

#	ACTION (SUB-ACTION)	RISKS
TU – Transportation + Utilities Goal: Improve transportation and utility infrastructure to maintain viability during periods of extreme heat, extreme weather and flooding.		
TU 1.0	Develop site-level adaptation plans for all transportation, energy, water & wastewater, and telecommunications facilities, functions and service areas identified as at-risk from sea level rise and flooding.	
TU 1.1	Identify at-risk facilities and develop adaptation or retirement plans for those facilities.	Sea Level Rise Flooding
TU 1.2	Conduct near-term and long-term flooding evaluations for at-risk facilities based on projected increases in heavy precipitation, increased storm-surge, and permanent inundation due to sea level rise.	Sea Level Rise Flooding
TU 2.0	Increase the resilience of energy systems	
TU 2.1	Stabilize the power grid with distributed energy resources including storage, renewable energy, and micro-grids capable of providing back-up power.	Extreme Heat Flooding Extreme Weather
TU 2.1	Flood proof and/or elevate electric infrastructure including, but not limited to, substations, transformers, and switch gear. Plan and design below ground electrical distribution systems to withstand flooding.	Sea Level Rise Flooding
TU 2.3	Flood proof and/or elevate natural gas infrastructure including, but not limited to, pressure regulating stations, odorization equipment, tanks, controls, and electric components.	Sea Level Rise Flooding
TU 2.4	Conduct site-level studies of extreme heat risk to electric grid infrastructure including transformers and overhead transmission and distribution lines. Identify necessary upgrades and mitigation strategies.	Extreme Heat
TU 3.0	Increase Resiliency of Drinking Water, Wastewater, and Stormwater Systems	
TU 3.1	Update design standards for water and drainage infrastructure to address increased intensity of precipitation.	Sea Level Rise Flooding
TU 3.2	Increase combined sewer and stormwater system capacity with green and grey infrastructure including raingardens, green roofs, cisterns, and pervious pavement.	Flooding Extreme Precipitation

#	ACTION (SUB-ACTION)	RISKS
TU 3.3	Reduce water demand and increase combined sewer system capacity with water recycling and water reuse. Explore the use of distributed rainwater harvesting and grey / black water recycling to reduce demand on potable water systems.	Flooding Extreme Precipitation

#	ACTION (SUB-ACTION)	RISKS
TU 3.4	Elevate and / or flood proof critical components of drinking water infrastructure including pumping stations, reservoirs, storage, and treatment facilities.	Sea Level Rise Flooding
TU 3.5	Flood proof critical stormwater and combined sewer infrastructure including but not limited to pumping stations, inlets and outlets, and waste treatment facility. Implement backflow prevention techniques.	Sea Level Rise Flooding
TU 4.0	Increase Resilience of Communication Systems	
TU 4.1	Expand the initial findings and recommendations of this report with a comprehensive vulnerability assessment of the AM/FM, TV, cellular communication and internet systems.	All
TU 5.0	Increase Resilience of Transportation Systems	
TU 5.1	Continue and expand efforts to mitigate flooding of the Metrorail system.	Flooding Extreme Precipitation
TU 5.2	Identify alternate evacuation routes for roads and bridges identified as vulnerable to flooding and/or sea level rise.	Sea Level Rise Flooding
TU 5.3	Update design standards for roads and transit infrastructure to account for extreme temperatures and precipitation.	Extreme Heat/Cold
TU 5.4	Evaluate existing bridges for resilience to extreme temperatures.	Extreme Heat/Cold
TU 5.5	Evaluate vertical clearance for bridges on waterways based on sea level rise projections.	Sea Level Rise
BD – Buildings & Development Goal: Upgrade existing buildings and design new buildings and development projects to withstand climate change impacts.		
BD 6.0	Provide back-up power for emergencies at all identified critical facilities.	
BD 6.1	Evaluate all critical facilities to identify those with or without existing back-up power systems, if they are above flood elevations, are in good working order, and are the appropriate size for that facility type.	All

#	ACTION (SUB-ACTION)	RISKS
BD 6.2	Flood-proof back-up power systems at critical facilities to protect against future events accounting for sea level rise and increasingly severe precipitation events.	Flooding Sea Level Rise
BD 7.0	Improve thermal safety + indoor building temperatures to increase resilience to extreme heat, especially in the event of a power outage.	
BD 7.1	Incorporate recommendations/requirements for improving thermal safety in residential building codes through use of passive cooling strategies.	Extreme Heat
BD 7.2	Identify existing residential building typologies (e.g. high rises, garden style) where residents are at highest-risk during extreme heat events and develop policies to support retrofits and upgrades.	Extreme Heat
BD 7.3	Expand existing incentive programs to include thermal safety and urban heat island mitigation measures such as cool roofs and solar shading.	Extreme Heat
BD 7.4	Evaluate public housing for vulnerability to extreme heat and incorporate resilience in future capital improvement plans.	Extreme Heat, Flooding, Extreme Precipitation
BD 8.0	Pursue deep energy and water efficiency for all buildings	
BD 8.1	Continue to pursue energy efficiency for all commercial and residential buildings through incentive programs, building codes, and financing to increase grid stability by reducing energy demand at peak periods.	Extreme Heat
BD 8.2	Consider developing a post-occupancy energy optimization program for new and existing buildings to ensure that efficiency potential constructed into buildings is realized.	Extreme Heat
BD 8.3	Develop incentives, training and technical assistance programs for significant water use reductions including rainwater and greywater harvesting and onsite blackwater treatment.	Extreme Precipitation
BD 9.0	Incorporate climate resilience into development planning and review processes	
BD 9.1	Develop climate resilience guidelines for new development projects.	All

#	ACTION (SUB-ACTION)	RISKS
BD 9.2	Evaluate sequencing of agency approvals for new building development projects to determine the best point at which to incorporate flood review.	All
BD 9.3	Assess feasibility of district energy and/or micro grids and district stormwater management for all large development projects.	All
BD 9.4	Require all Planned Unit Development, large tract review, and publicly financed projects to complete an adaptation checklist based on BD 9.1.	All
BD 10.0	Leverage land-use planning to promote resiliency	
BD 10.1	Incorporate climate resilience into the District's Comprehensive Plan for land-use.	All
BD 10.2	Consider amending zoning regulations to require or extend waterfront setbacks and buffers to account for future sea-level rise, changes in precipitation patterns, and erosion and to take advantage of natural-based strategies to reduce flood risks.	Sea Level Rise, Flooding
BD 10.3	Develop a set of flood resilience guidelines for the 500-year floodplain in addition to those existing for the 100 year floodplain for new development and substantial improvements.	Sea Level Rise, Flooding
BD 10.4	Limit the siting of critical facilities including hospitals, emergency services, shelter facilities and critical infrastructure systems within the 500-year floodplain.	Sea Level Rise, Flooding
BD 10.5	Identify buildings in the current 500-year floodplain and create design guidelines for retrofitting the various typologies of buildings.	Sea Level Rise, Flooding
BD 11.0	Provide incentives to encourage private property owners and developers to implement flood resiliency measures.	
BD 11.1	Offer rebates or grants for flood-resilience measures such as removable flood barriers, dry and wet flood proofing, elevation in vulnerable areas, and wastewater backup valves.	Flooding Extreme Precipitation
BD 11.2	Explore the use of buyouts for flood-prone properties in order to facilitate the restoration of natural floodplains and to account for sea level rise.	Flooding
BD 11.3	Explore the use of tax credits for conservation of floodplains and natural buffers, such as wetlands, in vulnerable areas.	Flooding

#	ACTION (SUB-ACTION)	RISKS
BD 11.4	Incentivize resilience measures beyond typical community benefits for Planned Unit Developments, large tract developments, and other large projects.	All
NC – Neighborhoods & Communities Goal: Make neighborhoods and communities safer and more prepared by strengthening community, social, and economic resiliency.		
NC 12.0	Improve emergency preparedness and planning for climate-related events with a particular focus on vulnerable populations.	
NC 12.1	Encourage active participation in disaster preparedness training and recovery programs including the Community Emergency Response Team volunteer program.	All
NC 12.2	Continue and expand efforts to identify and reach vulnerable populations. Provide training to home healthcare and other service providers that engage directly with vulnerable residents.	All
NC 12.3	Evaluate health risks that will be exacerbated by climate change. Provide training and capacity-building to public health officials to address increased cases of heat stress as well and new disease threats.	All
NC 12.4	Improve public awareness of health risks associated with climate change, and strategies for dealing with extreme heat and natural disasters.	All
NC 12.5	Conduct an in-depth assessment of vulnerable populations at the neighborhood level to build upon Ward-level assessment completed for this study.	All
NC 13.0	Reduce risks of extreme heat and the urban heat island	
NC 14.1	Develop thermal mapping to identify urban heat island hot-spots and areas with the greatest potential for cooling.	Extreme Heat
NC 14.2	Reduce the heat-Island effect with cool and living roofs, expanded green space and tree cover. Incorporate heat island mitigation into planning for green infrastructure and tree canopy and public space initiatives.	Extreme Heat
NC 14.3	Evaluate existing cooling centers based on location, accessibility and needs of vulnerable residents.	Extreme Heat
NC 14.4	Evaluate and revise existing heat-emergency plan and warning system.	Extreme Heat

#	ACTION (SUB-ACTION)	RISKS
NC 15.0	Strengthen Community Cohesion for Safety + Resilience	
NC 15.1	Assess walkability, public transit access and non-motorized transit options within neighborhoods. Prioritize improvement of walkability and connectivity in the Comprehensive Plan.	All
NC 15.2	Develop or maintain neighborhoods with easy access to fundamental resources including but not limited to a mix of food, emergency and health services, basic business services, affordable housing and community spaces.	All
NC 15.3	Strengthen and encourage active participation in community-based organizations and expand opportunities for civic engagement and volunteerism. Provide capacity-building and training for community level emergency preparedness and resiliency planning.	All
NC 15.4	Encourage healthy lifestyles through the built environment and neighborhood planning. Apply active design to buildings. Encourage walking and biking for transportation. Provide green space that supports community activities. Provide public spaces that encourage the community to come together.	All
NC 15.5	Leverage climate adaptation implementation projects to advance workforce development objectives and to promote business continuity planning.	All
NC 16.0	Develop Eco-Resiliency Districts and Community Resilience Hubs	
NC 16.1	Leverage ongoing neighborhood planning to begin to implement neighborhood-scale resilience solutions including district energy and micro grids, and district stormwater and water reuse.	All
NC 16.2	Explore the creation of Community Resilience Hubs which would locate emergency preparedness and response supplies and training in resilient community facilities, be they privately or publicly owned, such as faith organizations, community centers, community-based organizations.	All
NC 16.3	Provide technical and financial assistance to private entities that provide essential services, including universities, hospitals and affordable housing so that these entities may conduct their own risk assessments.	All

#	ACTION (SUB-ACTION)	RISKS
GI – Governance & Implementation Goal: Establish the policies, structures, and monitoring and evaluation procedures to ensure successful implementation of the adaptation plan.		
GI 17.0	Conduct additional analysis of climate vulnerability and adaptation strategies to account for the latest climate science.	
GI 17.1	Develop, and periodically update, comprehensive flood modeling that translates the projections for future sea level rise and extreme precipitation into updated flood maps and elevations.	All
GI 17.2	Annually monitor the current climate change science.	All
GI 17.3	Support efforts by infrastructure owners to conduct more in-depth climate vulnerability assessments of their systems.	All
GI 18.0	Align Climate Adaptation Plan with related planning efforts.	
GI 18.1	Incorporate long-term energy resiliency planning into the District's Comprehensive Energy Plan.	All
GI 18.2	Integrate climate change adaptation into the District's Hazard Mitigation Plan and related emergency planning efforts.	All
GI 18.3	Develop climate change resilience guidelines for all capital projects.	All
GI 18.4	Add a resilience element to the District's Comprehensive Plan.	All
GI 18.5	Revise engineering and building standards and codes to address climate change.	All
GI 18.6	Engage with Historic Preservation Review Board, Zoning Commissioning, and Public Service Commission, and others agencies that buildings and development to ensure that projects are allowed/encouraged to incorporate greater resiliency during design and permitting.	All
GI 19.0	Establish the necessary structures to ensure successful implementation of the Climate Adaptation Plan	
GI 19.1	Develop a supporting implementation plan for that identifies lead agencies and timelines.	All

#	ACTION (SUB-ACTION)	RISKS
GI 19.2	Identify potential sources of funding and financing including emerging financing tools like green or climate bonds. Leverage existing capital budgets to implement upgrades over time.	All
GI 19.3	Develop a plan for monitoring and evaluation including the identification of key indicators of climate vulnerability and successful adaptation.	All
GI 19.4	Establish a public-private task force with key stakeholders including infrastructure owners and operators to oversee and coordinate implementation of the plan, identify funding opportunities, and develop cross-cutting policy recommendations and design guidelines.	All
GI 19.5	Require climate change training for staff responsible for capital infrastructure and large development projects to educate them about climate risks and how to manage them.	All
GI 19.6	Use existing cross-agency and inter-governmental networks to share technical resources and best practices.	All
GI 19.7	Develop a system to regularly evaluate sea level rise and changes in floodplains in order to provide clear guidance to developers and regulators.	Sea Level Rise Flooding