mitigating climate hazards, particularly extreme heat. In an interview, Dr. Vivek Shandas—who co-authored a 2020 study which linked historic racist housing policy to unequal exposure to extreme heat across multiple cities—emphasized both the need to prioritize previously under-invested neighborhoods and plan for long-term maintenance. The City of Seattle is attempting to mitigate such disparities by prioritizing tree planting in “focus areas” identified by an environmental equity assessment. Planting programs should take measures to avoid “green gentrification,” and avoid trees that burden communities with excess maintenance (e.g. fruit trees) or pollen (produced by male trees of certain species), as cautioned in the interview with Dr. C.N.E. Corbin. Finally, the failure of many cities (at home and abroad) to meet their tree-planting pledge goals reinforces the importance of maintenance programs, as well as public outreach to private landowners—with research in Los Angeles showing some benefit to adopting a more targeted Community Based Social Marketing (CBSM) approach.^{5,6}

KEY FINDINGS

3

PUBLIC AWARENESS AND INVOLVEMENT

All of the reviewed city adaptation strategies acknowledged a need to increase public awareness of climate change risks and available support, with some strategies including actions promoting public involvement in adaptation planning and response efforts as well. In an interview with David Goldberg from Seattle (where climate change conversations included talking about affordable housing), he advocated for connecting climate change to relatable issues, such as public health—and that alliances be built within the public health community for this purpose. To help frame public outreach for its Climate Action Plan update, the City of Shoreline engaged a panel of Community Advisors, which produced innovative recommendations for reaching a wider audience, such as hiring multilingual high school students to conduct door-to-door surveys for school credit. To promote public involvement in adaptation planning and work, the Climate Ready Boston plan envisioned including residents in developing neighborhood-scale adaptation plans through Local Climate Resilience Committees.

4

FINANCIAL ASSISTANCE

A growing body of research shows that government-provided disaster recovery funds favor middle and higher-income households.⁷ Climate Ready Boston includes an action to evaluate the current insurance landscape for flooding. For Boston, this includes identifying any affordability challenges for property owners participating in the National Flood Insurance Program (NFIP), and evaluating strategies to help them respond to major increases in insurance premiums. The need to consider communities least equipped for bouncing back from disaster was echoed in the conversation with Dr. Vivek Shandas—and would require further research into neighborhoods' exposure to flooding, accounting for projected future conditions.

5. COMMUNITY ENGAGEMENT

VANCOUVER CLIMATE ADAPATION PROJECT

Purpose
The Council and various members of the Vancouver community are creating a Climate Adaptation Plan that better understands and responds to the needs of Vancouver residents as a changing climate affects their quality of life.

Who are we?
This is a project of the University of British Columbia students involved in the Master of Urban and Regional Planning and the City of Vancouver's Climate Change Adaptation Project. We are a group of community members interested in developing a set of recommendations for the City of Vancouver's Climate Change Adaptation Project.

What is climate change?
Climate change is a change in average weather conditions, such as temperature or rainfall, in a region over a long period of time. The changes that we've observed in British Columbia since the early 20th century are probably due to human activities. Scientists estimate that the average temperature has risen about 1.5 degrees Celsius since 1950.

Climate Related Hazards
Climate hazards that are likely to impact Vancouver in the coming decades include:
- Urban Heat Islands
- Wildfires leading to poor air quality
- Increased frequency of flooding

GET INVOLVED!
Share your thoughts with us today!
Answer the questions about the plan and share your feedback on the plan. We'll use your input to help us create a plan that works for everyone.
- Scan the QR code on the table
- Visit vancouver.ca/climatechange

VANCOUVER CLIMATE ADAPATION PROJECT
PROYECTO DE ADAPTACIÓN CLIMÁTICA DE VANCOUVER

What are some ideas you have for how the City can help you and your household be prepared for future climate-related weather events? (Think creatively!)
Climate-related hazards that the City can help you and your household be prepared for future climate-related weather events: (Think creatively!)
Climate-related hazards that the City can help you and your household be prepared for future climate-related weather events: (Think creatively!)

Agree Acuerdo

Agree Acuerdo

What are some ideas you have for how the City can help you and your household be prepared for future climate-related weather events? (Think creatively!)
Climate-related hazards that the City can help you and your household be prepared for future climate-related weather events: (Think creatively!)
Climate-related hazards that the City can help you and your household be prepared for future climate-related weather events: (Think creatively!)

Vancouver Climate Adaptation Project

We Value Your Input!

HATCH PLANNING
COMMUNITY LED ADAPTATION

PROCESS

The community engagement process took place over the course of approximately four weeks in late April and early May 2022. A three-pronged engagement strategy to include community members who have not historically been involved in the planning process was used. The three elements of the strategy were:

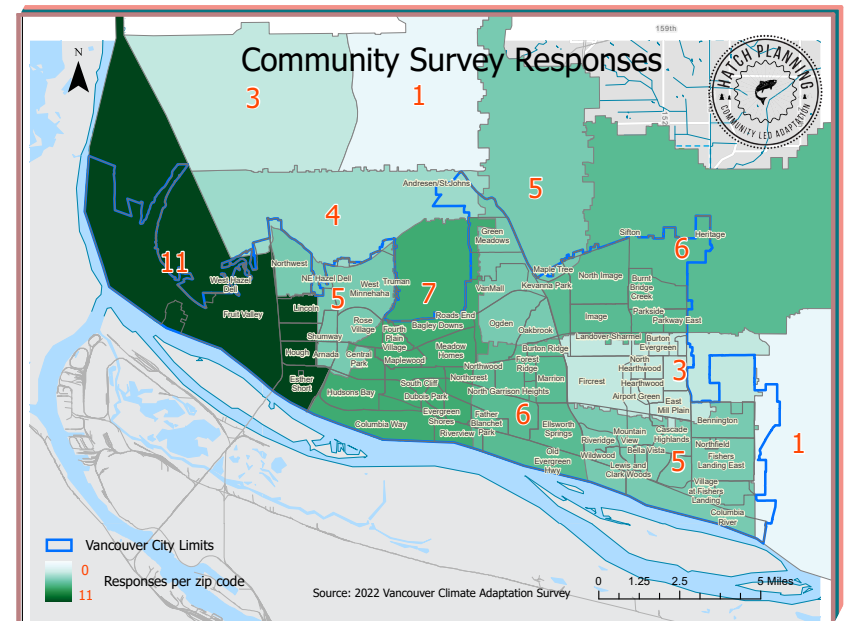
- a community-wide survey
- six pop-up events in different locations, and
- five small group conversations (focus groups)

The project team’s goal was to determine the **needs**, **experiences**, and **ideas** of the community with regard to climate adaptation.

Overall, approximately 140 Vancouver community members shared details about their personal experience with climate change, what people need to have a prosperous and healthy future in Vancouver, and their ideas on how Vancouver can better support climate adaptation. Along with the results of the best practices research, the findings from the engagement process came together to inform the project recommendations. A full report of the community engagement activities and findings is included in Appendix C.



Map 5. Map showing the locations of community engagement activities.



Map 6. Map showing the Survey Responses by Zip Code

KEY FINDINGS

1

Most community members had negative experiences during severe weather events - the wildfire smoke of 2020 and heat wave of 2021. Negative experiences were due to a loss of work time, discomfort and health issues, the canceling of events, and more.

2

Aside from severe heat and wildfire smoke, participants also worried about snowy and icy weather events, and particularly the power outages and difficulty of travel that comes with those events.

3

Participants identified several circumstances that made it more difficult to deal with severe weather events. These included:

- Lack of air conditioning or air purification
- Lack of access to a car
- Lack of communication within the community and to the community from authorities regarding preparedness for severe weather
- Need to work outside during severe weather events
- The effect of COVID-19 on the availability of indoor, air conditioned public spaces
- Lack of resources for people with disabilities during severe weather events



Fig. 4. Jamie Shalvey engages community members at Fisher Basin Park.

“I live in a small, older home that has no centralized HVAC system. We only had an in-window AC Unit that we could not run with good consciousness because the filter was just turning black” - Survey Response



Fig. 5. Jodi Mescher ready to engage the community at Bagley Park.

“Vancouver is pretty good about trees in public spaces, but more street and parking lot trees are required to reduce urban heat island effect.” - Survey Response

KEY FINDINGS

4

While many residents do feel prepared for future heat waves and other events, they expressed serious concerns about the safety and well-being of their neighbors and community.

5

Many participants had ideas for how the city can help them in the future, including providing resources to help households have alternative energy sources in the event of power outages, the creation of cooling and warming shelters, creating community-led disaster drills to help people understand how to stay safe and prepared, and prioritizing low-income or houseless people in city policy to ensure their safety.

6

Some physical elements that community members would like to see include water features such as splash pads, urban gardens and fruit trees, more tree coverage, and community centers or public spaces for neighbors to connect with one another.

7

Participants cited the need for community education on environmental issues and sustainability through programming and incentives, including conferences, talks, and videos that share the importance of sustainability as well as other educational materials. Participants, particularly those in small group conversations, also saw a need for increased public engagement about this issue.

“It would be good to have a list of specific locations for evacuations that the public can have access to in case of fires, earthquakes, flooding. Cooling shelters would be a welcome addition to green spaces.” - Survey Response



Fig. 6. Jai Daniels discusses climate adaptation at the Vancouver Farmer's Market.



Fig. 7. Jai Daniels, Trevor Luu, and members of Clark College's Environmental Club discuss climate adaptation at Marshall Park.

A vibrant outdoor market scene with people walking, stalls, and autumn trees. The image shows a wide street lined with colorful trees in shades of yellow, orange, and red. On the right side, there are several market stalls with white and blue canopies. One stall in the foreground has wooden shelves displaying various items, including what looks like wooden toys or furniture. People are seen walking along the street, some carrying shopping bags. The overall atmosphere is bright and festive, typical of a fall market.

6. RECOMMENDATIONS

GOALS FRAMEWORK

A series of policy recommendations under six topics were created to help Vancouver respond to climate change in an equitable way. The goal underpinning this work is listed below:

Vancouver will lift up all residents to prepare and respond to the impacts of climate change by *fostering community connectivity, creating resilient places, and broadening access to community resources.*

The recommendations include action items, which climate risks are addressed, the lead and supporting agencies responsible for implementation, the implementation timeline, and anticipated resource needs. Some of the recommendations connect directly to the Climate Action Plan's (CAP) goals, which have been included to emphasize the strategy's importance.

How to read this guide:

Climate Risks Addressed:



Extreme Heat



Wildfires



Poor Air Quality



Flooding



Snow/Ice



Food Security



Emergency Management



Public Health

Implementation Timeline:



Short



Medium



Long

Resource Needs:



Low



Medium



High

FOCUS AREAS FOR RECOMMENDATIONS

The Climate Adaptation Strategy identifies six focus areas to assist Vancouver residents to adapt to climate change:

1 Climate-Ready Communities

Provide essential services for communities to increase resiliency, and expand and increase inclusive access to services. Cultivate community connections to build resilient communities.

2 Communication & Education

Increase community-wide awareness of climate adaptation strategies and available resources. Foster communication and collaboration between the City and residents, and among residents and community organizations.

3 Green Infrastructure

Bolster green infrastructure in the urban environment that reduces the urban heat island effects and mitigates poor air quality. Install green infrastructure in the built environment to increase the resiliency of structures.

4 Land Use & the Built Environment

Implement sustainable land use policies to address changing climate conditions. Promote building and development standards for public and private facilities.

5 Food Security

Increase equitable access to food in the face of rising food prices and insecurity. Promote self-sufficiency through local food production.









6 Governance

Institutionalize climate adaptation strategies among City departments.

RECOMMENDATIONS MATRIX

Recommendations	Climate Risk Addressed	Implementation Timeline	Resource Needs
Improve and increase access to cooling centers, clean air quality centers, and other resource centers during extreme climate events.		>>	\$\$\$
Engage more community members in emergency response efforts.		>>	\$\$
Install heat mitigating structures within existing public areas.		>	\$\$\$
Review and coordinate existing public safety efforts to ensure support of communities facing climate risks.		>	\$
Support safe environments at home and work during extreme climate events.		>>>	\$\$
Promote community understanding of and engagement with climate change adaptation through training and education, building on past City efforts such as “Map your Neighborhood.”		>>	\$\$
Increase public awareness of existing services related to climate change adaptation.		>	\$
Increase public awareness of health and safety precautions in the event of extreme climate events.		>>	\$
Increase green space and tree plantings in identified heat islands and in areas with poor air quality.		>>	\$\$
Increase the adaptability of public buildings.		>>	\$\$
Update building and development codes to increase adaptability of non-public buildings.		>>	\$
Increase funding mechanisms for climate adaptation and mitigation programs.		>	\$
Promote renewable energy within the built environment.		>>	\$\$
Research alternative, climate resilient building materials.		>>	\$
Collaborate with local higher education institutions to develop strategies to reduce flooding on transit routes and in parks.		>>>	\$

RECOMMENDATIONS MATRIX

Recommendations	Climate Risk Addressed	Implementation Timeline	Resource Needs
<p>Promote other forms of green infrastructure, especially in places suffering from extreme heat. Prioritize investment in areas that have lower property values. Green infrastructure investments should be coordinated with affordable housing and other policies to avoid impacts of green gentrification and related displacement.</p>		<p>>></p>	<p>\$\$\$</p>
<p>Implement land use planning policies for flood mitigation.</p>		<p>>></p>	<p>\$\$</p>
<p>Support food security.</p>		<p>>></p>	<p>\$</p>
<p>Consider opportunities to combine adaptation and food security efforts, such as through increasing the urban tree canopy with plantings of fruit and nut trees when/where appropriate. Plantings should be coordinated with fruit and nut tree maintenance education programs (e.g. plantings on public school properties) to relieve burden on Public Works.</p>		<p>>>></p>	<p>\$</p>
<p>Standardize definitions of heat advisory and heat emergency events based on best practices in the field. Ensure definitions used, whether from the National Weather Service or Severe Weather Working Group (facilitated by Council for the Homeless) meet the needs of the most vulnerable populations.</p>		<p>></p>	<p>\$</p>
<p>Coordinate with City and County to incorporate projected climate risks into future hazard plans.</p>		<p>>></p>	<p>\$</p>
<p>Continue pursuing updates to FEMA's National Flood Insurance Program flood risk maps (last updated 2012), and advocate for improvements to their mapping that accounts for climate change projections through members of Congress. Consider evaluating affordability of NFIP and other flood insurance.</p>		<p>>></p>	<p>\$</p>
<p>Build on research conducted for this strategy to confirm areas to prioritize for climate adaptation investments, and conduct vulnerability assessment to better define local risks.</p>		<p>>></p>	<p>\$</p>

CLIMATE-READY COMMUNITIES

Recommendation A

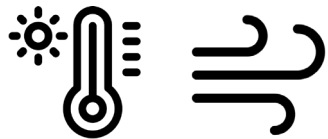
Improve and increase access to cooling centers, clean air quality centers, and other resource centers during extreme climate events.

Action Item 1: Continue working with the Clark Regional Emergency Services Agency (CRESA) and community organizations to facilitate access to cooling centers and shelters during extreme heat events. Support and evaluate accessibility (e.g. allow pets, plan for indoor play spaces). Consider supplementing Vancouver Parks’ outdoor water play areas with misting stations and other heat management tactics as well.

Action Item 2: Pilot a program with local businesses to serve as cooling centers.

Action Item 3: Retrofit existing community assets as clean air and cooling shelters. Look into the use of FEMA hazard mitigation grants for this purpose.

Climate Risk Addressed



Lead Agency: Clark Regional Emergency Services Agency (CRESA)

Supporting Partners: Parks, Recreation & Cultural Services, Vancouver Public Schools, Vancouver Public Libraries, Local Businesses

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Enhance resilience of overburdened communities

Community Priority

Recommendation B

Engage more community members in emergency response efforts.

Action Item 1: Develop a volunteer support program at the neighborhood level with a Neighborhood Association Response Team, based on the existing Community Emergency Response Team (CERT) curriculum. Neighborhood Association Response Teams should be organized by neighborhood associations, but open to alignment by affinity groups given past challenges in neighborhood recruitment.

Action Item 2: Pilot neighborhood scale program encouraging residents to check on their neighbors during extreme climate events.

Action Item 3: Fund liaisons in communities identified as vulnerable to strengthen their relationships with the city.

Action Item 4: Continue to support pre-disaster work through the City’s and Neighborhood Association’s involvement in Community Organizations Active in Disasters (COAD). During large-scale disasters, leverage volunteer response via COAD members with large volunteer groups.

Climate Risk Addressed



Lead Agency: City Manager’s Office

Supporting Partners: Community Organizations Active in Disasters, Clark Regional Emergency Services Agency (CRESA), Emergency Management, Public Works

Implementation Timeline



Anticipated Resource Needs



CLIMATE-READY COMMUNITIES

Recommendation C

Install heat mitigating structures within existing public areas.

Action Item 1: Install splash pads at parks within proximity to priority neighborhoods.

Action Item 2: Increase public swimming facilities, such as public pools. Additional measures should be taken to evaluate the cost and benefits of increased swimming facilities as a heat protection tool.

Climate Risk Addressed



Lead Agency: Public Works

Supporting Partners: Planning, Parks, Recreation & Cultural Services

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Enhance resilience of overburdened communities

Recommendation D

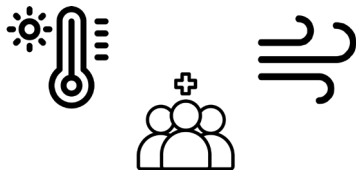
Review and coordinate existing public safety efforts to ensure support of communities facing climate risks.

Action Item 1: Prior to anticipated extreme heat events, initiate a staff review of public safety procedures to recognize and respond to the physical and behavioral signs of heat-related illness.

Action Item 2: Coordinate with local health departments to address impacts of poor air quality on frontline communities.

Action Item 3: Coordinate internal city training with first responders on how to manage an influx of domestic violence calls during heat waves.

Climate Risk Addressed



Lead Agency: City Manager's Office

Supporting Partners: Clark County Public Health, Vancouver Police Department, Vancouver Fire Department

Implementation Timeline



Anticipated Resource Needs



CLIMATE-READY COMMUNITIES

Recommendation E

Support safe environments at home and work during extreme climate events.

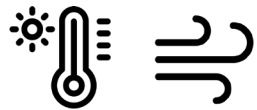
Action Item 1: Mandate air conditioning (AC) and air filtration systems in select public-facing government buildings. Buildings providing services to frontline communities should be prioritized for retrofits, including community centers, senior centers, and public schools.

Action Item 2: Prioritize assistance for frontline communities, including assistance with utility bills (mandated by WA's Clean Energy Transformation Act), and subsidies for thermal window treatments, weatherization, energy efficient AC, and air filtration fans or systems.⁸ Consider a range of options for subsidizing AC, e.g. advocating in the state's next Medicaid plan application for flexibility in using Washington Apple Health plan funds for this purpose.

Action Item 3: Build on momentum of WA State Building Code Council's requirement for heat pumps in new businesses and apartments starting 2023 by working with landlords to promote safe conditions in existing rental properties, by requiring that landlords allow renters to install AC. Consider subsidies for thermal window treatments, weatherization, energy efficient AC, and air filtration fans or systems.

Action Item 4: Support living wages and training programs for workers supporting energy efficiency, heating/cooling installation, and related work.

Climate Risk Addressed



Lead Agency: Planning

Supporting Partners:
Clark Public Utilities, Northwest Natural, Washington Department of Commerce (Weatherization Plus Health program), Workforce Southwest Washington, Washington Department of Health

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Increase use and storage of renewable energy while reducing consumption

Community Priority

COMMUNICATION & EDUCATION

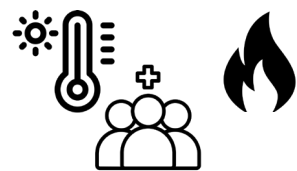


Recommendation A

Promote community understanding of and engagement with climate change adaptation through training and education, building on past City efforts such as “Map your Neighborhood.”

Action Item 1: Organize family-friendly trainings on topics related to adaptation, such as urban gardening and household emergency preparedness.

Action Item 2: Organize outreach programs promoting efforts connected to city adaptation work, such as urban tree planting. Consider innovative best practices, such as hiring students to create promotional videos in multiple languages and providing a template for residents to create comics about how they cope with extreme heat.

Action Item 3: Promote non-AC methods of cooling through public education efforts.

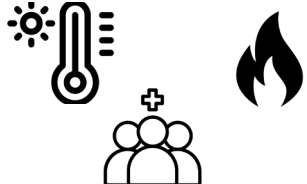


Climate Risk Addressed	Lead Agency: Parks, Recreation & Cultural Services, City Manager’s Office, Community Development	Implementation Timeline	Anticipated Resource Needs	Related CAP Goals
	Supporting Partners: Loo Wit Sierra Club			<i>Have recycling and composting education and outreach</i>

Recommendation B

Increase public awareness of existing services related to climate change adaptation.

Action Item 1: Compile list of locations residents can go to access resources in extreme climate events. Make the list available in multiple languages, post to city website, and conduct targeted outreach to vulnerable populations (e.g. by reaching out to multi-family and mobile home property managers).

Action Item 2: Include information about first responders’ training in responding to extreme climate events, and how they can help.

Climate Risk Addressed	Lead Agency: City Manager’s Office	Implementation Timeline	Anticipated Resource Needs	Related CAP Goals
	Supporting Partners: 211 Information			<i>Enhance resilience of overburdened communities through comprehensive outreach and education</i>

Community Priority

COMMUNICATION & EDUCATION

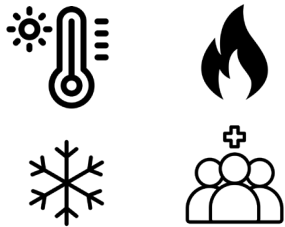
Recommendation C

Increase public awareness of health and safety precautions in the event of extreme climate events.

Action Item 1: Determine improvements needed for existing alert systems (CRESA's Everbridge emergency alert system and TV/radio alerts), such as language accessibility (and needs for specific populations, such as the houseless), to comply with state requirements for providing materials in local primary languages, and build on existing systems through partnerships and additional resources for this work.

Action Item 2: Provide information on how to be safe during climate events and emergency transportation routes.

Climate Risk Addressed



Lead Agency: Clark Regional Emergency Services Agency (CRESA)

Supporting Partners: Emergency Management, City Manager's Office

Implementation Timeline



Anticipated Resource Needs



GREEN INFRASTRUCTURE

Recommendation A

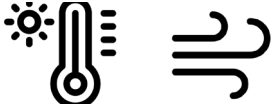


Increase green space and tree plantings in identified heat islands and in areas with poor air quality.

Action Item 1: Expand community-wide programs for planting and maintaining urban tree canopy through coordinating the city’s Treefund program with tree maintenance education. Evaluate programs for accessibility, given inequities and failures of many cities’ tree planting programs.

Action Item 2: Continue research and updating approved street tree list including appropriate species for climate change.

Action Item 3: Encourage residents to incorporate native plants in home gardens. Include approved native plants in the city’s Treefund Program, and incorporate native plants in public green spaces.

Community Priority

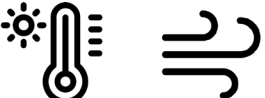

Climate Risk Addressed	Lead Agency: Planning, Public Works	Implementation Timeline	Anticipated Resource Needs	Related CAP Goals
	Supporting : Parks, Recreation & Cultural Services, Friends of Trees, Arbor Day Foundation, Vancouver Urban Forestry, WSU Master Gardener Program, Backyard Habitat Program			<i>Increase carbon storage in trees and soil</i>

Recommendation B

Promote other forms of green infrastructure, especially in places suffering from extreme heat. Prioritize investment in areas that have lower property values. Green infrastructure investments should be coordinated with affordable housing and other policies to avoid impacts of green gentrification and related displacement.

Action Item 1: Require new large developments to incorporate strategies to mitigate heat island effects. This could include living or green roofs, white roofs, and solar-ready hook-ups.

Action Item 2: Lead by example through CAP’s development of a Green Building Policy for City-owned and occupied buildings.

Climate Risk Addressed	Lead Agency: Economic Prosperity and Housing Department	Implementation Timeline	Anticipated Resource Needs	Related CAP Goals
	Supporting Partners: Vancouver Housing Authority			<i>Increase use and storage of renewable energy while reducing consumption</i>

LAND USE & THE BUILT ENVIRONMENT

Recommendation A

Increase the adaptability of public buildings.

Action Item 1: For city owned buildings (especially community centers and libraries) assess the need for passive and active cooling and resilience retrofits by considering impacts of increasing heat and higher nighttime temps on operations budgets.

Climate Risk Addressed



Lead Agency: Public Works

Supporting Partners: City Manager's Office

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Prioritize climate action in City operations and allocate resources needed to achieve climate goals.

Recommendation B

Update building and development codes to increase adaptability of non-public buildings.

Action Item 1: Add National Housing Standards to technical codes to establish adequate home systems.

Action Item 2: Require and/or incentivize awnings for new commercial buildings.

Climate Risk Addressed



Lead Agency: Community and Economic Development

Supporting Partners: City Manager's Office

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Increase the energy efficiency of existing and future buildings and develop a green building strategy.

Recommendation C

Promote renewable energy within the built environment as a potential means of backup power and utility bill reduction.

Action Item 1: Develop minimum standards for insulation and efficiency of windows.

Action Item 2: Develop standards for minimum energy generation of solar panels.

Action Item 3: In partnership with CBOs, seek funding for community scale renewable energy production and storage projects to serve as resilience hubs in the event of power outages.

Climate Risk Addressed



Lead Agency: City Manager's Office

Supporting Partners: Clark Public Utilities, Washington State Department of Commerce

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Low-carbon energy use and resilience

LAND USE & THE BUILT ENVIRONMENT

Recommendation D

Research alternative, climate resilient building materials.

Action Item 1: Evaluate impacts of dark asphalt shingle roofs, cool colors/covers over public spaces & asphalt, permeable parking lots, and consider reflective materials that absorb less heat in new buildings.

Climate Risk Addressed



Lead Agency: Public Works

Supporting Partners: City Manager's Office, Community and Economic Development

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Increase the energy efficiency of existing and future buildings and develop a green building strategy.

Recommendation E

Implement land use planning policies for flood mitigation.

Action Item 1: Periodically review whether existing national, state, and local (County floodplain permits; City's Low Impact Development Code, Critical Areas Ordinance) regulations on building in flood hazard areas meet local needs.

Action Item 2: Consider building on existing guidelines by establishing a flood protection overlay zone and developing design guidelines to address flood risk for new and existing buildings.

Climate Risk Addressed



Lead Agency: Planning, Community and Economic Development

Supporting Partners: City Manager's Office

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Improve ecosystem resilience.

FOOD SECURITY

Recommendation A

Support food security.

Action Item 1: Continue supporting programs such as SNAP match funding at farmer’s markets. Expand promotion of SNAP matching programs to low-income communities.

Action Item 2: Establish a network to divert food waste to food banks and summer lunch programs ahead of new law to curb food waste HB 1799.

Action Item 3: Expand the community gardening program to meet increasing demand (all plots filled 2022) and interest in multiple plots.

Climate Risk Addressed



Lead Agency: Washington State Department of Health

Supporting Partners: Parks, Recreation & Cultural Services, Faith Organizations

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Build a more community-driven, circular economy.

Recommendation B

Consider opportunities to combine adaptation and food security efforts, such as through increasing the urban tree canopy with plantings of fruit and nut trees when/where appropriate. Plantings should be coordinated with fruit and nut tree maintenance education programs (e.g. plantings on public school properties) to relieve burden on Public Works.

Climate Risk Addressed



Lead Agency: Public Works (Urban Forestry)

Supporting Partners: Vancouver Public Schools

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Mainstream sustainability at the City, including staff capacity.

GOVERNANCE

Recommendation A

Increase funding mechanisms for climate adaptation and mitigation programs.

Climate Risk Addressed



Lead Agency: City Manager's Office

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Mainstream sustainability at the City, including staff capacity.

Recommendation B

Standardize definitions of heat advisory and heat emergency events based on best practices in the field. Ensure definitions used, whether from the National Weather Service or elsewhere, meet the needs of the most vulnerable populations.

Climate Risk Addressed



Lead Agency: City Manager's Office

Supporting Partners: Clark Regional Emergency Services Agency (CRESA), Council for the Homeless' Severe Weather Working Group

Implementation Timeline



Anticipated Resource Needs



Recommendation C

Coordinate with City and County to incorporate projected climate risks into future hazard plans.

Climate Risk Addressed



Lead Agency: City Manager's Office

Supporting Partners: Clark County

Implementation Timeline



Anticipated Resource Needs



Recommendation D

Continue pursuing updates to FEMA's National Flood Insurance Program flood risk maps (last updated 2012), and advocate for improvements to their mapping that accounts for climate change projections through members of Congress. Consider evaluating affordability of NFIP and other flood insurance.

Climate Risk Addressed



Lead Agency: City Manager's Office, Clark Regional Emergency Services Agency (CRESA)

Implementation Timeline



Anticipated Resource Needs



GOVERNANCE

Recommendation F

Collaborate with local higher education institutions to develop strategies to support climate adaptation, such as reducing flooding on transit routes and in parks.

Climate Risk Addressed



Lead Agency: City Manager's Office, Public Works

Supporting Partners: Clark College, Washington State University, Portland State University

Implementation Timeline



Anticipated Resource Needs



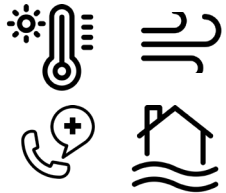
Related CAP Goals

Improve ecosystem resilience; and expand and improve the bicycle, pedestrian, and transit networks.

Recommendation G

Utilize research conducted for this strategy and the regional Social Vulnerability Tools Project (SVT) of the Regional Disaster Preparedness Organization to confirm areas to prioritize for climate adaptation investments, and conduct vulnerability assessments to better define local risks, in partnership with other efforts, such as Public Works' tracking of surface level flooding.

Climate Risk Addressed



Lead Agency: City Manager's Office

Supporting Partners: Regional Disaster Preparedness Organization (RDPO)

Implementation Timeline



Anticipated Resource Needs



Related CAP Goals

Enhance resilience of overburdened communities.

ADDITIONAL STRATEGIES TO CONSIDER

- Integrate greenspace through the city with trees, protected wetlands, and conserved natural areas—potentially by applying for grants through the state’s Floodplains by Design program, if appropriate, and through engagement in the County Buildable Lands Inventory, which assumes 50% of critical areas will develop.⁹
- Use parks holistically as part of the larger urban fabric (e.g., store backup generators in a stage).
- Explore compensation for workers unable to work during extreme conditions.
- Partner with developers to build and manage micro-housing, and other middle-housing options, that will withstand extreme climate.
- Explore options for indoor entertainment facilities targeted towards youth.

RECOMMENDATIONS FOR CONTINUED ENGAGEMENT

- Frame community conversations around public health to reach people.
- Consider innovative community-lead outreach techniques, such as partnering with multilingual students to conduct surveys for school credit.
- Improve communication between City and Spanish-speaking communities and other non-English speaking communities.
- Engage with and compensate community liaisons to inform further outreach.
- Promote BeHeard Vancouver to a wider audience to increase awareness of ongoing City projects and spur increased involvement from underrepresented groups.

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Vancouver Climate Adaptation Strategy

Spring 2022