

## SNAPSHOT OF RESILIENT FAIRFAX STRATEGIES

Pillars	Integrated Action Planning				Climate Ready Communities			Resilient Infrastructure and Buildings		Adaptive Environments	
Goals	<b>IAP.1. Integrate Resilience into General Planning</b>	<b>IAP.2. Coordinate and Enhance Data Collection</b>	<b>IAP.3. Obtain and Track Funding</b>	<b>IAP.4. Enable Interagency Collaboration</b>	<b>CRC.1. Create Safe and Resilient Spaces</b>	<b>CRC.2. Build Community Capacity</b>	<b>CRC.3. Pursue Climate Ready Development</b>	<b>RIB.1. Incorporate Climate Resilience into County Infrastructure Decisions</b>	<b>RIB.2. Advocate for Infrastructure Resilience Outside of County Control</b>	<b>AE.1. Protect Natural Resources that Enhance Resilience</b>	<b>AE.2. Restore Damaged Areas Through Nature-Based and Natural Solutions</b>
Strategies	<b>IAP.1a. Inventory and Update the Comprehensive Plan to Enhance Resilience</b>	<b>IAP.2a. Develop Resilience Metrics and a Tracking System for Ongoing Assessment of Community Resilience and Improvements</b>	<b>IAP.3a. Develop a County Climate Fund</b>	<b>IAP.4a. Establish a Long-Term Interagency Collaboration System</b>	<b>CRC.1a. Develop Adaptation Action Areas Where Resilience Action is Prioritized</b>	<b>CRC.2a. Provide Community Aid and Services to Alleviate Resilience Needs</b>	<b>CRC.3a. Pursue and Implement a Flood-Risk Reduction Plan for the Fairfax County Community</b>	<b>RIB.1a. Update the Capital Improvement Program Process to Include Climate Resilience Considerations</b>	<b>RIB.2a. Advocate and Partner for Energy Resilience</b>	<b>AE.1a. Develop a Consolidated Natural Resources Management Plan</b>	<b>AE.2a. Pursue Green Infrastructure Projects that Provide Climate Resilience Benefits</b>
	IAP.1b. Update the Strategic Plan to Enhance Climate Resilience	IAP.2b. Support Climate Research and Data Collection	<b>IAP.3b. Pursue Federal and State Funding Opportunities</b>	IAP.4b. Build County Staff Capacity to Lead on Climate Resilience Planning and Implementation	<b>CRC.1b. Pursue Development of a Network of Resilience Hubs in Climate-Vulnerable Areas of the County</b>	<b>CRC.2b. Launch a Climate Resilience Education and Guidance Program</b>	<b>CRC.3b. Encourage Heat-Resilient Design, Development, Upgrades, and Practices</b>	<b>RIB.1b. Enhance Flood Resilience of County Government Buildings and Other Facilities</b>	RIB.2b. Advocate for Resilience Updates to the Building Code	<b>AE.1b. Survey and Protect Areas that Provide Natural Resilience Benefits</b>	AE.2b. Support Continued Stream Corridor Restoration
	IAP.1c. Complete the Climate Health Plan	IAP.2c. Create Consolidated Database of Flood-Prone Areas	IAP.3c. Identify Funding for Long-Term Data Collection		CRC.1c. Expand Targeted Tree Plantings	CRC.2c. Support Resilience Related Workforce Development	<b>CRC.3c. Pursue Amendments to the Zoning Ordinance and other County Codes</b>	RIB.1c. Enhance Energy Resilience for County Buildings and Facilities	RIB.2c. Advocate and Partner with Transportation Agencies to Support Transportation Resilience	AE.1c. Update Provisions for Conservation Easements	AE.2c. Support Continued Urban Reforestation
	IAP.1d. Coordinate Hazard Mitigation and Emergency Management Planning with Climate Resilience Planning	IAP.2d. Continue to Collect Rainfall Data	IAP.3d. Identify Additional Funding Opportunities		CRC.1d. Enhance C-PACE Program Outreach and Technical Assistance	CRC.2d. Expand Heat Warning System	CRC.3d. Update the Public Facilities Manual	RIB.1d. Enhance Heat Resilience for County Buildings and Facilities		AE.1d. Integrate Climate Change Considerations into Urban Forestry Program	AE.2d. Explore Living Shoreline Opportunities
		IAP.2e. Create Database to Track Hazard Mitigation Actions						RIB.1e. Update Procurement Practices for Resilience			AE.2e. Restore Wetlands and Floodplains
		IAP.2f. Continue to Collect Tree Canopy Data									AE.2f. Explore Regenerative Agriculture Opportunities
		IAP.2g. Support Updates to LiDAR Data									
		IAP.2h. Collect Climate Change and Vector-Borne Disease Data									

**4 PILLARS.  
11 GOALS.  
18 PRIORITY STRATEGIES.  
30 ADDITIONAL STRATEGIES.**

The strategies in bold font are prioritized strategies. Each prioritized strategy is detailed in a full Implementation Roadmap in the following pages. The strategies in normal font are additional strategies that are critical to climate resilience.

# How to Read an Implementation Roadmap

## STRATEGY DESCRIPTION:

Description of the strategy, including context for how it connects to existing county plans, policies, or programs, how the strategy addresses climate risk, and/or how the strategy improves Fairfax's resilience.

## CLIMATE HAZARDS ADDRESSED:

Identifies which climate hazards are relevant to the strategy.

## LEAD:

County department(s) that will lead and coordinate the completion of the Implementation Actions.

## PARTNERS:

Other county departments or key coordinating public agencies that will have a supportive role in completion of the Implementation Actions.

## TIMELINE:

Estimated timeline needed to **complete** the specific Implementation Actions listed for a particular strategy. The timeline does not refer to time before the strategy will start. Estimated scale of time (0-8 years).

## COST:

Estimated level of funding needed to complete the specific Implementation Actions listed. Costs do not refer to recurring annual costs, existing staff salaries, or construction costs. Costs may reflect anticipated additional staff or consultant/contractor needs to complete the Implementation Actions listed. More formal cost estimates will be developed for each strategy as appropriate during the county budgeting processes. Estimated scale of investment (\$-\$\$\$).

## EXISTING STAFF:

**Yes** = This strategy can be accomplished with existing staff.

**Partial** = There are staff who can devote some time to this strategy, but additional staff and/or consultant services may be needed to bring the strategy to full fruition.

**No** = There are no existing staff to work on this strategy.

Goal	Goal Title
STRATEGY	Strategy Title
Strategy Description:	
Climate Hazards Addressed:	
     	
Lead:	
Partners:	
Timeline:	
Cost:	
Existing Staff:	
Implementation Actions:	

## IMPLEMENTATION ACTIONS:

Clear, measurable steps to achieve the strategy objective. Implementation Actions can be, but are not necessarily, sequential.

## CLIMATE HAZARDS KEY



**Key Performance Indicators:**

**Equitable Implementation:**

- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓

**Funding Opportunities:**

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**CO-BENEFITS**

- Public Health
- Social Equity
- Economic Benefits
- GHG Reductions
- Community Capacity Building
- Natural Resource Protection

**KEY PERFORMANCE INDICATORS:**

Key metrics that help to measure progress, monitor implementation, and inform decision-making.

**FUNDING OPPORTUNITIES:**

Identifies applicable funding sources that could assist with strategy implementation.

**EQUITABLE IMPLEMENTATION:**

Recommendations for how to implement the strategy more equitably, with considerations for needs of vulnerable and historically disadvantaged populations.

**CO-BENEFITS:**

Highlights additional benefits provided by strategy implementation, beyond climate resilience.

**ADDITIONAL STRATEGIES:**

Other key adaptation and resilience strategies identified throughout the strategy development phase. Because strategy prioritization was necessary, the “Additional Strategies” are not fleshed out with detailed Implementation Roadmaps. However, these Additional Strategies are also critical to resilience, top of mind for staff, and important to include in the plan. Therefore, the “Additional Strategies” are incorporated in the plan in a simplified form. In some instances, the Additional Strategies were not selected for Implementation Roadmaps because work is already well underway through another initiative, or they are already regularly addressed through county work programs.

ADDITIONAL STRATEGIES FOR GOAL	

## Integrated Action Planning Implementation Roadmaps

### PILLAR 1: INTEGRATED ACTION PLANNING (IAP):

The Integrated Action Planning pillar builds climate change considerations into planning, data collection, funding, and interagency collaboration to establish a system for continuous resiliency success. This pillar provides a strong foundation for the other pillars. It supports resilience collaboration that is multidisciplinary, well-coordinated, data-based, iterative, inclusive, and transparent. Strategies in the “Integrated Action Planning” pillar support the county in aligning plans and policies, making informed decisions, conducting metric-based monitoring and evaluation, obtaining needed funding, and working collaboratively across county departments and agencies for the long-term.

#### Integrated Action Planning includes:

- Amending county-wide plans such as the [Comprehensive Plan](#), [Strategic Plan](#), and the [Hazard Mitigation Plan](#) to enhance resilience
- Monitoring and evaluating progress, supporting transparency, and informing implementation
- Positioning the county to be competitive for state and federal funding opportunities
- Building new funding streams and providing dedicated funding source to support county’s climate goals
- Establishing long-term continued interdepartmental resiliency collaboration and capacity

IAP Integrated Action Planning Strategies:			
Goal IAP.1: Integrate Resilience into General Planning	Goal IAP.2: Coordinate and Enhance Data Collection	Goal IAP.3: Obtain and Track Funding	Goal IAP.4: Enable Interagency Collaboration
<p><i>Priority Strategies:</i></p> <p>IAP.1a: Inventory and Update the Comprehensive Plan to Enhance Resilience</p>	<p><i>Priority Strategies:</i></p> <p>IAP.2a: Develop Resilience Metrics and a Tracking System for Ongoing Assessment of Community Resilience and Improvements</p>	<p><i>Priority Strategies:</i></p> <p>IAP.3a: Develop a County Climate Fund</p> <p>IAP.3b: Pursue Federal and State Funding Opportunities</p>	<p><i>Priority Strategies:</i></p> <p>IAP.4a: Establish a Long Term Interagency Collaboration System</p>
<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ IAP.1b: Update the Strategic Plan to Enhance Climate Resilience</li> <li>▪ IAP.1c: Complete the Climate Health Plan</li> <li>▪ IAP.1d: Coordinate Hazard Mitigation and Emergency Management Planning with Climate Resilience Planning</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ IAP.2b: Support Climate Research and Data Collection</li> <li>▪ IAP.2c: Create Consolidated Database of Flood-Prone Areas</li> <li>▪ IAP.2d: Continue to Collect Rainfall Data</li> <li>▪ IAP.2e: Create Database to Track Hazard Mitigation Action</li> <li>▪ IAP.2f: Continue to Collect Tree Canopy Data</li> <li>▪ IAP.2g: Support Updates to LiDAR Data</li> <li>▪ IAP.2h: Collect Climate Change and Vector-Borne Disease Data</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ IAP.3c: Identify Funding for Long-Term Data Collection</li> <li>▪ IAP.3d: Identify Additional Funding Opportunities</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ IAP.4b: Build County Staff Capacity to Lead on Climate Resilience Planning and Implementation through Staff Trainings, Capacity Building, and Continuity of Operations Guidance</li> </ul>

# Goal IAP.1

## General Planning: Integrate Climate Resilience into Countywide General Planning

### STRATEGY IAP.1a

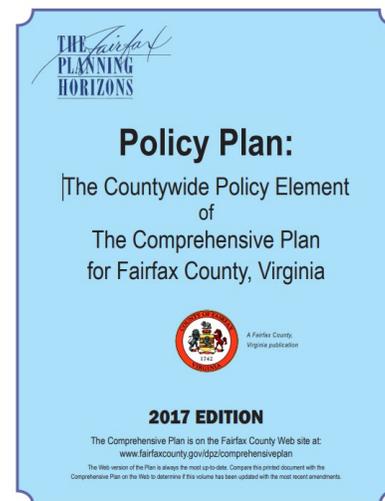
#### Inventory and Update the Comprehensive Plan to Enhance Resilience

**Strategy Description:** The [Fairfax County Comprehensive Plan](#), as required by state law, serves as a guide for decision-making about the natural and built environment. The Policy Plan includes general countywide policy on land use, transportation, housing, the environment, heritage resources, economic development, and public facilities, including public parks, recreation, and trails. The Area Plans identify key elements for implementing the Policy Plan’s goals and objectives at more detailed levels. The Comprehensive Plan is relevant to climate resilience because it provides a long-term vision for the county and includes numerous sectors that serve as pieces of the resilience puzzle. The Comprehensive Plan can guide resilience for both private development and public facilities in addition to natural areas. This strategy includes analysis, recommendation formation, and potential updates to Comprehensive Plan elements pertaining to climate resilience. This strategy will build upon work completed through the Resilient Fairfax Audit process. Potential updates could pertain to critical public service facilities, land use patterns, floodplains, wetlands and shorelines, Urban Heat Islands, and stronger protection for Resource Protection Areas, among others. All amendment processes require Board of Supervisors authorization. Comprehensive Plan amendments relating to resilience should be coordinated with other Comprehensive Plan amendments, such as those associated with CECAP. Completion of this strategy will align long-term planning with Resilient Fairfax and the county’s climate resilience goals.

#### Climate Hazards Addressed:



<b>Lead:</b>	OEEC, DPD
<b>Partners:</b>	DEMS, DOT, DPWES, EDA, FCHD, FCPA, LDS, NCS
<b>Timeline:</b>	Long-term (5-8 years)
<b>Cost:</b>	\$ (\$0k - \$100k)
<b>Existing Staff:</b>	Yes



#### Implementation Actions:

i.	OEEC, in coordination with DPD and other partner agencies, will develop specific draft recommendations for amended or added text in the Policy Plan Elements or Area Plans to enhance the county’s climate resiliency, beginning with Policy Plan Elements. In drafting these recommendations, OEEC will seek input from advisory groups, Boards, Authorities, and Commissions (BACs), the Planning Commission, the public, and other key stakeholders.
ii.	As authorized by the Board, staff will develop amendments to the Comprehensive Plan. OEEC will lead outreach efforts associated with any Comprehensive Plan amendments and will assist with technical climate resilience-related details. DPD will lead the Comprehensive Plan amendment processes.
iii.	OEEC, in coordination with DPD, will identify specific sections that may have subsequent amendments to enhance the county’s climate resilience. The future phased identification will expand upon the work completed through the Resilient Fairfax Audit process. Sections "relevant to climate resilience" may include but are not limited to: those related to public facilities, human service facilities, transportation, or other critical facilities, land use that may mitigate Urban Heat Island effect and/or flooding, floodplains, wetlands, shorelines, Environmental Quality Corridors, Resource Protection Areas, trees, green infrastructure, and impervious cover. The process will also identify specific county departments and/or other partner agencies responsible for each of the Comprehensive Plan sections.



**Key Performance Indicators:**

- Number, type, and location of engagement opportunities offered during the amendment process.
- Number of plan amendments proposed that align with Resilient Fairfax.

**Equitable Implementation:**

- ✓ Well-meaning policies can have negative unintended consequences on certain populations. Staff should consider if any Comprehensive Plan updates could adversely impact vulnerable populations.
- ✓ Comprehensive Plan amendment updates should include a robust public engagement process that seeks to collect input from those that are often underrepresented. Stakeholders should be engaged through a variety of platforms, at times convenient to those most affected, and through materials translated into multiple languages.
- ✓ Staff should leverage the Inclusive Community Engagement Framework (ICEF).
- ✓ Staff should analyze compatibility of land uses with any change in land use designation that is adjacent to, or otherwise affects identified vulnerable communities.
- ✓ Staff should use One Fairfax to identify regions that are seeing an increase in vulnerable groups to prepare for increased need of services in that area.



**Funding and Resource Opportunities:**

- Community Development Block Grant Mitigation (CDBG-MIT) Program
- General Fund (salaries)

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL IAP.1**

<p><b>Strategy IAP.1b</b></p>	<p><b>Update the Strategic Plan to Enhance Climate Resilience</b> Pursue potential additions to the countywide Strategic Plan to enhance climate resilience during the anticipated regular update cycle. (The county’s <a href="#">first-ever countywide Strategic Plan (2021)</a> did include climate resilience strategies. However, with the completion of the Resilient Fairfax plan, additions could be made for greater specificity).</p>
<p><b>Strategy IAP.1c</b></p>	<p><b>Complete the Climate Health Plan</b> Complete the Climate Health Plan, including considerations for resident and worker safety in extreme climate conditions such as extreme heat. (The Climate Health Plan process was started prior to the Covid-19 pandemic and has been paused while Health Department resources are focused on pandemic response).</p>
<p><b>Strategy IAP.1d</b></p>	<p><b>Coordinate Hazard Mitigation &amp; Emergency Management Planning with Climate Resilience Planning</b> Continue coordination between OEEC and DEMS to ensure alignment between hazard mitigation/emergency management plan updates and climate resilience plan updates. (OEEC and DEMS have coordinated for alignment between their respective plans, both scheduled for completion in 2022. In future iterations, there may be opportunities for further streamlining or even combining hazard mitigation and climate resilience planning processes).</p>

# Goal IAP.2

## Data Collection: Coordinate and Enhance Data Collection to Inform Resilient Fairfax Implementation

### STRATEGY IAP.2a

#### Develop Resilience Metrics and a Tracking System for Ongoing Assessment of Community Resilience and Improvements

**Strategy Description:** Monitoring and evaluation is key to the success of the adaptation process. An ongoing assessment of community resilience and improvements helps to increase accountability, transparency, and long-term success while advancing community understanding of resilience measures. Resilience metrics are quantifiable variables that can be measured or tracked over time. They outline a set of indicators that help to track progress, measure improvement, identify priority needs, or monitor changes. While there is currently no national standard for resilience metrics, the Key Performance Indicators outlined in the Resilient Fairfax plan for each prioritized strategy offer an initial opportunity to benchmark resilience implementation and evaluate progress. Data monitored over time will be used to support ongoing quality improvement. Community representatives from Fairfax County will be invited to participate in monitoring, quality improvement, and evaluation processes. Future development of a climate resilience index could provide greater insight to the outcomes of Resilient Fairfax implementation and measurable progress in community resilience.

#### Climate Hazards Addressed:



<b>Lead:</b>	OEEC
<b>Partners:</b>	DCC, DEI, DEMS, DFS, DIT, FCDOT, DMB, DPD, DPSC, DPWES, FCPA, FCPS, FMD, HCD, FCHD, LDS, NVSWCD, One Fairfax, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years), Ongoing
<b>Cost:</b>	\$ (\$0 to \$100k)
<b>Existing Staff:</b>	Partial



#### Implementation Actions:

i.	Building from the Key Performance Indicators and tracking tool developed through the Resilient Fairfax plan, design a monitoring and evaluation process, schedule, and tracking system to track implementation progress over time.
ii.	Develop an annual progress report that documents progress made, key successes, and future needs. Collect data and information from implementation leads on the status of each strategy using the Key Performance Indicators established in the Resilient Fairfax plan. Data requests will be streamlined with other OEEC data requests for efficient use of partners' time and to reduce duplication of requests.
iii.	Explore development of a climate resilience index that includes resilience-related metrics, such as vulnerable populations, climate hazard exposure, environment, proximity to critical services/facilities, social factors, and built infrastructure.



**Key Performance Indicators:**

- Number of strategies initiated by type, population served, and location (where applicable).
- Number (and percentage) of Implementation Actions completed by type, population served, and location (where applicable).

**Equitable Implementation:**

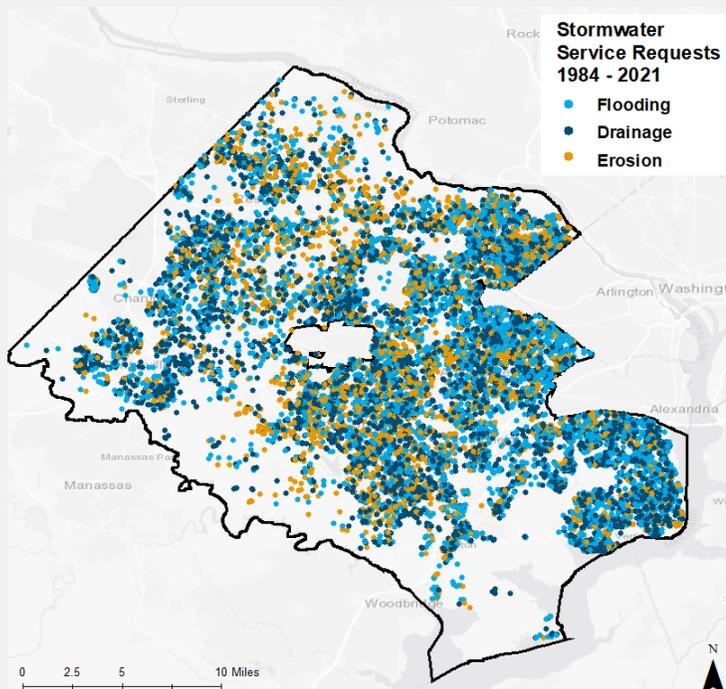
- ✓ Consider transparency and accountability.
- ✓ Consider how vulnerable populations contribute to overall metrics, and how social factors impact metrics.
- ✓ Establish regular reporting against the goals and targets of community resilience improvements.
- ✓ Break down the beneficiaries of funding spent on resilience by social factors and demographics.
- ✓ Build in the opportunity to reevaluate the success metrics based on whether positive change is observed.



**Funding and Resource Opportunities:**

- General Fund (salaries)

**Co-Benefits:**

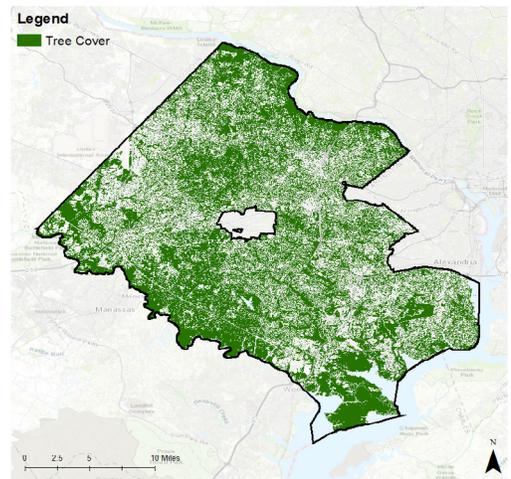


**Flooding-related Service Requests**

Flooding and drainage service requests are one tool Fairfax County uses to track and monitor flooding. When residents experience flooding in their yards or neighborhoods, they can submit a service request through DPWES. In addition to providing service, the service requests are plotted on a map over time to track which areas of the county may experience the greatest or most repetitive flooding. While this approach helps county staff identify key problem areas, it likely underreports the true extent of flooding, because many residents are not aware of this service. Visit the [DPWES webpage](#) to file a service request.

## ADDITIONAL STRATEGIES FOR GOAL IAP.2

<p><b>Strategy IAP.2b</b></p>	<p><b>Support Climate Research and Data Collection</b> Support climate-related research and data collection through partnerships with schools and universities, internship opportunities, and citizen science projects.</p>
<p><b>Strategy IAP.2c</b></p>	<p><b>Create Consolidated Database of Flood-Prone Areas</b> Consolidate currently separate databases of flood-prone and storm-affected areas to provide comprehensive documentation of vulnerable areas. Pursue potential expansion of internal databases such as the Emergency Data Gathering Repository (EDGR) to enable long-term tracking.</p>
<p><b>Strategy IAP.2d</b></p>	<p><b>Continue to Collect Rainfall Data</b> Collect localized rainfall data and consolidate regional rain gauge networks. Rainfall data collection and analysis should consider effects of impervious surfaces.</p>
<p><b>Strategy IAP.2e</b></p>	<p><b>Create Database to Track Hazard Mitigation Action</b> Create a tracking database to record hazard mitigation retrofits and future cost savings and expenditures. Build upon and align with the Hazard Mitigation Plan documentation.</p>
<p><b>Strategy IAP.2f</b></p>	<p><b>Continue to Collect Tree Canopy Data</b> Regularly update the tree canopy data layer to support strategic and equitable tree planting.</p>
<p><b>Strategy IAP.2g</b></p>	<p><b>Support Updates to LiDAR Data</b> Support regular updates of Fairfax County GIS LiDAR data to facilitate resilience-related GIS analyses.</p>
<p><b>Strategy IAP.2h</b></p>	<p><b>Collect Climate Change and Vector-Borne Disease Data</b> Collect data on and map current disease-carrying insect vector populations, and monitoring of vector-borne diseases throughout Fairfax County, considering future conditions impacts on vector populations.</p>



### Tree Canopy Data

The county regularly collects tree canopy data through a range of sources including LiDAR, satellite imagery technology, field measurements, and vector data. This data helps the county assess changes in land cover, identify gaps in the urban forest, and inform strategic and equitable tree plantings. A strong and healthy tree canopy helps our county retain excess stormwater, provide shading and cooling relief from the heat, support biodiversity, and maintain healthy air quality.

# Goal IAP.3

## Funding: Obtain and Track Funding for Successful Resilient Fairfax Implementation

### STRATEGY IAP.3a

#### Develop a County Climate Fund

**Strategy Description:** This strategy seeks to develop a county-level Climate Fund to mobilize financial resources and provide a dedicated funding source for county-led climate adaptation and resilience projects. The proposed Climate Fund would support implementation of Resilient Fairfax strategies and provide an identified funding source to be leveraged as a local match for federal, state, and other resilience related grants. The fund would not be county department specific, but rather available to all county departments who are implementing resilience related projects. The fund would promote implementation of projects that lessen the impact of climate change on Fairfax County’s communities, with prioritization of more vulnerable communities. Development of a Climate Fund would need to consider startup capital, funding sources, and fund structure. The Climate Fund could leverage public funding to support Resilient Fairfax goals, fostering a more resilient community, economy, and environment.

**Climate Hazards Addressed:**



<b>Lead:</b>	DMB, OEEC
<b>Partners:</b>	DEI, DEMS, DPWES, FCPA, NVSWCD, OCA, One Fairfax, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

**Implementation Actions:**

i.	Receive authorization to pursue development of a Climate Fund.
ii.	Conduct research on Climate Fund practices, structures, mechanisms, legal considerations, and other factors, for applicability to Fairfax County. Explore options for development of a county Climate Fund for county investment in climate adaptation and mitigation projects, with priority consideration for more vulnerable communities.
iii.	Identify and compile list of potential grant funding opportunities for which the Climate Fund could provide a local match. This action item should be coordinated with Strategy IAP.3b.
iv.	In coordination with the development of AAAs (Strategy CRC.1b) updates to the county CIP process (RIB.1a), and flood risk reduction planning (CRC.3a), identify project needs and level of funding required for project implementation. Projects nominated for Climate Fund investment may be larger in scope than those funded through the Environmental Improvement Program (EIP).
v.	Establish ranking criteria that will guide prioritization and selection of resilience projects to be funded through the Climate Fund. Criteria should consider factors including but not limited to: vulnerable populations, risk of climate hazard, scale of funding needed, and available grant funds.



**Key Performance Indicators:**

- Percentage of funding directed, by project type and location (e.g., grant matching, enhancing County projects with resilience focus, projects or initiatives in AAAs for vulnerable neighborhoods).
- Annual total funds in Climate Fund and percentage used, organized by type of project.

**Equitable Implementation:**

- ✓ In the creation of a County Climate Fund, transparency is important to understand where funds are being directed. Consider the fairness and equity of how the Climate Fund will be used.
- ✓ Define how the fund will prioritize vulnerable communities.
- ✓ Allocate a portion of the fund to reach vulnerable communities via community programming.



**Funding and Resource Opportunities:**

- General Fund (salaries)
- State Clean Water Revolving Loan Funds
- Bonds

**Co-Benefits:**



**Tree Preservation and Planting Fund**

The county’s Tree Preservation and Planting Fund (TPPF) supports efforts by the county and the community at large to protect, manage, and enhance its urban forest resources. The TPPF helps to collect, manage, and allocate funding that supports the preservation and management of existing forest as well as the planting of new trees. The TPPF can be applied towards a range of programs and policies, including tree planting to support watershed management plans, conservation of trees to align with the county’s Tree Action Plan, and tree-related projects that are identified in the annual Environmental Improvement Plan.



# Goal IAP.3

## Funding: Obtain and Track Funding for Successful Resilient Fairfax Implementation

### STRATEGY IAP.3b

#### Pursue Federal and State Funding Opportunities

**Strategy Description:** Federal and state grant opportunities could provide significant funding to support implementation of Resilient Fairfax strategies and the county’s broader climate goals. This strategy will best position the county to be both competitive and successful in securing funding as it becomes available. To organize around funding and grant opportunities, the county should create an updated, centralized database to track and apply for grant opportunities, and an interagency, streamlined process for the pursuit of funding opportunities. This strategy should be part of the interagency collaboration system (IAP.4a).

**Climate Hazards Addressed:**



<b>Lead:</b>	DMB, OEEC (Facilitator)
<b>Partners:</b>	DEMS, DFS, DOT, DPWES, FCDOT, FCHD, FCPA, FCPS, Fort Belvoir, HCD, One Fairfax, NCS, NVRC, NVSWCD, UFMD
<b>Timeline:</b>	Short-Term (2 years or less)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

**What is BRIC?**



Building Resilient Infrastructure and Communities (BRIC) is a FEMA grant funding opportunity that supports states, local communities, Tribes, and territories in undertaking projects to promote resilience and reduce risks posed by natural hazards, including those due to climate change. A wide range of project are eligible for BRIC funding, including capability and capacity building activities, project scoping, and planning related activities, and hazard mitigation projects, including projects designed to increase resilience, protect public safety, and mitigate risk to critical services and infrastructure.

**Implementation Actions:**

<b>i.</b>	Create an updated and consolidated database of all climate resilience-related federal and state funding opportunities, shared with all relevant departments. Example funding opportunities may include but are not limited to: Community Development Block Grant Programs (CDBG), Community Flood Preparedness Fund Grant Program (CFPF), the Flood Mitigation Assistance (FMA) Grant Program, Building Resilient Infrastructure and Communities (BRIC), Hazard Mitigation Assistance (HMA), Infrastructure Investment and Jobs Act, American Rescue Plan, National Coastal Resilience Fund (NCRF), National Coastal Wetlands Conservation Grant, Safeguarding Tomorrow Through Ongoing Risk Mitigation (STORM) grants, and Virginia Coastal Zone Management Program, among others.
<b>ii.</b>	Establish a process for coordinated tracking and prioritization of resilience-related grant opportunities, proposals submitted, funding awarded, and projects conducted. The process should include clear identification of lead and support agencies for each grant and/or funding opportunity. The lead department for each grant will be determined based on topic. For example, DPWES will lead stormwater-related grants, and FCHD will lead health-related grants. The process should identify “best fit” grant opportunities that both align with county priorities and likelihood of success.
<b>iii.</b>	Assess and identify need for dedicated staff to support grant tracking, proposals, and active grant management.
<b>iv.</b>	Apply for available and appropriate federal and state funding opportunities for resilience.



**Key Performance Indicators:**

- Number and type of Fairfax departments involved in the development and use of the grant tracking system.
- Number of grant opportunities pursued, by type and percent of opportunities targeting projects in AAAs.
- Amount of funding secured for resilience projects, organized by categories such as granting agency, county department/agency, new or existing project/initiative, communities served, grant focus, period of performance, and cost share.

**Equitable Implementation:**

- ✓ Consider how grant funding can be prioritized for vulnerable populations and which grants may designate funding for vulnerable populations.
- ✓ Apply for funding opportunities that are specifically for the advancement of equitable initiatives and vulnerable communities.
- ✓ Identify community organizations led by vulnerable and under-served populations and collaborate on securing funding.
- ✓ Track funding allocated to vulnerable communities.



**Funding and Resource Opportunities**  
(to apply for the additional funding):

- General Fund (salaries)

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL IAP.3**

**Strategy IAP.3c**

**Identify Funding for Long-Term Data Collection**

Identify funding to support long-term data collection, analysis, and management.

**Strategy IAP.3d**

**Identify Additional Funding Opportunities**

Identify additional funding opportunities including regional coordination, public-private partnerships, and cost-share programs to support resilience.

# Goal IAP.4

## Interagency Coordination: Enable Continued Interagency and Intergovernmental Collaboration on Climate Resilience

### STRATEGY IAP.4a Establish a Long-Term Interagency Collaboration System

**Strategy Description:** Interagency collaboration is foundational to climate resilience planning and implementation and is promoted within Fairfax County by OEEC. OEEC was created to lead interagency environmental coordination, including climate resilience. OEEC also leads the county’s climate-related coordination with regional, state, and federal entities. Throughout development of this Resilient Fairfax plan, the Resilient Fairfax Planning Team, comprised of 20 county departments, coordinated closely with OEEC to inform project deliverables, including the technical analyses, strategies, and the compiled Resilient Fairfax plan. Continued interagency collaboration during the implementation phase is critical to the success of Resilient Fairfax, because climate resilience efforts are interdisciplinary and cross-cutting across many departments. This strategy involves the establishment of a system for long-term climate resilience coordination, capacity building, and project alignment across all relevant county departments. The collaboration system should be structured in a way that is helpful, convenient, and streamlined for participating departments.

**Climate Hazards Addressed:**



<b>Lead:</b>	OEEC
<b>Partners:</b>	DCC, DEI, DEMS, DFS, DIT, DMB, DPD, DPSC, DPWES, FCDOT, FCPA, FCPS, FMD, HCD, FCHD, LDS, NVRC, NVSWCD, One Fairfax, UFMD
<b>Timeline:</b>	Shovel Ready
<b>Cost:</b>	\$ (\$0 - \$100k)
<b>Existing Staff:</b>	Yes

**Office of Environmental and Energy Coordination:** OEEC was created in 2019 and is responsible for interagency coordination and implementation of countywide environmental and energy policies, goals, programs, and projects. OEEC reports to the Office of the County Executive and is given the ability to coordinate across all county departments.



**Implementation Actions:**

<b>i.</b>	Identify county departments who should be involved in climate resilience collaboration long-term, led by OEEC. Beginning with the departments involved in the Resilient Fairfax planning process, these departments may include but are not limited to: DEMS, DFS, DPD, DPSC, DPWES, DVS, FCDOT, FCPA, FCPS, FMD, GIS, HCD, FCHD, HHS, LDS, NCS, NVSWCD, OCA, OEEC, One Fairfax, and UFMD. Designate a climate champion within each department.
<b>ii.</b>	Identify non-county infrastructure management and resilience-related entities who should continue to be involved in the county's climate resilience implementation collaboration and data sharing long term.
<b>iii.</b>	Create a clear and user-friendly system for long-term collaboration. This system could include periodic Resilience Work Group meetings, information sharing protocols, a schedule for updates, or other options.
<b>iv.</b>	Establish a process for clear coordination of interagency resilience projects, policy and plan updates, resilience-related grant opportunities (IAP.3b), and capacity building. This process should include different "levels" of engagement, including more regular collaboration between agencies that are particularly imperative to the community's climate resilience and have expressed interest in closer collaboration, including but not limited to FCHD, NCS, LDS, FCPA and DPWES.
<b>v.</b>	Conduct yearly evaluations of the collaboration system and adjust as needed to improve coordination efforts.



**Key Performance Indicators:**

- Number of county departments engaged per year to implement, track and monitor the progress of implementation.
- Number of non-county entities engaged per year to implement, track and monitor the progress of implementation.
- Number of engagement opportunities and level of public interaction (e.g., frequency of feedback, public input, number, and type of comments).

**Equitable Implementation:**

- ✓ Use inclusive community engagement across departments to inform collaboration on resilience issues.
- ✓ Consider setting up a dashboard for quick access to important information and a designated place for representatives to share best practices in promoting equitable outcomes.
- ✓ Create a system to “tag” when a topic is related to equity and inclusion.
- ✓ During annual evaluation of the collaboration efforts, assess if/how efforts have improved equity.



**Funding and Resource Opportunities:**

- General fund (salaries)

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL IAP.4**

**Strategy IAP.4b**

**Build County Staff Capacity to Lead on Climate Resilience Planning and Implementation through Staff Trainings, Capacity Building, and Continuity of Operations Guidance**

Provide climate resilience and climate equity trainings as well as climate-oriented continuity of operations assistance to county staff, customized for relevance to their work. Consider staffing needs for implementation of resilience projects.



Metropolitan Washington Council of Governments



Northern Virginia Regional Commission

**Building on Existing Regional Coordination:**

Fairfax County regularly engages and collaborates with regional entities such as the Metropolitan Washington Council of Governments (MWCOG) and the Northern Virginia Regional Commission (NVRC) to address climate change. County staff are active participants in numerous other regional and statewide initiatives and groups relating to climate resilience, including but not limited to: the Virginia Municipal Stormwater Association, the Virginia Forestry Association, the Virginia Association of Forest Health Professionals, Southeast Sustainability Directors Network, American Planning Association local and state chapters, Resilient Virginia, and the Virginia Energy and Sustainability Peer Network, among others.

## Climate Ready Communities Implementation Roadmaps

### PILLAR 2: CLIMATE READY COMMUNITIES (CRC):

The Climate Ready Communities pillar aims to ensure that Fairfax County communities are resilient, adaptable, and prepared for a changing climate. Climate-ready communities are well-connected with a strong social fabric, have access to the resources they need, are prepared for climate hazards, and live in physically resilient neighborhoods. To support climate-ready communities, we are working to address existing inequities, improve access to county resources and aid, strengthen neighbor-to-neighbor connections, build greater social cohesion, reduce the climate vulnerabilities of our neighborhoods and development, and improve awareness of and readiness for climate change impacts.

#### Climate Ready Communities have:

- Strong social cohesion to support community response to climate hazards, including both long-term stressors and short-term shocks
- Homes and neighborhoods that are resilient to flooding, extreme heat, storms, and power outages
- Education, training, and resources that are easily accessible to all members before, during, and after climate events

In the event of an emergency or natural disaster, 77% of Resilient Fairfax survey takers said they could count on their neighbors for help and 75% have their neighbor’s contact information.

<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">CRC</div> <div>Climate Ready Communities Strategies:</div> </div>		
Goal CRC.1: Create Safe and Resilient Spaces	Goal CRC.2: Build Community Capacity	Goal CRC.3: Pursue Climate Ready Development
<p><i>Priority Strategies:</i></p> <p>CRC.1a: Develop Adaptation Action Areas Where Resilience Action is Prioritized</p> <hr/> <p>CRC.1b: Pursue Development of a Network of Resilience Hubs in Climate Vulnerable Areas of the County</p>	<p><i>Priority Strategies:</i></p> <p>CRC.2a: Provide Community Aid and Services to Alleviate Resilience Needs</p> <hr/> <p>CRC.2b: Launch a Climate Resilience Education and Guidance Program</p>	<p><i>Priority Strategies:</i></p> <p>CRC.3a: Pursue and Implement a Flood-Risk Reduction Plan for the Fairfax County Community</p> <hr/> <p>CRC.3b: Encourage Heat-Resilient Design, Development, Upgrades, and Practices</p> <hr/> <p>CRC.3c: Pursue Amendments to the Zoning Ordinance and other County Code Chapters to Enhance Community Resilience</p>
<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ CRC.1c: Expand Targeted Tree Plantings</li> <li>▪ CRC.1d: Enhance C-PACE Program Outreach and Technical Assistance</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ CRC.2c: Support Resilience Related Workforce Development</li> <li>▪ CRC.2d: Expand Heat Warning System</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ CRC.3d: Update the Public Facilities Manual</li> </ul>

# Goal CRC.1

Create Safe and Resilient Spaces for the Community

## STRATEGY CRC.1a

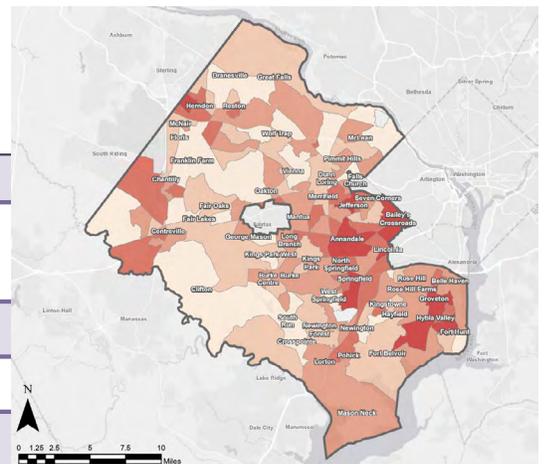
Develop Adaptation Action Areas Where Resilience Action is Prioritized

**Strategy Description:** Adaptation Action Areas (AAAs) are a land-use planning and policy tool that can be used to guide and prioritize climate adaptation implementation. AAAs may be used to identify, map, and establish locations of greatest need within Fairfax County where the county will take resilience action first. Development of the AAAs will be informed by complete analysis and technical reports, including the [Resilient Fairfax Vulnerability and Risk Assessment](#), the [Climate Projections Report](#), the [Audit of Existing Policies, Plans, and Programs](#), the county’s flood risk reduction efforts, and the [NASA Develop Urban Heat Island Effect Study](#). These reports, along with the best available science, will inform the mapping of AAAs and include consideration for: flood-prone areas, Urban Heat Islands, population vulnerability (such as [the One Fairfax Vulnerability Index](#), as pictured below), and low adaptive capacity, among other factors. Development of AAAs provides a comprehensive and cohesive approach for the county to effectively implement resilience related policies, programs, and projects.

### Climate Hazards Addressed:



<b>Lead:</b>	OEEC
<b>Partners:</b>	DCC, DEI, DEMS, DFS, DPD, DPWES, FCDOT, FCHD, FCPA, HCD, LDS, NCS, NVSWCD, OCA, One Fairfax, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial



### Implementation Actions:

i.	Identify and map potential AAAs based on climate risk and the One Fairfax Vulnerability Index. AAA considerations could include but are not limited to: flood-prone areas, Urban Heat Islands, population vulnerability, and low adaptive capacity.
ii.	Draft options for the incorporation of AAAs. Options could include but are not limited to: using AAAs during the Capital Improvement Program process to prioritize implementation of resilience projects, using AAAs to prioritize funding of Resilient Fairfax implementation, and to prioritize resilience aid and/or incentives, among others.
iii.	Present options for incorporation of AAAs for BOS approval and receive authorization to incorporate AAAs.
iv.	Prioritize implementation and engagement in AAAs. Consider piloting resilience approaches in AAAs that can be scaled up community-wide.



### Key Performance Indicators:

- Number and type of stakeholders involved in the development and operationalization of AAAs.
- Number and type of climate resilience programs, projects, and initiatives in AAAs.
- Demographics of communities in designated AAAs.
- Reduction of vulnerability to specific climate hazards in AAAs (e.g., reduction in localized flooding service requests, number of heat-related illness reports).

### Equitable Implementation:

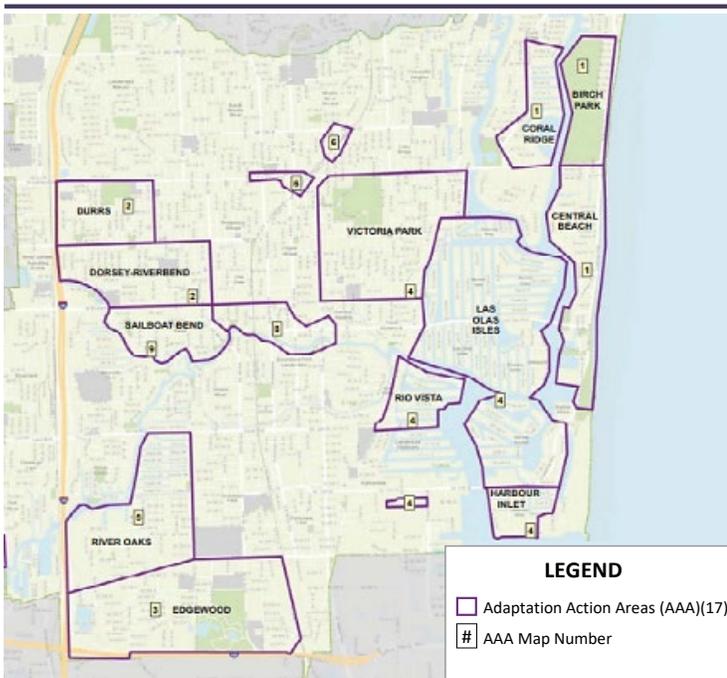
- ✓ Neighborhoods may reflect similar demographics but have different needs or desires. Consider how AAAs will incorporate community input for these decisions.
- ✓ Involve community members and organizations in the decision-making process.
- ✓ Conduct surveys or other means of collecting feedback to understand how a pilot AAA program could affect certain populations.
- ✓ Include equity factors in determining locations for AAAs.
- ✓ Leverage the Inclusive Community Engagement Framework (ICEF).



### Funding and Resource Opportunities:

- BRIC
- Community Development Block Grant Mitigation (CDBG-MIT)

### Co-Benefits:



### Case Study: Adaptation Action Areas

Fort Lauderdale, Florida updated their comprehensive plan to designate Adaptation Action Areas (AAAs) to provide the foundation for the development and implementation of adaptation measures to reduce risk to climate change impacts, such as sea level rise. AAAs are designated areas that are prioritized for infrastructure and other resilience improvements to reduce climate risk. The mapped AAAs and identified capital improvement projects within the AAAs are reviewed and updated annually by staff to inform funding needs and project prioritization.

# Goal CRC.1

## Create Safe and Resilient Spaces for the Community

### STRATEGY CRC.1b

#### Pursue Development of a Network of Resilience Hubs in Climate-Vulnerable Areas of the County

**Strategy Description:** Resilience hubs are community-serving facilities (often existing facilities) that distribute and centralize information and resources, connect residents to county assistance, support residents’ resilience to climate events, and build community capacity and connection. These facilities are sometimes upgraded to enhance their physical resilience to climatic effects, to ensure continuity of service during climate hazards. Resilience hubs are typically located in existing facilities that are trusted by community members, such as recreation centers, community centers, libraries, non-profit facilities, or faith centers. On a day-to-day basis, hubs function as a space for community gathering or events, location for trainings, and as a centralized place for community members to seek resources. Resilience hubs are most effective when there is strong partnership between the local government (the county) and community organizations and/or networks; resilience hubs should be community-led and community-serving. This strategy will explore options for development of a network of resilience hubs in the areas of Fairfax County, with a prioritization for areas with the greatest need and that are most vulnerable to climate change impacts. Resilience hubs should not be confused with “shelter” facilities, which follow specific emergency management protocols and plans. Resilience hubs help to build greater community connection and enhanced capacity to adapt and respond to climate related events.

#### Climate Hazards Addressed:



#### What Are Resilience Hubs?

Resilience Hubs are community-serving facilities augmented to support residents, coordinate communication, distribute resources, and enhance communities’ capacity to adapt to climate change. Existing community centers, libraries, and non-profit entities are among potential sites for resilience hubs.

<b>Lead:</b>	OEEC
<b>Partners:</b>	DEMS, DFS, DPD, DPSC, DPWES, FCHD, FCPA, FCPS, FMD, GIS, HCD, LDS, NCS, OCA, One Fairfax
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$\$ (\$500k - \$1 million)
<b>Existing Staff:</b>	Partial

#### Implementation Actions:

i.	Identify areas of the county where there is the greatest need and greatest benefit for resilience hubs. Utilize data sources such as Resilient Fairfax, One Fairfax data, Adaptation Action Areas, and others to determine these locations.
ii.	Inventory existing network of centers that could serve as "resilience hubs." Prioritize trusted locations within community, such as community centers (NCS), recreation centers (FCPA), places of worship, and non-profit facilities that provide essential services to the community. Coordinate with DEMs' identification of places to stay cool and OEEC's ESCO (Energy Service Company) work.
iii.	Compile site information to support evaluation of location for resilience hub. Consider building condition, location, transportation and access, site capacity, key climate hazards impacting that community, planned and/or required retrofits, typical operations and staffing, and other needs as identified by the community.
iv.	Conduct outreach to community organizations, nonprofits, faith groups, or other community serving groups in identified areas (CRC.2a) to begin county-community collaboration on the visioning of a resilience hub network in the community.
v.	Identify a pilot resilience hub location and work with facility managers and community partners to build out community resilience offerings.
vi.	Evaluate potential network of resilience hubs, with priority consideration to identified areas in CRC.2a and in collaboration with community partners. Consider staffing and funding needs for resilience hub implementation. As appropriate, explore establishing working groups for each resilience hub location.



**Key Performance Indicators:**

- Number of potential and actual Resilience Hub locations identified, pursued, and implemented by the county.
- Accessibility of Resilience Hubs within AAAs (e.g. travel distance, closest metro/transit, density per district).
- Number and demographics of community members served by Resilience Hubs.
- Number and type of community members aware of Resilience Hub locations and resources, measured through surveys.

**Equitable Implementation:**

- ✓ Work with communities to identify needs of vulnerable populations to ensure accessibility to resilience hubs.
- ✓ Work with communities to identify which areas of the county would benefit the most from or have greatest need for resilience hubs.
- ✓ Meet with community organizations and partners to foster collaboration and identify areas that will best serve as resilience hubs.
- ✓ Identify transportation/evacuation routes that would assist access to the hubs.
- ✓ Engage community members on what they want to see in a resilience hub.



**Funding and Resource Opportunities:**

- BRIC
- Community Development Block Grant

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL CRC.1**

<p><b>Strategy CRC.1c</b></p>	<p><b>Expand Targeted Tree Plantings</b> Build upon existing Urban Forest Management Division tree planting efforts to expand targeted tree plantings. Prioritize neighborhoods with high vulnerability as determined by One Fairfax, the Vulnerability and Risk Assessment, and Adaptation Action Area mapping (CRC.1a).</p>
<p><b>Strategy CRC.1d</b></p>	<p><b>Enhance Commercial Property Assessed Clean Energy (C-PACE) Program Outreach and Technical Assistance</b> Support utilization of the existing C-PACE program through enhanced outreach and technical assistance.</p>

# Goal CRC.2

Build Community Capacity to Understand, Be Ready For, Respond To, And Bounce Back from Climate Change Impacts

## STRATEGY CRC.2a

Provide Community Aid and Services to Alleviate Resilience Needs

**Strategy Description:** Vulnerable populations will be disproportionately impacted by climate change. There are many existing county resources that can help. However, many residents are unaware of these resources, do not know how to request services, or are hesitant to access aid. Populations experiencing homelessness may be especially exposed and in need of aid. This strategy focuses on community engagement to better connect residents to existing resilience-related support and resources, and to continue the identification of unmet needs. Meaningful engagement should center on traditionally under-served populations, expanding the work of Equity Impact Plans and One Fairfax. This strategy includes identification of community-based partners and community-specific needs, identification of pressing needs, and enhancing and streamlining access to aid from multiple county departments. This strategy will support improved preparedness and resilience of the county’s more vulnerable populations. (For education and guidance, please see strategy CRC.2b).

**Climate Hazards Addressed:**



<b>Lead:</b>	OEEC (Facilitator)
<b>Partners:</b>	CSB, DEMS, DFS, DHCD, DPWES, FCHD, FCPA, FCPS, NCS, NVSWCD, One Fairfax
<b>Timeline:</b>	Short-Term (2 years or less); Ongoing
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

**Implementation Actions:**

i.	Launch an implementation group responsible for this program. The group should leverage partners from the Resilient Fairfax planning process, and should include county agencies, community-based organizations, and community leaders who hold existing trust with vulnerable populations in Fairfax County. Work collaboratively to develop a climate resilience community engagement program, using the county's Inclusive Community Engagement Framework (ICEF).
ii.	Building upon the results of the <a href="#">Vulnerability and Risk Assessment</a> and concurrent county initiatives such as the Flood Risk Reduction Plan (Strategy CRC.3a), identify specific, pressing climate-related needs of the county’s vulnerable neighborhoods, such as areas of extreme heat exposure and recurrent flooding.
iii.	Identify how best to connect neighborhoods, residents, outdoor workers, and other vulnerable groups with existing county aid and resources. Work with community leaders, CSB, NCS, DFS, DEMS, FCHD, OPEH, NCS, and others to help ensure that awareness of available county aid is equitably reaching communities of color and low-income, older adult, unhoused, disabled, outdoor workers, and other under-served residents.
iv.	Streamline and facilitate access to existing climate hazard-related resources and assistance from numerous departments such as: flood mitigation assistance (DPWES), energy resilience for frequent power outages, air conditioning assistance during extreme temperatures (DFS), energy efficiency and other building improvements for enhanced resiliency (HCD, OEEC), sites that serve as places to stay cool (DEMS), relocation for repetitive loss properties (DPWES), and/or health and human services that can also enhance resilience to climate hazard effects (CSB, DFS, FCHD, NCS). Produce easy-to-understand, multi-lingual guides to help residents understand what aid is available and how to access it. Provide centralized physical and virtual locations for climate hazard related resources. Resilience hubs (Strategy CRC.1b) could potentially serve this purpose.



**Key Performance Indicators:**

- Type and quantity of aid applied for and distributed to community members to address resilience needs.
- Number and type of organizations involved in the provision of resilience-related support and resources.
- Number and type of touchpoints between service-aid provider and individuals in need.
- Awareness of county aid programs in the community, measured by surveys and/or application rates.

**Equitable Implementation:**

- ✓ Consider how to engage with underserved communities on a regular ongoing basis.
- ✓ Ensure a balanced understanding of community interests and concerns.
- ✓ Leverage the Inclusive Community Engagement Framework (ICEF).
- ✓ Choose times and locations that work best for a variety of different schedules.
- ✓ Use various engagement approaches based on what will include representative demographics of community members and voices of the more vulnerable populations.
- ✓ Ensure residents are given clear help (in their language of choice) for aid applications that may be confusing or difficult to navigate.



**Funding and Resource Opportunities:**

- Robert Wood Johnson Foundation grant opportunities
- Climate and Clean Energy Equity Fund

**Co-Benefits:**



**Community Partners**

Throughout the Resilient Fairfax plan development process, staff gathered recommendations for community partners, faith-based institutions, and other community organizations who may wish to participate in the implementation of this pillar’s strategies. These organizations include but are not limited to: Cornerstones, George Mason Center for Climate Change Communication, Medical Society Consortium for Climate and Health, Virginia Clinicians for Climate Action, Faith Alliance for Climate Solutions, and American Lung Association.



# Goal CRC.2

Build Community Capacity to Understand, be Ready for, Respond to, and Bounce Back from Climate Change Impacts

## STRATEGY CRC.2b Launch a Climate Resilience Education and Guidance Program

**Strategy Description:** To be successful, climate adaptation and resilience strategies require local community awareness, understanding, buy-in, and participation. Climate resilience education for the community should include guidance documents and resources for various climate-related topics such as emergency preparedness, flood mitigation, natural resource resilience, and energy resilience, among others. Education may include resources on introductory concepts of climate change, such as background on climate science and impacts on public health and safety. All educational materials will be customized for the intended audience, and their needs, to ensure materials are translated, relatable, relevant, understandable, and accessible.

### Climate Hazards Addressed:



### Fairfax County Public Schools: Get2Green Program:

The Fairfax County Public Schools Get2Green is an environmental stewardship program that provides guidance and resources to bring hands-on environmental action into classrooms and the community. The Get2Green program supports student eco-teams that engage in student-driven sustainability activities such as reducing waste, conserving energy, planting, and maintaining habitat, and tending to edible gardens.

<b>Lead:</b>	OEEC
<b>Partners:</b>	DCC, DEMS, DFS, DPWES, FCPA, FCPS, FCHD, HCD, LDS, NCS, NVRC, NVSWCD, One Fairfax
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

### Implementation Actions:

i.	Identify and engage key partners for a climate resilience education campaign, including local schools (Get2Green), community-based and environmental organizations, county departments, libraries, homeowners' associations, and other partners with existing community education programs such as OPA, FCPA, NCS, DEMS, DPWES, and NVSWCD. Engage with community leaders and residents to increase understanding and tailor educational materials to specific community needs.
ii.	Develop and deliver Climate Change 101 educational materials to Fairfax County staff and residents to provide background on climate science, climate hazards, climate mitigation, climate adaptation and resilience, and climate impacts on public health and safety.
iii.	Host a series of interagency, informational meetings in accessible neighborhood locations throughout the county. Leveraging existing programs and resources from DEMS, DPWES, and other agencies.
iv.	<b>Flood resilience guidance:</b> Develop and promote existing guidance for flood safety and resilience measures, such as elevating structures or equipment, wetproofing, dry proofing, flood insurance, and small-scale green infrastructure for property owners and operators/landlords. Any assistance will be in alignment with applicable laws and policy.
v.	<b>Heat resilience guidance:</b> Develop and promote guidance on heat safety, such as safe thresholds for outdoor workers, outdoor activities, and youth sports, guidance for those experiencing homelessness during extreme heat, and heat resilience retrofits, such as cool roofs, cool pavements, trees, building orientation and design, and energy efficiency.
vi.	<b>Wind, storm, and energy resilience guidance:</b> Develop and promote existing guidance for severe storm, wind, and energy resilience (power outage prevention) retrofits, such as solar plus storage, back-up power, infrastructure hardening, tree trimming to prevent tree falls on power lines, and pre-storm actions.
vii.	<b>Agricultural resilience guidance:</b> Connect local farmers and landowners to education and funding opportunities for regenerative and resilient agricultural practices.



**Key Performance Indicators:**

- Amount of funding allocated to community education and guidelines on resilience.
- Number and type of organizations involved in community education and outreach for Resilience Fairfax activities and programs.
- Number of views of guidance documents and/or outreach materials.
- Number and type of educational and guidance materials, events, and learning opportunities available.
- Number of residents using practices recommended through this strategy (i.e. number of flood insurance holders over time).
- Community understanding of resilience practices, evaluated through community outreach and/or surveys.

**Equitable Implementation:**

- ✓ Consider how this information will be made available to all residents.
- ✓ Consider how the county can strategically identify partners that will reach a diverse audience.
- ✓ Partner with community-based organizations and entities that are on the ground and connected to underrepresented communities.
- ✓ Develop education materials that are easily understood, available online and in a designated location, and available in multiple languages.



**Funding and Resource Opportunities:**

- EPA Environmental Education Grants
- NOAA Environmental Literacy Grants

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL CRC.2**

<b>Strategy CRC.2c</b>	<p><b>Support Resilience-Related Workforce Development</b> Pursue workforce development initiatives to develop resilience-related construction and contracting skillsets, such as pervious paver installation, solar-plus-storage installation, green infrastructure installation, and other skillsets.</p>
<b>Strategy CRC.2d</b>	<p><b>Expand Heat Warning System</b> Promote early warning system to warn community members of upcoming heat events. Explore tiered warning system approach for heat. Promote and leverage existing Fairfax Alerts, National Weather Service, and other warning systems.</p>

# Goal CRC.3

Integrate Climate Hazard and Resilience Considerations into Development Regulations, Processes, and Retrofits

## STRATEGY CRC.3a

Pursue and Implement a Flood-Risk Reduction Plan for the Fairfax County Community

**Strategy Description:** This strategy aligns with and advances the “Flood Risk Reduction Plan” recently initiated by DPWES. This strategy is focused on reducing flooding risk that threatens the health, safety, and welfare of county residents in their neighborhoods. (For flooding of county government facilities, please see Strategy RIB.1b). The Fairfax County community experiences multiple types of flooding, including urban, inland, riverine, and coastal flooding, each of which requires a customized approach. Additionally, flood risk reduction requires action for both new and existing development. Any changes made to county policies and standards apply only to new development or re-development (see Strategy RIB1.a). For existing neighborhoods with flooding issues, retroactive physical capital improvement projects may be needed. Across all approaches, projected climate conditions and impacts should be factored into flood risk reduction efforts.

### Climate Hazards Addressed:



<b>Lead:</b>	DPWES, LDS
<b>Partners:</b>	DCC, DEMS, DPD, FCPA, OEEC, One Fairfax
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$\$ (\$500k - \$1 million)
<b>Existing Staff:</b>	Partial



### Implementation Actions:

<b>i.</b>	(In progress): Initiate plan. Complete project initiation tasks, including establishment of: an interagency workgroup, flood risk reduction approach, community engagement and equity approach, benchmarking against other jurisdictions, and draft levels of service.
<b>ii.</b>	(In progress): Complete detailed analysis on existing and future flooding issues. Quantify and categorize existing and future flooding issues in the county. For future flooding, utilize the latest accepted climate projections.
<b>iii.</b>	(In progress): Complete detailed analysis on existing flood-related policies, standards, and processes, building upon work completed through the Resilient Fairfax Audit and update regularly. Consider a lens of future climate projections.
<b>iv.</b>	Draft flood risk reduction recommendations, including potential updates to county policies, design standards and guidelines, ordinances, processes, and capital projects (see Strategy CRC.3c).
<b>v.</b>	Identify and prioritize capital projects for flood alleviation. The identification of areas in need of flood alleviation capital projects may be facilitated through the Adaptation Action Area process (see Strategy CRC.1a). The prioritization of capital projects may be facilitated through a revised Capital Improvement Program (CIP) process (see Strategy RIB.1a).
<b>vi.</b>	If applicable and approved by the BOS, implement approved updates.

*Note: For flood-related upgrades to county government facilities, please see Strategy RIB.1b. For small-scale property owner flood-proofing guidance, please see Strategy CRC.2b. For Adaptation Action Areas, please see Strategy CRC.1a. For Capital Improvement Program (CIP) process updates please see Strategy RIB.1a. For updates to County Codes, see CRC.3c.*



**Key Performance Indicators:**

- Quantity and type of flooding issues in the county, organized by demographics of communities most affected.
- Number, type, and geographic distribution of public engagement activities during plan development, project identification, and project implementation.
- Number, type, and location of flood risk reduction capital improvement projects planned, budgeted for, and implemented.
- Percent of flood-vulnerable residences with flood insurance over time.
- Number of county flood risk reduction projects completed.
- Percent of structural flood-related service requests out of total number of structures in the county.

**Equitable Implementation:**

- ✓ Consider that well-meaning development regulations can sometimes have negative unintended consequences on certain populations.
- ✓ Provide a robust public engagement process for changes to development regulations, that seeks to collect input from those that are often underrepresented.
- ✓ Assess development regulations/restrictions in residential areas to ensure that regulations do not result in displacement of existing community members.



**Funding and Resource Opportunities:**

- BRIC
- Virginia Community Flood Preparedness Fund
- Flood Mitigation Assistance

**Co-Benefits:**



**Huntington Levee**

The Huntington Levee project was a \$41.2 million dollar project completed in June 2019. A levee and pumping station were constructed to protect homes and property in the Huntington neighborhood from flooding. The project mitigates flooding due to tidal surges from to Potomac River and flash flooding from the Cameron Run Watershed. The project included the development of approximately 4,800 linear feet of recreational trails along the top of the levee and around the ponding area for public recreation and enjoyment.

# Goal CRC.3

Integrate Climate Projections and Resilience Considerations into Development Regulations, Processes, and Retrofits

## STRATEGY CRC.3b

Encourage Heat-Resilient Design, Development, Upgrades, and Practices

**Strategy Description:** Extreme heat is a pressing issue with increasing impacts on both public health and infrastructure. This strategy is focused on encouraging new and existing development to consider heat-mitigation measures, including nature-based solutions, in their design, construction or redevelopment, and operations and maintenance. Guidance materials, potential incentive programs, and integration of heat-related climate risk into development review processes can mitigate the impact of extreme heat to residents, particularly more vulnerable populations. A comprehensive approach can better prepare neighborhoods for more extreme and frequent heat conditions.

### Climate Hazards Addressed:



<b>Lead:</b>	EDA, LDS, OEEC
<b>Partners:</b>	DCC, DEMS, DPD, FCDOT, FCHD, FCPA, NCS, OCA, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial



### Implementation Actions:

<b>i.</b>	Complete detailed analysis to identify a suite of applicable cooling measures for priority heat islands as identified by the Resilient Fairfax planning process and NASA Develop’s Urban Heat Island assessment. Example cooling measures could include but are not limited to cool roofs and cool pavements, targeted tree canopy, green infrastructure, and green space for evapotranspiration, building and site orientation for heat mitigation, heat-mitigating building materials and efficiency, among others.
<b>ii.</b>	Complete detailed analysis of existing standards and processes. Identify opportunities to update existing standards and processes to consider heat mitigation. Examples include heat-specific updates to urban design guidelines, Sustainable Development Policy for Capital Projects, and guidelines relating to trees and impervious coverage limitations.
<b>iii.</b>	Develop design guidelines that are a practical reference for planners, building developers, and other stakeholders with influence in design/construction of projects in Fairfax County. The guidelines will serve as a resource for public and private development (both new construction and retrofits). The design guidelines will provide guidance on how to evaluate the building or site/landscape for heat vulnerabilities and offer guidance/considerations on cooling measures and opportunities to enhance resilience. Guidelines should support the use of native plantings when feasible and effective. These guidelines can build on the use of Urban Design Guidelines for Commercial Revitalization Districts and Areas and certain Mixed-use Centers as designated on the Fairfax County Comprehensive Plan including the Tysons Urban Center and the Reston Transit Station Areas.
<b>iv.</b>	Identify additional financing or incentive options. Highlight and align with existing financing and incentive programs that can be used for heat mitigation retrofits or cooling measures, such as C-PACE (see Strategy CRC.1d) or potential green infrastructure incentive programs (see Strategy AE.2a).



**Key Performance Indicators:**

- Community sentiment towards usability and use of guidelines.
- Number of developments and building retrofits with heat mitigation measures by location and demographics of communities affected.
- Number of heat-related health stresses and illnesses in AAAs relative to average county incidents.
- Developer and community awareness of heat risk reduction design guidelines and considerations (e.g., surveys).

**Equitable Implementation:**

- ✓ Identify which types of assistance and guidelines will best support retrofits in heat-vulnerable neighborhoods.
- ✓ Minimize impacts of additional review and requirements to help ensure continued affordability.
- ✓ Use best practices for inclusion of retrofits that can be applied to low-income housing projects to include best practices (e.g., increase in tree cover/street trees, pervious surface requirements).
- ✓ Consider offering density incentives for added heat-mitigating features, to offset affordability of units with these features.



**Funding Opportunities:**

- General Fund (salaries)

**Co-Benefits:**



**Urban Design Guidelines**

Urban Design Guidelines provide detailed urban design and streetscape guidance intended to be used by citizens, developers, designers, Fairfax County staff, and the Fairfax County Planning Commission and Board of Supervisors when proposing, designing, or reviewing development. Fairfax County has developed and published several Urban Design Guidelines, including guidelines from Commercial Revitalization Districts and Areas, as well as district areas guidelines such as Richmond Highway and Annandale. Design guidelines include many elements that support a resilience county, such as inclusion green infrastructure, urban park design, and stormwater management.



# Goal CRC.3

Integrate Climate Projections and Resilience Considerations into Development Regulations, Processes, and Retrofits

## STRATEGY CRC.3c

Pursue Amendments to the Zoning Ordinance and Other County Code Chapters to Enhance Community Resilience

**Strategy Description:** There are several County Codes that guide development and land use in Fairfax County, including the Zoning Ordinance, Stormwater Management Ordinance, Chesapeake Bay Preservation Ordinance, Tree Conservation Ordinance, and the Subdivision Ordinance, among others. Incorporating resilience into these County Codes helps ensure that new development can withstand a changing climate. This strategy pursues potential amendments to the Zoning Ordinance and other County Code chapters to enhance climate resilience. The strategy will build upon opportunities identified by the [Resilient Fairfax Audit](#). This strategy connects to other strategies in the Implementation Roadmap, such as potential updates to the Comprehensive Plan (IAP.1a), the Countywide Strategic Plan (IAP.1b), the Flood Risk Reduction Plan (CRC.3a), Heat Resilient Design Guidelines (CRC.3b), the Public Facilities Manual (CRC.3d), the Capital Improvement Program (RIB.1a), and the potential Consolidated Natural Resources Management Plan (AE.1a). Amendments to County Code associated with Resilient Fairfax will be aligned with other ongoing, scheduled, considered, and planned amendments.

### Climate Hazards Addressed:



<b>Lead:</b>	DPD, DPWES, LDS, OEEC
<b>Partners:</b>	DCC, DEMS, FCHD, FCPA, NCS, OCA, UFMD
<b>Timeline:</b>	Long-Term (5-8 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

### Implementation Actions:

i.	OEEC will identify regulatory document sections that are relevant to climate hazard resilience and identify opportunities to address resiliency. Topics may include but are not limited to limitations on impervious coverage and pavement, parking requirements ("Parking Reimagined"), density and open space, tidal flooding setbacks, stormwater and floodplain regulations, environmental site assessments, landscaping requirements (including trees), land use definitions for resilience-related uses, and energy production and storage. Amendments will be aligned with amendments from related initiatives such as the Flood Risk Reduction Plan (CRC.3a), CECAP, and Fairfax Green Initiatives.
ii.	Lead and partner agencies, in coordination with OEEC, will aid in the analysis of identified regulatory changes. Specifically, LDS will aid any amendments related to site plans, parking, floodplain requirements, and landscaping and screening provisions. DPWES will aid in any amendments relating to floodplains and flood mitigation. The Urban Forestry Management Division will aid in any amendments relating to trees.
iii.	Lead and partner agencies, in coordination with OEEC, will bring any proposed amendment topics to the Board for consideration. If supported, the amendments will be added to the agency's work program.
iv.	As authorized by the Board, develop amendments to the relevant documents. All proposed amendments will be drafted and revised in coordination with applicable stakeholder groups, Boards, Authorities, and Commissions (BACs), and the public.
v.	Agencies will proceed through the amendment process, to include outreach, draft amendments, and public hearings.



**Key Performance Indicators:**

- Number and description of county code amendments authorized and adopted.
- Number and description of stakeholder and community engagement opportunities during the amendment process.

**Equitable Implementation:**



- ✓ Well-meaning regulations can have negative unintended consequences on certain populations. Consider whether any amendments negatively impact climate conditions in other areas.
- ✓ Conduct a robust public engagement process beyond the public hearings for the County Code amendment processes, seeking to collect input from those that are often underrepresented. Engage stakeholders during times and with platforms that are convenient to those most affected. Use best practices for collecting input from all stakeholders including various platforms translated into multiple languages.
- ✓ Leverage the Inclusive Community Engagement Framework (ICEF).
- ✓ Assess regulations to ensure that regulations do not result in displacement of existing community members.
- ✓ Ensure county codes do not exclude multi-generational families, single-earner families, etc. on the premise of implementing a climate resilience measure.
- ✓ Ensure zoning does not exclude certain populations from accessing critical facilities, including public service facilities, parks, recreation, and natural resource areas. Ensure existing amenities are maintained in vulnerable areas.



**Funding and Resource Opportunities:**

- BRIC
- Community Development Block Grant Mitigation (CDBG-MIT)

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL CRC.3**

**Strategy CRC.3d**

**Update the Public Facilities Manual**

Pursue updates to the Public Facilities Manual to consider climate projections and enhance resilience. This strategy may occur concurrently with County Code and plan amendments depending on breadth and scope. Please see Strategy CRC.3c.

## Resilient Infrastructure and Buildings Implementation Roadmaps

### PILLAR 3: RESILIENT INFRASTRUCTURE AND BUILDINGS (RIB):

The Resilient Infrastructure and Buildings pillar aims to ensure that the infrastructure and buildings in Fairfax County can withstand climate impacts, keep residents safe, reduce service disruptions, and improve countywide resilience. This pillar includes embedding resilience considerations into infrastructure decisions, so that new and upgraded infrastructure are ready for a changing climate. It advocates for the safety of our buildings, accessibility of the transportation network, and reliability of our critical infrastructure. These actions help us maintain key services and keep residents safe.

#### Resilient infrastructure and buildings:

- Can withstand extreme temperatures, flooding, and severe storms
- Are built and prepared for future conditions
- Are energy-resilient, energy efficient, and leverage diverse and clean energy sources with backup power
- Support safe movement to jobs, homes, critical services, and other points of interest

In addition to **buildings**, this pillar includes enhancing resiliency of critical infrastructure and facilities in the **transportation, water, energy, communications, and public services** sectors.

<span style="font-size: 2em; font-weight: bold; margin-right: 20px;">RIB</span> <span style="font-weight: bold;">Resilient Infrastructure and Buildings Strategies:</span>	
<b>Goal RIB.1:</b> Incorporate Climate into County Infrastructure Decisions	<b>Goal RIB.2:</b> Advocate for Infrastructure Resilience Outside of County Control
<p><i>Priority Strategies:</i></p> <p>RIB.1a Update the Capital Improvement Program Process to Include Climate Resilience Considerations</p> <hr style="width: 30%; margin-left: 0;"/> <p>RIB.1b: Enhance Flood Resilience of County Government Buildings and Other Facilities</p>	<p><i>Priority Strategies:</i></p> <p>RIB.2a: Advocate and Partner for Energy Resilience</p>
<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ RIB.1c: Enhance Energy Resilience for County Buildings and Facilities</li> <li>▪ RIB.1d: Enhance Heat Resilience for County Buildings and Facilities</li> <li>▪ RIB.1e: Update Procurement Practices for Resilience</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ RIB.2b: Advocate for Resilience Updates to the Building Code</li> <li>▪ RIB.2c: Advocate and Partner with Transportation Agencies to Support Transportation Resilience</li> </ul>

# Goal RIB.1 Resilient County Government Buildings and Infrastructure

## STRATEGY RIB.1a Update Capital Improvement Program Process to Include Climate Resilience Considerations

**Strategy Description:** The Capital Improvement Program (CIP) is Fairfax County’s five-year roadmap for creating, maintaining, and funding present and future capital infrastructure requirements. The CIP guides the investment in and planning of capital projects. Climate hazards such as increasingly severe flooding, extreme heat, and severe storms can impact the lifespan, function, and maintenance costs of capital facilities. Additionally, capital projects that address climate vulnerabilities may be increasingly needed. This strategy promotes revisions to the CIP evaluation and project prioritization process to better integrate climate resilience into infrastructure planning and development. The intended results of this strategy are to A. ensure that capital facilities planned now can withstand future climatic conditions, and B. prioritize resilience-related capital projects, (such as stormwater infrastructure upgrades) that address top vulnerabilities. Prioritization of these considerations will help the county ensure the long-term safety and resiliency of the Fairfax County community.

### Climate Hazards Addressed:



<b>Lead:</b>	DMB, DPWES, OEEC
<b>Partners:</b>	DEMS, DPD, DPWES, FCDOT, FCPA, OCA, One Fairfax, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$ (\$100k - \$500k)
<b>Existing Staff:</b>	Partial

### Implementation Actions:

i.	Review the existing CIP process to identify revisions needed to embed consideration of: climate change projections, potential risks from climate hazards, and resilience enhancements for the county’s infrastructure and facilities. Resilience enhancements should consider ways a project could enhance overall community resilience. Explore screening criteria and identify selection criteria for projects that support the county’s resilience goals. Identify pathways to prioritize implementation and funding for climate resilience projects.
ii.	Build a project list of identified resilience projects, including those identified in the Flood Risk Reduction plan and the Hazard Mitigation Plan. Integrate One Fairfax and build upon the completed analysis of the Vulnerability and Risk Assessment to prioritize projects that support the needs of vulnerable populations and/or address top climate risks to the county.
iii.	Partner with staff responsible for capital improvement evaluation, project management, and implementation to draft proposed revisions.
iv.	Proceed through revision and approval processes to encourage capital projects that mitigate risk and build resilience to future projected extreme heat, heavy precipitation, coastal flooding, and severe storms. Coordinate with the department responsible for asset management or use in advance of project approval to ensure there are no adverse impacts.
v.	Monitor and evaluate CIP implementation results and project outcomes. Adjust process and/or prioritization criteria if needed.



**Key Performance Indicators:**

- Number of CIP projects that address a climate vulnerability (e.g., flood risk reduction projects).
- Percent of CIP projects that consider long-term resilience of the project to projected climate conditions.
- Percentage of resilience-related CIP projects located in AAAs or vulnerable areas.
- Amount of funding dedicated to resilience-focused or resilience-related CIP projects.

**Equitable Implementation:**

- ✓ Consider how to factor needs of underserved communities into the CIP process.
- ✓ Identify how the county can monitor the effects of proposed projects on marginalized populations.
- ✓ Consider how to maintain the integrity and fabric of communities that are seeing significant impacts from flooding due to their location, while protecting them from potential risk and loss during storm events.
- ✓ Prioritize and distribute projects to communities most vulnerable to climate change.



**Funding and Resource Opportunities:**

- BRIC
- Hazard Mitigation Grant Program (HMGP)

**Co-Benefits:**



**Case Study: VDOT Design Standards Consider Climate Change and Coastal Storms**

The Virginia Department of Transportation (VDOT) issued new design standards for bridge structures that aim to make them more resilient to climate change impacts. The standards account for sea level rise, water salinity, temperature changes, and rainfall intensity when constructing and maintaining bridges. The guidelines identify adaptive measures, such as building certain bridges higher and longer to account for rising seas and more intense rains. The department is also developing new standards to make roadways more resilient to climate change.

# Goal RIB.1

## Resilient County Government Buildings and Infrastructure

### STRATEGY RIB.1b

#### Enhance Flood Resilience of County Government Buildings and Other Facilities

**Strategy Description:** Fairfax County's local government buildings should be flood-resilient to ensure continuity of public services and long-term durability during more frequent flooding events. The county has implemented best practice flood resilience measures for certain county facilities. Other existing facilities may be in need of flood resilience enhancements and protection. This strategy would include prioritization of local government facilities that are flood-vulnerable, interagency collaboration to address those vulnerabilities, and improvements to county processes for reporting and tracking such issues long-term. Flood resilience actions could include but are not limited to: elevating or relocating critical infrastructure, flood proofing measures, stormwater management improvements, and improving accessibility.

**Climate Hazards Addressed:**



**Executive Orders:** Complementing this local government strategy, Virginia Governor Ralph Northam issued two executive orders that support resilience at the state level. Executive Order 24 (2018) directed the state to take a range of actions to plan for flooding and sea level rise, including developing a Virginia Coastal Resilience Master Plan and adopting an updated freeboard standard for state-owned properties. Executive Order 45 (2019) created the Virginia Flood Risk Management Standard which increased freeboard requirements for state-owned buildings in floodplains.

<b>Lead:</b>	OEEC (Facilitator)
<b>Partners:</b>	DEMS, DPWES, FCPA, FCPS, FMD, HCD, and other departments as relevant to specific facilities.
<b>Timeline:</b>	Medium-term (2-5 years)
<b>Cost:</b>	\$\$ (\$100K - \$500k)
<b>Existing Staff:</b>	Partial

**Implementation Actions:**

- i. Building upon preliminary work conducted during the Resilient Fairfax process, complete an inventory of county buildings and facilities with current and potential future flooding vulnerabilities.
- ii. Categorize building vulnerabilities for appropriate resolution. Example categories could include: those requiring routine maintenance only (FMD, FCPA, FCPS, HCD), those requiring significant capital improvements (agencies' Capital Facilities entities), and those requiring stormwater management improvements on site (DPWES - Stormwater).
- iii. Prioritize buildings and facilities for flood resilience upgrades for implementation through appropriate avenues, such as maintenance work orders or the CIP. CIP upgrades should be coordinated with Strategy RIB.1a.
- iv. Review current processes for internal county reporting of flooding issues and/or damage to county buildings. Reporting should include both repetitive small-scale flooding and larger-scale flooding events. This process review should include DEMS, FMD, DPWES, FCPA, FCPS, HCD, and designated facilities managers. Clarify roles, responsibilities, and standard procedures. Identify opportunities for streamlining, consolidated reporting, and improved data collection consistency.
- v. Incorporate findings into facility reporting and improvement processes. Educate staff to provide improved understanding and use of proper reporting systems for each flooding type. These reporting systems may include the Emergency Data Gathering Repository (EDGR), DPWES service requests, and facility maintenance requests.



**Key Performance Indicators:**

- Number of county government facilities and buildings inventoried for flood vulnerabilities.
- Percentage of facilities identified with flooding-related vulnerabilities, and percentage with improvements completed.
- Locations of and demographics served by buildings in need of flood vulnerability improvements.
- Number of staff trained on building vulnerability reporting systems.

**Equitable Implementation:**

- ✓ Consider buildings that provide critical services to vulnerable groups.
- ✓ Insert a prioritization factor that uses demographics of the community. Low-income neighborhoods may be more reliant on community centers and improving the accessibility for critical infrastructure will be instrumental.



**Funding and Resource Opportunities:**

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance Grant

**Co-Benefits:**



**ADDITIONAL STRATEGIES FOR GOAL RIB.1**

<b>Strategy RIB.1c</b>	<p><b>Enhance Energy Resilience for County Buildings and Facilities</b>                  Enhance the energy resilience of county-owned facilities, particularly new facilities, through strategies such as increasing the availability of on-site back-up power (prioritizing clean power when feasible), elevating equipment, hardening infrastructure, creating energy redundancy, and establishing back-up communications. Coordinate with OEEC’s ESCO work.</p>
<b>Strategy RIB.1d</b>	<p><b>Enhance Heat Resilience for County Buildings and Facilities</b>                  Include consideration of heat mitigation techniques for new and renovated county facilities, such as heat-resilient trees and shading, energy efficiency and ventilation, cool roofs, passive cooling, and heat-resilient building orientation and materials. Pursue these updates through the CIP process (Strategy RIB.1a) or through resilience-related updates to the Sustainable Development Policy for Capital Projects, as appropriate.</p>
<b>Strategy RIB.1e</b>	<p><b>Update Procurement Practices for Resilience</b>                  Project scope descriptions for county procurement and Architecture/Engineering contracts should maximize the inclusion of construction methods and design elements that maximize resilience, such as porous material installation, green infrastructure implementation, wetland restoration, and solar plus storage design and construction.</p>

# Goal RIB.2

Advocate for Infrastructure Resilience Outside of County Control

## STRATEGY RIB.2a

Advocate and Partner for Energy Resilience

**Strategy Description:** Energy infrastructure (i.e., the electricity grid and natural gas infrastructure systems) can be affected by climate change impacts, including extreme storms, flooding, and heat. These impacts can cause service disruptions and cascading effects across many sectors. Power outage impacts were identified as a top risk in the [Resilient Fairfax Vulnerability and Risk Assessment](#). While Fairfax County has limited ability to directly address energy infrastructure, opportunities have been identified for Fairfax County to continue and expand engagement and coordination with energy utilities, including Dominion Energy and NOVEC (Northern Virginia Electric Cooperative). Fairfax County can also promote energy resilience enhancements by developing an Energy Assurance Plan, which would consider a community’s energy profile, providers, and critical facilities. Through advocacy and partnership, Fairfax County can support greater energy resilience for the community, helping to limit energy disruption and improve energy reliability.

### Climate Hazards Addressed:



<b>Lead:</b>	OEEC
<b>Partners:</b>	DEI, DEMS, DPD, DPSC, OCA
<b>Timeline:</b>	Ongoing
<b>Cost:</b>	\$\$ (\$100k - \$500K)
<b>Existing Staff:</b>	Yes

### Implementation Actions:

i.	Continue coordination with the State Corporation Commission to support statewide and regional efforts to improve energy resilience through distributed energy resources, undergrounding, improved grid reliability, and islanding capabilities while maintaining energy affordability.
ii.	Continue coordination with energy utilities, including Dominion Energy, NOVEC, Washington Gas, and Columbia Gas, to support consideration of climate hazards in new and/or upgraded energy infrastructure, and to advocate for continued energy resilience enhancements. Where applicable, advocate for strategies such as undergrounding and energy infrastructure hardening.
iii.	Identify opportunities for implementation of distributed energy resources, such as renewables (i.e. solar), back-up power, and energy storage. Identify priority locations for siting distributed energy resources, with consideration for vulnerable populations, community-serving facilities, emergency operation centers, and other critical facilities. As use of distributed energy matures, monitor the community for opportunities for microgrid applications for greater redundancy.
iv.	Evaluate options for development of an Energy Assurance Plan, either at the county or state level, to enhance preparedness for climate hazard events and improve energy resilience.



**Key Performance Indicators:**

- Number, length, and geographic distribution of power outages in the county.
- Number of DER sites identified and implemented, tracked over time, including the percentage of DER programs supporting vulnerable communities and/or within AAAs.
- Number of coordination meetings with utilities and/or state regulators.

**Equitable Implementation:**



- ✓ Consider which programs and policies would best support needs of vulnerable communities and ensure access to energy during climate change related impacts.
- ✓ Consider how to best advocate for all residents, especially vulnerable communities.
- ✓ Ensure that the Energy Assurance Plan considers energy needs of the most vulnerable populations.
- ✓ Prioritize implementation of renewables, and storage in low-income communities.
- ✓ Identify funding options to support upfront costs to vulnerable communities in the future.



**Funding and Resource Opportunities (for future energy resilience projects):**

- BRIC
- Community Development Block Grant State Program

**Co-Benefits:**



**What are distributed energy resources?**

Distributed energy resources (DER) are small scale electricity generation and storage technologies that provide energy capacity where needed. DER systems are typically less than 10 megawatts of power and can be either connected to the local power grid or stand alone from the power grid. DER includes a range of technologies such as wind turbines, solar photovoltaics, natural gas generators, battery energy storage, and fuel cells.



**ADDITIONAL STRATEGIES FOR GOAL RIB.2**

<b>Strategy RIB.2b</b>	<p><b>Advocate for Resilience Updates to the Building Code</b> Continue advocating for updates to the Virginia Statewide Building Code to enhance resilience to climate hazards for new buildings.</p>
<b>Strategy RIB.2c</b>	<p><b>Advocate and Partner with Transportation Agencies to Support Transportation Resilience</b> Support transportation infrastructure managers such as WMATA, VDOT, FCDOT and others to advocate for climate adaptive measures for transportation infrastructure, including roadways and public transit. Resilience measures may include flood mitigation upgrades, energy resilience retrofits, shaded transit stops, green bus stops, seating, cool pavements, or alternate paving materials.</p>

## Adaptive Environments Implementation Roadmaps

### PILLAR 4: ADAPTIVE ENVIRONMENTS (AE):

The Adaptive Environments pillar focuses on protection and restoration of the county's natural environments to enhance resilience and protect biodiversity. Adaptive Environments improve the county's overall resilience to climate impacts by supporting ecosystems' ability to naturally mitigate risks and provide ecosystem services. When ecosystems are healthy and protected, they are better able to provide critical services that support county-wide resilience. For example, wetlands, thriving stream valley parks, and green infrastructure are able to naturally absorb excess flood waters. Living shorelines are able to naturally absorb coastal storm surge energy along the Potomac, providing protection to the communities behind the shores. Tree canopies and green spaces provide a localized cooling effect from heat through shade and evapotranspiration.

#### Adaptive Environments in Fairfax include:

- Green infrastructure that enhances neighborhood resilience to flooding and heat
- Natural resources and environments that are thriving, biodiverse, accessible to the public, and able to provide ecosystem services and natural resilience
- Environmentally sensitive areas that are protected and conserved
- Natural resources planning that considers future climate conditions

<span style="font-size: 2em; font-weight: bold; margin-right: 20px;">AE</span> <b>Adaptive Environments Strategies:</b>	
<b>Goal AE1:</b> Protect Natural Resources that Enhance Resilience	<b>Goal AE2:</b> Restore Damaged Areas Through Nature-Based and Natural Solutions
<p><i>Priority Strategies:</i></p> <p>AE.1a: Develop a Consolidated Natural Resources Management Plan</p> <hr style="width: 30%; margin-left: 0;"/> <p>AE.1b: Survey and Protect Areas that Provide Natural Resilience Benefits</p>	<p><i>Priority Strategies:</i></p> <p>AE.2a: Pursue Green Infrastructure Projects that Provide Climate Resilience Benefits</p>
<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ AE.1c: Update Provisions for Conservation Easements</li> <li>▪ AE.1d: Integrate Climate Change Considerations into Urban Forestry Program</li> </ul>	<p><i>Additional Strategies:</i></p> <ul style="list-style-type: none"> <li>▪ AE.2b: Support Continued Stream Corridor Restoration</li> <li>▪ AE.2c: Support Continued Urban Reforestation</li> <li>▪ AE.2d: Explore Living Shoreline Opportunities</li> <li>▪ AE.2e: Restore Wetlands and Floodplains</li> <li>▪ AE.2f: Explore Regenerative Agriculture Opportunities</li> </ul>

# Goal AE.1

## Protection: Protect Natural Resources That Enhance Resilience

### STRATEGY AE.1a

#### Develop a Consolidated Natural Resources Management Plan

**Strategy Description:** A consolidated natural resources management plan will allow the county to more comprehensively plan for and manage its numerous natural resources, including tree canopies and forests, parkland and conserved land, stream corridors and valleys, water bodies, shorelines, wetlands, green infrastructure, critical habitats, and other natural resources. Currently, these natural resources are managed and planned in numerous separate processes, policies, and programs, which renders it difficult for the county to manage our natural resources as an interconnected, integrated, and overarching system. Climate change impacts, such as changing precipitation patterns and increasing temperatures, will affect ecological systems’ integrity and ability to provide ecosystem services. A comprehensive natural resources management plan will enable the county to plan with a systems-level approach, include climate change projections into planning and management decisions, and identify needed measures to improve ecosystem resilience. This strategy will fold together the county’s existing natural resource management related plans, including those managed by DPD, FCPA, NVSWCD, DPWES Urban Forestry Division, and other applicable departments. The natural resources management plan should cover all of Fairfax's natural assets,

**Climate Hazards Addressed:**



<b>Lead:</b>	FCPA, NVSWCD
<b>Partners:</b>	DPD, DPWES, OEEC, One Fairfax, UFMD
<b>Timeline:</b>	Long-Term (5-8 years)
<b>Cost:</b>	\$\$\$ (\$500k - \$1 million)
<b>Existing Staff:</b>	Partial

consider climate change impacts to the resources and biodiversity, include invasive species management and consideration of climate-resilient species, identify measures to mitigate risk, and develop management actions to increase resource resilience. The natural resources management plan will provide clear guidance to county staff that manage natural resource assets. Guidance from the natural resources management plan should be integrated into applicable county plans and ordinances to facilitate implementation.

**Implementation Actions:**

<b>i.</b>	Following authorization by applicable Boards (Board of Supervisors, Park Authority Board, and NVSWCD Board), create a working group inclusive of all county departments and entities that oversee and manage the existing natural resource plans and/or enforce related natural resource policies and ordinances.
<b>ii.</b>	Building upon the Resilient Fairfax Audit and VRA, identify A. applicable existing natural resource-related plans that should be consolidated into and updated through a consolidated Natural Resources Management Plan, B. related natural resource policies and ordinances that need to be aligned with such plans, such as the Chesapeake Bay Preservation Ordinance, the Tree Conservation Ordinance, Wetlands Zoning Ordinance, and others, and C. new plan sections that should potentially be added, such as a Shoreline Management Plan.
<b>iii.</b>	Create a work plan for creation of the Natural Resource Management Plan, including schedule, tasks, responsibilities (including leads for each section), coordination system, and budget.
<b>iv.</b>	Develop a draft consolidated Natural Resource Management Plan that folds together existing county natural resource management plans, incorporates climate change projections and consideration for climate change impacts, and identifies measures needed to protect and enhance ecosystem resilience. Align this plan with related County Code updates (CRC.3c), plan updates (IAP.1a, IAP.1b, IAP.1c), Adaptation Action Areas (CRC.1a), the Flood Risk Reduction Plan (CRC.3a), and other natural resource strategies (AE.1b-d, AE.2a-f).
<b>v.</b>	Lead and partner agencies will bring the draft plan forward through the public hearing process, including outreach and public hearings prior to Board consideration of adoption. Relevant entities such as the Wetlands Board, the Chesapeake Bay Exception Review Committee, the Tree Commission, EQAC, and others will be consulted.



**Key Performance Indicators:**

- Number and type of previously separate plans incorporated into the Consolidated Natural Resource Management Plan.
- Progress towards completing plan consolidation (measured against work plan).
- Number and type of departments and organizations involved in plan development.

**Equitable Implementation:**

- ✓ Well-meaning regulations can have negative unintended consequences on certain populations. Consider if measures identified in the natural resource management plan could negatively impact vulnerable communities and identify ways to ensure vulnerable populations are able to enjoy benefits provided by natural areas.
- ✓ Consider access to natural areas for low-income neighborhoods so the ecosystems benefits that come from these areas are equitably distributed.
- ✓ Leverage the Inclusive Community Engagement Framework for community outreach during plan development.



**Funding and Resource Opportunities:**

- BRIC
- National Fish and Wildlife Foundation
- Small Watershed Grants Planning and Technical Assistance

**Co-Benefits:**



**Tree Planting:**

Fairfax County’s tree canopy covers more than 50% of the county. To protect and maintain this tree canopy, the county supports numerous tree preservation, management, and planting programs. For example, the Fairfax County Urban Forest Management Division works to protect the vitality of the urban forest through development plan review to maximize opportunities to preserve trees, pest management to detect threats to the County’s urban forests, and through public outreach to foster awareness and support for tree planting and preservation. UFMD also has a pilot program with Casey Trees to plant trees on residential properties in vulnerable neighborhoods, as identified by the [One Fairfax Vulnerability Index](#). Additional tree planting initiatives, seedling sales, and assistance are provided by Fairfax County Park Authority (FCPA) and Northern Virginia Soil and Water Conservation District (NVSWCD), among others.

# Goal AE.1

## Protection: Protect Natural Resources That Enhance Resilience

### STRATEGY AE.1b

#### Survey and Protect Areas that Provide Natural Resilience Benefits

**Strategy Description:** Healthy natural lands and environmentally sensitive areas are critical to the long-term resilience of Fairfax County. These areas, such as wetlands, critical habitats, biodiverse land, natural shorelines, and healthy stream corridors, can reduce our climate vulnerabilities and enhance resilience in several ways. They can serve as natural barriers against severe storms, absorb excess flood waters and storm surge energy, protect downstream communities, reduce erosion, mitigate against extreme heat, and support the biodiversity of ecosystems threatened by climate change, among other benefits. These areas and natural resources provide many additional co-benefits, such as water quality protection and protection of areas with historical, archaeological, or recreational significance. This strategy involves the surveying, mapping, prioritization, and conservation of natural areas that currently lack sufficient protection.

#### Climate Hazards Addressed:



<b>Lead:</b>	FCCA, NVSWCD
<b>Partners:</b>	DPD, DPWES, FCDOT, OCA, OEEC, UFMD
<b>Timeline:</b>	Long-Term (5-8 years)
<b>Cost:</b>	\$\$\$ (\$500k - \$1 million)
<b>Existing Staff:</b>	Partial



#### Implementation Actions:

- i. Identify and secure additional staff capacity and/or consultant support needed to implement this strategy.
- ii. Leverage the Consolidated Natural Resources Management Plan (Strategy AE1.a) and other applicable plans as a starting point for identification of environmentally sensitive areas that could be candidates for more stringent protection. To thoroughly analyze these candidate areas, complete field surveys of public land to verify and document lands that naturally enhance climate resilience, contain sensitive and/or rare habitats, and areas with extensive invasive species in need of management. Consider leveraging existing GIS data, such as tree canopy cover and land use type, to inform field survey work. Partner with state and federal agencies, as applicable, to coordinate survey work and data collection. Build off of existing and ongoing surveys and documentation from FCCA and NVRC.
- iii. Informed by data collection under this strategy as well as available county data, create an updated GIS database of natural areas in need of stronger protections for climate resilience, including lands with sensitive and/or rare habitat and species and high-quality natural resources areas.
- iv. Based upon the field surveys, GIS database, and [Resilient Fairfax Vulnerability and Risk Assessment](#), identify land prioritized for conservation easements, Natural Area Preserve designation, or other protective status to enhance or preserve natural climate resilience.
- v. Explore strategic partnerships, grant opportunities and/or financing opportunities for conservation and protection of identified environmentally sensitive areas, including but not limited to: tidal and freshwater wetlands, intermittent streams, shorelines, and habitat for key species. Partners in this effort may include, but are not limited to: Department of Defense, National Park Service, Northern Virginia Regional Parks, Northern Virginia Conservation Trust, and Virginia Department of Conservation and Recreation.



**Key Performance Indicators:**

- Total amount of land area surveyed, and number of field surveys completed.
- Amount secured in grant and/or other funding sources for conservation.
- Percent of eligible acres of environmentally sensitive land conserved and/or protected within the county.

**Equitable Implementation:**



- ✓ Consider how the protection of environmentally sensitive areas could affect development and/or change land values.
- ✓ Consider whether the benefits of protecting environmentally sensitive areas will be distributed equitably.
- ✓ Along with protecting environmentally sensitive areas, include aspects of environmental restoration in low-income neighborhoods so the benefits that come from these ecosystems are equitably distributed.



**Funding and Resource Opportunities:**

- BRIC
- Coastal and Estuarine Land Conservation Program
- Conservation Reserve Enhancement Program
- Emergency Coastal Resilience Fund
- Land and Water Conservation Fund
- National Coastal Resilience Fund
- National Coastal Wetlands Conservation Grant Program
- Virginia Environmental Endowment
- Wildlife Conservation Society Climate Adaptation Fund
- Virginia Land Conservation Fund
- Virginia Open Space Lands Preservation Trust Fund
- Virginia Recreational Trails Fund

**Co-Benefits:**



## ADDITIONAL STRATEGIES FOR GOAL AE.1

**Strategy  
AE.1c**

**Update Provisions for Conservation Easements**

Update the provisions for conservation easements to include potential canopy credit as well as resources needed to maintain or improve the condition of the resource in perpetuity.

**Strategy  
AE.1d**

**Integrate Climate Change Considerations into Urban Forestry Program**

Consider future climate conditions to support long term tree health, including consideration for tree selection, required maintenance, and planting processes.



**Dyke Marsh Wildlife Preserve Restoration**

Dyke Marsh is the Washington metropolitan region’s largest freshwater wetland and one of the best studied wetlands in the nation. Located in Fairfax County, the marsh is home to 300 different plant species including six species of concern. The marsh began growing 2,500 years ago. During the 20th century, over 100 acres of the marsh was dredged away for mining of sand and gravel. Erosion and sea level rise pose additional threats. The USACE and NPS have been working on Dyke Marsh stabilization. Phase I is complete, and Phase II was scheduled to start summer 2022. Restoration and stabilization of marshes like Dyke Marsh not only provide critical habitat for a variety of wildlife, but also provide storm buffers, helping to reduce wave energy and prevent erosion. Additionally, our marshes act as natural filters to clean the waters of the Potomac River.

# Goal AE.2

## Restoration: Restore Damaged Areas Through Nature-Based and Natural Solutions

### STRATEGY AE.2a

#### Pursue Green Infrastructure Projects that Provide Climate Resilience Benefits

**Strategy Description:** “Green infrastructure” refers to systems that use a combination of ecologically-based and engineered solutions to support heat mitigation, water quality, stormwater management, and numerous other co-benefits. Green infrastructure can range from structural projects, such as bioretention ponds, bioswales, permeable pavements, and green roofs, to non-structural green infrastructure, such as tree conservation, floodable parks, and green spaces. Strategic implementation of green infrastructure projects can support the county’s broader flood mitigation efforts through localized retention of stormwater, as well as providing localized cooling and other community benefits. The county has numerous initiatives, pilots, and policies that relate to the goals of green infrastructure. This strategy would expand upon existing efforts to support implementation of green infrastructure for resilience benefits. Departmental leads for specific green infrastructure (GI) projects may depend on the project type, as follows: DPWES: for GI within stormwater management projects, capital facilities, tree planting, invasive species management, and maintenance. FCDOT: for GI within transportation projects and plans. NVSWCD: Small-scale GI for residents and other private properties. DPD: For GI in plan review, code, and compliance.

#### Climate Hazards Addressed:



<b>Lead:</b>	FCDOT, DPWES, NVSWCD
<b>Partners:</b>	DPD, FCPA, FCPS, LDS, OEEC, UFMD
<b>Timeline:</b>	Medium-Term (2-5 years)
<b>Cost:</b>	\$\$\$ (\$500k - \$1 million)
<b>Existing Staff:</b>	Partial



#### Implementation Actions:

i.	Identify areas that are: heat vulnerable, flood-prone, and/or areas where green infrastructure would provide additional community and resilience benefits. Model green infrastructure in identified areas to determine if the project will provide the assumed benefit(s).
ii.	(In progress) Integrate structural green infrastructure projects into county CIP process and support prioritization of green infrastructure projects in identified areas. Prioritize native and/or climate-resilient plants when feasible and effective.
iii.	Explore policies to support green infrastructure implementation, including but not limited to: incentive programs, de-paving programs, and limits on impervious surfaces.
iv.	Develop and promote guidance for small-scale green infrastructure projects, such as tree plantings or rain gardens, that can be implemented on-site by local businesses, commercial and industrial properties, and homeowners to support heat mitigation, local retention of stormwater, and other resilience benefits. Promote and expand awareness of existing green infrastructure programs, workshops, and assistance provided by entities such as NVSWCD.
v.	Support community greening programs to encourage reduction of impervious spaces and expansion of green spaces in communities, prioritizing native and/or climate-resilient plants when feasible and effective. Develop maintenance programs for green spaces. Engage with community groups, volunteers, and students.



**Key Performance Indicators:**

- Number of CIP projects with green infrastructure component (public projects, by type).
- Number of tree plantings and their survivorship.
- Total acreage of green space and green infrastructure in the county, sorted by type so as not to count the replacement of forested land with developments that have green infrastructure as a net positive.

**Equitable Implementation:**



- ✓ Consider how these green infrastructure projects affect surrounding neighborhoods and how residents, particularly low-income, can benefit and meaningfully participate in community greening projects.
- ✓ Include a maintenance program for green infrastructure installations to ensure proper drainage and that the amenity does not attract/collect litter or dumping, which can affect the values of surrounding properties.
- ✓ Assess interest in and engage those interested in green infrastructure and provide tools necessary to participate at an individual level.
- ✓ Include a community education component to involve stewards that can address continued use of green infrastructure installations.
- ✓ Set up programs that subsidize or provide incentives for residents to adopt rain capture practices to reduce localized flooding. Incorporate an educational component to promote neighborhood-wide adoption.



**Funding and Resource Opportunities:**

- BRIC
- HMGP
- Flood Mitigation Assistance Grant
- Virginia Community Flood Preparedness Fund
- Healthy Streets Program

**Co-Benefits:**



**Case Study: Green Infrastructure**

A study of social and economic benefits of green infrastructure (GI) in 12 cities across the United States as well as international cities, including Copenhagen, Adelaide, Toronto, and Tokyo, confirmed many of the co-benefits provided by GI beyond stormwater mitigation. The study found that GI helped to lower heat stress, heat stroke, and heat-related deaths. Through implementation of GI, the creation of new green spaces in communities improved community livability, providing recreation opportunities, encouraging walkability, and other outdoor activities. GI also supported air quality improvement through improved filtering of the air by vegetation and lower energy consumption in buildings with GI implementation. Many Fairfax County government buildings incorporate green infrastructure, such as the Public Safety Headquarters, which has a suite of green infrastructure including a vegetated roof, rain garden, and pervious pavement, among others.

## ADDITIONAL STRATEGIES FOR GOAL AE.2

<b>Strategy AE.2b</b>	<p><b>Support Continued Stream Corridor Restoration</b> Continue and expand the county’s stream corridor restoration opportunities, leveraging best available science and best practices in habitat restoration. Include inventories of existing habitat quality and design for ecological lift as part of the project selection and design process.</p>
<b>Strategy AE.2c</b>	<p><b>Support Continued Urban Reforestation</b> Aid with Urban Heat Island effect and flooding impacts through urban reforestation projects, expanding upon existing initiatives by the Urban Forestry Management Division. Explore tree planting programs that plant, maintain, and replace loss of mature trees in residential neighborhoods, using the One Fairfax lens.</p>
<b>Strategy AE.2d</b>	<p><b>Explore Living Shoreline Opportunities</b> Aid in coastal flooding risks through living shorelines projects. Pursue potential development of a Shoreline Management Plan, as a component of the Consolidated Natural Resources Management Plan (see Strategy AE.1a). Leverage existing living shorelines pilot projects for educational purposes.</p>
<b>Strategy AE.2e</b>	<p><b>Restore Wetlands and Floodplains</b> Aid in reduction of flooding risk through wetland and floodplain restoration.</p>
<b>Strategy AE.2f</b>	<p><b>Explore Regenerative Agriculture Opportunities</b> Engage local farmers, community gardeners, and food advocates, and aid in agricultural resilience to climate hazards.</p>



**Case Study: Living Shoreline**

The Leesylvania State Park Living Shoreline Project was a collaborative effort between Prince William County, NVRC, the Virginia Department of Conservation and Recreation, Leesylvania State Park, Dominion Power, and the Virginia Institute of Marine Science. Completed in 2016, the project includes 800 linear feet of stabilized shorelines and 25,000 square feet of restored inter-tidal marsh and beach habitat. The project utilizes various living shoreline practices such as marsh restoration, beach enhancement, and rocky ledges to promote shoreline and habitat protection while maintaining recreational access. Living shorelines are a nature-based approach to address climate risk due to sea level rise.

**What are nature-based solutions?**

Nature based solutions are “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (IUCN). Nature-based solutions can include ecosystem restoration (wetlands restoration), infrastructure related approaches (green infrastructure), ecosystem management approaches (water resources management), or ecosystem protection approaches (land conservation).



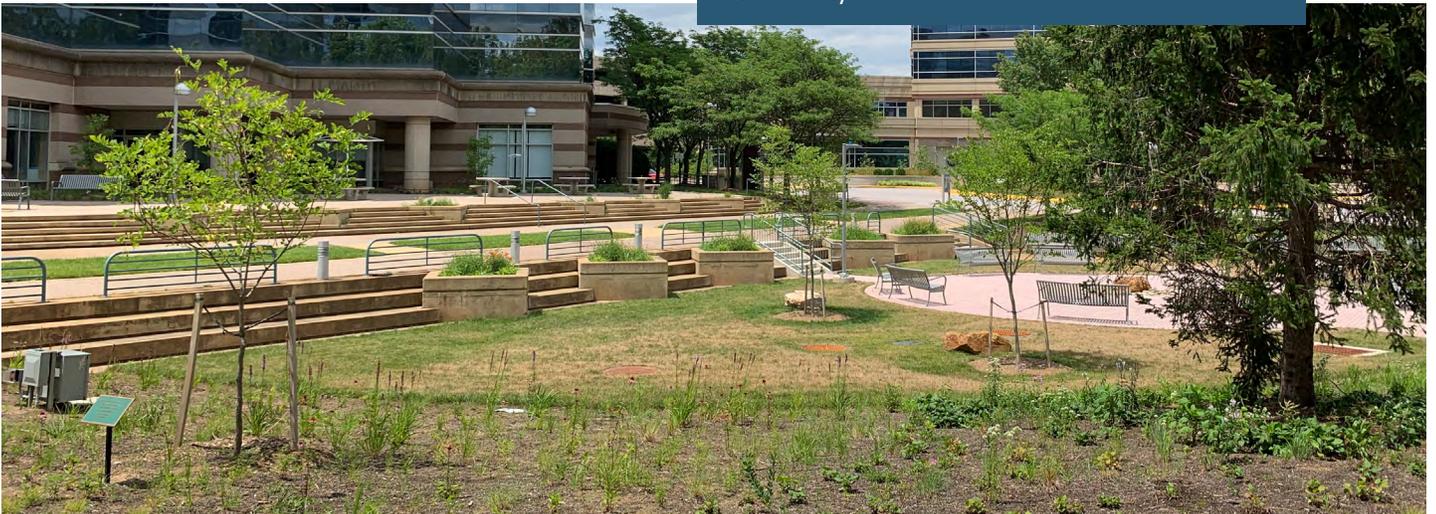
## L. Moving Forward

The climate crisis poses real, costly, and serious threats to the county's residents, infrastructure, and services. Preparing for and adapting to climate change takes hard work, dedicated leadership, and meaningful engagement from community members and infrastructure partners. However, these conditions also create a valuable and exciting opportunity. When we enhance our climate resilience, we can also enhance our quality of life, financial sustainability, natural resource health, infrastructure durability, equitable access to services, and emergency preparedness. Despite the significant challenges ahead, Fairfax County is prepared to answer the call. By taking action now, the county reduces risk and minimizes costs in the long run. The adaptation and resilience goals outlined in this plan guide the county to become a stronger, more resilient, and climate-ready place to live for all its residents.

Broad-based dissemination of the plan throughout the community will bring awareness of the plan and a call for action. It is the intention of the county that Resilient Fairfax will continue as an ongoing program, with periodic updates, learning, engagement, and monitoring and evaluation of implementation. As the state of science advances, technologies mature, and successes and shortcomings are identified through Resilient Fairfax, the strategies may evolve to fit the emerging needs and best practices. The county looks forward to working alongside local, state and federal partners, community organizations and leaders, and residents, among other stakeholders to realize a Resilient Fairfax.

### It takes a village!

The county will continue engaging and collaborating across its departments and agencies, community and infrastructure partners, and state and regional entities to ensure the goals are implemented successfully.



## References

For a full list of the sources consulted in development of this plan, please see the accompanying technical reports:

- [Climate Projections Report](#)
- [Vulnerability and Risk Assessment](#)
- [Audit of Existing Policies, Plans and Programs](#)

## Appendix A: Glossary

(Based on U.S. Climate Resilience Toolkit)

**Adaptation:** The process of adjusting to new (climate) conditions in order to reduce risks to valued assets.

**Adaptive capacity:** The ability of a person, asset, or system to adjust to a hazard, take advantage of new opportunities, or cope with change.

**Assets:** People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible things people or communities value.

**Climate Change:** Changes in average weather conditions that persist over multiple decades or longer.

**Climate Projections:** Simulated response of the climate system to a scenario of future emissions derived from climate models.

**Climate shock:** A sudden condition or event that is high impact with a limited duration and that can increase vulnerability of a system.

**Climate stressor:** A condition, event, or trend related to climate variability and change that can exacerbate hazards.

**Co-benefits:** Positive secondary benefits in addition to climate risk mitigation provided by strategy implementation that improve overall resilience of Fairfax.

**Consequence:** A subsequent result (usually negative) that follows from damage to or loss of an asset. Quantifying potential consequences is an important part of determining risk.

**Drought:** Based on the meteorological drought, “drought” is the degree of dryness or rainfall deficit and the length of the dry period. Hydrologic drought is based on the impact of rainfall deficits on the water supply such as stream flow, reservoirs and lake levels, and ground water table.

**Ecosystem services:** Benefits that humans receive from natural systems, such as climate regulation, water purification, nutrient cycling, among others.

**Equity:** The commitment to promote fairness and justice in the formation of public policy that results in all residents – regardless of age, race, color, sex, sexual orientation, gender identity, religion, national origin, marital status, disability, socio-economic status or neighborhood of residence or other characteristics – having opportunity to fully participate in the region’s economic vitality, contribute to its readiness for the future, and connect to its assets and resources.

**Exposure:** The presence of people, assets, and ecosystems in places where they could be adversely affected by hazards.

**Flood Mitigation:** Implementation of actions to reduce or eliminate long-term risk of flood-damage to buildings, other structures and infrastructure.

**Greenhouse gases (GHGs):** Gases that trap heat in the atmosphere, contributing to global warming and climate change. Common GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases.

**Greenhouse gas reductions:** Decreases in the emissions of heat-trapping greenhouse gases into the atmosphere.

**Hazard:** An event or condition that may cause injury, illness, harm, or death to people, unsafe conditions, damage to assets and systems, and/or impact on services.

**Hazard Mitigation:** Sustained action(s) taken to reduce or eliminate long-term risk to life and/or property from hazard event, and can occur before, during, or after a hazard event.

**Impacts:** Effects on natural and human systems that result from hazards. Evaluating potential impacts is a critical step in assessing vulnerability.

**Implementation Partners:** Implementation partners include other county departments as well as key public, private, and/or nonprofit organization that will support implementation and strategy success.

**Implementation Actions:** Specified set of activities developed to carry out a climate adaptation and resilience strategy.

**Key Performance Indicators:** Quantitative metrics that can help measure progress and success of strategy implementation.

**Lead:** County department that will oversee strategy implementation.

**Mitigation:** Processes that can reduce the amount and speed of future climate change by reducing emissions of heat-trapping gases or removing them from the atmosphere. See also Flood Mitigation and Hazard Mitigation.

**Probability:** The likelihood of hazard events occurring. Probabilities have traditionally been determined from the historic frequency of events. With changing climate and the introduction of non-climate stressors, the probability of hazard events also changes.

**Projections:** Potential future climate conditions calculated by computer-based models of the Earth system. Projections are based on sets of assumptions about the future (scenarios) that may or may not be realized.

**Renewable energy:** Energy generated from renewable, non-fossil fuel sources such as solar and wind.

**Representative Concentration Pathways (RCPs):** Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases, aerosols, and other chemical active gases, as well as land use/land cover. The word "representative" signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term "pathway" emphasizes that not only the long-term concentration levels are of interest, but also the trajectory taken over time to reach that outcome. Emissions scenarios are labeled as "RCP" followed by a number, such as RCP 2.5, RCP 4.5, RCP 6.0, and RCP 8.5. The numbers refer to the warming (in watts) per square meter across the planet by the end of century. For example, "RCP 8.5" means the emissions scenario where the concentration of carbon results in warming at an average of 8.5 watts per square meter over the planet in 2100.

**Resilience:** The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.

**Risk:** The potential for negative consequences where something of value is at stake. In the context of the assessment of climate impacts, the term risk is often used to refer to the potential for adverse consequences of a climate-related hazard. Risk can be assessed by multiplying the probability of a hazard by the magnitude of the negative consequence or loss.

**Sea Level Rise:** Increase in the average long-term global rise of the world's sea level due to global warming.

**Sensitivity:** The degree to which a system, population, or resource is or might be affected by hazards.

**Strategy:** A broader set of actions or set of subsector work that can be modeled to understand GHG emissions reductions.

**Strategy Description:** Description of the strategy, including context for how it connects to existing county plans, policies, or programs, how the strategy addresses climate risk, and/or how the strategy improves Fairfax's resilience.

**Storm Surge:** The sea height during storms such as hurricanes and tropical storms that is above the normal level expected at that time and place based on the tides alone.

**Tropical Cyclones:** Low pressure system (not associated with a front) that develops over tropical and sometimes sub-tropical waters and has organized deep convection with a closed wind circulation about a well-defined center. Tropical depression, tropical storms, and hurricanes are all examples of tropical cyclones.

**Uncertainty:** A state of incomplete knowledge. Uncertainty about future climate arises from the complexity of the climate system and the ability of models to represent it, as well as the inability to predict the decisions that society will make.

**Urban Heat Island Effect (UHI):** The tendency for higher air temperatures to persist in urban areas because of heat absorbed and emitted by buildings and asphalt, tending to make urbanized areas warmer than the areas with ample green space.

**Vulnerability:** The propensity or predisposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity.

# Appendix B: Summary Table of How Strategies Address Top Risks

## RESILIENT FAIRFAX STRATEGIES X TOP RISKS (AS IDENTIFIED BY THE VULNERABILITY RISK ASSESSMENT)

		Heavy Precipitation Causing Inland Flooding of Communities	Combined Stress on Natural Systems	Severe Storms and Wind Causing Vulnerabilities Due to Debris, Damage, and Unsafe Conditions	Severe Storms and Wind Causing Vulnerabilities due to Power Outages	Extreme Heat Causing Health Related Impacts	Coastal Flooding Impacts
Goal IAP.1   General Planning: Integrate Climate Resilience into Countywide General Planning	Strategy IAP.1a   Inventory and Update the Comprehensive Plan to Enhance Resilience	X	X	X	X	X	X
Goal IAP.2   Data Collection: Coordinate and Enhance Data Collection to Inform Resilient Fairfax Implementation	Strategy IAP.2a   Develop Resilience Metrics and a Tracking System for Ongoing Assessment of Community Resilience and Improvements	X	X	X	X	X	X
Goal IAP.3   Funding: Obtain and Track Funding for Successful Resilient Fairfax Implementation	Strategy IAP.3a   Develop a County Climate Fund	X	X	X	X	X	X
	Strategy IAP.3b   Pursue Federal and State Funding Opportunities	X	X	X	X	X	X
Goal IAP.4   Interagency Coordination: Enable Continued Interagency and Intergovernmental Collaboration on Climate Resilience	Strategy IAP.4a   Establish a Long-Term Interagency Collaboration System	X	X	X	X	X	X
Goal CRC.1   Create Safe and Resilient Spaces for the Community	Strategy CRC.1a   Develop Adaptation Action Areas Where Resilience Action Is Prioritized	X	X	X	X	X	X
	Strategy CRC.1b   Pursue Development of a Network Of Resilience Hubs In Climate-Vulnerable Areas of the County	X		X	X	X	X
Goal CRC.2   Build Community Capacity to Understand, be Ready for, Respond to, and Bounce Back from Climate Change Impacts	Strategy CRC.2a   Provide Community Aid and Engagement to Identify and Alleviate Resilience Needs	X		X	X	X	X
	Strategy CRC.2b   Launch a Climate Resilience Education and Guidance Program	X	X	X	X	X	X
Goal CRC.3   Integrate Climate Projections and Resilience Considerations into Development Regulations, Processes, and Retrofits	Strategy CRC.3a   Pursue and Implement a Flood-Risk Reduction Plan for the Fairfax County Community	X	X	X			X
	Strategy CRC.3b   Encourage Heat-Resilient Design, Development, Upgrades, and Practices					X	
	Strategy CRC.3c   Pursue Amendments to the Zoning Ordinance and other County Code Chapters to Enhance Community Resilience	X	X	X	X	X	X
Goal RIB.1   County Infrastructure Decisions: Incorporate Climate Projections and Resilience into County Infrastructure Decisions	Strategy RIB.1a   Update Capital Improvement Program Process to Include Climate Resilience Considerations	X	X	X	X	X	X
	Strategy RIB.1b   Enhance Flood Resilience of County Government Buildings and Other Facilities	X					
Goal RIB.2   Advocate for Infrastructure Resilience Outside of County Control	Strategy RIB.2a   Advocate and Partner for Energy Resilience				X	X	
Goal AE.1   Protection: Protect Natural Resources That Enhance Resilience	Strategy AE1.a   Develop a Consolidated Natural Resources Management Plan	X	X			X	X
	Strategy AE1.b   Survey and Protect Areas that Provide Natural Resilience Benefits		X			X	X
Goal AE.2   Restoration: Restore Damaged Areas Through Nature-Based and Natural Solutions	Strategy AE.2a   Pursue Green Infrastructure Projects that Provide Climate Resilience Benefits	X	X			X	X