

KING COUNTY

Extreme Heat Mitigation Strategy



King County



July 2024



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ACKNOWLEDGMENTS

King County thanks the many community members, local partners, and county staff who participated in the development of this strategy, including those listed below. All contributions, both big and small, are sincerely appreciated. Names with an asterisk (*) indicate contributors that helped author strategy content.

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Washington Association of Maintenance and Operation Administrators
Washington Labor & Industries
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Work on the strategy was supported by a Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant #EMS-2020-BR-102-0004 and by King County.

Recommended citation: Iyaz, D. and L. Whitely Binder. 2024. *King County Extreme Heat Mitigation Strategy*. King County, Washington.

LETTER FROM THE EXECUTIVE

July 2024

King County residents,

2023 was the warmest year on record globally, and 2024 may be even hotter. This June marked the 13th consecutive month of record-breaking temperatures around the world, and once again, extreme heat is affecting millions across the western United States.

Extreme heat is one of the deadliest natural disasters, causing more deaths each year than any other weather event. Higher temperatures lead to increased mortality, stress on our ecosystems, and are often associated with wildfires, which then lead to more devastating impacts.

It has only been three years since the Pacific Northwest experienced the deadly June 2021 Heat Dome, an event that was 150 times more likely because of climate change.

Heat impacts our lives. During the 2021 Heat Dome, 94% of heat-related deaths and 49% of emergency department visits involved residents aged 60 and older. Many groups, often the most vulnerable, are more sensitive to heat, including children, pregnant people, people with cardiovascular disease, people with mental health disorders, and people who take certain medications.

Heat impacts our economy. Illness, traumatic injury, death, and productivity losses associated with extreme heat are estimated to cost Washington state more than \$100 million annually. By 2030, heat-related losses in labor productivity alone are projected to reach around \$100 billion annually across the country.

Heat exposes and exacerbates our inequalities. A King County study found that communities in two different parts of the county at the same day and time can experience as much as a 20°F difference in temperature. The hottest areas in King County have more people with low incomes, seniors living alone, and people with limited English proficiency. A person living in the hottest 40% of the county is more likely to be below 200% of the federal poverty level.

No one agency is solely responsible for reducing heat risk for King County residents. It will take all of us working together. Every community in King County and beyond must grapple with how to mitigate and adapt to the growing threat of extreme heat.

I want to extend my thanks to FEMA and the hundreds of contributors to this strategy, including community-based organizations, subject matter experts, service providers, and local governments.

Together, we can strengthen our region's ability to equitably prepare for more frequent and severe extreme heat events by better protecting our people and places.



Dow Constantine, King County Executive

EXECUTIVE SUMMARY

Concern about higher summer temperatures and the potential for more extreme heat events has grown as the impacts of climate change become more evident. This concern was heightened with the June 2021 Pacific Northwest Heat Dome, an event made 150 times more likely because of climate change.¹ The 2021 Heat Dome currently stands as the single most deadly climate disaster event in Washington State with more than 125 reported heat-related deaths statewide, including 34 deaths in King County.

All climate scenarios point to hotter summers in King County and the Puget Sound region. Average summer maximum temperatures in King County are projected to be about 3.7 degrees Fahrenheit (°F) (range: 2.5-4.9°F) warmer by the 2030s and 10.5°F (range: 7.4-13.0°F) warmer by the 2080s compared to the 1980-2009 historical average. The likelihood of more frequent and hotter heat waves also increases with climate change. One study found that a heat dome of similar intensity to the 2021 event could happen every five to 10 years with 3.6°F (2°C) of warming.¹

Hotter summer temperatures affect everyone in King County. However, the impacts of that heat are not felt equally. Research, health data from the 2021 Heat Dome, and analyses of King County heat islands (Figure ES -1) show that vulnerability to heat is disproportionately borne by people living with low incomes, unhoused people, seniors, people with limited English proficiency, and people with chronic health conditions like cardiovascular disease and diabetes—factors known to increase vulnerability to extreme heat. Other at-risk populations include children, pregnant people, individuals with mental health conditions, outdoor workers, and households and workers without access to air conditioning or other cooling resources. The overlap between some of the hottest areas in King County and inequities in health, housing, and economic opportunity are most notable in south King County.

The goal of the King County Heat Mitigation Strategy is to equitably reduce the harmful effects of extreme heat on people and places in King County by:



1. Effectively preparing for and responding to heat events when they occur,



2. Expanding the use of built and nature-based solutions that reduce extreme heat impacts,



3. Strengthening the resilience of communities most affected by extreme heat.

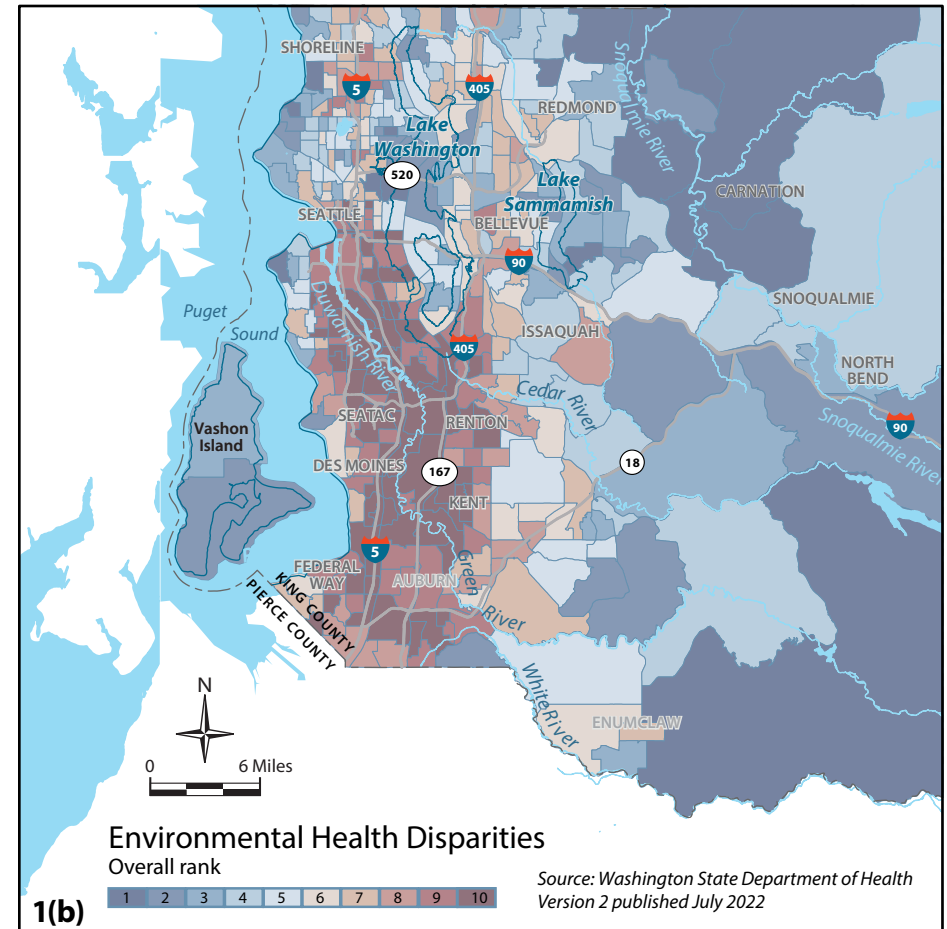
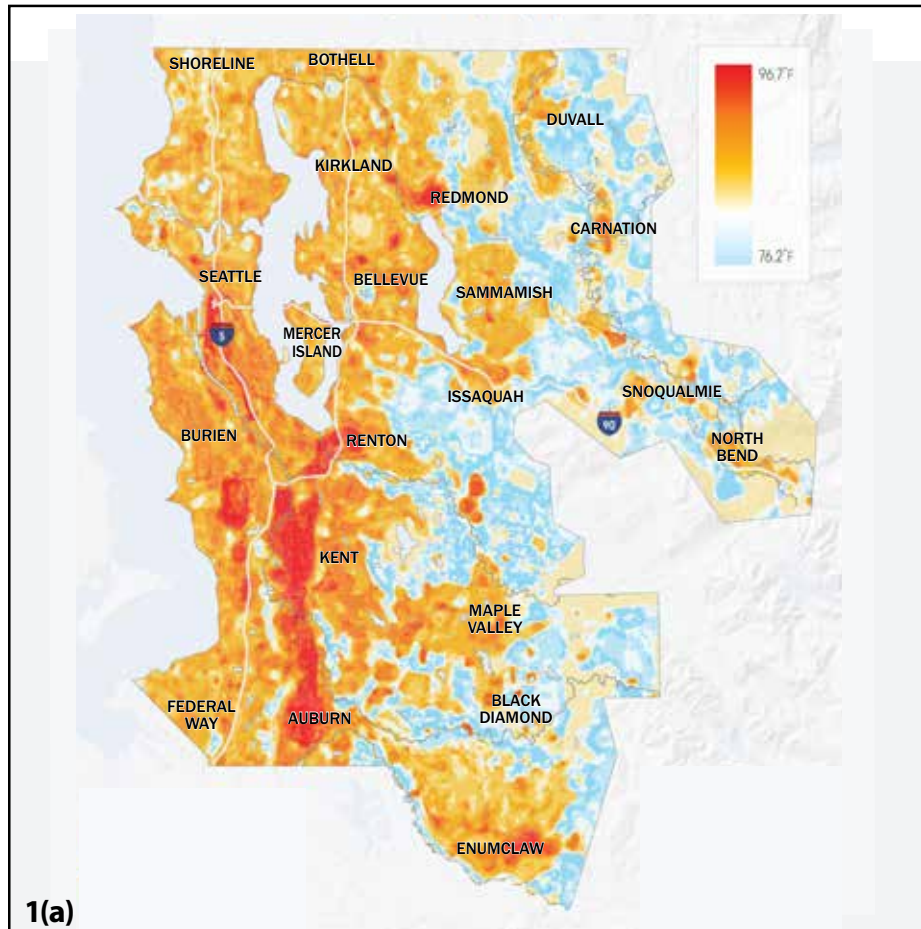


Figure ES-1(a-b). (left) King County Heat Island Map. Areas in red and orange on the heat map indicate areas with hotter surface temperatures relative to areas in blue. The hotter areas are referred to as “heat islands”. (right) Washington State Dept. of Health Environmental Health Disparities map for King County. Aggregate risk ranking for census tracts based on environmental exposures (e.g., fine particulate pollution from diesel pollution and other sources, proximity to roadways); socioeconomic factors (limited English proficiency, no high school diploma, unaffordable housing); and health factors (death from cardiovascular disease, low birth weight). Areas in darker orange indicate locations with greater environmental health disparities compared to areas in dark blue. Mapping of health disparities and other indices show similar spatial patterns. *Figure sources: King County; Washington Department of Health.*

The King County Extreme Heat Mitigation Strategy was developed to provide strategic direction for local and countywide work on heat mitigation. The strategy was co-developed in collaboration with state and local governments, service providers, community-based organizations, frontline communities, and other partners. The strategy includes 20 actions, shown at right and summarized in Table ES-1, that take a comprehensive approach to preparing people and places in King County for the impacts of hotter summers and more extreme heat events.

Strategy actions complement and build on existing emergency management practices and heat response activities while also leveraging other activities that benefit heat mitigation. Many actions also provide other benefits that go beyond reducing heat impacts, furthering the value of action on heat. Co-benefits can include lower greenhouse gas emissions; building local organization capacity for sustained work on heat; expanded recreation opportunities; workforce development; increased health protection from air pollution and wildfire smoke; and environmental benefits such as improved air and water quality.

The King County Extreme Heat Mitigation Strategy is a five-year plan (2024 – 2029). To successfully address heat resilience in King County communities, this strategy calls on partner agencies and organizations to lead, support, and collaborate on implementation. Partnering with communities disproportionately affected by heat impacts will be particularly important. While the strategy supports heat mitigation efforts across King County, emphasis is placed on prioritizing implementation in identified heat islands, low-income



Help people stay cool and safe indoors: providing in-home cooling support and expanding access to cooling locations, energy efficiency improvements, and utility bill assistance.



Help people stay cool and safe outdoors: supporting drowning prevention, people experiencing homelessness, and occupational heat safety.



Cool our neighborhoods: bolstering urban tree canopy, expanding access to parks and green space, and reducing the formation of new heat islands by preserving existing green space/forested areas.



Design for heat: integrating heat resilience into building and development codes and policies, planning for schools.



Increase heat safety awareness: addressing the need for multilingual heat awareness, communications, trainings, and alerts.



Support heat action: identifying and pursuing sustainable partnerships and funding opportunities for implementation, supporting community-led heat resilience activities related to the strategy.

neighborhoods, communities of color, and other disproportionately affected communities in King County.

Implementing these actions will require ongoing community engagement, sustained partnerships across sectors, and coordination between multiple levels of government.

King County will be the steward of the strategy, tracking implementation and working with stakeholders to leverage opportunities and partnerships, address barriers to action, and evaluate the need for future updates to the strategy. Through this work, we can collectively and collaboratively move towards a future of equitable heat preparedness and resilience in King County.

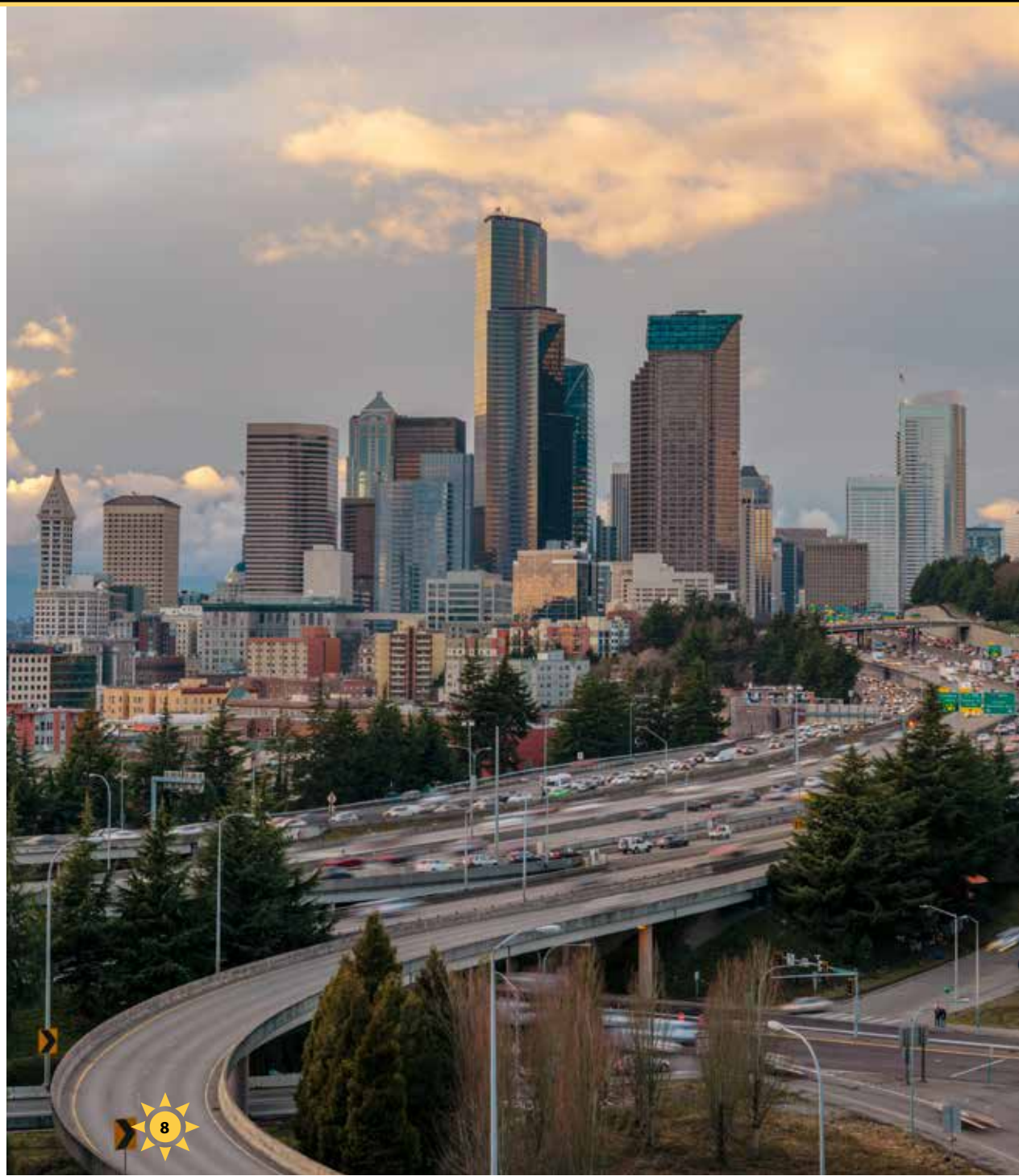


Table ES-1. Overview of King County Extreme Heat Mitigation Strategy actions, primary implementers, and alignment with the strategy's strategic priorities.


1: HELP PEOPLE STAY COOL & SAFE INDOORS		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Prepared-ness and Response</i>	<i>Built and Nature- based Solutions</i>	<i>Community Heat Resilience</i>
1	In-Home Heat Safety: Increase access to portable air conditioning and in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals.	King County, local governments, housing authorities, local service providers, community- based organizations	X		X
2	Energy Efficiency and Utility Bill Assistance: Expand access to weatherization, energy efficiency, and utility bill payment assistance.	Utilities, King County, local governments, community- based organizations		X	X
3	Heat Pump Installations: Expand heat pump installation programs to cover more households and locations.	King County, local jurisdictions, community-based organizations, local service providers, heat pump vendors & installers, utilities	X	X	X
4	Enhanced Cooling Centers: Provide wrap-around services to public cooling centers.	Local governments, King County	X		X
5	Community-led Cooling Spaces: Expand cooling location options to include more community-trusted locations.	King County, local jurisdictions, community-based organizations	X		X

Table ES-1 (continued). Overview of King County Extreme Heat Mitigation Strategy actions, primary implementers, and alignment with the strategy's strategic priorities.


2: HELP PEOPLE STAY COOL & SAFE OUTDOORS		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Prepared-ness and Response</i>	<i>Built and Nature- based Solutions</i>	<i>Community Heat Resilience</i>
6	Drowning Prevention: Promote water safety and drowning prevention through swimming lessons, lifeguard training, and distribution of water safety equipment.	Non-profits, local governments, community-based organizations, King County	X	X	X
7	Cool Kits for Unhoused People: Distribute Cool Kits for unhoused people during heat events.	King County Regional Homelessness Authority, service providers	X		X
8	Occupational Heat Safety: Increase heat safety awareness and preparedness for workers who are more at-risk when it is hot.	King County, community-based organizations, local service providers, Washington Department of Labor & Industries	X		X

Table ES-1 (continued). Overview of King County Extreme Heat Mitigation Strategy actions, primary implementers, and alignment with the strategy's strategic priorities.


3: COOL OUR NEIGHBORHOODS		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Prepared-ness and Response</i>	<i>Built and Nature- based Solutions</i>	<i>Community Heat Resilience</i>
9	Private Property Tree Care: Develop and promote technical, educational, and financial assistance for tree planting and maintenance to private property owners.	Local jurisdictions and King County	X	X	X
10	Maximize Tree Survival: Research, share, and promote best practices tree establishment to increase survival of newly planted trees.	Local jurisdictions and King County	X	X	X
11	King County Tree Code Toolkit: Develop and support application of a King County Tree Code Toolkit.	King County, local jurisdictions, and King Conservation District	X	X	X
12	Track Equitable Canopy Cover: Assist King County jurisdictions to collaborate and utilize Urban Tree Canopy assessments to identify, track, and strategically address tree canopy inequities.	King County, local jurisdictions, and King Conservation District	X	X	X
13	Open Space Access: Protect, increase and maintain accessible green space, particularly in heat islands.	King County, local jurisdictions, and non-governmental organizations		X	X

Table ES-1 (continued). Overview of King County Extreme Heat Mitigation Strategy actions, primary implementers, and alignment with the strategy's strategic priorities.




4: DESIGN FOR HEAT		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Preparedness and Response</i>	<i>Built and Nature-based Solutions</i>	<i>Community Heat Resilience</i>
14	Cool Schools: Increase heat resilience of local schools and learning centers through a Cool Schools Initiative.	King County, local jurisdictions, school districts, and early learning facilities	X	X	X
15	Building and Development Codes: Reduce heat impacts through effective building and development codes and policies.	King County, local jurisdictions		X	X
16	Heat Smart Parks and Playgrounds: Design and activate parks and playgrounds for heat.	King County, local jurisdictions, community-based organizations, neighborhood groups, private funders		X	X
5: INCREASE HEAT SAFETY AWARENESS		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Preparedness and Response</i>	<i>Built and Nature-based Solutions</i>	<i>Community Heat Resilience</i>
17	Multilingual Communications: Develop and support distribution of inclusive, multilingual materials related to heat preparedness.	King County, local jurisdictions	X		X
18	Community Heat Preparedness Trainings: Create and administer trainings to help educate communities on heat safety, preparedness, and heat resilience strategies.	King County, community partners	X	X	X

Table ES-1 (continued). Overview of King County Extreme Heat Mitigation Strategy actions, primary implementers, and alignment with the strategy's strategic priorities.

6: SUPPORT HEAT ACTION		KEY IMPLEMENTING PARTNERS	RELATED STRATEGIC PRIORITY		
 <i>Action Title</i>		<i>Not Inclusive of All Partners</i>	<i>Heat Prepared-ness and Response</i>	<i>Built and Nature- based Solutions</i>	<i>Community Heat Resilience</i>
19	Sustainable Partnerships for Implementation: Build partnerships and coordination around strategy implementation and sustainable funding.	King County, local jurisdictions, and local service providers	X	X	X
20	Community Solutions: Uplift community-determined solutions through administrative and funding support.	King County, local jurisdictions, philanthropy			X

ABOUT THE STRATEGY

In June 2021, the Pacific Northwest and British Columbia experienced an unprecedented heat wave that collectively led to more than 600 deaths from heat-related causes, including 125 deaths in Washington state alone and at least 34 deaths in King County (see box at end of this section).²

Research finds that the 2021 Heat Dome was 150 times more likely to occur and 3.6 degrees Fahrenheit (°F) warmer than it otherwise would have been because of human-caused climate change.¹ Some studies also suggest that a repeat of the 2021 Heat Dome is much more likely under current climate projections.¹

While research on the role of climate change on past events like the 2021 Heat Dome as well as future extreme heat events continues, one thing is clear – climate change is expected to lead to hotter summers and more heat events in King County. Research also finds evidence of heat impacts on health in King County at more typical “hot day” heat thresholds, e.g., the 80s and low 90s °F —temperatures well below the record breaking 2021 Heat Dome.^{3,4} These findings underscore the importance of planning for summer heat as the norm rather than the exception.

The King County Extreme Heat Mitigation Strategy was created to provide strategic direction for countywide work on heat mitigation. This includes work within and across local jurisdictions and organizations in King County. A countywide approach—rather than a focus on King County government action—was taken for several reasons, including the following:

- Extreme heat affects the health and safety of residents throughout King County, creating the need for action across King County’s 39 local jurisdictions and unincorporated King County. Efficiencies of scale can be realized by working collaboratively on heat mitigation.

Strategy Goal:

Equitably reduce the harmful effects of extreme heat on people and places in King County by:



1. Effectively preparing for and responding to heat events when they occur;



2. Expanding the use of built and nature-based solutions that reduce extreme heat impacts;



3. Strengthening the resilience of communities most affected by extreme heat.

- Interest in, and local action on, heat mitigation has grown since the 2021 Heat Dome. As more jurisdictions and organizations engage in heat work, the potential for missed opportunities and duplication of effort increases. Having a countywide strategy supports a more systematic approach to heat action, increases partnership opportunities, leverages limited resources, and helps to ensure that our collective efforts are working towards the same goal.
- The time and effort required to develop a local heat mitigation plan can be a barrier to taking action for many local jurisdictions. Developing a countywide strategy removes that barrier, allowing jurisdictions and partners to focus limited resources on implementation.
- King County government is well-positioned to facilitate a broader approach given its role as the local government for unincorporated King County, as the regional service provider for public health, and as a regional convener for countywide action on climate change, urban forestry, land conservation, building and energy code improvements, emergency management, and other issues relevant to heat mitigation.

The heat strategy takes a comprehensive approach to preparing people and places in King County for the impacts of hotter summers and more extreme heat events. The strategy's 20 actions, organized into six categories (shown at right), support a range of near-term heat coping activities as well as longer-term heat preparedness interventions that adapt our built environment and build community resilience.



Help people stay cool and safe indoors: providing in-home cooling support and expanding access to cooling locations, energy efficiency improvements, and utility bill assistance.



Help people stay cool and safe outdoors: supporting drowning prevention, people experiencing homelessness, and occupational heat safety.



Cool our neighborhoods: bolstering urban tree canopy, expanding access to parks and green space, and reducing the formation of new heat islands by preserving existing green space/forested areas.



Design for heat: integrating heat resilience into building and development codes and policies, planning for schools.



Increase heat safety awareness: addressing the need for multilingual heat awareness, communications, trainings, and alerts.



Support heat action: identifying and pursuing sustainable partnerships and funding opportunities for implementation, supporting community-led heat resilience activities related to the strategy.

Heat strategy actions were co-developed in collaboration with state and local governments, service providers, utilities, community-based organizations, and frontline community members. The actions were also informed by research on projected heat impacts and evidence-based best practices from across the country. Strategic oversight for strategy development was provided by a steering committee consisting of representatives from local jurisdictions, emergency management, public health, frontline communities, and academia (see [Acknowledgements](#) for members).

Equity is central to the strategy and is embedded in the guiding principles created for strategy development and implementation. Extensive community engagement with frontline community^a members and organizations helped ensure that community needs and priorities are reflected in the strategy. Actions that are directly responsive to those needs and priorities are tagged for added accountability. Additionally, while the strategy supports heat mitigation efforts across King County, emphasis is placed on prioritizing implementation in identified heat islands, low-income neighborhoods, communities of color, and other communities disproportionately affected by heat. Finally, many of the actions in the strategy involve frontline community-based organizations and service providers as co-implementers. Funding support for their participation in those activities will be needed.

The King County Extreme Heat Mitigation Strategy is a five-year plan (2024 – 2029). The strategy calls on local jurisdictions and partner organizations to lead, support, and collaborate on implementation efforts that can range in scale from individual neighborhoods and communities to all of King County. As a roadmap for action, jurisdictions and partners should use this strategy to guide their own work on heat mitigation while also leveraging the collective learning and collaboration opportunities presented by the strategy to save time and resources.

Heat Strategy Guiding Principles

1. Lead with equity in implementation of heat actions.
2. Prioritize benefit and access to communities disproportionately impacted by heat.
3. Prioritize activities that advance co-benefits.
4. Build on existing partnerships and work being done across jurisdictions.
5. Advance solutions that support the strategy's goal and strategic priorities.

Developed with input from the Heat Strategy Steering Committee and King County [Climate Equity Community Task Force](#) to guide strategy development and implementation.

^a Frontline communities are those communities that often experience the most acute impacts of climate change, face historic and current inequities, and have limited resources and/or capacity to adapt. Source: [King County 2020 Strategic Climate Action Plan](#).



As convener and author of the strategy, King County will be the steward of the strategy, tracking implementation and working with stakeholders to leverage opportunities and partnerships, address barriers to action, and evaluate the need for updates to the strategy. It is expected that some actions can be completed before 2029 while other actions will take longer to implement. The goal by 2029 is to see more communities engaged in the work laid out in this strategy and to see work happening across all of the strategy's actions.

The Heat Strategy is Organized as Follows:

- **Section 2 - Why Heat Matters:** overview of why heat matters in King County, including the impacts of heat on health, how the built environment and other factors can shape how an individual or community experiences heat, and climate change impacts on the potential for more extreme heat events.
- **Section 3 – Community Engagement:** overview of approach and key findings from public engagement with local partners and frontline communities.
- **Section 4 – Heat Strategy Actions:** describes each of the 20 actions prioritized for inclusion in the strategy.
- **Section 5 – Next Steps & Future Considerations:** previews next steps for implementation of the strategy other issues for consideration as we move into implementation.

Development of the strategy is a shared priority in King County's 2020 Strategic Climate Action Plan and 2020 King County Hazard Mitigation Plan. The goals and priorities identified in this strategy are also shared in other countywide planning and partnership efforts led by King County, including King County's [Comprehensive Plan](#); Regional Operational Plan for Extreme Weather Centers and Disaster Sheltering; [Land Conservation Initiative](#); [Blueprint for Addressing Climate Change and Health](#); [King County Parks, Recreation, Trails and Open Space Levy](#); [Clean Water, Healthy Habitat plan](#); and the [30-Year Forest Plan](#). Work on the strategy was supported by a Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant and by King County.

The 2021 Pacific Northwest Heat Dome

From June 25 to July 2, 2021, Washington State and other parts of the Pacific Northwest and British Columbia experienced a major heat wave now referred to as the Pacific Northwest Heat Dome. Over these dates, 124 all-time high temperature records were set across Washington ([NCEI-b](#)).⁵ Seattle recorded its warmest temperature on record (108°F), breaking the previous record set in July 2009 by 5°F. Temperatures were equally hot or hotter in other parts of King County, including Kent (106°F), Renton (109°F), Issaquah (116°F), and Maple Valley (118°F). The event also set a new record for the hottest temperature ever recorded in Washington—120°F, set on June 29, 2021 at the Hanford Site in eastern Washington.⁶

The 2021 Heat Dome was the single most deadly climate disaster event in Washington State with more than 125 reported heat-related deaths statewide, including 34 deaths in King County.⁷ Heat-specified deaths represent only a portion of the impact, however. Statewide estimates counted 441 “excess deaths”, or deaths above the predicted amount compared to previous years after removing deaths from COVID-19.^{8,9} Deaths where heat exposure can be a contributing factor include natural causes of death like cardiac arrest or kidney failure, or injury deaths like drownings, transportation accidents, suicide, or homicide.¹⁰

In addition to the increase in premature deaths, the Heat Dome led to an overall increase in stress to the healthcare system in King County. Emergency Medical Services (EMS) typically responds to about 500-600 incidents daily, but June 28 set the record of 1,124 total responses.¹¹ EMS reported specific increases in heat-related illness, drowning, cardiac arrest and dead on scene responses. EMS personnel also reported increased stress and fatigue, resulting in high occupational risk.¹²

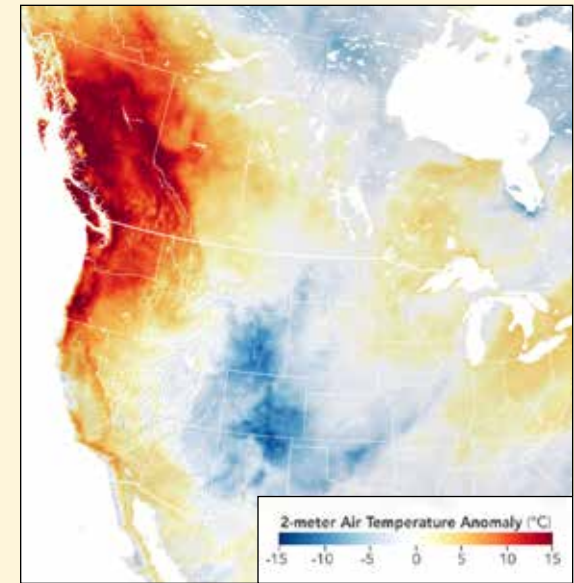


Figure 1. Map of air temperature anomalies in the western United States and Canada on June 27, 2021. Map derived from the Goddard Earth Observing System (GEOS) model and depicts air temperatures near ground level (about 6.5 feet). Red areas are where air temperatures climbed more than 27°F (15°C) higher than the 2014-2020 average for the same day. *Figure source:* [NASA Earth Observatory](#).

The highest number of heat-related emergency department visits by King County residents was on Monday June 28, 2021. That day saw 249 visits, accounting for 11 percent of all emergency department visits, compared to the previous peak on June 12, 2019 (less than 10 visits). From June 26-July 2, 2021, 557 heat-related emergency department visits were identified; 175 resulted in admission.¹³ Compared to the overall King County population, there was a disproportionately higher percentage of heat-related illness visits among American Indian/Alaska Native and Black residents, as well as by individuals over age 60, who represented more than half of heat-related illness emergency department visits.¹³

The role that human induced climate change played in the 2021 Heat Dome is an active area of study. While the intensity of the 2021 Heat Dome was unusual, the meteorological pattern for the event is a common feature of Pacific Northwest heat waves.¹⁴ In that sense, more heat domes (regardless of intensity) will occur.

Climate change is likely to have had a big effect on the likelihood of the event and at least some impact on how high temperatures got. One study estimates that the 2021 Heat Dome was 150 times more likely to occur and 3.6°F warmer than it otherwise would have been because of human-caused climate change.¹ While climate change added to the intensity of the heat wave, there is also some consensus that the heat wave's temperatures would have been a record-breaking event regardless given the unusual height of the high pressure ridge in the atmosphere that characterized the Heat Dome.¹⁵⁻¹⁷

Research also suggests that climate change will increase the likelihood of experiencing another heat dome of similar intensity in the future. One study found that a Heat Dome of similar intensity could happen approximately every five to 10 years under a warming scenario of only 3.6°F (2° Celsius).¹

The 2021 Heat Dome demonstrated that deadly heat can occur in today's climate, underscoring the need to be better prepared for extreme heat events as they exist today and with climate change.

WHY HEAT MATTERS

Extreme heat affects everyone in King County. However, the impacts of heat are not felt equally. Factors influencing vulnerability to heat include where a person lives or works, occupation, income, age, degree of social isolation, and prevalence of pre-existing medical conditions. As we work towards a more systematic approach to managing current and future heat risk in King County, it is helpful to understand why heat matters for health, how the built environment can influence heat risk, and how climate change increases the potential for more extreme heat events.

Heat Impacts on Health

Extreme heat is the number one cause of weather-related fatalities nationally.¹⁸ Current annual losses in Washington State due to heat-related illness and heat-associated traumatic injury, death, and productivity losses are calculated to be between \$111 to \$153 million annually.² By 2030, heat-related losses in labor productivity alone are projected to reach around \$100 billion annually nationally.¹⁹

Heat affects health in complex ways and often at lower ages and temperature thresholds than people assume.⁴ Extreme heat can increase stress on organ systems, increasing the risk of illness and death (Figure 2).²⁰ Health effects of extreme heat can include:

- Acute heat illnesses (e.g., heat exhaustion, heat stroke, fainting);
- Exacerbation of chronic disease (e.g., respiratory issues, cardiovascular disease, kidney disease, diabetes, and psychiatric disorders);
- Adverse pregnancy outcomes (e.g., low birth weight, premature birth); and
- Injuries (e.g., occupational risks, drowning, violence).^{20,21}

Analysis and supporting details on the health impacts of heat provided by S. Jampel, Hannah Collins, and Brad Kramer (Public Health-Seattle & King County) and the Washington Dept. of Health RHINO team.

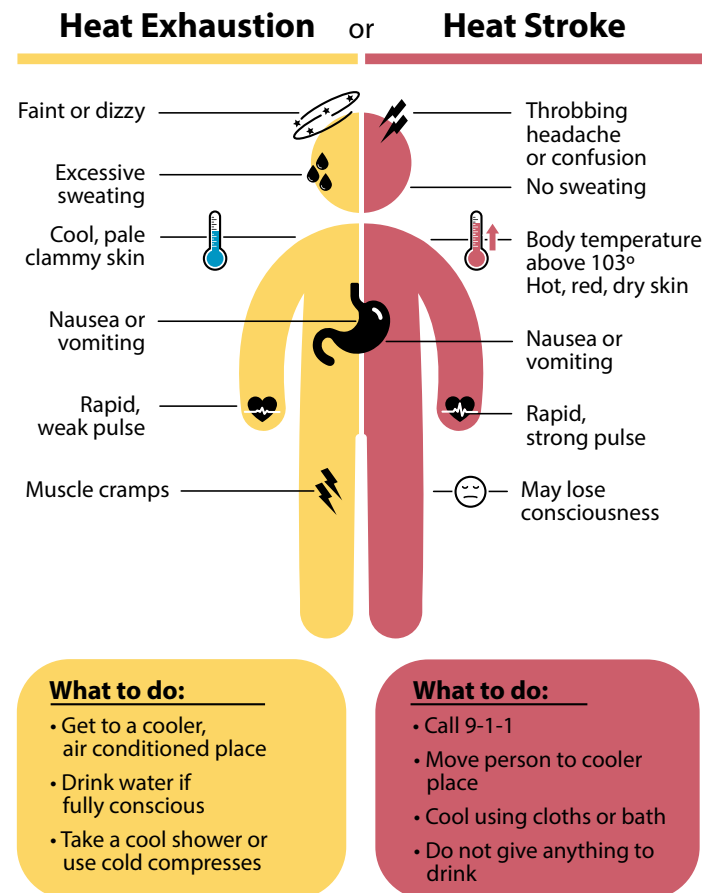


Figure 2. Heat illness and heat stroke symptoms and safety tips. *Figure source: National Weather Service.*



Heat and Homelessness

King County is home to at least 53,000 people who are experiencing homelessness.²⁸ The unhoused population includes those living in cars, parks, tents, and abandoned buildings as well as those living in temporary shelters provided by homeless service providers, family, or friends. Individuals experiencing homelessness, especially unsheltered individuals, face higher rates of chronic diseases, serious mental health conditions, and substance abuse, all of which can make it difficult for individuals to access cooling when it is hot or take other steps to stay cool.²⁹ During the 2021 Heat Dome, 11 percent of the 118 heat-related calls to Seattle Fire Department were from people experiencing homelessness.³⁰

Populations who are more at risk include children and older adults, pregnant people, individuals with chronic health conditions or mental health conditions, outdoor workers, unhoused individuals, and households without access to air conditioning or other cooling resources.

Who is affected by heat, how they are affected, and how harmful those effects are will vary depending on an individual's exposure, sensitivity, and adaptive capacity to heat. Individuals with high exposure, high sensitivity, and low adaptive capacity will be more vulnerable to heat compared to individuals with low exposure, low sensitivity, and high adaptive capacity. Each of these factors is explored further below.

Exposure. Exposure refers to how much heat a person experiences. Individuals who spend prolonged time outdoors, including people who work outside and people who are unhoused, have higher levels of heat exposure relative to individuals who live and work indoors with air conditioning. As a result, those who live or work outdoors may be more at risk of heat illness or other health effects.

Exposure to indoor heat can also be a concern during heat events. Homes, apartments, and work sites without air conditioning or where it may be difficult to keep a space sufficiently cool can lead to high indoor temperatures, providing little relief to people in those spaces and at times exceeding outdoor temperatures. Work environments where indoor heat may pose additional challenges include commercial kitchens, laundries, manufacturing locations, warehouses, and service garages, for example.²²

Where a resident lives, works, learns, or plays is an important contributor to heat exposure. While anyone can be affected by heat regardless of where they live, areas with lower tree canopy coverage and a high concentration of hard surfaces—such as buildings, parking lots, roofs, and roads—will absorb, retain,

and emit more heat back into the local environment relative to more natural landscapes.²³ These areas will also emit heat back into the environment later into the evening compared to natural areas. This effect can amplify local temperatures, leading to the development of “heat islands” and higher heat risks for communities living in heat islands (Figure 3).²³ Emissions from buildings, industrial facilities, vehicles, and air-conditioning units can add additional heat into the urban environment, further contributing to the heat island effect.

National studies show that heat islands are more likely to be found in low income and majority non-White urban communities with lower tree canopy, fewer parks and greenspace, higher levels of pollution, and worse health outcomes. These disparities stem from a history of discrimination and disinvestment in communities of color, including the legacy of redlining.^{23,24,25} These same communities also often experience higher rates of heat-related risk factors like cardiovascular disease, respiratory illness, and hypertension. See next section for more on King County’s heat islands.

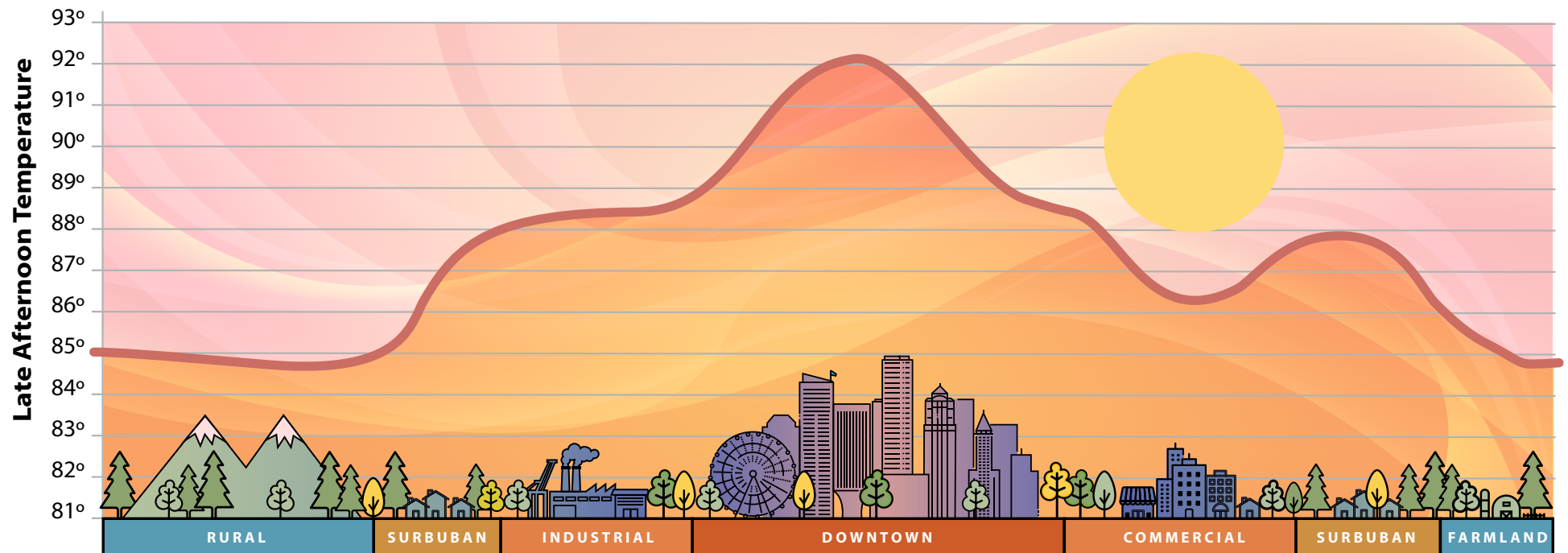
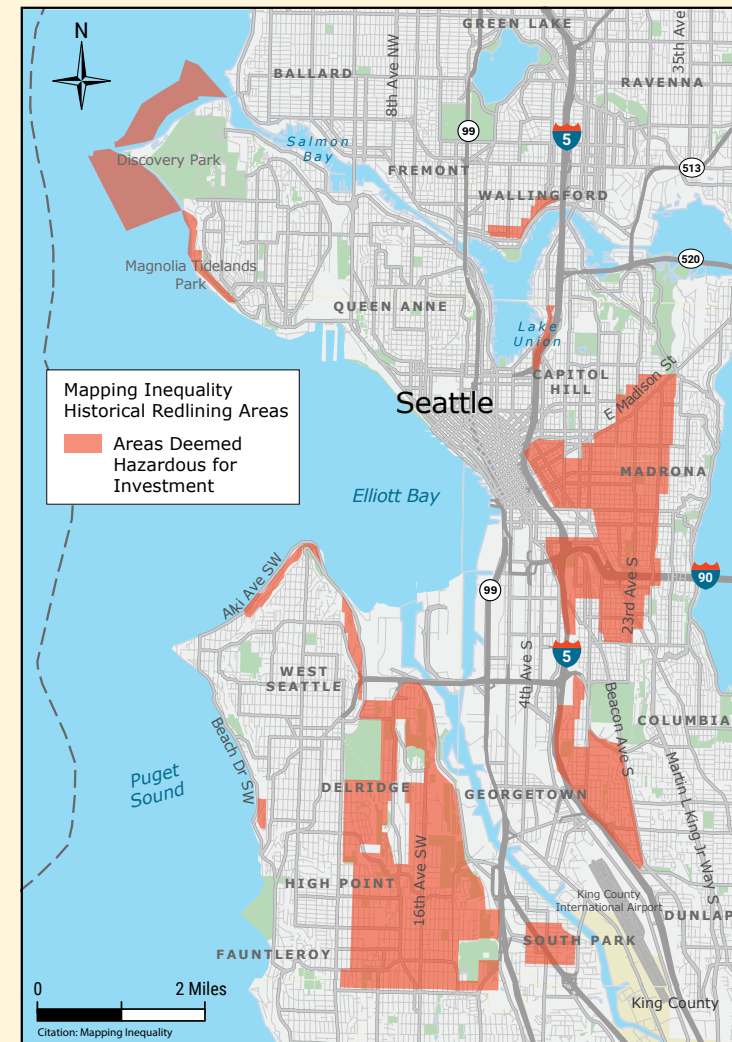


Figure 3. The urban heat island effect. Areas that are more developed typically contain more paved surfaces and fewer trees. As a result, developed areas absorb and retain more heat, increasing surface temperatures more than their surrounding areas.

Redlining and Urban Heat Islands

Heat islands are often found in areas that have been historically underserved because of exclusionary zoning practices such as redlining.^{24,25} Redlining describes a now-illegal practice from the 1930s where the federal government systematically marked non-White communities as less desirable for housing investment, leading to lenders to deny loans and services to those communities.²³ While redlining was banned in 1968, redlined communities to this day are still more likely to have fewer trees, less greenspace, more impervious surfaces, higher levels of pollution, and worse health outcomes.²⁶ The net result is higher heat in already over-burdened communities. In a national study of 108 urban areas, researchers found that land surface temperatures in historically redlined communities were 4.7°F hotter than non-redlined communities.²⁶ Higher rates of heat-related risk factors like cardiovascular disease, respiratory illness, and hypertension are also more likely to be found in these same communities, further exacerbating the inequitable impacts of heat and underscoring the multi-generational impact of redlining on the health and welfare of communities living in those areas today.²⁵

Figure 4. Map of historically redlined areas in Seattle. The red areas highlighted in the map are places that were deemed hazardous and undesirable for residential investment due to proximity to industrial sites or other factors that reduced property value and attractiveness, including the prevalence of communities of color. *Figure source: Adapted from Mapping Inequality.*



Sensitivity. Sensitivity refers to an individual's susceptibility to heat. Sensitivity can be driven by age-related traits and other factors. For example, infants and children are more likely to overheat because of under-developed sweat glands. Older adults similarly have a reduced ability to sweat.

Studies show that people with diabetes, obesity, kidney disease, respiratory illness, and mental-illness and/or people or who take medications that alter the body's ability to regulate temperature are more sensitive to heat and therefore may face a higher risk of heat-related illness and death.^{21,26}

Adaptive capacity. The ability, or inability, to adjust in ways that reduce heat impacts is referred to as adaptive capacity. Short term adaptive strategies include visiting a cooling center or air-conditioned location, drinking more water, reducing physical exertion and time in the sun when it is hot, wearing protective clothing (loose fitting clothes, hat, sunglasses), or purchasing air conditioning. An individual's adaptive capacity will depend on factors such as income, occupation, connection to family and social networks, access to healthcare, and whether they rent or own their residence.

Longer term adaptive strategies at the community level include changing building design standards, increasing access to green space, planting or maintaining shade trees, or reducing impervious surfaces.

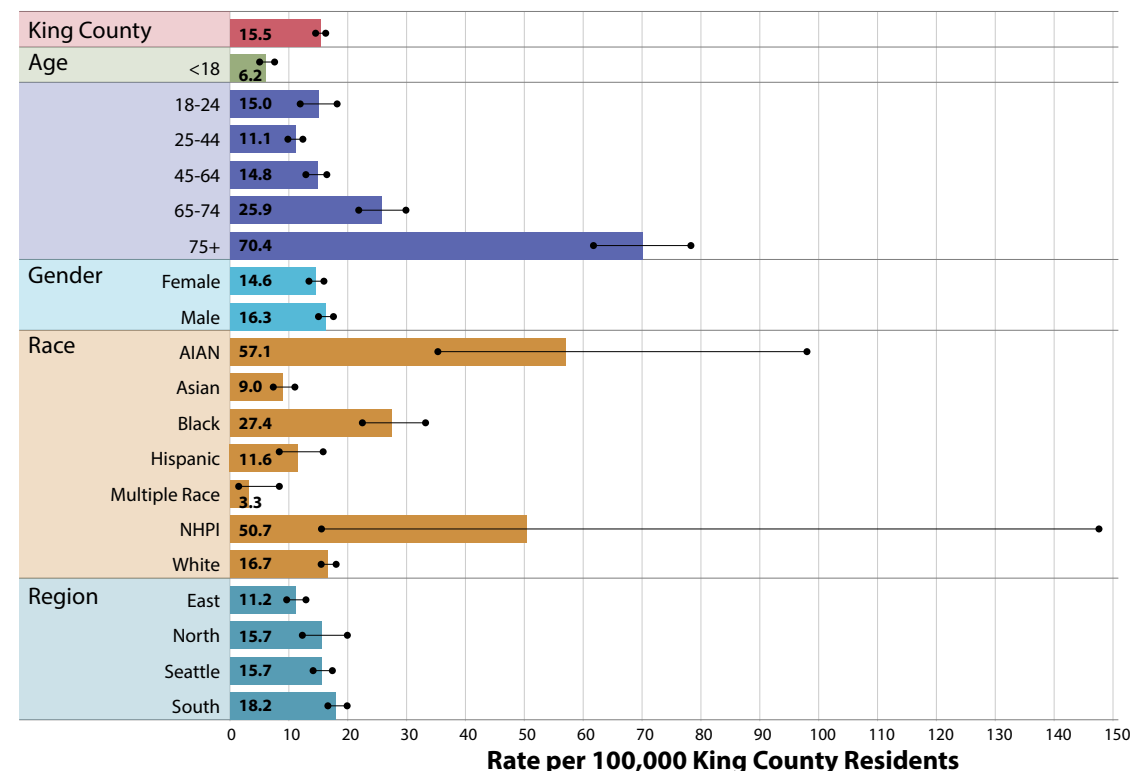


Observed Impacts of Heat on Health

Studies show the risk of death in King County on “hot days” (97°F, with humidity) increased by 10 percent,²¹ hospital admissions increased by two percent,³ and emergency medical service calls increased by 14 percent, relative to non-heat days.²¹ Furthermore, those same studies show that all ages can be impacted by heat. Emergency medical service calls for all age groups in King County increased at a relatively normal hot day temperature of 85°F.⁴ Hospitalization risk in King County also increased across many age groups (15-44, 45-64, 65-84, 85+) on high heat days (97°F).³

While heat matters for all ages, older adults are particularly impacted by heat. Forty-nine percent (363 of 741) of emergency department visits and 32 of 34 heat-related deaths in King County during the 2021 Heat Dome involved residents aged 60 and older.¹⁷ Data from Public Health–Seattle & King County²⁷ show that there were 4.5 times as many visits per 100,000 population for adults age 75 or older (70.4) compared to the county-wide average (15.5) between May and September 2021 – 2023, a time period inclusive of the 2021 Heat Dome (Figure 5). Rates for the 18-24 and 45-64 age groups were on par with the countywide average while the rate for ages 65 – 75 exceeded the average.

Rate per 100,000 King County Residents of Emergency Department Visits Involving Heat-Related Illness (May–September 2021–2023)



AIAN = American Indian/Alaska Native

NHPI = Native Hawaiian/Pacific Islander

Source: Washington State Department of Health, Rapid Health Information NetwOrk (RHINO)

Figure 5. Rate per 100,000 King County residents of emergency department visits involving heat-related illness May–September– 2021–2023. Rates are age-adjusted and calculated based on population estimates. Whiskers represent 95% confidence intervals and can aid in comparison between groups. *Figure source: Public Health—Seattle & King County.*

The data also show the disproportionate impact of heat for non-White communities. Between May and September 2021-2023, American Indian/Alaska Native residents (57.1 per 100,000), Native Hawaiian/Pacific Islander residents (50.7 per 100,000), and Black residents (37.40 per 100,000) experienced significantly higher rates of emergency department visits for heat-related illness relative to the King County average (15.5 per 100,000).

Projected Impacts of Heat on Health

Projected demographic changes in King County point to increased vulnerability to extreme heat events. King County's population is projected to grow by more than 660,000 people by 2044.²⁸ The County's population will also be older—the number of King County residents over age 65 is expected to double from an estimated 305,000 in 2020 to 617,000 in 2050 (increasing from 13.4 percent to 21.4 percent of residents).²⁹ Accommodating this growth in population, combined with an aging population, has the potential to expand heat islands.

Increasing temperatures will add to heat-related health risk in western Washington. By 2050, heat-attributable deaths in the Puget Sound lowlands (which includes western King County) under both a low and high greenhouse gas emissions scenario could increase 87-178 percent. Projected heat-related mortality also increased in the east Olympic Cascade Foothills (inclusive of central King County; a 57-133 percent increase) and Cascade Mountains West (inclusive of eastern King County; a 100-200 percent increase). Those in age categories 45–64, 65–84, and 85+ years of age and those with pre-existing conditions like diabetes, cardiovascular and respiratory illness are more likely to see an increase in heat-related mortality. For more on climate change and extreme heat, see Observed and Projected Changes in Heat in this section.

Heat, Equity, and the Built Environment

In 2020, King County partnered with the City of Seattle, Seattle Public Utilities, and CAPA Strategies to better understand how differences in land use, land cover, and geography affect ground-level temperatures in King County. The heat mapping campaign collected real-time, ground-level temperature data across the county on a single day (July 27, 2020) over multiple times of the day (6-7 a.m., 3-4 p.m., and 7-8 p.m.). Data were then used to develop detailed maps of local temperatures, providing clarity on the location and extent of heat islands in King County.



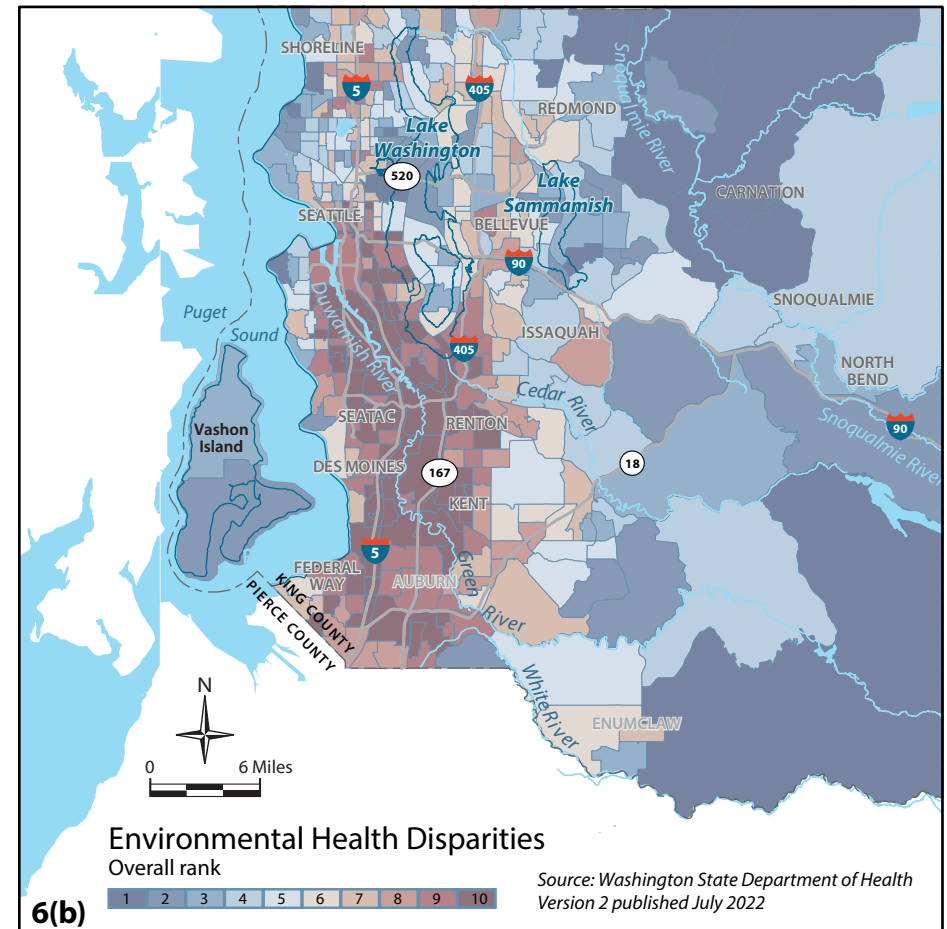
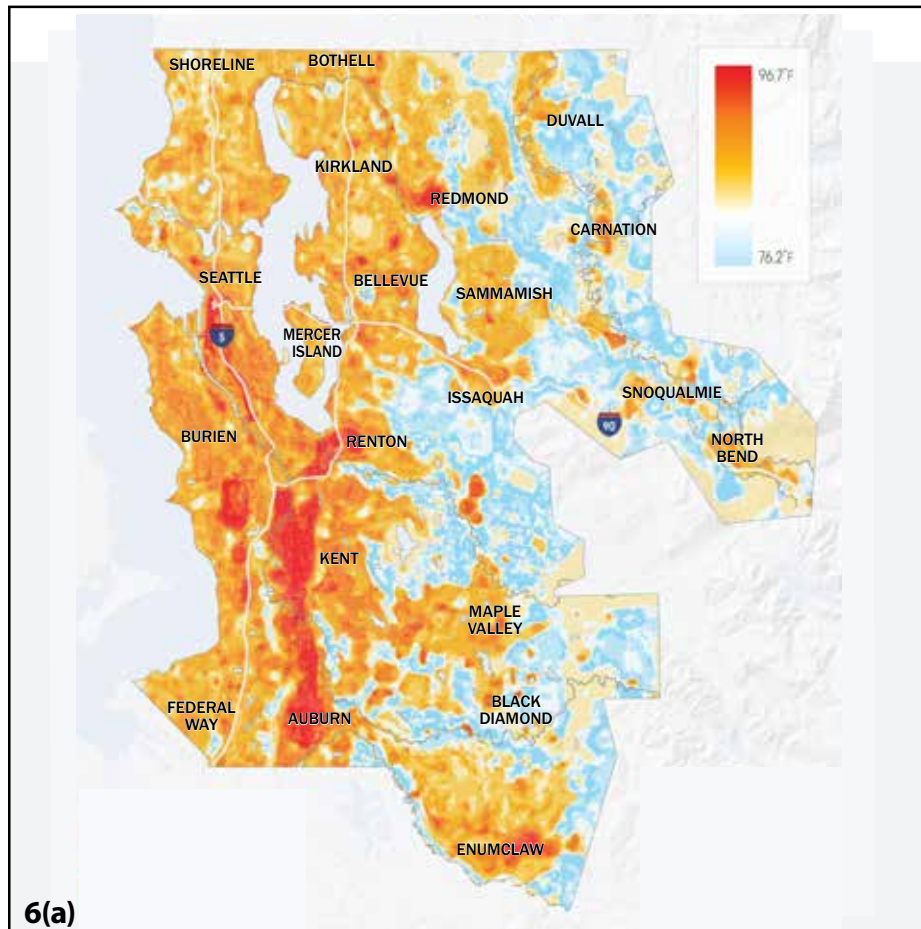


Figure 6 (a-b). (left) King County Heat Island Map. Areas in red and orange on the heat map indicate areas with hotter surface temperatures relative to areas in blue. The hotter areas are referred to as “heat islands”. (right) Washington State Dept. of Health Environmental Health Disparities map for King County. Aggregate risk ranking for census tracts based on environmental exposures (e.g., fine particulate pollution from diesel pollution and other sources, proximity to roadways); socioeconomic factors (limited English proficiency, no high school diploma, unaffordable housing); and health factors (death from cardiovascular disease, low birth weight). Areas in darker orange indicate locations with greater environmental health disparities compared to areas in dark blue. Mapping of health disparities and other indices show similar spatial patterns. *Figure sources: King County; Washington Department of Health.*



Photo source: King County

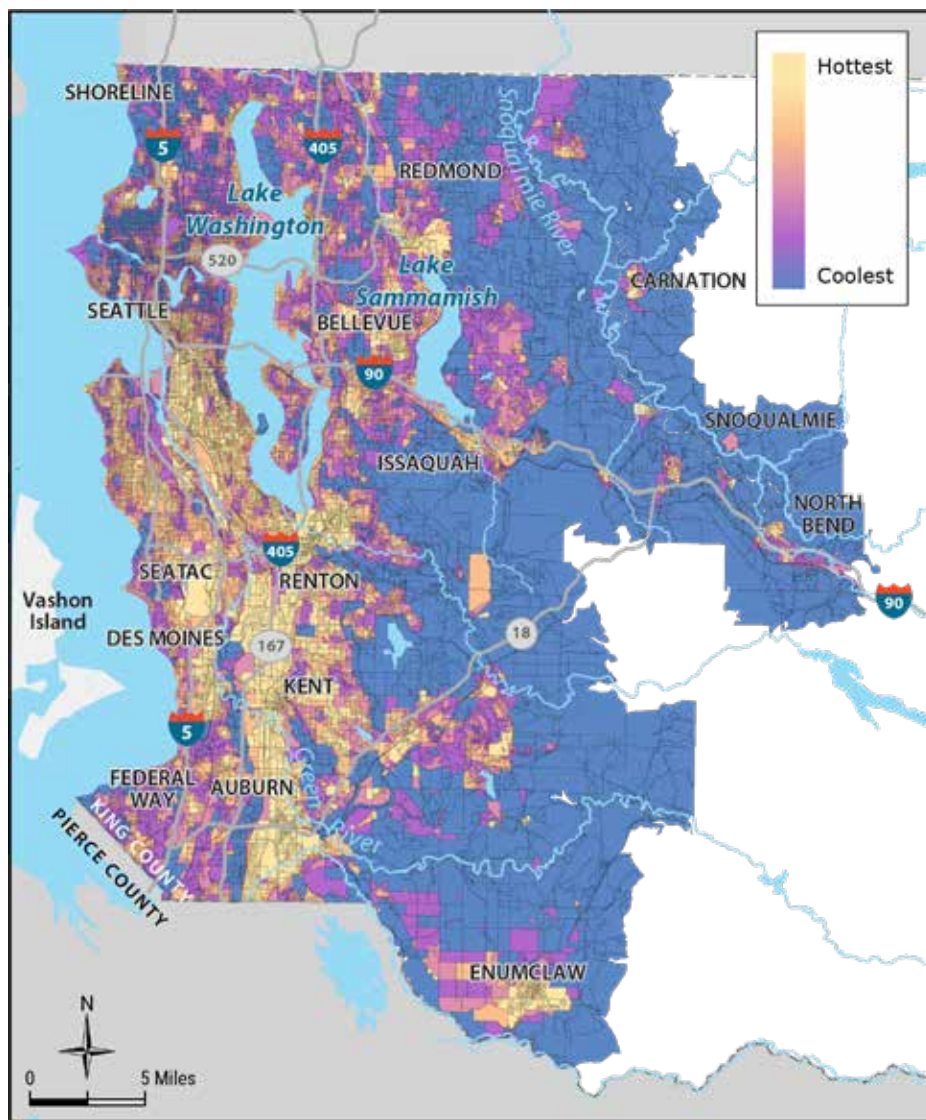
Results from the King County heat mapping effort are shown in Figure 6(a). The data show that across some parts of King County, there can be as much as a 20°F difference in temperature at the same time of day based on geography and differences in local factors such as the amount of impervious surface and tree canopy extent.³⁰ Temperatures in the more urbanized western half of King County were warmer overall, particularly in the Kent Valley, relative to the less urbanized eastern half King County. The analysis also revealed that heat islands are not just an urban issue; smaller cities and towns in east King County also have heat islands associated with development.

Another key takeaway from the King County heat mapping results is the connection between heat islands and other environmental and socioeconomic inequities that can affect vulnerability to heat. Similar to national trends, spatial analysis of King County's heat islands confirms that hotter areas of the county have fewer trees and more impervious surface relative to cooler areas (Figure 7b). The analysis also finds a higher proportion of people living with low incomes, seniors living alone, people with limited English proficiency, and cardiovascular disease in hotter areas of the county (Figures 8a-d).

Heat-related health risks for residents living in heat islands can be made worse by other environmental challenges. Figure 6(b) shows a strong spatial overlap between some of the hottest areas in King County and areas with high environmental health disparities identified by the Washington State Department of Health.^b Many of the same activities that contribute to the heat island effect in urban areas (e.g., high traffic volumes, industrial activities) contribute to higher concentrations of local air pollution, including nitrous oxide and fine particulates, and other sources of pollution. Fine particulates from wildfire smoke events can further exacerbate adverse health impacts during heat events, particularly in overburdened communities. The overlap between heat and environmental health disparities is most notable in south King County, where there is a higher percentage of people of color, limited-English-speaking communities, immigrant/refugee communities, and people living with lower incomes.

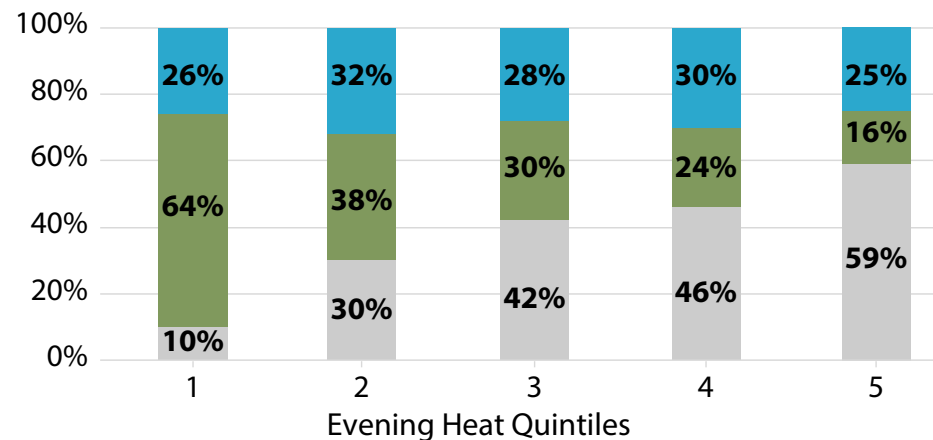
^b [The Washington State Department of Health Environmental Health Disparities map](#) provides an aggregate risk ranking for census tracts based on environmental exposures (e.g., fine particulate pollution from diesel pollution and other sources, proximity to roadways); socioeconomic factors (limited English proficiency, no high school diploma, unaffordable housing); and health factors (death from cardiovascular disease, low birth weight). Mapping of health disparities and other indices show similar spatial patterns.

County-wide Snapshot



7(a)

Built Environment



7(b) ■ Impervious surface ■ Tree canopy ■ Other land use

Figure 7(a). An analysis of the evening temperatures heat map from 4(a). The analysis aggregated heat mapping data to the census block level to support comparisons with existing health and environment data. The temperature data was split into quintiles (20% segments) with the coolest temperature (lowest 20%) represented by blue and the hottest temperatures (highest 20%) represented by yellow.

Figure 7(b) shows how the amount of impervious (paved) surfaces increase and tree canopy coverage decreases in hotter areas of the county.

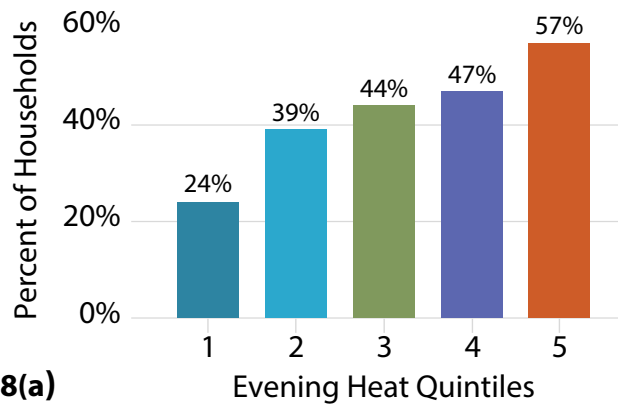
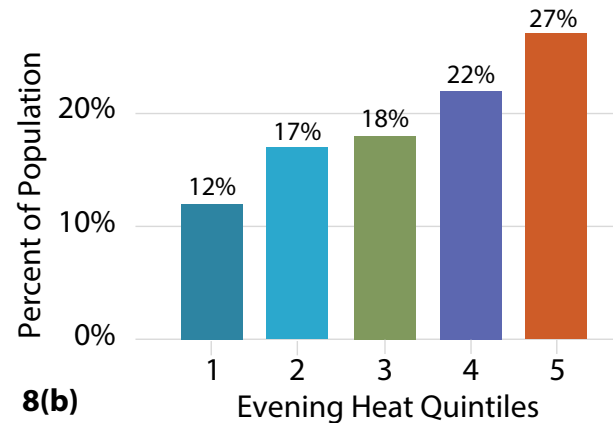
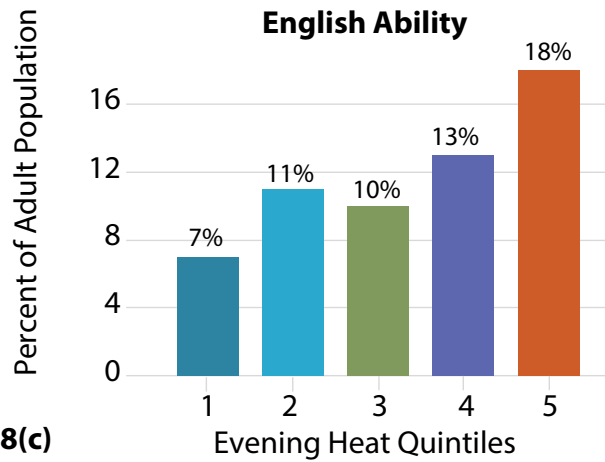
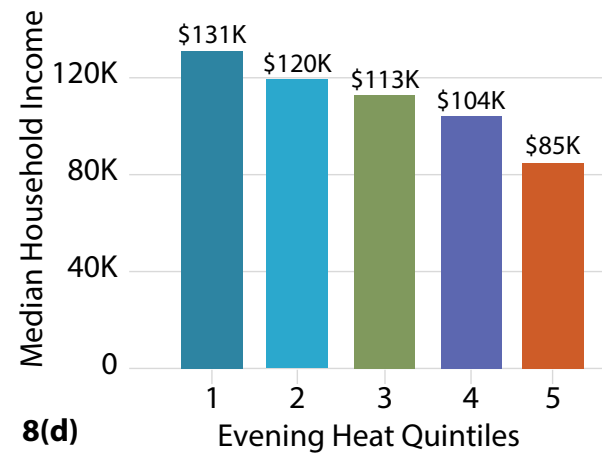
Percent of Households that are Renter Occupied**8(a)****Percent of Population below 200% of the Federal Poverty Level****8(b)**

Figure 8(a-d) depicts how renter-occupied households, people below 200% of the federal poverty level, and adults with limited English ability increases (a - c) and median household income decreases (d) in hotter areas of the county. Quintiles ordered from coolest (1) to hottest (5).

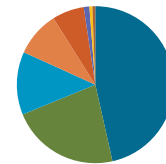
Percent of Adults with Limited English Ability**8(c)****Median Household Income****8(d)**

Who lives in the hottest areas of the County?



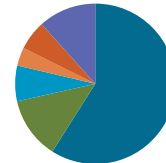
Figure 9(a). Map of the hottest 40% of the county, based on aggregating base heat map (Figure 6) to the census block level (Figure 7a).

Race/Ethnicity



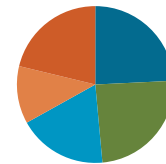
White (46%)	Population of two or more races (7%)
Asian (22%)	Native Hawaiian and other Pacific Islander (1%)
Hispanic or Latino (13%)	American Indian and Alaska Native (1%)
Black or African American (9%)	Some other race (1%)

Languages Spoken



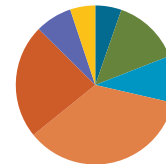
English (67%)	Spanish (8%)
Asian and Pacific Islander languages (Mandarin, Tagalog, Vietnamese, etc.) (14%)	Other Indo-European languages (4%)
	Other (7%)

Household Income Distribution



Less than \$49,999 (24%)
\$50,000 - \$99,999 (24%)
\$100,000 - \$149,999 (18%)
\$150,000 - \$199,999 (12%)
\$200,000 or more (21%)

Age Distribution



Under 5 (5%)	45 to 64 (23%)
5 to 17 (14%)	65 to 74 (7%)
18 to 24 (10%)	75+ (5%)
25 to 44 (36%)	

Figure 9(b): Demographic breakdowns of people living within the hottest 40% of the county by race/ethnicity, spoken languages, income, and age.

When compared to the King County average, a person living in the hottest 40% of the county would be:

- 37% more likely to be below 200% of the federal poverty level
- 34% more likely to have limited English ability
- 18% more likely to rent their home
- 17% more likely to have a disability
- 9% more likely to have diabetes

The hottest 40% of the County contains approximately:

- 163,037 single-family homes; 8,600 multi-family homes; 3,287 mobile homes; and 1,431 condos
- 210 K-12 schools and 106 daycares
- 144 senior citizen facilities
- 44 libraries
- 30 hospitals

Note: Exact building counts are difficult to obtain, so these counts may not fully reflect all buildings within the hottest 40% of the county.



Figure 10. Impervious surfaces and low tree canopy coverage are key factors contributing to higher temperatures in King County heat islands. *Photo source: King County*

Observed and Projected Impacts of Heat

Observed Trends in Summer Temperature and Heat Waves

The NOAA National Centers for Environmental Information maintains long-term records of county-average temperature data beginning in 1895 (NOAA NCEI Climate at a Glance).³¹ Analysis of those records finds that summers (June through August) are getting warmer in King County and across western Washington, although how much warming has occurred depends on what is being measured, where it is being measured, and over what time period. Key findings include the following:

- **Summer is getting warmer on average.** Average summer temperature for June through August in the Puget Sound lowlands increased 2.5°F between 1895 and 2023 ([NOAA NCEI Climate-at-a-Glance](#)) (Figure 11).³ This is comparable to the increase in average summer temperature for Washington state for the same period (+2.6°F).
- **Summer daytime temperatures have been rising since 1980.** Summer maximum temperatures, which typically occur in the afternoon, increased 2.6°F on average in King County between 1980 and 2023. There is no statistically significant long-term (1895-2023) trend (Figure 12a).

Washington, Climate Division 3 Average Temperature

June-August

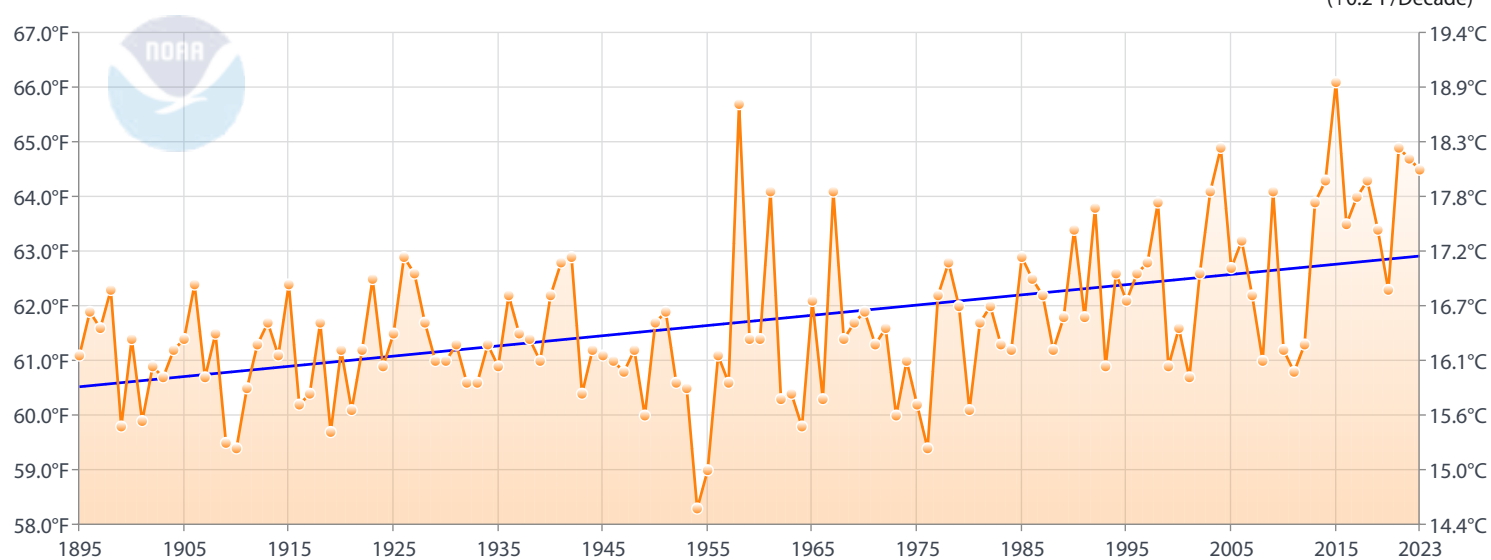
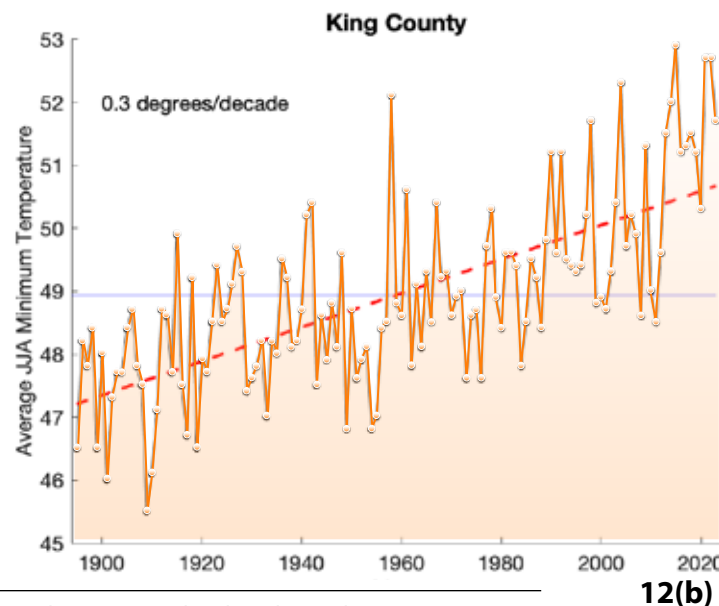
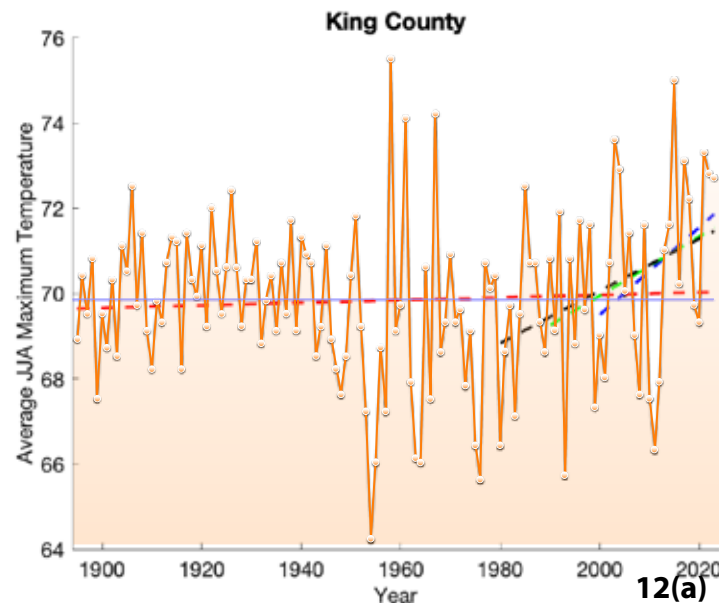


Figure 11. Long-term trends in summer (June-August) temperature for the Puget Sound lowlands, 1895-2023. Year-to-year average annual summer temperature shown in orange. Blue line shows the long-term linear trend for the entire period of record. *Figure source:* [NOAA National Centers for Environmental Information](#) ([noaa.gov](#))

Analysis and supporting details for this section provided by K. Bumbaco, Office of the Washington State Climatologist.

- **Summer nighttime temperatures have risen significantly.** Summer minimum temperatures, which typically occur at night, increased about 3.5°F between 1895-2023 (Figure 7b) and 2.7°F for 1980-2023 in King County. Elevated nighttime temperatures are important because they limit the potential for homes to cool and people to recover after hot days, often worsening poor health outcomes. While development may be a contributing factor over time in some urban locations in King County, this trend in warmer nighttime temperatures is consistent with Washington trends as a whole (including rural locations).
- **Some warm season months (May-September) have gotten notably hotter while changes in other months are less clear.** Maximum temperatures for August and September in King County increased 1.8°F and 3.0°F, respectively, on average between 1895 and 2023.^c Trends in maximum temperatures for May, June,



Figures 12(a) and (b). Summer (Jun-Aug, or “JJA”) maximum temperatures (top) and minimum temperatures (bottom) for King County from 1895-2023. The linear trend line for the entire period of record is the dashed red line. The blue line is the average for the period of record (1895-2023). Trends in maximum temperature for more recent periods are shown as follows: 1980-2023 (dashed black line), 1990-2023 (dashed green line), and 2000-2023 (dashed blue line). Recent years show more warming in maximum summer temperatures. *Figure source: K. Bumbaco, Office of the Washington State Climatologist using [NOAA NCEI Climate at a Glance](#); accessed February 27, 2024.*

^c The increases in maximum temperatures observed in August and September compared with earlier in the warm season are consistent across Washington state and may be related to declines in summertime precipitation, at least over the last few decades. Additional research on this potential connection is needed.

and July are not statistically significant. In contrast, summer minimum temperatures have warmed significantly for May, June, July, August, and September since 1895.

Trends in summer heat waves also vary. Heat waves can change in terms of magnitude (how hot it gets during a heat wave), duration (how long a heat wave lasts), and frequency (how often a heat wave occurs). While there is no single definition of a heat wave, a common definition is the number of consecutive days or nights above a given temperature percentile.^d

Trends for two percentile thresholds—the 95th and 99th percentile—and two absolute temperature thresholds locally—85°F and 90°F—show an increase in the frequency of some types of heat waves (daytime versus nighttime), while others do not show an increase. More specifically:

- **Nighttime heat waves are occurring more often across western Washington.** The number of warm nights per summer and frequency of warm night heat waves have increased in western Washington.^{7,32} This finding is true for different thresholds (95th or 99th percentile) and baseline periods (1901-2009, 1920-2021). There have been no significant long-term changes in the duration or magnitude of nighttime heat waves at this point, however.

- **There is evidence of increasing local trends in heat but no long-term trend in daytime heat waves.** There is no significant, long-term increase in the frequency, magnitude, or duration of daytime heat waves averaged over western Washington and western Oregon⁷ or in western Washington alone. Nevertheless, there is evidence of increasing daytime heat locally. For example, observations at Seattle-Tacoma International Airport and show a statistically significant increasing trend in the number of days 85°F or above and 90°F or above for 1945-2023 (Figure 13).

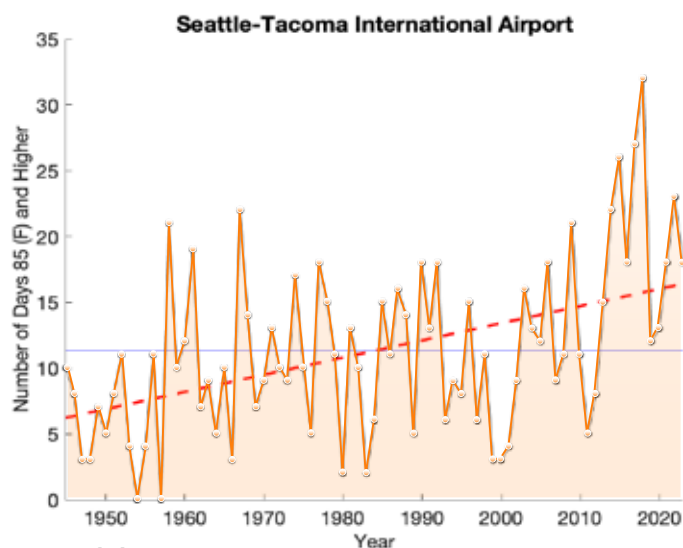
It is important to note that temperatures can vary substantially throughout King County in association with local effects related to the geography and the built environment. As noted previously, temperatures on a warm summer day can vary by as much as 20°F across the county based on differences in land use, land cover, and geography. King County locations closer to water and/or with more natural landscapes tend to be cooler during a hot day relative to locations with more development and/or farther away from Puget Sound, such as Kent, Auburn, Maple Valley, Duvall, and Carnation. Averaging temperatures over the entirety of King County can therefore mask important differences in local temperatures.

^d A percentile definition is more closely aligned to the climatology of a location, since people in milder climates might have a lower threshold for what constitutes a heat wave.

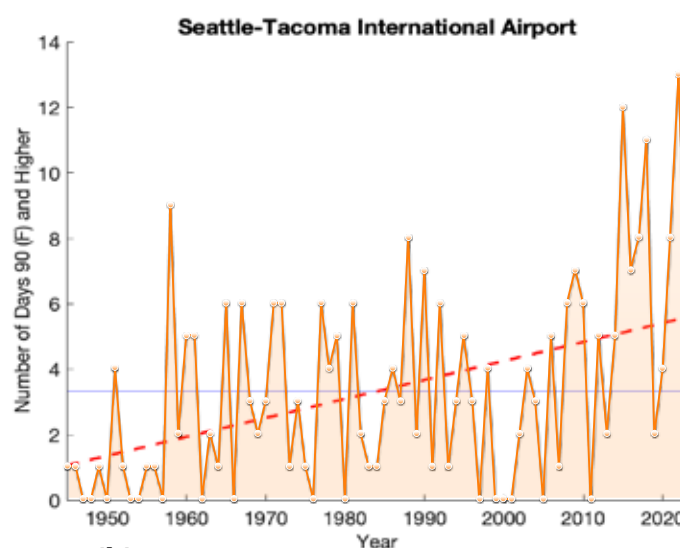
Projected Changes in Summer Temperature and Heat Waves

All climate scenarios point to hotter summers in King County and the Puget Sound region. It is also very likely (greater than 90 percent probability) that heat waves will increase in frequency, severity, and duration across the United States.³³ Average summer maximum temperatures in King County are projected to be +3.7°F (*range: 2.5-4.9°F*) warmer by 2020-2049 compared to the 1980-2009 historical average (Figure 14).^e By the 2080s, average summer maximum temperatures exceed 80°F, warming +10.5°F (*range: 7.4-13.0°F*) relative to the historical average. This increases the likelihood for more and hotter heat waves.

Changes to extremely warm days and nights are shown through a measure known as humidex. Similar to the heat index, humidex is a measure of temperature and humidity used to describe the combined effects of heat and humidity on the human body.³ Projections indicate 10 more days (*range: 6-13 days*) with a humidex above 90°F for 2020-2049 compared to the average for 1980-2009 (Figure 15). By late century (2070-2099), projections show 40 more days (*range: 24-59 days*) exceeding the 90°F humidex threshold in King County.



13(a)

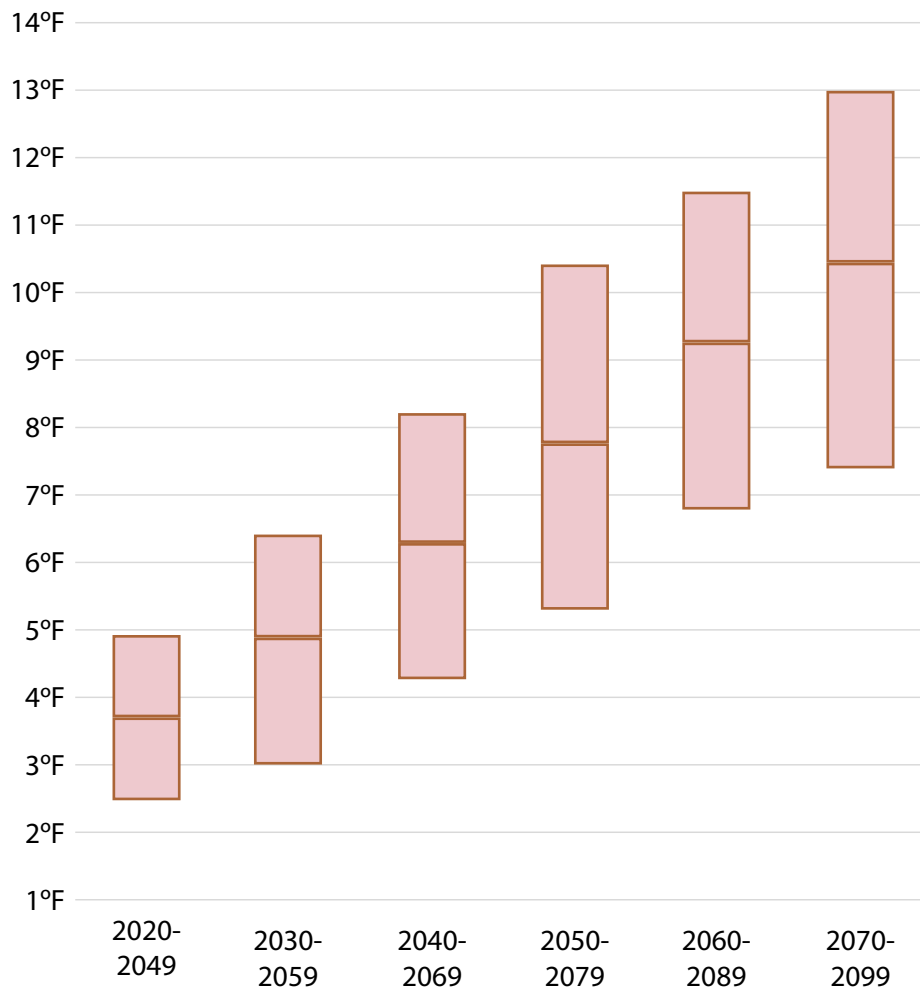


13(b)

Figures 13(a) and (b): The annual number of days 85°F or above (left) and 90°F or above (right) at Seattle-Tacoma International Airport from 1945-2023. Both increasing trends are significant at the 95% confidence level. The blue line is the average for the period of record (1945-2023).
Figure source: K. Bumbaco, Office of the Washington State Climatologist using NOAA NCEI [GHCND](#); accessed February 27, 2024.

^e The temperature and extreme heat projections highlighted here are from the University of Washington Climate Impacts Group's [Climate Mapping for a Resilient Washington](#) web-based tool.³⁴ Unless otherwise noted, all projections are based on a high emissions scenario (Representative Concentration Pathway 8.5). Prior to 2050, differences among greenhouse gas scenarios are relatively minor, whereas the results for later in the century can be significantly affected by scenario choice.

King County, Washington
Change in Average Summer (June-Aug) Maximum Temperature
 Higher Scenarion (RCP 8.5); Historical (1980-2009) Value: 70.5°F



The number of warm night heat waves is also projected to increase. Specifically, nights with a humidex above 65°F in King County are projected to occur on seven more nights (*range: 3-12 days*) by 2020-2049, relative to the average for 1980-2009. By late century (2070-2099), projections show 45 more nights (*range: 18-71 days*) exceeding the 65°F humidex threshold in King County. Elevated nighttime temperatures are important because they limit the potential for homes to cool and people to recover after hot days, often worsening poor health outcomes. Nighttime heat exposure has been shown to add stress on the human body even when controlling for daytime hot temperatures.

How much and how quickly summer temperatures increase as a result of climate change will depend on how quickly global greenhouse gas emissions are curtailed. While not listed as an action in this strategy, local action to reduce greenhouse gas emissions is part of a comprehensive heat plan. Many heat mitigation actions, including urban greening, preservation of forested areas, and a focus on energy efficiency, also benefit emissions reduction. See [Actions](#) for more on heat mitigation approaches and co-benefits.

Figure 14. Projected change in average summer maximum temperature (June-August) for King County based on a high greenhouse gas emissions scenario (RCP8.5). The solid, red line in each rectangle represents the model median while the rectangle encompasses the 10th and 90th percentile range of the individual model projections. *Figure source: [Climate Mapping for a Resilient Washington, University of Washington Climate Impacts Group.](#)*

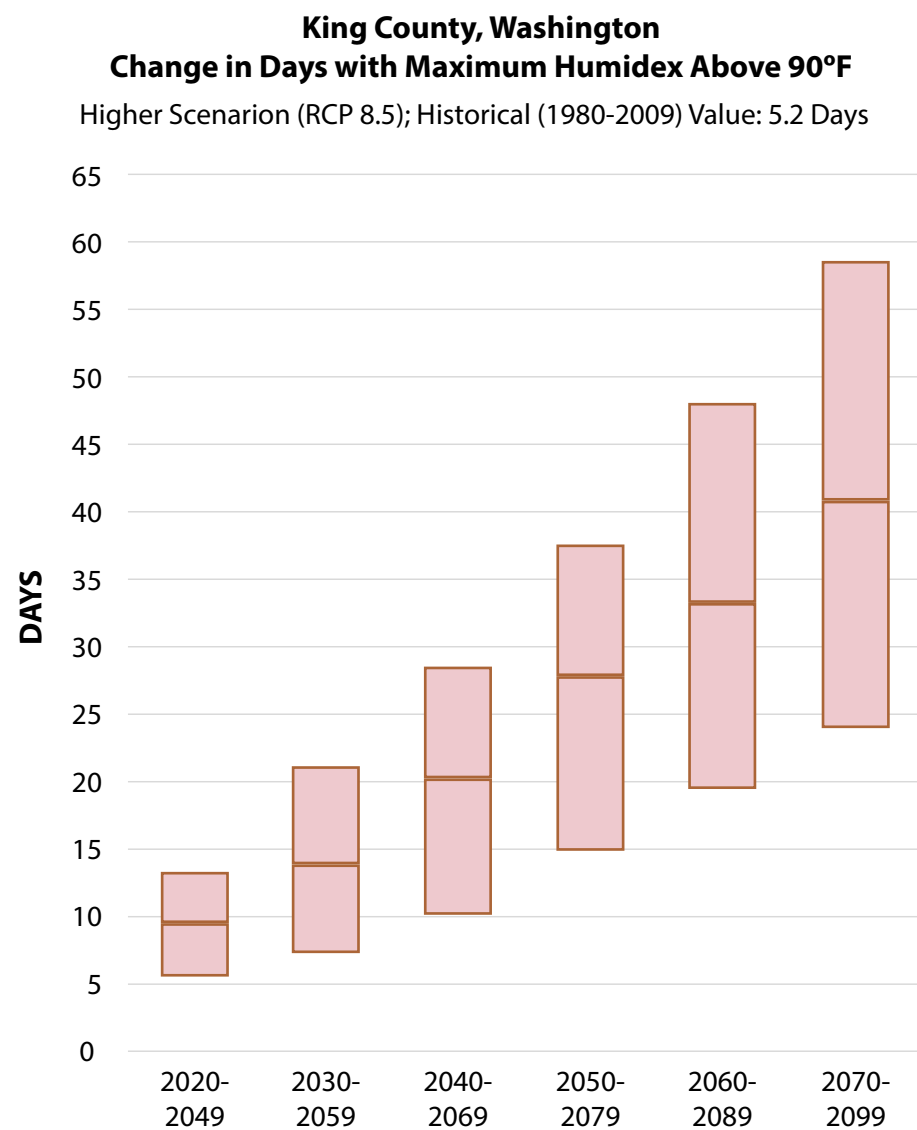


Figure 15. Projected change in the number of days above a maximum humidex of 90°F (32.2°C) for King County based on a high greenhouse gas emissions scenario (RCP8.5). The solid, red line in each rectangle represents the model median while the rectangle encompasses the 10th and 90th percentile range of the individual model projections. *Figure source: [Climate Mapping for a Resilient Washington, University of Washington Climate Impacts Group.](#)*

COMMUNITY ENGAGEMENT

Engagement Methods

King County conducted extensive outreach with local governments, community-based organizations, frontline community members, and other partners to identify and prioritize actions for the strategy. Engagement activities included workgroups, focus groups, community surveys, tabling events, subject matter expert briefings and consultations, and interviews. The County’s engagement approach was rooted in a commitment to ensure the strategy addressed the needs of those most affected by heat. The engagement approach also reflected a goal of building partner awareness and support for the work outlined in the strategy. In total, more than 900 people were engaged in the process (Figure 15).

Strategy Workgroups

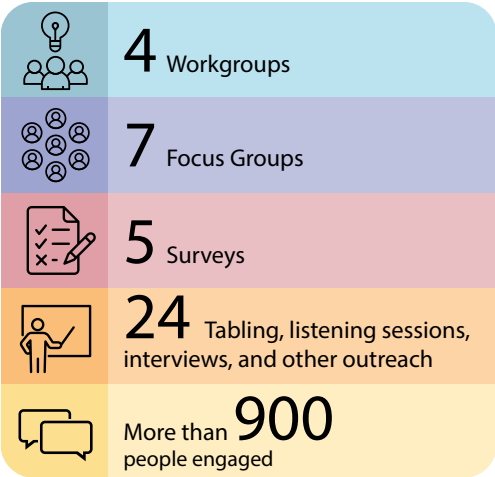
King County convened four workgroups, described below, to identify and prioritize actions related to specific topic areas or lived experience. Each workgroup provided a range of subject matter expertise, critical perspectives, and lived experience to guide action development, to identify implementation details and partners, and to ensure alignment with core strategy values and principles. Existing groups were utilized where possible to reduce duplication of effort and build sustained connections for implementing strategy actions.

- **Community Partners Workgroup.** Created specifically for this strategy, the Community Partners Workgroup consisted of eight frontline community-based organizers from across King County (see [Acknowledgements](#) for participating members and organizations). Workgroup members identified and

prioritized frontline community priorities, developed action concepts to address community needs, and identified equity-related considerations for action implementation.

- **Urban Forestry Forum Workgroup.** The Urban Forestry Forum Workgroup consisted of 11 urban forestry professionals recruited from King County’s recently established Urban Forestry Forum (see [Acknowledgements](#) for participating members and organizations). The Forum serves as a platform for King County and its 39 municipalities to share information, strategies, industry standards, successes, and challenges related to urban forestry. More details about the Forum can be found in [Action 11: King County Tree Code Toolkit](#).
- **Heat Response Workgroup.** Created specifically for this strategy, the Heat Response workgroup consisted of more than 40 county and local jurisdiction staff from across King County with expertise and/or interest in emergency management. The Heat

Response workgroup was convened to identify needs and opportunities related to topics such as extreme heat communication and outreach, supporting heat-sensitive populations, heat relief supplies distribution, and cooling center organization.





U.T.O.P.I.A Heat Strategy Focus Group



Heat strategy focus groups (top, bottom) hosted by the Chinese Information and Services Center



Tabling at Issaquah Welcome Week



Tabling at the Rainer Beach Community Center

Figure 16. Engagement activities related to heat strategy development.

Photos source: King County

- **Regional Code Collaborative.** The Regional Code Collaborative (RCC) is a multi-jurisdictional group of more than 95 code officials and planners from across King County who work together to develop and update green building codes for local adoption. A subgroup of more than 25 RCC participants were engaged to discuss how building codes can be updated to include heat resilience and to identify additional built environment strategies to mitigate extreme heat.

Frontline Community Member Focus Groups

King County staff hosted seven focus groups with frontline communities who live in identified heat islands:

- High school youth (host partner: Foster High School, Tukwila) (two focus groups)
- Chinese immigrant community seniors and young families in the Seattle Chinatown/International District and in Renton (host partner: Chinese Information Services Center) (two focus groups)
- Queer and trans Native Hawaiian/Pacific Islander community members (host partner: U.T.O.P.I.A. Washington) (one focus group)
- People experiencing homelessness (Seattle, Auburn; host partners: King County Regional Homelessness Authority, YMCA) (two focus groups)

Focus groups created a forum for hearing directly from community members about their experiences with extreme heat and community priorities and ideas for reducing heat risk. The focus groups also provided opportunities to share information and resources on heat preparedness with participants and partner organizations.

Focus groups were planned, organized, and facilitated in partnership with community-based organizations and service providers. Up to 20 community members participated in each focus group. Where relevant, focus groups were held in-language or translation was provided.

Other Engagement Activities

Interviews with 14 local jurisdictions^f in King County were conducted early in the strategy development process to learn about current priorities or plans for addressing heat and what would make a countywide heat mitigation strategy useful to their work. Additional local government outreach included engagement with city managers, elected officials, and local government staff participating in the Sound Cities Association and interviews with other local and state government subject matter experts.

Other outreach events included tabling at community events, surveys, and virtual discussion sessions. When tabling, County staff distributed multilingual heat safety information and conducted “dot exercises” to better understand community challenges, priorities, and preferred interventions regarding extreme heat. Virtual outreach sessions included brainstorming activities and discussions around challenges and desired interventions related to extreme heat. Outreach was prioritized in communities that face risk during extreme heat events.

^f Interviewed jurisdictions: Bothell, Burien, Issaquah, Kent, Kirkland, Maple Valley, Mercer Island, North Bend, Redmond, Renton, Sammamish, Seattle, Shoreline, Tukwila.

Engagement Findings

Communities are concerned about extreme heat.

Residents of all ages, ranging from seniors to youth, expressed concern for themselves, their families, community members, and the environment during extreme heat events. In a survey conducted in the Chinatown-International District, 96 percent of 120 respondents stated they were concerned about heat at some level. Along with the health impacts of heat, many engagement participants noted inequities in how people are exposed to heat, the magnitude of health impacts, and access to cooling resources.

Residents face challenges with staying cool at home.

Most residents prefer to stay at home during periods of extreme heat even though many reported significant challenges with comfort and health due to inadequate cooling options at home. Residents and community organizers identified cost of purchasing, installing, and operating cooling equipment as the leading barrier to home cooling (Figure 17). Residents also reported landlord restrictions, complexity of the technology, and health or mobility limitations as hurdles to attaining home cooling. Obtaining fans, portable air conditioners, cold foods, and ice can also be a challenge when it is hot.

Residents face challenges with staying cool outside their homes.

Participants reported many obstacles to finding cooling options outside the home, including limited awareness of where to go and limited access to cooling centers and community cooling spaces. Additional barriers included transportation issues, safety concerns, known or perceived social stigmas, and a lack of age-appropriate on-site programming to help keep individuals or families engaged.

Participants also identified a need for more walkable green spaces and parks with more amenities. Neighborhoods, particularly in heat islands, tended to lack walkable shaded outdoor areas. Identified issues limiting the use of greenspaces and parks when it is hot include a lack bathrooms, shade structures, free water, enough seating, and accessible public transportation at local green spaces and parks. Some participants also mentioned an inability to swim or discomfort with water, which limited their ability to cool off via swimming.

What limitations prevent you from using or upgrading cooling options inside your home? (n=130)

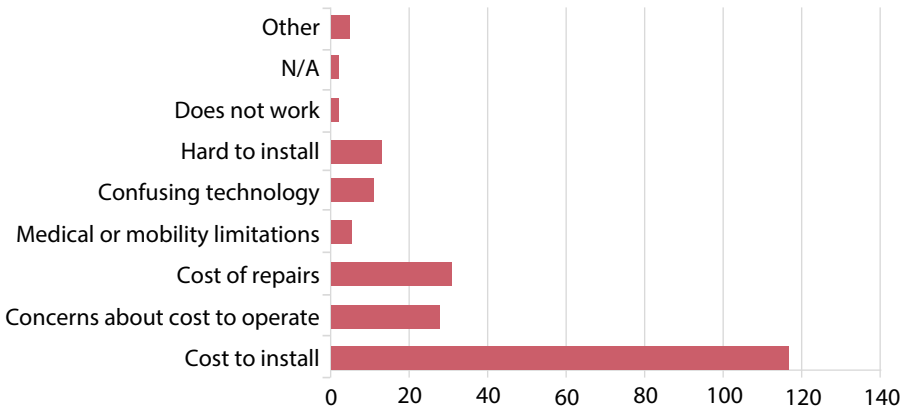


Figure 17. Energize! Survey results. Administered by King County and Spark Northwest in 2023 during three different workshops as a part of the Energize! heat pump pilot.



Photo source: Paul Christian Gordon, *Crosscut*

People experiencing homelessness face unique challenges.

Many focus group participants experienced physical and mental health issues that were exacerbated by heat, including heat stroke and a near fatality during the 2021 Heat Dome. Challenges for people experiencing homelessness included difficulties accessing public cooling spaces (limited hours, restrictions on restroom use, barriers to entry or staying in cool spaces), the cost of bottled water (combined with a lack of publicly accessible water sources), lack of heat impact awareness, social stigmas about people who are homeless, and challenges with pets. Residents living in tiny houses and cars had their living space heat up quickly, and affording food and hydration remained a challenge.

Seniors, multigenerational households, and rural areas also face challenges staying cool.

Seniors, especially those with low mobility, reported numerous challenges with heat. Residences with no air conditioning can become dangerously hot, and power outages can exacerbate these risks, especially for seniors in apartment buildings who cannot use stairs. Additionally, some seniors are not aware of the health risks they face. Language barriers can contribute to these and other heat-related challenges.

Larger multigenerational families sharing a single living space can struggle with staying cool at home. This can lead to heightened stress, discomfort, and health issues for all family members, particularly seniors and young children. Finally, the limited availability of cooling locations in rural communities can create added challenges for rural residents, particularly if they lack affordable transportation and/or must travel longer distances to find cooling.

Residents employ a wide range of coping strategies when it is hot.

Residents employ a diverse range of coping strategies during extreme heat, ranging from makeshift methods like damp towels over windows to taking cold showers or soaking in ice to seeking air-conditioned spaces. Families identified the importance of weather alerts to help them stock up on cold foods or cooling items (such as fans, portable air conditioning, or ice). If their living spaces were too hot, residents reporting seeking refuge in areas with air conditioning such as malls, homes of friends, or community centers. They also frequented shaded park spaces, pools, and lakes.

Residents reported the importance of relationships and community cohesion during heat waves. Multiple focus group participants reported checking in on or going to friends, elders in their community, and other families with young children. They also reported concern for vulnerable members of their community or people that work in hot environments, citing the need for community to take care of each other.

Residents are looking for equitable solutions for heat resilience.

Residents identified a variety of interventions to support heat resilience in their communities. Outreach participants advocated for support measures such as multilingual information and cooling resource distribution, information and resources for people facing occupational heat risk, inclusive and engaging community cooling spaces, support with cooling, sustainable urban design and policy, enhancing green spaces, and support for swim safety. Figure 19 at the end of this section illustrated some of those solutions.

Equity was a recurring focus in community discussions, highlighting the pressing need for fair access to cooling resources. Particularly among low-income and vulnerable groups, there was strong advocacy to create tailored solutions, such as proactive heatwave alerts, and culturally sensitive educational campaigns for the most vulnerable community members. Additionally, suggestions highlighted the need for consistent funding and partnership with government agencies and private organizations to boost capacity of community organizers to engage in resilience efforts and reach underserved populations. These insights underscore the importance of a collective effort to ensure that every community member, especially those most at risk, can effectively cope with extreme heat.



Local governments are looking for strategic guidance and resources to support planning.

Local jurisdiction staff are looking for assistance in identifying strategic opportunities and resources for heat action. In particular, staff noted that local government heat work in King County would benefit from the following:

- a more comprehensive (but focused) approach,
- consistency in approaches across jurisdictions,
- shared goals and collaborative approaches,
- flexibility in approaches so local jurisdictions can determine how and where to engage,
- equitable solutions,
- a heat toolkit/toolbox for accessing sample ordinances, policies, and best practices,
- shared communication resources and partnerships,
- information on funding and help with securing funding, and
- guidance and data, including support in identifying vulnerable communities.

Additional local government areas of interest for heat action are shown in Figure 18.

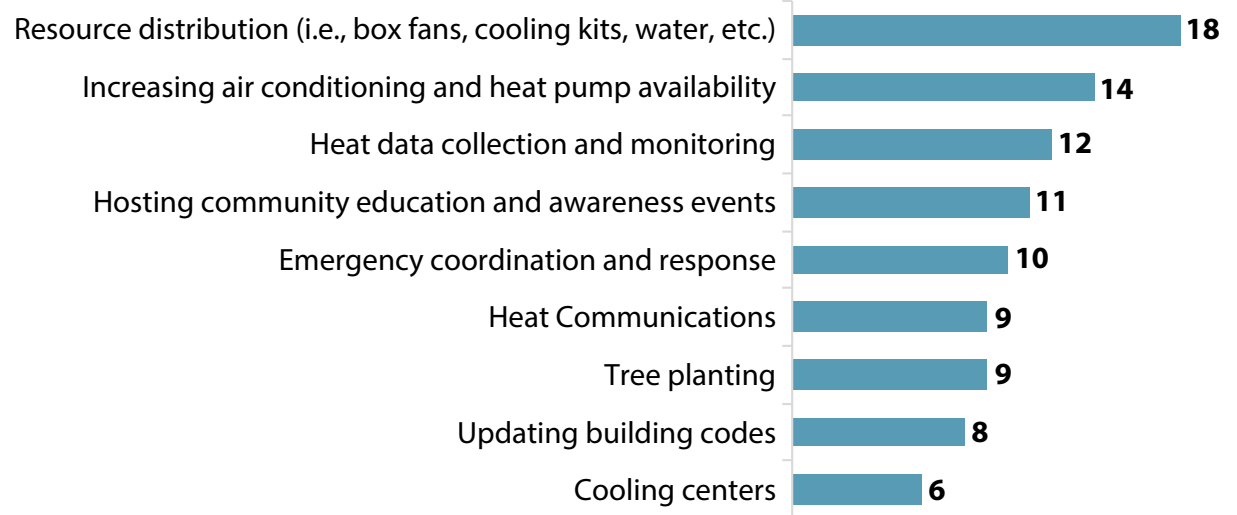


Figure 18. Survey responses to the question “Where would you like your jurisdiction to do more [on heat]? (pick top three)”, Sound Cities Alliance participant survey, May 19, 2023.

1



2



3

**Figure 19: Adapting to Extreme Heat**

- 1. Urban areas with little shade** (upper left) lead to urban heat islands that put people at greater risk. Tree planting, green roofs and shade structures can reduce heat islands; while heat checks for vulnerable populations, public and commercial spaces with AC coupled with transportation to these venues (upper right) can reduce extreme heat health risks.
- 2. Vulnerable individuals** such as older people with pre-existing medical conditions and/or limited mobility (middle left) are at higher risk during extreme heat events. Reducing direct sunlight with blinds and trees in south-facing windows, installing and using AC and conducting wellness checks (middle right) can help reduce that risk.
- 3. Outdoor workers** (lower left) are especially vulnerable during peak temperatures. Encouraging rehydration with scheduled breaks and quickly accessible bathrooms, shifting working hours and increasing shade with temporary shade structures (lower right) are proven strategies to reduce extreme heat health risks for outdoor workers.

Figure credit: Zoe Vartanian (UW College of the Environment), Zach Kearl (UW Climate Impacts Group) and "In the Hot Seat" report author team.²

ACTIONS

Heat strategy actions are organized into six categories and include the following information:

Action Description:

Summarizes what the action seeks to accomplish, the issue(s) being addressed, the spectrum of work involved, and intended outcome(s). Many actions include multiple activities. These activities further delineate aspects of the work needed to achieve action outcomes. The activities also provide options for engaging in the work, allowing implementation partners the opportunity to scale their work relative to differing organizational needs, capacities, and resources.

Implementation Partners:

Identifies organizations, groups, or communities that serve a key role in guiding, implementing, and sustaining the work, depending on how the action is implemented. Listed partners include confirmed and potential partners. Implementation partners may also include other organizations not included in the list.

Action Typology:

Identifies actions as one of three action types. Actions can have more than one typology based on different activities within the action.



“Accelerate”: identifies actions where the intent is to accelerate existing at-scale efforts so community benefits are realized sooner. “At-scale” is defined as county-wide in its implementation or happening in enough locations to be considered county-wide in practice. Examples include public health messaging on heat and operation of public cooling centers.



“Scale up”: identifies actions where the intent is to expand the scope and scale of smaller scale efforts to cover more places and communities. Examples include expanding pilot projects or best practices.



“New”: identifies a new activity or emerging practice for our region.

Implementation Feasibility: ☀️—☀️☀️☀️

Identifies the relative level of effort required to implement the action. Options are easy, moderate, or hard. Factors that influence implementation feasibility include funding and staffing requirements; legal, technical, or logistical challenges; and the degree to which organizations are already engaged in the work or similar activities. Actions that contain multiple activities may have a range of feasibility, e.g., easy to moderate or easy to hard.

Alignment with Community Feedback: ✓

Identifies actions that are directly responsive to priorities identified by community members during engagement efforts.

Timeline for Community Benefits:

Identifies the general time frame in which communities would see benefits once the action is implemented. Options are under one year, one to three years, and over three years. Actions that contain multiple activities may have multiple time frames. Summary benefits are noted. Additional benefits may exist.

Callout Box:

Highlights an example of ongoing work related to the action or a key idea related to action implementation.

HOW TO READ THE ACTIONS

Action Description
Implementation Partners
Action Typology

Category 3:
Cool Our Neighborhoods

ACTION 9: Private Property Tree Care
Develop and promote technical, educational, and financial assistance for tree planting and maintenance to private property owners.

Proper tree care on private property can pose challenges for residents lacking the time, knowledge, or financial resources needed to provide that care. This action calls for the development of technical, educational, and financial assistance programs to help local governments and King County residents with retaining, maintaining, and planting trees on private property and adjacent rights-of-way.

While trees offer vital public benefits to our communities, the vast majority of urban trees are found on private property. Additionally, private homeowners are often legally responsible for the trees in the adjacent right-of-way. Hiring a certified and licensed arborist for tree assessments and care can be prohibitively expensive for many. This can result in tree removal as an alternative to ongoing tree maintenance or avoided tree maintenance that ultimately increases risks for trees, homeowners, and nearby properties.

To support planting and proper tree care on private property, local governments, community-based organizations, local nurseries, and other partners should work together to:

How Do Trees Help?
Trees play a crucial role in heat mitigation, underscoring the importance of preserving and nurturing healthy trees and a robust tree canopy. Research indicates that shaded areas, such as those beneath trees, can experience temperatures approximately 20-45°F lower during peak heat compared to exposed locations.⁴³ Supporting the growth and proper maintenance of large trees is particularly valuable. A medium to large size mature tree (25 feet or more) provides more canopy and shade and has a bigger impact on conserving energy and mitigating heat island effects than smaller trees.⁴⁴

1. Develop and implement programs that provide financial incentives and assistance for tree planting and care on private property. Examples of assistance programs and incentives that should be created, adapted, and expanded to support low-income households include:

- Establish a collaborative program in partnership with certified arborists and tree service providers to offer cost-share or sliding-scale tree services, including hazardous tree assessments, pruning, and maintenance.
- Provide tree voucher or give-away programs.
- Offer water bill subsidies or credits to eligible participants who engage in tree watering activities on private property and rights-of-way, incentivizing tree care and maintenance.

2. Create and distribute locally relevant outreach materials, particularly multilingual materials, focused on planting and caring for trees. More in-language and culturally relevant materials and information are needed to support frontline community learning and engagement on the topics of urban forestry, canopy coverage, tree planting and maintenance, and heat mitigation. Needed materials include tip sheets and guides as well as visual aids, graphics, interactive workshops/engagement, and video trainings on tree selection, planting, care and regulations. Providing a channel of communication with trusted community partners to help answer questions will also be important.

While these programs can benefit residents throughout King County, implementation should prioritize frontline communities, including low-income neighborhoods and areas with low tree canopy cover or more impervious surfaces. Outreach materials and programs should be co-developed and piloted with local communities to ensure that materials reflect community interest, concerns, and ideas for effective information and programs. Getting community

Callout Box
Timeline for Community Benefits
Alignment with Community Feedback

Implementation Partners
Implementation Feasibility

feedback on materials and resources before finalizing them will also increase the likelihood of their use and impact. Forming partnerships with community organizations and local tree care providers will be instrumental in ensuring the accessibility and success of these initiatives.

Implementation Partners: Local jurisdictions, King County Urban Forestry Forum (see callout box in Action 11: King County Tree Code Toolkit for more information), community-based organizations, King Conservation District, Washington State Department of Natural Resources, local nurseries, local tree care providers, in-language technical support agencies.

Action Typology:

Implementation Feasibility:

Timeline for Community Benefits (Benefits): 3+ years (more equitable tree canopy coverage; air quality, water quality, and other ecosystem benefits; lower greenhouse gas emissions; reduces heat island effect).

Alignment to Community Priorities:

HEAT STRATEGY ACTIONS

Category 1:

Help People Stay Cool and Safe Indoors

1. In-home heat safety
2. Energy efficiency and utility bill assistance
3. Heat pump installations
4. Enhanced cooling centers
5. Community-led cooling spaces

Category 6:

Support Heat Action

19. Sustainable partnerships for implementation
20. Support community solutions

Category 5:

Increase Heat Safety Awareness

17. Multilingual communications
18. Community heat preparedness trainings

Category 2:

Help People Stay Cool and Safe Outdoors

6. Drowning prevention
7. Cool kits for unhoused people
8. Occupational heat safety

Category 3:

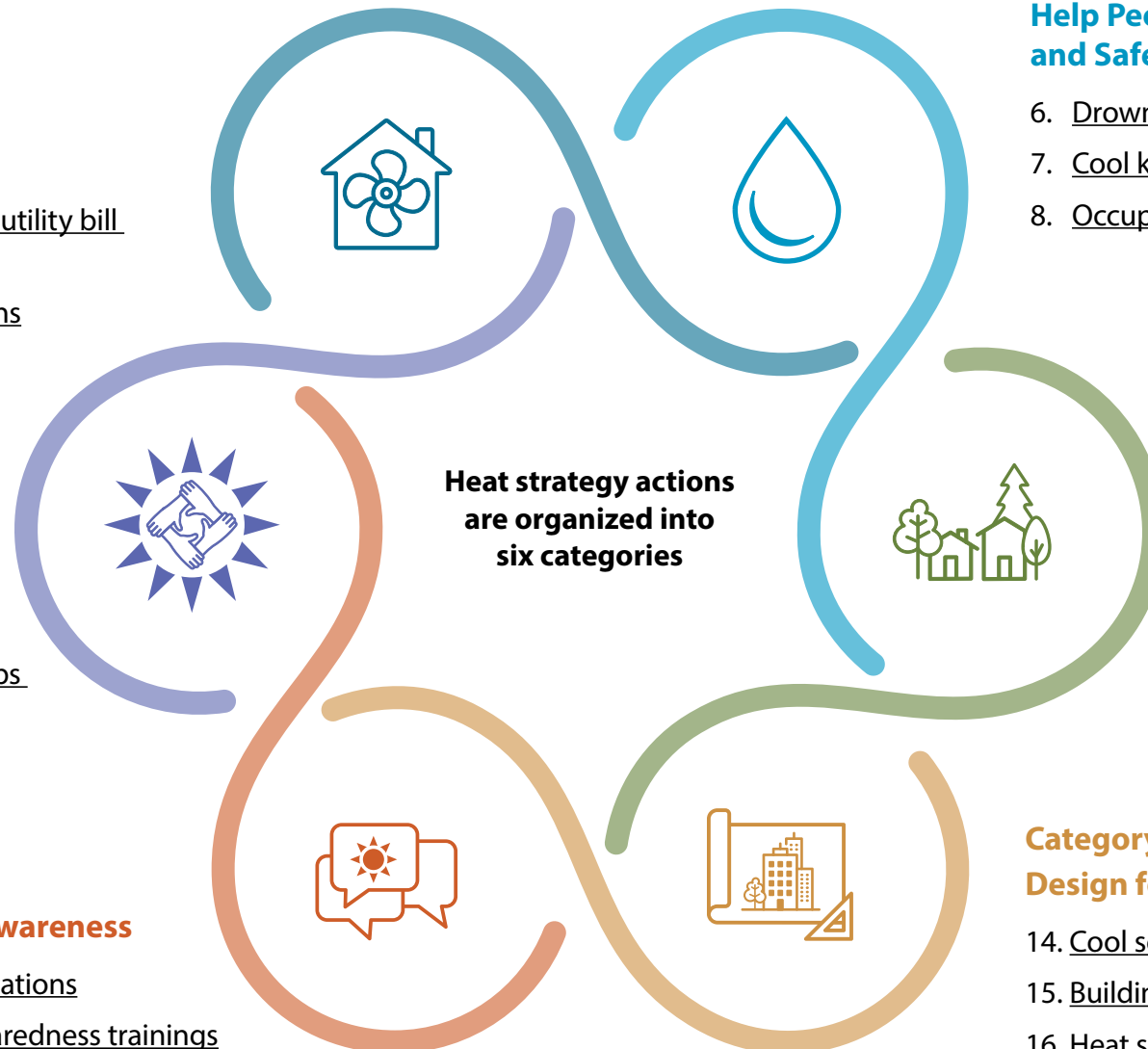
Cool our Neighborhoods

9. Private property tree care
10. Maximize tree survival
11. King County tree code toolkit
12. Track equitable canopy cover
13. Open space access

Category 4:

Design for Heat

14. Cool schools
15. Building and development codes
16. Heat smart parks and playgrounds





Category 1: Help People Stay Cool and Safe Indoors

ACTION 1: In-Home Heat Safety

Increase access to portable air conditioning and in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals.

Community outreach shows a strong interest in home cooling and other approaches to staying safe at home when it is hot. This action, in concert with expanding access to heat pumps ([Action 3: Heat Pump Installations](#)), leverages local and regional partnerships to support access to in-home cooling options and provide additional in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals.

Indoor heat safety is particularly important for low-income seniors, people with disabilities, homebound individuals, and others who may have difficulty seeking access to cooling outside of their residences due to limited mobility, limited income, pre-existing health conditions, and social isolation, among other factors. Fifty-five percent (304 of 557) of emergency department visits¹⁷ and 32 of 34 heat-related deaths in King County during the June 2021 Heat Dome involved residents aged 60 and older.³⁵

This action calls for the following in-home heat safety supports for at-risk community members:

1. ***Increase access to portable air conditioners and other lower-cost options for cooling.*** For many households, portable air conditioners such as a window unit or free-standing mobile air conditioner are the most affordable or only option for air conditioning. Increasing access to portable air conditioning for low-income residents who face higher heat-related health risks includes working with service providers and community-based organizations to:
 - a. Fund direct distribution, partner with local businesses on a voucher program for discounted units, and/or support partner procurement and distribution to at-risk communities.
 - b. Distribute or otherwise help senior housing, low-income housing, and caregiving facilities purchase portable air conditioners for at-risk residents and/or to create shared “cool rooms” for residents.
 - c. Work with the Washington State Department of Health and other state and local partners to find additional pathways for procuring affordable in-home cooling resources to those who need it most (see box).
2. ***Support passive cooling approaches such as interior or external shades and ultraviolet reflective window films to help reduce interior heating.*** These approaches can be used alone or in combination with portable air conditioning to help increase the efficacy of air conditioning and should be coupled with additional heat-safety support and information on utility assistance (see [Action 2: Energy Efficiency and Utility Bill Assistance](#)).

Expanding Access to Air Conditioning

In 2022, Oregon passed groundbreaking legislation ([Senate Bill 1536](#)) requiring the Oregon Health Authority to create a program for distributing portable air filters and air conditioning (AC) units to residents who qualify for medical assistance through the Oregon Health Authority, the Department of Human Services, or Medicare. This program was set to distribute approximately 3,000 AC units and 4,700 air filtration devices in 2023. Authorized air conditioning units include freestanding or window units with an energy efficiency ratio rating of eight or higher. Additionally, installation of the units cannot require alteration of the dwelling unit. Senate Bill 1536 also revised state law to limit a landlord's ability to prohibit or restrict tenants from installing air cooling devices in their residences, provided operation of the units does not pose safety hazards. For more information on Oregon Health Authority's program, [Air Conditioner and Air Filter Deployment Program](#).

3. Expand in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals. In addition to helping at-risk individuals access residential cooling as described above, in-home heat safety can be supported via work with service providers and community-based organizations to:

- Distribute "Cool Kits" like those described in [Action 7: Cool Kits for Unhoused People](#) to at-risk individuals.
- Share information on heat safety, summer preparedness, and utility bill assistance programs with at-risk individuals and their caregivers through partner programming and outreach, including home visits.
- Promote wellness checks during heat events inclusive of multilingual guidance on when and how to check on at-risk individuals, and how to help when help is needed.

Implementation of this action should prioritize low-income individuals in identified heat islands.

Implementation Partners: Public Health-Seattle & King County, King County Housing Authority, King County Dept. of Community and Health Services, local governments, local public housing authorities, Seattle Public Library, neighborhood associations, community-based organizations and non-profits who work with vulnerable communities such as Sound Generations, King County Senior Hubs, social work-focused organizations.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 – 3 years (direct support for higher-risk communities; increased public awareness; building local capacity)

Alignment to Community Priorities: 



Category 1:

Help People Stay Cool and Safe Indoors

ACTION 2:

Energy Efficiency and Utility Bill Assistance

Expand access to weatherization, energy efficiency, and utility bill payment assistance.

Housing quality and utility costs can be important factors in how heat affects residents, particularly in heat islands. This action seeks to directly address concerns expressed in focus groups and community surveys about utility costs as a barrier to cooling in the summer by increasing awareness of and participation in weatherization, energy efficiency, and utility bill payment assistance programs, particularly by low-income residents living in identified heat islands.

Older, less energy efficient housing can lead to higher indoor air temperatures, putting resident health at risk from heat-related health issues. Higher temperatures can also reduce the effectiveness of air conditioning (when available), requiring more energy to cool interior spaces resulting in higher utility bills and increased utility burden for low-income residents. In 2018, King County found that 124,000 low- and moderate-income households spent more than 30 percent of their income on housing and utility costs. Communities of color and renters are more likely to spend upwards of 50 percent of their income towards these costs.³⁶

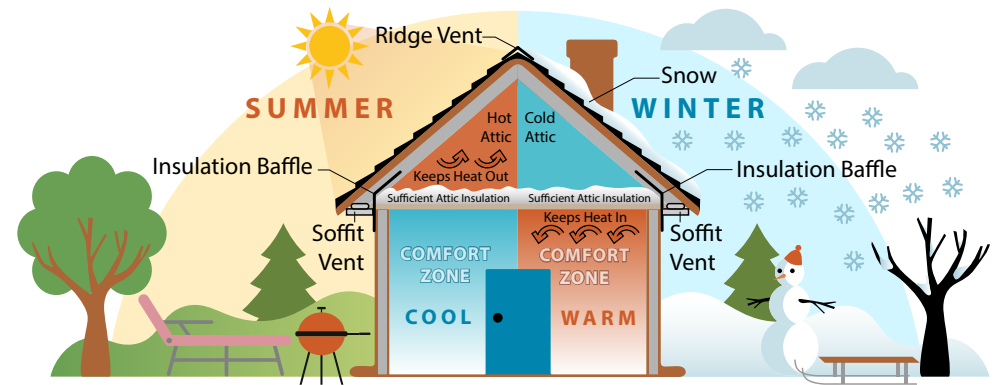


Figure 20: Benefits of proper weatherization include less cost to maintain comfortable temperatures inside the home. *Figure based on ENERGY STAR graphic.*

Energy efficient repairs and upgrades such as sealing air leaks around windows, adding insulation to attics and basements, and replacing inefficient cooling equipment with electric heat pumps (see also [Action 3: Heat Pump Installations](#)) can help lower indoor temperatures and utility costs during heat events by increasing the efficacy of air conditioners and passive cooling approaches such as light-colored roofs or window treatments. Having air conditioning and sealing air leaks around windows and doors also reduces infiltration of wildfire smoke into homes, providing additional health benefits for residents.

Accessing weatherization, energy efficiency, and utility bill payment assistance can be a challenge for many income-eligible households. Renter participation in these programs can also be challenging if renters do not have a direct billing relationship with their utility or are not authorized to make weatherization and energy efficiency improvements to their rental unit.

Despite qualifying for bill discounts, utilities and local distributors of the federal Low Income Home Energy Assistance Program (LIHEAP) report resident under-utilization of homeowner energy assistance programs. Renter participation in these programs can also be challenging. Renters may have more difficulty accessing utility assistance programs if they do not have a direct billing relationship with their utility and/or may not be authorized to make weatherization and energy efficiency improvements to their rental unit. Alternately, landlords may not have strong incentives to invest in weatherization and energy efficiency upgrades if tenants are responsible for paying for energy costs.

To address these concerns, this action calls for increased partnership between King County, local jurisdictions, energy utilities, community-based organizations, service providers, public housing authorities, and other organizations to:

1. *Expand outreach in eligible communities to help inform and connect qualifying residents to weatherization, energy efficiency, and utility bill payment assistance programs.*

Expanded outreach should be paired with [Action 17: Multilingual Communications](#) to help ensure information is provided in languages and formats that reach diverse audiences. Additionally, information about time-sensitive programs should be conveyed ahead of time to ensure community members can respond within the necessary eligibility window. Expanded outreach also provides an opportunity to include additional tips and resources for staying cool during extreme heat events.

- 2. *Partner with community-based organizations to increase access to relevant programs.*** This could include expanding outreach partnerships to provide administrative support for enrolling community members in utility assistance programs and related rebate or incentive programs.
- 3. *Work with utilities, service providers, and public agencies to streamline and expand enrollment in energy efficiency and assistance programs.*** This could include linking energy assistance program enrollment with other benefit programs and encouraging self-attestation of eligibility. Doing so can facilitate auto enrollment and limit required documentation. Work on this action includes addressing data sharing and other barriers that can limit these linkages.
- 4. *Identify technical, programmatic, and policy solutions to improve the energy efficiency of rental housing for cost-burdened renter households.*** Examples could include rental housing retrofit grant programs with affordability covenants, rental housing energy disclosure requirements, and rental housing efficiency requirements.

Additionally, this action calls on utilities and other partners to prioritize implementation of the above actions in heat islands and to integrate heat mapping results into program eligibility, evaluation, and prioritization criteria, as appropriate, for utility assistance programs and initiatives related to weatherization and energy efficiency upgrades.



Implementation Partners: King County, Seattle City Light, Puget Sound Energy, local jurisdictions, funders such as the Washington State Department of Commerce and Environmental Protection Agency, community-based organizations and non-profits who work with vulnerable communities, home weatherization/energy efficiency contractors, and public housing authorities.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits: 0 – 3 years (direct support for higher-risk communities; building local capacity; lower greenhouse gas emissions)

Alignment to Community Priorities: 

**Category 1:****Help People Stay Cool and Safe Indoors****ACTION 3: Heat Pump Installations**

Expand heat pump installation programs to cover more households and locations.

Cooler indoor temperatures can save lives during a heatwave. This action seeks to leverage local and regional partnerships to expand access to energy efficient electric heating and cooling systems known as heat pumps, with an emphasis on increasing access for low- and moderate-income family homes, multifamily buildings, locations that serve heat-sensitive populations (e.g., daycares, senior care facilities), and facilities that could serve as community-trusted cooling locations during heat wave events (see [Action 5: Community-led Cooling Spaces](#)).

Maintaining cooler indoor ambient temperatures is critical to keeping people safe during heat waves. Though most attention is focused on outdoor temperatures during extreme heat events, high indoor temperatures can also be dangerous, particularly for low-income residents and those who may need to stay home during heat events or who have difficulty traveling to public cooling centers. This includes residents with limited mobility, health conditions, caregiving needs, transportation challenges, or safety concerns.

While air conditioning use is on the rise in the King County region,³⁷ data show notable inequities in who has access to residential cooling. As of 2023, 64 percent of households with air conditioning in the

Heat Pump Installation Campaigns

Multiple model programs and initiatives in the Puget Sound have installed heat pumps in low- to moderate-income homes. As of December 2023, the [Energy Smart Eastside Program](#) has provided 25 affordable housing units with weatherization and heat pumps, done 116 site assessments, and installed 17 heat pumps. Seattle's [Clean Heat](#) program has transitioned approximately 5,000-7,000 households off of oil heat to heat pumps since 2017. King County's [Energize! Program](#) is working towards installing 150 heat pumps in Skyway and White Center homes while leveraging weatherization and utility discounts as well.

In 2024, King County was awarded \$1.5 million in Climate Commitment Act funds from the Washington State Department of Commerce to install heat pumps in Adult Family Homes (AFHs) in King County, or residential homes licensed to care for up to six adults in need of care, such as seniors, people with mental health issues, developmental disabilities, or dementia. King County anticipates that the grant will fund heat pump installations in 50 to 60 AFHs, helping up to 360 persons. There are 1,527 licensed AFHs within King County and its cities, representing approximately 33% of the 4,661 AFHs in the state. Approximately 65% of AFHs are funded by Medicaid supporting low-income seniors. This AFH heat pump program will help address community needs by supporting primarily low-income seniors and lower-wage workers or AFH operators with cooling services and improved indoor air-quality, while also reducing fossil fuel consumption and greenhouse gas emissions from improvements to targeted AFH facilities.

Seattle metro area had household incomes of \$200,000 or more.³⁸ In comparison, only 41 percent of households with incomes below \$50,000 had air conditioning.

Several King County jurisdictions have piloted efforts to incentivize or retrofit homes with heat pumps. Heat pumps can reduce energy bills for oil-heated homes and support widespread energy bill savings when integrated with weatherization and utility discount programs. Electric heat pumps also reduce greenhouse gas emissions, particularly when replacing oil heat, and can help reduce exposure to wildfire smoke due to the ability to keep windows closed even when it is hot.

To increase heat pump access for residents, this action calls for local partnerships to implement any combination of the following approaches:

- a. Expand individual installation programs to cover additional households or wider geographic areas with full-cost installations for low-income homes and reduced-cost installations for moderate-income homes. Engage multi-family landlords to increase enrollment of their properties in heat pump programs while ensuring rent protections for tenants.
- b. Pursue distributor rebate programs, point-of-sale rebates for homeowners for equipment meeting specific requirements, and reduced installation costs.
- c. Develop a larger King County-wide heat pump program that

allows cities to pool funding with King County to support installations. This would need additional staff support or sufficient funding to contract with a consultant or nonprofit provider.

Work should be coordinated with weatherization and utility discount programs to sustain cooling benefits and to support cost-reductions for low-income residents (see [Action 2: Energy Efficiency and Utility Bill Assistance](#)). Several jurisdictions are also working with the Building Decarbonization Coalition to pilot the [Switch is On Washington](#) campaign providing guidance to homeowners and renters on rebates, contractors, and educational resources on multiple types of home electrification efforts – including heat pumps. Finally, this action can also support local job creation, local contractor development, and women and minority-owned businesses enterprise recruitment.

Action Typology:



Implementation Partners: King County, local jurisdictions, community-based organizations and non-profits who work with vulnerable communities, service providers, housing authorities, utilities, heat pump distributors and installers.

Implementation Feasibility:



Timeline for Community Benefits (Benefits): 1 – 3 years (direct support for higher-risk communities; workforce development; lower greenhouse gas emissions)

Alignment to Community Priorities:





Category 1:

Help People Stay Cool and Safe Indoors

ACTION 4: Enhanced Cooling Centers

Provide wrap-around services at public cooling centers.

In community engagement events and surveys conducted by King County's Office of Emergency Management, King County residents indicated a need for more awareness of, access to, and programming at existing public cooling centers. This action looks to support those needs and increase utilization of public cooling centers with additional investment in cooling center staffing, amenities, and accessibility.

Cooling options outside the home are necessary interventions to keep King County residents safe and cool. In response to extreme heat events, local governments in King County have opened cooling locations that offer air conditioning to all members of the public. However, public cooling centers often report low utilization rates. Community engagement points to a lack of cooling center awareness, family friendly programming, and accessible transportation as barriers to accessing cooling options outside the home.

This action calls on King County agencies and local governments to support increased community access to and use of public cooling centers by:

- a. Collaborate to identify and address gaps in cooling centers services and transportation access.
- b. Promote and advertise transit options to and from extreme weather respite locations.

- c. Provide additional incentives such as snacks, bottled water, Wi-Fi access, and the ability to charge devices at cooling centers.
- d. Increase communications related to cooling center options during heat events, including information on disability accessibility. Coordinate this work with [Action 17: Multilingual Communications](#) to ensure messaging around cooling centers is provided in multiple languages prior to, during, and following any extreme weather event.
- e. Budget additional funding for staff and operation costs to accommodate longer access to cooling centers.

These steps will increase access to lifesaving and sustaining services, especially for individuals living in neighborhoods with elevated temperature in the day and night. Implementation of this action will be prioritized in lower income neighborhoods that are identified heat islands based on temperature mapping (see [Section 2: Heat, Equity, and the Built Environment](#)).

Implementation Partners: King County Office of Emergency Management, local jurisdictions, King County Metro, Public Health-Seattle & King County.

Action Typology:



Implementation Feasibility:



Timeline for Community Benefits (Benefits): 0 – 1 year (direct support for higher-risk communities)

Alignment to Community Priorities:



**Category 1:****Help People Stay Cool and Safe Indoors****ACTION 5: Community-led Cooling Spaces****Expand cooling location options to include more community-trusted locations.**

This action seeks to expand partnerships between County and local governments, service providers, community-based organizations, faith-based organizations, and others to create additional cooling locations for frontline communities at community-trusted locations. These locations may include cultural centers, places of worship, senior centers, community kitchens, and community-based organization facilities.

Community-trusted facilities are uniquely positioned to serve as cooling locations that are culturally compatible and attuned to the needs of their high-risk community members. In focus groups conducted with elder adults in Seattle's Chinatown-International District and in Kent—both prominent heat islands—participants indicated a strong preference for cooling centers located in and operated by trusted community organizations due in part to concerns about societal stigmas and safety at public cooling centers. The King County Regional Operational Plan for Extreme Weather Centers and Disaster Sheltering also identifies this need as a key priority in preparing for and responding to extreme weather events.

While community members express interest in community-trusted cooling locations, the ability for community-based organizations to

serve in this capacity varies. Community-based organizations have a range of available resources and staff capacity and may require customized support to serve as a cooling location for their vulnerable community members. Needs identified by the Community Partners Workgroup included heat safety training, funding for extended staff hours and coordination, and infrastructure upgrades to provide or improve cooling capacity. Workgroup members additionally noted the need to provide resource programming and refreshments at community-led cooling spaces.

This action calls on action partners to support the development of more community-trusted cooling locations via the following activities:

- 1. *Work with frontline community partners to identify potential locations and site hosts.*** As part of this process, survey community organizations and facilities to identify cooling, training, and resource needs for designating a location as a community-trusted location.
- 2. *Equip community facilities with the necessary resources and upgrades to serve as a cooling location.*** This may occur via direct funding for specific site needs, partnering with potential host sites on grants, and/or pursuing public/private partnerships to help resource site needs, such as heat pump installation ([Action 3: Heat Pump Installations](#)), weatherization, renewable energy systems (such as solar), back up battery energy storage, external and internal shade structures, outdoor shading via canopies, or supplying organizations with portable air conditioners.

3. **Train community-based organization staff to organize and operate cooling locations.** King County will work with local government and community partners to develop and distribute training materials such as multilingual training guides and workshops to support community-based organization staff in planning for and operating cooling spaces. This could be offered in combination with other community-based organization heat preparedness and safety trainings as described in [Action 18: Heat Resilience Trainings](#).
4. **Support the creation of Resilience Hubs.** At the more complex and more resource-intensive end of the spectrum, some community facilities may be able to serve as Resilience Hubs, providing community support services for a broader range of extreme events, in addition to heat (see box). Eight Puget Sound Region counties and their respective Tribal Nations are initiating the planning, engagement, and contracting process for developing community-specific Resilience Hubs, with its first strategy to plan for catastrophic events. Critical hazards include a Cascadia Subduction Zone event, extreme heat, and wildfire smoke. As cities are in different places in the planning process, King County could share community-informed planning efforts among municipalities interested in developing Resilience Hubs and support the development of a regional Resilience Hub strategy. Up-to-date information on this work can be found at this link (<https://maps.seattle.gov/resilience-hubs>).

Implementation Partners: King County, local jurisdictions, community-based organizations that are interested in serving as cooling locations.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 1- 3 years (direct support for higher-risk communities; building local capacity)

Alignment to Community Priorities: 



Figure 21. Community trusted locations can serve an important role in heat awareness and safety in King County.

Photo source: King County

What is a Resilience Hub?

Resilience Hubs are an emerging practice for supporting local resilience and capacity to respond and recover from hazards, including the impacts of extreme weather.³⁸ Resilience Hubs are community-trusted locations that can quickly transition from regular community services and programming to emergency support for local communities. Hubs are tailored to meet the unique needs of their community and come in various forms, ranging from community-led facilities to senior centers, libraries, and faith-based institutions. Collaborative partners for Hubs include government agencies, non-profit organizations, and community stakeholders.

In the context of heat, Resilience Hubs can serve as cooling centers, offering respite to individuals lacking access to air conditioning or suitable shelter. Moreover, Resilience Hubs can serve as locations for distributing heat safety information, resources such as water and cooling supplies, and coordinating community-based heat emergency response efforts.³⁹

Interest in resilience hubs is growing in the Puget Sound region. The City of Seattle's Office of Emergency Management is working with frontline communities and local governments in Island, King, Kitsap, Mason, Pierce, Skagit, Snohomish, and Thurston counties and Federally Recognized Tribal Nations to identify needs and opportunities for Resilience Hubs in these locations. The City of Issaquah is also creating a network of Resilience Hubs, starting with the city's local senior center.

For more information on Resilience Hubs, see the Urban Sustainability Directors Network's Resilience Hubs resource site <https://resilience-hub.org/resources/>.



Figure 22. Community Emergency Response Team volunteers preparing for an emergency exercise at the Issaquah Senior Center Resilience Hub.
Photo source: City of Issaquah.



Category 2: Help People Stay Cool and Safe Outdoors

ACTION 6: Drowning Prevention

Promote water safety and drowning prevention through swimming lessons, lifeguard training, and distribution of water safety equipment.

Swimming outdoors and water recreation in lakes, rivers, and Puget Sound are a popular and cost-effective ways to cool off when it is hot in King County. However, keeping people safe while enjoying the water is an ongoing challenge. This action seeks to build on and expand partnerships to increase access to water safety resources and to promote awareness and education of drowning risk especially during summer months.

King County has reported an elevated number of drownings since 2019.³⁹ Multiple factors influence drowning risk, including access to water safety resources, lifeguard availability, cultural barriers, financial barriers, and lack of transportation. Black residents—who have less access to pools and swimming lessons—are two-and-a-half times more likely to drown than white residents.⁴⁰ Recent immigrants and people who are unfamiliar with the region's colder, swifter waters are also at greater risk due to language and cultural barriers.⁴⁰

Local efforts to address swim equity have grown in recent years, although more support is needed. Programs such as Swim Seattle and No More Under have worked to increase access to swim lessons

and personal flotation devices. Demand for these services exceeds available resources, however. Local governments are also working to address an ongoing shortage of local lifeguards and promote educational campaigns and on-site signage focused on reducing the risk of drowning.

Saving Lives through Swim Lessons

Swim lessons and water safety skills are one layer of protection against unintentional childhood drowning deaths. This need is particularly acute for children and communities of color, who are at a disproportionate risk of drowning.

Programs such as [Swim Seattle](#) (led by Seattle Parks & Recreation and the YMCA of Greater Seattle) and [No More Under](#) are providing equitable access to swim lessons within Seattle. Swim Seattle is an initiative that aims to address the higher youth drowning rates in communities of color, and they started providing free swim lessons and water-safety workshops to youth starting in 2023. The program also prioritizes families who cannot afford lessons. No More Under offers a similar service - facilitating connections between existing organizations that provide learn-to-swim programs to youth and families who are looking to learn to swim. These programs ensure that every child can safely enjoy the plentiful amount of swimming areas around our region.

This action calls on King County, local governments, service organizations, and community-based organizations to work together to:

- 1. Increase access to swim lessons for income eligible children and adults.** This includes increasing direct funding support for swim equity programs, partnering on grants, or providing other forms of support that allow swim programs to serve more low-income families. This also includes working with community-based organizations to raise awareness about swim equity opportunities.
- 2. Expand access to water safety equipment such as personal flotation devices.** This includes expanding funding support and distribution channels for distribution of personal flotation items such as life vests and to increase lifejacket loaner programs throughout the region.
- 3. Improve availability and enrollment in lifeguard trainings.** This includes expanded options for lifeguard training, expanded outreach via community-based organizations to low-income and other at-risk communities to increase participation in lifeguard certification courses, and reducing financial barriers for participation in those trainings. Work can build upon existing efforts and partnerships underway in King County.
- 4. Develop and distribute water safety messaging and increase on-site signage for drowning risk awareness.** This includes additional messaging around drowning prevention and safety resources (such as life vests) during public health summer

safety messaging campaigns (see [Action 17: Multilingual Communications](#)), direct distribution of translated water safety materials to community-based organizations and Community Navigators, and partnership with local jurisdiction Parks departments to increase water safety signage in outdoor swimming locations.

Implementation Partners: King County Play Equity Cohort, YMCA, King County (Public Health—Seattle & King County, Department of Natural Resources & Parks), local jurisdiction Parks departments, community-based organizations and non-profits who work with vulnerable communities.

Action Typology:



Implementation Feasibility:



Timeline for Community Benefits (Benefits): 0 – 1 years (direct support for higher-risk communities; increased public awareness; expanded recreation opportunities).

Alignment to Community Priorities:



Photo source: City of Seattle Parks and Recreation



Category 2:

Help People Stay Cool and Safe Outdoors

ACTION 7: Cool Kits for Unhoused People

Distribute Cool Kits for unhoused people during heat events.

Unhoused people often bear the worst of extreme heat due to a lack of access to hydration, shade, and indoor facilities with cooling. This action seeks to reduce heat-related illness and the adverse impacts of extreme heat through the direct distribution of personal cooling items delivered as close as possible to where the residents are located.

During the 2021 Heat Dome and 2022 heat events, the King County Regional Homelessness Authority (KCRHA) worked with service providers to distribute cooling resources directly to unhoused residents in King County. Setting up cooling tents and directly providing cooling resources such as cold water, cooling towels, UV protective clothing, sunscreen, and other personal cooling items to vulnerable individuals in the form of “Cool Kits” helped bring heat relief to unhoused residents wherever they were sheltering. Ongoing purchase and distribution of Cool Kits is uncertain, however, as pandemic response-related funding sources used to cover costs in 2021 and 2022 wind down.

This action calls for increased and sustained funding and programmatic support for the purchase and distribution of Cool Kits

for unhoused populations living in King County. With direct funding and in-kind support from local governments (such as assistance with item storage or procurement), the private sector, and philanthropic organizations, KCRHA can order and distribute cooling items to utilize its existing network of service providers to assemble Cool Kits customized for the specific needs of local unhoused communities. Cool Kit distribution could also occur at pop-up locations selected by service providers.

This work will promote heat safety and reduce the potential for heat-related illness in communities that are the most prone to adverse health impacts. Additionally, distribution of Cool Kits can strengthen coordination between local jurisdictions, KCRHA, and service providers when planning to support King County’s most vulnerable residents.

Implementation Partners: King County Regional Homelessness Authority (lead), local jurisdictions, service providers (especially extreme weather service providers such as the Salvation Army and Urban League), Public Health-Seattle & King County, philanthropic organizations.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 - 1 years (direct support for higher-risk communities).

Alignment to Community Priorities: 



Category 2: Help People Stay Cool and Safe Outdoors

ACTION 8: Occupational Heat Safety

Increase heat safety awareness and preparedness for workers who are more at-risk when it is hot.

People who work outside or in certain indoor environments are at higher risk for heat-related illness.⁴¹ Occupations that may face a higher risk of heat illness include agricultural, construction, and delivery workers; gardeners; day laborers; and individuals working in warehouses, factories, and commercial kitchens. This action seeks to directly address concerns expressed in focus groups and community surveys about at-risk workers through increased distribution of heat safety awareness, trainings, and resources.

Multiple occupational factors can increase heat risk, including prolonged exposure to high outdoor temperatures, increased body heat due to physical exertion,⁴² and in some cases, the use of personal protective equipment.⁴³ Additional risk factors include immigration status, language barriers, inequities in access to healthcare, economic status, and a fear of backlash when requesting accommodations when it is hot.^{41,44,45}

As awareness about heat impacts on health has grown, additional standards and best practices have been established nationally and regionally to support worker safety (see box).⁴⁶ While these standards and best practices are in place, a lack of awareness and

Washington Labor & Industries Outdoor Heat Exposure Rules

The Washington State Department of Labor & Industries adopted updates to Outdoor Heat Exposure rules on June 27, 2023. The updated rules provide minimum requirements for employers to prevent heat-related illness and traumatic injuries for outdoor workers exposed to heat. This includes requirements for providing shade, rest, water, and acclimation for outdoor workers.

The rules also updated temperature thresholds for which some preventative actions must be taken, such as reducing the Outdoor Temperature Action Level from 89°F to 80°F. The rules furthermore require employers to help workers prepare for hot temperatures and exposure to heat by addressing outdoor heat exposure safety in their accident prevention programs, providing annual heat-related illness training, having emergency procedures to respond to heat-related illness symptoms, and ensuring an accessible route of communication between supervisors and employees in the case of an emergency.

These updates help workers and employers be heat smart and reduce the risk that outdoor workers can face for heat-related illness, heat exhaustion, heat stroke, and acute kidney damage.

understanding of these measures can make it more challenging for workers to proactively protect their health when it is hot. Additionally, some workers—particularly day laborers, agricultural workers, and/or those who may face language, income, or other barriers to adjusting work activities when it is hot—remain especially vulnerable to heat.

This action calls for increased partnership between state and local agencies, community-based organizations, service providers, and others to:

- 1. *Increase awareness of heat and occupational safety best practices.*** Consistent with Action 17: Multilingual Communications, King County will work with partners to adapt existing heat safety recommendations from the National Institute for Occupational Safety and Health (NIOSH), Washington Labor & Industries (L&I), and other sources into multilingual, visually relatable mediums for distribution by service organizations and community-based organizations. Messaging should focus on health concerns from prolonged exposure to extreme heat in the workplace and what individual actions can reduce heat stress. To ensure this messaging contains up-to-date information on heat impacts and available safety resources and standards, collaboration with health and labor agencies should be prioritized.
- 2. *Distribute cooling resources and heat safety trainings to outdoor workers.*** Similar to Action 7: Cool Kits for Unhoused People, King County, local jurisdictions, and private sector organizations should partner with service providers and

community-based organizations that serve residents working in higher heat risk environments to distribute items that aid in personal cooling, along with heat safety messaging. This could include items such as reusable water bottles, electrolytes, hats, cooling cloths, and other resources. Messaging developed by Public Health–Seattle & King County regarding wildfire smoke safety can also be incorporated into the above actions, resulting in more comprehensive awareness for summer climate hazards.

Implementation Partners: Public Health–Seattle & King County; Washington Department of Labor & Industries; Washington Department of Health; local jurisdictions; community-based organizations and non-profits that work with outdoor workers local jurisdictions, including such as Casa Latina; private sector; philanthropic organizations.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 - 3 years (direct support for higher-risk communities; increased public awareness).

Alignment to Community Priorities: 



Category 3: Cool Our Neighborhoods

ACTION 9: Private Property Tree Care

Develop and promote technical, educational, and financial assistance for tree planting and maintenance to private property owners.

Proper tree care on private property can pose challenges for residents lacking the time, knowledge, or financial resources needed to provide that care. This action calls for the development of technical, educational, and financial assistance programs to help local governments and King County residents with retaining, maintaining, and planting trees on private property and adjacent rights-of-way.

While trees offer vital public benefits to our communities, the vast majority of urban trees are found on private property. Additionally, private homeowners are often legally responsible for the trees in the adjacent right-of-way. Hiring a certified and licensed arborist for tree assessments and care can be prohibitively expensive for many. This can result in tree removal as an alternative to ongoing tree maintenance or avoided tree maintenance that ultimately increases risks for trees, homeowners, and nearby properties.

To support planting and proper tree care on private property, local governments, community-based organizations, local nurseries, and other partners should work together to:

1. **Develop and implement programs that provide financial incentives and assistance for tree planting and care on private property.** Examples of assistance programs and incentives that should be created, adapted, and expanded to support low-income households include:
 - a. Establish a collaborative program in partnership with certified arborists and tree service providers to offer cost-share or sliding-scale tree services, including hazardous tree assessments, pruning, and maintenance.
 - b. Provide tree voucher or give-away programs.
 - c. Offer water bill subsidies or credits to eligible participants who engage in tree watering activities on private property and rights-of-way, incentivizing tree care and maintenance.

How Do Trees Help?

Trees play a crucial role in heat mitigation, underscoring the importance of preserving and nurturing healthy trees and a robust tree canopy. Research indicates that shaded areas, such as those beneath trees, can experience temperatures approximately 20-45°F lower during peak heat compared to exposed locations.⁴³ Supporting the growth and proper maintenance of large trees is particularly valuable. A medium to large size mature tree (25 feet or more) provides more canopy and shade and has a bigger impact on conserving energy and mitigating heat island effects than smaller trees.⁴⁴



- d. Provide tools and resources, such as example letter templates, tree care agreements, and tree species selection guides for renters seeking permission to plant a tree and establishing tree care responsibilities with their landlord.
- e. Incorporate tree care into existing homeowner assistance programs, such as green building initiatives, weatherization and energy efficiency incentives and rebate programs.

2. Create and distribute locally relevant outreach materials, particularly multilingual materials, focused on planting and caring for trees. More in-language and culturally relevant materials and information are needed to support frontline community learning and engagement on the topics of urban forestry, canopy coverage, tree planting and maintenance, and heat mitigation. Needed materials include tip sheets and guides as well as visual aids, graphics, interactive workshops/engagement, and video trainings on tree selection, planting, care and regulations. Providing a channel of communication with trusted community partners to help answer questions will also be important.

While these programs can benefit residents throughout King County, implementation should prioritize frontline communities, including low-income neighborhoods and areas with low tree canopy cover or more impervious surfaces. Outreach materials and programs should be co-developed and piloted with local communities to ensure that materials reflect community interest, concerns, and ideas for effective information and programs. Getting community

feedback on materials and resources before finalizing them will also increase the likelihood of their use and impact. Forming partnerships with community organizations and local tree care providers will be instrumental in ensuring the accessibility and success of these initiatives.

Implementation Partners: Local jurisdictions, King County Urban Forestry Forum (see callout box in [Action 11: King County Tree Code Toolkit](#) for more information), community-based organizations, King Conservation District, Washington State Department of Natural Resources, local nurseries, local tree care providers, in-language technical support agencies.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 3+ years (more equitable tree canopy coverage; air quality, water quality, and other ecosystem benefits; lower greenhouse gas emissions; reduces heat island effect).

Alignment to Community Priorities: 



Category 3: Cool Our Neighborhoods

ACTION 10: Maximize Tree Survival

Research, share, and promote best practices tree establishment to increase survival of newly planted trees.

While many communities have had success in creating tree planting programs, ensuring that trees survive past the planting period remains a significant challenge, particularly in urban environments. This action calls for jurisdictions to prioritize increasing survival of newly planted trees, especially along streets, in urbanized landscapes, in parks, and in new developments in low canopy neighborhoods.


Newly planted trees generally require a two to three-year-establishment period for the tree to generate a healthy root system and adjust to the planting location. Poor site conditions, environmental stress, improper planting techniques, and inadequate watering and care during this critical period contribute to low survival rates. Additionally, a lack of local funding and resources to implement and reinforce proper planting preparation, installation and after care during the establishment period compounds this challenge.

To support the survival of newly planted trees, local jurisdictions and other implementation partners will need to collaborate on the following activities:

- a. Establish and update tree planting guidelines to meet industry standards and best practices.
- b. Build capacity to assign a staff point of contact to ensure oversight, guidance, and follow-through of tree planting projects and requirements where applicable.
- c. Test and share innovative planting and watering techniques, such as tree hydration products and systems and structural soils or soil cells, to overcome space limitations and accommodate tree growth.
- d. Collaborate with regulatory agencies to streamline permitting and build partnerships with utility companies to coordinate tree planting activities and minimize underground conflicts.
- e. Provide trainings to educate project planners, tree planting crews, and residents on proper tree planting and aftercare.
- f. Prioritize translated materials and language interpretation services during training sessions and program meetings.
- g. Secure ongoing funding for jurisdictions to follow through on tree establishment care and monitoring of newly planted trees.
- h. Track and monitor the number and location of trees planted and survival to assess tree planting success.

Upfront investment in the survival of newly planted trees will pay dividends by creating a strong, healthy urban canopy and mitigating the heat island effect.

Implementation Partners: Local jurisdictions, the Urban Forestry Forum (see [Action 11: King County Tree Code Toolkit](#) for more information), community-based organizations, King Conservation District, professional landscape architects, tree planting and tree care service providers (certified arborist and landscaping companies), Pacific Northwest Chapter of the International Society of Arboriculture.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 3+ years (more equitable tree canopy coverage; stronger regional coordination and alignment; lower greenhouse gas emissions; air quality, water quality, and other ecosystem benefits; reduces heat island effect).

Alignment to Community Priorities: N/A



Figure 23. Proper soil volume, staking, mulching, and watering help newly planted trees survive and establish to a healthy mature state.
Photo source: King County.



Category 3: Cool Our Neighborhoods

ACTION 11: King County Tree Code Toolkit Develop and support application of a King County Tree Code Toolkit.

To ensure the health, safety, and sustainability of the urban forest, local jurisdictions often develop tree regulations and guidelines to manage maintenance, removal, planting, and protection of trees within a specific area. This action calls on King County to work with partners to build upon existing best practices in tree regulations to further develop and support implementation of a “Tree Code Toolkit” to assist cities in King County, and potentially beyond, in their efforts to craft or revise tree regulations.

Retaining tree canopy has become increasingly important and challenging as development intensifies in the King County region. Between 1990 and 2020, the population of King County surged by 50 percent, growing from 1.5 million residents to 2.26 million residents.⁴⁷ Another 660,000 people are projected to move into King County by 2044.⁴⁸ Local jurisdictions are in the position of needing to simultaneously sustain and increase tree canopy while also accommodating increased housing needs.

Local ordinances that govern tree canopy play a vital role in achieving this balance. However, tree codes established and enforced at the local jurisdictional level vary in structure and complexity. While some



The King County Urban Forestry Forum

In 2021, King County’s Department of Natural Resources and Parks (DNRP) introduced the [30-Year Forest Plan](#), highlighting Urban Forest Canopy as one of seven priority areas. DNRP initiated the Urban Forestry Forum in 2022 to advance the Plan’s goals and to foster collaboration on county-wide urban forestry objectives. The Forum facilitates the exchange of information, strategies, successes, and challenges related to urban forestry among King County and the 39 incorporated cities and towns in the county. The Forum is comprised of staff from King County and municipalities dedicated to tree management, regulation, and preservation. The Forum covers urban forest management topics including tree ordinances, street tree maintenance, incentive programs, best practices, private property engagement, climate action plans, and ongoing canopy assessments.

Photo source: King County

cities have recently updated their regulations to align with citywide goals for housing, canopy, and environmental health, others may lack resources to do so.

To assist local jurisdictions in navigating these challenges, King County conducted a tree code analysis synthesizing best practices for tree regulations for private land. The resulting *Guide to Developing Effective Urban Tree Regulations on Private Property (Guide)*, released in April 2024, provides jurisdictions with insights, best practices, and recommendations to consider when crafting effective tree regulations and facilitating tree ordinance adoption.

This action seeks to build upon the analysis and recommendations in the Guide by having King County and local partners develop a Tree Code Toolkit inclusive of the following:

- a. A tree ordinance framework;
- b. Example tree codes for both public and private trees, including methods for calculating tree retention and defining significant trees;
- c. Community engagement strategies;
- d. Ways to integrate tree codes with broader urban forestry initiatives; and
- e. Implementation resources such as maintenance agreements, educational materials, and protocols to support effective implementation and enforcement of tree regulations.

Local government support for implementing the Toolkit will be important. Crafting effective tree codes is not a one-size-fits-all endeavor, as each city's needs, priorities, and goals are unique. Moreover, some cities may lack the capacity and resources necessary for this process.

Promotion and implementation support of the Toolkit will occur through the King County Urban Forestry Forum (see box). Support will include outreach, resource development, and technical assistance. It will also be important to update and make additions to the Toolkit to reflect evolving practices and standards in urban forestry. Combining regulations with tree planting programs and technical and financial assistance for tree care (see [Action 9: Private Property Tree Care](#)) can help alleviate barriers and cost burdens associated with trees, enhancing tree canopy, and mitigating extreme heat in frontline communities.

Implementation Partners: King County, the Urban Forestry Forum, local jurisdictions (in particular, urban forestry staff), King Conservation District, subject matter experts such as urban forestry staff, consultants, and arborists on the local and national level.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 1 – 3 years (more equitable tree canopy coverage; stronger regional coordination and alignment; reduces heat island effect).

Alignment to Community Priorities: N/A



Category 3: Cool Our Neighborhoods

ACTION 12: Track Equitable Canopy Cover **Support local efforts to identify, track, and achieve tree canopy goals.**

One of the most valuable tools available to local jurisdictions and community stakeholders for understanding, managing, and enhancing the ecological, social, and economic benefits of urban trees is an Urban Tree Canopy (UTC) assessment. This action seeks to equip jurisdictions and communities with the tools and support needed to identify, track, and achieve tree canopy goals, particularly in low canopy areas affected by or vulnerable to high heat events.

UTC assessments systematically evaluate the extent and distribution of tree cover within an urban area. UTC assessments also assess the health, species composition, and spatial distribution of the urban tree canopy. The assessment involves collecting data through various methods such as aerial imagery analysis, field surveys, and remote sensing technologies to quantify the percentage of land covered by trees. These assessments help identify disparities in tree canopy coverage and areas suitable for planting, especially in relation to identified heat areas. Repeated assessments can help jurisdictions track tree canopy over time and inform ongoing project implementation.

As technology for canopy cover mapping and analysis evolves, navigating the myriad options and tools available can be daunting. Moreover, some jurisdictions lack the resources to comprehensively set and track canopy goals essential for equitable distribution across neighborhoods and management zones. This emphasis on equity is critical given the disproportionate impact of high heat events on marginalized communities.

To better equip jurisdictions with the tools needed to achieve their tree canopy goals, this action calls on local agencies and organizations to address the following needs:

- a. Consistent, standardized and comparable canopy cover and plantable space data developed using replicable methods;
- b. Collaboration to acquire County-wide Light Detection and Ranging (Lidar) mapping and aerial imagery, updated at regular intervals;
- c. Guidance on using data to set granular tree canopy goals and strategies by neighborhood and land-use types;
- d. Updated UTC assessment every five years;
- e. Translation of data into plans with specific goals and strategies that address high heat and low canopy neighborhoods;
- f. Effective ways to communicate UTC assessment results and trends to agency leadership and the public; and
- g. Staff capacity to act and implement projects based on results.

Embracing technology and information can help cities leverage funding opportunities and partnerships to sustain and expand urban forests. Canopy cover assessments also serve as tools for outreach and education, fostering public understanding and appreciation of urban forestry. Implementation of this action will prioritize communities needing canopy enhancement to help mitigate the effects of high heat events.

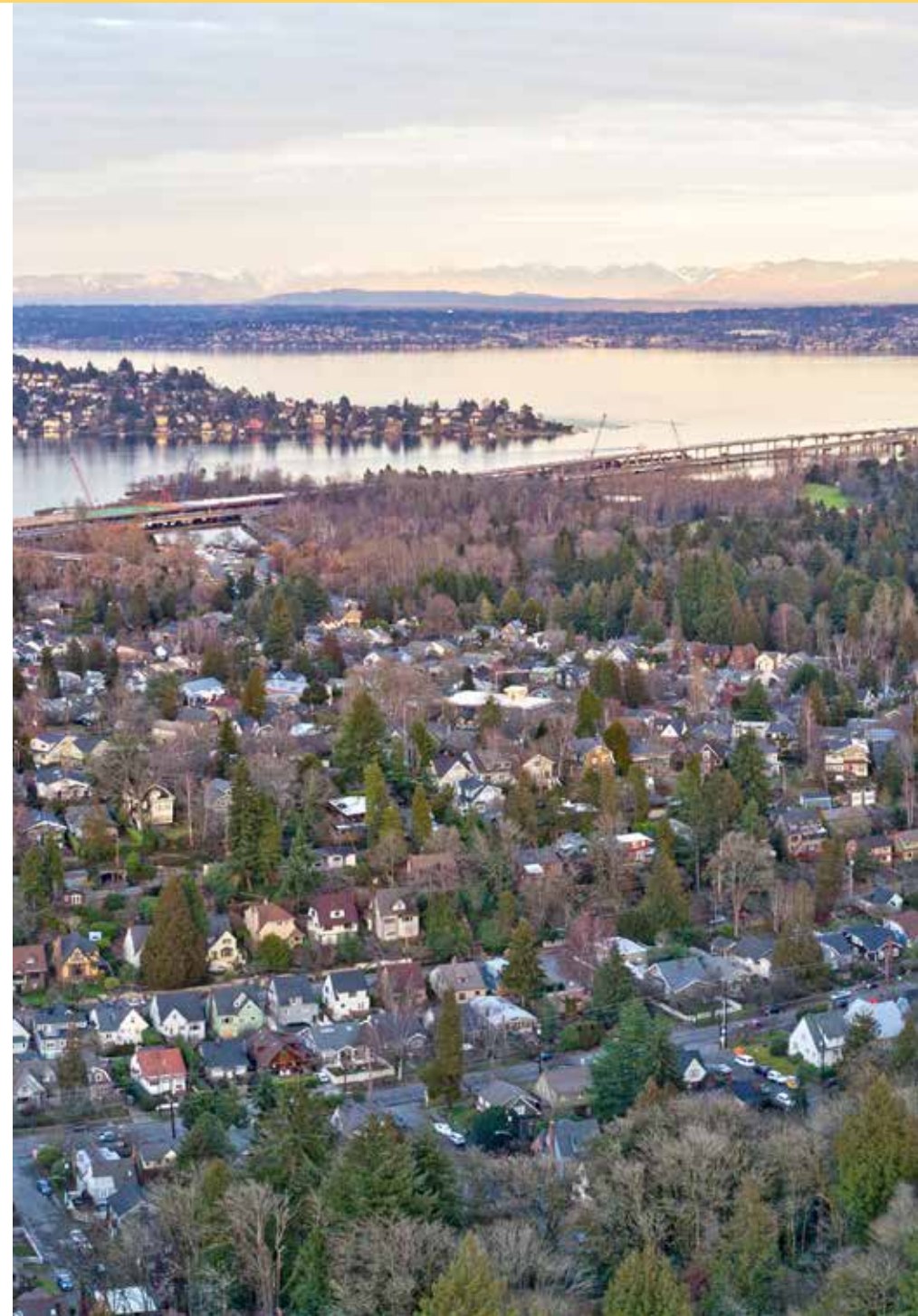
Implementation Partners: King County, the Urban Forestry Forum (see callout box in [Action 11: King County Tree Code Toolkit](#) for more information), local jurisdictions, King Conservation District, Washington State Department of Natural Resources, local urban forestry non-profits, urban forestry subject matter experts (such as consultants and arborists) that specialize in UTC assessments.

Action Typology: 

Implementation Feasibility:  

Timeline for Community Benefits (Benefits): 1 - 3+ years (more equitable tree canopy coverage; stronger regional coordination and alignment; reduces heat island effect).

Alignment to Community Priorities: N/A





Category 3: Cool Our Neighborhoods

ACTION 13: Open Space Access

Protect, increase, and maintain accessible open space, particularly in heat islands.

One of the key markers of heat islands is a lack of tree canopy and open space (specifically parks, natural areas, forested areas, and similar areas) relative to cooler locations. Hotter areas of the county also have a higher proportion of residents living below 200 percent of poverty level.

This action supports reduction of the heat island effect by increasing, protecting, and maintaining accessible open space, particularly in lower income communities and identified heat islands. This action also seeks to avoid the creation of new heat islands by preserving and expanding existing open space.

"Having these accessible green spaces will improve our physical, emotional, and community health; and they are important to the resiliency of our neighborhoods given the changing climate and a future of extreme weather events."

-- King County Open Space Equity Cabinet
([Recommendations to King County Executive and Council](#), 2019, p.3)

Implementation will leverage collaborative approaches involving King County, local governments, and community partners as well as actions that can be implemented by individual jurisdictions. Implementation includes the following:

1. **Increase and protect open space via acquisition.** The King County Land Conservation Initiative (LCI) is a collaborative effort led by King County to preserve and protect high conservation value lands and to reduce open space inequities in low-income communities. Many areas designated as LCI Opportunity Areas for open space acquisition are co-located in mapped heat islands (Figure 24), creating opportunities to reduce the heat island effect while increasing access to green space. The LCI can also help prevent the creation of new heat islands by protecting existing open space from development. To help support heat mitigation objectives, the LCI will:
 - a. Integrate heat mitigation as an additional criterion by which land should be prioritized for acquisition.
 - b. Explore land-banking as an approach to preserving and expanding natural areas within urban locations. Land-banking recognizes that sometimes, conserving open space must be opportunistic and occur before resources are secured for programming and activation. Land-banking protects natural areas in a caretaker status, preserving not only the environmental benefits offered by that space, but also the opportunity for future recreational planning in partnership with the community.

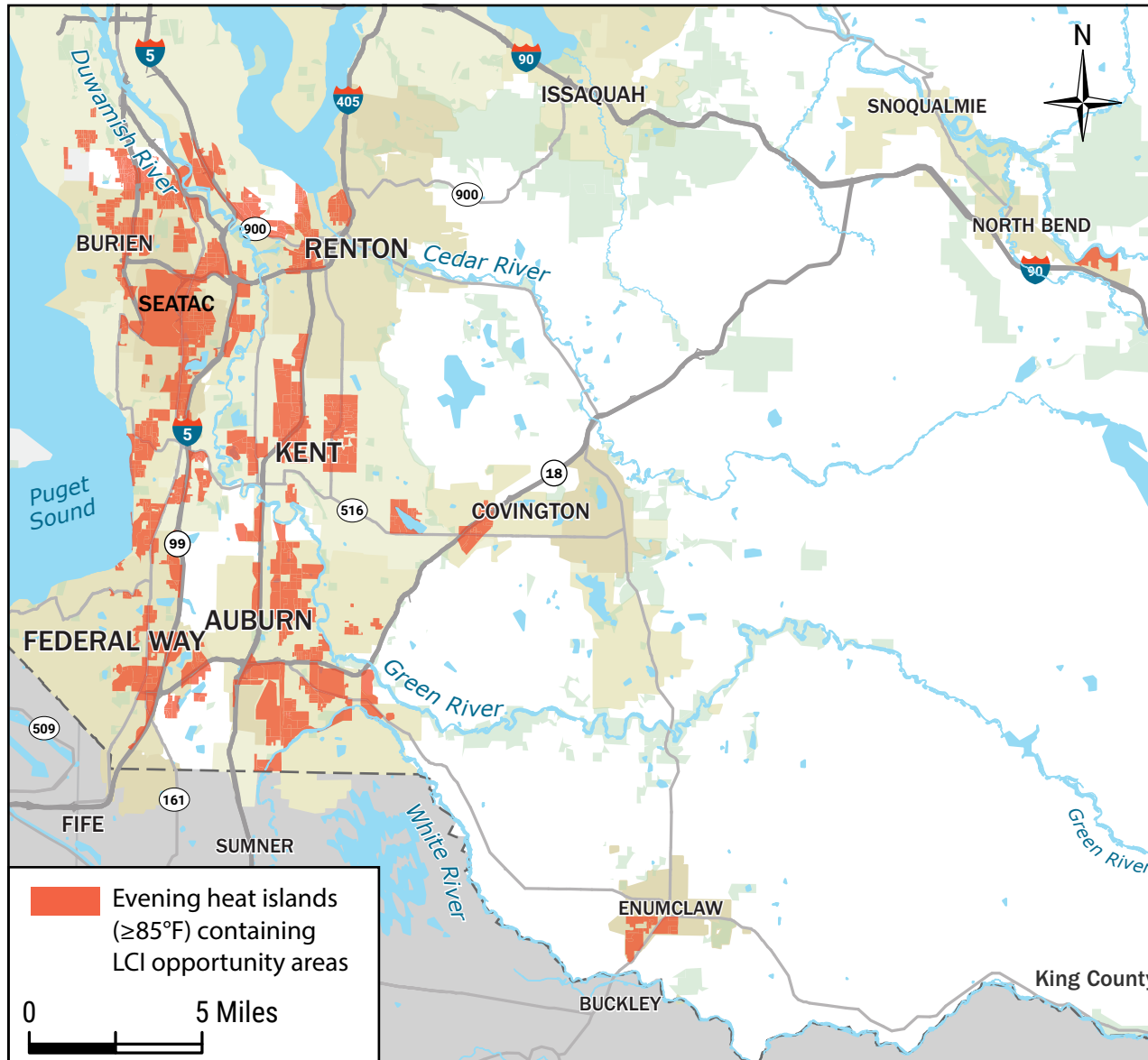


Figure 24. Map showing the overlap between Land Conservation Initiative Opportunity Areas and mapped heat islands, with a focus on areas where median evening temperatures were 85°F or higher based on data collected between 7- 8 p.m. on July 27, 2020. Opportunity Areas are locations where households lack open space access and simultaneously fall in the bottom third of census tracts for household income and top third of census tracts for hospitalization rates due to asthma, diabetes, and heart disease.

2. Utilize depaving to reduce impervious surface and create space for urban greening.

Removing or reducing the amount of impervious surface through depaving may be needed to create more space for trees, green space, and low-impact development such as green stormwater infrastructure. Depaving can be integrated into redevelopment projects or pursued as stand-alone projects proposed by and implemented in partnership with communities. Local and county governments can promote and support depaving by:

- a. Working with the Washington State Department of Transportation, King County Roads, and local departments of transportation to identify potential de-paving opportunities within the public right-of-way.
- b. Working with local property owners (especially large commercial parking lots) to retrofit parking lots via depaving for green stormwater infrastructure.
- c. Providing private property owners with financial incentives to depave hardscapes like driveways and parking lots. Financial incentives can include rebates, cost-sharing options, and reductions in stormwater taxes and fees.
- d. Including depaving as part of a green jobs training program to grow workforce skills for depaving strategies.

3. Leverage planned investments in stormwater parks and green stormwater infrastructure to increase green space and access to shaded outdoor spaces in heat islands. King County's



Figure 25. McKinley Hill Neighborhood depaving project, Tacoma, Washington. *Photo source:* [Pierce Conservation District](#).

regional Stormwater Investment Plan includes the goal of building 30 stormwater parks by 2050 to help address stormwater management needs in King County. To help maximize heat mitigation benefits associated with these projects, King County will incorporate heat mitigation as a co-benefit when siting and designing projects. Additionally, King County will use the following best management practices when planning stormwater parks located in heat islands:

- a. Incorporate the maximum amount of shade-providing trees (based on mature size estimates) into site design.

- b. Ensure project funding includes long-term maintenance funding to maintain planted trees.
- c. Ensure early engagement with the local community to ensure project plans align with local interests for heat mitigation and other co-benefits.
- d. Follow best practices for heat when designing playground features or other public amenities to be included in a stormwater park (see [Action 16: Heat Smart Parks and Playgrounds](#)).

In addition to the activities noted above, it is important to expand support for efforts to restore and care for existing forested parks and natural areas. Restoration and maintenance of forested areas brings together thousands of volunteers each year through regional efforts coordinated by local governments, community members, businesses, and coalitions such as the Green City Partnerships. Continued investment in this work will help ensure that existing green space is protected and enhanced in ways that provide benefit to nearby communities.

Implementation Partners: King County, Department of Natural Resources and Parks, local jurisdictions, community-based organizations, and non-governmental organizations, such as the Nature Conservancy, Stewardship Partners, the Puget Sound Regional Council, the South-Central Local Integrating Organization, and other related organizations.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 3+ years (more equitable access to green space; expanded recreation opportunities; improved air quality, water quality, and other ecosystem benefits; reduces heat island effect; workforce development).

Alignment to Community Priorities: 



Figure 26. Madison Valley Stormwater Park, Seattle, WA. Stormwater parks provide water quality treatment for stormwater runoff while also adding neighborhood green spaces. *Photo source: Seattle Public Utilities, [Stormwater Parks & Ponds — Shape Our Water](#)*



Category 4: Design for Heat

ACTION 14: Cool Schools

Increase heat resilience of local schools and learning centers through a Cool Schools Initiative.

Climate change is increasing the likelihood of seeing high temperatures when school is in session (specifically in May, June, and September) and during summer school programs. At the same time, many schools and learning centers in King County lack air conditioning. This action seeks to increase heat resilience in schools and early learning centers via support for a suite of activities collectively referred to as the Cool Schools initiative.

Classrooms (particularly south and west facing classrooms) without air conditioning can get uncomfortably hot during heat events, potentially affecting student learning and the health of staff and students in those classrooms.⁴⁹ The buildup of heat in buildings can also affect janitorial and maintenance staff who are often working in the building after school hours. This risk is heightened for schools located in identified heat islands with fewer shade trees and large areas of pavement (e.g., parking lot or paved play areas).

The Cool Schools initiative takes a multi-faceted, partnership-based approach to heat mitigation in schools and early learning centers. The approach provides a flexible way for education partners to opt-in

to initiative activities in collaboration with local and state partners, where relevant. The initiative includes:

1. *Providing training and information resources related to heat.*

This includes developing and distributing age-appropriate, multilingual educational materials on heat and health, ways to stay cool in the heat, and resources for families (see also [Action 17: Multilingual Communications](#)). Staff trainings could include information on ways to manage heat in the classroom, options to cool facilities for maintenance and operations staff, and recognizing and responding to heat-related illness for coaches and physical education instructors.

2. *Promoting infrastructure upgrades and maintenance.* This includes supporting school district staff in establishing optimal routine heating, ventilation, and air conditioning (HVAC) system assessments and to identify grants for HVAC improvements. Assessments can also consider other infrastructure upgrades, such as use of reflective building materials, passive cooling retrofits, and renewable energy systems.

3. *Increasing green spaces and shading on school campuses.* This includes the following, where feasible: planting trees to promote campus greening and shading, reducing the amount of paving in proximity to the school building, and installing shade structures (such as solar canopies) in paved areas, for example.

4. *Incorporating heat resilience in policies and facility design standards.* This includes integrating heat mitigation best practices into school design projects and standards as part of building

replacement or major site updates. Similar to [Action 16: Heat Smart Parks and Playgrounds](#), this can also include heat safety practices for designing and upgrading playground equipment in schools. Through this work, partners could also identify and work to advocate for changes in local and state policies needed to support climate resilient school design, including funding for HVAC upgrades, building envelop improvements, and green space development.

- 5. Supporting Cool Schools implementation.** This includes identifying and creating funding sources and professional development opportunities to assist school and early learning staff in implementing the listed activities. Options can include infrastructure assessment and upgrade grants to assist staff in evaluating facility needs and in prioritizing where capital improvements should be focused. Additionally, investment in professional development trainings focused on sustainable design, green building practices, and climate adaptation strategies can build capacity and facilitate staff leadership in Cool Schools activities.

Implementation of the above actions could have the most benefit for older facilities located in identified heat islands to address the most at-risk communities. The initiative also seeks to incorporate co-benefits with other weather and pollution-related concerns (such as wildfire smoke) and energy reduction goals of schools. The included activities can be updated to include best evidence-based practices that emerge from future research and shared learning.

Implementation Partners: King County, local jurisdictions, school districts, local schools, early learning facilities, Public Health – Seattle & King County, Washington State Office of Superintendent of Public Instruction.

Action Typology: 

Implementation Feasibility:  —   

Timeline for Community Benefits (Benefits): 0 - 3+ years (direct support for higher-risk communities; lower greenhouse gas emissions; increased public awareness; improved air quality, water quality, and other ecosystem benefits; reduces heat island effect).

Alignment to Community Priorities: 





Category 4: Design for Heat

ACTION 15: Building and Development Codes

Reduce heat impacts through effective building and development codes and policies.

Building and development codes and policies are foundational to addressing heat in the built environment. This action calls on King County, local jurisdictions, and other partners to develop and adopt heat resilient building standards and development codes to reduce heat impacts on health and adapt the built environment for heat.

Building codes. Housing conditions play an important role in protecting the health of individuals during extreme weather events such as extreme heat. One of the primary tools for standardizing how new or existing buildings are designed, built, or altered is building codes.⁵⁰ Building codes require every new structure, altered structure, or built element to meet a minimum standard by law. Developing codes that improve thermal comfort or increase heating and cooling efficiencies help to ensure access to safer and more energy efficient buildings over time. Building codes can also help reduce the heat island effect by reducing overall thermal loading on buildings.

Recognizing the importance of building codes in supporting heat resilience, this action includes the following activities related to building codes:



New Buildings Institute Heat Code Overlay

The [New Buildings Institute \(NBI\)](#) released the [Extreme Heat and Urban Heat Island Code Overlay](#) in March 2024, providing building code language for reducing the impact of extreme heat and urban heat islands. The overlay strengthens and expands cool surface requirements in energy codes and standards with a focus on building surfaces (i.e., “cool surfaces” installed to reflect sun and heat away from a structure), building sites (e.g., installing cool and/or permeable pavement, vegetation and shading), and cooling equipment (using passive cooling strategies to reduce the need for mechanical cooling equipment like air conditioners). Recognizing that climate change has increased the need for cooling to be a basic health and safety requirement in all new buildings, the overlay also adds maximum indoor temperature to the language of the 2021 International Mechanical Code, 2021 International Residential Code (IRC), and 2024 International Building Code (IBC). *Photo source: King County*

1. **Develop a King County heat mitigation building code package.**

King County will convene subject matter experts through the Regional Code Collaboration (RCC) to develop the necessary building codes. Drafters of the code package will be able to adapt and build upon an existing compendium of model building codes for heat created by the New Buildings Institute in 2024.

2. **Promote adoption of model codes in the State Building Code.**

Building code changes affecting small residential buildings must be made through the Washington State Building Code Council (SBCC)⁵¹ amendment process. The SBCC amendment process occurs two of every three years of the code cycle, with the next update beginning in 2024. Active engagement in this code cycle will require providing testimony to the SBCC, participation in relevant stakeholder group meetings (Technical Advisory Groups, Committee, and Council), and coordinating sign-on letters of support.

3. **Support King County jurisdictions in adopting codes locally as needed.** Any code not approved by the state via the SBCC process can be adopted locally, as able. Codes not approved by the state will need concerted effort from local jurisdiction staff to be adopted at the local level. To adopt these codes, local jurisdictions will require funding and capacity support from County and state partners.

Integrating heat mitigation into building codes ensures more King County residents have access to green building benefits, not just those with economic means. Additionally, the anticipated building

codes will have co-benefits with building decarbonization, reducing greenhouse gas emissions, and smoke and indoor air quality improvement.

Development codes. Development codes and policies shape how communities grow and adapt over time, influencing issues like building density, how and where development occurs, and availability of open space, for example. This action calls on county and local governments to review and update development codes and policies to address gaps, barriers, or opportunities related to mitigating extreme heat impacts in the built environment, such as Cool Corridors.

Implementation Partners: King County, local jurisdictions, climate associations such as Shift Zero and Climate Solutions, community-based organizations, supportive building industry partners and manufacturers, affordable housing developers.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 1 – 3+ years (lower greenhouse gas emissions; reduced heat island effect; cooler, more energy efficient residences; stronger regional coordination and alignment).

Alignment to Community Priorities: N/A

Cool Corridors

Responding to and preparing for the effects of climate change guides the City of New York's policies in a variety of ways. The New York City Panel on Climate Change's most recent assessment reports that New York City will see changes in temperature, precipitation intensity, and sea level resulting in greater hazards from extreme heat, extreme rainfall, coastal storm surge, and chronic tidal flooding. In 2021, the New York City Department of Transportation was granted funding from FEMA's Building Resilient Infrastructure and Communities grant to develop a Cool Corridors toolkit. Cool Corridors are streets with features that help lower ambient temperatures and provide relief from extreme heat to street users. These features include shade canopies, trees, and reflective surface treatments which lower the air temperature and fans, drinking fountains, and water misters which lower users' body temperature. Used in combination along a corridor, these features can have a great impact. DOT's Cool Corridors Toolkit will serve as a 'design manual' that is based on observed infrastructure in New York City, domestically, and internationally, where successful heat mitigation is occurring through urban design and new street furnishings. The final report will include a cost-benefit analysis of Cool Corridors in concept to determine their most cost-effectiveness. The toolkit is expected to be finalized by the end of 2024 and will be used to inform how the City of New York can better prepare our streets, sidewalks, and public spaces to combat extreme heat.

Summary courtesy of Z. Youngerman, New York City Dept. of Transportation



Figure 27. Including trees, reducing impervious surfaces, and adding other cooling amenities can help reduce the heat island effect in King County. *Photo source: King County.*



Category 4: Design for Heat

ACTION 16: Heat Smart Parks and Playgrounds

Design and activate parks and playgrounds for heat.

Parks and playgrounds are frequently preferred outdoor locations for cooling off when it is hot, particularly for youth, families with young children, and other residents who lack air conditioning and who are looking for a low or no cost alternative to hot indoor temperatures. This action calls for integrating heat resilience into parks and playground design and programming to enhance the role that local parks and playgrounds serve as cool spaces when it's hot, particularly for lower income communities who live in identified heat islands.

Community engagement participants frequently cited parks as the most likely place they would go when it is hot outside. Participants also identified heat-related improvements to parks as a priority for the strategy. While parks typically have mature trees or shelters that can provide shade, newly acquired park properties, smaller neighborhood parks, and parks in underserved communities may not have sufficient shade or other features to provide cooling during heat events. This can exacerbate heat risks for parks visitors, including children, pregnant people, and seniors.

This action calls for integrating heat resilience into parks and playground design and programming, with emphasis on

Tree Retention at Riverview Park, Snoqualmie

A recent project at Riverview Park aimed to replace aging playground equipment while maintaining and enhancing canopy cover and shade around the playground. Five mature trees were preserved by protecting their Critical Root Zones (CRZ) including a Norway maple directly adjacent to the playground. Two smaller trees were removed. Seven new trees were planted, including coastal redwood, swamp white oak, yellowwood, and blue Atlas cedar.



Figure 28. A new playground in Riverview Park, Snoqualmie. Construction of this park included preservation of pre-existing trees and planting of new trees to improve shading.

Photo source: City of Snoqualmie

areas in identified heat islands and low-income communities. Implementation includes the following:

1. **Develop and implement best practice guidelines for designing and/or retrofitting parks and playgrounds for heat.** King County will work with local parks departments, landscape architects, and community partners to develop and promote locally relevant heat design guidelines and best practices for parks and playgrounds. This includes guidelines and best practices related to building materials for park and playground features, landscaping, access to water and/or water features, seasonal shading, and reducing impervious surfaces (including depaving).
2. **Incorporate heat safety programming and amenities in parks during summer months.** As community gathering spots, parks provide valuable opportunities for sharing information on heat and heat safety. This may include multilingual seasonal placarding to raise awareness about the signs of heat illness and how to stay cool when recreating outdoors in summer. This may also include erecting portable shade structures at parks and/or hosting mobile cooling stations that offer water, popsicles, and other “cool treats” to parks visitors during heat events.
3. **Increase access to recreational areas that contain pools, water features, or beaches.** Parks programs should extend hours of operation for supervised, water-based recreation areas during heat events, where possible. This includes wading pools, public swimming pools, and beaches. See [Action 6: Drowning Prevention](#) for related water safety recommendations actions. This may also include integrating temporary or fixed water features such as splash pads or misters.

Additionally, implementation should be planned in partnership with local communities to ensure that features and planned activities are responsive to local needs.

Implementation Partners: King County Department of Natural Resources and Parks, local jurisdictions/parks and recreation programs, landscape architects, community-based organizations and neighborhood groups, local youth, parks supporters (private/foundation funders).

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 - 3+ years (direct support for higher-risk communities; recreation benefits; stronger regional coordination and alignment; reduces heat island effect).

Alignment to Community Priorities: 



Category 5: Increase Heat Safety Awareness

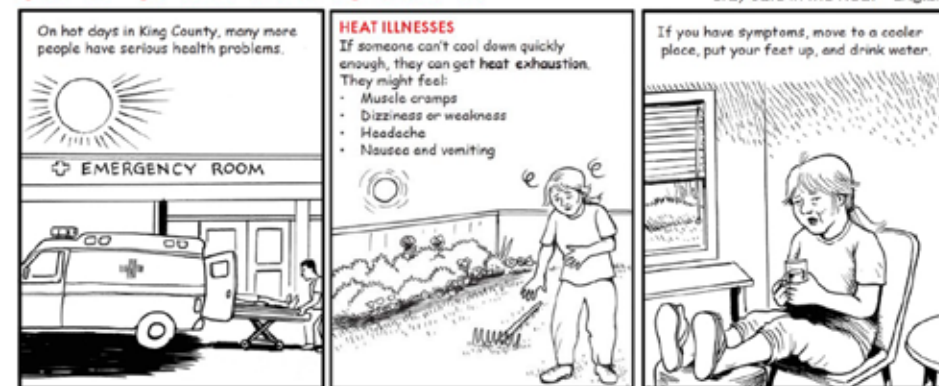
ACTION 17: Multilingual Communications

Develop and support distribution of inclusive, multilingual materials related to heat preparedness and mitigation.

Understanding how heat can affect health and what steps can be taken to reduce heat-related health impacts is critical to building individual and community resilience to heat. Language and other barriers can limit the reach of this information, however. To support increased awareness of these impacts in local communities, this action calls for developing and increasing the distribution of multilingual and culturally relevant heat safety and preparedness information in King County.

While the availability of heat and health information, including in-language resources, has increased in recent years (see Figure 29), additional work is needed to help ensure that information is reaching households and communities with limited English proficiency, many of whom live in the hottest areas of the county. Analysis of King County's heat island map shows that the top 20 percent hottest areas in King County have the highest proportion of limited English-speaking residents over the age of 18 relative to other mapped heat areas.

STAY SAFE in the HEAT



KULEYLKA KA BADBAAD

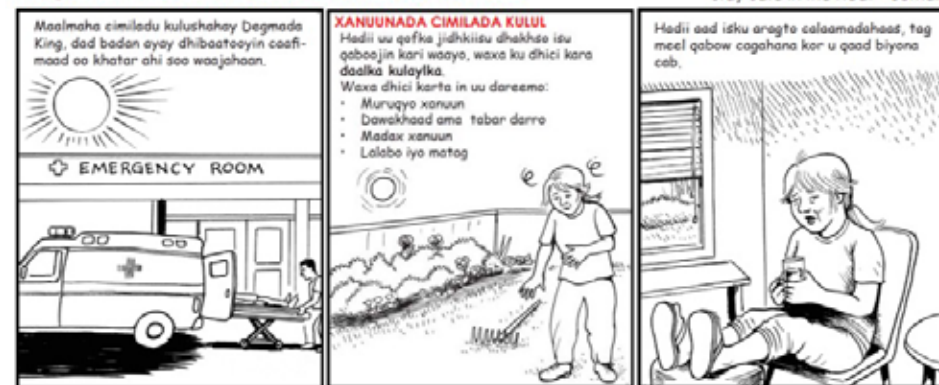


Figure 29. English and Somali images from the [Stay Safe in the Heat mini comic book](#) designed by PHSKC and University of Washington. It provides guidance for preventing heat illness during hot weather, and it is available in 11 different languages apart from English. *Figure source: Public Health – Seattle & King County.*

This action calls on King County, local governments, service organizations, community-based organizations, and public and private information networks to work together to:

1. ***Co-create more comprehensive and culturally relevant heat preparedness and mitigation content.*** Heat resilience information can be more effective and inclusive when co-created with community partners. This work includes partnering with community-based organizations, service providers, and others to evaluate community needs and priorities for heat messaging, as well as developing or supporting development of heat safety preparedness and safety materials with those partners.
2. ***Expand public, private, and community networks and formats for distributing heat safety and preparedness messaging prior to and during heat waves.*** This includes partnering with community and multilingual media and other community-trusted information providers to adapt and share heat safety information in a variety of languages and multimedia formats. The importance of heat safety and heat mitigation should be integrated into messaging and programming prior to summer months to help communities prepare early for high temperatures and to ensure residents can purchase cooling items, such as portable air conditioning and fans, during off-seasons when they are less likely to be sold out. This work should also include a focus on how to effectively utilize information channels to support time-sensitive messaging during a heat wave, direct residents towards local resources near their living area, and inform individuals of low-cost alternatives to suggested interventions.

While heat and health safety are a major focus of this action, this action will also support multilingual information needs called out in other parts of this strategy. These include the co-creation of multilingual resources related to:

- a. Increased in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals ([Action 1: In-Home Heat Safety](#));
- b. Urban tree canopy management (Actions 9-12); and
- c. Expanding access to weatherization, energy efficiency, and utility bill payment assistance ([Action 2: Energy Efficiency and Utility Bill Assistance](#)); and other actions.

Materials will also be added to the extreme heat online clearinghouse (see [Action 19: Partnerships for Implementation](#)) to facilitate access.

Implementation Partners: King County (including Emergency Management's Trusted Partner's Network), Public Health–Seattle & King County (including Community Navigators), local jurisdictions, community-based organizations, utilities, service providers, media/ community and multilingual media, neighborhood/community groups or advisory boards.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 - 1 years (direct support for higher-risk communities; increased public awareness; building local capacity).

Alignment to Community Priorities: 



Category 5: Increase Heat Safety Awareness

ACTION 18: Heat Resilience Trainings

Create and administer trainings to help educate communities on heat safety and preparedness.

Community-based organizations and service provider staff who work directly with heat-sensitive populations, and/or caregivers of those community members, are uniquely positioned to help provide information and training within their communities on identifying and mitigating heat-related risks.

This action seeks to leverage health and training expertise within Public Health–Seattle & King County, community-based organizations, service providers, and other partners to develop heat safety and preparedness curricula for use in public programming and trainings. Work on this action includes the following activities:

1. **Develop a Community Climate Resilient Housing Curriculum.**

Public Health–Seattle & King County will develop a comprehensive climate resilient housing curriculum inclusive of extreme heat for use during community outreach and engagement events and/or as part of service provision. The curriculum will be designed to raise resident awareness of factors, features, behaviors, and actions that benefit extreme weather risk reduction at home. A “train the trainer” model will be developed to help partners understand and teach curriculum components to their community members, helping to extend the reach of information within

communities. Curriculum materials and training opportunities will include a focus on renters and the challenges they can face in adapting their living spaces for heat and will emphasize serving low-income and median-income households.

2. **Create additional heat safety awareness and preparedness trainings.** In addition to the Community Climate Resilient Housing Curriculum, Public Health–Seattle & King County will work with partners to develop training materials to help community-based organization staff identify and treat heat-related illness, raise awareness of and cope with the potential mental health impacts of heat, identify and connect residents to opportunities and resources that can provide heat relief, and help residents manage co-occurring hazards that can occur with a heat event, such as wildfire smoke, power outages, and food safety. Training adaptations may include conversion to multimedia content, creation of online modules, and customized in-person sessions, in addition to in-language resources.
3. **Provide a training point of contact for community organizations.** Community partner organizations engaged during strategy development noted the need for a trusted, sustained point of contact for questions about training content. Public Health–Seattle & King County will designate a point of contact to provide public support on the training and outreach materials developed for this action.

All materials and trainings for this action will be developed through a multipronged, culturally informed, and language accessible

approach, consistent with [Action 17: Multilingual Communications](#). Funding support for frontline community participation in the development and implementation of heat safety trainings will be required.

Implementation Partners: Public Health--Seattle & King County, Sound Generations Elder Education Institute, Seattle Public Library, community-based organizations, King County Department of Community and Health Services, King County Housing Authority, local governments.

Action Typology: 🔍

Implementation Feasibility: ☀️☀️

Timeline for Community Benefits (Benefits): 0 - 3 years (direct support for higher-risk communities; increased public awareness; building local capacity; workforce development).

Alignment to Community Priorities: ✅



Figure 30. Co-developed trainings between local government staff and community-based organizations can increase outreach and awareness of culturally relevant and community-specific heat safety information. *Photo source: King County.*



Category 6: Support Heat Action

ACTION 19: Partnerships for Implementation

Build partnerships and coordination around strategy implementation and funding.

Development of this strategy has identified the need for continued collaboration with local jurisdictions, community-based organizations, service providers, and other partners to share learnings about extreme heat, to leverage resources, and to increase coordination around implementing listed actions. Recognizing this, King County will:

1. **Work with implementation partners to finalize strategy performance measures.** To support ongoing evaluation of strategy implementation and effectiveness, King County will work with implementation partners to finalize a performance measurement framework for the strategy. The goal is to create a shared framework for measuring action implementation and outcomes that can be used within and/or across implementing organizations, facilitating measurement tracking over time and across efforts. Potential performance measures identified as actions were developed will be used to inform this work.
2. **Support opportunities for joint implementation and funding.** As more communities look to engage in specific strategy actions,

King County will seek opportunities to bring local partners with shared action interests together to work collaboratively on implementation. This includes partnering on joint funding proposals to support action implementation. Additionally, King County will create or support ongoing opportunities to build collective knowledge and action on:

- a. Extreme heat impacts and equitable mitigation practices;
- b. Local heat preparedness activities and resource needs for action implementation;
- c. Gaps in heat data and potential collection methods;
- d. Opportunities for outreach, engagement, and involvement of additional partners;
- e. Funding opportunities; and
- f. Evaluation of heat strategy action outcomes.

Existing forums will be utilized where available.

3. **Develop an online resource page to support Heat Strategy implementation.** Planned and anticipated site content includes information on and/or links to information on local planning activities, outreach and engagement materials, funding opportunities, data, best practices, and case studies. Site content will include content developed specifically for the strategy and new and existing resources developed by partner programs and agencies.

Implementation Partners: King County, state and local jurisdiction stakeholders, community-based organizations, service providers.

Action Typology: 

Implementation Feasibility: 

Timeline for Community Benefits (Benefits): 0 - 3+ years (stronger regional coordination and alignment; building local capacity).

Alignment to Community Priorities: 



Figure 31. Tabling at the Rainer Beach Health and Wellness Festival, April 2022. Photo source: King County



Category 6: Support Heat Action

ACTION 20: Support Community Solutions

Support implementation of community-determined solutions for heat.

The King County Extreme Heat Mitigation strategy provides a comprehensive set of actions and activities developed with local jurisdictions, community-based organizations, frontline community members, and other partners. Additional solutions—many of which are based in the lived experiences and knowledge of local communities and service providers—exist outside the scope of this strategy.

This action addresses expressed interest from frontline community partners for continued opportunities to stay connected on heat mitigation activities and support for future community-determined heat mitigation solutions. More specifically, this action calls on King County and local government staff to uplift community-determined solutions by:

- a. Developing or leveraging existing community-based organization and service provider network(s) for sharing relevant information, data, and tools for heat mitigation solutions.
- b. Connecting community organizations to local, state, and federal funding and partnership opportunities.

- c. Providing technical support for the development of individual or joint community-based grant applications and/or by serving as a grant partner for those applications.
- d. Directly funding community projects through new or existing programs and/or grant opportunities.

King County's [Community Climate Resilience Grant program](#) could potentially support implementation of heat-related activities. Additional opportunities beyond 2025 will be explored as part of strategy implementation.

Implementation Partners: King County, local governments, community-based organizations, service providers, philanthropy.

Action Typology:

Implementation Feasibility:

Timeline for Community Benefits (Benefits): 1 – 3 years (direct support for higher-risk communities; building local capacity).

Alignment to Community Priorities:

NEXT STEPS AND FUTURE CONSIDERATIONS

The King County Extreme Heat Mitigation Strategy identifies 20 actions prioritized for implementation by local and county governments, community-based organizations, service-based organizations, and other partners over the next five years (2024-2029). Some actions, or specific activities within actions, can be completed before 2029 while other actions represent ongoing work and/or will take longer to fully implement.

Implementation partner readiness to start or expand their work on heat varies. While many organizations are already involved in heat work, time will be required to build additional individual and collective capacity to implement many strategy actions. When implementation occurs and by whom will reflect a combination of considerations, including:

- Action status and type: Actions that accelerate or scale up existing efforts may be easier to initiate or build on in the near term relative to new or emerging actions.
- Implementation feasibility: Actions that are easier to implement may be started sooner relative to other actions. At the same time, work on actions that are difficult to implement should begin as soon as feasibly possible given the time required to implement those actions.
- Alignment with organizational priorities and near-term work planning: Some actions may align with exiting organizational priorities, planned work, resourcing, or responsibilities. As a

result, work on those actions may begin sooner relative to other actions.

- Windows of opportunity: Grant opportunities, changes in local and state policies, and new partnerships may create unique “windows of opportunity” for advancing specific actions and activities.

Table 1 provides an overview of key implementation considerations that organizations can use to start identifying opportunities and entry points for strategy implementation. Mapping out implementation at the organizational level can help identify where an organization can start work on the heat strategy and how to strategically build in additional capacity and activities. To that end, King County will develop a strategy implementation plan in 2024 specific to County operations that identifies:

- Roles and responsibilities relative to strategy activities,
- Key partners and community engagement needs,
- Multi-benefit and leveraging opportunities, and
- Timelines, steps, and implementation targets for sequencing work within and across actions.

A template for this implementation plan will be provided to other implementation partners to support similar mapping.

To help ensure further progress on shared priorities, strategy actions should be integrated into county and local planning documents,

policies, budgets, and work plans, where relevant. This additional level of integration can drive countywide coordination on heat action, draw additional funding and staff capacity to the work, and support initiatives with multi-benefit outcomes.

As convener and author of the strategy, King County will be the steward of the strategy, tracking overall implementation and working with stakeholders to leverage opportunities and partnerships, address barriers to action, and evaluate the need for future updates to the strategy. Markers of implementation success for the strategy as a whole by 2029 include:

- More jurisdictions and organizations are engaged in heat mitigation work and are using the strategy to inform that work.
- A framework for tracking implementation is in place and being used.
- Work is happening across all strategy actions.
- Frontline community members, community-based organizations, and service partners are engaged in strategy implementation.

Refining performance measurement for individual actions and outcomes will continue in 2024-2025 as part of strategy implementation and will be used to measure progress on individual actions or action categories going forward (see [Action 19: Partnerships for Implementation](#)).



Development of this strategy identified several areas of future research and planning to foster countywide heat resilience. King County will continue to explore heat impacts and initiatives in the following areas:

- ***Seeking sustainable funding to implement initiatives.***

Research and interviews conducted by students from the University of Washington Evans School of Public Policy and Governance identified the need to build heat resilience into local government budgeting and long-term programming as well as the need to engage with state and federal agencies (such as the Washington State Department of Commerce and the Federal Emergency Management Agency) to integrate extreme heat as a criterion for funding opportunities.

- ***Uplifting solutions to benefit community connectivity for heat resilience.*** Community engagement revealed the need to promote social connectivity as a method of heat resilience. Noted ways to encourage connectivity included strengthening community networks related to heat preparedness, promoting, culturally relevant foods used to stay cool, and encouraging intergenerational support in response to extreme heat (e.g., partnering with youth on wellness checks for seniors). These solutions could be supported via [Action 20: Support Community Solutions](#).

- ***Leveraging workforce development to advance heat resilient action.*** To strengthen King County's priority areas around extreme heat, strategic alignment between the King

County Green Jobs Strategy and Extreme Heat Mitigation Strategy should be explored. This could include addressing heat vulnerability through workforce development opportunities and partnerships such as:

- o ***Skilled Workforce Partnerships:*** Leverage existing key workforce development initiatives under the Green Jobs Strategy to provide action implementation support and formalized partnerships with contractors to further HVAC installations and weatherization project to advance [Action 3: Heat Pump Installation](#).
- o ***Expanding Occupational Heat Mitigation Knowledge:*** In partnership with the JumpStart climate-workforce development initiative, support heat resilience and climate justice education for prospective work-based learning trainees. This could leverage Action 18: Heat Resilience Trainings.
- o ***Internal Capacity Building:*** Through collaboration with the King County Climate and Workforce Development team, recommend relevant building efficiency certifications and trainings through the Green Skills Development Fund to advance county workforce skills in implementing heat resilient infrastructure.

- ***Keeping pets healthy during extreme heat events.*** Pet care was a concern in multiple community focus groups, and many residents without air conditioning did not feel comfortable leaving pets home alone to seek cooler locations outside their residence.



Further attention should be given to helping pet owners keep their pets safe during heat events.

- **Collecting temperature data** through additional heat mapping efforts using low-cost sensors and engaging community members.
- **Promoting heat resilience in the healthcare industry.** Having a standardized method through which physicians can identify and code heat-related symptoms could improve data collection on heat and health impacts. Additionally, co-developing heat safety messaging with physicians can increase heat awareness from trusted medical sources.

Implementing this strategy will require ongoing community engagement, sustained partnerships across sectors, and coordination between multiple levels of government. Sustained partnerships between government entities and frontline community organizations will be particularly important to ensure continuous prioritization of frontline community needs in implementation and to build long-term community resilience to heat. Through this approach, we can collectively build a more heat resilient King County.

Table 1. Overview of key information about each action. This table is intended to assist strategy readers in selecting relevant actions for their community.

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
	Action Title	Includes others not listed here.	As identified in community engagement.	Additional benefits may apply. Timeline refers to time after action implementation.	For tracking implementation progress and outcomes. Not final measures.
1: HELP PEOPLE STAY COOL & SAFE INDOORS					
1	In-Home Heat Safety: Increase access to portable air conditioning and in-home heat safety support for low-income seniors, people with disabilities, and homebound individuals.	King County, local governments, housing authorities, local service providers, community-based organizations	X	Direct support for higher-risk communities Increased public awareness Building local capacity 0 – 3 years	Number of residences that receive cooling support New/enhanced organizational partnerships established to support this work
2	Energy Efficiency and Utility Bill Assistance: Expand access to weatherization, energy efficiency, and utility bill payment assistance.	Utilities, King County, local governments, community-based organizations	X	Direct support for higher-risk communities Building local capacity Lower greenhouse gas emissions 0 - 3 years	Increased enrollment in utility assistance and efficiency programs New/enhanced organizational partnerships established to support this work

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
3	Heat Pump Installations: Expand heat pump installation programs to cover more households and locations.	King County, local jurisdictions, community-based organizations, local service providers, heat pump vendors & installers, utilities	X	Direct support for higher-risk communities Workforce development Lower greenhouse gas emissions 1 – 3 years	Number of heat pumps installed in low-income homes, multi-family buildings, and community-centered buildings
4	Enhanced Cooling Centers: Provide wrap-around services at public cooling centers.	Local governments, King County	X	Direct support for higher-risk communities 0 – 1 year	Number and distribution of cooling centers with added activities Number and distribution of cooling centers with extended hours Facility attendance during heat events
5	Community-led Cooling Spaces: Expand cooling location options to include more community-trusted locations.	King County, local jurisdictions, community-based organizations	X	Direct support for higher-risk communities Building local capacity 1 – 3 years	Number of community-led cooling locations established Training materials developed to support help community facilities become cooling locations Facility attendance during heat events

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
2: HELP PEOPLE STAY COOL & SAFE OUTDOORS					
6	Drowning Prevention: Promote water safety and drowning prevention through swimming lessons, lifeguard training, and distribution of water safety equipment.	Non-profits, local governments, community-based organizations, King County	X	Direct support for higher-risk communities Increased public awareness Expanded recreation opportunities 0 – 1 year	Number of income-qualified residents participating in swim lessons Number of life vests and swim safety information distributed Number and diversity of people participating in lifeguarded trainings
7	Cool Kits for Unhoused People: Distribute Cool Kits for unhoused people during heat events.	King County Regional Homelessness Authority, service providers	X	Direct support for higher-risk communities 0 – 1 year	Number and geographic distribution of Cool Kits shared New/enhanced organizational partnerships supporting Cool Kits delivery

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
8	Occupational Heat Safety: Increase heat safety awareness and preparedness for workers who are more at-risk when it is hot.	King County, community-based organizations, local service providers, Washington Department of Labor & Industries	X	Direct support for higher-risk communities Increased public awareness 0 – 3 years	New/enhanced organizational partnerships involved in co-creating and distributing occupational safety materials
3: COOL OUR NEIGHBORHOODS					
9	Private Property Tree Care: Develop and promote technical, educational, and financial assistance for tree planting and maintenance to private property owners.	Local jurisdictions and King County	X	More equitable tree canopy coverage Air quality, water quality, and other ecosystem benefits Lower greenhouse gas emissions Reduces heat island effect 3+ years	Number and geographic distribution of trees planted in identified heat islands Percentage of canopy cover gained in identified heat islands

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
10	Maximize Tree Survival: Research, share, and promote best practices tree establishment to increase survival of newly planted trees.	Local jurisdictions and King County		<p>More equitable tree canopy coverage</p> <p>Stronger regional coordination and alignment</p> <p>Lower greenhouse gas emissions</p> <p>Air quality, water quality, and other ecosystem benefits</p> <p>Reduces heat island effect</p> <p>3+ years</p>	<p>Percentage of newly planted trees that survive past three years in identified heat islands</p> <p>Percentage of resources distributed and trees planted in identified heat islands</p> <p>Number of participants in technical trainings</p>
11	King County Tree Code Toolkit: Develop and support application of a King County Tree Code Toolkit.	King County, local jurisdictions, and King Conservation District		<p>More equitable tree canopy coverage</p> <p>Stronger regional coordination and alignment</p> <p>Reduces heat island effect</p> <p>1 – 3 years</p>	<p>Availability of the toolkit through multilingual and multi-media translation and distribution events.</p> <p>Number of jurisdictions that use the toolkit to inform their tree code development process</p>

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
12	Track Equitable Canopy Cover: Support local efforts to identify, track, and achieve tree canopy goals.	King County, local jurisdictions, and King Conservation District		More equitable tree canopy coverage Stronger regional coordination and alignment Reduces heat island effect 1 –3+ years	Urban tree canopy analyses completed by jurisdictions Increased collaboration across jurisdictions on tree canopy work Percentage of tree canopy cover gained in identified heat islands
13	Open Space Access: Protect, increase and maintain accessible open space, particularly in heat islands.	King County, local jurisdictions, and non-governmental organizations	X	More equitable access to green space Expanded recreation opportunities Improved air quality, water quality, and other ecosystem benefits Reduces heat island effect Workforce development 3+ years	Reduction in open space inequities in identified heat islands Number and distribution of depaving projects completed in identified heat islands Number of stormwater parks completed in identified heat islands

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
4: DESIGN FOR HEAT					
14	Cool Schools: Increase heat resilience of local schools and learning centers through a Cool Schools Initiative.	King County, local jurisdictions, school districts, and early learning facilities	X	Direct support for higher-risk communities Lower greenhouse gas emissions Increased public awareness Improved air quality, water quality, and other ecosystem benefits Reduces heat island effect 0 - 3+ years	Number and distribution of schools in identified heat islands engaged in the work Number and distribution of school staff trainings developed and hosted Training evaluations Number of schools in identified heat islands with heat-related upgrades Lower indoor temperatures in rooms or buildings that have received upgrades

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
15	Building and Development Codes: Reduce heat impacts through effective building and development codes and policies.	King County and local jurisdictions		<p>Lower greenhouse gas emissions</p> <p>Reduces heat island effect</p> <p>Cooler, more energy efficient residences</p> <p>Stronger regional coordination and alignment</p> <p>1 – 3+ years</p>	<p>Adoption of proposed codes to the Washington State Building Code</p> <p>For codes not approved by the state, number of codes adopted by local jurisdictions</p> <p>Number of local development codes and policies updated to include heat resilience</p>
16	Heat Smart Parks and Playgrounds: Design and activate parks and playgrounds for heat.	King County, local jurisdictions, community-based organizations, neighborhood groups, private funders	X	<p>Direct support for higher-risk communities</p> <p>Recreation benefits</p> <p>Stronger regional coordination and alignment</p> <p>Reduces heat island effect</p> <p>0 – 3+ years</p>	<p>Number of agencies incorporating heat-smart best practices into capital planning programs and other decision processes</p> <p>Number of playgrounds built in accordance with heat smart guidance</p> <p>Number of parks that include heat safety activities or outreach during summer or heat events</p>

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
5: INCREASE HEAT SAFETY AWARENESS					
17	Multilingual Communications: Develop and support distribution of inclusive, multilingual materials related to heat preparedness.	King County and local jurisdictions	X	Direct support for higher-risk communities Increased public awareness Building local capacity 0 – 1 year	Number of languages and media formats in which educational materials are available Number, diversity, and geographic reach of media outlets distributing translated messaging Number, diversity, and geographic reach of community-based organizations involved in co-creation and distribution of materials

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
18	Heat Resilience Trainings: Create and administer trainings to help educate communities on heat safety and preparedness.	King County and community partners	X	Direct support for higher-risk communities Increased public awareness Building local capacity Workforce development 0 – 3 years	Number of educational training modules developed Number of languages in which training modules are available Number, diversity, and geographic reach of community-based organizations engaged in delivery of trainings Community partner feedback on ease and effectiveness of trainings

		IMPLEMENTING PARTNERS	COMMUNITY PRIORITY	ACTION BENEFITS & TIMELINE FOR BENEFITS	POTENTIAL PERFORMANCE MEASURES
6: SUPPORT HEAT ACTION					
19	Partnerships for Implementation: Build partnerships and coordination around strategy implementation and funding.	King County, local jurisdictions, and local service providers	X	Stronger regional coordination and alignment Building local capacity 0 – 3+ years	Number and tracking mechanism for finalized performance measures Number, diversity, and geographic reach of communities involved as partners Individual and joint funding opportunities pursued to support strategy implementation Data on utilization of web resources
20	Support Community Solutions: Support implementation of community-determined solutions for heat.	King County, local governments, community-based organizations, service providers, philanthropy	X	Direct support for higher-risk communities Building local capacity 1 – 3 years	Amount of funding available for community-identified heat mitigation activities through existing or new grant programs Number, diversity, and geographic reach of communities receiving technical assistance and/or grant funding

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