A RESILIENT FUTURE FOR ALL

CITY OF KELOWNA

CLIMATE EQUITY ANALYSIS

Prepared by:
Chelsea Krahn
Kiera Vandeborne
Serena Choi

Image by Kolby Milton

SCARP
School of Community
And Regional Planning

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ACKNOWLEDGEMENTS

The City of Kelowna is located on the traditional and unceded territory of the Syilx Okanagan people, who have taken care of their homelands since time immemorial. The communities of the Syilx Okanagan Nation are known as the Westbank First Nation, Okanagan Indian Band, Penticton Indian Band, Upper Nicola Band, Lower Similkameen Indian Band, Upper Similkameen Indian Band, and the Osoyoos Indian Band.

The UBC SCARP student team acknowledges that the practice of planning frequently contributes to the displacement of Indigenous peoples.The student team believes there cannot be strong climate resilience nor climate equity without reconciliation and Indigenous knowledge. While the project team recognizes the importance of Indigenous rights and knowledge to climate equity, the project was unable to engage with the local Syilx Okanagan community.

The student team also acknowledges this project takes place during a time of overlapping crises. While recovering from the COVID-19 pandemic, the Province of British Columbia has also responded and is recovering from a series of climate-related wildfire and flooding events. These events underscore the urgency of action on climate equity.

Importantly, we extend our gratitude to our project partners at the City of Kelowna, SCARP faculty and peers, and key informants for their guidance and expertise throughout the project development.

EXECUTIVE SUMMARY

Climate and the Community

Kelowna is facing dynamic pressures– a rapidly growing population alongside increasingly intense climate-related events, including extreme heat, wildfire, and flooding. **Section 1** outlines how the risk of these climate hazards is unevenly distributed across the city due to existing social inequities. Considering the relationship between climate hazards and social inequities, this report provides strategic direction for the City of Kelowna to embed climate equity in the upcoming Climate Resiliency Strategy through spatial analysis, community engagement, and climate policy.

Moving towards climate equity means a just distribution of resources and benefits to alleviate unequal burdens created by climate change (City of San Diego, 2019; Tlhotlhalemaje, 2021). The City can plan for a resilient future for all by understanding the inequitable distribution of climate risk and prioritizing at-risk communities, providing fair and equal engagement opportunities by the communities most impacted, and addressing historical inequities and root causes of social vulnerability through policy.

Kelowna's Risk and Social Vulnerability

Prior to engagement and policy, it is crucial to understand, and locate, which populations are most at-risk to extreme heat, wildfire, and flooding, along with where they are located. **Section 2** explores the spatial distribution of climate risk exposure and seven social vulnerability indicators in Kelowna. Social factors, such as age, race, economic status, social isolation, and housing play a role in an individual and populations' vulnerability. An individual's or community's level of risk is a combination of social vulnerability and climate hazard exposure. Table 1 highlights which neighborhoods are at risk and why each hazard requires different planning responses or actions.

Table 1. Kelowna's at-risk neighbourhoods

CLIMATE HAZARD	PROMINENT SOCIAL VULNERABILITY INDICATORS	AT-RISK NEIGHBORHOODS
Extreme Heat	Children, Older adults, Urban Indigenous people, Visible minority, low-income households, Single-person households, Renters	Central City, Pandosy-KLO

CLIMATE HAZARD	PROMINENT SOCIAL VULNERABILITY INDICATORS	AT-RISK NEIGHBORHOODS
Wildfire	Children, Senior, Urban Indigenous people, Living alone, Renters	McKinley Landing, Glenmore Clifton, West Rutland
Flooding	Low-income households, Single-person households, Renters	Pandosy-KLO

Looking at cross-hazard exposure and cross-vulnerabilities, this report identifies the **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** neighborhoods in Kelowna to be most at-risk (see Figure 1). The City should prioritize engaging socially vulnerable populations in these areas and consider adopting targeted interventions to mitigate hazard and improve equity. While these communities are labeled "at-risk", social vulnerability should not be seen as a lack of personal resilience, but rather a symptom of systemic inequity (City of Vancouver, 2019).

The City can take steps towards reducing social vulnerability and addressing climate equity through engagement and planning policy.

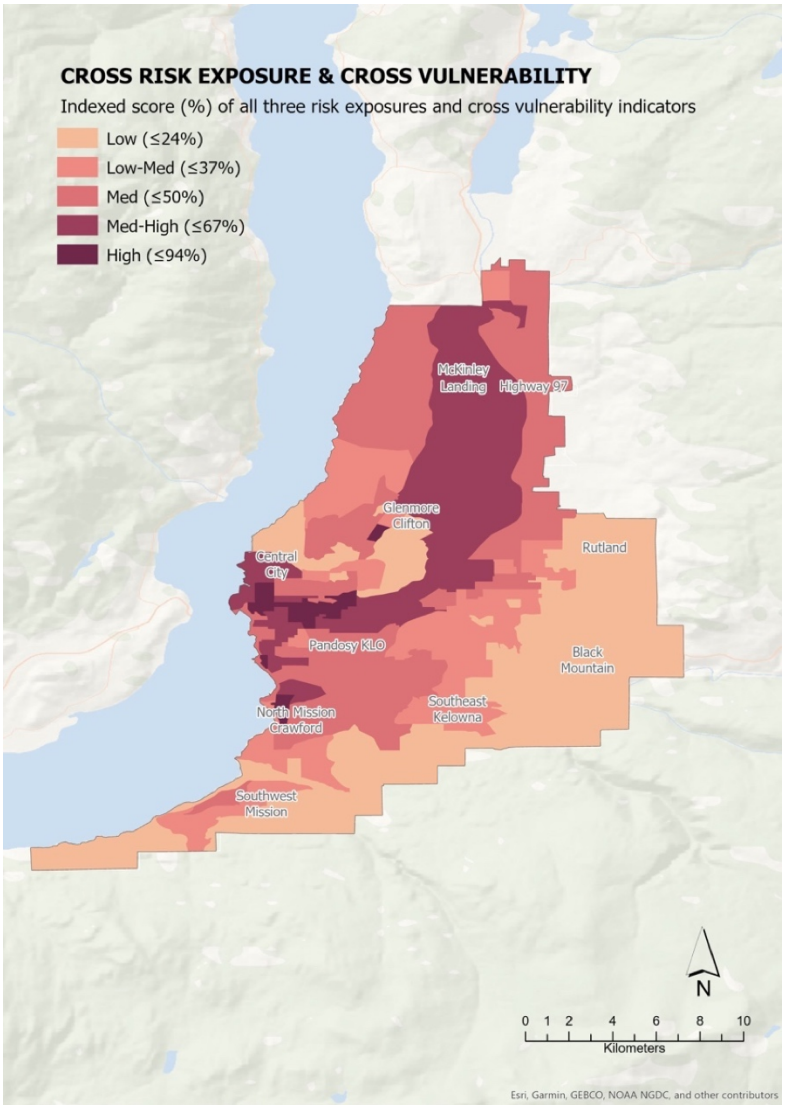


Figure 1. Cross-risk exposure and vulnerability in Kelowna

Embedding Lived Experience

The Climate Resiliency Strategy will be most impactful when the voices and knowledge of at-risk communities are captured through equitable engagement (SFU, 2020). **Section 3** outlines why equitable engagement is important for climate action in Kelowna and identifies guiding principles in designing equitable engagement processes (USDN, 2017). Equitable engagement can advance procedural equity, and is a process that involves considering reflective questions, removing common barriers to participation, and building trust and partnerships with community leaders. Indigenous engagement is also imperative to gain a clear vision of climate priorities and actions. **Section 3** also provides an overview of high- level targeted strategies and mitigation activities to support engagement with at-risk communities to heatwaves, wildfire, and flooding in Kelowna.

Advancing Climate Equity Through Policy

A Climate Resiliency Strategy can help to advance structural, distributional, transgenerational, and procedural equity through policy (Tlhotlhalemaje, 2021). **Section 4** identifies best practices in reducing social vulnerabilities and operationalizing each type of equity in climate policy. Equitable policy design addresses root causes of social vulnerability, seeks multiple co-benefits, and includes socially vulnerable communities throughout the process (Green Ribbon Commission, 2019; USDN, 2017). **Section 4** also provides considerations specific to, and examples of policies for, housing, land use, and urban design, that can support more equitable preparedness and response to extreme heat, wildfire, and flooding in Kelowna.

Towards a Climate Resiliency Strategy

The Climate Resiliency Strategy is an opportunity to plan for a rapidly growing population while mitigating the impacts of, and adapting to, a rapidly changing climate. A climate equity lens minimizes not only the risk to those most vulnerable but delivers co-benefits to the city as a whole. **Section 5** includes recommendations for the City to consider in its development of a Climate Resiliency Strategy that advances climate equity. These include:

1. **RESIST A STANDALONE STRATEGY**
2. **PRIORITIZE AT-RISK COMMUNITIES**
3. **BUILD RISK & VULNERABILITY KNOWLEDGE**
4. **NORMALIZE & OPERATIONALIZE EQUITY**
5. **COMMIT TO RECONCILIATION**

By addressing climate equity, the City of Kelowna can create a resilient future for all.

Understanding Climate Equity

1.UNDERSTANDING CLIMATE EQUITY

1.1 Climate and the Community

Since time immemorial, natural hazards such as heat, wildfire, and flooding, have been a normal part of Kelowna's ecosystem. Yet, these natural hazards are increasing in intensity and frequency due to climate change. Over the next 30 years, the Regional District of Central Okanagan region is expected to experience hotter and drier summers, increased precipitation with more intense weather events, and warmer and wetter winters (Okanagan Climate Projections, 2020). These impacts are expected to be experienced more intensely in the valley bottoms, where Kelowna is located (Ibid).

Kelowna is experiencing a climate emergency. In 2017, there was a 229% increase of water flow to Okanagan Lake, causing record-level flooding. It posed a displacement risk to 23% of Kelowna's population living in the floodplain and affected more than 3,200 citizens and 500 land parcels. The flooding also cost the City $10.7 million in public assets (City of Kelowna, 2017). In the summer of 2021, Kelowna experienced extreme heat, breaking the decades-old temperature record at 45.6 C (Lockhart, 2021; Seymour, 2021). As a result, in Kelowna, 12 people succumbed to heat in less than a week (BC Coroners Service, 2021). Province-wide extreme heat events also contributed to the third worst wildfire season in British Columbia, with more than 1,600 fires burning nearly 8,700 square meters of land (Kulkarni, 2021). In Central Okanagan, several different wildfires in 2021 displaced thousands from their homes, including the multi-jurisdictional White Rock Lake wildfire.

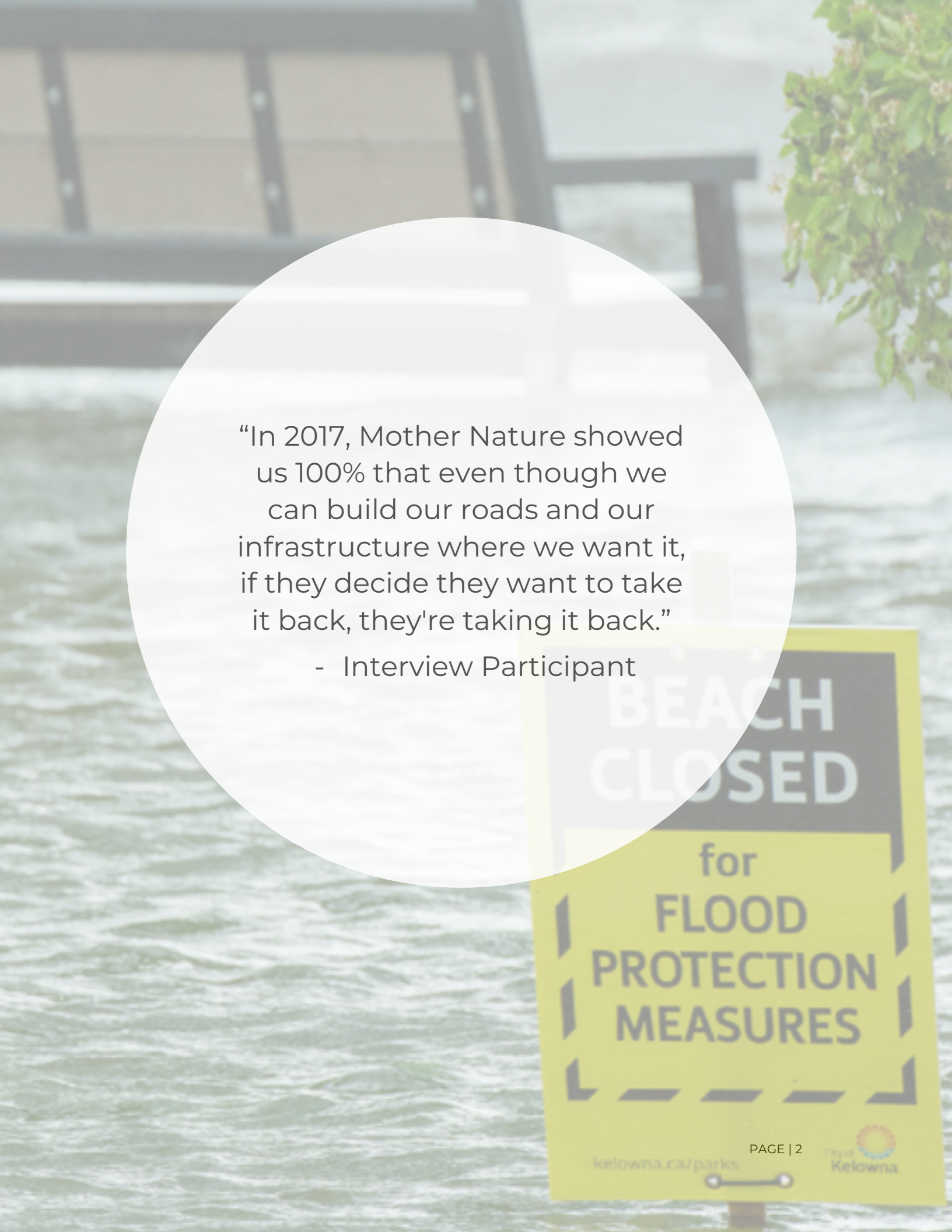
Against the backdrop of a changing climate, Kelowna is one of the fastest growing communities in Canada. The City is anticipating nearly 45,000 more residents by 2040 (City of Kelowna, 2018; Szeto, 2022). In the future, how the City grows and develops will contribute to the extent of adverse impacts from climate risk. Moving forward, the City's policies in housing, land use and urban design will be critical to accommodate and protect the growing community.

Municipal governments are uniquely positioned to address climate equity, with jurisdiction over land use decisions and tools to both mitigate and adapt to climate risks, as well as to reduce community vulnerabilities (ICLEI, 2019). Kelowna's draft 2040 Official Community Plan and the 2018 Community Climate Action Plan both recognize the urgency of climate action and the City's role in mitigating climate change impacts for communities (City of Kelowna, personal communication, September 28, 2021).

Building off the Climate Action Plan, Kelowna is developing a Climate Resiliency Strategy. The Climate Resiliency Strategy will adopt an equity lens to address the ways in which climate shocks will be experienced differently across populations and geographies. The City can prepare and plan for a resilient future for all by:

1. Understanding the inequitable distribution of climate risk and prioritizing at-risk communities,
2. Embedding lived experiences through the planning process, and
3. Addressing root causes of social vulnerabilities through equitable policy design.

This report identifies a number of tools and strategies the City can employ related to spatial analysis, equitable engagement, and policy development to advance climate equity in the upcoming Climate Resiliency Strategy and beyond.



"In 2017, Mother Nature showed us 100% that even though we can build our roads and our infrastructure where we want it, if they decide they want to take it back, they're taking it back."

- Interview Participant

1.2 Digging into Climate Equity and Social Vulnerability

Climate equity is at the core of resilient communities. Systemic inequities, such as colonialism, racism and classism are deeply embedded within political and economic structures. Pre-existing inequities are amplified during climate events; they further restrict people's access to resources and information, leaving those who have been historically underserved and underrepresented in a more precarious and socially vulnerable position. Additionally, these populations tend to be more geographically exposed to hazards, making them increasingly susceptible to climate events. Systemic inequities and exposure lead to less adaptive capacity to plan for, respond and recover from the adverse impacts (Thomas et al., 2018). These factors make people socially vulnerable (see Figure 2). Therefore, building climate resilience for the people of Kelowna is inherently an equity issue.

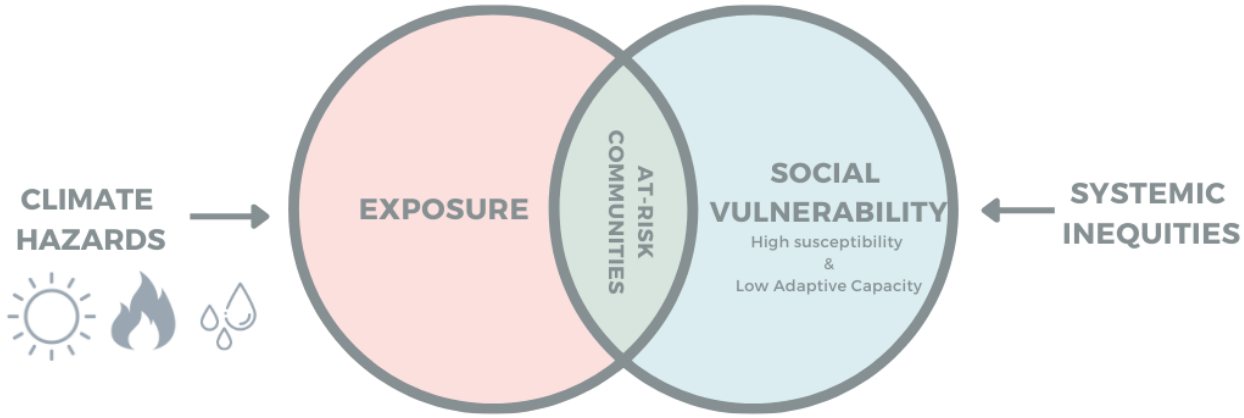


Figure 2. Climate Risk

Social vulnerability should not be seen as a lack of personal resilience. Socially vulnerable populations are extremely resilient and know how to employ their assets and strengths in a creative way. This report encourages the City to formally recognize social vulnerability as a symptom of systemic inequity and elevate and support socially vulnerable communities in building climate resilience (City of Vancouver, 2019).

Furthermore, minimizing the impact of social vulnerability and inequity does not only benefit at-risk population, but also delivers co-benefits to the society as a whole (City of Portland, 2015). For example, policies to increase urban canopy cover can reduce the risk of urban heat island effects, improve air quality and public health as well as residents' quality of living. Therefore, by addressing climate equity, the City can work towards a resilient future for all.

"Social justice and equity are core aspects of climate resilient development pathways that aim to limit global warming to 1.5°C as they address challenges and inevitable trade-offs, widen opportunities, and ensure that options, visions, and values are deliberated, between and within countries and communities, without making the poor and disadvantaged worse off."

- International Panel on Climate Change, 2018

1.3 Project Approach

This report took a phased approach and was formatted in four phases.

PHASE 1: INFORMATION GATHERING

1. **Literature Review:** In this phase, the team conducted an extensive contextual framework scan and literature review to gather information for the development in the next phases of the climate equity analysis, and to gain a greater understanding of specific vulnerability indicators for each climate risk. This included 20+ grey literature and 65+ academic papers reviewed.
2. **Data Collection**: The team found 147 raw datasets to visualize and map key vulnerability indicators for each heat, wildfire, and flood risks in Kelowna. The raw data sources are collected from federal, provincial, and municipal and regional levels and synthesized into a data inventory.
3. **Key Informant Interviews:** The team conducted 6 key informant interviews to ground truth the literature in the City of Kelowna context. The key informants included two registered professional foresters, emergency manager, two engagement specialists, an Indigenous governance scholar, and a regional health authority team.

PHASE 2: SPATIAL ANALYSIS

1. **GIS Mapping**: The team employed the available data previously identified in Phase 1 and developed risk and vulnerability maps. These resulting 16 maps (found here) delineate the intersections between risk exposure and seven social vulnerability indicators found through a literature review. Based on the maps, the team identified at-risk communities.

PHASE 3: BEST PRACTICE

1. **Equitable Engagement:** The team conducted a scan of provincial and municipal engagement plans and academic papers that directly addresses barriers to equity, frameworks for Indigenous engagement, and activities and tools to guide engagement.
2. **Policy Plans:** The team conducted a scan of municipal and Indigenous climate plans to identify climate equity policies (see Appendix G for a full list). The parameters for

this search included North American plans within the last five years that make an explicit attempt to address climate equity or justice. Of 20 plans, 6 were selected for deeper review.

PHASE 4: STRATEGIC DIRECTION

1. **Recommendations:** Upon completion of Phase 1-3, the team analyzed and synthesized the qualitative and spatial data into high level recommendations with long term goals and short to medium term (1-7 years) actions. The recommendations for the City include themes of an integrated approach across engagement and policy design processes which entails an understanding of the spatial distribution of climate risk and prioritizing at-risk communities, valuing lived experiences, while addressing root causes of social vulnerability in policy.

Kelowna’s Climate Risk and Social Vulnerability

2. ASSESSING KELOWNA'S CLIMATE RISK AND SOCIAL VULNERABILITY

This section explores the spatial distribution of climate risk exposure and seven social vulnerability indicators in Kelowna. Social factors, such as age, race, economic status, social isolation, and housing play a role in an individual and populations' vulnerability. An individual's or community's level of risk is a combination of social vulnerability and climate hazard exposure. Looking at cross-hazard exposure and cross-vulnerabilities, this report identifies the **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** neighborhoods in Kelowna to be most at-risk.

2.1 Introduction

This section outlines the spatial distribution of climate risk across the City of Kelowna. It provides an understanding of Kelowna's at-risk populations, who are most exposed and socially vulnerable to extreme heat, wildfire, and flooding. Identifying at-risk populations and determining where they are located are crucial steps before engaging communities in the process of policy and decision-making (De Sherbinin et al. 2019).

It is important to recognize the limitations of mapping as it reduces people's experiences to quantitative proxies. This spatial analysis requires a parallel, nuanced narrative to better communicate on the ground realities through equitable engagement strategies recommended in Section 3. While some experiences, including risk perception, mental health status, gender norms, social capital, and cultural values, are difficult to map, they are invaluable because they add to the robust explanation of a community's resilience (Berke & Stevens, 2016). Informed by both spatial analysis of risk and embedded lived experiences, the City can advance climate equity through adopting the recommended best practices in Section 4.

This section begins with assessing Kelowna's exposure to the three climate risks, followed by the distribution of socially vulnerable indicators across the City. The resulting maps should not be considered as a comprehensive risk and vulnerability assessment, but rather a preliminary analysis to understand the social aspects of climate risk. The next steps for a more comprehensive analysis are recommended in Section 5.

2.2 Risk Exposure

Climate hazards, such as extreme heat, wildfire, and flooding, can have different impacts depending on where they occur. Therefore, the first step of the climate risk assessment is to identify the communities that are spatially exposed to these hazards. This section looks at separate areas within the City of Kelowna that would face extreme heat, wildfire, and flooding. Additionally, the section determines the areas that are exposed to all three risks and require the City's special attention to prepare for a scenario where risks coincide.

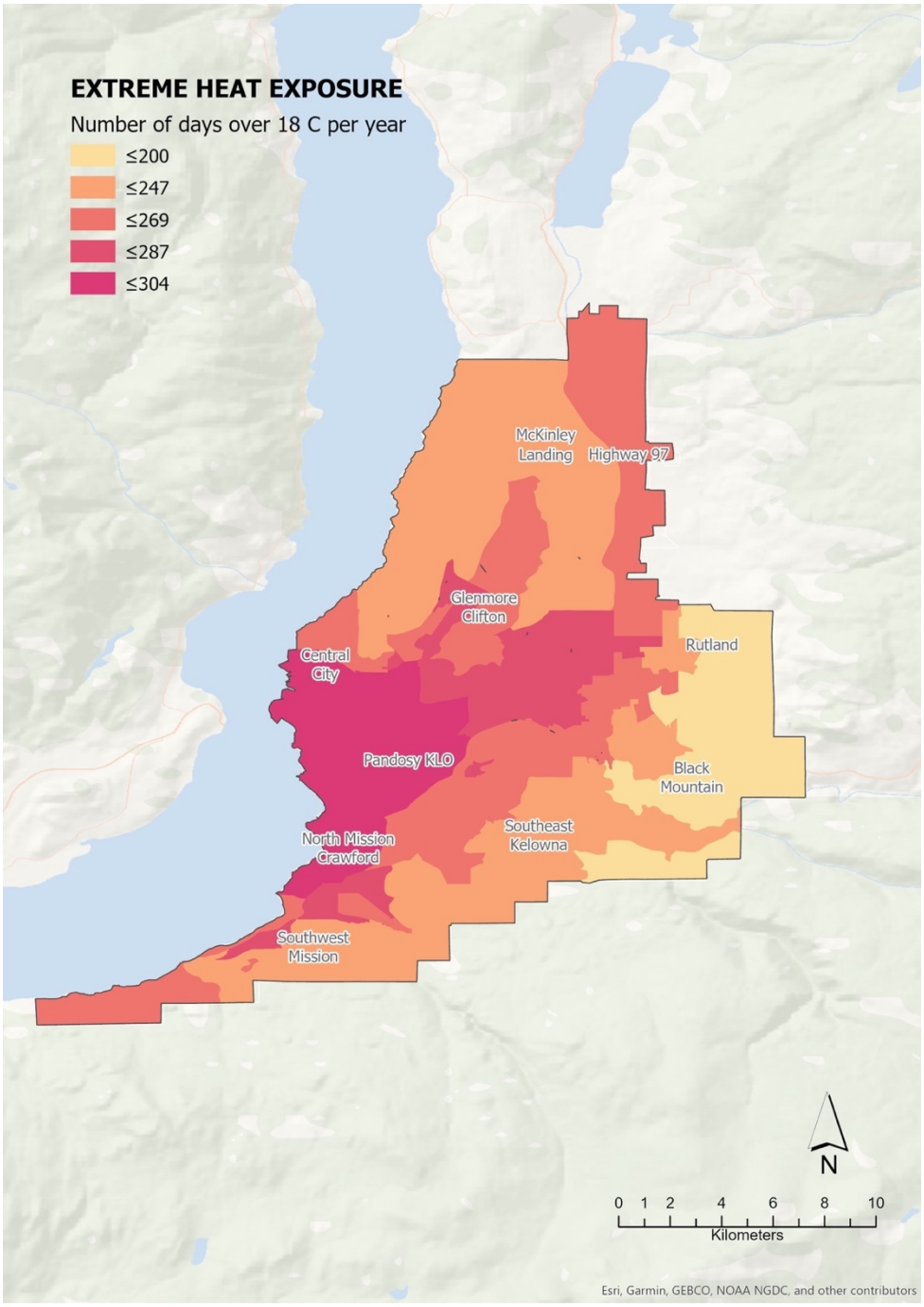
In the interest of mapping, the exposure to each hazard is represented by the following indicators.

Table 2. Risk Exposure Indicators

CLIMATE HAZARD	EXPOSURE INDICATOR	DATA SOURCE
	Number of days above 18 C annually predicted according to the historic trend (1991~2020)	ClimateBC (Wang et al., 2016)
	Wildland Fire Hazard Development Permit Areas	City of Kelowna
	Floodplain of the highest recorded flood of Okanagan Lake (2017) and Mill Creek floodplain bylaw	Okanagan Basin Water Board; City of Kelowna

EXTREME HEAT

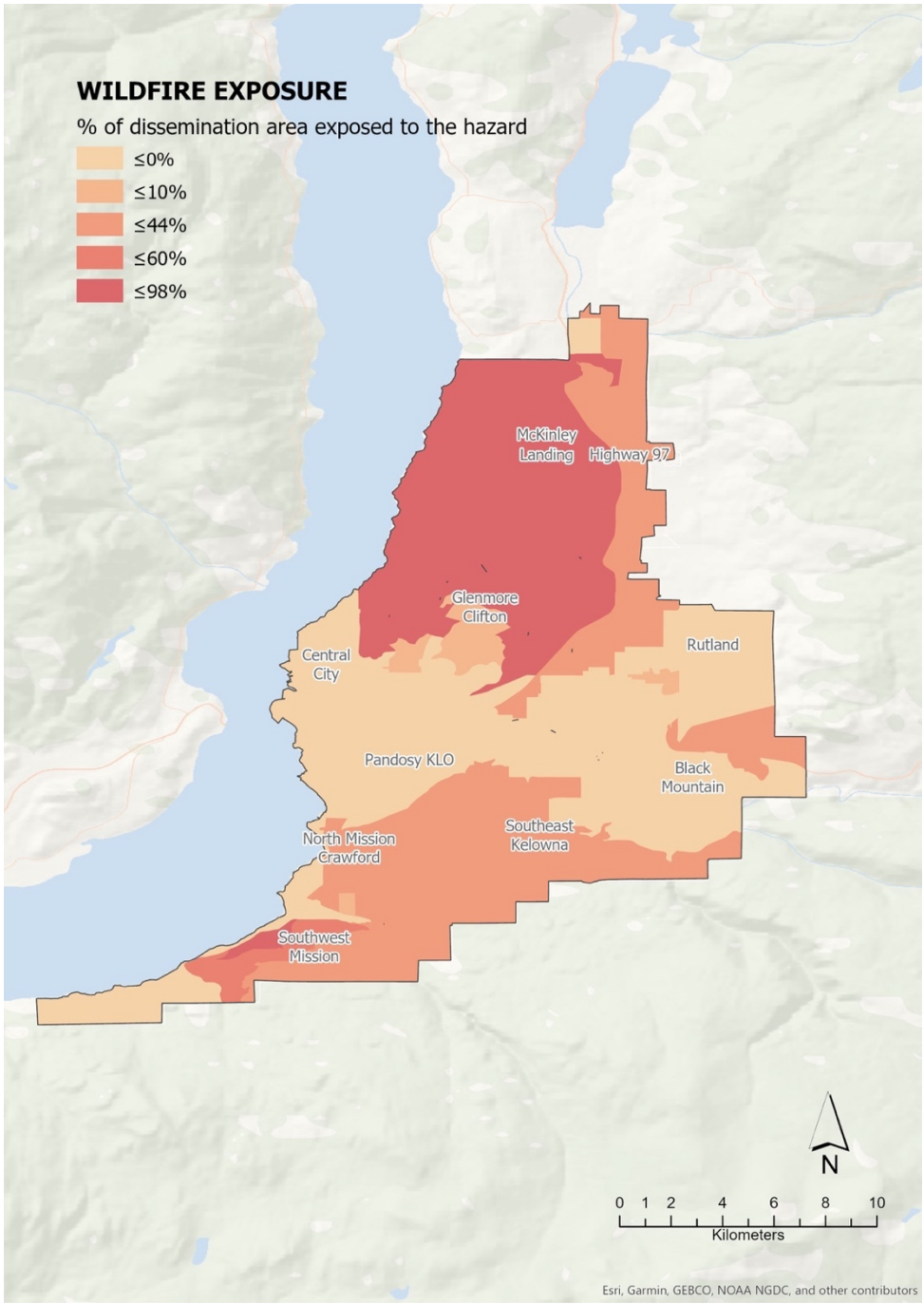
Communities who are exposed to extreme heat may experience serious health challenges, ranging from heat cramps to mortality (HealthLinkBC, 2021). While residents of Kelowna are accustomed to regular heat events during summer, climate change poses unprecedented levels of risk with increased nighttime temperatures and duration of heat waves (The Canadian Press, 2021).



In Figure 3, the exposure to extreme heat is described as the predicted number of days annually over 18 C based on the historical trend between 1991 and 2020. It is observed that the neighborhoods in the city core, such as **Central City, Pandosy-KLO, and North Mission-Crawford**, are highly exposed to extreme heat hazard.

Figure 3. Extreme Heat Exposure in Kelowna

Many areas of Kelowna are located within the urban-wildland interface area, where urban development is close to forests or grasslands. As the City continues to grow into the outer region, the lands and people exposed to wildfire risk will also increase.



In Figure 4, the exposure to wildfire is described as the percentage of a dissemination area that falls within the City's Wildland Fire Hazard Development Permit Areas. This Development Permit Areas has been developed by the City and the City Fire Department based on the analysis of physical structures, fuel types and fire behavior (City of Kelowna, 2011). As a result, it is observed that the neighborhoods located at the outer edge of the city, such as **McKinley Landing and Southwest Mission**, are more exposed to wildfire hazard

Figure 4. Wildfire Exposure in Kelowna

FLOODING

Kelowna faces flooding hazards every year, especially during spring and early summer when snowpack melts and runs off into creeks and stream channels. The city is highly exposed to flooding since 23% of the City's residents live in a floodplain (City of Kelowna, 2017). As Kelowna is growing rapidly, more development and impervious surfaces are also likely to increase the communities' exposure to flooding.

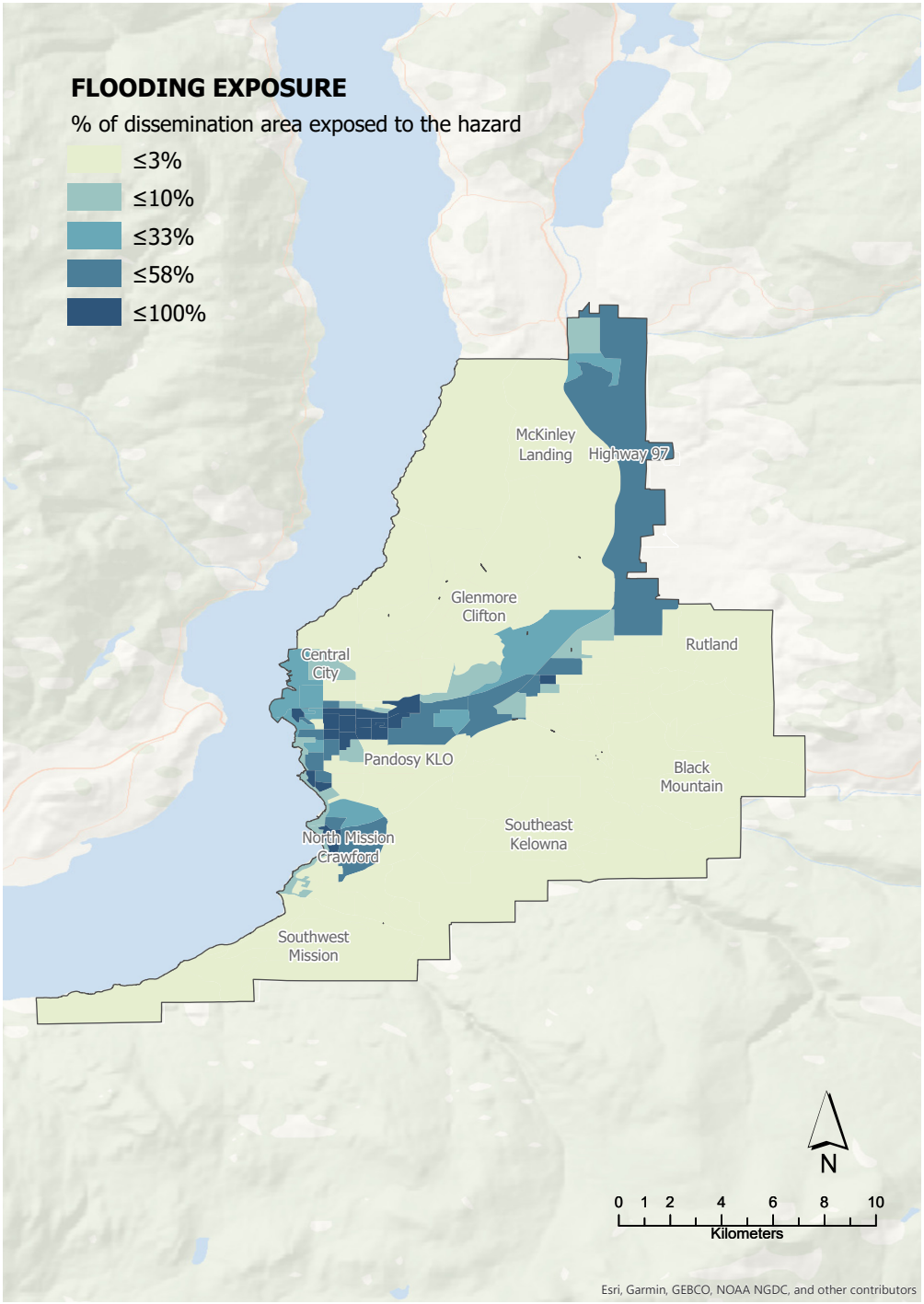


Figure 5. Flooding Exposure in Kelowna

In Figure 5, the exposure to flooding is determined by the combination of floodplain maps created by the Okanagan Basin and the City of Kelowna. The areas in **Central City, Pandosy-KLO, North Mission-Crawford, and near Highway 97** are most exposed to flooding.

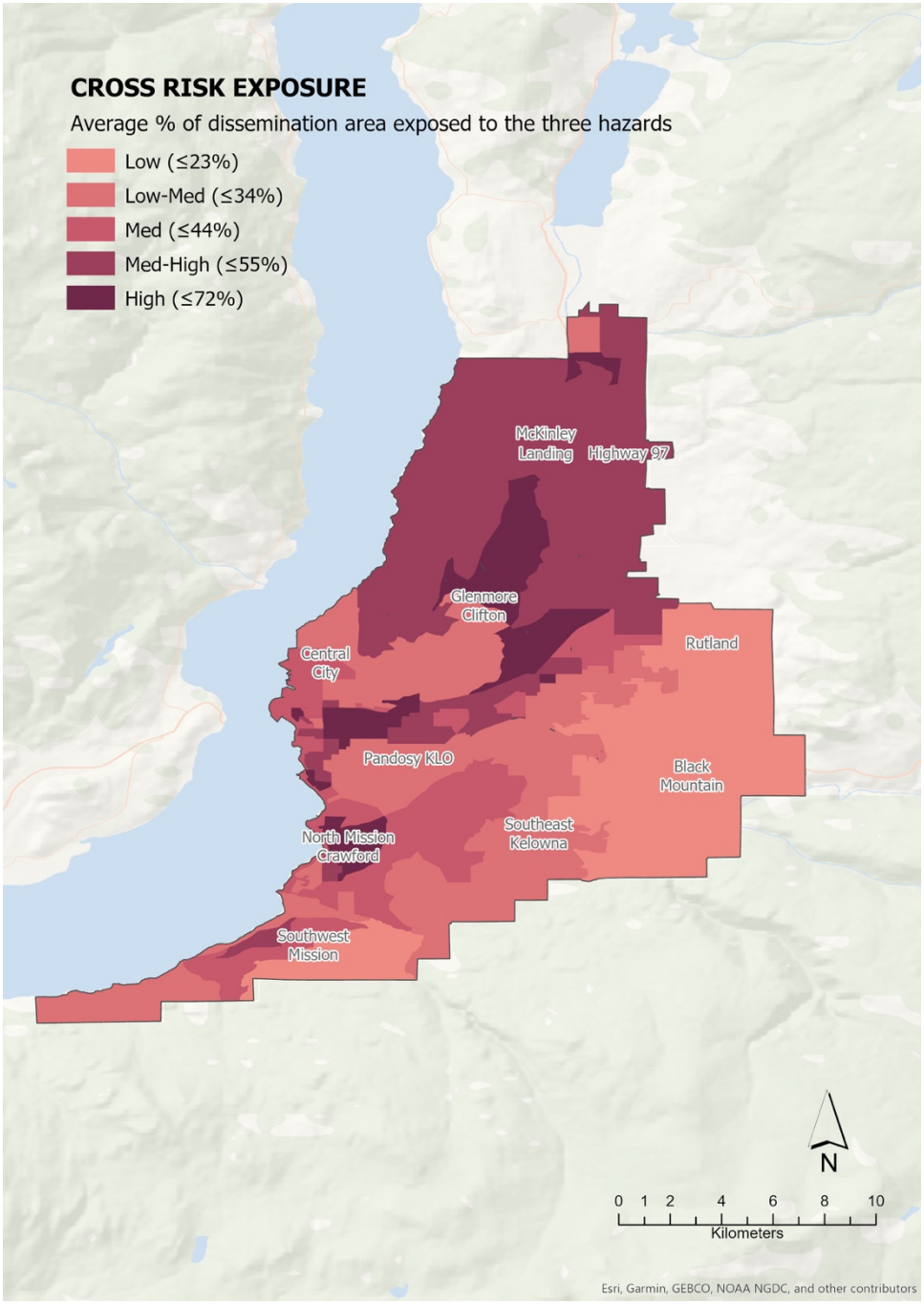


Figure 6. Cross-Risk Exposure in Kelowna

Figure 6 shows the areas that are highly exposed across the three hazards. The areas such as **Pandosy-KLO, North Mission Crawford, Glenmore Clifton and West Rutland** require attention from the City given that more than one risk may happen in a time period. For example, extreme heat may also increase the risk of wildfires and flooding.

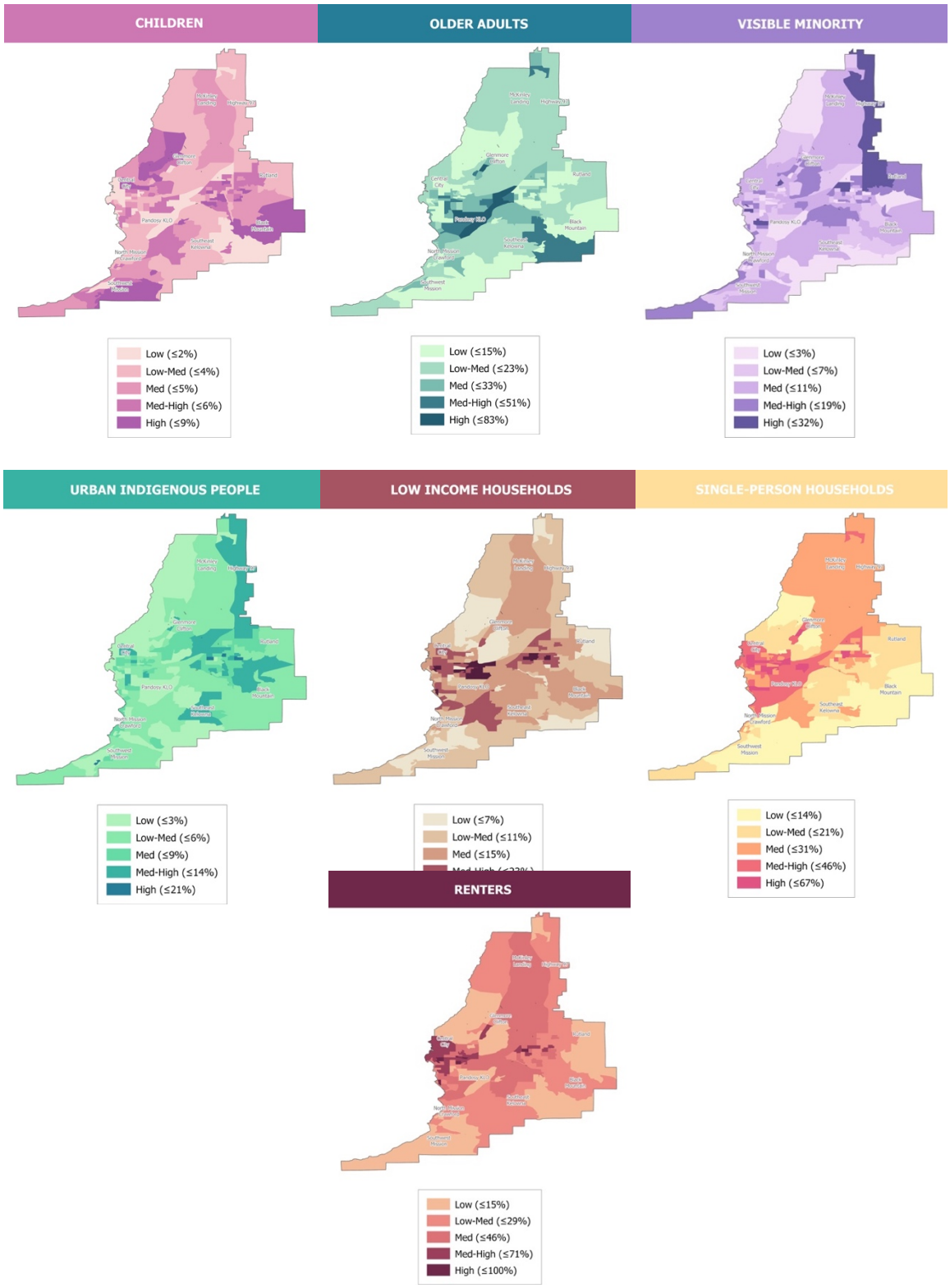
2.3 Vulnerability Indicators

This section maps the spatial distribution of total **seven indicators of social vulnerability** throughout the city. The list of indicators in Table 3 include susceptibility indicators, as well as indicators which identify a lack of adaptive capacity. Maps in Figure 7 on page 24, illustrate the distribution of each social vulnerability indicator across Kelowna. This section also shows the areas where different social vulnerabilities overlap with one another, describing how intersecting identities shape and reinforce vulnerable population's experience of climate risk (Walker, Reed & Fletcher, 2020). A full list of vulnerability dimensions for each climate hazard can be found in Appendix B.

Table 3. Overview of Social Vulnerability Indicators

CATEGORY	SOCIAL VULNERABILITY INDICATOR (CENSUS, 2016)
Age	Children under the age of 4
	Older adults aged 65 and over
Race	Urban Indigenous people of any aboriginal identity
	Visible minority
Economic Status	Low-income households based on the Census low-income measure after tax (LIM-AT)
Social Isolation	Single-person household
Housing	Renters

Figure 7. Distribution of Social Vulnerability Indicators



“What we're learning about heat is that the elderly living alone is a big risk factor. When we think of age, poverty, and homeownership indicators, a layer underneath that is living alone, and more people living alone do not have a strong support system in place.”

- Interview Participant

Table 4. Exploring Social Vulnerability in Kelowna

CATEGORY	SOCIAL VULNERABILITY INDICATOR (CENSUS, 2016)
Age	Children under the age of 4 In Kelowna: 4% of the population (5,485 people as of 2016) While all children are susceptible to climate risks, those under the age of 4 have even more adverse impacts. Children have reduced ability to thermoregulate and communicate discomfort and increased risk for dehydration (Aminipouri et al., 2016). As children depend on the care of others, evacuation during wildfires and flooding can be more challenging (Rufat et al., 2015). Older adults aged 65 and over In Kelowna: 21% of the population (26,435 people as of 2016) Older adults aged 65 years and above have higher rates of pre-existing medical conditions that may hinder them from responding to risk (Jia Coco Liu et al., 2017). Older adults may also depend on the care of others, particularly as they age, and have difficulties with evacuation (Rufat et al., 2015). As Kelowna is an aging city, the number of older adults could increase up to 69,597 by 2040, stressing the need for interventions to protect them against climate risk (City of Kelowna, 2018).

"The elderly during the extreme heat were hugely impacted because they tend to live I apartments alone, they're used to their routine, or they don't have support and often are without air conditioning. And because it was a health emergency, we asked them to leave their apartments to come to a cooling centre to provide some relief, but they didn't want to leave the comfort of their home."

- ***Interview Participant***

CATEGORY	SOCIAL VULNERABILITY INDICATOR (CENSUS, 2016)
Race	Urban Indigenous people of any aboriginal identity In Kelowna: 5% of the population (6,840 people as of 2016) Due to the legacy of colonialism, Indigenous communities face more health challenges such as significantly higher rates of infant

Race	and child mortality, chronic and infectious diseases, and limited access to culturally safe health care (BCAAFC, 2020). Systemic inequity also limits Indigenous people's access to resources and decision making to prepare, respond and recover from climate risks. For example, one in four urban Indigenous people in Canada are in poverty (Arriagada et al., 2020). Furthermore, Indigenous people more often experience numerous socioeconomic challenges, such as inadequate housing, limited transportation, food, and water insecurity (NCCIH, 2022). Visible minority In Kelowna: 9.5% of the population (11,745 people as of 2016) 9.5% of Kelowna's residents are a visible minority with many from South and East Asian countries. Visible minority populations are likely to experience disproportionate impacts of climate risk due to systemic racism, discriminatory policies, and cultural barriers. Specifically, in Kelowna, people of color struggle to find meaningful employment and lack social support and access to health care services (UBC Okanagan, 2016).
CATEGORY	SOCIAL VULNERABILITY INDICATOR (CENSUS, 2016)
Economic Status	Low-income households based on the Census low-income measure after tax (LIM-AT) In Kelowna: 13% of the population (16,605 people as of 2016) Individuals with low to no income have less access to resources required to prepare, respond, and recover from adverse impacts of climate risk, and are often excluded from the government's decision-making process.
Social Isolation	Single-person household In Kelowna: 12% of the population (15,725 people as of 2016) Socially isolated individuals lack interactions and relationships with friends, families, and neighbors. They are likely to experience more harm from climate risk. For example, during the heatwaves, people who live alone and lack strong social ties tend to experience higher mortality (Poumadère et al., 2005). They also have more difficulties with evacuation and relocation during wildfires and flooding. Socially isolated populations are more likely to face other challenges such as old age, poor health conditions and outcomes (Climate Just, n.d.). This compounding vulnerability

Social Isolation	indicates the importance of providing strategies to support socially isolated residents. This project maps the distribution of single-person households as a proxy indicator to social isolation. As Kelowna anticipates the number of people who live alone to increase in the near future, it is crucial for the City to determine and address their needs in advancing climate resilience.
CATEGORY	SOCIAL VULNERABILITY INDICATOR (CENSUS, 2016)
Housing	Renters In Kelowna: 13% of the total households (17,180 households as of 2016) Renters are less likely to be covered by housing insurance. Additionally, compared to homeowners, renters have more challenges with adopting preparatory measures to housing (Koks et al., 2015). According to the future projection, housing prices will increase at a faster rate than incomes (City of Kelowna, 2018). Without proper interventions to provide affordable housing, owning a house will become more challenging in the future.

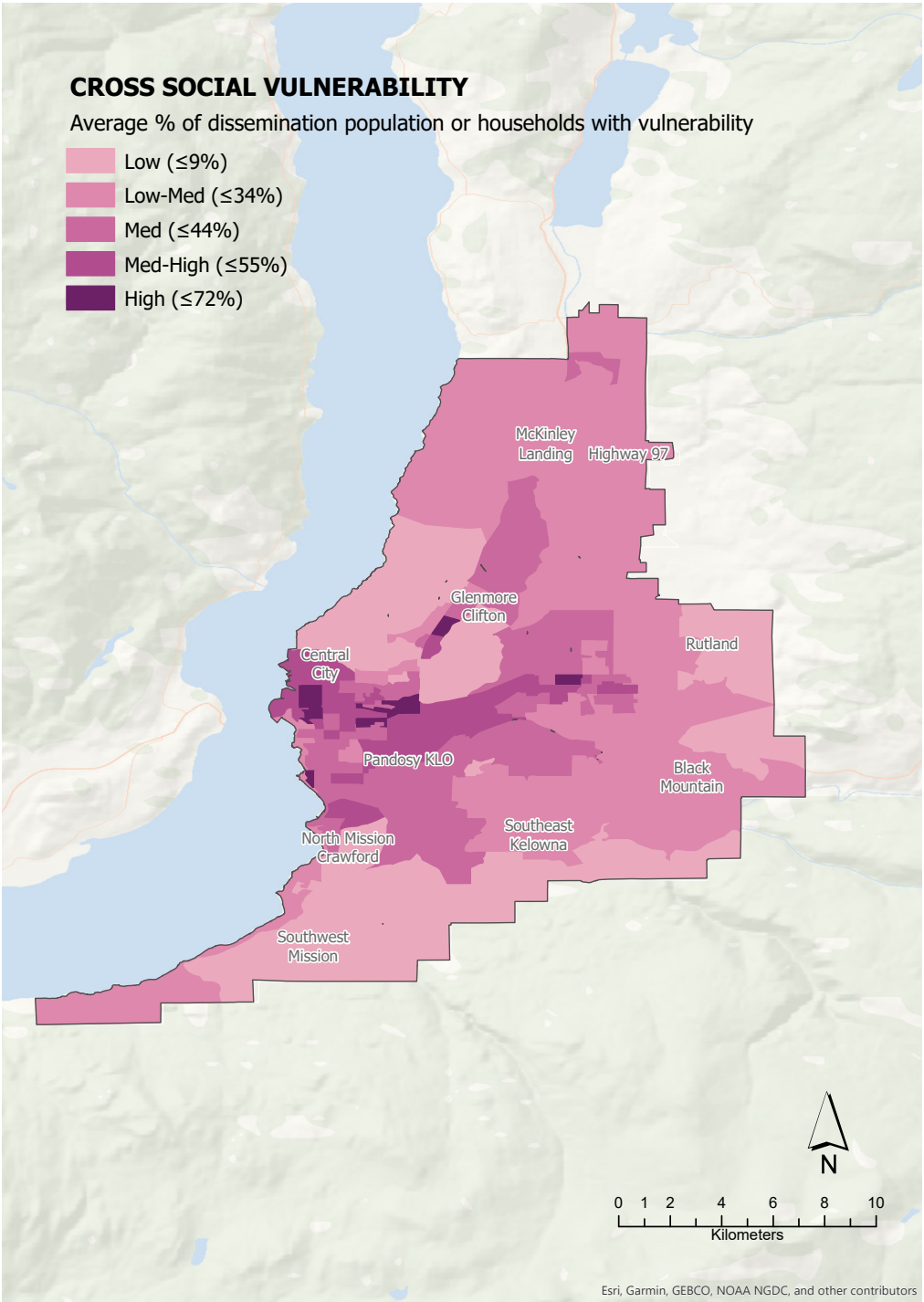


Figure 8. Cross Vulnerabilities in Kelowna

The map in Figure 8 show the areas where high social vulnerabilities overlap and intersect one another. Populations in these areas are likely to require the City's support in mitigating social vulnerability and advancing equity. These areas include **Central City, Pandosy-KLO, Glenmore Clifton and West Rutland.**

2.4 Risk & Vulnerability in Kelowna's Communities

This section explores where at-risk populations are located in relation to extreme heat, wildfire and flooding, respectively as each risk requires different planning responses. Figures 9, 10, 11 are complemented by an in-depth analysis of prominent social vulnerability indicators in at-risk neighborhoods.

Lastly, this section looks at the socially vulnerable population as a whole across all three risks combined. Figure 12 shows the distribution of cross risk and vulnerability scores, with 100% meaning the highest risk exposure and social vulnerability.

SOCIAL VULNERABILITY WITHIN HIGH-RISK EXPOSURE AREAS

This project speculates the areas that are exposed to specific risk and have compounding social vulnerability. Referring to the maps in Figure 9, 10, 11 socially vulnerable people who live in **Central City and Pandosy-KLO** tend to be the most at-risk to extreme heat; **McKinley Landing, Glenmore Clifton and West Rutland** at-risk of wildfire; and **Pandosy-KLO** at-risk of flooding**.**

Additionally, Table 5 shows which vulnerability indicators seem prominent in each high exposure area. It is of note that the neighborhoods at-risk of extreme heat also have high concentrations of all seven social vulnerability indicators.

Table 5. At-Risk Neighbourhoods

CLIMATE HAZARD	PROMINENT SOCIAL VULNERABILITY INDICATORS	AT-RISK NEIGHBOURHOODS
	Children, Older adults, Urban Indigenous people, Visible minority, Low-income households, Single-person households, Renters	Central City, Pandosy-KLO
	Children, Senior, Urban Indigenous people, Living alone, Renters	McKinley Landing, Glenmore Clifton, West Rutland
	Low-income households, Single-person households, Renters	Pandosy-KLO

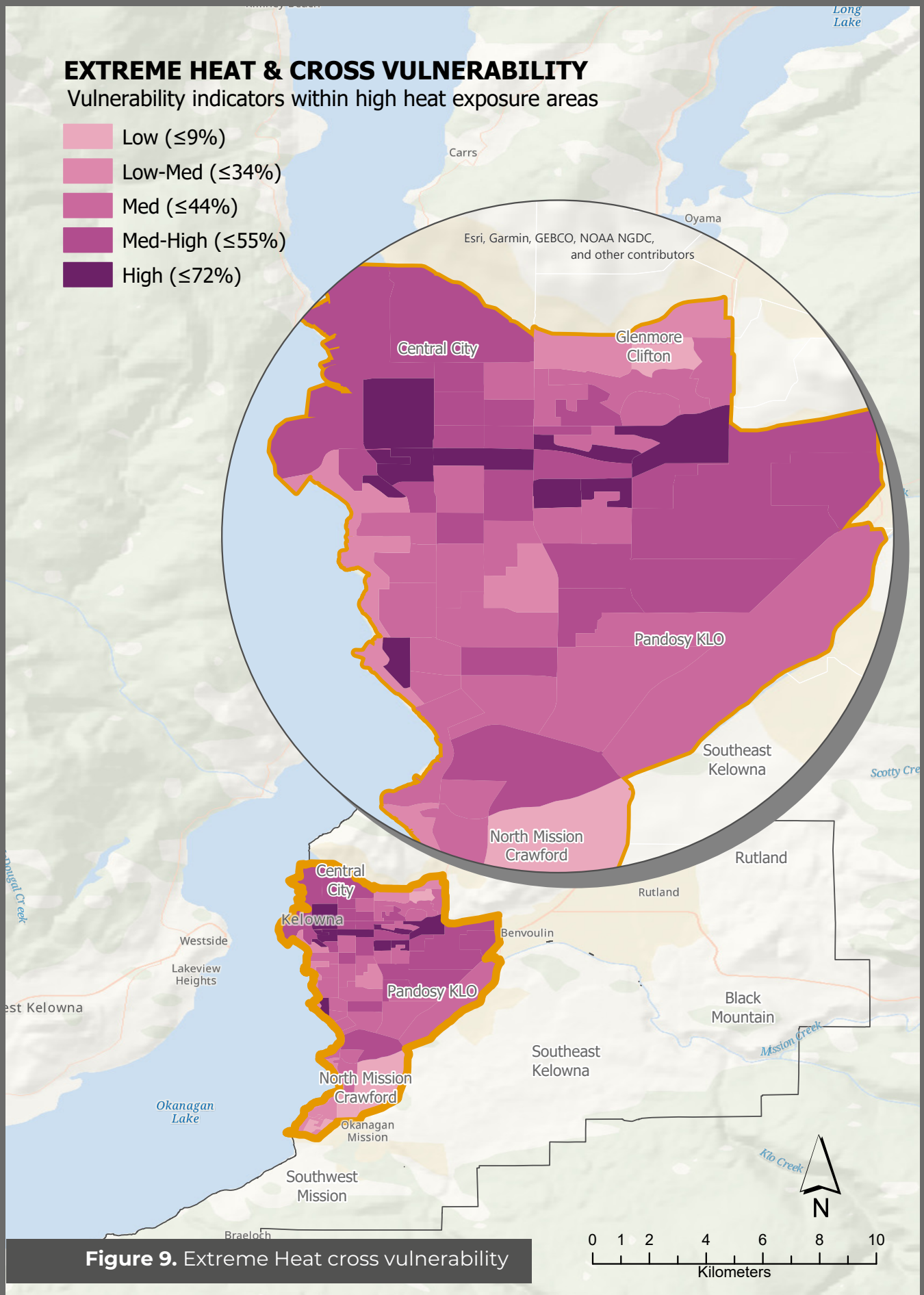


Figure 9. Extreme Heat cross vulnerability

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors, Sources: Esri, HERE, Garmin, GEBCO, National Geographic, NOAA, and the GIS User Community

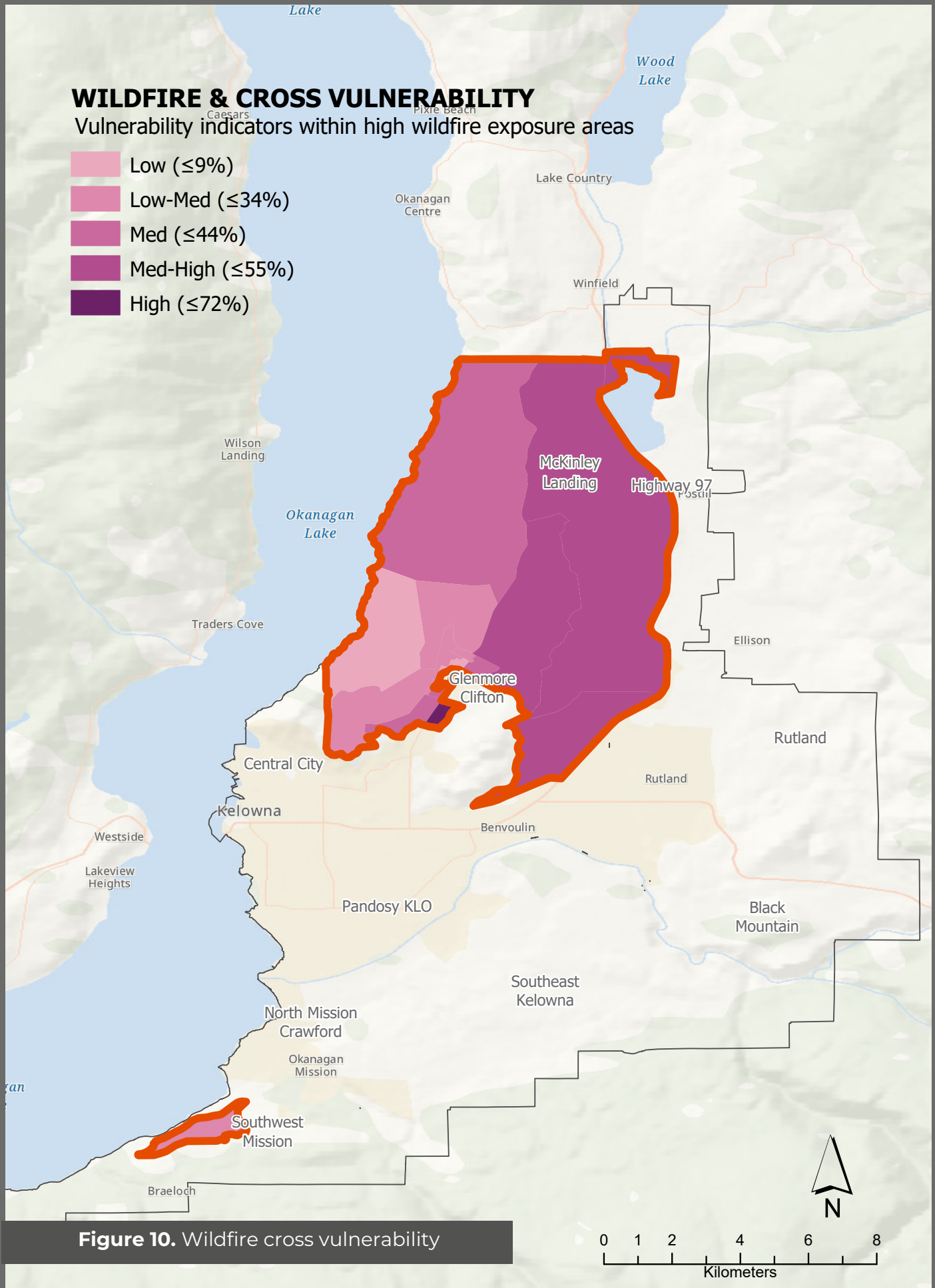


Figure 10. Wildfire cross vulnerability

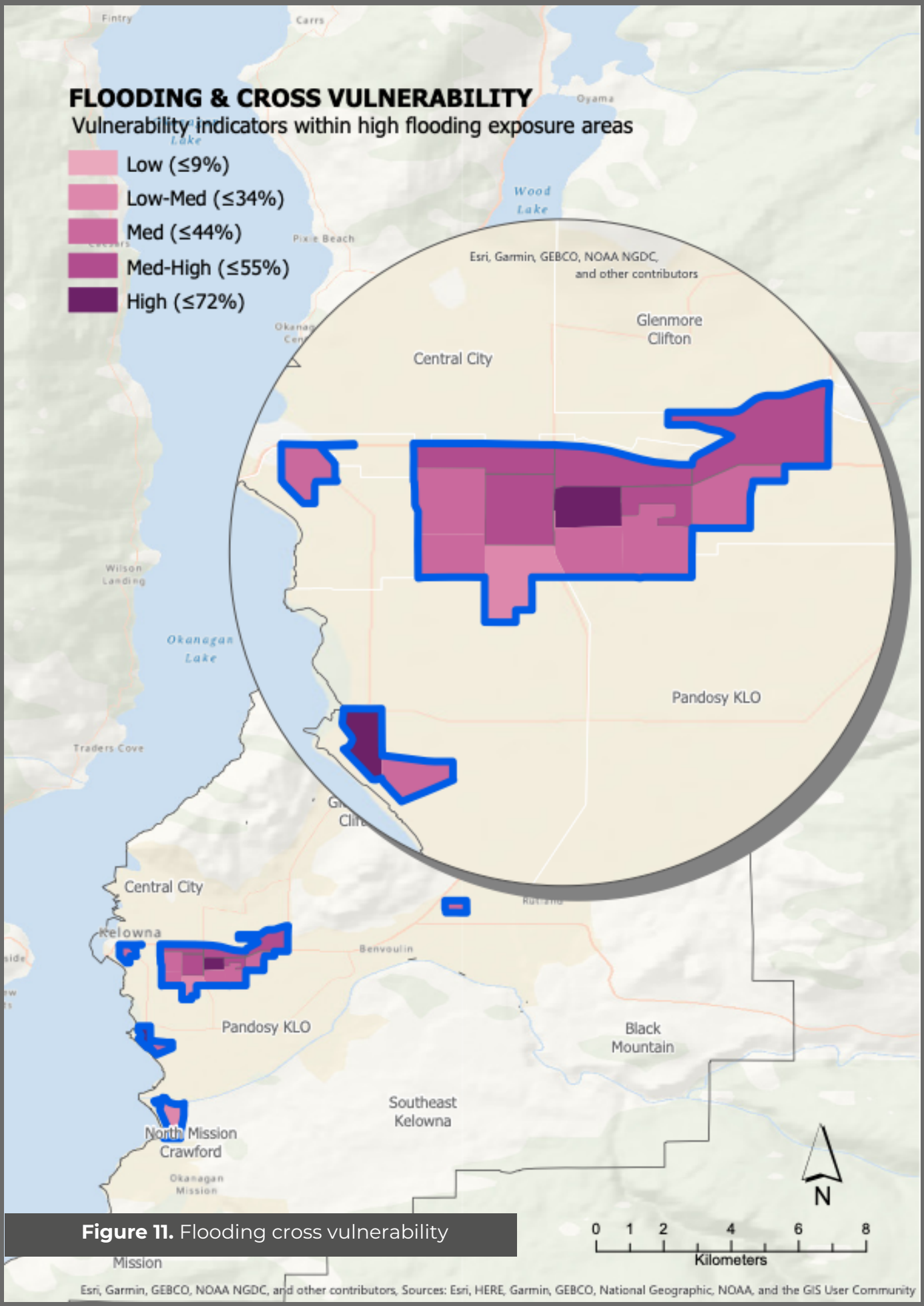


Figure 11. Flooding cross vulnerability

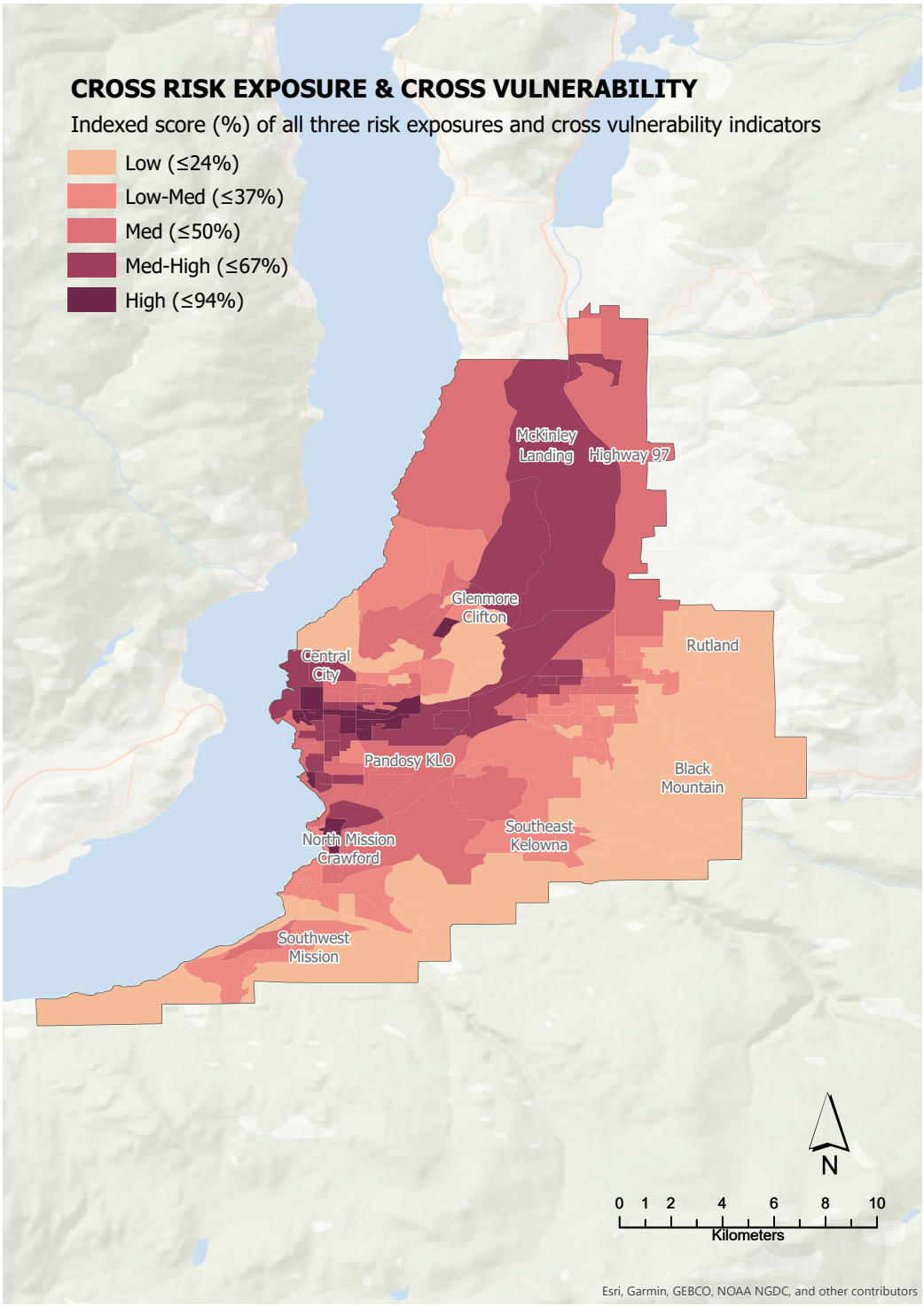


Figure 12. Cross exposure and cross vulnerability

Figure 12 assigns the indexed score of cross-risk and cross-social vulnerability indicators to each dissemination area. Darker colored areas are at-risk across all three hazards as well as with overlapping social vulnerability. As a result, Kelowna should prioritize engaging with at-risk populations in **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** and consider the recommended policies in Section 4 to mitigate compounding hazards and social vulnerability.

Best Practices:

Embedding Lived Experiences, Advancing Climate Equity Through Policy

3. EMBEDDING LIVED EXPERIENCES

The Climate Resiliency Strategy will be most impactful when the voices and knowledge of at-risk communities are captured through equitable engagement (SFU, 2020).

This section outlines why equitable engagement is important for climate action in Kelowna and identifies guiding principles in designing equitable engagement processes (USDN, 2017). Equitable engagement can advance procedural equity, and is a process that involves considering reflective questions, removing common barriers to participation, and building trust and partnerships with community leaders.

Indigenous engagement is also imperative to gain a clear vision of climate priorities and actions. This section also provides an overview of high- level targeted strategies and mitigation activities to support engagement with at-risk communities to heatwaves, wildfire, and flooding in Kelowna.

3.1 What is Equitable Engagement?

Everyone deserves to be involved in the decisions that impact their lives (BPHC, 2019). Additional attention is needed to ensure engagement reaches a diversity of voices including those who are socially vulnerable. Public engagement is a strategy to capture the input and visions of these socially vulnerable communities for a resilient future for all of Kelowna.

Public engagement is premised on the belief that everyone has the right to be involved in decisions that will affect their life (SFU, 2020). Yet, multiple barriers to participation such as systemic discrimination can diminish engagement from diverse communities (SFU, 2020). Equitable engagement intentionally removes barriers to participation and invites all socially vulnerable community members into a meaningful and integral decision-making process (APA, 2019). Equitable engagement advances procedural equity by involving those who are most impacted in the decision-making process (BPHC, 2019).

PROCEDURAL EQUITY

Inclusive, accessible, and authentic engagement and representation in decision-making (Tlhotlhalemaje, 2021).

Equitable engagement processes have the power to build community capacity, social capital, and cohesion, as members share challenges and work towards solutions (USDN, 2017). Equitable climate action engagement is most impactful when it is grounded in principles of reciprocity, effective communication, and accountability (City of Vancouver, 2019). The City of Kelowna can move towards equitable engagement processes by using guiding principles, by considering strategic questions on equitable actions and by removing known barriers to engagement for communities facing increased climate risk impacts.

3.2 Why is equitable engagement important for climate action in the City of Kelowna?

Equitable engagement is important for climate action in Kelowna because it prioritizes and values the lived experience and community knowledge as mechanisms of change and resiliency. Planning for climate resilience must intentionally account for the diverse experiences within the community and counter systems of marginalization that limit communal liberation and participation (Hoogeveen, Klein, Brubacher & Gislason, 2021).

The mapping analysis in Section 2 suggests that there are a diversity of vulnerable populations in **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** vulnerable to extreme heat, wildfires, and floods. Each climate risk requires a unique engagement response as the impacts may affect vulnerable populations differently. To build a resilient future for Kelowna, where these identified communities are prepared to adapt to climate risks, it is necessary to address interacting forms of barriers, identities, and systemic discrimination (Hoogeveen, Klein, Brubacher & Gislason, 2021).

Climate change has real impacts on real people. Every person hosts different layers of experiences that are shaped by social structures, public perceptions, and power imbalances. Intersecting identities shape and reinforce vulnerable population's experience of their environment (Walker, Reed & Fletcher, 2021). Age, English proficiency, sex, gender, physical ability, and accessibility are all examples of identities that inform people's lived experiences and how well they can engage in climate action and public events (SFU, 2021).

> *For example, a single mother who is a recent immigrant to Kelowna and does not understand heat warnings because they are only communicated in English and cannot attend community events due to the lack of childcare and her work schedule; or an elderly man who is blind cannot access cooling stations because he does not feel comfortable walking to the nearest bus stop.*

It is often these same communities that experience the greatest level of impact from climate risks but have contributed the least to climate change risks (Hoogeveen, Klein, Brubacher & Gislason, 2021) that are disproportionately absent from community engagement (USDN, 2017). Therefore, **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** need to be prioritized for engagement for the Climate Resiliency Strategy (C40 Cities Knowledge Hub, 2022).

3.3 Designing Equitable Engagement Processes

GUIDING PRINICIPLES

This section outlines transferable guiding principles that will help design equitable engagement processes (SFU, 2020; NDCC 2010; APA, 2019;). There is no singular approach on how to ensure equitable engagement processes (SFU, 2022). However, the following guiding principles provide a high-level direction to build better processes for engaging with communities impacted by climate risks.

1. **Commit to decolonization**
2. **Commit to advancing systemic equity**
3. **Center and value lived experience**
4. **Invest in reciprocal relationships with communities**
5. **Build accountability and trust**

ACTIONS FOR EQUITABLE ENGAGEMENT

The following section provides actions for how to operationalize the guiding principles through equitable engagement. While the list is similar to traditional engagement processes, each step outlines key questions to embed equity within the process. Prior to beginning the engagement process, this list starts with outlining the importance and value of reflecting on purpose and power as a way to frame the rest of the process. It is important to note that often these actions will occur simultaneously and not in a linear progression. It is imperative to evaluate and monitor the engagement process at every step of the project (BC Ministry of Health, n.d.).

Actions and Principles for Equitable Engagement

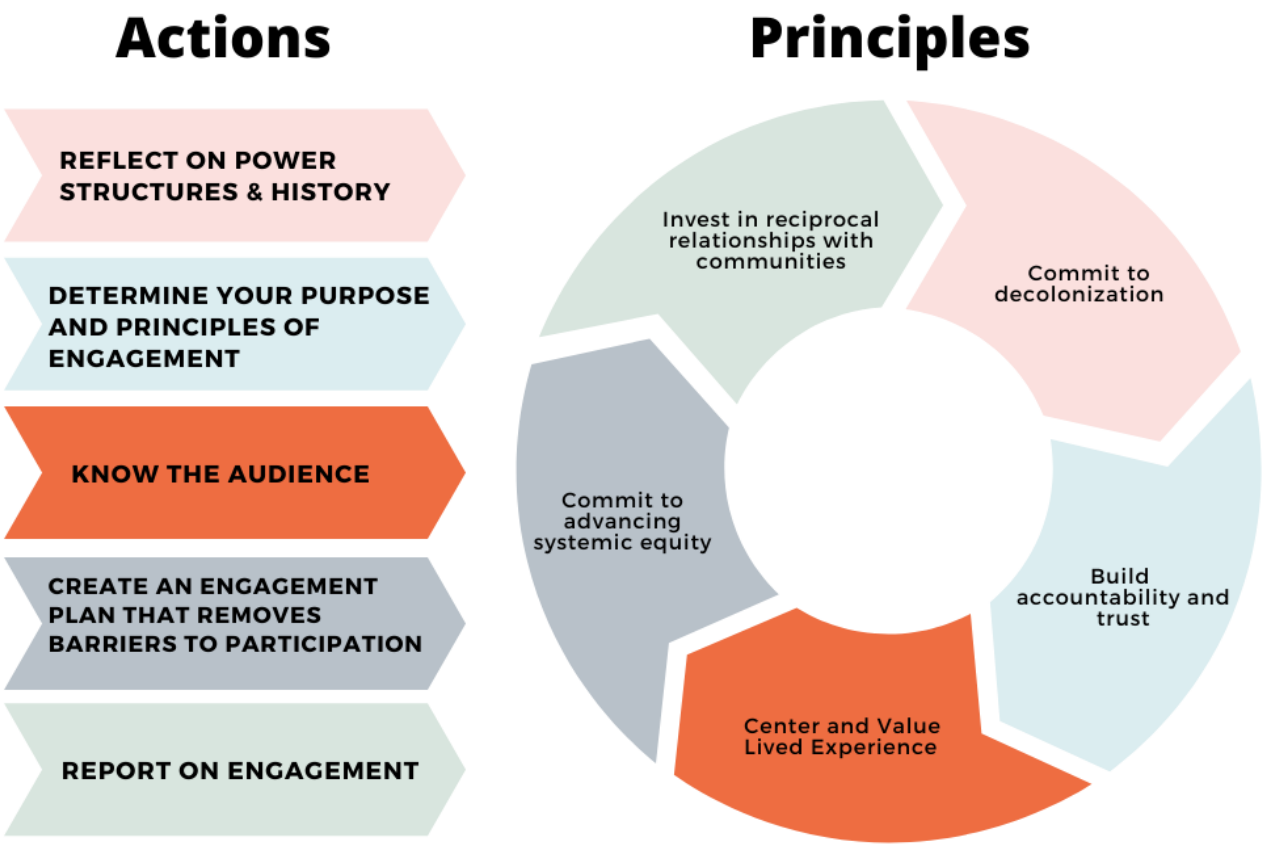


Figure 13. Actions and Principles for Equitable Engagement

PRINCIPLE: COMMIT TO DECOLONIZATION; BUILD ACCOUNTABILITY AND TRUST
ACTION: REFLECT ON POWER STRUCTURES & HISTORY

First, reflecting on power structures and historical relationships with Indigenous communities and other marginalized communities offers the City a fuller understanding of the past harms committed against these populations. Addressing and acknowledging these specific tensions will help to work towards committing to decolonization and provide avenues for relationship-building (City of Durham, 2018; City of Vancouver, 2019). In engagement, this could look like acknowledging that Indigenous knowledge and care principles extend far beyond the colonial process of climate data gathering, projections and planning.

Questions for the team:

- How will the engagement address systemic inequities for socially vulnerable populations?
- Are there past harms the City has caused that need to be addressed in order before relationships can be built and engagement can occur?
- What power is the city willing to concede to improve equity?
- Have you familiarized yourself with the lands, culture, history, protocols, and governance structure of the First Nations?
- Does the Nation have capacity to participate at this time?

Targeted Strategies:

- Prior to the engagement process initiation, Kelowna should consider building local government readiness through budgeting for relationship building, equity training and cultural competency training (USDN, 2017).
- Partner with an Indigenous consulting firms, Indigenous leaders and elders to facilitate and apply culturally competent approaches to engagement (See the Stakeholder List).
- Compensate Indigenous communities for their engagement as rights-holders in a way that is respectful, equitable and dignifying.
- Listen to Indigenous leaders and offer multiple forms of engagement, including oral systems as valid methods.

> ***"If staff or external facilitators are expected to go out in community to have conversations and build relationships with different groups, they need to be aware of how to navigate the topics they're bringing up and to be sensitive and appreciative of different lived experiences. One piece of that may be training in trauma-informed engagement or working with trusted/respected leaders in community to create safe and comfortable spaces for dialogue."***
>
> ***- Interview Participant***

PRINCIPLE: BUILD ACCOUNTABILITY AND TRUST
ACTION: DETERMINE YOUR PURPOSE AND PRINCIPLES OF ENGAGEMENT

In engagement, building accountability and trust can include being transparent about the planning processes, the level of influence that participation will have on decision making and following through on reporting back (City of San Francisco, 2021). Based on the purpose of engagement, determine the level of participation needed for each audience. Match engagement purpose to the IAP2 spectrum (see Appendix C) and where possible, invite communities into co-designing principles of engagement. This could be accomplished by asking them how they would like to be engaged, creating more opportunity for relationship building and successful visioning. Proactive, authentic, and early engagement that commits to ongoing learning takes time and cannot be rushed.

> ***"It's important for people to understand that this is not about the equity analysis. It's not about data. It's about using data to make people's lives better and making sure that everyone is receiving the same benefits."***
>
> - ***Interview Participant***

Questions for the team:

- What is the purpose and goal for engagement?
- Possible purposes could include, but not limited to (NCDD, 2010):
    - *Exploration*: To explore a topic, encourage people and groups to learn more about themselves, their community, or an issue, and possibly discover innovative solutions
    - *Conflict Transformation or relationship building:* To resolve conflicts, to foster personal healing and growth, and to improve relations among people
    - *Decision making:* To influence public decisions and public policy and improve public knowledge
    - *Collaborative action:* To empower people and groups to solve complicated problems and take responsibility for the solution
- What are the project's key issues, how can engagement help to resolve them?
- What other value can engagement provide? (e.g., relationship building, education, trust, etc.)
- How early on will the community be engaged?
- Where is there room for influence? How will public input shape the final decision?
- How will you communicate risks, promises & constraints to the public on the impact of their engagement?

Targeted Strategy:

- Allocate sufficient time in the engagement planning phase to consider these questions to make next steps and appropriate tactics more clear**.**

PRINCIPLE: CENTER AND VALUE LIVED EXPERIENCE
ACTION: KNOW THE AUDIENCE(S)

In engagement, knowing the audience includes placing equal value on lived experience as much as technical expertise. Knowing the audience through research, relationship building, and community connections allows for the engagement process to be tailored to consider cultural expectations, historical tensions, accessibility barriers and intersectionality. Taking the time to get to know a community demonstrates a commitment towards learning and shows respect for the process being about people. It is important for audiences to understand where there is opportunity for influence, why the City is engaging and how their input will be considered.

Consulting and partnering with community leaders will help to design custom engagement strategies and actions for each group and specific context. Investing in relationship building with community leaders is a long-term endeavor that requires a budget and resources to build trust, and to deeply understand and address community needs.

When considering Indigenous engagement, there are multiple Indigenous identities in Kelowna. There are people who belong to the local nations and those from different nations that live in the city. Urban Indigenous people and sylix Okanagan people living on their lands, both must be respected through different approaches of engagement.

Stakeholder Mapping

Stakeholder mapping is a tool to begin to prioritize and understand your audience. Through the process, project teams often consider which groups hold the most power or have the most interest in a project. However, this often does not account for those who may be most impacted but unable to engage. Another approach may be to map groups' existing relationships with the City and their ability to engage, selecting engagement tactics that move towards relationship building. These tactics may include targeted meetings, community education on the planning process and sharing capacity building resources with community leaders according to their needs.

A sample stakeholder list for groups and community leaders in Kelowna that may be interested in, or impacted by, the Climate Resiliency Strategy can be accessed here. This stakeholder list focuses on at-risk community trends that emerged from mapping vulnerabilities to climate risk in Section 2 and identifies key resources and potential partnerships per at-risk neighborhood.

Questions for the team:

- Which groups will be interested or impacted by the decision?
    - Who may be unintentionally impacted by the decision that does not have representation?
    - Which intersectionalities exist?
- What community relationships do we already have? Which need to be developed?
- Have the identified communities been engaged on similar topics previously?
    - Is there potential to draw on this work to lessen engagement fatigue?
- Is there an opportunity to form an ongoing working group?
- What resources can you dedicate to engage with urban Indigenous populations? Consider supporting a parallel Indigenous-led engagement stream.

INTERSECTIONALITY

The term "Intersectionality" was first coined by legal scholar Dr. Kimberle Crenshaw to describe the compounding inequities faced African-American women along racial and gender lines. There are multiple connected identities (i.e., age, race, class, ability, sexual orientation, gender identity among others) which shape and impact how people experience their environment, including discrimination and barriers to democratic participation in society.

PRINCIPLE: COMMIT TO ADVANCING SYSTEMIC EQUITY
ACTION: CREATE AN ENGAGEMENT PLAN THAT REMOVES BARRIERS TO PARTICIPATION

With an idea of your audiences, purpose of engagement, constraints, and limitations, create an engagement plan that defines the approach for engagement including tools and tactics to overcome barriers to participation. It is important to be flexible and recognize that tactics may change based on project phase and community needs (BPHC, 2020; NYC, 2020). A list of Suggested Engagement Tools to engage at-risk communities can be found at the link here.

Questions for the team:

- What barriers do these groups face related to climate risks?
- Which engagement tactics best serve your purpose, audience and fit within your constraints & mitigate risks and limitations?
- How can you limit barriers to participation and dedicate sufficient time and resources to understand community needs?

Systemic inequities often hinder at-risk populations from engaging in public discourse. Some of these barriers are common to engagement events, therefore, intentionally removing them increases the opportunity for equitable engagement (Community Toolbox, n.d.). Appendix D Strategies for Removing Common Barriers offers a complete table of additional resources and mitigation activities.

Common Barriers to Engagement

1. Time and Date: Timing of events can be a barrier for people who need to work shiftwork or provide caregiving throughout the day or evening. Pop up events to go where people are already congregated so that people do not need to alter their schedules and find time to attend an additional event **(**TransformTO, 2016; SFU, 2021).

In Kelowna, providing community benefits, incentives and hosting multiple times of the day can improve this barrier. For example, this could look like hosting a pop-up event on a Saturday using neighborhood parks in at-risk communities in the summer with ice cream and sunscreen to discuss climate change.

2. Location: Event locations may be difficult to access if they are far from transit, or the terrain is inappropriate. For example, wheelchairs and people with slower mobility can struggle in lawns and grass. Events located in uphill areas are also a barrier (Evergreen, 2020).

The City of Kelowna could go where people are already meeting. For example, the City could partner with senior centers in vulnerable communities like Rutland Senior's Center and attend the Saturday Night Dance or Craft Corner program to host a series of conversations on climate risk.

3. Financial Burden: Costs such as time away from work, travel expenses, and caregiving can inhibit participation. Providing incentives and childcare support can relieve financial pressures.

The City of Kelowna could provide local vouchers to grocery stores or retail stores at events, in addition to childminding services.

4. Communication: Accessible communication, specifically on climate issues, is important to consider because without access or understanding, people cannot participate. People with limited proficiency in English, youth, people with developmental disabilities and people with vision impairment may struggle with jargon and understanding the event (City of Vancouver, 2019; BPHC, 2020). Additionally, people often have emotional responses when discussing climate change such as fear or despair, dissuading dialogue.

The City of Kelowna can incorporate the use of software and apps to ensure accessible communication. For example, the Hemingway app to check for reading level compatibility and language level and ColorSafe is a website that generates accessible color pallets for all viewers.

5. Gender: Women, members of the LGBTQ2S+ community, and non-binary and gender non-conforming folks, have historically been underrepresented in decision-making processes.

The City of Kelowna can partner with Kelowna Pride Society and Transparent Kelowna to co- create safe spaces, use gender-neutral language in documents and visuals, provide an opportunity for everyone to share pronouns (potentially included on name tags) and ensure venues have at least one universally accessible washroom for in-person events.

6. Institutional & Governmental Mistrust: People with different lived experiences may have a historically negative perception of institutional authority and governmental powers which inhibits full community engagement **(**BPHC, 2020).

Host events in culturally safe spaces. For example, City Hall may not be a safe space for all people to participate. Accept and publicly address reasons for potential mistrust to build relationships and take a trauma-informed approach to engagement.

7. Accessibility: All venues should accommodate participants with varying levels of mobility to increase opportunities for participation. See Appendix E for accessibility resources.

The City of Kelowna can partner with PLAN Okanagan to learn and consider accessibility concerns from families and staff. This will help with knowledge sharing and relationship building.

8. Cultural Differences: Cultural norms and behaviors need to be considered when planning engagement. Consider family structure dynamics, appropriate communication channels and structures.

The City of Kelowna can consult with The Ki-Low-Na Friendship Society and Kelowna Community Resources to build capacity and connect with community leaders to provide training for facilitators on culturally appropriate knowledge sharing and listening.

PRINCIPLE: INVEST IN RECIPROCAL RELATIONSHIPS WITH COMMUNITIES
ACTION: REPORTING ON ENGAGEMENT

Reporting back on what was heard in engagement sessions provides an opportunity for the community to make any corrections or adjustments to the work. Ensuring community approval and buy-in will help.

Questions for the team:

- How will you inform community members of the engagement outcomes?
- How will you demonstrate where their input went?
- What is your plan to ensure input is reflected in the final decision?
    - If the final decision does not reflect input, how do you communicate the reasons why?
- How can the city sustain community relationships after the project is finished? Are there opportunities to maintain a mutual connection with community members you have engaged?

Targeted Strategies:

- Report back using multiple platforms: social media, one-pagers, at community events
- Follow through on timelines that were set or communicate if timelines have changed and provide updates
- Plan reporting back periods to these communities through the phases of the project

4. ADVANCING CLIMATE EQUITY THROUGH POLICY

A Climate Resiliency Strategy can help to advance structural, distributional, transgenerational, and procedural equity through planning policy (Tlhotlhalemaje, 2021).

This section identifies best practices in reducing social vulnerabilities and operationalizing each type of equity in climate policy. Equitable policy design addresses root causes of social vulnerability, seeks multiple co-benefits, and includes socially vulnerable communities throughout the process (BPHC, 2019; USDN, 2017).

This section also provides considerations specific to, and examples of policies for, housing, land use, and urban design, that can support more equitable preparedness and response to extreme heat, wildfire, and flooding in Kelowna.

4.1 Introduction

In Kelowna, the neighbourhoods of **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** are identified as most at-risk through analysis in Section 2. The following pages offer approaches to policy that reduce the risk to those most vulnerable, and the city as a whole. The section begins with an overview of equitable policy design, followed by a section on housing, land use, and urban design, each with equity considerations and sample policies. The policies to follow are not meant to be a template, but rather ideas for inspiration that can be tailored by local context and community engagement, building on the principles of equitable engagement in Section 3.

While these approaches are specific to housing, land use and urban design, equitable policy interventions around social systems and community programming should also be considered for climate resiliency. Equitable policy design should also be paired with a strong implementation and review process, to foster ongoing learning and mitigate unintended consequences. Appendix F includes an additional list of resources and tools around integrating equity into climate planning.

4.2 Equitable Policy Design

EQUITY FRAMEWORK

Government institutions often inadvertently perpetuate or exacerbate existing social inequities through climate adaptation and mitigation planning (USDN, 2017). Inequity can be perpetuated in three main ways; when adaptation interventions fail to alter the social and political root causes of vulnerability, when adaptation redistributes vulnerability elsewhere, and when projects inadvertently introduce longer-term risks (Eriksen et. al, 2021). In Kelowna, explicitly embedding climate equity through policy design can help to mitigate these unintended consequences.

There are four types of equity that can be advanced through climate policy: structural, distributional, transgenerational, and procedural (Tlhotlhalemaje, 2021). The table below describes the four types and how they can be advanced through climate policy.

PROCEDURAL EQUITY **P**	Can be advanced through inclusive and accessible community engagement, representation in decision-making, and transparency in government processes. Procedural equity increases civic engagement opportunities of communities that are disproportionately impacted by climate change. It also creates processes that are transparent, fair and inclusive in developing and implementing any program, plan or policy. Questions to ask in policy design: • Is it inclusive? Is there an active and meaningful role in decision-making for those impacted or socially vulnerable communities? • How does the policy foster effective, long-term relationships and trust between community and local government? • What will implementation look like? Does it build community capacity through funding, expanded knowledge or other resources? • How can we measure and track equity impacts and action? Can there be measurement of quantity and quality of service provided and community impacts to provide performance feedback?

DISTRIBUTIONAL EQUITY **D**	Can be advanced through fair distribution of benefits and burdens across all segments of a community, and prioritizing resources for communities that experience the greatest inequalities, face disproportionate impacts, and have the greatest unmet needs. Questions to ask in policy design: • Is the policy available to and beneficial for all communities? If not, is the purpose to address an identified gap for disproportionately impacted communities? • Is it affordable to all community members? • How accessible are the benefits of this policy?
STRUCTURAL EQUITY **S**	Can be advanced through decisions made with recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups. Structural equity focuses on closing the gap so that factors such as race and economic status can no longer be used to predict life outcomes, and outcomes for all groups are improved. Question to ask in policy design: • What is the historical context of this policy as it relates to the process of colonization and dispossession of traditional, unceded territory? • How can we advance the Truth and Reconciliation calls to action and articles under the United Nations Declaration on the Rights of Indigenous Peoples? • Does the policy address root causes of social vulnerability? • Is the policy just? Does it address historical disparities and cultural differences? • Does the policy change organizational norms and operationalize equity within government processes?

TRANSGENERATIONAL EQUITY **T**	Can be advanced through decisions that consider generational impacts and do not result in unfair burdens on future generations. This is particularly pertinent with climate change, as present-day actions (or non-actions) will undoubtedly affect subsequent generations. Questions to ask in policy design: • Is this policy guiding long-term thinking? • What are the impacts to future generations? • What are the unintended consequences of this policy?

(Tlhotlhalemaje, 2021; BPHC, 2019)

EQUITY STRATEGIES

Designing equitable policy should draw intention towards addressing root causes of social vulnerability, deriving multiple co-benefits, and including socially vulnerable communities in the process (BPHC, 2019; USDN, 2017).

ROOT CAUSES

Social inequities can be addressed while promoting community resilience to climate change. This includes prioritizing communities most impacted by climate change and mitigating potential negative impacts (USDN, 2017). As identified in Section 2, populations most vulnerable to extreme heat, wildfire, and flooding include: children and older adults, urban Indigenous populations, visible minorities, low-income households, single-person households, and renters. Each of these communities are diverse and require engagement to further understand specific needs and priorities in Kelowna, through principles and considerations reinforced by Section 3. Figure 14 on page 55 illustrates a number of potential areas for transformative actions that address many of the root causes of climate vulnerability.

> ***"There needs to be specific policy language to address resource gaps or to make sure that resources are flowing to people who are actually at risk of the impacts of climate change. You know, they can't be broad level community statements, they really need to consider who is at the biggest risk and incorporate policy language around how to address those gaps."***
>
> ***- Interview Participant***

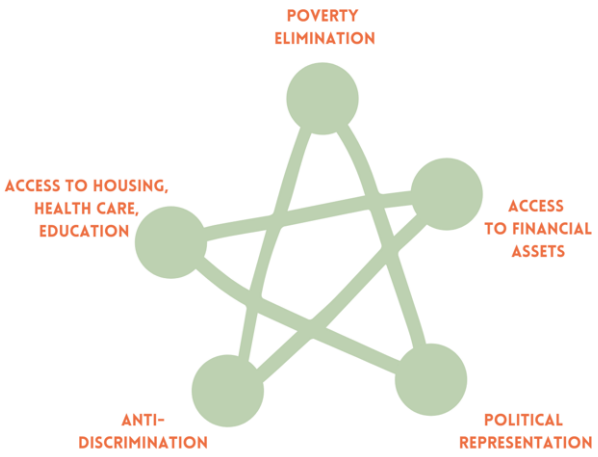


Figure 14. Transformative actions

Adopted from USDN, 2017

CO-BENEFITS

Understanding and addressing drivers of climate vulnerability and climate change requires an integrated approach that accounts for the complexity of climate equity issues (USDN, 2017). Concepts such as neighbourhood resiliency, public and community health and well-being, environmental justice, public participation, capacity building, sustainable transportation, and place-making, all relate to climate resiliency (City of Vancouver, 2021). Resilience policies that focus on climate equity can support those who are at most risk and deliver benefits to all residents of Kelowna.

Indigenous worldviews offer an alternative to institutional silos by centering on reciprocity and the interconnection of relationships (Indigenous Climate Action, 2018). In policy design, collaboration is needed across multiple City departments, First Nations, and regional organizations to seek co-benefits to policy solutions. Through meaningful and full inclusion of Indigenous peoples, climate policy can be made more just and uphold Indigenous rights, knowledge, and sovereignty (Ibid).

COMMUNITY ENGAGEMENT

Climate policies fail to address climate equity when they are void of community involvement. Equitable policy design will identify strategies that prioritize benefits to communities at greatest risk and will work with the communities to evaluate and implement actions (USDN, 2017). They provide an opportunity for learning, building understanding, strengthening relationships, and new partnerships and collaboration through the process (City of Vancouver, 2021). Equitable community engagement should follow principles and considerations as outlined in Section 3.

4.3 Housing Policy

CLIMATE EQUITY CONSIDERATIONS

Housing type, tenure, and location play a key role in a population's exposure and adaptive capacity to extreme heats, wildfire, and flooding (Hoogeveen, Klein, Brubacher & Gislason, 2021). Poor housing quality, as measured by air quality, thermal comfort, home safety, space per individual, and the presence of mold, pests, asbestos, or lead, increase an individual or families' vulnerability to climate-related events (BPHC, 2019). The age of building stock contributes to these issues, impacting energy efficiency and the structural integrity to withstand climate shocks.

Housing policies that address climate equity generally strive to:

1. Weatherize housing,
2. Locate affordable housing in safe, connected areas, and
3. Maintain affordability and reduce displacement.

These policies should be paired to maximize inclusivity– for example, pairing energy efficiency tax credit or rebates with an accessible communications strategy (BPHC, 2019).

Weatherize Housing

Policies generally aim to improve household access to clean, cool air. An increase in extreme temperatures and wildfire smoke will result in higher energy use, increasing utility costs and greenhouse gas emissions (City of Austin, 2020). Pursuing energy efficiency and renewable energy for both new and old residential developments should benefit, not burden, vulnerable populations (City of Portland, 2015). It is critical to prevent or minimize these costs being passed down to tenants, which could exacerbate housing affordability challenges (City of Toronto, 2021).

> ***"This summer we saw multiple days in Kelowna above 45 degrees, and for a long period of time, over two or three weeks. From personal experience, there is a high cost of electricity to keep your home cool. We need to make sure there are community resources available for all members of our community to stay cool."***
>
> - ***Interview Participant***

Complete Communities

Locating affordable and accessible housing along frequent transit routes, including well-connected bike and pedestrian pathways, can improve individual and households' access to services, both year-round as well as during a climate-event. Reducing car-dependency may improve community social cohesion (City of Portland, 2019). These together work to improve adaptive capacity.

Reduce Displacement

Major climate-events, like a fire or flood, can also impact the availability and adequacy (e.g., mold, structural integrity) of housing stock in a community. Such a shortage may disproportionately impact those with lower income, and drive displacement and homelessness (BPHC, 2019; City of Austin, 2020). Short term evacuation and longer-term displacement of communities can sever social ties, further limiting community resiliency (City of Austin, 2020). The policies below aim to mitigate displacement by limiting development in flood-prone areas, promoting insurance for all households, and mitigating gentrification of cooling efforts, such as neighbourhood greening.

Sample Policies

In Table 6 on below, icons indicate the type of equity the policy promotes, as well as its ability to address heat, fire, and flooding. A full table of housing policy examples can be found in Appendix G.

Table 6. Housing Policy Samples

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
WEATHERIZE			
	S D	**GOAL-** Upgrade existing buildings and design new buildings and development projects to withstand climate change impacts. **ACTION-** Improve thermal safety of buildings to increase resilience to extreme heat, especially in the event of a power outage. Identify existing residential building typologies (e.g., high rises, garden style) where residents are at highest risk during extreme heat events and develop policies to support and encourage retrofits and upgrades.	District of Columbia's Plan to Adapt to a Changing Climate

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
COMPLETE COMMUNITIES			
	D T	**GOAL-** Create vibrant neighbourhoods where 80% of Portland residents can easily walk or bike to meet all basic daily, non-work needs and have safe pedestrian or bike access to transit. **ACTION-** Affordable Housing Access to Transit. Use regulatory and voluntary tools to promote affordable and accessible housing development along existing and planned high-capacity transit lines, frequent transit routes and in opportunity areas identified by the Portland Housing Bureau. a) Identify additional affordable housing opportunities as part of the SW Corridor and Powell- Division high-capacity planning projects. b) Evaluate needs for safe, direct bicycle and pedestrian access to transit in areas near affordable housing. c) Support legislation to repeal the State pre-emption on inclusionary zoning.	City of Portland Climate Action Plan
MITIGATE DISPLACEMENT			
	S P	**GOAL-** Raise structures above flood level. **ACTION-** Conduct vulnerability assessment and work with community groups and residents to identify areas prone to flooding. Prioritize lower-income housing and developments for programs to raise existing structures above flood level.	USDN Guide For Equitable Community-Driven Preparedness

4.4 Land Use Policy

CLIMATE EQUITY CONSIDERATIONS

Land use guides community development and mobility. It impacts access to amenities, services and resources, and the safety and durability of the built environment. In the face of a climate-related event, critical infrastructure (often called lifeline infrastructure) is imperative for a communities' ability to withstand and recover from impacts (Chang, 2010). The City's transportation, building codes, and ecosystem and cultural services, all play a role in an individual's and communities' ability to withstand, recover from, and adapt to shocks.

Policies that work to address climate equity strive to:

1. Upgrade infrastructure and buildings,
2. Improve transportation networks, and
3. Ensure cultural and ecosystem services protection.

Buildings and Facilities

A changing climate will impact where, and how, a city is built. Land use planning can limit development in low-lying and high-hazard areas and guide adoption of building codes that strengthen structures (Peacock et. al, 2014). Upgrades and new development should lessen existing inequalities and apply systems thinking, new technologies, and innovative policies (City of Vancouver, 2021). These interventions should target reducing risk to critical infrastructure and buildings while supporting the well-being of present and future residents (Ibid). Building resilience should account for renewable and reliable back up energy, providing power to critical facilities, such as emergency shelters, hospitals, police, and fire stations in a hazard-event (District of Columbia, 2016). These solutions may be at the neighbourhood-scale and include community leadership, including district energy systems, stormwater and reuse systems, and the concept of community resilience hubs (Ibid).

Transportation

Networks of roads, bridges and transit infrastructure are critical for evacuation, emergency response, and access to services are vital to community resilience in the event of extreme weather (District of Columbia, 2016). By updating design standards to account for future flooding, wildfires, and extreme temperatures, the city can improve the resilience of these systems while identifying alternative evacuation routes for flood-prone and fire-risk areas (Ibid). Transportation is also critical when considering access to climate relief interventions. Cooling centers may not be accessible to populations with limited mobility or located in neighborhoods at greatest risk of impacts from climate hazards (USDN, 2017). It is important to consider not just proximity to public transit, but the transit experience, including affordability, reliability, frequency of service, and safety (BPHC, 2019).

Sample Policies

In Table 7 below, icons indicate the type of equity the policy promotes, as well as its ability to address heat, fire, and flooding. A full table of land use policy examples can be found in Appendix G.

Table 7. Land Use Policies

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
BUILDINGS & FACILITIES			
	P D	**GOAL-** Make neighborhoods and communities safer and more prepared by strengthening community, social, and economic resilience. **ACTION-**Deploy neighborhood-scale resilience solutions. Leverage ongoing work with neighborhood planning to begin to implement neighborhood-scale resilience solutions including district energy and micro grids, and district stormwater and water reuse systems. Explore the creation of Community Resilience Hubs which would locate emergency preparedness and response supplies and training in resilient community facilities, be they privately or publicly owned (e.g., churches, community centers, etc.).	District of Columbia's Plan to Adapt to a Changing Climate
TRANSPORTATION			
	S P	**GOAL**- Strengthen and reconnect communities by increasing density, diversity of land uses and location efficiency. **ACTION**-Design public space and the transportation system to advance disability justice by co-developing plans and projects with diverse elements of the disability community and understanding their needs before designs are complete.	City of San Francisco's Climate Action Plan

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
PROTECTING ECOSYSTEM & CULTURAL SERVICES			
	P	**GOAL**- By 2030, legally protect an additional 20,000 acres of carbon pools on natural lands and manage all new and existing natural areas (approximately 70,000 acres total), focusing on resilience. **ACTION-** Prepare natural lands for climate change and avoid catastrophic loss of carbon pools through active, intentional, and holistic management. Leverage Traditional Ecological Knowledge of local Indigenous people and compensate them appropriately for their time, expertise, and contributions. Plans, policies, and programs clearly state how Indigenous people will be involved in and benefit from stewards of lands that have historically been in their care.	Austin Climate Equity Plan

4.5 Urban Design Policy

CLIMATE EQUITY CONSIDERATIONS

Urban design influences how individuals and communities experience buildings, public spaces, and landscapes. Faced with changing climate pressure, urban design can aid in both mitigation and adaptation.

The examples of policies below aim to:

1. Prioritize neighbourhoods with a higher proportion of impervious surfaces for expanding green spaces, tree planting, cool roofs and green infrastructure,
2. Design cooling centres, critical infrastructure, and public space to meet the diverse needs of the community, and
3. Mitigate gentrification and include community members through the process.

Neighbourhood Greening

Neighbourhood landscape plays a critical role in an individual's and communities' sensitivity and adaptive capacity to extreme heats, wildfire, and flooding. Neighborhoods with large areas of pavement and buildings, minimal greenspace, and tree canopy cover will be more negatively impacted by the Urban Heat Island effect and extreme heat (District of Columbia, 2016). Similarly, a lack of impervious surfaces will impact water draining and flooding, while lack of tree canopy cover will impact filtering of clean air in the event of a wildfire. Policies that seek to advance climate equity prioritize underserved neighbourhoods for greening efforts.

Public Space & Building Design

Adaptation strategies, along with public spaces and amenities should take into consideration the needs of the most vulnerable populations. Decision-making should be carried out through community engagement and an understanding of the multiple, intersecting design objectives. This may include reclaiming underused public spaces for greening, designing public spaces for social connection, and designing cooling centres that respond to different gender, accessibility, and caretaker (pets, children, seniors) needs (Hoogeveen, Klein, Brubacher & Gislason, 2021).

Strengthening Community Relationships

Importantly, neighbourhood investments must not create upward pressure on rents and property values. Equitable policies seek to minimize the effects of gentrification on low-income populations, including measures such as rent control (City of Portland, 2015). Policies may also address procedural equity in carrying out programming in partnership with local community organizations and First Nations, while integrating traditional ecological

knowledge. This may help to strengthen social cohesion, further reducing vulnerability to extreme heats, wildfire, and flooding.

Sample Policies

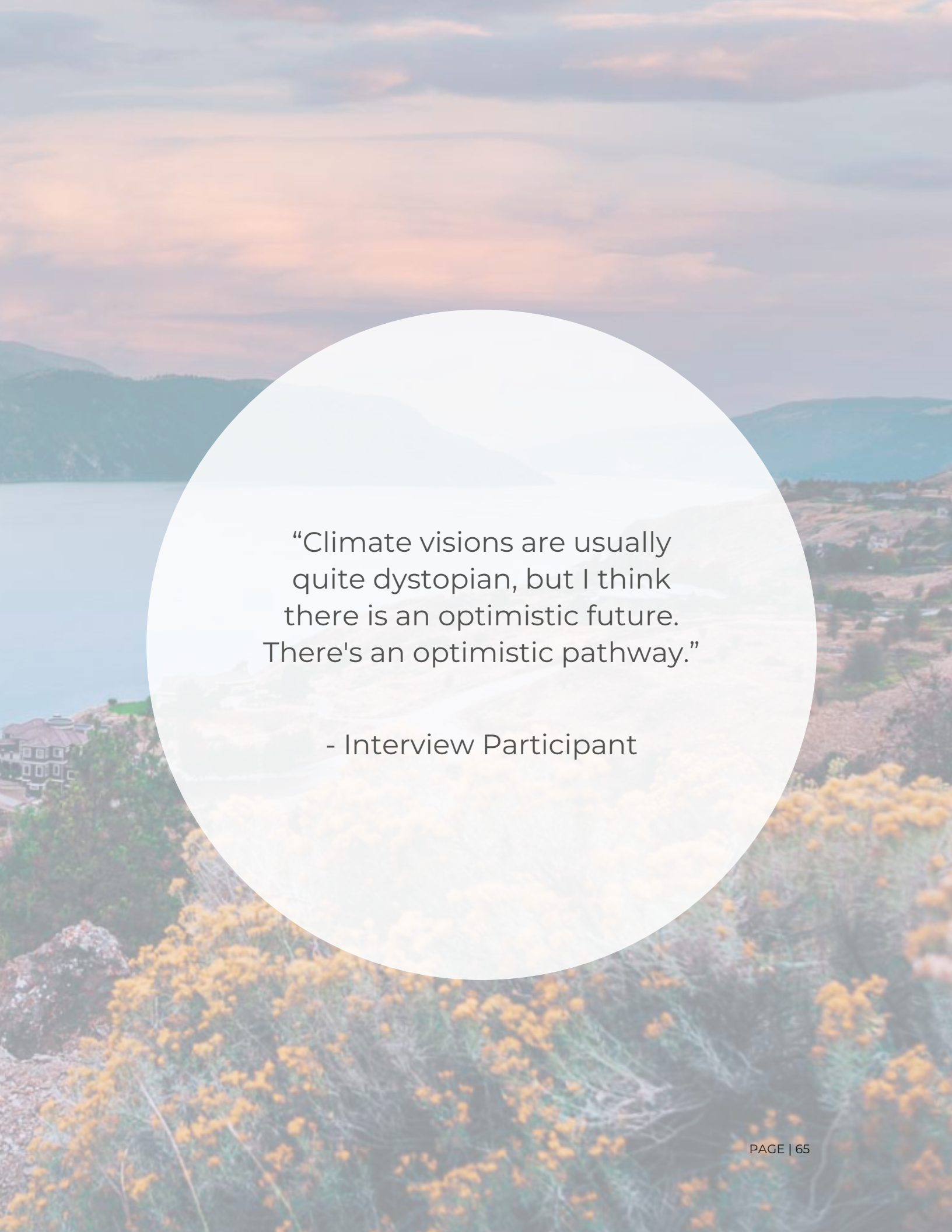
In Table 8 below icons indicate the type of equity the policy promotes, as well as its ability to address heat, fire, and flooding. A full table of urban design policy examples can be found in Appendix G.

Table 8. Urban Design Policies

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
NEIGHBOURHOOD GREENING			
	S T	**GOAL**- Sequester carbon through increased green infrastructure and natural areas. Reduce effective impervious areas by 600 acres. Expand the urban forest canopy to cover at least one-third of the city. **ACTION-** Continue tree planting and expand tree preservation and maintenance programs and incentives. a) Focus on low-canopy neighborhoods and neighborhoods with populations at higher risk of adverse outcomes of urban heat island effects. b) Explore options for public and private partnerships to help reduce or share the cost of tree planting and maintenance. **ACTION-** Research, evaluate and integrate the economic, social and ecological benefits (ecosystem services) of natural resources and green infrastructure in land use and infrastructure planning, programs and projects. Prioritize areas with historical and current underinvestment.	City of Portland Climate Action Plan
	P	**GOAL-** Increase equitable community participation and perspectives in nature-based climate solutions, including meaningful efforts to prioritize Indigenous science and TEK. **ACTION**-The City will engage American Indian tribes, cultural bearers, neighborhood organizations, local businesses, the San Francisco Unified School District, and non-profit organizations during the planning and implementation of greening projects, including for the purpose of local hiring and workforce development.	City of San Francisco's Climate Action Plan

HAZARD	EQUITY	POLICY EXAMPLE	JURISDICTION
PUBLIC SPACE & BUILDING DESIGN			
	P T	**GOAL**- Shape an inclusive city that can adapt to change and turn challenges into opportunities. **ACTION**- Create and test a Resilient Neighbourhood Design Framework, a neighbourhood design tool that connects physical design indicators with resilience objectives to understand co-benefits and trade-off of different approaches.	Resilient Vancouver Strategy

Strategic Direction



“Climate visions are usually quite dystopian, but I think there is an optimistic future. There's an optimistic pathway.”

- Interview Participant

5.1 Strategic Direction

Planning for climate equity requires an integrated approach across engagement and policy design processes. This approach entails an understanding of the spatial distribution of climate risk and prioritizing at-risk communities, valuing lived experiences, while addressing root causes of social vulnerability in policy. Below are long-term recommendations for the City of Kelowna's consideration in the development of a Climate Resiliency Strategy, and work in climate equity beyond. These recommendations are considered continuous processes, supported by short to medium-term (one - seven years) actions identified throughout the report.

1. RESIST A STANDALONE STRATEGY

A Climate Resiliency Strategy will succeed to the extent that it is integrated with other social and environmental strategies. Seek to maximize co-benefits and reduce co-risks to health and wellbeing, safety, equity, housing, environmental justice, poverty reduction, and decolonization, accounting for systems and their interdependencies.

Short-Medium Term Actions:

- Work across City departments, with Syilx Okanagan people and regional stakeholders (health, food bank, housing, etc.) to weave climate equity across municipal and regional initiatives.
- Pair actions, such as policies that address the root cause of social inequities with community preparedness measures to reduce social vulnerability and improve adaptive capacity.
- Advance procedural equity through plan implementation and review. Consider tracking vulnerability indicators and engaging with socially vulnerable populations to foster ongoing learning and mitigate unintended consequences.

2. PRIORITIZE AT-RISK COMMUNITIES

With limited resources, time and internal capacity to address climate inequities in Kelowna, it is imperative to prioritize at-risk communities as indicated in Section 2. Intentionally prioritizing long-term investments in relationships with socially vulnerable populations and allocating resources to these communities will result in greater climate equity and co-benefits for all of Kelowna.

Short to Medium Term Actions:

- Prioritize at-risk communities for climate interventions, addressing existing resource gaps.
- Review stakeholder list and map out existing relationships and where partnerships can be built.
- Allocate resources to partner with trusted community organizations.
- Continue building long term reciprocal relationships by establishing a Climate Equity working group including community leaders for ongoing support and work.

4. BUILD RISK AND VULNERABILITY KNOWLEDGE

Climate equity entails reducing existing inequities and addressing community needs and priorities. This requires a more fulsome picture of risk and vulnerability in Kelowna, informed by the best available data and meaningful participation of socially vulnerable communities, while acknowledging risk and vulnerability are dynamic in nature.

Short to Medium Term Actions:

- Reduce spatial data gaps and continue to build on spatial analysis for a more complete understanding of disparities in Kelowna. This includes:
    - Additional social vulnerability indicators, such as chronic health conditions, education attainment, insurance and LGBTQIIA+ communities.
    - Indicators to assess vulnerability of built environment, such as age of buildings and impervious surfaces; and
    - Access to physical interventions, such as cooling centers and green spaces.
- Complement quantitative data with lived experiences. This may include:
    - Understanding the intersecting demographics of area prior to emergency, and meeting people where they are at; and
    - Determining risk awareness and past experiences of people.
- Monitoring data to understand how risk and vulnerability change over time.

4. NORMALIZE AND OPERATIONALIZE EQUITY

To address systemic barriers to climate resiliency, embed equity in local government organizational culture through process changes over the long-term.

Short to Medium Term Actions:

- Allocate resources to increase staff capacity around equity, including but not limited to continuing education on racial equity, anti-racism, environmental racism, environmental justice, implicit bias, and equitable engagement.
- Implement the forthcoming equity framework to guide city-wide decision-making.
- Foster a learning organization that cultivates a feeling of trust and safety throughout the organization, encourages risk-taking and innovation, and allows the organization to remain flexible.

5. COMMIT TO RECONILITATION

Climate equity in Kelowna takes place on traditional, unceded Syilx Okanagan territory. There is a need for climate resiliency planning to be grounded in this understanding; to work to uphold Indigenous rights, value Traditional Ecological Knowledge, and to recognize the colonial legacy of the city's relationship with urban Indigenous peoples.

Short to Medium-Term Actions:

- Work towards building a reciprocal relationship with the Syilx Okanagan Nation and urban Indigenous communities.
- Design culturally appropriate and trauma-informed engagement strategies with urban Indigenous populations.
- Allocate the time and resources needed for reconciliation, be flexible in timelines and budgets to allow for deeper relationship and trust-building work.
- Appropriately compensate Indigenous people for their time and knowledge sharing in the planning process.
- Where appropriate, integrate Traditional Ecological Knowledge in landscape and urban design.
- Uphold the Calls to Actions from the Truth and Reconciliation Commission and articles under the United Nations Declaration on the Rights of Indigenous Peoples.

5.2 Conclusion

Kelowna is facing dynamic pressures– a rapidly growing population alongside increasingly intense climate-related events, including extreme heat, wildfire, and flooding. The risk of these climate hazards is unevenly distributed across the city due to existing social inequities. Considering the relationship between climate hazards and social inequities, this report provides strategic direction for the City of Kelowna to embed climate equity in the upcoming Climate Resiliency Strategy through planning policy and engagement.

The City can prepare and plan for a resilient future for all by:

1. Understanding the inequitable distribution of climate risk and prioritizing at-risk communities,
2. Embedding lived experiences through the planning process, and
3. Addressing root causes of social vulnerabilities through equitable policy design.

Social factors, such as age, race, economic status, social isolation, and housing play a role in an individual and populations' vulnerability to extreme heat, wildfire, and flooding. When combined with hazard exposure, this report identifies the **Central City, Pandosy-KLO, Glenmore Clifton and McKinley Landing** neighbourhoods in Kelowna to be most at-risk. While these communities are labeled "at-risk", social vulnerability should not be seen as a lack of personal resilience, but rather a symptom of systemic inequity (City of Vancouver, 2019). The City can take steps towards reducing social vulnerability and addressing climate equity through engagement and planning policy,

Equitable engagement may serve as a pathway to procedural equity. While there is no singular approach to equitable engagement, Section 3 of this report lays out a set of guiding principles and considerations for improving equity and diversity in engagement. At its core, equitable engagement places an emphasis on relationship-building and removing barriers to participation. In Kelowna, equitable engagement can help to prioritize and value the lived experience and knowledge of the community in pursuit of climate resiliency.

In the development of the Climate Resiliency Strategy, thoughtful policy can help to advance structural, distributional, transgenerational, and procedural equity (Tlhotlhalemaje, 2021). Section 4 offers housing, land use, and urban design policy ideas for the City to operationalize all four types of equity while reducing risk to extreme heat, fire, and flooding. Overall,

equitable policy should draw intention towards addressing root causes of social vulnerability, derive multiple co-benefits, and include socially vulnerable communities throughout the process (BPHC, 2019; USDN, 2017).

Overall, the Climate Resiliency Strategy is an opportunity to plan for a rapidly growing population while mitigating the impacts of, and adapting to, a rapidly changing climate. A climate equity lens not only minimizes risk to those most vulnerable but delivers co-benefits to the city as a whole. By addressing climate equity, the City of Kelowna can create a resilient future for all.

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APPENDICES

Appendix A – Glossary

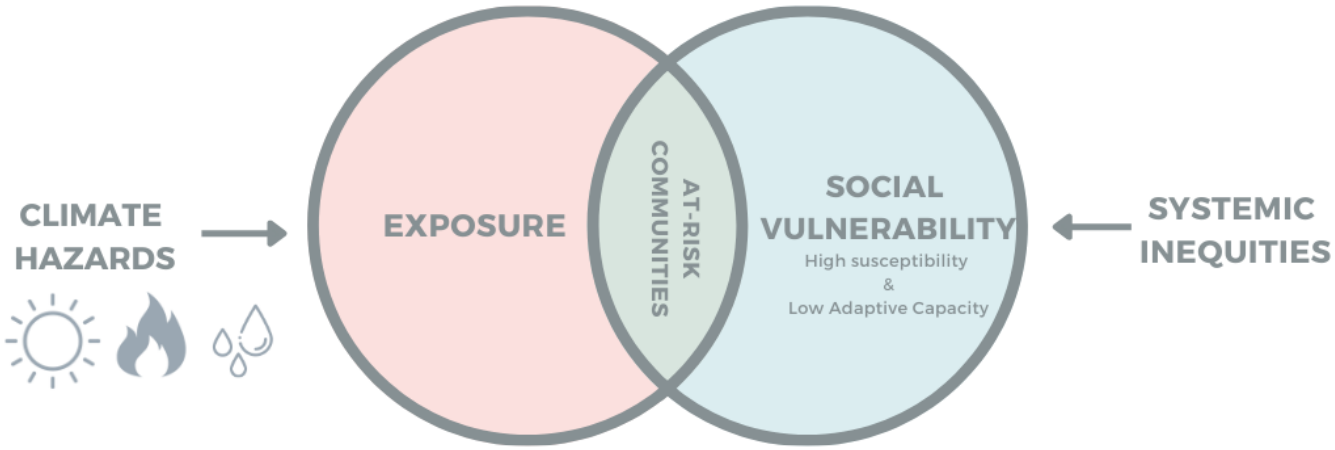
The following definitions provide a baseline for describing concepts relating to terms used in this report.

At-Risk Communities / At Risk Population

The term refers to the population who are highly exposed to heat, wildfire, and flooding, are highly susceptible to their adverse impacts, and have low adaptive capacity.

Climate Risk

While climate risk is felt throughout the interconnected systems, the term here refers to the likelihood of communities to experience adverse consequences of climate hazards. Risk is determined by exposure and vulnerability.



Climate Hazard

While climate hazards are various, in this report, climate hazard refers to extreme heat, wildfire and flooding.

Co-benefits

Co-benefits refers to simultaneously meeting several interests or objectives in policy decision-making.

Community Engagement (IAP2): A process through which community members are empowered to own the change they want to see and involves communication, problem solving, governance and decision-making skills and strategies. (Plan H, 2017)

Equity

There are four types of equity that relate to climate change (Tlhotlhalemaje, 2021):

Procedural

Can be advanced through inclusive and accessible community engagement, representation in decision-making, and transparency in government processes. Procedural equity increases civic engagement opportunities of communities that are disproportionately impacted by climate change. It also creates processes that are transparent, fair and inclusive in developing and implementing any program, plan or policy.

Distributional
Can be advanced through fair distribution of benefits and burdens across all segments of a community, and prioritizing resources for communities that experience the greatest inequalities, face disproportionate impacts, and have the greatest unmet needs.

Structural
Can be advanced through decisions made with recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups. Structural equity focuses on closing the gap so that factors such as race and economic status can no longer be used to predict life outcomes, and outcomes for all groups are improved.

Transgenerational
Can be advanced through decisions that consider generational impacts and do not result in unfair burdens on future generations. This is particularly pertinent with climate change, as present-day actions (or non-actions) will undoubtedly affect subsequent generations.

Exposure

The presence of people in places that could be affected by climate hazards.

Identities

Social categories applied to individuals based on physical or social features, such as age, race, class, gender identity, neurodiversity, and ability. Individuals with perceived similarity in physical and/or social features are grouped together; however, the degree to which an individual ascribes to a certain identity will vary. Every individual holds multiple identities, which collectively shape their relative privilege and marginalization in different contexts.

Intersectionality

The term “Intersectionality” was first coined by legal scholar Dr. Kimberle Crenshaw to describe the compounding inequities faced African-American women along racial and gender lines. There are multiple connected identities (i.e., age, race, class, ability, sexual orientation, gender identity among others) which shape and impact how people experience their environment, including discrimination and barriers to democratic participation in society.

Lived Experienced

Personal knowledge about the world is gained through first-hand involvement rather than representations constructed by other people. These experiences interact with an individual’s identities to shape their relative privilege and marginalization in different contexts.

Resilience

The ability of a community to prepare for, respond to and recover from adverse impacts of climate risk.

Root Cause

The underlying social, political, economic systems that produce social vulnerability.

Social Vulnerability

A measure of both the susceptibility of a population to climate hazards and its ability to withstand, respond to and recover from the adverse impacts (Cutter & Finch, 2008). That is, a person is more vulnerable to climate events when they - and have less resources to prepare and recover from hazards. Yet, it is important to recognize that the root causes of vulnerability are systemic inequity deeply embedded within the power and economic structures (Wisner et al., 2004). Using the term without acknowledging the systemic inequity is problematic as it may stigmatize or disempower the people who have been persevering despite the legacy of marginalization (National Collaborating Centre for Determinants of Health, n.d.).

Appendix B- Vulnerability Dimensions

EXTREME HEAT

EXPOSURE INDICATORS	SENSITIVITY INDICATORS	ADAPTIVE CAPACITY INDICATORS
Environmental • Daytime air temperature	**Demographic** • Age (under 4 and over 65 years)	**Socioeconomic** • Race • English proficiency • Income and poverty • Educational attainment
		Housing • Home ownership • Types of dwelling
		Social support • Living alone
		Physical environment • Tree canopy coverage • Parks • Cooling stations
		Mobility • Proximity to regional transit
Environmental • Nighttime surface temperature	**Health** • Mental illness • Pre-existing health conditions (e.g. cardiovascular, respiratory diseases, diabetes)	**Housing** • Air conditioning • Homelessness • Age of buildings
Physical Environment • Impervious surface		**Socioeconomic** • Outdoor occupations

WILDFIRE

EXPOSURE INDICATORS	SENSITIVITY INDICATORS	ADAPTIVE CAPACITY INDICATORS
Housing • Housing in WUI • Homes in the Wildfire DPA • First Nations reserves proximity to WUI	**Demographic** • Age (under 4 and over 65 years)	**Socioeconomic** • Race • Income and poverty
Physical environment • Fine particles from smoke (wildfire-specific PM2.5)		**Housing** • Home ownership • Types of dwelling • Home retrofits • Percentage of people with home insurance in the WUI/ DPA area
		Social support • Participation in wildfire mitigation programs
		Physical environment • Quality of road networks on evacuation routes
		Demographic • Gender
		Mobility • Proximity to regional transit
	Health • Pre-existing health conditions (e.g. cardiovascular, respiratory diseases, diabetes) • Mental illness • Pregnant people	**Mobility** • Access to vehicle
		Socioeconomic • Outdoor occupations

FLOODING

EXPOSURE INDICATORS	SENSITIVITY INDICATORS	ADAPTIVE CAPACITY INDICATORS
• Land area in the floodplain w • Building and facility, including critical infrastructure, located within floodplain	**Demographic** • Age (under 4 and over 65 years)	**Socioeconomic** • Income and poverty • Race • Education • English proficiency • Occupation in primary or tourism sectors
		Housing • Home ownership • Types of dwelling
		Social support • Living alone • Single-parents
		Physical environment • Urban drainage systems
		Citizenship status • Recent immigrants
• Impervious surface	**Health** • Mental illness • Pre-existing health conditions (e.g. cardiovascular, respiratory diseases, diabetes)	**Housing** • Flooding insurance • Homelessness • Age of buildings
		Mobility • Access to vehicle

Appendix C- IAP2 Spectrum of Engagement

IAP2 spectrum

developed by the international association for public participation

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives and/or solutions.	To obtain public feedback on analysis, alternatives and/or decision.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

iap2 international association for public participation CANADA

Appendix D- Strategies for Removing Common Engagement Barriers

Barrier	Mitigation + Activity	Additional resources
Time & Date	• Consider seasonality & ensure engagement does not interfere with other climate crisis (eg: Don't engage on flooding during wildfire season) • Consider time of day and temperature • Hold sessions at different times of the day and week • Record sessions for digital users with captions if they are not able to attend the event due to timing • Know and research important cultural and religious events • Know the general expectation around time- is it more important for the group to be flexible or is keeping to the scheduled timeframe	• Multiple forms of engagement for maximum chance of input (online surveys, online forums) • Hybrid events using Zoom or other digital engagement tools
Location	• Connect with neighborhood house groups, local religious organizations, local sports teams and set up events where there is already activity. • Go where people already are gathering • Provide customized surveys at pop up events	"Kitchen Table " conservations lead by community leaders, can include a self-directed guided discussion with a point person who reports back what they heard on climate action. This can take place within homes or communities and does not require people to move.
Financial burden	• Provide childminding or available toys, bus passes, a meal and culturally appropriate compensation (money, coupons to local businesses etc...)	N/A

Communication	• Use images where possible • Use high contrast colors and large font for visually impaired on posters • Provide multiple ways for feedback both verbal and non-verbal • Allow extra time and space for feedback in sessions • Provide an interpreter to in person events and live closed captioning on digital events • Consider background videos to provide background information on a project in a visually engaging way and can help to explain the context, key issues, and considerations before launching engagement that can be pause and slowed down according to viewers needs. Disseminate on multiple platforms. • Translate documents and resources into languages common in at-risk communities. This can be determined used census data. • Partner with community organizations to determine how people best receive information in that community (eg: Radio ads, Facebook groups, newpaper ads) • Coordination with existing lists of residents who would require assistance, as in Fire Safety Plans. • Coordination of response plans to enable all community service providers to share timely information and warning notices and conduct	Hemingway Editor 5 accessibility tools to check your design's contrast ratio

	outreach directly to affected	
Gender	• Follow Advancing Equity and Inclusion Guide for Municipalities • Partner with LGBTQIIA+ organizations for event support • Adopt GBA+ lens and recommendations	
Institutional & Governmental Mistrust	• Partner with community ambassadors to lead engagement in safe spaces • Provide leadership training to community ambassadors, ideally people who are members of the same community	
Accessibility	• Follow accessibility check list to audit venues for access • Provide details and room specifications to participants in advance of the event	City of Vancouver Accessibility Resources and Checklist
Cultural differences	• Partner with community organizations with a shared identity and compensate the leaders appropriately	Engaging Ethno-cultural Communities Toolkit by Ethno-Cultural Council of Calgary Cultural Competence by Gov't of Alberta

Appendix E- Resources and Tools for Equitable Engagement

FACILITATION TOOLS

- National Coalition for Dialogue & Deliberation. (2010). Resource Guide on National and Public Engagement. Retrieved from
- https://www.ncdd.org/uploads/1/3/5/5/135559674/ncdd2010_resource_guide.pdf
- See Suggested Engagement Tools Appendix for more resources

COVID-19 ENGAGEMENT RESOURCES

- Ali, A., Blain, B. C. (2020). Safe and Equitable Engagement Spaces in the Age of COVID-19. SFU Morris J. Wosk Centre for Dialogue. Retrieved from https://www.sfu.ca/content/dam/sfu/centre-for-dialogue/News%20and%20Events/COVID19/Inclusion%20Webinar%20Highlights.pdf
- Argyle PR. (2020, March 23). Engaging in an era of COVID-19. Youtube. Retrieved from https://www.youtube.com/watch?v=TcCr9EXJKz0&feature=youtu.be
- COVID-19: How to include marginalized and vulnerable people in risk communication and community engagement. (2020). https://reliefweb.int/sites/reliefweb.int/files/resources/COVID-19_CommunityEngagement_130320.pd
- Farrow, J., Swerhun, N., Ebrahim, Z., Gibbs, A. (2020, April 9). How Public Engagement and Participation Processes Change? Canadian Urban Institute. Retrieved from https://canurb.org/citytalk-news/cities-in-the-time-of-covid-19-how-will-public-engagement-and-participation-processes-change/?tab=panel-transcript
- International Association for Public Participation. (2020) COVID-19 P2 Resources: IAP2 Webinars. Retrieved from https://www.iap2canada.ca/COVID-19-Public-Participation-Resources

CLIMATE COMMUNICATION

- Government of British Columbia. (n.d.). CleanBC Roadmap to 2030. Retrieved from:
    - https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf
- BEST PRACTICES: COMMUNICATING ON CLIMATE CHANGE
    - CleanBC offers two key takeaways that climate communication is about people and language.
      1. Put People at the Heart of Things
        - Talk about actual, tangible areas that people love and value (parks, clean water), not the “climate”.
        - Build on the value of pride in being people who prepare
        - Trusted leaders

        - Stories trump science
        - Message needs to be realistic, but positive with confidence building actions.

    2. Use language that resonates

        - Use simple language in documentation and advertisements
        - When trying to convince an audience of urgency, use “re” words (rebuild, respect, resolve, renew, restore etc…)
        - There needs to be hope, this can be communicated through positive branding, graphically stimulating and uplifting fonts, colors and rather than doom and gloom images

- Futerra Sustainability Communications.(2011). Sell the Sizzle. Retrieved from: https://futerra-assets.s3.amazonaws.com/documents/Sell_the_sizzle.pdf
    - See “ Sell the Sizzle” as an example of positive communication.
    -

ADDITIONAL GUIDES AND WHITE PAPERS ON CLIMATE COMMUNICATION

- TALKING IT THROUGH A DISCUSSION GUIDE FOR LOCAL GOVERNMENT
- STAFF ON CLIMATE ADAPTATION
- Having the Climate Conversation: Strategies for Local Governments
- Risk Communication for empowerment An ultimate or elusive goal?
- The role of social and decision sciences in communicating uncertain climate risks
- Climate change adaptation through an equity lens
- Climate Risks- Engaging Vulnerable Populations
- Promoting Equitable Climate Adaptation through Community Engagement

BARRIER REMOVAL RESOURCES

Accessibility

- Event Accessibility Checklist: City of Vancouver. (2022). Accessible events checklist and resources. Retrieved from: https://vancouver.ca/people-programs/accessible-events-checklist-and-resources.aspx
- Language Readability Tool: Hemingway Editor
- Tools for Graphic Design for Visually Impaired: 5 accessibility tools to check your design's contrast ratio

Visible Minorities

- Toolkit for Engaging Ethno-Cultural Communities: Ethno-Cultural Council of Calgary. (2013). Engaging Ethno-cultural Communities Toolkit. Retrieved from: https://actiondignity.org/wp-content/uploads/2018/07/Engage_Toolkit_2013.pdf

Gender

- Kelowna Pride (See Stakeholder List)

- City for All Women Initiative. (2015). Advancing Equity and Inclusion Guide for Municipalities. Retrieved from: https://www.cawi-ivtf.org/sites/default/files/publications/advancing-equity-inclusion-web_0.pdf

Appendix F- Resources and Tools for Resilience Planning

Type of Resource	Source	Title	Year
Municipal Plans	City of Vancouver, British Columbia	Resilient Vancouver Strategy	2021
	City of Portland, Oregon	Climate Action Plan	2015
	City of Toronto, Ontario	TransformTO: A Climate Action Pathway to 2030 and beyond	2021
	City of San Francisco, California	San Francisco's Climate Action Plan	2021
	District of Columbia, Washington	Climate Ready DC	2016
	City of Austin, Texas	Austin Climate Equity Plan	2020
	City of Providence, Road Island	Climate Justice Plan	2019
	City of Montreal, Quebec	Climate Plan 2020-2030	2019
	City of King County, Washington	King County Strategic Climate Action Plan	2015
	City of Vancouver, British Columbia	Climate Change Adaptation Strategy	2018
	City of Boston, Massachusetts	Climate Action Plan	2020
	Saanich, British Columbia	Climate Plan: 100% Renewable & Resilient Saanich	2020
	City of Halifax, Nova Scotia	HalfiACT Acting on Climate Together	2020
	City of Kamloops, British Columbia	Community Climate Action Plan	2021
	City of Ottawa, Ontario	Climate Change Master plan	2020
	City of Calgary, Alberta	City of Calgary exploring climate equity	2021
	City of Vancouver, British Columbia	Rain City Strategy	2019
Indigenous Plans	Westbank First Nation	Community Wildfire Protection Plan	2020
	Syilx Okanangan	Syilx Okanangan Projects	n.d.
	Tseil-Waututh Nation	TWN Climate Change Resilience Plan	2021
	Kanaka Bar Band	Kanaka Bar Band Adaptation Strategy	2019
Municipal Reports & Guides	City of Boston, Massachusetts	Carbon Free Boston Social Equity Report 2019	2019
	City of Chula Vista, California	Chula Vista Climate Equity Index	n.d.
	City of San Diego, California	City of San Diego Climate Equity Index Report	2019
	Urban Sustainability Directors Network	Guide to equitable comunity-driven climate planning	2017
	Evergreen Foundation	Climate Risks- Engaging Vulnerable Populations	2020
	UBC Sustainability Scholar	A Climate Equity Framework for the City of New Westminster	2021
	SFU & City Studio	Climate Action Equity in Canada	2021
	Canadian Institute of Planners	Policy on Climate Change Planning	2018
	American Planning Association	Planning for Equity Policy Guide	2019
	National Fire Protection Association	Community Wildfire Safety Through Regulation	2016
	Toronto Environmental Alliance	An equity review of the City of Calgary's Climate Resilience Strategy	2021
Indigenous Reports & Guides	City of Toronto, Ontario	Indigenous Climate Action Report	2018
	Centre for Indigenous Environmental Resources	Climate Chage Adaptation Planning Toolkit for Indigneous Communities	2020
	Indigenous Climate Action	Decolonizing Climate Policy	2021
Provincial Reports & Guides	BC Ministry of Environment and Climate Change Strategy	Climate Change, Intersectionality, and GBA+ in British Columbia	2021
	BC Ministry of Environment and Climate Change Strategy	Social Impacts of the 2018 Grand Forks Flood: A Gender Based Plus Analysis of Climate Risk	2021
Learning Networks and Other Resources	Royal Roads University	Adaptation Learning Network	
	New Brunswick Environmental Network (NBEN)	Natural and Nature-Based Climate Change Adaptation Community of Practice	
	Action on Climate Team	Adaptation Equity Portal	
	Indigenous Climate Hub	Indigenous Community Adaptation Projects	
	Centre for Indigenous Environmental Resources	Case Studies	
	Resilient Cities Network	Resilient Cities Network	

Appendix G – Example Climate Policies

Housing Policies

Hazard	Equity	Policy Example	Jurisdiction
		WEATHERIZE	
Heat, Wildfire	Distributional, Transgenerational	GOAL- Reduce the total energy use of all buildings built before 2010 by 25 percent. ACTION- Partner with Clean Energy Works, Energy Trust of Oregon, utilities and contractors to retrofit 1,000 homes and improve the efficiency of 1,000 multifamily units per year. Establish minimum standards for rental housing.	City of Portland Climate Action Plan
Heat, Wildfire	Structural, Transgenerational	GOAL- Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems and use types. ACTION- By 2023, develop and adopt tenant protection and anti-displacement policies for renters in buildings transitioning to efficient and all- electric systems.	City of San Francisco's Climate Action Plan
Heat, Wildfire	Structural, Transgenerational	GOAL- Invest in local renewable energy and energy resilience projects. ACTION- Assist affordable housing developments with installing on-site solar and battery storage and meeting City energy efficiency and solar energy requirements.	City of San Francisco's Climate Action Plan
Heat, Wildfire	Distributional, Procedural, Transgenerational	GOAL- Increase access to renewable energy for frontline communities via community solar other programs.	City of Providence Climate Justice Plan

		ACTION- Increase access to renewable energy for frontline communities via community solar other programs. Work with frontline community organizations and members to implement policies and programs to increase access to renewables.	City of Providence Climate Justice Plan
Heat, Wildfire, Flood	Structural, Distributional	GOAL- Upgrade existing buildings and design new buildings and development projects to withstand climate change impacts. ACTION- Improve thermal safety of buildings to increase resilience to extreme heat, especially in the event of a power outage. Identify existing residential building typologies (e.g. high rises, garden style) where residents are at highest-risk during extreme heat events and develop policies to support and encourage retrofits and upgrades.	District of Columbia's Plan to Adapt to a Changing Climate
Heat, Wildfire	Distributional, Procedural	GOAL- Affordable, efficient, and clean energy ACTION- Expand knowledge of and access to existing energy efficiency programs. Work with frontline community organizations and the Community Action Partnership of Providence (administrator of the Low Income Home Energy Assistance Program (LIHEAP) to expand knowledge of, access to, and better evaluations of existing energy efficiency programs, especially to frontline community members in culturally-appropriate ways.	City of Providence Climate Justice Plan
Wildfire, Heat	Distributional	GOAL- Support air conditioning to filter air pollutants. ACTION- Support energy assistance programs for lower-income residents. Establish subsidy or rebate system to assist	USDN Guide For Equitable Community-Driven Preparedness

		lower-income residents to purchase and install air conditioning.	
Wildfire	Distributional, Structural, Procedural	GOAL- Weatherize homes to reduce indoor pollution. ACTION- Support low-income weatherization/ energy efficiency programs. Expand job training opportunities of lower-income residents for weatherization installation projects. Develop tenant-landlord agreement to retrofit rental housing.	USDN Guide For Equitable Community-Driven Preparedness
		COMPLETE COMMUNITIES	
Heat	Distributional, Transgenerational	GOAL- Create vibrant neighbourhoods where 80% of Portland residents can easily walk or bike to meet all basic daily, non-work needs and have safe pedestrian or bike access to transit. ACTION- Affordable Housing Access to Transit. Use regulatory and voluntary tools to promote affordable and accessible housing development along existing and planned high capacity transit lines, frequent transit routes and in opportunity areas identified by the Portland Housing Bureau. a) Identify additional affordable housing opportunities as part of the SW Corridor and Powell- Division high capacity planning projects. b) Evaluate needs for safe, direct bicycle and pedestrian access to transit in areas near affordable housing. c) Support legislation to repeal the State preemption on inclusionary zoning.	City of Portland Climate Action Plan

		MITIGATE DISPLACEMENT	
Heat, flood	Structural	GOAL- Avoid gentrification and displacement due to neighourhood greening projects. ACTION- Institute rent control and just-cause eviction laws and other strategies to maintain housing affordability.	USDN Guide For Equitable Community-Driven Preparedness
Flood	Structural, Procedural	GOAL- Limit development in flood prone areas and maintain affordable housing. ACTION- Ensure that affordable housing development projects are pursued in areas with low risk of flooding. Enact local hire benefits for new housing construction.	USDN Guide For Equitable Community-Driven Preparedness
Heat, Flood	Distributional	GOAL- Promote home insurance. ACTION- Establish a program or a system to subsidize insurance for lower-income households to both renters and homeowners.	USDN Guide For Equitable Community-Driven Preparedness
Flood	Structural, Procedural	GOAL- Raise structures above flood level. ACTION- Conduct vulnerability assessment and work with community groups and residents to identify areas prone to flooding. Prioritize lower-income housing and developments for programs to raise existing structures above flood level.	USDN Guide For Equitable Community-Driven Preparedness

Land Use Policies

Hazard	Equity	Policy Example	Jurisdiction
		BUILDINGS & FACILITIES	
Heat, Wildfire, Flood	Structural, Transgenerational	GOAL- Anticipate threats and mitigate and minimize disruption to civic infrastructure and critical services. ACTION-Map and design a disaster resilient lifelines network. Enable emergency service access and delivery of resources to critical facilities and hard to reach neighbourhoods, to guide long-term investment, policy and regulations.	Resilient Vancouver Strategy
Heat	Structural	GOAL- Reduce risks and impacts from heat, drought and wildfire by preparing for hotter, drier summers with increased incidence of extreme heat days. ACTION- Ensure detention facilities are capable of adequate cooling during extreme heat events and that public safety staff are properly trained to recognize and respond to physical and behavioral signs of heat-related illness.	City of Portland Climate Action Plan
Heat, Wildfire, Flood	Procedural, Distributional	GOAL- Make neighborhoods and communities safer and more prepared by strengthening community, social, and economic resilience. ACTION-Deploy neighborhood-scale resilience solutions. Leverage ongoing work with neighborhood planning to begin to implement neighborhood-scale resilience solutions including district energy and micro grids, and district stormwater and water reuse systems. Explore the creation of Community Resilience Hubs which would locate emergency preparedness and response supplies and training in resilient community facilities, be they privately or	District of Columbia's Plan to Adapt to a Changing Climate

		publicly owned (e.g., churches, community centers, etc.).	
Heat, Wildfire, Flood	Procedural	GOAL- Create vibrant neighbourhoods where 80% of Portland residents can easily walk or bike to meet all basic daily, non-work needs and have safe pedestrian or bike access to transit. ACTION- Develop and use a transparent and inclusive decision-making framework designed to achieve climate, equity, safety, health and prosperity goals when making major infrastructure, transportation, land use, community development and project development plan and investment decisions. Consider existing systems, like STARS and MOSAIC, as models.	City of Portland Climate Action Plan
Heat, Wildfire, Flooding	Structural, Transgenerational	GOAL- Invest in local renewable energy and energy resilience projects. ACTION- Explore developing grid-independent solar and storage at critical municipal facilities and other critical or vulnerable community sites.	City of San Francisco's Climate Action Plan
Flood	Procedural, Structural	GOAL- Stormwater and sewer infrastructure improvements. ACTION- Conduct vulnerability assessment and work with community groups and residents to identify areas prone to flooding and in need of sewer and stormwater improvements. Prioritize lower-income communities and communities of color at greatest risk of flooding impacts for stormwater and sewer infrastructure improvement projects.	USDN Guide For Equitable Community-Driven Preparedness
Flood	Structural	GOAL- Build protection measures, such as seawalls, levees, living shorelines, etc. where appropriate.	USDN Guide For Equitable Community-

		ACTION- Conduct vulnerability assessment and work with community groups and residents to identify areas prone to flooding and in need of infrastructure improvements. Prioritize communities most likely to be impacted by climate change for infrastructure projects.	Driven Preparedness
Heat, wildfire, flood	Procedural, Structural, Transgenerational	GOAL- Establish Green Justice Zones in Frontline Communities. ACTION- Green Justice Zones use a collaborative governance model with frontline communities to make investments in sustainability and equity in neighborhoods that have been disinvested in and are overburdened with pollution. The City of Providence would provide resources to support community members in developing action plans alongside City officials to address the priorities and concerns of the neighborhood. Green Justice Zones seek to achieve health equity, improve quality of life, and climate resilience in frontline communities. They should consider the following: • Microgrids in critical community spaces (i.e. schools, elder care facilities, community centers, etc.) to enable local energy generation, storage and consumption, add capacity and stability to the larger grid, and operate independently at times. • Resiliency Hubs • Participatory budgeting processes. • Weatherization, energy efficiency, electrification, and on site renewables, especially for low income community members. • Training and job opportunities in the above for local community members. • Policy tools such as zoning to prevent the burden of additional pollution in frontline communities.	City of Providence Climate Justice Plan

		TRANSPORTATION	
Heat	Structural, Transgenerational	GOAL- Build a fast and reliable transit system that will be everyone's preferred way to get around. ACTION- While meeting transit ridership goals, prioritize services and reduce obstacles for more vulnerable populations, neighborhoods with fewest mobility options, and populations that have faced historic disinvestment.	City of San Francisco's Climate Action Plan
Heat, Wildfire, Flood	Distributional	GOAL- Improve transportation and utility infrastructure in order to maintain viability during periods of extreme heat, severe weather, and flooding. ACTION- Increase the resilience of the transportation infrastructure. Identify alternate evacuation routes for roads and bridges identified as vulnerable to flooding and/or sea level rise. Update design standards for roads and transit infrastructure to account for projected extreme temperatures and extreme precipitation events. Ensure all street tree boxes are filled and that large shade trees are planted in tree boxes where possible.	District of Columbia's Plan to Adapt to a Changing Climate
Heat, Flood	Structural, Procedural	GOAL- Strengthen and reconnect communities by increasing density, diversity of land uses and location efficiency. ACTION-Design public space and the transportation system to advance disability justice by co-developing plans and projects with diverse elements of the disability community and understanding their needs before designs are complete.	City of San Francisco's Climate Action Plan
Heat	Distributional, Procedural	GOAL- Improve access to cooling centres.	USDN Guide For Equitable Community-

		ACTION- Locate centers in neighborhoods with the residents most at risk. Select locations that are trusted places and are run by trusted service providers. Offer transportation assistance in specific neighborhoods or to residents with limited mobility or transportation access.	Driven Preparedness
		PROTECTING ECOSYSTEM & CULTURAL SERVICES	
Flood, Wildfire	Structural, Transgenerational, Procedural	GOAL- Support community and cultural health. ACTION- Identify high-risk cultural sites and work with [Indigenous] community members to develop suitable strategies to preserve these sites.	Tseil-Waututh Nation Climate Change Resilience Plan
Heat, Flood	Procedural	GOAL- By 2030, legally protect an additional 20,000 acres of carbon pools on natural lands and manage all new and existing natural areas (approximately 70,000 acres total), focusing on resilience. ACTION- Prepare natural lands for climate change and avoid catastrophic loss of carbon pools through active, intentional, and holistic management. Leverage Traditional Ecological Knowledge of local Indigenous people and compensate them appropriately for their time, expertise and contributions. Plans, policies and programs clearly state how Indigenous people will be involved in and benefit from stewards of lands that have historically been in their care.	Austin Climate Equity Plan

Urban Design Policies

Hazard	Equity	Policy Example	Jurisdiction
		NEIGHBOURHOOD GREENING	
Heat, Flood	Procedural, Structural	GOAL- Expand and improve green spaces. ACTION- Partner with community organizations to expand green spaces and parks in frontline communities.	City of Providence Climate Justice Plan
Heat, Flood	Distributional, Procedural, Structural, Transgenerational	GOAL- Address inequities in green infrastructure and avoid gentrification. ACTION- Prioritize neighborhoods with the greatest need for green infrastructure. Partner with community organizations to provide job training programs. Require local hire for green infrastructure. Institute rent control and just- cause eviction laws.	USDN Guide For Equitable Community-Driven Preparedness
Heat, Flood, Fire	Structural, Transgenerational	GOAL- Sequester carbon through increased green infrastructure and natural areas. Reduce effective impervious areas by 600 acres. Expand the urban forest canopy to cover at least one-third of the city. ACTION- Continue tree planting and expand tree preservation and maintenance programs and incentives. a) Focus on low-canopy neighborhoods and neighborhoods with populations at higher risk of adverse outcomes of urban heat island effects. b) Explore options for public and private partnerships to help reduce or share the cost of tree planting and maintenance. ACTION- Research, evaluate and integrate the economic, social and ecological benefits (ecosystem services) of natural resources and green infrastructure in land	City of Portland Climate Action Plan

		use and infrastructure planning, programs and projects. Prioritize areas with historical and current underinvestment.	
Heat	Structural, Trangenerational	GOAL- Reduce risks and impacts from heat, drought and wildfire by preparing for hotter, drier summers with increased incidence of extreme heat days. ACTION-Decrease the urban heat island effect, especially in areas with populations most vulnerable to heat, through strategies such as revegetation, tree preservation planting and maintenance, depaving and porous pavement, green infrastructure like bioswales and ecoroofs and site development performance standards.	City of Portland Climate Action Plan
Heat, Wildfire, Flood	Procedural	GOAL- Increase equitable community participation and perspectives in nature-based climate solutions, including meaningful efforts to prioritize Indigenous science and TEK. ACTION-The City will engage American Indian tribes, cultural bearers, neighborhood organizations, local businesses, the San Francisco Unified School District, and non-profit organizations during the planning and implementation of greening projects, including for the purpose of local hiring and workforce development.	City of San Francisco's Climate Action Plan
Heat, Flood	Distributional	GOAL- Achieve at least 50% citywide tree canopy cover by 2050, focusing on increasing canopy cover equitably. ACTION-Increase community tree planting. Increase City funding for community tree-planting programs focused on low-income communities and communities of color.	Austin Climate Equity Plan
Flood	Transgenerational	GOAL- By 2030, include all City-owned lands under a management plan that	Austin Climate Equity Plan

		results in neutral or negative carbon emissions and maximizes community co-benefits. ACTION-Reclaim public space and prioritize green infrastructure. Identify and reclaim mono-use, underused, and unconventional public spaces to increase community access and ecological function — such as utility easements, road rights-of-way, stormwater wet ponds, and cemeteries — with a focus on green infrastructure.	
Heat	Structural, Distributional	GOAL- Make neighborhoods and communities safer and more prepared by strengthening community, social, and economic resilience. ACTION-Reduce the risks of extreme heat and the urban heat island. Reduce the heat-island effect and related increase in outside air temperatures with cool and living roofs, expanded green space, tree planting, and tree protection efforts, prioritizing hotspots and those areas with the greatest number of heat vulnerable residents. Incorporate heat-island mitigation into planning for green infrastructure, tree canopy, and public space initiatives. Evaluate existing cooling centers based on location, accessibility and needs of vulnerable residents. Consider areas for pets, security, sign-language interpreters, child friendly amenities, accessible restrooms, medical assistance, back-up power, sleeping areas, drinking water, and proximity to transit.	District of Columbia's Plan to Adapt to a Changing Climate

		PUBLIC SPACE & BUILDING DESIGN	
Heat, Wildfire, Flood	Procedural, Transgenerational	GOAL- Shape an inclusive city that can adapt to change and turn challenges into opportunities. ACTION- Create and test a Resilient Neighbourhood Design Framework, a neighbourhood design tool that connects physical design indicators with resilience objectives to understand co-benefits and trade-off of different approaches.	Resilient Vancouver Strategy