

2. SUSTAINABILITY, CLIMATE AND ENVIRONMENT (SCE) ELEMENT

Purpose

The Growth Management Act (GMA) requires the City to adopt development regulations that protect critical areas. The SCE element provides a policy basis to guide the implementation, and any future amendments, to development regulations that could potentially impact, or improve, our natural environment. The element is forward-looking and provides policies to guide ongoing responses to climate change at individual property and citywide scales, as well as policies that will help make Kirkland a more resilient community over the next 20 years.

It is recognized that development of land plays an important role in how nature is preserved and enhanced because the natural environment supports humans and biodiversity in plants and animals. Climate impacts are limiting ecosystem services such as clean air, water and the food to support all living things. Therefore, it is essential that the City continuously look for ways to allow sustainable growth to occur while ensuring that how it is done helps and does not hinder climate resilience. This balancing act is important to get right because the impacts of climate such as extreme heat and wildfire smoke events are happening with regularity.

The element provides policy that supports the enhancement of our urban forest, ensuring that stormwater is managed and that the water quality of our streams is monitored so that it can be healthier and continue to support the ecosystems that rely on a healthy watershed. Providing environmental education, equitable financial assistance, and the knowledge of what an individual can do to support enhancement of the natural environment and adapt to climate impacts will be an area where the City can provide leadership and guidance to the whole community.

In addition to development, transportation accounts for large part of the City's greenhouse gas (GHG) emissions. The City is required through State legislation to reduce emissions from vehicle miles traveled. Therefore, new policy has been added that intersects with the Transportation Element and the Transportation Strategic Plan and guides them to set goals and create actions that fulfil this requirement and help the City reduce its GHG emissions from transportation.

The SCE Element includes goals and policies that support actions needed to:

- Restore our natural systems and critical areas including streams, wetlands, habitat areas and Lake Washington for maximum ecological value and functions.
- Implement the Strategic Urban Forestry Management Plan to enhance our urban forest.
- Continue to upgrade Kirkland's High Performing Buildings and promote retrofitting of existing structures.
- Provide consistent funding and staff to implement Kirkland's Strategic Sustainability Plan and accomplish regional commitments so that we can be readily adaptable and resilient in advance of the effects of climate change impacts.
- Fund, staff, and implement all other functional plans that seek to improve the environment and ensure long-term sustainability and resilience.

The policies contained in the Sustainability, Climate and Environment Element establish the basis and framework for these concepts and should be utilized to create incentives, regulations,

programs, pilot projects and actions to help Kirkland become more livable and sustainable and resilient for all current and future generations.

Kirkland's Strategic Sustainability Plan (SSP) is the functional plan that contains actions that implement many of the goals and policies in the SCE Element. The SSP seeks to coordinate the many existing City strategic plans, policies, programs and actions that encompass environmental issues. The SSP helps the community articulate where we are now, where we should be, and establishes goals and implementable actions that put the City on a clear path to achieve sustainability for future generations to come.

The SSP has eight focus areas that covers topics such as energy use and production, managing land use and transportation, enhancing our urban forest and ecosystems, fostering a sustainable economy and city government and ensuring healthy community. It also addresses solid waste, recycling, composting and emphasizes wasting less of our resources. The SSP also prioritizes equity in the City's actions which works hand in hand with the City's 5 Year Diversity, Equity, Inclusion and Belonging Plan.

The Energy and Emissions focus area of the SSP is especially important because it serves as a climate action plan blueprint for the City, by setting goals related to reducing greenhouse gases and providing milestones for reductions by 2030, 2040 and 2050. It is imperative that the City do all it can; including working with the local utility (Puget Sound Energy) and continuing to develop programs and initiatives to achieve the emission reduction goals, while also finding ways to help the community equitably adapt to warmer weather and smoke events. Proactive work in SSP actions will help ensure resilience to climate impacts being experienced now, and in the future.

Vision

Kirkland Is a Livable, Sustainable and Resilient Community.

With the 2044 Comprehensive Plan update, the Kirkland community expressed that they want Kirkland to be Livable, Sustainable and Resilient now, and for the future.

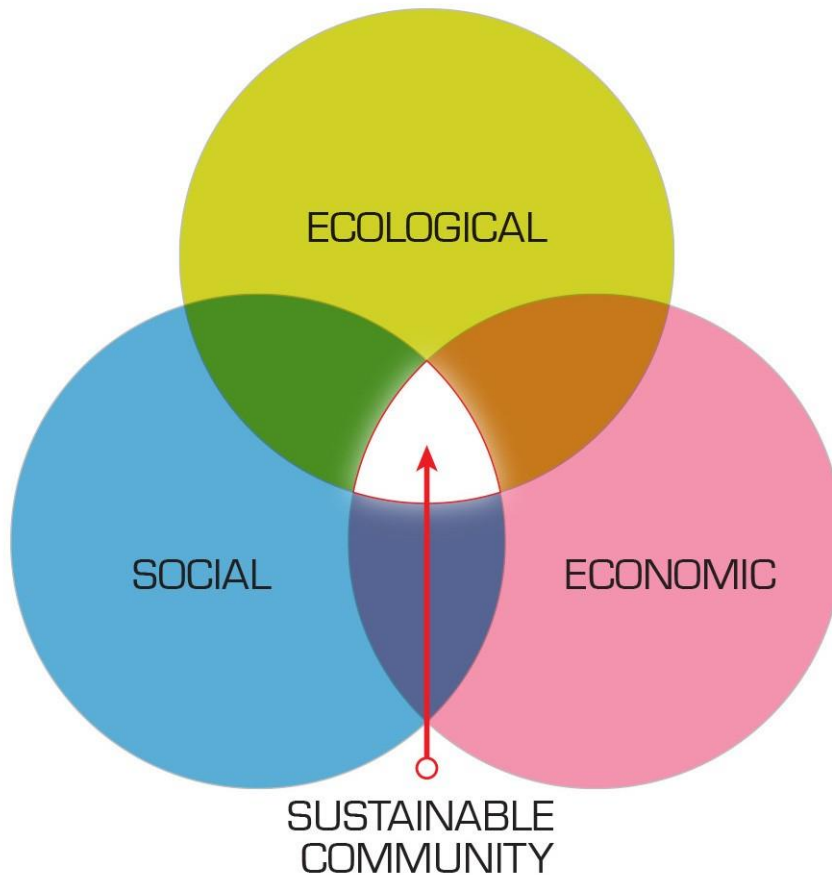
Livable may be subjective for each member of our community, but it has been defined as a quality-of-life standard that is attached to a place. Kirkland as a place needs to have characteristics that allow it to be connected, well-designed, and allow access to the basic needs for living such as clean water and air, healthy food, affordable housing, education, and employment opportunities. A livable city should also have reliable infrastructure, and government that is proactive and can manage its operations to ensure that the quality of life is high for its community members. The concepts of livable and sustainable go hand in hand.

Sustainability means meeting our present needs while ensuring future generations have the ability to meet theirs. To become a more sustainable city, we need to consider the long term and wide-ranging impacts of our actions and to evolve, strengthen and expand our policies and programs to adapt to new situations. The three key areas of sustainability are:

- **Ecological Sustainability:** Ensure that natural systems and built structures protect habitats, water supply, creates a healthy environment, and promotes energy efficiency.

- **Economic Sustainability:** Ensure a strong economy that is able to support our entire community and seeks to solve environmental issues and not compromise the environment in which we live.
- **Social Sustainability:** Ensure that the City provides a sense of community to our residents, supports basic health and human service needs, and is proactive in creating opportunities and providing resources for those who are unhoused, unemployed, underemployed, and vulnerable so that they can have a pathway to participate in greater opportunities and enjoyment of the community.

Figure SCE-1: Sustainable Community



Resilience takes sustainability to the next step in which a community can adapt to the ever-changing environment in a socially responsible manner. At its most basic level, a resilient community ensures that its residents and workforce have access to food and water and housing, and this is especially critical during extreme weather events or disasters. In the built environment this means incentivizing and requiring high performing buildings and development and redevelopment. High Performance Buildings have a low carbon footprint in construction and operation, use less potable water and energy, are electrified, rely less on fossil fuels, and produce more solar energy and store excess clean energy using emerging technologies such as battery storage for later use.

Figure SCE-2: Solar Panel Array



Goals and Policies

Natural Systems Management

Figure SCE-3: Forbes Creek Wetlands



Natural systems serve many essential biological, hydrological, and geological functions that significantly affect life and property in Kirkland. Features such as wetlands and streams provide habitat for fish and wildlife, flood control, and groundwater recharge, as well as surface and groundwater transport, storage, and filtering. Vegetation, too, is essential to fish and wildlife habitat, and helps support soil stability, prevents erosion, moderates temperature, produces oxygen, and absorbs significant amounts of water, thereby reducing runoff and flooding. Soils with healthy structure and organic content, such as those found in natural wooded areas, absorb, store, and transport water, effectively supporting vegetation, slope integrity, and reducing flooding and erosion. Clean air is essential to life. In addition to these functions, the natural environment provides many valuable amenities such as scenic landscape, community identity, open space, and opportunities for recreation, culture, and education. Kirkland's community members and visitors recognize and often comment upon the important role the natural environment plays in the quality of life.

Maintaining these valuable natural systems within Kirkland is a crucial but complex undertaking. Effective management of the natural environment must begin with the understanding that natural features are components of systems which are, in turn, interdependent upon other natural systems that range beyond the City's borders. The Washington State Growth Management Act and Federal Endangered Species Act underscore this approach and prescribe additional requirements. Accordingly, Kirkland manages the interrelated natural systems:

- Jointly with other agencies and the affected tribes to ensure coordinated and consistent actions among the jurisdictions sharing an ecosystem (e.g., a watershed);
- Comprehensively, by coordinating natural systems information and practices across City departments;
- Scientifically, by applying the best available science to system-wide inventories and analyses to formulate policies and development standards to protect the functions and values of critical areas; and
- Conscientiously, to give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries through salmonid habitat conservation.

As an urban community with a considerable legacy of environmental resources, Kirkland continues its longstanding effort to balance multiple concerns. The City's natural resources include 13 drainage basins – some with salmonid-bearing streams, several large wetlands, two minor lakes, and extensive shoreline on Lake Washington (see Figure SCE-31). Large portions of the City contain steep slopes and mature vegetation (see Figures SCE-32a, SCE-32b, SCE-33 and SCE-34). Future growth will generally be infill at a range of scales within Kirkland's well-established land use pattern. Because many of the remaining sites are small and constrained by environmentally sensitive or hazardous areas, Kirkland's challenge for the future will be to accommodate infill growth and development while protecting and enhancing natural systems on public and private lands.

A variety of tools are needed to effectively manage the natural environment, because natural systems traverse private and public property lines as well as jurisdictional boundaries. These tools include:

- Programs and practices used by the City to maintain land for which it is responsible, such as parks, open space, and rights-of-way;
- Public education and involvement to cultivate a culture of stewardship and especially youth outreach;
- Incentives to foster sound practices by Kirkland residents, businesses, and institutions;
- Acquisition of the most ecologically valuable sites by the City when feasible; and
- Regulations accompanied by effective enforcement.

The fundamental goal is to protect natural systems and features from the potentially negative impacts of nearby development and to protect life and property from certain environmental hazards. To accomplish this, the Element:

- Recognizes the importance of environmental quality and supports standards to improve it;
- Supports comprehensive management of activities in sensitive and hazard areas through a variety of methods to ensure high environmental quality and to avoid risks or actual damage to life and property;
- Promotes system-wide management of environmental resources. Supports interagency coordination among jurisdictions sharing an ecosystem;

- Supports the acquisition of comprehensive technical data and the application of best available science for natural systems management; and
- Acknowledges the importance of informing the public of the locations, functions, and needs of Kirkland's natural resources.

Goal SCE-1: Protect and enhance Kirkland's natural systems and features.

Policy SCE-1.1: Incorporate environmental protection and restoration efforts including climate action, mitigation, and resilience into Comprehensive Plan elements and related functional plans to ensure that the quality of the natural environment and its contributions to human health and vitality are sustained now and for future generations.

Figure SCE-4: Yarrow Bay



Policy SCE-1.2: Use a system-wide approach in designing and implementing interdisciplinary strategies to effectively manage natural systems, including areas that cross jurisdictional boundaries, working in partnership and coordination with affected State, regional, and local government and agencies as well as affected tribes.

Environmental resources – such as streams, soils, and trees – are not isolated features, but rather components of ecosystems that go beyond a development site and, beyond our City boundaries. Therefore, a system-wide approach is necessary for effective management of environmental resources. Also, recognition of the interdependence of one type of natural system upon another is essential. An example of this is the relationship between the shoreline and Lake Washington. For this reason, a comprehensive approach to the management of natural resources is most effective.

Responsibility for management of these ecosystems falls to many agencies at many levels of government, including King County, State resource agencies, and watershed planning bodies. Kirkland and its planning area lie within the Usual and Accustomed Treaty Area of the Muckleshoot Indian Tribe. Joint coordination and planning with all affected agencies and tribes is appropriate to ensure consistent actions among the jurisdictions sharing an ecosystem.

Policy SCE-1.3: Manage activities affecting air, vegetation, water, and the land to enhance and improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property.

Figure SCE-5: Chinook Salmon at the mouth of Juanita Bay



Policy SCE-1.4: Manage the natural and built environments to achieve no net loss of the functions and values of each drainage basin; and proactively enhance and restore functions, values, and features, and incentivize private landowners to restore the ecological assets on their property.

State and Federal laws require no net loss of functions and values of lakes, streams, and wetlands. These laws may also require the protection, enhancement, and restoration of these features. Development should avoid or minimize the impacts to these functions and values. Where degradation has occurred, enhancement and restoration should be pursued. Projects, programs and regulations should include mitigation banking when appropriate, adaptive management approaches and Best Available Science standards to preserve and enhance the functions. Limited modification of wetlands and streams that have very low ecological function and value may be allowed, provided these functions and values are fully restored or enhanced. Development standard flexibility could be considered if such flexibility provides opportunity for better quality restoration of ecological assets.

Figure SCE-6: Low Impact rain garden captures water from downspouts



Figure SCE-7: Bioretention at street edge designed to absorb stormwater



Policy SCE-1.5: Ensure public and private projects incorporate locally appropriate, low-impact development approaches, utilize the most current high performance building certification requirements, and employ a watershed approach for managing stormwater, protecting water quality, minimizing flooding and erosion, protecting habitat, and reducing greenhouse gas emissions.

Figure SCE-8: Low impact permeable paver installation

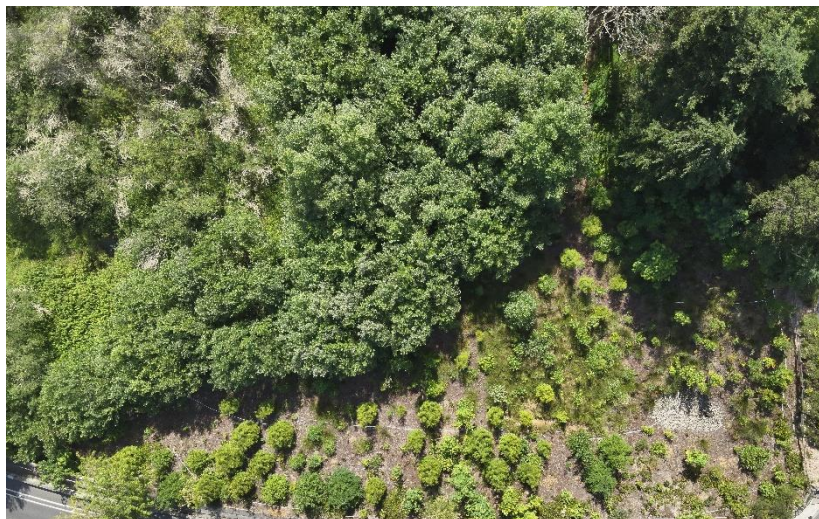


The City should promote and model these practices and others, including purchasing energy efficient and renewable technology products and services, whenever feasible, by maintaining model sensitive area buffers, using current arboricultural techniques for public trees, using and eventually certifying new public facilities through programs fostering sustainable building practices, and by linking Kirkland stakeholders to information sources and programs for notable trees, neighborhood planting events, backyard wildlife, and streamside living.

Kirkland can promote public environmental awareness and stewardship of sensitive lands in a variety of ways. The City can provide resources and incentives to assist the public in adopting practices that benefit rather than harm natural systems. For example, the City should work with residents, businesses, builders, and the development community to promote low impact development and sustainable building practices that include energy efficiency retrofits of existing buildings, electrification of new and existing buildings and replacement appliances that use fossil fuels. These practices can lower construction and maintenance costs and when combined with reduction of combustion of natural gas and other fossils can enhance human health, as well as benefit the environment by reducing pollution.

Any future programs that provide financial assistance to pursue electrification, energy efficiency should always ensure equitable access to the City's programs and benefits so that all community members can be part of the solution of reducing pollution and greenhouse gas emissions and increasing resilience to climate impacts such as heat and smoke events.

Figure SCE-9: Restoration Project



Policy SCE-1.6: Incorporate an integrated and comprehensive approach to managing fish and wildlife habitat to accelerate ecosystem recovery, focusing on enhancing the habitat of salmonids and other threatened and endangered species and species of local importance.

Policy SCE-1.7: Identify and preserve significant open space opportunities that provide the following valuable functions:

- *Ecosystem linkages and migratory corridors crossing jurisdictional boundaries;*
- *Active and passive outdoor recreation opportunities;*
- *Wildlife habitat and migration corridors that preserve and enhance ecosystem resiliency;*
- *Preservation of ecologically sensitive, scenic, or cultural resources;*
- *Urban green space, habitats, and ecosystems; and*
- *Opportunity for food production potential.*

This policy emphasizes that open space provides abundant opportunities to serve multiple beneficial functions to the natural environment, wildlife, and the community. For example, wildlife corridors, also known as habitat corridors, provide a safe passage for wildlife between one area of refuge to another. The City should incentivize the creation of backyard wildlife sanctuaries on private property and encourage owners of larger pieces of property to dedicate permanent conservation easements. For City owned properties, the City should pursue acquisition, enhancement and restoration of land that could provide active or passive use, and/or contribute to the broader habitat and ecosystem.

Policy SCE-1.8: Provide consistent and stable financial resources and staff to effectively implement the City's Sustainability Strategic Plan (formerly known as the Sustainability Master Plan).

Policy SCE-1.9: Provide information on regulations and enhance programs, education and incentives to all stakeholders concerning improvement of natural systems and their function.

The City can also increase awareness by allowing access where appropriate to sensitive areas for scientific and recreational use while protecting natural systems from disruption. Careful planning of access trails and the installation of environmental markers and interpretive signs can allow public enjoyment of lakes, streams, or wetlands and increase public awareness of the locations, functions and needs of sensitive areas. In the case of large-scale projects on sensitive sites, the City can require developers and property owners to provide additional education to inform owners and occupants of the harmful or helpful consequences of their actions in, or near, sensitive areas and buffers.

Water Systems

Policy SCE-1.10: Using a watershed-based approach, both locally and regionally, apply best available science in formulating regulations, incentives, and programs which encourage public and private landowners, as well as the broader community, to enhance habitat, ecology and ecosystem services that improve the quality of Kirkland's water resources.

Kirkland's Streams, Wetlands, and Wildlife Study (July 1998) is a natural resource inventory of wetlands, streams, fish, wildlife, and habitat areas within Kirkland. A drainage basin or watershed approach was used to identify Kirkland's drainage systems, to determine primary and secondary basins, and to evaluate and record the primary functions, existing problems, and future opportunities for each drainage basin. This data and analysis form a scientific basis for system-wide resource management that addresses the distinct characteristics of each basin, and this inventory is updated on a regular basis as specific features are studied in detail.

Figure SCE-31 indicates the general locations of known sensitive areas and drainage basin boundaries. This study is supplemented by technical information from the Water Resource Inventory Area (WRIA) 8 salmon conservation planning effort and the City's Surface Water Strategic-Plan. The WRIA 8 Chinook Salmon Conservation Plan was adopted by the City in 2005 (Resolution R-4510). Since that time Kirkland has provided financial and legislative support and worked collaboratively with other cities within the WRIA 8 watershed to increase funding for salmon recovery and implementation of the plan.

Policy SCE-1.11: Engage with the Puget Sound Partnership around implementation of the Puget Sound Action Agenda and coordinate land use and transportation plans and actions for the benefit of Puget Sound and its watersheds.

Figure SCE-10: Private stream and wetland restoration



Policy SCE-1.12: Restore freshwater shorelines, watersheds, estuaries, and other waterbodies to a natural condition for ecological function and value, where appropriate and feasible, and incentivize private landowners to pursue similar efforts on their land.

Figure SCE-11: Juanita Creek Fish Passage



Policy SCE-1.13: Prioritize removing fish passage barriers for public projects.

Culverts and other structures may pose physical barriers to fish, resulting in loss of habitat and population decline. The City's Surface Water Strategic Plan (SWSP) has developed an inventory of publicly owned culverts and their fish passage barrier status. The SWMP has also prioritized those barriers for removal and developed conceptual designs and cost estimates for removal of the first few barriers. This inventory needs to be kept up-to-date and should be augmented with an inventory of fish passage barriers that exist on private property.

Policy SCE-1.14: Support programs and incentives to encourage removal of fish passable barriers and daylighting of streams on private property.

For many years it was believed that conventional piped drainage systems were the best method for handling all drainage in urban areas. Consequently, as rights-of-way and properties developed, segments of Kirkland's streams were placed in pipes. Over time it has been observed that open drainage can be more effective than conventional detention and engineered conveyances. The size, shape and placement of the pipes can also cause a barrier that prohibits fish migration upstream. In addition, piped drainage systems can cause increased flooding, decreased water quality, decreased ground water recharge, loss of fish and wildlife habitat, loss of urban forest, and reduced viability of streams and wetlands due to lost natural hydrological systems.

One way to restore these connections and promote fish passable barriers is to remove the stream segments in pipes and daylight them in natural channels. While there may be challenges to doing this such as monetary costs and loss of property due to providing a buffer and daylight channel, the benefits may outweigh these costs and challenges. The City should prioritize private piped stream segments for daylighting and removal of fish passable barriers and

encourage this change by pursuing grant funding, creating incentive programs, removal of disincentives, and adopting updated regulations.

Policy SCE-1.15: Manage surface water systems to improve water quality and habitat functions, minimize erosion and sedimentation, protect public health, reduce flood risks, and moderate peak stormwater runoff rates through regulations and implementation of programs. Work cooperatively among local, regional, state, national, and tribal jurisdictions to establish, monitor, and enforce consistent standards for managing streams and wetlands throughout drainage basins.

The City should look for, and act upon, opportunities to restore or enhance natural features and systems wherever significant environmental benefits will be realized cost-effectively. Land surface modifications that violate the intent of the goals, policies and regulations should be corrected through site restoration.

Figure SCE-12: City of Kirkland staff monitoring the health of Juanita Creek



Policy SCE-1.16: Maintain funding and programs to monitor water quality, quantity, biological conditions, and outcome measures for improving the efficiency and effectiveness of monitoring efforts.

Policy SCE-1.17: Respond to spills and dumping of materials that are impactful to the environment.

The City should take a proactive approach and provide funding for immediate response to spills and dumping of hazardous materials and pollutants within the City. Spill control and cleanup is required per the City's Phase II NPDES Municipal Stormwater Permit. It is far easier to clean up spills and prevent pollutants from reaching our waterways, than to try and clean polluted lakes and streams.

Surface Water

The City adopted an updated Surface Water Strategic Plan (SWSP) in 2023. This plan outlines the priorities and needs for surface water management and related programs, requirements, and activities in the City. Implementation of the plan is important for the City in its overall efforts to address stormwater runoff, water quality, flooding, and environmental protection.

Policy SCE-1.18: Improve management of stormwater runoff from impervious surfaces by employing low impact development practices and green infrastructure through City projects, such as stormwater parks; pilot incentive programs on private property, and development standards.

As land is developed, the loss of vegetation, the compaction of soils, and the transformation of land to impervious surface all combine to cause uncontrolled stormwater runoff to degrade streams, wetlands, and associated habitat; to increase flooding, and to make many properties wetter. Low impact development practices minimize impervious surfaces and use vegetated and/or pervious areas to treat and infiltrate stormwater. Such practices can include incentives or standards for landscaped rain gardens, permeable pavement, narrower roads, vegetated rooftops, rain barrels, impervious surface restrictions, downspout disconnection programs, “green” buildings, street edge alternatives and soil management.

Figure SCE-13: Stormwater detention under soccer field



Policy SCE-1.19 Retrofit existing impervious surfaces to accomplish water quality treatment and look for opportunities to provide regional facilities.

Regulations impose limitations on impervious surfaces and require treatment of stormwater based on adopted stormwater design regulations.

While it is important to regulate new development, the bulk of change in Kirkland’s stormwater infrastructure will occur through redevelopment. Partnering with private properties may be a cost-efficient way to achieve regional water quality treatment, as it is usually far less expensive to build facilities in parking lots rather than beneath public rights-of-way which are encumbered by numerous utilities. The City should pursue grant funding, incentive programs, regulations and planning for retrofitting existing impervious areas to improve water quality treatment and further the goals of the Surface Water Strategic Plan.

Policy SCE-1.20: Engage in holistic flood hazard management efforts through the King County Flood Control District and King County Flood Planning.

Policy SCE-1.21: Preserve the natural flood storage function of 100-year floodplains and emphasize nonstructural methods in planning for flood prevention and damage reduction.

Floodplains are lands adjacent to lakes, rivers, and streams that are subject to periodic flooding. Floodplains naturally store flood water, protect water quality, and provide recreation and wildlife habitat. New development or land modification in 100-year floodplains should be limited and be designed to maintain natural flood storage functions and minimize hazards to life and property (see Figure SCE-33).

Policy SCE-1.22: Create connections between streams and floodplains to enhance ecological function and meet regulatory standards for floodplain development.

Funding, construction and maintenance of vaults or tanks upstream can be more costly and difficult than finding in-channel areas to store water to increase floodplain storage. The City should identify and implement floodplain storage near existing streams to reduce water velocities that benefit fish and other aquatic organisms and can translate into less flooding and property damage.

Trees and Vegetation

Trees and vegetation, essential components of the urban forest, play a crucial role in elevating Kirkland's quality of life while mitigating the effects of urbanization. However, many urban elements pose threats to these vital green assets, shortening their life expectancy and contributing to canopy loss. Thus, it is imperative that municipal planning and management prioritize strategies that not only safeguard but also enhance the public benefits that trees and vegetation provide over the long-term. See Figure SCE-34 for a map of Kirkland's tree canopy.

Goal SCE-2: Plant, protect, enhance, and restore trees and vegetation in the natural and built environment to abate noise, calm traffic, improve air quality, sequester carbon, and ensure resilience to climate impacts.

Figure SCE-14: Trees shading Market Street



Policy SCE-2.1: Maintain and increase the tree canopy to achieve a native, diverse, and climate resilient urban forest with a minimum 40 percent tree canopy coverage that also helps accomplish the following actions:

- *Increases green infrastructure projects, sustainable development, and energy conservation;*
- *Prioritizes underserved communities and areas with low canopy cover;*
- *Mitigates pollution producing infrastructure, such as freeways and roads;*
- *Contributes to habitat and ecological function and green corridors;*
- *Implements the Urban Forestry Strategic Management Plan;*
- *Increases public outreach and awareness of the benefits of trees;*
- *Dedicates resources for regular monitoring of urban forest health;*
- *Establishes strategic partnerships with overlapping jurisdictions;*
- *Mitigates urban heat islands and surface water runoff; and*
- *Prioritizes mental, physical public health.*

Urban forests provide numerous benefits - improved water and air quality, reduced atmospheric carbon, erosion reduction, temperature moderation, recreational opportunities and human health benefits, improved salmon habitat, and cultural heritage, among others. A sustainable and climate resilient urban forest consists of diverse tree ages and species. Larger, mature trees should be maintained and protected, as the greatest benefits accrue from the continued growth and longevity of larger trees, and new trees should be planted that will eventually replace the services provided by older trees as they die.

Since the first canopy study was conducted in 2010, the Urban Tree Canopy (UTC) has decreased by approximately 3%, which equates to roughly 348 acres of total tree canopy loss. While improved tree regulations and planting efforts appear to have slowed the rate of canopy loss in recent years, additional measures are needed to reverse this downward trend and increase canopy cover over time.

Kirkland maintains a minimum canopy cover goal of 40%; however, regional strategies are moving away from single targets and shifting the focus on specific goals, such as reduction of urban heat island effect and stormwater runoff. To track progress toward these goals continued monitoring will be essential through urban tree canopy cover assessments conducted every 3 to 4 years. Additionally, the City's Urban Forestry Strategic Management Plan should be updated and revised every six years to reflect current knowledge, technology, and industry standards.

Because most of the canopy cover is located on private properties, increasing pressure from urban growth and development has had a substantial impact. Care should be taken to plan for and use site specific development practices and regulations to minimize removal or destruction of trees, particularly significant stands of native evergreen trees, natural woodlands and associated vegetation and sensitive area buffers.

In the built and paved environment, trees, shrubs, and groundcovers serve as green infrastructure and contribute to energy conservation and equitable access to green space. By prioritizing underserved communities living in areas with low canopy cover, Kirkland can address environmental justice concerns and mitigate adverse impacts of pollution-producing infrastructure like freeways and roads.

Policy SCE-2.2: Balance regulations with targeted incentives and funding programs for private landowners, including support for low-income residents, such as tree planting and maintenance programs.

Figure SCE-15: Tree planting in Kingsgate



The majority of Kirkland's tree canopy is located on privately owned lands. Because of this, it is essential to find a balance between regulatory measures and the utilization of incentives to promote stewardship of natural resources. Incentives may take various forms, such as streamlining permitting processes, allowing flexibility in development codes, providing utility rate discounts, distributing vouchers for plant materials or tree maintenance, offering technical assistance and cost sharing for natural area restoration, and publicly recognizing exemplary tree retention efforts.

Policy SCE-2.3: Collaborate with overlapping agencies, utility providers and jurisdictions to optimize the collective impact of urban forest practices, programs, and strategies, reduce resource strain, and foster a coordinated response and approach to urban tree management.

Urban trees are increasingly recognized as valuable assets, akin to traditional infrastructure investments. In Kirkland, collaborative efforts, and coordination among various entities during major projects yield efficiencies and cost savings, preventing tree preservation conflicts, especially in overlapping jurisdictions like I-405, Sound Transit, Seattle City Light, and Puget Sound Energy corridors. Consultation between these entities and the City is essential to ensure

that trees are only removed when necessary and that replanting adheres to City policies and standards. Moreover, the establishment of vegetation management plans, particularly for utility corridors, is crucial to guide removal and pruning operations effectively.

Policy SCE-2.4: Ensure consistent interdepartmental and division stakeholder collaboration to effectively implement the Urban Forest Strategic Management Plan through cohesive work programs that integrate actions and goals across various departments.

Kirkland has multiple departments that interact with and manage different components of the urban forest. Interdepartmental collaboration is necessary to ensure efficient utilization of resources and expertise. Not only will this promote a unified vision and strategy for sustaining and enhancing the urban forest, but it will increase the capacity to address complex challenges. Examples of areas where collaboration will have the greatest impact include securing funding and grants for urban forestry projects, utilizing best management practices for tree pruning and maintenance, engaging residents, and stakeholders in urban forestry initiatives, and aligning data collection and management protocols.

Soils and Geology

Geologically hazardous areas are defined as critical areas under the Growth Management Act. These consist of landslide, erosion, and seismic hazard areas. They pose a potential threat to the health and safety of the community. Many areas of the City have steep slopes and ravines subject to erosion and hazardous conditions (earthquakes and landslides). Geologically hazardous areas are mapped depicting the general location and presence of these areas based on available geologic and soils information. (See Figure SCE-2a: Landslide Susceptibility Map and Figure SCE-2b: Liquefaction Potential Map).

Landslides are highly probable in many steep and unstable slope areas, regardless of development activity. Landslides may be triggered by grading operations, land clearing, irrigation, or the load characteristics of buildings on hillsides. Damage resulting from landslides may include loss of life and property, disruptions to utility systems, or blockage of transportation and emergency access corridors. For these reasons, development is regulated where landslides are a potential hazard. In some cases, regulation may result in severe limitations to the scale and placement of development, and land surface modification should be limited to the smallest modification necessary for reasonable site development.

In the Puget Sound area, possible damage to structures on some unstable slopes or wetland areas can be caused by low-intensity tremors. This is especially true when hillsides composed of clay and/or organic materials are saturated with water. Slopes with grades of 15 percent or steeper are also subject to seismic hazards. Areas with slopes between 15 and 40 percent or greater are particularly vulnerable. Low-intensity earth tremors could cause liquefaction and damage development in wetland areas composed of organic or alluvial materials. In hillside and wetland areas, structures and supporting facilities need to be regulated and designed to minimize hazards associated with earthquakes. The City should continue to provide information to the public about potential geologic hazards, including site development, building techniques and disaster preparedness.

Goal SCE-3: Improve public safety by avoiding or minimizing impacts to life and property from geologically hazardous areas.

Policy SCE-3.1: Require appropriate geotechnical analysis, sound engineering principles and best management practices for development in or adjacent to geologically hazardous areas.

The City's Landslide Susceptibility and Liquefaction Potential Maps (Figures SCE-32a and SCE-32b) shows the general location of these areas. The determination of the actual conditions and characteristics of these hazards on or near property is based on detailed scientific and geotechnical engineering analysis and principles. The City can require geotechnical investigations, reports and recommendations by a qualified engineer when development is proposed, or restoration activities are being considered in or adjacent to geologically hazardous areas.

Policy SCE-3.2: Regulate land use and development to protect geologic, vegetation and hydrological functions and minimize impacts to natural features and systems; utilize best available science and data for seismic and landslide area mapping.

The City should continue to regulate development near geologically hazardous areas with the adopted standards in Kirkland Zoning Code Chapter 85 and should periodically review the standards to ensure that they are achieving their intent while also reducing barriers for development.

Built Environment

Ensuring that sustainable development principals are used when land is developed or redeveloped in Kirkland is one strategy for managing built environment to enhance a livable community that can exist in harmony with our natural systems. The City uses a variety of sustainable third party verified building certifications that create healthier buildings that use less materials, energy and water. The City uses both voluntary incentive programs and required programs to help create more sustainable development throughout the community.

Technology is changing daily, and building, stormwater and energy codes are lagging, but over the last few years have begun to catch up. Current codes can be improved to address healthier building materials. These same codes could be modified so that buildings harvest the energy or the water that it uses. It is possible today for structures in the built environment to be designed and constructed to create a net-positive effect. Even existing structures can be retrofitted to be more efficient and reduce the impacts on the environment.

The City has a prime opportunity to provide leadership in the built environment by constructing its own facilities to the highest sustainability standards. The City can also promote and encourage sustainable development by supporting the incorporation of these principles in the State building, energy, and stormwater codes. Working in collaboration with other regional partners to ramp up these requirements will spur more technological advances in the building industry, which in turn will help get more living buildings in Kirkland and ensure that the community is livable now and for future generations.

Goal SCE-4: Manage the built environment to reduce waste, prevent pollution, conserve water and other resources, and increase energy efficiency, electrification and renewable energy production and storage.

Figure SCE-16: Green Roof using Green Factor landscaping standards



Policy SCE-4.1: Expand City programs and incentives that promote high performing sustainable building certifications and Green Factor landscaping standards and require them when appropriate.

The City developed a voluntary expedited green building program for single-family homes in 2009. Applications that qualify can get priority review of their building permit(s). Many builders and homeowners have taken advantage of reduced permit review times in exchange for building sustainable structures that help the City further reduce energy and resource use. These types of programs are also important because they promote healthy indoor air quality and reduce greenhouse gas emissions, which supports other City policies.

This program was updated in 2022 to include all structures such as commercial and mixed-use buildings and major renovations of existing structures, so that all building types can be built more sustainably with an incentive of faster permitting times for certifying a building as a high performing green building.

Larger developments, and projects that require a master plan are now required to be a High Performing Building and this means they must achieve a superior sustainability certification, utilizing certification programs such as LEED or Built Green. In addition, these buildings must achieve seven performance measures intended to ensure that the buildings energy performance is very energy efficient and fossil fuel free for all structures except for commercial kitchens.

Policy SCE-4.2: Design, build and certify public building projects to LEED, Living Building Challenge or equivalent certification standards and ensure that buildings generate net-zero emissions, and that building materials and projects use lower global warming potential materials.

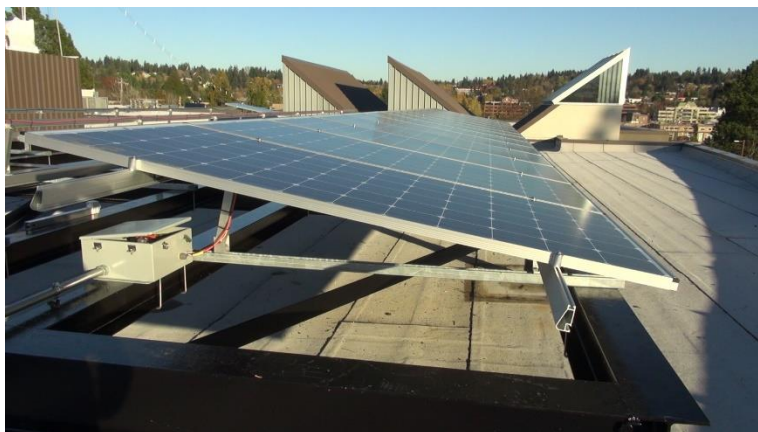
Figure SCE-17: City Hall Annex LEED Gold Plaque



The City currently builds its public facilities to meet at least a LEED “Gold” certification. There are other certifications such as the International Living Future Institute’s Living Building Challenge that move beyond merely reducing environmental impacts by restoring and regenerating the natural environment through the construction of “living buildings.” Living buildings harvest and clean their own water, clean their wastewater, and produce and use their own clean renewable energy. The City should consider striving to achieve a LEED Platinum certification level as a goal, build all-electric net-zero energy structures, and begin utilizing portions of the Living Building Challenge certification with the intent of eventually constructing “living buildings.”

Policy SCE-4.3: Implement high performing energy efficiency projects for existing and new City facilities, and measure building performance through the Environmental Protection Agency’s (EPA) Energy Star or equivalent energy benchmarking program.

Figure SCE-18: City Hall Solar Installation



The City strives to increase the energy efficiency of its buildings and infrastructure, such as streetlights and signals, and has measured the effectiveness of building improvements by using the EPA’s portfolio manager program. The City should continue to look for ways to further reduce energy use and support local and regional climate change emission reduction targets by

supporting local solar campaigns, using Photovoltaic Solar Panels (PV) on City facilities to generate clean renewable energy, and purchasing electric and clean energy vehicles for the City's fleet. In addition, the City should continue partnering with Puget Sound Energy and accelerate bringing all facilities up to the standards to meet Washington State's Clean Buildings Act.

Policy SCE-4.4: Utilize rigorous sustainability standards and green infrastructure in all City projects to reduce embodied carbon in bid, design, and construction; reduce water use and increase water reclamation to ensure community health and resilience.

Figure SCE-19: Swale at Kirkland Justice Center



There are many programs that exist to measure the sustainability of buildings, but there are very few that measure and certify the other types of projects such as roads, sewer and stormwater projects as identified in the City's Capital Improvement Program (CIP). As part of the project's design, the City should continue to incorporate environmental or sustainability measures into all of its projects and facilities.

This could be done by considering more than just the initial costs to design and build infrastructure projects. The cost of an infrastructure project could incorporate installing purple stormwater pipes and reclaiming that water for other uses. Prioritization should be placed on reducing the environmental impacts of these infrastructure projects throughout the entire project development process, from conception to completion and maintenance (while ensuring that needed infrastructure projects can be accomplished cost effectively). This could include hiring consultants and contractors that are specialists in the design and construction of greener, more sustainable infrastructure that consider the environmental cost of the embodied carbon of building materials, such as concrete, and its contribution to greenhouse gas emissions.

Policy SCE-4.5: Utilize life cycle cost analysis for public projects that benefit the built and natural environment.

Life Cycle Cost Analysis (LCCA) is a concept that considers the total cost of ownership for improvements such as City buildings and infrastructure over its lifetime. There are many factors to consider when proposing a project, and budget has traditionally been very important. Criteria that allow the total costs, both financial and environmental, to be evaluated should be

considered, prior to issuing a Request for Proposal (RFP), designing, and building a Capital Improvement Project. The positive benefits of employing an environmental lens can help reduce facility operations and maintenance costs, reduce use of resources such as water and energy and further the City's goals to enhance the natural and built environment.

Policy SCE-4.6: Work with regional partners such as Regional Code Collaborative (RCC) to build on the Washington State Energy Code, leading the way to “net-zero carbon” buildings through innovation in local codes, ordinances, and related partnerships and encouraging cost effective methods to reduce embodied carbon for all project types.

One technique to increase energy efficiency is to work with regional partners, as Kirkland does not have its own energy code and uses the Washington State Energy Code. A strategy could be to incentivize owners of existing structures to upgrade their buildings and reduce energy usage by working with utility providers to help incentivize these improvements. In some cases, commercial and multi-unit buildings are now required to become more energy-efficient pursuant to the Clean Buildings Act of Washington State. Both new and existing building owners will need appropriate tools, such as education that describes what is required and how to pursue achieving it.

Another technique to consider is to work with other cities and building associations such as the King and Snohomish County Master Builders to build a workforce to implement a regional energy efficiency retrofit economy. For any of these efforts to be successful they must have participation from owners of existing and new buildings.

Policy SCE-4.7: Work with Cascade Water Alliance and other regional partners to pursue 100 percent use of a combination of reclaimed, harvested, grey and black water for the community's non-potable needs and set targets for water conservation to assist in preserving the limited potable drinking water supply.

Figure SCE-20: Water cisterns at Kirkland Justice Center



A livable and sustainable community plans and works towards ensuring that a vital resource such as water continues to be available for future generations. A prudent and conservative approach would include reusing and capturing water to be used for other purposes instead of letting it become storm or wastewater after one use.

Rainwater can be harvested for watering plants such as food gardens. Grey water that has been used for washing dishes could be captured and used to water non-edible landscaping. Black

water, which is sewage, can be processed on a site or community scale and could create compostable resources such as natural fertilizer for plants while simultaneously putting minerals back into the soil. These and other measures take pressure off the use of clean, potable drinking water for nonpotable uses and thereby preserve valuable water. It is important to work with our water suppliers and embark upon water conservation measures, outreach and education and incentives to ensure that water is always available to our communities.

Policy SCE-4.8: Prevent, mitigate, and remediate harmful environmental pollutants, toxins, and hazards, including light, air, water, noise, soil, and structural hazards in the natural and built environments where they have contributed to racialized health or environmental disparities, and increase environmental resiliency in underserved communities.

A livable community does not permit placing toxins into the environment, and this includes disallowing materials with known harmful effects to humans to be used in the construction of new and existing structures. The International Living Future Institute's Material Red List can be used for guidance. It may not be possible to source materials that don't include toxic chemicals, but being aware of them and not using them in City projects and discouraging their use in private projects could result in the market producing healthier materials for construction.

Policy SCE-4.9: Establish an annual Integrated Pest Management (IPM) review and reporting process to demonstrate the City is reducing the use of toxic pesticides, chemical fertilizers, and other products on all City properties, and promote alternatives that minimize risks to human health and the environment, to the greatest possible extent.

Policy SCE-4.10: Promote preservation and adaptive reuse of existing structures and collaborate with partners to establish a market for building moves. Support construction and demolition debris recycling, deconstruction requirements, and re-use of salvaged building materials.

Figure SCE-21: City Hall Annex



The City has a history of reusing existing buildings such as the Kirkland Annex, which was an old single-family home that was converted into City offices. The City also repurposed a former

Costco Home structure into a Public Safety Building. This preservation strategy has environmental, financial, and historical/cultural implications.

First, it recognizes the embodied energy and the monetary value of the materials in existing buildings. If these materials from an existing building are destroyed it creates waste and pollution. Second, it conserves the natural raw materials that would be needed to create new construction materials. In addition, there are financial costs that are avoided by reusing, salvaging, and repurposing existing structures or materials. Last, in the case of the Kirkland Annex, restoring a historical structure and preserving a piece of Kirkland's history is an important facet of keeping the community intact for future generations to enjoy.

The City should continue to look for these kinds of opportunities and develop incentive programs and initiatives to encourage private owners to preserve and reuse structures and salvaged usable building materials throughout the City.

Policy SCE-4.11: Promote and encourage Statewide sustainable product stewardship to provide stable financing for end-of-life management of consumer products, increase recycling and resource recovery, and reduce environmental and health impacts.

Product Stewardship is an environmental management strategy that means whoever designs, produces, sells, or uses a product takes responsibility for minimizing the product's environmental impact throughout all stages of the product's life cycle. The greatest responsibility lies with whoever has the most ability to affect the life cycle environmental impacts of the products.

The City (Solid Waste) is a Member of the Product Stewardship Institute and an Associate Member of the NW Product Stewardship Council (NWPSC). The City should continue participating on the NWPSC Steering Committee. The City is a large purchaser of goods and services and should provide leadership by incorporating the principles of product stewardship into its own purchasing policies to influence businesses and consumers in the community to do the same.

Policy SCE-4.12: Work locally and regionally with partners and the community to develop multiple facilities that house and promote equitable access to hand and electric tools, re-use of building materials, and other usable materials to foster a reuse community and strengthen existing tool swapping or re-use, promote equitable access to resources, and reduce embodied carbon, waste, energy use and emissions.

The City should make the most of opportunities to promote a circular economy and to reduce waste ending up in our landfills to the maximum extent possible. Outreach to the community can show how building and other materials, and non-pollution generating tools can be used and re-used through different mechanisms such as pilot programs, incentive programs and ordinances and codes.

Climate Change and Resilience

Climate Change

Climate change, also referred to as global warming, refers to the rise in average surface temperatures on Earth. An overwhelming scientific consensus maintains that climate change is due primarily to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air. The gases trap heat within the atmosphere, which can have a

range of effects on ecosystems, including rising sea levels, severe weather events, and droughts that render landscapes more susceptible to wildfires.

Kirkland can take an active role in reducing greenhouse gas emissions (GHG). Climate change has the potential to impact public and private property, infrastructure investments, water quality, and health. The consequences can be significant from warming temperatures, rising seas, decreasing snowpack, and increased flooding.

A carbon footprint is the measure given to the amount of greenhouse gases produced by burning fossil fuels, measured in units of carbon dioxide. Carbon neutrality means that both City operations and the community balance the carbon released into the air with an equal amount of clean renewable energy production. There are many possible ways to achieve this goal. A best management practice is to first reduce the amount of carbon produced, so that reducing net emissions to zero becomes more feasible. A complementary strategy would be to replace the use of fossil fuels with the production and use of renewable energy such as solar and wind.

For government operations this would include implementing energy efficiency improvements within City facilities and infrastructure and producing and using renewable energy sources. For the broader Kirkland community this means creating more energy efficient structures and working directly with local utility providers to provide more renewable energy options. This will take a significant effort by all to achieve, but it is important to realize that it is possible with a comprehensive approach that includes a focus on equity in transportation, land use, solid waste, urban forestry, local and state building codes, advocacy, and regional collaboration.

Greenhouse Gas Emission Reduction Sub-Element

Goal SCE-5: Target net-zero emissions and decarbonization for entire community by 2050 to greatly reduce the worst localized impacts of climate change and fulfilling the City's regional responsibilities per King County Planning Policies and State legislation.

Policy SCE-5.1: Adopt and implement policies and programs and actions to achieve a target of reducing community-wide and government operation sources of greenhouse gas emissions, compared to a 2017 baseline, by 50% by 2030, 75% by 2040, and 95%, including net-zero emissions through carbon sequestration and other strategies, by 2050. Evaluate and update these targets and the most effective actions to achieve them in consideration of the latest international climate science and statewide targets aiming to limit the most severe impacts of climate change and keep global warming under 1.5 degrees Celsius.

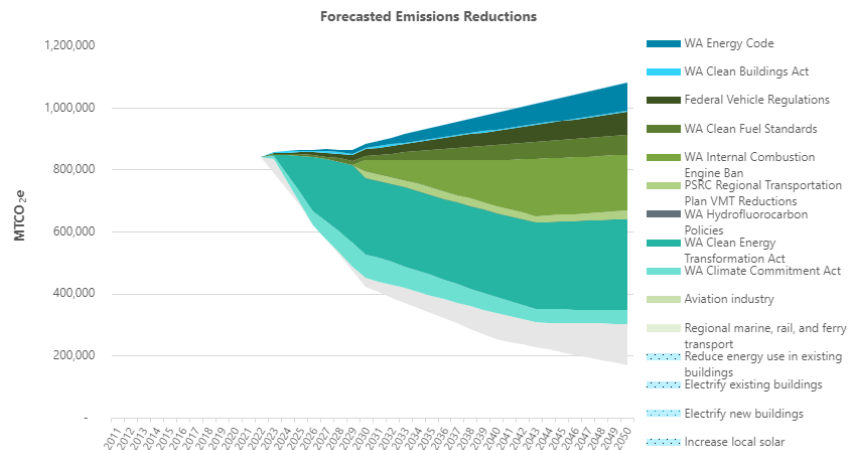
The City has adopted these greenhouse gas (GHG) emission reductions to be consistent with the new Countywide targets to comply with State legislation and has committed to working with the K4C on regional solutions in areas such as transportation, renewable energy production and fuel standards. It will be important to also develop and adopt near- and long-term government operational GHG reduction targets that support these same goals.

Policy SCE-5.2: Update the City's comprehensive community greenhouse gas emissions inventory every two years; by quantifying all direct sources of greenhouse gas emissions and producing a report to report on government operations annually.

The City should hire consultants that are aware of the known sources of greenhouse gases and related emissions to produce bi-annual or annual GHG inventories. The inventories should use a consistent methodology and provide defensible analysis about reasons for increases or reductions that help the City measure, track, and prepare programs and initiatives to reduce them. Since the emission targets will be difficult to achieve, the analysis in independent reports

is essential to measure progress and make changes to City climate actions when emission increase.

Figure SCE-22: Pathways to Kirkland's 2050 GHG Emission Reduction Target



Policy SCE-5.3: Regularly update the City's Sustainability Strategic Plan to respond to changing conditions, but with a goal of updating once every five years.

The City's Sustainability Strategic Plan will complete five years of implementation in 2026 and some actions will need to be amended, or new actions will need to be added to achieve the Plans goals.

Policy SCE-5.4: Align budget decisions in support of climate and sustainability goals and prioritize, fund, and implement carbon emission reduction actions in the Sustainability Strategic Plan for government operations and community-wide benefit.

The City's continuous and high-quality work to achieve climate and sustainability goals may need to find new sources of revenue to implement future climate actions. In some cases, the costs are quite high, but the value of the City reaching its goals are valuable. The City is leveraging State and Federal funding to do this work and is currently able to magnify direct City investment by pursuing local, regional grants and partnering with the K4C, and the Eastside Climate Partnership.

Policy SCE-5.5: Pursue principles, pathways and policies as described in the current version of the King County Climate Change Collaborative (K4C) Joint County-City Climate Commitments and continue participation in regional collaboration in the K4C, the Regional Code Collaboration (RCC) and the Puget Sound Climate Preparedness Collaborative.

The Joint County-City Climate Commitments document provides suggested policies and the pathways that can help Kirkland, King County and other signatory cities work collaboratively to achieve the common goals relating to climate change. According to Cascadia Consulting, a consultant hired by the City, the largest sources of emissions in Kirkland are from the built

environment and transportation and mobile sources as indicated in Kirkland 2022 Greenhouse Gas Emission Report.

For Kirkland to make significant reductions in these areas and achieve its greenhouse gas emission reductions, it will be necessary to work with regional partners such as Puget Sound Energy, King County Metro and Sound Transit and State lawmakers. Puget Sound Energy provides gas and electricity for this region and will need to produce significantly more renewable energy for Kirkland to get to 100 percent renewable electricity usage.

There will also need to be retrofits of existing buildings to become more energy efficient and to electrify as fossil fuel use declines. Transportation agencies will need to provide more transit service, electric buses and use cleaner energy while the State must also adopt stricter fuel standards. The Eastside cities can also help continue the prevalent use of electric vehicles and work with partners, both public and private to create more electric vehicle infrastructure and capacity to decarbonize the entire community.

The Regional Code Collaboration (RCC), comprising King County and participating cities, is working to revise building and energy codes with the intention of creating more energy efficient structures with lower GHG emissions. It is important for Kirkland to continue to collaborate with other regional groups to increase the supply of clean, renewable energy for homes, businesses, and vehicles because Kirkland is not in control of the regional energy supply. All these efforts require strategic partnerships which can be bridged by the City's continued advocacy and participation in the K4C and the RCC.

The Puget Sound Climate Preparedness Collaborative comprises city and county staff and emergency managers that work together to further climate preparedness and resilience to climate impacts much in the same way that the K4C does its regional work. Even though the subject matter of the collaborative is tethered to climate, it is focused on addressing climate impacts in the region such as sea level rise, extreme heat and smoke events and preparing to survive them and other threats that are emerging. It will be important for Kirkland to remain involved in these regional groups and work together on common issues.

Policy SCE-5.6: Advocate for comprehensive federal, state, and regional science-based limits and a market-based price on carbon pollution and other greenhouse gas (GHG) emissions.

Policy SCE-5.7: Support the adoption of a statewide low carbon fuel standard that gradually lowers pollution from transportation fuels, advocate for statewide and regional high-speed/capacity transit (such as light rail) and ensure that incentive programs are established to help underserved community members make the transition to low and zero emission transportation.

Transportation is a major contributor to Kirkland's and the region's greenhouse gas emissions; therefore, more efficient fuels will greatly reduce emissions.

Comprehensive advocacy and legislative effort will be necessary to communicate to local policy makers and state lawmakers the importance of making the fuel standards more stringent and therefore helping Kirkland achieve its emission reductions while the transportation sector becomes electrified and decarbonized.

Policy SCE-5.8: Advocate for clean, renewable aviation and marine fuels to drastically reduce carbon emissions and particulate pollution.

Policy SCE-5.9: Support all forms of non-emitting transportation such as bicycles and micromobility, and the infrastructure to store and charge this low impact and emission form of transportation in all City projects, parks, and new and existing development.

Policy SCE-5.10: Establish goals, create and implement actions to reduce community and per capita vehicle miles traveled (VMT) that are aligned with overall GHG emission targets for 2030, 2040 and 2050.

State legislation passed in 2021, requires setting goals and funding actions to reduce both the vehicle miles traveled, but also the related emissions. The City's Transportation Strategic Plan is where those goals are documented, along with the actions to achieve them.

Figure SCE-23: PSE's Skookumchuck Wind Project



Figure SCE-24: PSE's Lund Solar Farm



Policy SCE-5.11: Pursue 100 percent renewable energy use by the community and government operations by 2050 through regional collaboration.

For much of its operations, the City purchases renewable energy from Puget Sound Energy's Green Direct program that sources electricity from its wind and solar farms in Washington State. Washington State's Clean Energy Transformation Act of 2019 requires utilities to produce carbon neutral electricity by 2035 and completely clean renewable electricity by 2045. There will be programs, pilot programs and initiatives that will need to be accomplished to ensure we are producing more solar energy while reducing our energy demand to make this conversion successfully and decarbonize the entire community equitably.

Policy SCE-5.12: Encourage the transition to a sustainable, clean, and renewable energy future by reducing demand through efficiency and conservation, supporting the development of energy management technology, and meeting reduced needs from renewable and sustainable sources.

Policy SCE-5.13: Engage and lead community outreach efforts in partnership with other local governments, businesses, and community members to educate community about climate change efforts and collaborative actions to reduce carbon emissions, reduce energy use and be resilient to climate impacts.

To be successful with City and community climate change efforts, it will be important to communicate and work collaboratively with community members, businesses, and support efforts such as the Eastside Sustainable Business Alliance, Master Builders Association of King and Snohomish Counties, and the Kirkland Chamber of Commerce. Other means of outreach such as special presentations, workshops and joint campaigns or initiatives with the King County Climate Change Collaborative, Eastside Climate Collaborative, Puget Sound Energy, People for Climate Action- Kirkland, Livable Kirkland or other organizations will be helpful for education and behavior change purposes and building stakeholder support.

Policy SCE-5.14: Promote and prioritize retrofitting of existing buildings for increased energy efficiency, reduction of fossil fuels use, full electrification, and to support achievement of greenhouse gas emissions goals.

The conversion to all-electric buildings and reducing emissions has already begun for early adopters, but programs will need to be created and funded along with help from State and Federal sources for many in the community to make the switch to electric. Likely, those with financial means can benefit from education and guidance and those with lower incomes will also need strong financial incentives and low interest loan programs and other solutions to participate.

Figure SCE-25: Electric Heat Pump Water Heater



Climate Resilience

The first stages of climate action focus on learning the components of the city's greenhouse gas emissions inventory and measuring them. Undertaking this task helps the City understand if it is furthering its climate emission reductions goals.

The second stage of climate action is focused on reduction of GHG emissions and determining actions that could help us adapt to climate impacts. This is an ongoing effort and most assuredly will be part of an overall strategy to maintain a healthy quality of life as the environment continues to change.

Figure SCE-26: Heat Pumps



Climate impacts are being realized and felt now across all communities worldwide. Some places experience more impacts and struggle to maintain a quality of life because of constant severe weather events that tear communities apart. Others notice slight to moderate changes and have an opportunity to prepare and act now instead of being in a reactionary mode.

We are in a third stage of climate action. The term resilience is used in relation to climate change impacts that are being experienced now, and specifically the extreme heat events, warmer and wetter seasons and for several years now, smoke from wildfires in Washington

State and outside its borders. These impacts are very visible and have public health impacts on vulnerable populations, such as children and seniors as well as those with pre-existing health conditions. We need to ensure that our community can function well and that all members of the community are protected now and in the future.

Therefore, we should continue to measure our GHG emissions, implement actions to mitigate and adapt to ongoing climate impacts that were not expected until 2030, begin planning for community resilience so that all members of our community can survive the known climate impacts, and anticipate the unknown future impacts. This third stage is expected to last in perpetuity and our climate resilience planning will be adjusted and acted upon as conditions change for long term sustainability of the entire community.

Goal SCE-6: Promote, enhance, and implement plans and actions that are responsive to climate change impacts to ensure equitable community resilience.

The City should plan and prepare to help the entire community be resilient to climate impacts. Every effort should be made to ensure that community members that are vulnerable to climate impacts are prioritized and helped with financial assistance, programs, and education to adapt to changing conditions. This includes the City working with these communities, their leaders, non-profit organizations, Puget Sound Energy, and others to develop climate resilient plans together with appropriate buy-in from community stakeholders.

Policy SCE-6.1: Promote energy efficiency, conservation methods, sustainable energy sources, electrifying the transportation system, and limiting vehicle miles traveled to reduce air pollution, greenhouse gas emissions, and consumption of fossil fuels to support state, regional, and local climate change goals.

Policy SCE-6.2: Address rising sea water by siting and planning for relocation of hazardous industries and essential public services away from the 500-year floodplain.

Policy SCE-6.3: Proactively mitigate climate change by implementing immediate actions, including strategic planting of temporary, fast-growing forests in underutilized spaces, and prioritizing the retention of large, mature trees known for their substantial carbon storage capacity in order to rapidly mitigate climate change, promote biodiversity, and enhance overall environmental resilience within the urban landscape.

Policy SCE-6.4: Support and advocate for increasing production and storage of clean renewable energy using the most current technologies such as but not limited to Community Solar, Wind Power and Battery Energy Storage Systems (BESS).

Part of electrification of a community includes energy efficiency, energy demand management, energy production from individual and community solar installations. Efforts should continue with Puget Sound Energy and other non-profit organizations to ensure the community continues to make a sustainable transition to clean electricity and steep reductions in the use of fossil fuels for buildings, water heating and for transportation.

Goal SCE-7: Ensure a climate resilient community by working intentionally to reduce and eventually eliminate the use of fossil fuels and to be prepared for existing and future climate impacts.

Policy SCE-7.1: Create a climate preparedness study by 2026 with goals and actions to ensure community resilience to climate impacts and incorporate its actions primarily into functional plans such as the Sustainability Strategic Plan, Transportation Strategic Plan, Hazard Management Plan, and other relevant implementation plans.

Figure SCE-27: Cold Climate Heat Pump



Policy SCE-7.2: Prioritize support and financial assistance for underserved populations, and provide education, and technical information for all community members so they are able to make and maintain the transition to clean energy and full electrification of homes, electric vehicles and charging infrastructure to ensure climate resilience to known, and flexibility to address, unknown impacts.

Policy SCE-7.3: Work with regional partners to help leverage funding to help Kirkland electrify its homes, business, institutions and all means of micromobility in transportation to reduce contributions to climate impacts and unintended outcomes.

Policy SCE-7.4: Establish new and enhance existing Climate Resilience Hubs in the City and or programs/initiatives to provide mitigation during heat and smoke events to ensure public health.

Policy SCE-7.5: Ensure the City's Water Plan provides equitable access to safe, clean drinking water to the entire community and especially during times of drought or emergencies.

Policy SCE-7.6: Using technology, monitor air quality throughout the City and establish programs, partnerships, and initiatives to reduce environmental impacts and improve human health.

Healthy Food Community

Food security planning can help address environmental and social justice issues, such as increasing access to healthy food choices in all neighborhoods and supporting hunger

assistance programs. An emphasis on supporting the local food production economy can also have important economic, quality of life, and environmental benefits. Economic benefits include creating and sustaining living-wage jobs through food production, processing, and sales; improving the economic viability of the sales of local agriculture; and more efficiently using undeveloped parcels for urban agriculture. Kirkland can also foster environmental benefits and quality of life through programs that decrease food waste and reduce the miles food travels to store shelves and planning so that citizens have access to food during and after disasters.

Goal SCE-8: Support and encourage a local food economy.

Figure SCE-28: Farmers Market at Juanita Beach Park



Policy SCE-8.1: Expand the local food production market by supporting urban and community farming, including at schools, buying locally produced food and by participating in the Farm City Roundtable forum.

Within each local jurisdiction, demand for fresh food can be met through allowances for local urban farming and with the encouragement of residents to grow at least some of their fresh produce in their yards or in community gardens. Community gardens can create a more inclusive community character and dialogue while individual gardens can promote a more direct connection to the environment for individuals.

Expanding food related uses within the City can help to create a more resilient community and sustainable economy. The City supports urban farming by making City parks available for farmer's markets, such as Juanita Park, and community gardens, such as McAuliffe Park.

The City can also support local food production and distribution by participating in regional initiatives such the King County Local Food Initiative which has the stated goal of expanding the local food economy by:

- Taking advantage of an increasing interest among residents, tourists, and food-related businesses in locally produced food.
- Encourage Community Supported Agriculture drop off locations in the City including food banks.
- Reducing barriers for farmers in getting their products to market.
- Preserving farmland from increasing development pressure as the region grows.

Figure SCE-29: Community Garden



Policy SCE-8.2: Promote land use regulations that ensure equitable access to healthy food by establishing and maintaining more community gardens where none exist and prioritizing locating them where underserved community members live and establishing regulations that support and allow small-scale neighborhood grocery stores that serve this function to be constructed.

The City has an important role to play in the creation of policies and regulations that emphasize the furthering of healthy lifestyles. The City should consider commissioning its own food study to understand Kirkland's food landscape and use data-driven results to determine how to best make changes in land use regulations to promote the access of healthy foods to all residents.

Policy SCE-8.3: Reduce environmental impacts of food production and transportation by supporting regionally produced food and advocating for reducing carbon emissions and the use of chemicals and preserving water supplies.

The City can play a role in reducing the environmental impacts of food production, processing, and the distance that food must travel from the farm to table. This can be done by supporting actions that encourage the use of local and renewable energy, reductions in the use of other resources such as fossil fuels and water, and waste such as packaging of food. Some examples of other actions the City could take include:

- Restrict the use of excessive or environmentally inappropriate food packaging;
- Promote composting at urban garden sites;
- Support diversion of edible food from local businesses to food banks;
- Promote the use of organic products, composting and farming techniques Citywide;
- Promote water conservation and impacts of urban agriculture on surface and groundwater sources;
- Support rainwater capture and innovative technologies to process greywater for safe use in urban agriculture;
- Support agricultural technologies, processes and practices that protect soil and water resources;
- Encourage the use of native or regionally produced edible plants and seeds; and
- Work with local and regional partners to educate citizens of the benefits of urban agriculture and stewardship.

Policy SCE-8.4: Create a food plan which ensures food and water availability for the entire community that mitigates for shortages and promotes resilience.

Figure SCE-30: Water-saving drip irrigation



Food security is forecasted to become a major global issue in the coming decades, especially since food production and systems are intricately tied around the globe through internationally traded food commodities. Extreme weather events are already showing that food shortages resulting from climate change create a lack of food security for the people experiencing them, and inordinately affect lower income peoples around the globe.

At the local level, Kirkland can prepare for interruptions to food systems by promoting urban agriculture and coordinating with farms in outlying areas. The City of Kirkland has several programs in place such as:

- Pea Patch Program;
- Farmer's Markets;
- Juanita Beach's Friday Market;
- Wednesday Market;
- The Victory Garden;
- McAuliffe Park Urban Farm;
- Community Supported Agriculture (CSA);
- Community Gardens (privately held); and
- Nourishing Network and Hopelink.

Regional cooperation models should be explored to develop a comprehensive food security plan that would be resilient to climate change and weather-related or disaster-oriented events. Better coordination with farms in our outlying areas can make Kirkland a more food secure City.

Figure SCE-31: Sensitive Areas

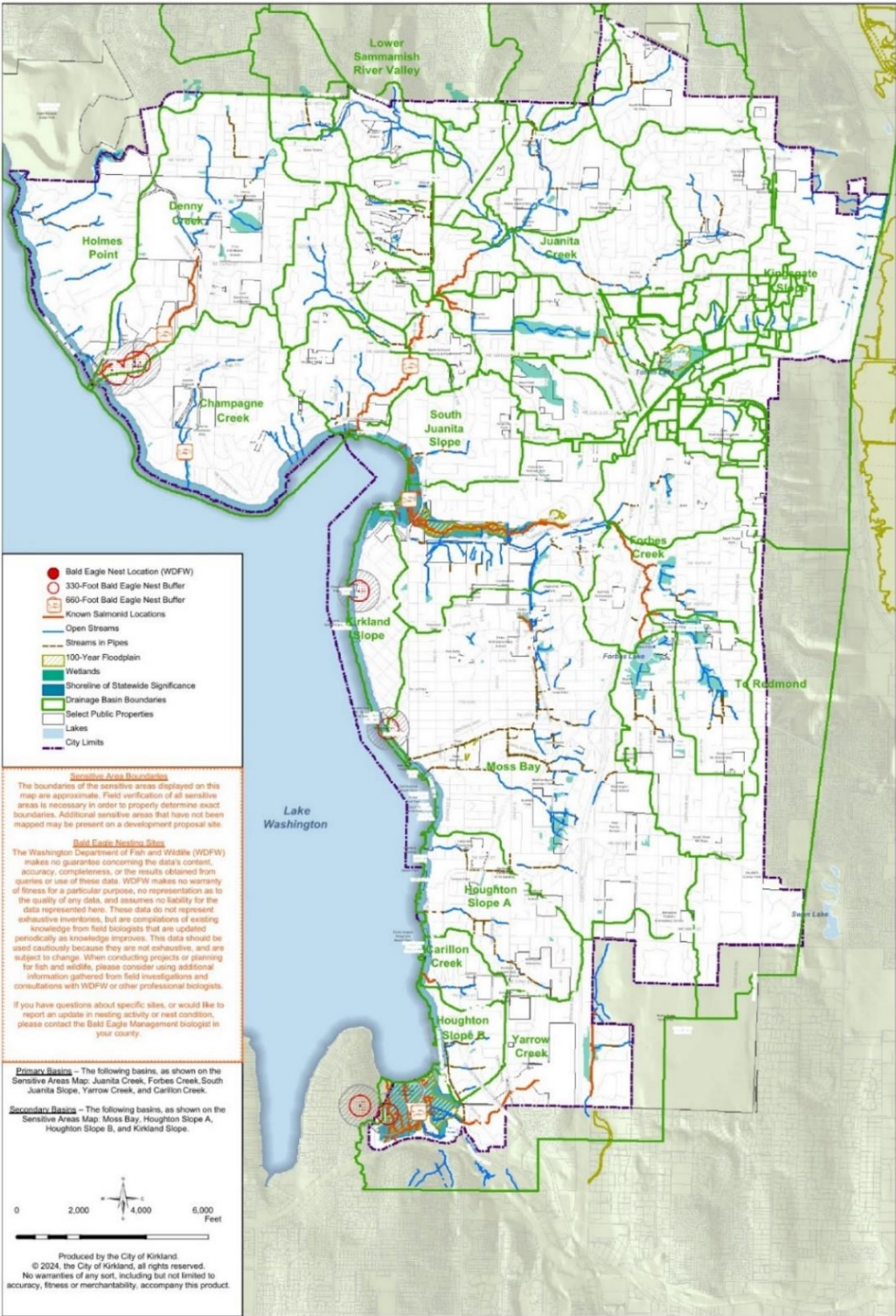


Figure 32a: Landslide Susceptibility

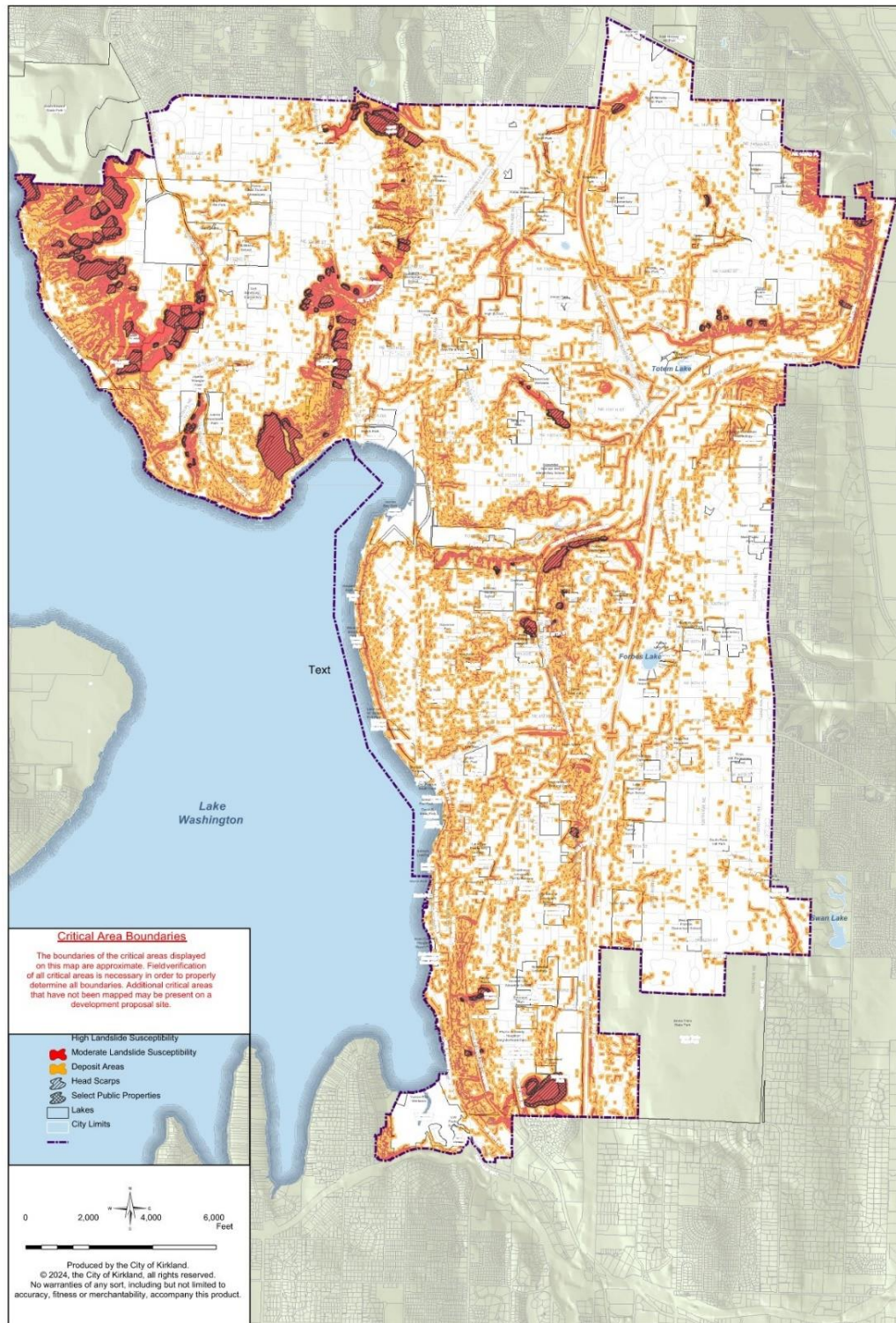


Figure 32b: Liquefaction Potential

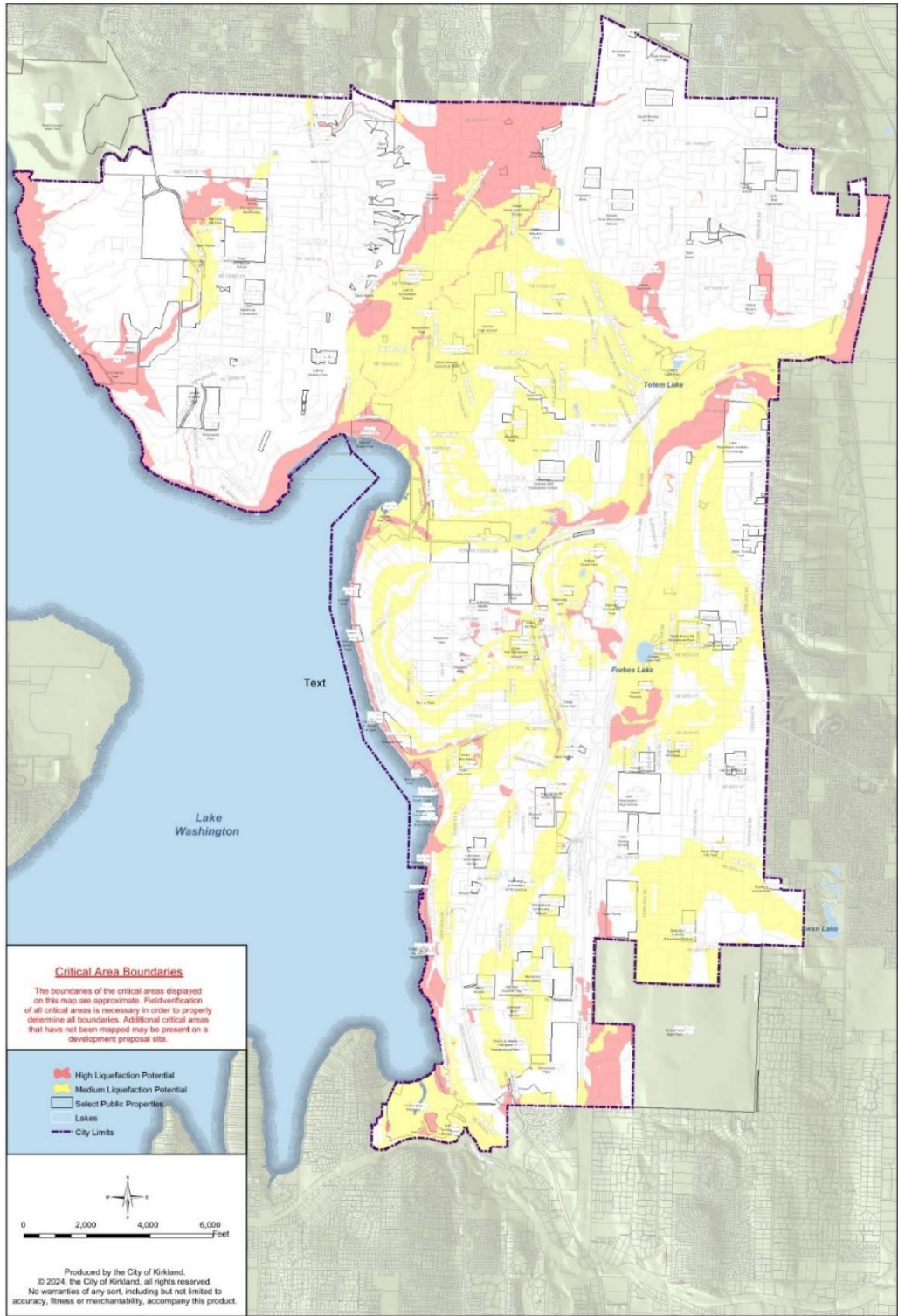


Figure SCE-33: Topography

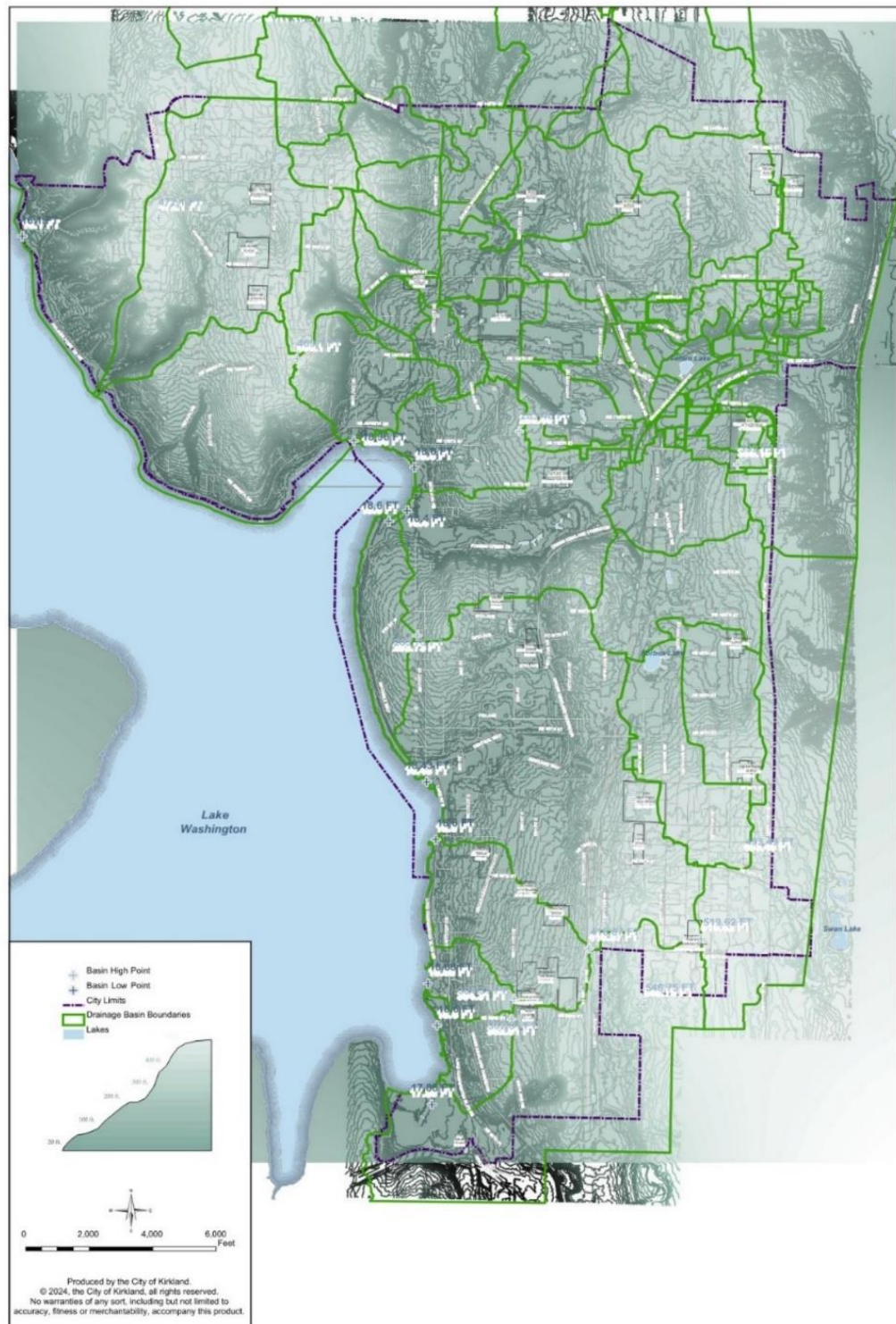


Figure SCE-34: Tree Canopy

