

Resilient Trees – PFM Amendment

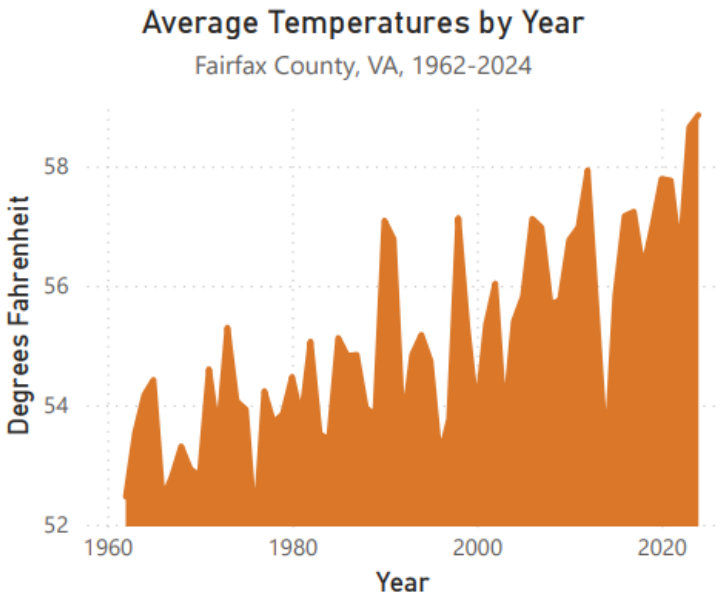
Update

Allison Homer, AICP, LEED AP | Resilient Fairfax Program Manager / Planner IV | OEEC
Adam Lipera| Chief, Forest Conservation Branch | LDS
Saundra O'Connell, LS, CFM | Code Specialist III | Site Code Research & Development | LDS

November 25, 2025

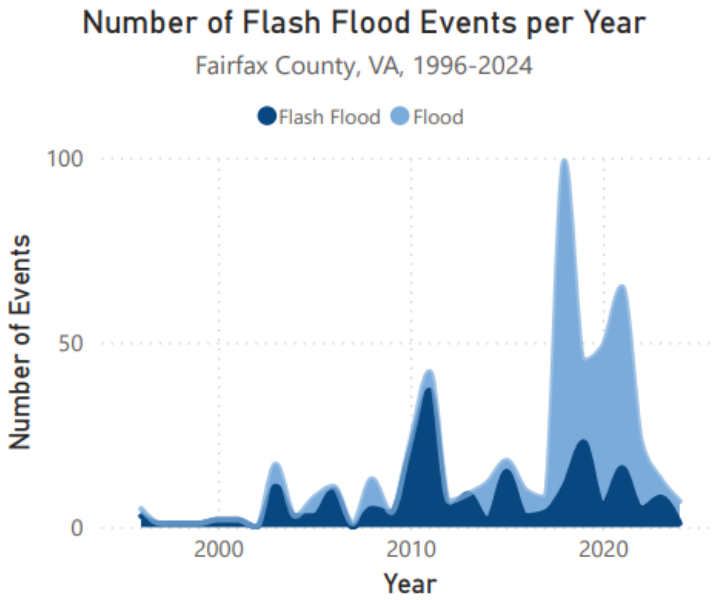
Climate Trends in Fairfax County

Warmer



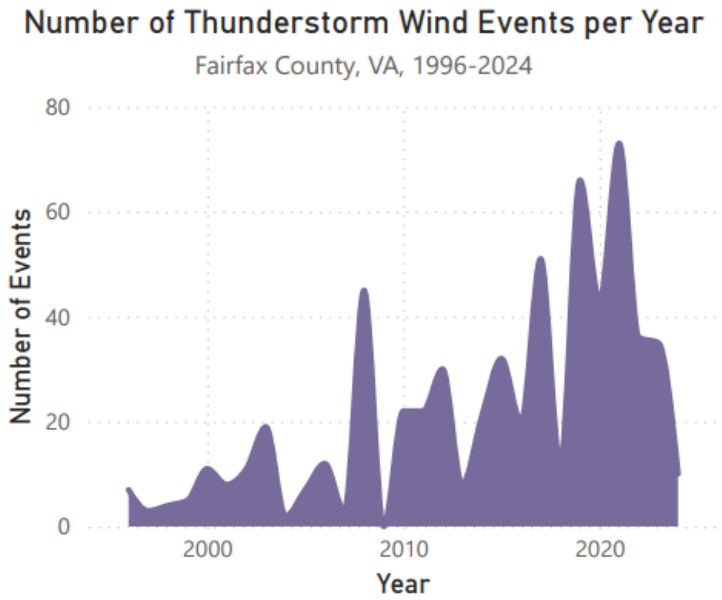


Wetter



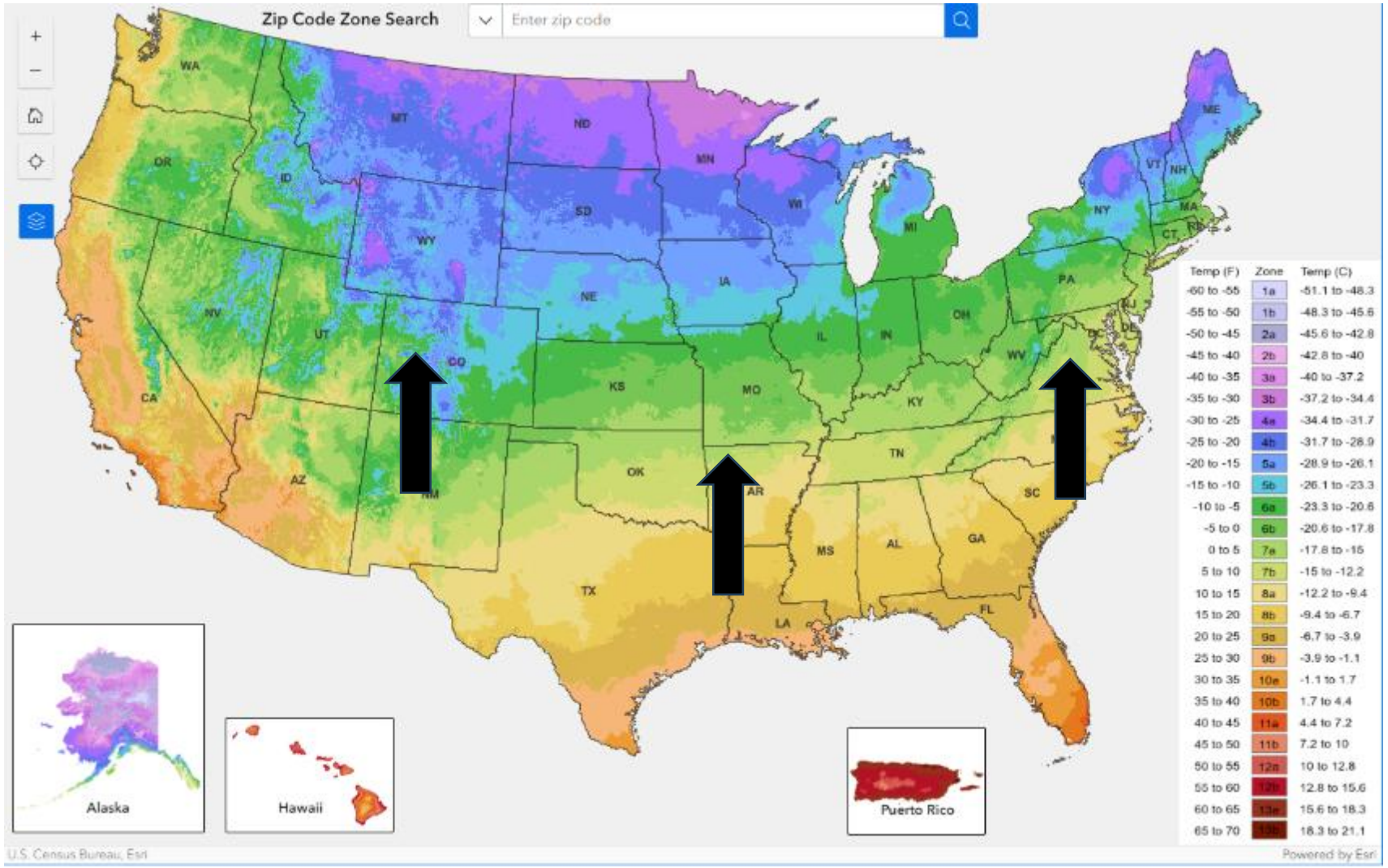


Weirder





Climate Trends, continued: *Shifting Hardiness Zones*



- **Hardiness zones are generally shifting North**
- **We will have hardiness zones that used to be South of us**
- Fairfax County has already shifted from **7a** (2012) to **7b** (2023)
- Projected to continue shifting as temperatures warm and southern climate zones move northward
- Wise to use trees on the higher end of the hardiness zone spectrum
  - Tree 1: 4a – 7a
  - ✓ Tree 2: 7a – 10a

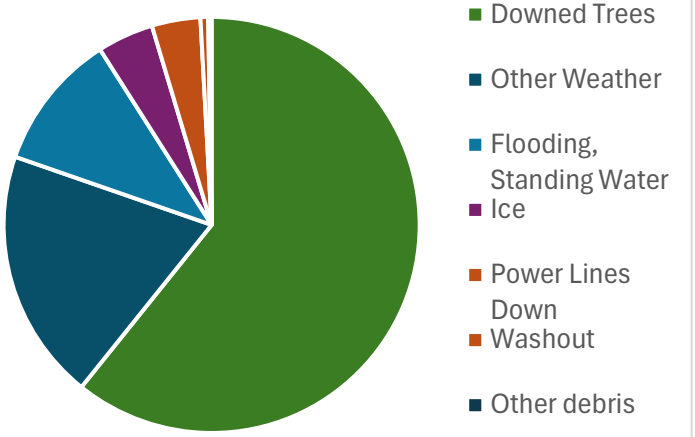
Concurrent Trend: Storm-related Tree Losses

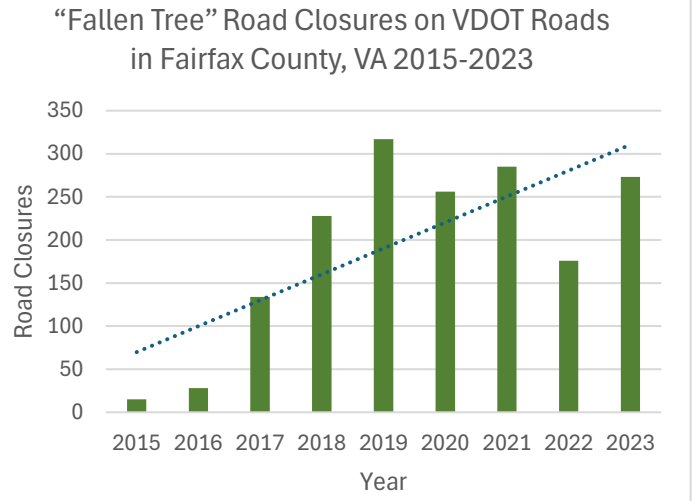


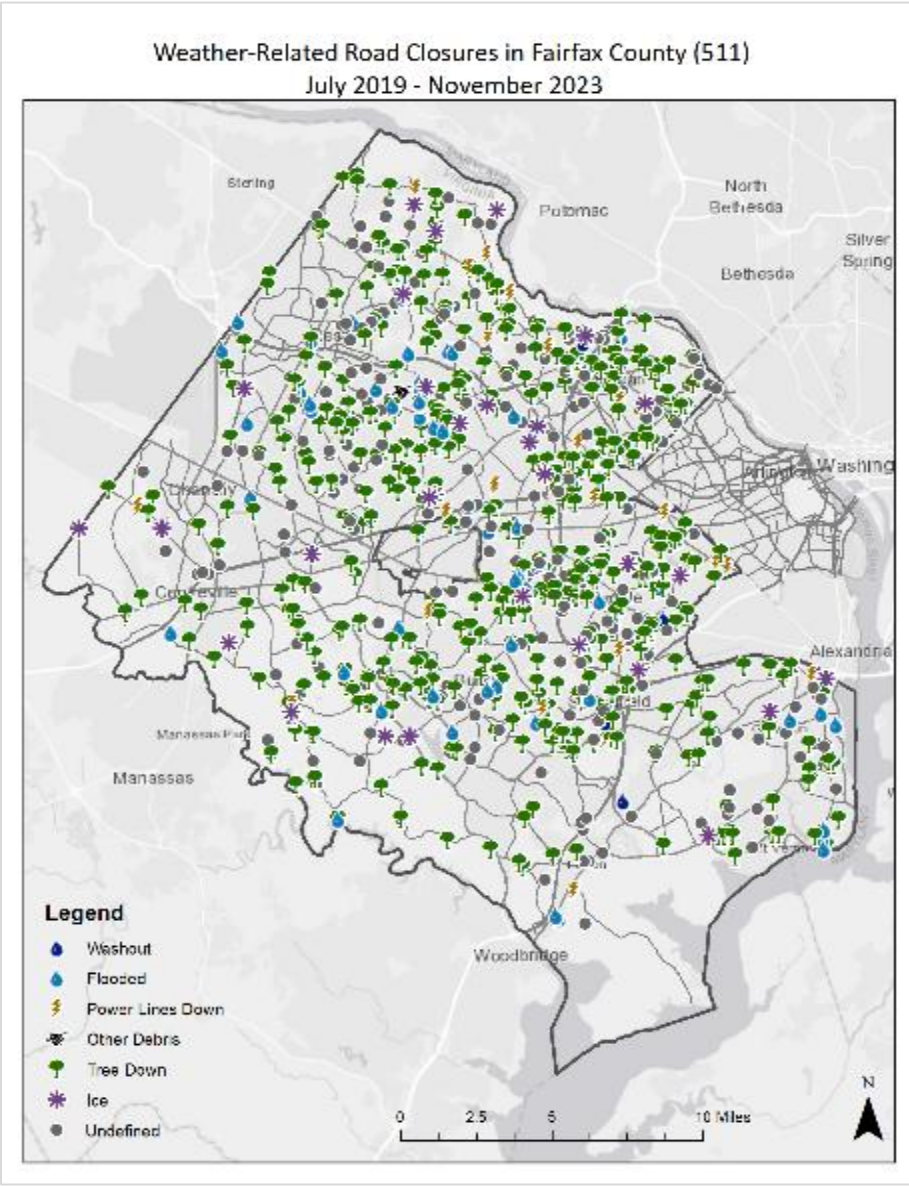
Fairfax County Government



Dave Leval/ DC News Now







Specific Focus within Broader Issue of Tree Failures

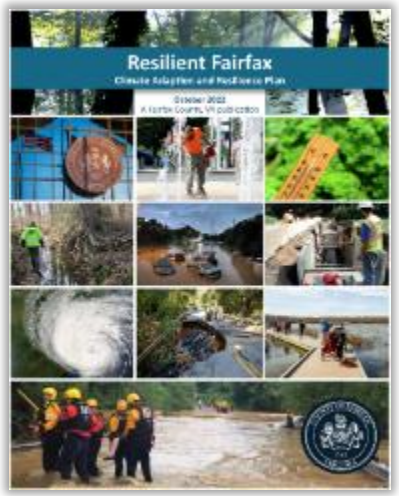
There are many reasons that trees fail. For this PFM amendment, we are focused on climate-related, species-specific factors.

- **In scope**
  - The species' resilience (or lack thereof) to wind, flooding, heat, etc.
  - The species' ability (or lack thereof to) adapt to a changing climate
  - The species' traits that provide adaptation benefits
  - **Why**: to help with "right tree, right place," and ensure better tree survival

- **Out of scope of this amendment:**
  - How the tree was planted or maintained
  - Age of the tree
    - *However, our tree canopy is aging, so we do generally encourage planting new trees before existing trees age out, and age diversity of trees to the extent possible.*
  - Injury to the tree that is not weather-related

Resilient Trees PFM Amendment – Origins in Resilient Fairfax Plan

Resilient Fairfax



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.
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.

"Resilient Trees": What was considered?

Climate Resilience / Vulnerability

- **Adaptability, Capability** under different climate scenarios
- **Habitat Change & Shifting**
- **Hardiness Zone Flexibility**
- **Flooding Resilience**
- **Flooding Adaptation Benefit**
- **Drought Resilience (Meteorological)**
- **Wind/Storm Resilience**
- **Wind Adaptation Benefit**
- **Heat Resilience**
- **Heat Adaptation Benefit**

Urban Environmental Tolerance

- **Dry Soil Tolerance**
- **Wet Soil Tolerance**
- **Partial Shade Tolerance**
- **Full Shade Tolerance**
- **Air Pollution Tolerance**
- **Salt Tolerance**
- **Poor Soil & Compaction Tolerance**
- **Disease and Insect Resistance**

Other Considerations

- **Non-invasive (required)**
- **Native preference**
- **Commercial availability**
- **Local relevance, site plan use**
- **Tree uses, planting locations**
- **Other Benefits** (Air Quality, Water Quality, Habitat, Energy Conservation)
- **pH preference**
- **Lifespan**
- **Maintenance (Low or High)**

Traits can be positive or negative. For example: FL-R= Flood Resilient. FL-V = Flood Vulnerable.

"Resilient Trees": What research informed the proposed changes?

- **288 tree species** in the Resilient Tree Matrix
  - **23,367 cells** in the matrix (each species scored for 70+ traits)
    - Generally, each trait for each tree: **+1 for positive**, **0 = neutral**, **-1 = negative**. (Some exceptions).
    - **Only traits with expert consensus** are listed in the PFM. If sources conflict (i.e., some say the tree is flood vulnerable, some say flood resilient), that trait for that tree is not listed in the PFM.
    - **For each tree, each trait carried over to the PFM has 2+ reputable sources cited. Many have 5+.**

Examples of Reputable Source Types

- Academia (research studies)
- State and local forestry resources
- Federal forestry resources
- Agriculture Extension resources
- USDA Climate Change Atlas
- Forestry tools like iTree

Qualities of Trees Proposed to Remain, be Added, or be Removed

Trees proposed to <u>REMAIN</u> in the PFM generally score well across the board.

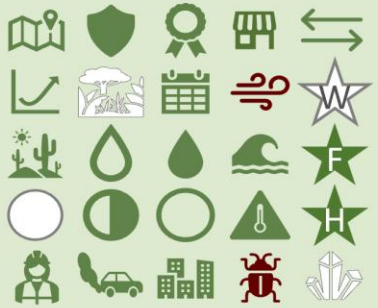
For these trees, only the <u>traits</u> are being updated.

Acer rubrum

Red Maple



Photo: NCSU CES



Celtis occidentalis

Common Hackberry



Photo: NCSU CES



Trees proposed to be <u>ADDED</u> to the PFM:

score well,

are mostly native,

and are good choices currently missing from the PFM.

Quercus shumardii

Shumard oak



Photo: OHDNR



Quercus macrocarpa

Bur oak



Photo: NCSU



Trees proposed to be <u>REMOVED</u> from the PFM:

score poorly,

are largely non-native,

and are not commonly planted anyway.

Pseudotsuga menziesii

Douglas fir



Photo: NCSU



Larix decidua

European Larch



Photo: WSU



"Resilient Trees": What is Being Amended?

Public Facilities Manual (PFM) 12-000 Tree Conservation

- Most updates are amendments to **Table 12.14: Tree Selection and Canopy Cover Guide**
  - ✓ **Add mostly native, resilient trees** previously missing
  - ✓ **Remove mostly non-native, non-resilient trees**
  - ✓ **Add climate adaptation and resilience strengths**
  - ✓ **Add vulnerability info, including climate vulnerabilities**
  - ✓ **Table reformatting for easier use**
  - ✓ **Consolidate "native" information in one column**
  - ✓ **Evaluate which trees receive 1.5 vs. 1.0 credit**
  - ✓ **Add new tree uses (Forested Area, Floodplain, Street Tree) to the existing uses** (*Screening Trees, Restricted Area (RA), Parking Lot (PL), General (G)).*
  - ✓ **Move tree planting window: October 1 – May 31st** (TB 24-05)
  - ✓ **Add requirement for weatherproof ID tags**
- Going through process at same time as **Landscaping and Screening** PFM amendment for alignment with recent ZOA

Table 12.14 Tree Selection and Canopy Cover Guide

Botanical/ Common Name	Min. Planting Area in ft^2	Projected 10-yr. Tree Canopy Area in ft^2 and caliper in inches at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit	Air Quality 12-0310.4 B(1)	Energy Conservation 12-0310.4 B(2)	Water Quality 12-0310.4 B(3)	Wildlife 12-0310.4 B(4)	Native 12-0310.4 B(5)	Improved Cult./ Var. 12-0310.4 B(6)
		1.0	2.0	3.0										
Trees 50 feet or less in height at maturity with a spread less than one-half of their height														
Columnar cultivars bred for narrow crowns	65	40	50	75	RA									
CATEGORY II DECIDUOUS TREES **Trees that can be maintained at a height of 20 feet or less and have a spread approximately equal to their height**														
Acer ginnala amur maple	50	75	100	125	G, RA		D, PS, RZ							
Acer palmatum Japanese maple	50	75	100	125	G		RZ, SH							
Amelanchier arborea downey serviceberry	50	75	100	125	G, RA		PS, RZ, W				1.25	1.5	1.5	
Amelanchier laevis Allegheny serviceberry	50	75	100	125	G, RA		PS, RZ, W				1.25	1.5	1.5	
Asimina triloba Paw paw	50	75	100	125			SH, W				1.25	1.5	1.5	
Carpinus caroliniana American hornbeam	50	75	100	125	G, RA		SH, W				1.25		1.5	
Cercis canadensis Eastern redbud	50	75	100	125	G, RA		D, PS, RZ, SC						1.5	
Chionanthus virginicus fringetree	50	75	100	125	G, RA		PS, RZ, W				1.25		1.5	
Cornus florida flowering dogwood Anthracnose resistant cultivars	50	75	100	125	G		PS	Yes				1.5	1.5	1.25
Cornus kousa Kousa dogwood	50	75	100	125	G		RZ							
Cornus mas Corneliancherry dogwood	50	75	100	125	G, RA		PS, RZ							

High-Level Proposed Schedule

Phase	Status	Date	Item
Directive	**COMPLETE**	**Nov 2022**	• **Adoption of Resilient Fairfax Plan, which included strategies for this amendment**.
Research	**COMPLETE**	**Jun 2023- Oct 2025**	• **Research on ~300 tree species' resilience characteristics and PFM**
Early Engagement	**COMPLETE**	**Mar 2025 – Oct 2025**	**Early engagement of entities including:** • **Board of Supervisors Environmental Committee** (5/20/25) • **Engineering Standards Review Committee (ESRC)** (8/7/25, 9/4/25, 10/30/25) • **Engineers & Surveyors Institute (ESI)** (10/22/25) • **Environmental Quality Advisory Council (EQAC)** (10/8/25) • **Interagency Climate Team** (Regular updates) • **NVBIA and NAIOP** (10/16/25) • **Resilient Fairfax Community Advisory Group** (12/4/24, 6/4/25, 10/20/25) • **Tree Commission** (9/4/25) and **Trees Community of Practice** (3/13/25, 9/25/25) • **Virginia Tech forestry professors and other tree experts**
	COMPLETE	**10/31/2025**	**Comments on draft text due from early engagement round**
Authorization and Public Hearings	**CURRENT**	**11/25/2025**	**Board of Supervisors Environmental Committee –** overview
	PENDING	**11/30/2025**	**Complete polished draft, incorporating comments from early engagement**
	PENDING	**1/15/2026**	**Planning Commission Environment Committee –** overview
	PENDING	**Spring – Summer 2026**	**Board Authorization** **Planning Commission Public Hearing** **Board of Supervisors Public Hearing**

Thank You



- Allison Homer, AICP, LEED AP | Resilient Fairfax Program Manager | OEEC
  - Allison.Homer@fairfaxcounty.gov
- Adam Lipera| Chief, Forest Conservation Branch | LDS
  - Adam.Lipera@fairfaxcounty.gov
- Saundra O'Connell, LS, CFM | Code Specialist III | LDS
  - Saundra.O'connell@fairfaxcounty.gov