



Wastewater Treatment Division

Executive summary

RWSP Update – Group #4, Policy Memo #6: Climate Impact Preparedness and Natural Hazard Resiliency

This executive summary provides a synopsis of the policy questions, problem statement, issues, challenges, and the options developed for the Climate Impact Preparedness and Natural Hazard Resiliency.

Policy questions

1. Should existing wastewater policy language (K.C.C. 28.86) be revised to specifically call out planning for future climate conditions in addition to population growth and other environmental factors?
2. How should WTD prepare and adapt to climate impacts (e.g., precipitation/storm intensities, sea level rise, river flooding, etc.) in line with the Strategic Climate Action Plan? What level of climate impact risk tolerance should WTD plan for to avoid or minimize risks to the system?

Problem statement

King County's regional wastewater system faces increasing risks today and over time from climate change including risks to operations, regulatory compliance, worker safety and emergency repairs and response that may affect water quality and public health. For example, heavier and more intense rainfall events are projected to increase flows in the conveyance system and treatment plants, potentially exceeding design capacity and increasing the frequency of secondary treatment bypassing and sewer overflows. Decisions and investments made today on facility design and capacity will determine how well the system performs under future climate conditions.

WTD considers exposure to some climate hazards on a project-by-project basis. Constructed investments tend to only be on the highest risk projects and related to sea level rise and/or heavy precipitation. Current practice does not reflect making asset renewal/replacement, conveyance and other non-Combined Sewer Overflow (CSO) projects climate-resilient.

Policy issues, challenges, and opportunities

Absence of climate preparedness language in K.C.C. 28.86: There is a gap between this wastewater code and existing County climate policy (in the Strategic Climate Action Plan and

the King County Comprehensive Plan) leading to inconsistent planning and design for climate change.

Long useful life of wastewater infrastructure: Wastewater facilities often operate for 50 to 100 years. Design decisions made today will determine whether infrastructure can perform reliably under future climate conditions and continue to protect water quality and public health.

Cost considerations: While using climate projections in design can increase upfront costs, it reduces long-term risks and expenses and is more cost-effective than retrofitting or replacing facilities later.

Opportunity to strengthen wastewater utility leadership: Major wastewater utilities around the country are investing in preparing for climate change. There is an opportunity for WTD to learn from these tested approaches, standardize our processes and expand our leadership on climate preparedness in the wastewater sector.

Uncertainty management: There are varying levels of uncertainty for different climate hazard projections and for different scenarios of multiple hazards occurring at the same time. That uncertainty may drive technical approaches and investment timing. WTD regularly works through uncertainty today to responsibly steward the wastewater system.

Policy options

Policy question #1: *Should existing wastewater policy language (K.C.C. 28.86) be revised to specifically call out planning for future climate conditions in addition to population growth and other environmental factors?*

- a. WTD recommends that the answer to this question is ‘yes’, K.C.C. 28.86 should be revised to broadly reference planning for future climate conditions. This will provide wastewater-specific policy direction for WTD to adapt to climate impacts.

Policy question #2: *How should WTD prepare and adapt to climate impacts (e.g., precipitation/storm intensities, sea level rise, river flooding, etc.) in line with the Strategic Climate Action Plan? What level of climate impact risk tolerance should WTD plan for to avoid or minimize risks to the system?*

The following three policy options represent a range of approaches to managing climate risk at WTD facilities, from maintaining the current approach to aggressively protecting all at-risk facilities; each offers a unique tradeoff between the level of climate risk and cost, with upfront costs increasing as risk is lowered:

- a. Maintain focus on highest climate risks for highest risk project, i.e. regulatory, and follow federal, state and county rules.

Outcomes: High risk of climate impacts; much of the system remains vulnerable to increased rainfall/storm intensity, sea level rise and river flooding.

- b. Reduce climate risks further by expanding use of future climate data for extended useful life of facility or asset in broader set of projects

Outcomes: Medium risk of climate impacts; greater percentage of WTD's facilities are made climate-ready.

- c. Reduce climate risks furthest by aggressively relocating or retrofitting existing facilities

Outcomes: Low risk of climate impacts; all facilities vulnerable to increased rainfall/storm intensity, sea level rise and river flooding are made climate-ready.

Relationship to other RWSP topics

Preparing for the impacts of climate change is a foundational part of the Regional Wastewater Services Plan (RWSP) Update and is essential for sustaining the regional wastewater system into the future. As such, this category relates to many RWSP topics as described below.

Climate preparedness supports a facility's ability to withstand, recover, and adapt to multiple climate hazards. It aligns closely with:

Asset renewal and replacement: Climate preparedness measures can be most cost effectively incorporated when facilities are already undergoing planned renewal or replacement.

Natural hazards resiliency: Climate preparedness measures address the projected increase in the frequency and intensity of some natural hazards (e.g. increased rainfall/storm intensity and flooding) due to climate change.

Energy production: Alternative sources of power such as solar and renewable sources can be important to keeping the system running when primary sources are taken down by high winds, flooding or other climate hazards.

Recycled water use: Recycled water use can provide beneficial uses that lessen climate impacts to river flows, groundwater and other water supplies.

Climate adaptation also relates to system capacity management, performance and compliance as the region prepares for more water in the system as heavy rainfall increases, including:

- Combined system management
- Separated system conveyance
- Inflow and infiltration control
- Treatment

RWSP Update - Climate Impact Preparedness and Natural Hazard Resiliency

Group #4, Policy Memo #6

A. Policy Questions

This memo is focused on two of the policy questions related to the Climate Impact Preparedness and Natural Hazard Resiliency topic of the Regional Wastewater Services Plan (RWSP) Update. The policy questions explored in this memo are related to Climate Impact Preparedness:

- i. Should existing wastewater policy language (K.C.C. 28.86) be revised to specifically call out planning for future climate conditions in addition to population growth and other environmental factors?
- ii. How should WTD prepare and adapt to climate impacts (e.g., precipitation/storm intensities, sea level rise, river flooding, etc.) in line with the Strategic Climate Action Plan? What level of climate impact risk tolerance should WTD plan for to avoid or minimize risks to the system?

B. Problem Statement

King County's regional wastewater system faces increasing risks over time from climate change. Heavier and more intense rainfall events are projected to increase flows in the conveyance system and treatment plants, potentially exceeding design capacity and increasing the frequency of secondary treatment bypassing and sewer overflows. Sea level rise and worsening river flooding threaten low-lying facilities with inundation and operational disruptions. Rising temperatures, more frequent wildfire smoke events, and stronger windstorms pose additional risks to power reliability, equipment function, treatment processes, and worker safety. These impacts affect the wastewater system's ability to perform as designed, perform consistently and withstand and recover.

These climate impacts are particularly significant for wastewater infrastructure because facilities are designed to operate for 50 to 100 years. Decisions made today about facility design and capacity will determine how well the system performs under future climate conditions. Currently, WTD's wastewater policies in King County Code (KCC) 28.86 do not explicitly address planning for future climate conditions, and although some climate hazards are sometimes considered, there is no standardized approach to incorporating climate projections into the design, construction, and management of wastewater facilities.

C. Contextual and Baseline Information

i. What is known about the topic and current conditions

Climate Change and the Wastewater System

WTD's regional wastewater system currently operates reliably under existing conditions but has vulnerabilities to natural hazards that climate change is projected to amplify over time. Climate hazards may emerge gradually, such as sea level rise, or as sudden extreme events that increase in intensity over decades, such as heavy rainfall. Future climate conditions will be different from the historical conditions under which the regional wastewater system was built.

In 2025, WTD chartered the Climate Adaptation Planning Program to address the need for long term, systemwide climate preparedness planning. This program covers the entire wastewater service area and will identify ways to minimize or avoid climate risks, standardize how capital projects plan and design for projected climate hazards, and inform investments including type, cost, sequence, and timing. The WTD Climate Adaptation Planning Program will develop the agency's first long-term climate adaptation plan to strategically guide investments. This work will also finalize internal sea level rise guidance for capital project teams.

WTD is already experiencing climate change impacts to the system. WTD considers exposure to climate hazards and ways to avoid or minimize risks in capital project planning on a project-by-project basis.

Capacity Management

WTD's conveyance and treatment plants are largely designed based on historical rainfall data. As rainfall patterns shift to have greater intensity, facilities designed for historical conditions may not provide the intended level of service over their extended useful life. For example, King County, EPA, Ecology, and the U.S. Department of Justice successfully negotiated the 2025 modification to King County's CSO consent decree due to changed conditions, which included new climate predictions for heavy rainfall.

Flood Risk Management

Many WTD facilities are located in low lying and waterfront areas due to the water dependent and gravity flow nature of wastewater conveyance and treatment. One example of climate change influenced impacts already seen today is the blocked access to the Carnation Treatment Plant and effluent monitoring station during recent Winter 2025 flooding. An operator remained on site so that this event did not impact operations.

Current King County Comprehensive Plan policies encourage siting new critical public facilities outside the 500-year floodplain, with an exception for water dependent facilities such as wastewater treatment plants and associated conveyance infrastructure. Federal and state regulations allow building in the 100-year floodplain under certain conditions and WTD has facilities in these areas.

Other Climate Hazards

WTD’s facilities are largely designed with historical hazard data such as for temperatures and wildfire risk. Damage from fallen trees on facilities and landslides along conveyance pipes are already occurring today and are expected to increase in frequency in the future.

WTD currently addresses some of these hazards on a project-by-project basis when facilities undergo planned upgrades and project budgets can absorb costs.

ii. Current policies in code, contract, or in practice

King County Code Chapter 28.86 Wastewater Treatment does not include any policies that explicitly address climate preparedness or planning for future climate conditions. Capacity and infrastructure planning policies in K.C.C. 28.86 are based on population growth and historical environmental conditions. The primary policy drivers for WTD’s current climate preparedness activities are the King County Strategic Climate Action Plan and the King County Comprehensive Plan.

Table 1. Current policies

Relevant Policies in K.C.C.	Description
KCC 18.25 Strategic Climate Action Plan	Requires development and update of the King County Strategic Climate Action Plan (SCAP). King County Code is revised to reflect significant SCAP actions.
2025 SCAP PREP 42	Develop a wastewater climate adaptation investment plan.
2025 SCAP PREP 43	Implement measures to minimize climate impacts in the design and construction of large wastewater capital projects.
KC Comprehensive Plan E-221	Requires taking actions that equitably reduce climate change vulnerabilities.
KC Comprehensive Plan E-222	Requires King County plan and prepare for likely impacts of climate change on County owned facilities.

KC Comprehensive Plan E-224	Requires integrating estimates of magnitude and timing of climate change impacts into capital projects and implementing operations and maintenance programs that consider life cycle costs and climate change impacts in asset management.
KC Comprehensive Plan E-225	Requires integrating projected climate change impacts into emergency management planning and programs.
KC Comprehensive Plan F-431(g) and F-478	Requires analysis of potential climate change impacts when siting a new or expanded essential public facility and identification of options to reduce impacts. Provides an exception for wastewater treatment facilities due to their water dependence.
KC Comprehensive Plan F-433	Encourages consideration of potential climate change impacts for existing essential public facilities such as wastewater facilities and identification of options to reduce impacts including relocation. Provides an exception for wastewater treatment facilities due to their water dependence.
King County Green Building Ordinance 19402	Requires all KC owned capital projects use a third-party sustainability certification or the WTD Sustainability Scorecard, which include climate preparedness credit for assessing climate risk and implementing risk management strategies.

Capacity management policies and codes relevant to the combined system, separated system and treatment plant planning can be found in the policy memos for those topics.

The Strategic Climate Action Plan is King County's five-year roadmap to address climate change and is the primary driver for current climate preparedness activities at WTD. The 2025 SCAP includes commitments for WTD to develop a long-term wastewater climate adaptation investment plan (PREP 42) and to implement measures to minimize climate impacts in the design and construction of large wastewater capital projects (PREP 43). WTD is the lead agency for both of these commitments.

The 2024 King County Comprehensive Plan updated and strengthened climate related policies to align with new state planning requirements. The Environment Section (E-221 through E-225) establishes requirements for County departments to plan and prepare for climate change impacts on County owned facilities, integrate climate projections into capital projects and asset management, and prioritize equity in investment decisions. The Services, Facilities and Utilities Section (F-431(g), F-433, F-477, F-478) addresses facility siting and flood hazard considerations, encouraging new critical public facilities to be sited

outside the 500-year floodplain while recognizing the water dependent nature of wastewater treatment facilities.

While these policies provide direction for climate preparedness activities, they exist outside of K.C.C. 28.86 and are not specific to wastewater system planning.

iii. The system “must-dos”

The integration of climate change projections and risk reduction measures into state and local practices, policies and codes is an evolving area.

WTD must comply with its NPDES permits for the West Point, South Plant, and Brightwater treatment plants, which establish effluent limits, treatment standards, and reporting requirements. As climate change increases rainfall intensity and frequency, maintaining permit compliance will require the system to manage higher wet weather flows without exceeding permitted discharge limits or experiencing unauthorized overflows. WTD's NPDES permits do not explicitly require the use of future climate projections in facility design or capacity planning.

WTD must meet combined sewer overflow control requirements under its West Point NPDES permit, which limits CSO frequency to no more than one untreated discharge per outfall per year on a long-term average basis. Increasing rainfall intensity will affect the ability of CSO control facilities to maintain compliance over time.

WTD must comply with state and federal requirements to avoid sanitary sewer overflows in the separated system. Increasing rainfall and associated inflow and infiltration could increase the risk of overflows if separated conveyance capacity is not designed to account for changing conditions.

iv. Current and budgeted expenditures

As part of the 2026/2027 Biennial Budget process, WTD secured about \$4.7M in appropriation for climate preparedness planning and no capital projects.

The first long-term wastewater climate adaptation plan is under development and is expected to include a list of conceptual capital projects and costs as early as the 2029 forecast.

v. Summary of science/data

WTD’s climate preparedness planning is informed by regional climate science, including global and regional climate models, local projections, and probabilities of future conditions. The following summarizes the key climate science relevant to each policy sub-topics.

Heavy Precipitation and Capacity

Climate projections show increases in heavy rainfall intensity for the Puget Sound region. However, natural variability makes the specific magnitude and timing of rainfall change uncertain. WTD has conducted studies on the implications of changing rainfall for CSO compliance, which showed most (29 of 39) CSOs trending out of compliance towards the end of the century without additional measures. Further study is needed to understand the implications of intense rainfall changes for the separated conveyance system and for treatment plant capacity. Research indicates that rainfall intensity increases for shorter duration events, such as those used in WTD's CSO and separated conveyance planning, are expected to be larger than the increases shown for 24-hour, 25-year storms in the 2025 SCAP (13% by the 2050s and 12% by the 2080s per Figure 25). This means the climate projections most relevant to WTD's design standards may reflect greater changes than the regional averages presented in the SCAP. More information on the effects of heavy rainfall on the wastewater system can be found at:

- [*Modeling Future Climate Change Scenarios in the combined system report*](#)

Sea Level Rise and Flooding

Sea level and river flows are projected to increase, causing increased coastal and river flooding (See Figure 1). WTD has completed climate hazard studies on sea level rise to inform facility planning. Results show that most combined system facilities assessed (over 70%) are vulnerable to sea level rise under end of century scenarios (based on the 2100 50% and 1% probability sea level rise projections), with most coastal facilities expected to experience operational impacts sooner. These assets are part of an interconnected system where impacts on one asset will lead to impacts on other assets including wastewater treatment. WTD has also completed studies on river flooding vulnerability under historic conditions that identified roughly a dozen major facilities with high or moderate-to-high risk, primarily pump stations in or near mapped floodplains. These same and possibly other facilities will be vulnerable under future conditions. Future work is needed to fill data gaps related to changes in groundwater levels due to sea level rise and changes to river flooding. More information on the effects of sea level rise can be found at:

- [*Sea Level Rise Impacts on King County Facilities report*](#)
- [*WA Coastal Storm Modeling System web tool*](#). Use the Hazard Exposure web tool to explore coastal flooding in terms of sea level rise, storm size and likelihood.

Other Climate Hazards

Climate projections for the Pacific Northwest indicate increasing frequency and intensity of extreme heat and cold events, more wildfires and smoke, increased extreme weather such as windstorms, and increased drought (see Figure 1). Recent events including the

June 2021 Pacific Northwest Heat Dome (34 heat-related deaths in King County), record wildfire smoke in 2021, and the November 2024 bomb cyclone demonstrate that these hazards are already affecting the region. By the 2080s, very hot days above 90°F in King County are projected to increase by 41 days. The 2018 Recommendations to Enhance Resiliency and Recovery of King County’s Regional Wastewater Treatment Facilities Study identified seven WTD facilities at high risk from extreme weather under historic conditions, including the West Point, South, and Brightwater treatment plants, but did not assess wildfire smoke, extreme heat, or drought. The 2025 King County Regional Hazard Mitigation Plan identifies water and wastewater systems as vulnerable to multi-day power loss during heat events and to wildfire impacts on pump stations in forested watersheds. Under future climate conditions, these risks are projected to increase. More information on the likely effects of other climate change hazards can be found at:

- [Climate Mapping for a Resilient Washington](#). Select King County, the climate hazard and the time period of interest for a visualization of data shared in the table below.

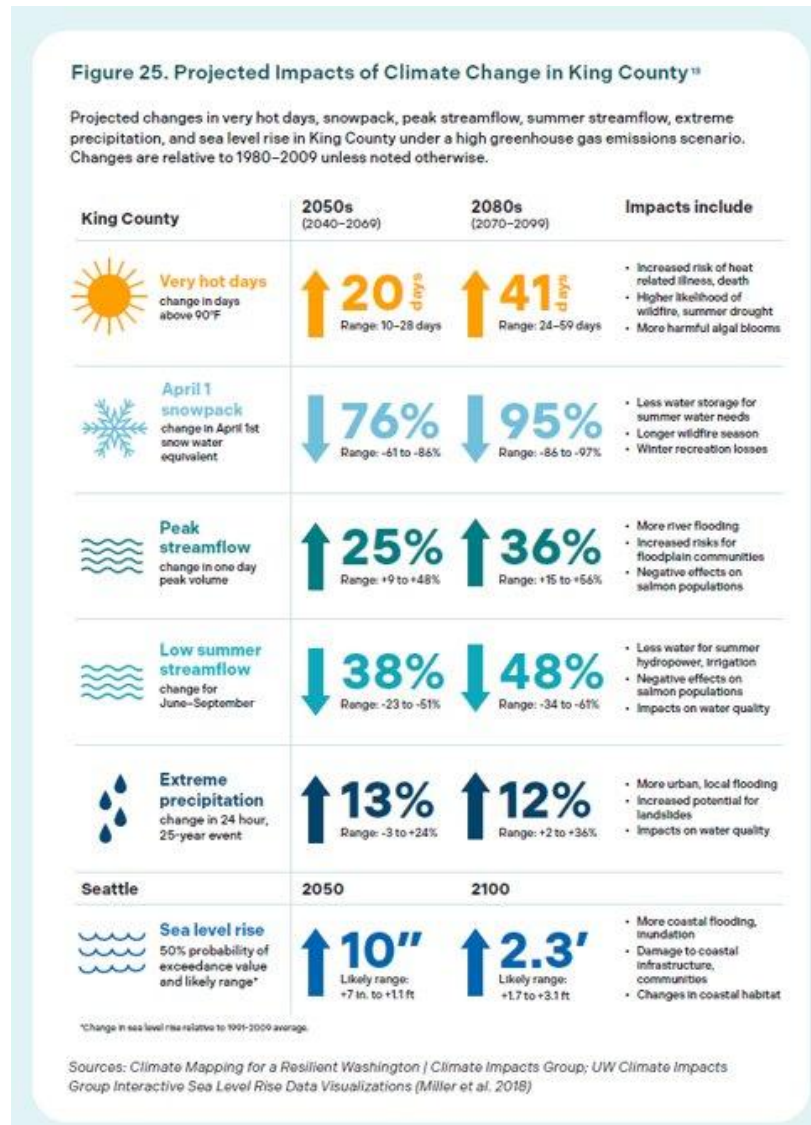


Figure 1. Projected Impacts of Climate Change in King County (excerpt from 2025 SCAP)

D. Example Practices from Other Jurisdictions/Industry

New York City Department of Environmental Protection [Multi Hazard Design Guidelines](#)

New York City has developed one of the most comprehensive climate preparedness programs for wastewater infrastructure in the United States. The NYC Climate Resiliency Design Guidelines provide step-by-step instructions for incorporating forward looking climate data into the design of city facilities. The guidelines address increasing heat, increasing precipitation, and sea level rise, and they use the extended useful life of each asset to determine the appropriate planning horizon. Different standards apply based on the criticality and size of a capital project, with critical facilities required to maintain operations during and after extreme events. These guidelines will be required by local law

for all City-funded capital projects beginning in 2027. A design guidelines approach is also being taken by Boston, Philadelphia and other cities. A guidelines approach could be applied to any of the policy options.

LOTT Clean Water Alliance, Washington Joint [Sea Level Rise Planning](#)

The LOTT Clean Water Alliance (serving Lacey, Olympia, Tumwater, and Thurston County in Washington State) developed a Sea Level Rise Response Plan in 2018 through a joint planning effort with the City of Olympia, and Port of Olympia. This collaborative approach ensured a coordinated strategy for protecting downtown Olympia and the Port peninsula from sea level rise impacts. The plan identifies needed actions, estimated costs, implementation schedules, and responsibilities across all partner agencies.

In addition, the Olympia Sea Level Rise Response Collaborative was established by an interlocal agreement between the City of Olympia, the Port of Olympia and LOTT in 2021. The members are working together to coordinate sea level rise response as envisioned in the Sea Level Rise Response Plan. The Collaborative is made up of an executive committee of elected officials representing the three initial member organizations, and a staff-level technical work group. Other governmental and non-profit organizations may join the Collaborative over time.

E. Policy Issues, Challenges, and Opportunities

1. Absence of climate preparedness language in K.C.C. 28.86

Current wastewater policy language does not reference future climate conditions. There is a gap between this wastewater code and existing County climate policy (Strategic Climate Action Plan and Comprehensive Plan).

2. Long useful life of wastewater infrastructure

Wastewater facilities often operate for 50 to 100 years. Design decisions made today will determine whether infrastructure can perform reliably under future climate conditions and continue to protect water quality and public health.

3. Cost considerations for climate preparedness investments

Incorporating climate projections into facility design may increase upfront capital costs but can reduce long-term costs associated with emergency repairs, operational disruptions, regulatory noncompliance, and premature asset replacement. Also, retrofitting or replacing existing facilities is more expensive than incorporating climate projections during design of new facilities or major upgrades. According to the National

Institute of Building Sciences, one dollar invested in natural hazards risk reduction can save approximately \$13 in losses.

4. Uncertainty management

Climate science provides a range of possible future conditions rather than a single prediction. This uncertainty complicates decisions about how much capacity or protection to build into long lived infrastructure. In addition, there is uncertainty around the compound impacts of multiple hazards occurring at the same time. That uncertainty may drive technical approaches and investment timing. WTD regularly works through uncertainty today to responsibly steward the wastewater system.

5. Opportunity to strengthen wastewater utility leadership

Major wastewater utilities around the country are investing in preparing for climate change. Several of these utilities such as in New York and San Francisco adopted climate preparedness policies and required design guidelines for large projects. There is an opportunity for WTD to learn from these tested approaches, standardize our processes and expand our leadership on climate preparedness in the wastewater sector.

F. Range of policy options with associated actions and considerations (including qualitative description of costs)

- Policy question: Should existing wastewater policy language (KCC 28.86) be revised to specifically call out planning for future climate conditions in addition to population growth and other environmental factors?

WTD recommends that the answer to this question is yes, K.C.C. 28.86 should be revised to broadly reference planning for future climate conditions. This will provide wastewater-specific policy direction for WTD to adapt to climate impacts.

- Policy question: How should WTD prepare and adapt to climate impacts (e.g., precipitation/storm intensities, sea level rise, river flooding, etc.) in line with the Strategic Climate Action Plan? What level of climate impact risk tolerance should WTD plan for to avoid or minimize risks to the system?

Answers to these questions are based on four variables: 1) which climate hazards to plan for (risk assessment), 2) which assets to protect (priority selection), 3) what level of protection/certainty to maintain levels of service (preparedness standard) and 4) what investment timeline (prioritization and triggers).

The following three policy options presenting a range of approaches to address these variables and managing climate risk at WTD facilities, from maintaining the current approach to aggressively protecting all at-risk facilities; these options offer decision makers distinctly different approaches to climate preparedness and risk relative to the costs:

1. Maintain focus on highest climate risks for highest risk project, i.e. regulatory, and follow federal, state and county rules.
2. Reduce climate risks further by expanding use of future climate data for extended useful life of facility or asset in broader set of projects
3. Reduce climate risks furthest by aggressively relocating or retrofitting existing facilities

Summary of Policy Options – Climate Preparedness

#	Description	Goals/outcomes	Tradeoffs
1	Maintain focus on highest climate risks for highest risk project , i.e. regulatory, and follow federal, state and county rules.	<ul style="list-style-type: none"> • Incremental improvements to combined system to prepare for sea level rise and heavy rainfall as budgets allow. • Other portions of the system have very limited improvements to prepare for heavy rainfall, river flooding and other climate hazards. 	<ul style="list-style-type: none"> • Highest risk of climate impacts on performance and repairs • Risk of under designed or failing to prepare • Lower costs today and higher cost later
2	Reduce climate risks further by expanding use of future climate data for extended useful life of facility or asset in broader set of projects	<ul style="list-style-type: none"> • Systematic improvements to new, upgraded and replaced facilities using protective future climate informed data and going beyond current laws 	<ul style="list-style-type: none"> • Lower risk of climate impacts on performance and repairs • Higher costs today for lower costs later
3	Reduce climate risks furthest by aggressively relocating or retrofitting existing facilities	<ul style="list-style-type: none"> • Systematic improvements to develop new relocation or major retrofit projects using more protective future climate informed data and going beyond current laws 	<ul style="list-style-type: none"> • Lowest risk of climate impacts on performance and repair • Risk of maladapted infrastructure that increases vulnerability • Highest costs today for lower costs later

G. Interested and affected parties WTD will engage to gather input

MWPAAC and the component agencies that WTD provides sewerage services to are one of the audiences that need to be engaged on the climate adaptation policy options. Additional engagement with tribes, community-based organizations (CBOs), and environmental non-governmental organizations (NGOs), businesses, industries, and the general public may be conducted during implementation planning.

H. Rate structure considerations (if applicable)

There are no known rate structure considerations for this policy question.

I. Relationship to contracts

According to the current sewer contracts, WTD must accept all sewage and waste delivered for treatment and disposal from the component agencies. Climate change is expected to increase flows from local systems due to increased infiltration due to heavier rainfall. The sewer contracts also state that the contracts may be modified from time to time through changes to King County Code.

Policy options do not propose changes to sewer contracts. However, policy choices made on the topic of inflow and infiltration may affect sewer contracts and affect (positively or negatively) capacity management in the regional system related to heavy rainfall due to climate change.

J. Equity and Social Justice (ESJ) impacts

Climate change impacts are not distributed equally across communities served by King County's regional wastewater system. Many WTD facilities are located in areas with environmental justice concerns, including the Duwamish Valley, where low lying wastewater infrastructure and the communities it serves face overlapping risks from flooding, sea level rise, and extreme heat. Climate related disruptions to wastewater service, such as sewer overflows from increased rainfall or facility flooding from sea level rise, can disproportionately affect communities that already experience higher environmental burdens and have fewer resources to respond. Also, decisions about how WTD plans for and invests in climate preparedness have the potential to affect both the reliability and cost of wastewater services.

Climate preparedness policy options 1, 2 and 3 each reduce climate related risks to the regional wastewater system to varying degrees which in turn continues protection of community public health and the environment.

Through policy option 1, ESJ considerations will be further integrated into the evaluation and prioritization of climate preparedness investments proposed by WTD's Climate Adaptation Planning Program consistent with the equity goals of the SCAP and King County Comprehensive Plan.

Policy options 2 and 3 propose increased and accelerated investment in climate risk reduction measures which is assumed to result in a higher level of protection for communities from potential sewer backups and for employees from multiple climate hazards during their work.

K. Planning-level cost estimates

This section will be added into the policy memo as the "Step 2" analysis later.

L. Evaluation of outcomes: identify impacts and outcomes of each option

This section will be added into the policy memo as the "Step 2" analysis later.

Appendix A: Policy options and actions

	Description	Climate Preparedness Resiliency Actions
#1	<p>Maintain focus on highest climate risks for highest risk project, i.e. regulatory, and follow federal, state and county rules. Results in limited action for other climate hazards</p>	<ul style="list-style-type: none"> • Capacity Management – Design projects to existing rainfall conditions, and increase confidence in compliance under more extreme rainfall conditions for regulatory driven projects • Flood Management – Site new critical facilities outside mapped flood zones and above 2 feet of sea level rise when technically feasible • Other Climate Hazards Management – Design climate hazard protections into facilities on a project-by-project basis, when project budgets allow and as prioritized in capital improvement plans
#2	<p>Reduce climate risks further by expanding:</p> <ul style="list-style-type: none"> • Use of protective future climate informed data for extended useful life of facility or asset • Scope of broader set of existing projects <p>Establish new or adjust existing wastewater policies to plan for:</p> <ul style="list-style-type: none"> • Increasing heavy rainfall • More extreme flooding <p>And/or, more generally, future climate conditions</p>	<ul style="list-style-type: none"> • Capacity Management – Ensure new, upgraded and replaced facilities and assets are able to handle increased flows from increased rainfall for the assets’ extended useful life to reduce public health and regulatory risk • Flood Management – Ensure new, upgraded and replaced critical facilities are flood resistant using climate change informed flood elevations for likely impacts over the extended useful life • Other Climate Hazards Management – Ensure new, upgraded and replaced facilities and assets are able to handle future climate conditions.

	Description	Climate Preparedness Resiliency Actions
#3	<p>Reduce climate risks furthest by aggressively expanding:</p> <ul style="list-style-type: none"> • Use of more protective future climate informed data for extended useful life of facility asset • Development of new relocation or major retrofit projects for existing facilities <p>Establish new or adjust existing wastewater policies to plan for:</p> <ul style="list-style-type: none"> • Increasing heavy rainfall • More extreme flooding <p>And/or. More generally, future climate conditions</p>	<ul style="list-style-type: none"> • Capacity Management - None • Flood Management – Proactively relocate existing at-risk facilities outside the 500-year floodplain and use more protective climate informed flood elevations to protect facilities for extended useful life • Other Climate Hazards Management – Proactively upgrade facilities, systems and assets to handle future climate conditions. For example, extreme temperature, extreme weather and wind, increased wildfires and smoke, and other climate hazards