



CODE & CANOPY

Policy Recommendations for Tree Preservation

OUR MISSION

to preserve, protect, and plant trees to enhance quality of life and health for present and future generations in the Lower Cape Fear area



INTRODUCTION

*by Isabelle Shepherd, Executive Director
of the Alliance for Cape Fear Trees*

The Cape Fear region is experiencing explosive growth. The tri-county area—Brunswick, New Hanover, and Pender—surged by 13% from 2020 to 2024, placing us among the fastest-growing metros in the nation.

This boom brings opportunity—and also bulldozers. Thousands of acres of mature forests are being cleared for subdivisions and shopping centers, often with minimal requirements for tree preservation or meaningful replanting. Once these mature stands are gone, they cannot be replaced in our lifetimes, or our children's.



Located along the Atlantic Ocean, our coastal region faces a unique collision of climate stress and development pressure. Wilmington's tree canopy, which covered 48% of the city in 2016, has fallen to about 40% today, according to the City's Urban Forestry Master Plan and Tree Equity Score data. That's an 8-point drop—a **loss of nearly 17% of our city's canopy in just nine years**. In unincorporated New Hanover County, **more than 3,000 acres of canopy disappeared between 2014 and 2022**, according to the Tree Canopy Report. Hurricanes like Florence played a role, but development is the major driver.

The costs of this loss go beyond aesthetics. Mature forests intercept hundreds of millions of gallons of stormwater, reducing flood risk and improving water quality. Their roots stabilize soils, their shade cools streets, and their branches store centuries of carbon. Wilmington's trees also improve air quality, reduce urban heat islands, support a biodiverse habitat, and enhance public health. *When large trees and natural areas are removed without adequate replanting, the region loses vital green infrastructure.*

Sustainable growth must balance rooftops with treetops, ensuring ordinances, incentives, and other planning decisions protect existing canopy and expand it for future generations. With Code & Canopy, this vision becomes a plan—one that empowers our community to advocate together for lasting change. **We hope you'll join us as we champion stronger, more consistent tree protections across municipal, county, and regional jurisdictions.**

By working with policymakers, planners, developers, and residents across the region, we aim to halt and reverse canopy loss, preserve community character, and safeguard the environmental services our forests provide. We're here to make sure growth doesn't come at the expense of the natural infrastructure that makes this place beautiful, livable, and resilient.

With gratitude,

A handwritten signature in blue ink, appearing to read 'Isa Shepherd'.

CLARIFYING SCOPE: *Code & Canopy* addresses canopy preservation in urban, suburban, and rapidly developing areas. It focuses on unregulated canopy loss from development, not responsible forestry or timber management on rural lands.

While grounded in the Cape Fear region, *Code & Canopy* is a flexible menu of policy options—adaptable to communities with different ecosystems and growth pressures across North Carolina and beyond.

All policy examples are summarized as directly and accurately as possible from published, publicly available sources. Because codes change, please consult the applicable jurisdiction for the most current requirements and details on any specific reference.

ABOUT THE ALLIANCE

At the Alliance for Cape Fear Trees, our mission has always been to **preserve, protect, and plant trees to enhance quality of life and health**. Although our founding roots are in Wilmington, we support forest preservation throughout New Hanover County and the broader Cape Fear region.

The Alliance envisions a healthy urban tree canopy and thriving mature forests that help mitigate climate change and flooding, improve public health, preserve the region's unique character and natural beauty, enhance biodiversity, and protect vulnerable communities from environmental injustices.

Our commitment is to champion policies that **halt and reverse canopy loss** while **advocating for equitable investment in urban forestry** for underserved communities.

We will push for **sustainable development** that protects our natural heritage, preserves our sense of place, and enhances our quality of life. Through partnerships across sectors—including housing, health, and transportation—**we aim to embed trees into every facet of regional planning**.

The Alliance for Cape Fear Trees is a 501(c)(3) nonprofit organization based in Wilmington, North Carolina.

Since 2015, the Alliance has worked to enhance community health and quality of life across the Lower Cape Fear region through urban forestry with a focus on advocacy and education.

Rooted in community, ACFT serves as a trusted voice for sustainable tree canopy management in both public and private development contexts.



American sycamore (*Platanus occidentalis*)



ENDORSEMENTS

The recommendations presented in *Code & Canopy* have been endorsed by the following organizations committed to conservation and sustainable growth:

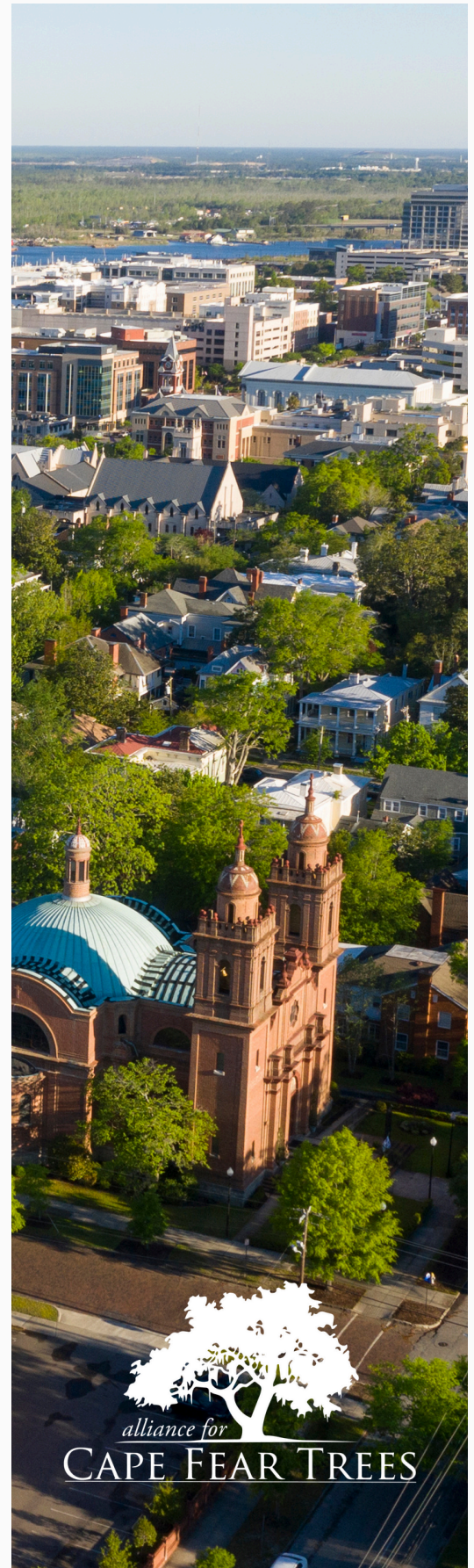
Audubon North Carolina
Be Agriculture
Cape Fear River Watch
Cape Fear Sierra Club
Coastal Plain Conservation Group
Eagles Island Task Force
Friends of the Arboretum
League of Women Voters of the Lower Cape Fear
North Carolina Coastal Federation
North Carolina Conservation Network
North Carolina Wildlife Federation
Save Midtown Neighborhoods
Save Sledge Forest
Voices to Votes NC

Washington hawthorn (*Crataegus phaenopyrum*)

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For more information, visit acftrees.org.



1 KEEP TREES STANDING

RETENTION OVER REPLACEMENT

Mature trees are essential infrastructure—critical to the health, resilience, and character of our communities. Large trees deliver decades of ecological services that replacement plantings simply cannot replicate in the short term: absorbing stormwater, capturing carbon, cooling neighborhoods, and sustaining biodiversity. Yet, too often, development defaults to removal and replanting, erasing canopy that took generations to grow.

To change course, local governments must adopt policies that treat mature trees as critical assets from the start of the planning process. This means embedding retention mandates, offering incentives, and providing flexible standards that prioritize preservation.

Policy Priorities

Protect Mature Trees: Establish protections for mature trees by defining ‘Specimen’ or ‘Heritage Trees’ as those 24" DBH or larger, regardless of species, with longleaf pines protected at 18" due to slow growth and ecological value.

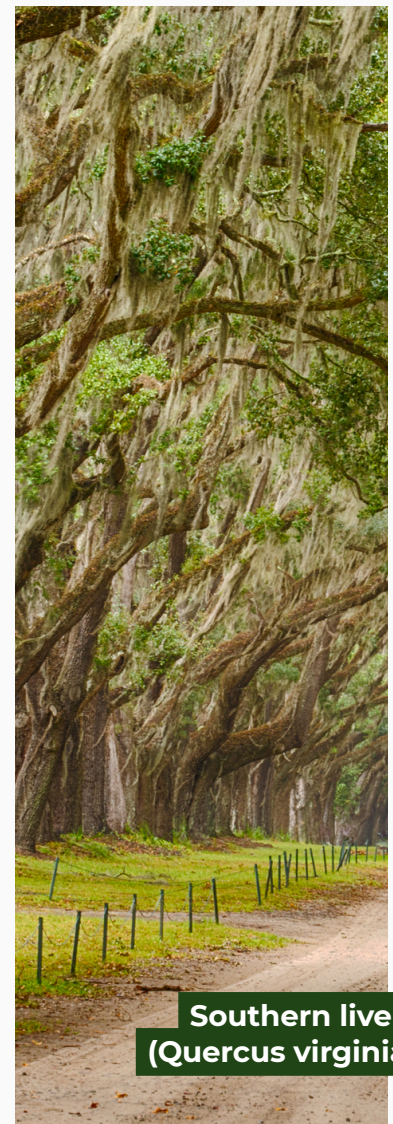
Establish Tree Save Areas: Require developers to preserve a percentage of each site as an undisturbed natural area, protecting contiguous canopy and significant trees.

Incentivize Preservation: Offer credits toward reduced mitigation requirements and other benefits to make preserving trees and groves financially advantageous.

Offer Flexible Standards: Allow planning staff to exercise discretionary flexibility in applying certain development requirements when a developer proposes substantive measures and solutions to maintain trees or groves.

Require Resource Management Plans: Mandate early-stage planning documents that inventory existing trees, assess ecological value, and outline strategies for preservation and mitigation.

Conduct Tree Surveys: Mandate professional inventories that document tree health, size, species, and canopy spread to inform preservation decisions.



**Southern live oak
(Quercus virginiana)**

POLICIES IN ACTION

‘Specimen’ Tree Regulations in the Lower Cape Fear

 TABLE 18-316.1: Protected Tree Species	
Tree Type	Minimum Diameter at Breast Height (DBH)
REGULATED TREES	
Dogwoods, Magnolias, other ornamental flowering trees, and American Hollies	4 inches
Hardwood trees, Long Leaf Pine, Pocosin (Pond) Pine, Black Pine, and non-pine conifer trees	8 inches
Other pine trees not specified	12 inches
SIGNIFICANT TREES	
Dogwoods, Magnolias, other ornamental flowering trees, and American Hollies	4 inches
Hardwood trees, Long Leaf Pine, Pocosin (Pond) Pine, Black Pine, and non-pine conifer trees	8 inches
Other pine trees not specified	12 inches
SPECIMEN TREES	
Live Oak, Pond Cypress, Bald Cypress, and Long Leaf Pine	24 inches

 NEW HANOVER COUNTY <i>The Model of Good Governance</i> TABLE 5.3.4.A: Regulated Trees	
Regulated Tree Type	Minimum Diameter at Breast Height (DBH)
DOCUMENTED TREES	
Dogwoods and American Hollies	4 inches
Longleaf Pine, Pond Cypress, Bald Cypress, and Hardwoods*	8 inches
Other Conifers	12 inches
SIGNIFICANT TREES	
Dogwoods, Magnolias, Native Flowering Trees, and American Hollies	8 inches
Longleaf Pine, Pond Cypress, Bald Cypress, and Hardwoods*	18 inches
Other Conifers	24 inches
SPECIMEN TREES	
Live Oaks, Pond Cypress, and Bald Cypress	36 inches
* Only includes sweetgums when they are located within required vegetated buffer areas or required open-space set asides	

CITY OF WILMINGTON: Article 5 of the Land Development Code designates regulated, significant, and specimen trees as “protected,” setting species-specific size thresholds and requiring preservation when possible. Removing a specimen tree—live oak, pond cypress, bald cypress, or longleaf pine at 24" diameter at breast height (DBH) or larger—requires a variance from the Board of Adjustment. Protected tree removals require mitigation only when the trees are classified as significant or specimen. For specimen trees, removal requires a variance and 200% mitigation.

NEW HANOVER COUNTY: Under the Unified Development Ordinance (Sec. 5.3.4), “regulated trees” are categorized by species and size, with specimen trees (live oaks, pond cypress, and bald cypress) protected at 36" DBH or larger. Removal requires permits and mitigation through on-site replanting or payment-in-lieu to the County’s tree fund. The ordinance emphasizes retention during site planning, allows relocation of trees by spading, and requires replacement in addition to standard landscaping, protecting the County’s canopy and heritage trees. New Hanover County’s UDO (Sec. 5.3.8) also includes incentives for retaining native stands of trees, even those smaller than “protected” thresholds.

ROOM FOR GROWTH

The Alliance advocates for **expanding protections** to include all trees with a 24" DBH or greater, regardless of species, and for **lowering the threshold** to 18" for longleaf pines due to their slow growth and ecological significance.

NORTH CAROLINA EXAMPLES: FLEXIBLE STANDARDS

Apex: Apex's UDO (Section 8.1.2.C.7) lets developers use Resource Conservation Areas (RCAs) instead of portions of required buffers if they preserve existing forest or specimen trees and meet size, adjacency, and design standards—a flexible way to conserve canopy while meeting code.

Durham: Durham's UDO (Section 8.3) allows flexibility in site design—such as tree coverage reductions and layout modifications—when developers preserve existing trees. Credits are granted for retaining mature or ecologically valuable trees, and required coverage may be adjusted to reward meaningful preservation.

Raleigh: Raleigh's UDO (Section 9.1.4.B.4–5) offers flexible compliance for tree conservation. Developers may preserve canopy in alternate on-site locations—outside the standard “primary” tree save zones—if those areas provide equal or better ecological value. The city also allows developers to meet requirements through combinations of off-site preservation, enhanced protection of significant trees, or contribution to a tree fund.

Southern magnolia (*Magnolia grandiflora*)

POLICIES IN ACTION

Tree Save Areas: Charlotte Case Study

Charlotte's Unified Development Ordinance (UDO) mandates substantial tree preservation through **Tree Save Areas**, particularly in commercial and multi-family developments.



FROM ARTICLE 20 (LANDSCAPING, SCREENING, & TREE PROTECTION)

Minimum Preservation: At least 15% of a commercial site must be preserved as a tree save area. If existing canopy is insufficient, new trees must be planted at 36 trees per acre to meet the threshold. If an area slated for protection cannot be preserved, replacement must equate to 150% of the removed area, with the same planting rate applied.

Protection Protocols:

- Tree save areas must be maintained free of invasive species before the final certificate of occupancy or plat approval.
- Any removal of trees within the save area requires a permit and may involve mitigation—though hazardous or invasive trees may be exempt from approval.
- Boundaries of areas under 30 feet in width must be clearly marked by a surveyor before plans are submitted.
- No structures may be built within 10' of the tree save area's boundary; in urban zones, this buffer may be counted toward the required save area as long as it is pervious and directly adjacent—but planting regulatory trees within that buffer is prohibited.

Flexibility & Integration with Other Development Elements: Charlotte's ordinance builds flexibility into its tree save requirements by allowing these areas to overlap with Mecklenburg County greenways or include canopy over utility easements if approved by the city. In designated urban or transit-oriented districts, developers can substitute amenitized tree areas such as plazas, landscaped courtyards, or green roofs, provided they meet equivalent planting standards such as 36 trees per acre. Tree save areas can also count toward up to 50% of a project's required open space if directly connected and offering passive recreation, thus encouraging creative site design without compromising canopy preservation goals.



NORTH CAROLINA EXAMPLES: RESOURCE MANAGEMENT PLANS

DURHAM: The city's Unified Development Ordinance (UDO Section 8.3.2) requires a **Land Disturbance Tree Survey** for most major development projects. These early-stage planning documents must inventory all trees ≥6" DBH and identify their species, health, and location—prioritizing preservation of ecologically or historically significant trees. The RMP informs site layout and is reviewed before a grading permit is issued, ensuring that meaningful tree protection is considered before designs are finalized. This process helps embed preservation into development decisions from the start, rather than treating it as a secondary compliance issue.

ORANGE COUNTY: While Orange County does not formally use the term "Resource Management Plan," its UDO takes a similar approach through site analysis and natural resource mapping, especially in **Conservation Subdivisions**. Developers must identify forests, specimen trees, wetlands, and other sensitive features prior to plan submittal. These features may then be designated as **Natural Resource Conservation Areas (NRCAs)** protected during development. Encroachment into NRCAs requires justification and may trigger redesign or mitigation. Together, these requirements serve as a functional RMP.

River birch (*Betula nigra*)

2 DESIGN WITH NATURE

LOW-IMPACT DEVELOPMENT

With intentional planning, our communities can meet housing needs while protecting ecological systems that make this region special and livable. **Community growth and greenspace preservation are not mutually exclusive.** Conventional ‘gray infrastructure’—pipes, culverts, and basins—cannot match the flood protection, filtration, and cooling power of intact systems. Clearing canopy increases runoff, heat, and infrastructure costs.

Low-Impact Development (LID) offers a smarter way forward. By integrating tools like permeable paving, bioswales, bioretention areas, rain gardens, and tree preservation into site design, LID minimizes disturbance to natural hydrology and reduces dependence on costly engineered systems. It’s a proven strategy for protecting irreplaceable landscapes such as wetlands, floodplains, and habitat corridors while building vibrant communities.



American holly
(*Ilex opaca*)

Policy Priorities

Incorporate LID into Site Design: Require development plans to preserve natural topography, mature trees, and soil infiltration areas. Promote vertical building to conserve open space, and use LID tools to manage runoff rather than through gray infrastructure.

Revise Standards to Prevent Unintended Canopy Loss: Adjust grading, retention, and stormwater rules so they don’t incentivize clear-cutting or mass grading. Preserving canopy can reduce stormwater management costs by lowering required treatment volumes, creating a financial incentive to keep trees standing.

Balance Density Increases with Greenspace Preservation: Revise zoning ordinances to ensure that requests for additional density beyond by-right allowances are conditioned on preserving on-site natural resources. Higher-density projects should offset impacts by reducing site disturbance and protecting ground-level greenspace.

Limit Impervious Cover: Establish maximum impervious surface standards in all zoning districts to protect soil infiltration and canopy retention, with stricter thresholds for sensitive sites such as wetlands and Natural Heritage Areas. Identify underutilized paved sites for infill or redevelopment.

POLICIES IN ACTION

Examples of Low-Impact Development Ordinances

Chapel Hill, NC:

Chapel Hill's Land Use Management Ordinance (Article 5.4.3) allows developers to use **infiltration-based systems such as bioretention areas, green roofs, and vegetated swales** in place of conventional stormwater retention, provided they meet performance standards. These LID practices are promoted in the Town's Public Works Engineering Design Manual to preserve natural hydrology and reduce runoff.

Charlotte, NC:

Charlotte's Post-Construction Stormwater Ordinance and Best Management Practices (BMPs) Manual (Section 4.7.2) recognize preserved trees as eligible BMPs for runoff reduction. Developers may receive **stormwater credits for mature tree canopy that intercepts rainfall and reduces impervious area impacts** provided they document infiltration rates and canopy coverage.

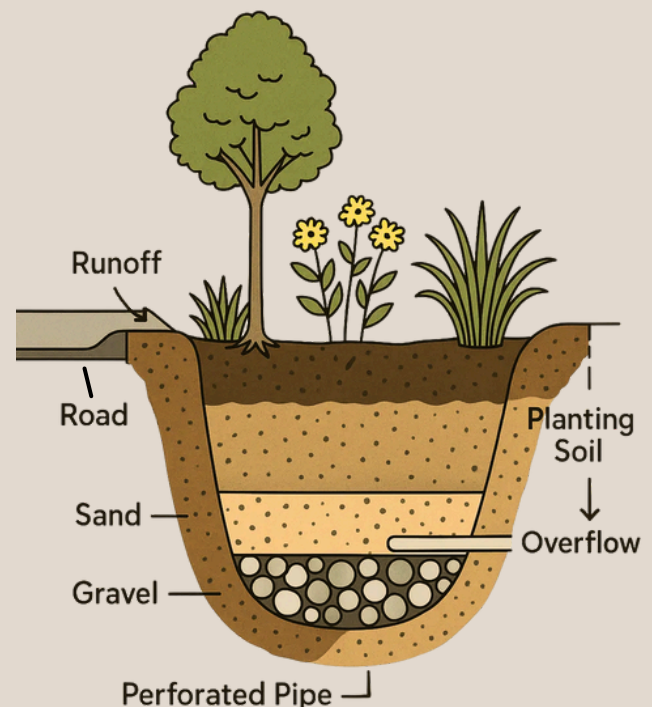
Bioretention Area

A shallow, landscaped depression designed to collect, store, and treat stormwater runoff using soil, plants, and microbes.

As water slowly infiltrates through the engineered soil mix, pollutants such as sediments, nutrients, and heavy metals are filtered out, while native vegetation and root systems absorb and break down contaminants. Many systems include an underdrain to convey treated water when infiltration is slow.

This process reduces flooding, improves water quality, and supports urban biodiversity, creating an effective green infrastructure tool for sustainable stormwater management.

VEGETATED SWALE: a sloped, planted channel that slows, filters, and conveys stormwater along its length, allowing some infiltration into the soil; typically used to move runoff toward a discharge point or treatment area while providing pollutant removal and erosion control



LOCAL EXAMPLE: LOW-IMPACT DEVELOPMENT

River Bluffs in northern New Hanover County exemplifies low-impact development through a thoughtful design philosophy rooted in environmental preservation. From the outset, developers embraced five guiding principles that shaped every facet of the community: **minimal paved roads and driveways, preserved trees and natural greenspace, energy-efficient homes, recycled construction debris, and natural drainage systems over conventional ditches.** Though state regulations required one retention pond, designers prioritized the land's existing hydrology.

By keeping tree canopies intact until home sites were purchased, the community minimized habitat disruption and supported undisturbed wildlife migration. Rather than reshaping the terrain, River Bluffs worked with it, favoring natural drainage pathways that sustain ecosystems and celebrate the land's rhythm.

At the heart of the project is a vision shared by local developer Burrows Smith: **to grow responsibly without compromising the environment.** His approach blends seamlessly into the landscape, integrating strategic stormwater management, conserved green space, and infrastructure that balances modern living with ecological integrity. These low-impact practices produced a community that models sustainable growth in Castle Hayne and beyond. River Bluffs' respect for nature not only enhances environmental health but also fosters a serene, nature-connected lifestyle for its residents.

Willow oak (Quercus phellos)

3 CANOPY FOR CLEAN WATER

STORMWATER INFRASTRUCTURE

Forests and urban tree canopy are vital to the Cape Fear River watershed's clean water strategy, naturally filtering pollutants, absorbing rainfall, and slowing runoff before it reaches our waterways. As development accelerates, the loss of critical canopy is intensifying flooding, erosion, and contamination, while climate change brings rising seas and stronger storms.

Trees ease the burden on costly stormwater systems by filtering pollutants and improving water quality—often outperforming pipes and basins. Their role in stormwater quantity management is significant but not formally recognized in most local standards. To build resiliency, communities can integrate standards and incentives into local ordinances.



Water tupelo
(*Nyssa aquatica*)

Policy Priorities

Integrate Trees into Stormwater Codes: Update stormwater codes to explicitly credit preservation of existing canopy as a Stormwater Control Measure (SCM) for water quality benefits. Recognize trees as functional infrastructure, as demonstrated in Wilmington's "Trees to Offset Stormwater" study.

Establish Riparian Buffers: Require forested buffer zones—including on single family properties—along streams, wetlands, and floodways to filter pollutants and slow stormwater runoff.

Facilitate Conservation Easements: Encourage landowners to protect forested land in key watersheds by incentivizing conservation easements.

Incentivize Preservation Through Stormwater Credits: Encourage developers to retain mature tree canopy by offering tangible stormwater management incentives. Projects that preserve a significant portion of pre-development canopy can reduce the need for costly detention infrastructure, though in some cases state approval may be required.

Establish Watershed Protection Overlay Districts: Require minimum canopy coverage (40%) in Watershed Protection Overlay Districts coupled with impervious surface caps and mandatory riparian buffers.

POLICIES IN ACTION

Green Infrastructure for Stormwater Management



Black gum
(*Nyssa sylvatica*)

Charleston, SC

Charleston's Stormwater Design Manual requires developers to minimize site disturbance and preserve existing vegetation, slopes, and natural drainage patterns to the maximum extent practicable. The manual prioritizes infiltration-based practices over conventional detention, calling for **bioretention areas, permeable pavements, vegetated swales, and infiltration basins** wherever soils and site conditions allow. Detention-only basins are discouraged and permitted only when infiltration is infeasible.

Charlotte, NC

Under Charlotte's Post-Construction Stormwater Ordinances and Stormwater Control Measure (SCM) Design Manual, **preserved canopy is recognized as a creditable component of stormwater management**. Developers may reduce required treatment volumes when existing mature canopy is retained and its hydrologic function (such as rainfall interception, evapotranspiration, and infiltration) is properly documented. The ordinance integrates canopy conservation into SCM design strategies, encouraging use of natural systems to meet water quality and quantity goals while reducing reliance on engineered infrastructure.

Raleigh, NC

Under Article 9.5 of Raleigh's UDO, development within the **Urban Watershed Protection Overlay District (UWPOD)** is limited to a maximum of 24% impervious surface. When this threshold is exceeded, the first 0.5" of runoff must be retained on-site using stormwater measures such as retention, infiltration, evaporation, detention, stormwater treatment devices, or some combination thereof. Additionally, lots in the UWPOD are required to have 40% of the lot forested through either tree preservation or planting. This overlay promotes tree canopy and soil function as first-line stormwater tools.

Apex, NC

Under Section 6.1.11 of Apex's Unified Development Ordinance, the town enforces stream buffer protections that require **a minimum 100-foot vegetated buffer along both sides of all perennial streams**, and 50-foot buffers on intermittent streams. These buffers safeguard water quality, reduce flood risk, stabilize streambanks, and protect aquatic and riparian ecosystems. The ordinance limits disturbance within the buffer zones, preserving existing vegetation and natural hydrology.

4 STRENGTHEN PROTECTIONS

ENFORCE EXISTING CODES

Local governments must update and consistently enforce codes to ensure greenspace is functional, connected, and valuable. This includes **tightening subdivision standards, modernizing zoning maps, adopting conservation overlays, extending protections through buildout, and requiring professional preservation.** Effective administration safeguards the integrity of policies intended to protect trees.

Policy Priorities

Revise Performance Subdivision Rules: Flexible tools like Performance Subdivisions must avoid token conservation by requiring minimum size, quality, and contiguity for open space, and by prohibiting flood-prone areas and wetlands from counting toward greenspace or density.

Identify High-Value Natural Areas & Strengthen Zoning Protections: Many of the region's most sensitive lands—wetlands, floodplains, and Natural Heritage Sites—are still zoned for buildout. Local governments should update zoning maps and appropriately reclassify these areas to safeguard ecosystems.

Adopt Conservation Resource Areas: Require developers to identify, preserve, and cluster around mapped ecological resources such as mature forests and riparian buffers. This shifts policy from piecemeal tree protection to true landscape-level conservation.

Preserve Trees Through Final Buildout: Apply protections to every lot regardless of size, ownership, or construction phase by recording preserved trees, Critical Root Zones, and mitigation commitments on final plats with the Register of Deeds. This prevents piecemeal clearing and ensures protections last through property transfers.

Enforce Professional Preservation Education: Ensure crews are qualified to implement preservation plans by requiring general contractors and site supervisors to complete annual training on tree protection protocols, including Critical Root Zone preservation, tree fencing, and low-impact construction techniques.



American elm
(*Ulmus americana*)

POLICIES IN ACTION

Cary, NC

Under its Conservation Residential Overlay District (UDO §4.4.3), Cary calculates base density using only the site's 'potential developable area'—the total land area excluding regulatory floodplains, streetscapes, and other required areas (see Chapter 7). This ensures that conservation areas do not count toward buildable density, reinforcing the intent of preserving sensitive ecosystems.

Durham, NC

Durham's recently updated Universal Development Ordinance requires that tree coverage be calculated not only at the subdivision level but also on a lot-by-lot basis. Each individual residential lot within a new subdivision must meet minimum tree coverage standards, and those obligations transfer to future property owners. This ensures that preservation commitments carry through final buildout, not just initial approval.

Chatham County, NC

Chatham County's Unified Development Ordinance (UDO Chapters 5.4.2 & 6.1.4) requires new subdivisions to dedicate open space ranging from 20% to 45%, depending on zoning district. Conservation subdivisions must preserve at least 45% of the site, with 80% of that designated as Tree Save Area—protected in perpetuity. Priority is given to preserving mature forests, riparian corridors, wetlands, and steep slopes. *Note that this regulation is adopted but not enacted due to Section 3.K1 of S.L. 2024-57, which restricts down-zoning. See page 24.*

Athens-Clarke County, GA

Under the Conservation Subdivision Planned Development regulations (Chapter 9-14A), Athens-Clarke County requires at least 50% of a site be preserved as open space, with 75% of that in a single, contiguous tract. At least 25% must be buildable land (not floodplain or wetland), ensuring conservation protects usable, ecologically valuable areas. Stormwater ponds, roads, and impervious surfaces don't count toward the minimum.



Athens-Clarke County, GA

CONSERVATION SUBDIVISIONS: CHATHAM COUNTY

Chatham County's Unified Development Ordinance (UDO § 5.4.2 & § 6.1.4) prioritizes tree preservation and open space through its **Conservation Subdivision** provisions.

Key Requirements:

- **Open Space:** At least 45% of each project area must be retained as open space.
- **Tree Save Area:** At least 80% of that open space must be designated as Tree Save Area—land that remains undisturbed and permanently protected.
- **Density Calculation:** Environmentally sensitive lands such as riparian buffers, regulated floodplains, and steep slopes are excluded from the developable area, ensuring growth is directed away from critical natural resources.

This approach integrates land conservation directly into subdivision design, preserving canopy and ecological function while allowing compact, efficient development patterns.

Note that this regulation is adopted but not enacted due to recent state legislation (Section 3K.1 of S.L. 2024-57). See page 24 for more.

Black walnut (*Juglans nigra*)

5 RETHINK ESSENTIAL SERVICES

SAVE ESSENTIAL TREES

Water, sewer, power, and broadband are vital, but shouldn't come at the cost of our living infrastructure. Too often, lines and roads are cut through forests for ease rather than necessity. Yet trees—like pipes and wires—provide essential services, and losing canopy for convenience weakens resilience.

Local codes should require early coordination with urban forestry staff, alternative routing analyses, and low-impact methods to avoid unnecessary root zone damage.

With smart planning, essential services and essential trees can coexist—keeping communities healthier, cooler, and more resilient.

Policy Priorities

Mandate Alternative Routing Analyses: Require utilities and agencies to submit routing analyses before siting projects that would impact protected trees, canopy, or riparian buffers, proving no feasible alternative exists. Analyses should be reviewed early on by urban forestry staff, with projects avoiding canopy loss eligible for faster approvals or reduced mitigation fees.

Codify CRZ Avoidance: Establish clear requirements to minimize disturbance within the Critical Root Zone of trees during siting and construction of public infrastructure. Low-impact techniques must be used if encroachment is unavoidable.

Integrate Tree Protection into Preliminary Planning: Require utilities and public agencies to address tree preservation in early stages—master plans, GIS siting, and feasibility studies—prior to submittal. Ordinances should mandate coordination with urban forestry staff in pre-design to avoid impacts to root zones and riparian buffers.

Protect Sensitive Areas: Prohibit routing of essential services through designated riparian buffers or watershed overlay zones unless no practicable alternative exists, and require mitigation and restoration if disturbance occurs.



Fringe tree
(*Chionanthus virginicus*)

POLICIES IN ACTION

Charlotte, NC

Charlotte's Post-Construction Stormwater Ordinance (PCSO), Sec. 18-321 requires that city-led infrastructure projects (including utilities) evaluate tree impacts as part of their stormwater management plans. Urban forestry staff participate in plan review to recommend alternative routing, and mature canopy preserved during infrastructure construction may count as a Best Management Practice (BMP), reducing detention volume requirements.

Austin, TX

Austin's Environmental Criteria Manual (Section 3.5.4) mandates that projects must evaluate design alternatives to minimize impacts to regulated trees and their critical root zones (CRZs). If routing through a CRZ is unavoidable, the city arborist must review and approve any such impacts. The Manual also outlines mitigation measures for tree removal or damage.

Chicago, IL

Chicago's Tree Preservation Guidelines for Construction Projects require utility and development projects to submit an Alternate Construction Plan when proposed work may impact public trees. Projects must demonstrate efforts to avoid the Critical Root Zone (CRZ), including use of augering or directional drilling instead of trenching. Any encroachment into the CRZ must be justified in writing and approved by the city forester. Projects that successfully avoid tree impacts may qualify for streamlined review or reduced mitigation fees.



**Bald cypress
(*Taxodium distichum*)**

LOCAL EXAMPLE: CRITICAL ROOT ZONE

The City of Wilmington's Land Development Code (Section 18-316[D]) requires strict protection of a tree's Critical Root Zone (CRZ) during construction.

Tree protection fencing must enclose the full CRZ—or extend at least 10' from the trunk, whichever is greater—and be clearly shown on all site and grading plans. This fencing must be installed and approved before equipment enters the site and must remain in place until construction is complete.

If full preservation isn't feasible, limited disturbance is allowed on one side of the tree only, no closer than half the CRZ radius, and cannot exceed 20% of the total CRZ area. Any root pruning must follow proper arboricultural practices. Violations such as unauthorized disturbance, improper fencing, or negligent practices may result in stop work orders, a \$500-per-day fine, and potential financial assurances for up to three years to ensure tree survival.

More information can be found on page 28 in the Appendix: Suggested Code Updates.

Black willow (*Salix nigra*)

6 SET HIGHER STANDARDS

REPLACEMENT & MITIGATION

Preserving trees is only half the battle—**where and how we plant matters**. Mitigation formulas based solely on trunk diameter often yield short-lived replacements that fail to restore canopy. Stronger, canopy-based standards should prioritize soil quality, native species, adequate space, and multi-year care. To be effective, these standards also require adequate staffing and funding to ensure consistent enforcement.

A well-managed Tree Mitigation Fund can then reinvest in urban forestry, especially in low-canopy areas, turning mitigation into a tool for ecological recovery and climate resilience.

Policy Priorities

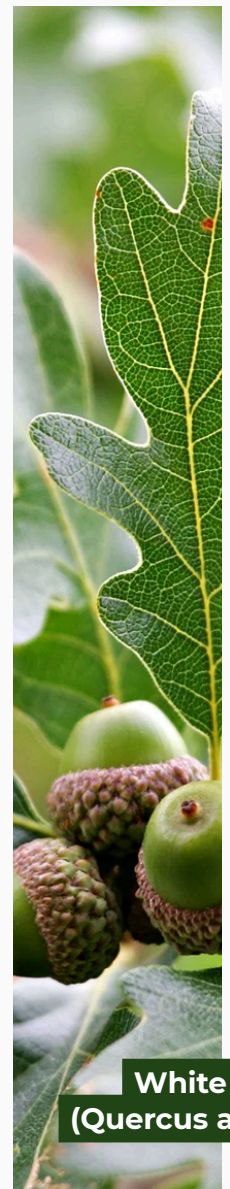
Canopy Coverage Goals: Tie mitigation requirements to the canopy area lost, rather than trunk diameter of individual trees, to better reflect ecological value and stormwater function. Establish a citywide and countywide goal of achieving and maintaining at least 40% tree canopy coverage in all areas. Special focus should be given to increasing canopy in neighborhoods currently below this target, using tools like Tree Equity Score to identify priority zones.

Tree Mitigation Fund: When trees are removed, associated mitigation fund use shall be restricted exclusively to urban forestry initiatives that are publicly reported annually with transparent accounting of all incoming payments, expenditures, and budgeting forecasts.

Soil Quality & Volume: New planting sites, especially in parking lots, streetscapes, and compacted urban soils, shall be excavated free of construction debris and backfilled with high-quality soil. Minimum soil volumes (e.g. 600 cubic feet for large canopy trees) and soil compaction limits shall be established to ensure healthy root growth.

Selection & Diversity: New plantings shall prioritize native or regionally-adapted species suitable for urban conditions, avoiding over reliance on single species to reduce pest and disease vulnerability.

Maintenance & Establishment Periods: All new and preserved existing trees shall be maintained for at least two years after planting, including watering and inspections to ensure survival. Preserved existing trees may require pruning, clearing of vines, or other maintenance.



White oak
(*Quercus alba*)

POLICIES IN ACTION

Charlotte, NC: Charlotte's ordinances go beyond symbolic tree planting to ensure long-term canopy health. At least 75% of new code-required trees must be native species, with the remainder non-invasive and meeting strict diversity and site suitability requirements. The City also mandates minimum soil volumes for urban planting sites, requiring large canopy trees to be installed in tree pits of at least 274 square feet with amended, debris-free soil.

Chapel Hill, NC: Chapel Hill's Tree Protection Ordinance (Land Use Management Ordinance, Section 5.7) clearly defines how canopy coverage must be measured, accounted for, and restored during development. The ordinance sets precise canopy coverage thresholds based on land use, requires developers to calculate existing canopy and deficits, and mandates replacement at a rate of one new tree per 500 square feet of canopy deficit.

New Hanover County & Wilmington, NC: Both jurisdictions require development sites to retain or plant 15 trees per disturbed acre, with newly planted canopy trees meeting a two-inch caliper minimum. In the County, significant and specimen trees—such as live oaks and bald cypress—are inventoried during site review, and removal triggers a 200% replacement rate, ensuring canopy recovery and protection of high-value natural assets. The City enforces similar planting requirements, while also imposing penalties for improper maintenance (such as topping or spiking) and requiring performance guarantees to ensure landscaping is installed and maintained.



Chattanooga, TN: Chattanooga's 2025 Tree Ordinance requires 36 inches of total tree caliper per acre developed, met through preservation, replanting, or contributions to the city's Tree Bank (rate set annually by the Tree Commission, currently \$200 per inch). In addition, the ordinance uses performance bonds to ensure planting commitments are fulfilled, with funds returned after successful establishment. These requirements apply to private development. Other codes have higher standards in urban zones—for example, one tree per five parking spaces in walkable districts versus one per ten elsewhere.

CASE STUDY: DURHAM, NC

Durham's Landscape Manual offers a strong model for municipalities seeking to ensure that mitigation and replacement plantings result in healthy, long-lived trees.

A key feature is the **requirement to match species selection and planting locations to site-specific conditions**. For every approved tree species, Durham specifies a minimum root growth area that must be provided, ensuring adequate space for root development, canopy growth, and long-term stability. This approach reduces the likelihood of premature decline due to overcrowded or unsuitable planting sites.

Soil preparation is treated as a foundational step in tree establishment. Planting areas must be free of construction debris and contaminants, with soil loosened and amended as needed to promote root penetration, proper drainage, and nutrient availability. Durham's standards ensure that planting sites are not only large enough but also capable of supporting healthy growth over time.

The city prioritizes the use of **native or regionally adapted species**, clearly marking them in its approved plant lists and explicitly prohibiting invasive plants in ordinance language. This reduces pest and disease risks, supports biodiversity, and ensures plantings are well suited to local climate and soil conditions.

Post-planting care is equally emphasized: mulching is prescribed in specific depths and materials, watering is required during establishment, and staking is allowed only under certain conditions and must be removed after one growing season.

Red maple (*Acer rubrum*)

CURRENT ORDINANCES

CAPE FEAR'S CANOPY PROTECTIONS AT A GLANCE

The City of Wilmington, New Hanover County, and Brunswick County each regulate trees through their development codes, though with varying scope and strength. Wilmington has the most comprehensive protections, extending tree removal permits and preservation requirements onto both private property and development projects. New Hanover County applies tree protections primarily in development contexts, requiring permits, minimum tree densities, and landscaping standards. Brunswick County relies on landscaping, buffering, and open space requirements, with fewer direct tree preservation rules.

The table below is a simplification of regional codes. For more nuance and contextual applications, please review the respective codes and ordinances.

Jurisdiction	Private Property Regulation	Development Standards	Enforcement & Mitigation	Authority Source
City of Wilmington	Permit required for removal of trees $\geq 4"$ DBH on private lots over 1 acre, plus in historic and environmental resource areas.	Requires tree preservation and replacement during development, with robust landscaping and buffering standards	Penalties: \$150/inch (DBH) or \$1,200 per tree; Mitigation fee: \$175/inch (DBH) x2 if not replanted. Higher fines apply for willful violations.	City Land Development Code (LDC), authorized under NC G.S. 160D and specific local act.
New Hanover County	No general rules for trees on private lots under 1 acre outside development context.	Tree removal permit required for development activity with species and size thresholds. Requires ≥ 15 trees per developed acre, with landscaping standards.	Mitigation fee: \$200/inch DBH, x2 for specimen trees. Credits for tree retention. Replanting or contribution to tree fund required. 3–5 year ban on permits for willful violations.	County Unified Development Ordinance (UDO), authorized under NC G.S. 160D and specific local act.
Brunswick County	No restrictions on private lot tree removal. Clear-cutting allowed outside development.	Landscaping, tree planting, buffer, and open space requirements during development; incentives to retain heritage trees.	Credit given for saving trees; fencing required during construction. No penalties for private tree removal.	County Unified Development Ordinance (UDO), authorized under NC G.S. 160D.

These measures are a start, but they fall far short of what's needed to protect our canopy for the next generation. We have the tools, the knowledge, and the public will. **Now, we must match them with bold, comprehensive action.**

Eastern redbud
(*Cercis canadensis*)

DILLON’S RULE

STATE RESTRICTIONS ON LOCAL AUTHORITY

In North Carolina, Dillon’s Rule limits local governments to powers expressly granted by the state legislature. This has long been cited as a reason local governments “can’t” enact stronger tree protections. In practice, it is more hurdle than blockade—local governments have found lawful paths to get the job done.

Tree ordinances in **Wilmington** and **New Hanover County** are grounded in Session Law 1987-786, a local act passed by the N.C. General Assembly in 1987 that explicitly authorizes New Hanover County—and all townships and municipalities within—to regulate tree removal on public and private lands. This special legislation remains the legal backbone of their tree regulatory authority.

Other communities, like **Charlotte** and **Chapel Hill**, have secured enabling legislation from the General Assembly. **Orange County**, meanwhile, relies solely on Chapter 160D to enforce strong tree preservation and open space standards through their UDOs. Canopy protections are treated as conditions of site plan approval rather than stand-alone regulations, which reduces vulnerability to legal challenges.

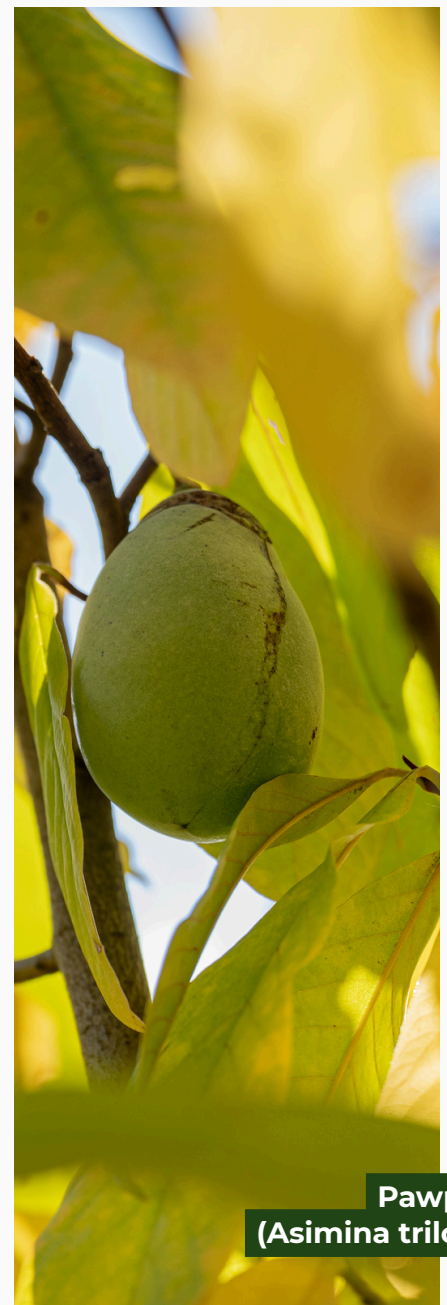
N.C. General Statute Chapter 160D

This statute modernizes North Carolina’s planning laws and provides the legal framework for local governments to regulate landscaping and buffering within the development process. While it does not independently authorize stand-alone tree preservation ordinances, it enables communities to integrate tree and canopy protection into zoning, subdivision, and landscaping standards.

Chapter 160D explicitly authorizes local governments to:

- Preserve natural resources and sensitive areas
- Protect trees and require landscaping
- Regulate development for public health, safety, and welfare
- Create overlay districts (e.g., Conservation Resource Areas) with protective provisions
- Require open space and conservation easements in subdivisions

In short: Chapter 160D gives counties broad powers for land use and environmental protection.



Pawpaw
(*Asimina triloba*)

DILLON'S RULE & CHAPTER 160D

Under **Dillon's Rule**, local governments in North Carolina must be able to point to specific statutory authority to enforce regulations—including tree protection. Fortunately, **Chapter 160D of the NC General Statutes** grants exactly that authority for zoning, subdivision, and environmental protections.

GENERAL AUTHORITY

Local governments are empowered to protect public health and welfare:

- Cities: **G.S. 160A-174**
- Counties: **G.S. 153A-121**
- Zoning & Land Use:
 - **G.S. 160D-701 & 702** (land use, zoning, public welfare)
 - **G.S. 160D-804 & 804.1** (subdivision regulations)

TREE-SPECIFIC STATUTES

Localities can regulate tree removal under:

- **G.S. 160D-922** (tree protection during development)
- **G.S. 160D-921** (forestry exemptions and penalties for clear-cutting)

Ordinances don't apply to use-value forestry lands or approved harvests, but permits may be delayed up to 5 years after unauthorized clearing.

LEGAL LIMITATIONS

Two exceptions:

- **G.S. 160A-175(h) / 153A-123(h)** – No regulation on airport-owned land
- **G.S. 160D-921(b)** – No regulation of forestry use-value or forest plan lands

BOTTOM LINE

Tree ordinances are allowable in NC, as long as they're rooted in statute. Knowing the legal landscape, you can preserve canopy with confidence.

Chickasaw plum (*Prunus angustifolia*)

ASSERTING LOCAL AUTHORITY

DRAFT LEGISLATION TO ADDRESS DILLON'S RULE

As cities like Durham show, local governments need not have a local act authorizing zoning ordinances that protect, preserve, and properly plant trees.

But there is still confusion or hesitation around the limits imposed by Dillon's Rule, which restricts local authority to what the General Assembly expressly permits.

To remove that ambiguity, we propose the following enabling language be adopted by the North Carolina General Assembly:

"Local governments may enact and enforce ordinances related to tree preservation, landscaping standards, native plantings, open space requirements, and green infrastructure in furtherance of public health, environmental protection, and climate resilience. This authority shall include, but is not limited to, the ability to:

- *Require mitigation for tree removal;*
- *Establish and enforce minimum canopy cover and landscape coverage standards;*
- *Designate tree conservation or landscape overlay districts;*
- *Preserve or expand public and private open space;*
- *Mandate the use of native or regionally appropriate plant species; and*
- *Regulate site design and land development in alignment with locally adopted comprehensive plans, open space plans, or urban forestry master plans."*

By expressly granting this authority, the General Assembly can empower North Carolina communities to implement smart, site-specific planning tools that protect public health, build climate resilience, and enhance quality of life.



**Longleaf pine
(*Pinus palustris*)**

DOWN-ZONING

STATE RESTRICTIONS ON LOCAL AUTHORITY



Yaupon holly
(*Ilex vomitoria*)

In December 2024, the North Carolina General Assembly enacted **Senate Bill 382, now Session Law 2024-57**. Among its provisions is **Section 3K.1**, which limits the ability of local governments to implement down-zoning—curbing a key tool in responsible growth management.

Down-zoning is a change to zoning laws that reduces the density or intensity of how a piece of land can be developed—for example, changing an area from multifamily to single-family use, or from commercial to residential. It's used by local governments to preserve neighborhood character, protect natural resources, or control overdevelopment.

Section 3K.1 of Session Law 2024-57 Restricts:

- County-initiated down-zonings
- Creation of overlay zoning districts and nonconformities for existing commercial properties
- Ability to raise landscaping or design standards
- Local code updates that conflict with the bill

Local Solutions Require Local Control

We're committed to working alongside elected leaders, planning departments, nonprofit partners, and residents to advocate for the restoration of local zoning powers in North Carolina.

Whether it's the live oaks that shade a historic downtown, floodplain forests that buffer storm surge, or the canopy that keeps neighborhoods cool and livable—these are local assets. They require local solutions. **That's why the Alliance is working to:**

- Restore local zoning authority statewide by urging the North Carolina General Assembly to repeal Section 3K.1 of S.L. 2024-57 and return key planning powers to municipalities and counties.
- Support local bills that grant tree preservation authority to counties across the region.
- Empower communities to shape development by providing model ordinances and support for strategic policies that work within legal confines.

ASSERTING LOCAL AUTHORITY

DRAFT LEGISLATION TO ADDRESS DOWN-ZONING

Repealing Section 3K.1 of S.L. 2024-57 (SB 382)

In 2025, North Carolina Senate Bill 419 was introduced to restore local governments' authority over down-zoning.

While SB 419 stalled in committee, the same language was later included in Senate Bill 587 (Clarifying Nonconforming Uses), which passed the Senate unanimously. **Section 10 of SB 587 proposed the following amendment to G.S. 160D-601:**

(d) Down-Zoning. – No amendment to a zoning regulation that down-zones property shall be initiated, enacted, or enforced without the written consent of all property owners whose property is the subject of the down-zoning amendment—unless the down-zoning amendment is initiated by the local government.

If we hope to restore local control, we must urge legislators to reintroduce this language in the next session and champion its passage.



American persimmon
(*Diospyros virginiana*)

TOOLS FOR LOCAL ADVOCACY

On pages 26 and 27, you'll find sample local resolutions and letters that can be adapted for use by councils, commissions, and advocacy groups across North Carolina. These are ready-to-use tools for any community that believes in restoring local authority and protecting its canopy.

The path forward depends on partnership. Whether you're a public official, community planner, nonprofit leader, or citizen advocate, your voice can help ensure that our towns and counties regain the power to plan responsibly.

ASSERTING LOCAL AUTHORITY

SAMPLE LOCAL RESOLUTION

WHEREAS, the protection of natural resources, community character, and public health depends on the ability of local governments to guide development through responsible planning and zoning policies; and

WHEREAS, the passage of Senate Bill 382 (S.L. 2024-57, Section 3K.1) imposed statewide restrictions on local land-use authority, limiting the ability of counties and municipalities to initiate down-zonings, create overlay districts, or strengthen landscaping and design standards; and

WHEREAS, these limitations have hampered the ability of local governments to implement site-specific solutions for climate resilience, stormwater mitigation, environmental justice, and tree preservation; and

WHEREAS, communities like ours are best positioned to balance growth with stewardship, protect public safety, and ensure equitable access to green infrastructure through local decision-making; and

NOW, THEREFORE, BE IT RESOLVED by the [City Council / Board of Commissioners] of [Jurisdiction Name], North Carolina, that:

- 1. We respectfully urge the North Carolina General Assembly to restore local authority over land-use planning and zoning decisions, including the ability to initiate down-zonings and guide responsible growth.*
- 2. We support statewide legislation affirming the right of municipalities and counties to:*
 - Enact and enforce ordinances related to tree preservation, landscaping, native plantings, open space, and green infrastructure;*
 - Adopt or amend overlay zoning districts and development design standards; and*
 - Regulate site design in alignment with locally adopted comprehensive plans, open-space plans, and urban forestry master plans.*



Sassafras
(*Sassafras albidum*)

ASSERTING LOCAL AUTHORITY

SAMPLE LETTER TO NC GENERAL ASSEMBLY

Restoring Local Authority to Guide Development and Protect Trees

Dear [Representative/Senator Last Name],

On behalf of [City / County Name], I am writing to share the enclosed resolution adopted by our [City Council / Board of Commissioners]. This resolution urges the General Assembly to restore essential local zoning powers restricted by Section 3K.1 of Session Law 2024-57 and to enact the corrective language contained in Senate Bill 587.

Our community is experiencing rapid growth—and with it, mounting threats to public health, neighborhood character, and the environmental assets that safeguard us from heat, flooding, and pollution. Local governments are best equipped to address these challenges because we understand the unique conditions of our economy, our ecology, and our people.

We respectfully ask that you consider introducing and supporting legislation to:

- Reintroduce and enact the provisions of SB 587, restoring local authority to initiate and enforce down-zonings;
- Grant local governments express authority to adopt ordinances for tree preservation, native landscaping, and open-space protection; and

Thank you for your service and your commitment to the people of North Carolina. We welcome the opportunity to work with you to ensure that future growth preserves the natural assets and community character that protect and define us.

Sincerely,

[Name]

[Title: Mayor / Chair / City Manager]



Shumard oak
(*Quercus shumardii*)

INCENTIVES & ASSESSMENTS

TOOLS WITHIN LOCAL AUTHORITY



Sweetgum
(*Liquidambar
styraciflua*)

Despite the constraints of Dillon's Rule and limitations to down-zoning, **local governments in North Carolina are not powerless** and retain a range of tools to protect trees and guide growth.

INCENTIVE-BASED TREE PRESERVATION PROGRAMS

Counties can offer voluntary incentives to developers who preserve tree canopy—such as **density bonuses, expedited review, fee waivers, reduced setbacks, or recognition programs**. Incentive programs reward conservation without adding new mandates, making them politically feasible and legal.

These programs also build goodwill between governments, developers, and the public. Developers who go above the minimum requirements can benefit from faster approvals and positive publicity. Over time, incentives help normalize the expectation that preserving trees is not a burden but an asset.

ENVIRONMENTAL REVIEWS

Local governments in North Carolina can require environmental documentation—like **floodplain analysis, tree surveys, or habitat studies**—as part of the site plan or special use permit review process. These reviews are powerful information-gathering tools. They shine a light on the environmental impacts of development, helping staff, elected officials, and the public understand trade-offs and risks that might otherwise be hidden.

Even without mandates, **the simple act of disclosure often influences outcomes**: developers may voluntarily adjust designs to avoid public controversy, streamline approvals, or demonstrate good stewardship. Reviews also create a formal record of impacts, which can strengthen advocacy efforts for stronger regulations.

Such reviews help counties tie environmental factors to existing local authority over health, safety, and stormwater, established under G.S. 160D. A tree survey or habitat assessment can provide evidence that supports stronger erosion controls, better stormwater planning, or conditions placed on special use permits. In practice, this means a county can require wider riparian buffers where runoff is a concern, direct a developer to preserve vegetation on steep slopes to prevent erosion, or require added stormwater controls when tree loss will increase impervious surface. Even without a tree ordinance, reviews give counties leverage.

ADVISORY COMMITTEES

TOOLS WITHIN LOCAL AUTHORITY

It is well within local authority to create **advisory committees that support planning, environmental protection, and public engagement**. These bodies don't pass laws or enforce regulations, so they're fully allowed under state law. They advise elected officials, inform staff, and strengthen community participation.

ENVIRONMENTAL ADVISORY COMMITTEE (EAC)

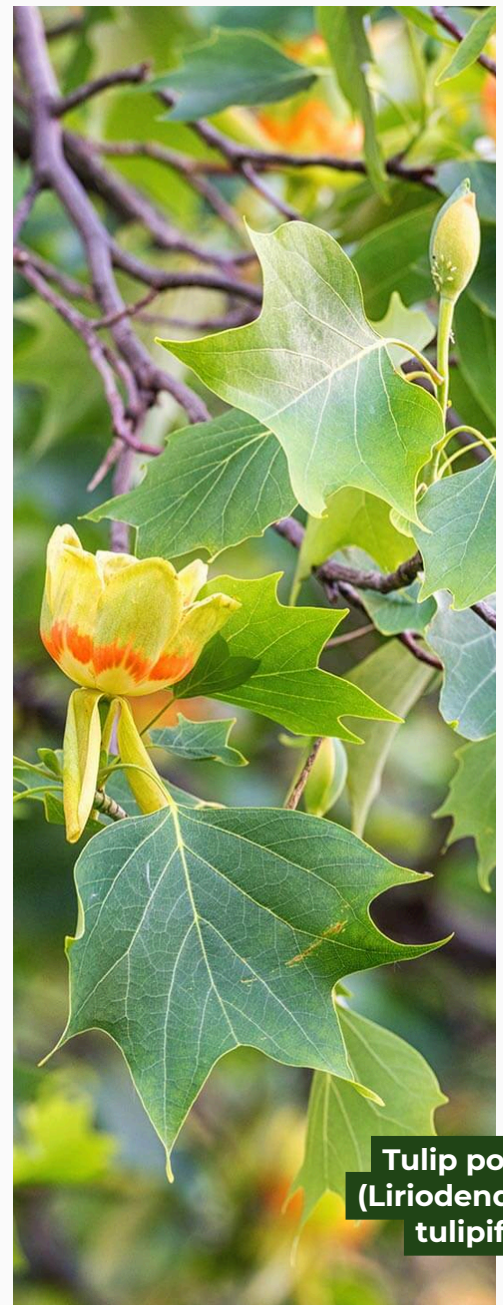
An Environmental Advisory Committee (EAC) is a standing board appointed by county commissioners to provide guidance on environmental issues like stormwater, air and water quality, climate resilience, tree canopy, and land use. EACs meet regularly to review plans, advise on policies, and engage the public.

EXAMPLE: Henderson County's EAC meets bi-monthly and reports directly to the Board of Commissioners. Its members represent a range of environmental expertise and community interests. The EAC provides recommendations to support environmental quality across the county. It functions as a trusted link between the public and local government, helping integrate sustainability goals into county operations.

ENVIRONMENTAL REVIEW ADVISORY COMMITTEE (ERAC)

An Environmental Review Advisory Committee (ERAC) serves a more specialized function, advising planning staff or boards on potential impacts of proposed developments or policy changes. Often composed of professionals in ecology, engineering, hydrology, and planning, ERACs provide scientific and technical insight into the review of rezonings, site plans, and comprehensive plan updates.

EXAMPLE: In Chatham County, as outlined in UDO Section 13.1.4, the ERAC is a non-regulatory advisory body established by the Board of Commissioners, tasked with reviewing environmental impact assessments and providing technical guidance on proposed developments.



Tulip poplar
(*Liriodendron tulipifera*)

NORTH CAROLINA EXAMPLE: COMMISSION FOR THE ENVIRONMENT

Orange County's Commission for the Environment (CFE) offers a strong model for citizen-driven environmental oversight. Composed of 15 at-large members appointed by the Board of County Commissioners, the CFE serves as an advisory body on environmental issues ranging from policy recommendations to public education initiatives. While its structure prioritizes broad civic participation, it does not require members to have specific professional backgrounds in science, development, or environmental justice—though individuals with such experience are often encouraged to apply. The CFE reflects a flexible and accessible governance approach, rooted in community engagement and accountability to local leadership.

To build on this foundation, counties and municipalities might adopt enhancements that ensure both inclusivity and expertise—such as reserving a minimum number of seats for environmental scientists, urban forestry professionals, public health advocates, or representatives from frontline communities disproportionately impacted by pollution and climate risk. Incorporating youth seats, term limits, and equitable geographic representation can increase both the technical capacity and legitimacy of the commission. A more structured balance between lived experience and technical knowledge would ensure that environmental decisions are informed, just, and community-centered.

American hornbeam (*Carpinus caroliniana*)



GLOSSARY

ARBORIST

A trained tree care professional; an ISA Certified Arborist meets national standards for tree health and safety practices.

BIOSWALE

Shallow, vegetated channel that slows and filters stormwater.

BIORETENTION AREA

Landscaped basin to filter stormwater with soil, plants, and mulch.

BUFFER ZONE

A protected area of vegetation that separates development from sensitive resources like waterways or wetlands.

CANOPY

The layer of leaves and branches from trees that provide shade over an area, measured as a percentage of land area.

CANOPY STANDARDS

Local requirements that set minimum amounts of tree canopy to be preserved or planted in a development.

CONTIGUOUS CANOPY

Continuous tree cover forming larger blocks of habitat and shade.

CONSERVATION RESOURCE AREA (CRA)

A mapped portion of land containing sensitive natural features that must be preserved and protected during development.

CRITICAL ROOT ZONE (CRZ)

The area around a tree's trunk containing the roots for health and stability, often defined by a set radius per inch of trunk diameter.

DIAMETER AT BREAST HEIGHT (DBH)

A standard measure of a tree's trunk diameter taken 4.5 feet above the ground.

DEVELOPMENT FOOTPRINT

The total area of a site directly altered by construction, grading, or paving.

ECOSYSTEM SERVICES

The benefits nature provides, like clean air, flood protection, shade, and wildlife habitat.

ENVIRONMENTAL ADVISORY COMMITTEE (EAC)

A citizen board that advises local government on environmental policies, programs, and community priorities.

ENVIRONMENTAL REVIEW ADVISORY COMMITTEE (ERAC)

A technical board that reviews development proposals for potential environmental impacts.

HERITAGE TREE

A term used in development ordinances to refer to a tree recognized for its age, size, or species and given special protection.

**INTERNATIONAL
SOCIETY OF
ARBORICULTURE (ISA)**

A global professional organization that sets certification standards for arborists.

INVASIVE SPECIES

Non-native plants or animals that spread aggressively and harm local ecosystems.

**LAND DEVELOPMENT
CODE (LDC)**

A set of regulations that governs land use, development, and environmental protections.

**LOW-IMPACT
DEVELOPMENT (LID)**

An approach to stormwater mitigation that mimics natural cycles using tools like permeable pavement and rain gardens.

MITIGATION FEE

A payment required when tree removal cannot be fully offset by planting replacements.

NATIVE SPECIES

Plants naturally occurring in a region that support local ecosystems and wildlife.

**NON-INVASIVE
SPECIES**

A non-native species that doesn't cause harm to the local environment or other species.

**PERFORMANCE
SUBDIVISION**

A design approach that allows flexibility in lot sizes or layouts in exchange for preserving open space and natural resources; also sometimes called "Conservation Subdivision"

PRESERVATION PLAN

A document detailing how existing trees will be protected before, during, and after construction.

PROTECTED TREE

A tree given legal protection by local ordinance due to its size, species, or location.

RAIN GARDEN

A landscaped depression planted with vegetation that collects and filters rainwater.

**RESOURCE
MANAGEMENT PLAN**

Document mapping a site's trees and natural features early in development to guide protection of environmental resources.

RIPARIAN BUFFER

Vegetated land along a stream or river that protects water quality and provides habitat.

ROUTING ANALYSIS

A review to determine the most suitable path for utilities or infrastructure to minimize environmental impact.

SOIL INFILTRATION

The process of water soaking into the ground, replenishing groundwater and reducing runoff.

SPECIMEN TREE

A term that is often used in development ordinances to refer to an outstanding individual tree due to size, form, condition, or species rarity.

STORMWATER COMPLIANCE

Meeting legal requirements for controlling and treating runoff from rain and development.

STORMWATER CONTROL MEASURE

A proven technique or design (referred to as SCM) used to reduce environmental impacts, such as stormwater runoff or erosion; *also known as Best Management Practice (BMP)*.

TOPOGRAPHY

The natural and man-made features of a landscape, including elevation and slope.

TREE MITIGATION

Actions taken to offset tree removal, such as replanting or paying into a mitigation fund

TREE MITIGATION FUND

A dedicated account for fees collected to replace or enhance tree canopy elsewhere.

TREE EQUITY SCORE

A measure of how well tree canopy is distributed across neighborhoods, accounting for health, income, and climate factors.

TREE RETENTION

The act of keeping and protecting existing trees during development.

TREE SAVE AREA

A designated portion of a site where existing trees must be preserved.

UNIFIED DEVELOPMENT CODE (UDO)

A comprehensive set of regulations that guides land use, zoning, and development standards, including provisions for environmental protection and tree preservation.

URBAN HEAT ISLAND EFFECT

The warming of built-out areas due to heat-absorbing non-natural surfaces like pavement and roofs.

VERTICAL DEVELOPMENT

Construction that increases building height rather than land coverage, often to conserve space.

WATERSHED

The land area that drains into a specific body of water, such as a river, lake, or estuary.

WATERSHED PROTECTION OVERLAY DISTRICT

A special zoning designation that provides additional regulations to protect water quality by limiting certain types of development and land disturbance near sensitive water resources such as rivers, streams, and wetlands.

“To cherish what remains of the Earth and to foster its renewal is our only legitimate hope of survival.”

Wendell Berry, *The Art of the Commonplace: The Agrarian Essays* (2002)

APPENDIX

Suggested Code Updates

KEEP TREES STANDING: RETENTION OVER REPLACEMENT

Protect Heritage Trees

“Specimen Trees shall be defined as any tree 24” DBH or greater. The removal of Specimen Trees shall be prohibited unless the applicant can demonstrate that preservation precludes reasonable development of the site. Removal of Specimen Trees shall require replanting or payment into the tree fund at a rate of 2.0 caliper inches for each inch removed.”

“Specimen longleaf pines shall be designated for protection at a threshold of 18 inches DBH, rather than 24 inches DBH, due to their slow growth rate and ecological significance. Removal of specimen longleaf pines shall require a variance and enhanced mitigation measures.”

Establish Tree Save Areas

“Development projects ≥ 1 acre in size shall preserve a minimum of 15% of the total site area as undisturbed Tree Save Area (TSA). TSAs shall be configured to preserve significant trees and contiguous natural areas.”

Incentivize Preservation

“Existing healthy trees may count toward landscape, buffer, and open space requirements, regardless of whether they fall within designated planting areas. Preserved canopy shall be credited proportionally, with enhanced credit granted for mature trees, contiguous groves, and native species. Tree preservation that achieves these outcomes may also qualify for reductions in other site development requirements, including setbacks, mitigation fees, or parking minimums.”

“Parking lot requirements may be reduced by up to 50% for developments that preserve $\geq 25\%$ of existing tree canopy on site.”

“Where existing vegetation—including groves, forested areas, or specimen trees—is preserved and designated as a Resource Conservation Area (RCA), such RCA may substitute for required perimeter or streetscape buffers. In these cases, the RCA must be a minimum of 20 feet wide, at least 0.25 acres in area, and adjacent to the site boundary. The RCA shall contain native or regionally adapted trees, be free of invasive species, and be permanently protected through conservation easement or restrictive covenant. Buffer reduction shall not exceed 50% of the standard width.”



**Sweetbay magnolia
(Magnolia virginiana)**

APPENDIX

Suggested Code Updates

KEEP TREES STANDING (CONT.)

Require Resource Management Plans (RMPs)

“Development projects ≥1 acre shall submit a Resource Management Plan (RMP) with their initial application. The RMP must inventory all trees ≥8” DBH, identify significant or native trees, and outline preservation strategies. Plans must demonstrate how tree protection was considered before site layout. No grading permit shall be issued without an approved RMP.”

Offer Flexible Standards

“Development projects may meet tree preservation requirements through alternative compliance measures, including off-site conservation, reconfiguration of required tree save areas, or payment-in-lieu, provided they preserve mature canopy and offer equal or greater environmental value. Proposals must show how the alternatives satisfy the ordinance’s intent and may be approved by the Planning Director or designee.”

Conduct Tree Surveys

“Development applications requiring site plan approval shall include a tree survey prepared and signed by a certified arborist, urban forester, or landscape architect. The survey shall identify species, DBH, canopy spread, health, and structural condition of all protected and specimen trees, as well as the critical root zones of trees proposed for preservation. It shall indicate trees proposed for removal and trees located within 20' of all property lines. Municipalities shall require the issuance of a tree removal permit prior to granting any land disturbance permit.”

DESIGN WITH NATURE: LOW-IMPACT DEVELOPMENT

Integrate Low Impact Development (LID) Principles

“Preserved tree canopy shall be recognized as a recognized Stormwater Control Measure (SCM) and may be credited toward required stormwater volume reduction. Subject to engineering approval, developments may reduce required retention volume proportionate to the interception and infiltration capacity of existing tree canopy preserved beyond baseline code requirements. Supporting documentation—such as canopy area, species characteristics, and soil infiltration data—shall be provided to demonstrate performance.”

Revise Standards to Prevent Unintended Canopy Loss

“Stormwater utility fees and required retention volumes shall be reduced for developments preserving healthy, mature tree canopy beyond minimum code requirements. Reduction amounts shall be based on documented interception, evapotranspiration, and infiltration benefits of preserved canopy, calculated using approved engineering methods. Preservation measures must be shown on final plans and protected through recorded easements or covenants.”



Atlantic white cedar
(*Chamaecyparis
thyoides*)

APPENDIX

Suggested Code Updates

DESIGN WITH NATURE: LOW-IMPACT DEV. (CONT.)

Tie Density Bonuses to Greenspace Preservation

“Modifications to dimensional or design requirements (e.g., setbacks, lot coverage, or height limits) may be granted to projects that preserve at least 20% of the total site as undisturbed greenspace, inclusive of mature tree stands, native vegetation, and natural hydrologic features.”

“Projects preserving 25% or more of existing on-site tree canopy may qualify for increased Floor Area Ratio (FAR), reduced impervious surface thresholds, or bonus dwelling units in designated high-density zoning districts.”

Limit Impervious Cover

“Base limits shall be set at no more than 30% impervious cover for residential zones and 50% for commercial or mixed-use zones, excluding rights-of-way. In environmentally sensitive areas, including Natural Heritage Sites, wetlands, and designated conservation or groundwater recharge zones, the maximum impervious surface threshold shall be reduced to no more than 10–20%, depending on site-specific ecological and hydrologic conditions. These standards may be exceeded only when developments incorporate approved green infrastructure practices—such as permeable pavement, preserved canopy, bioretention areas, or other stormwater control measures (SCMs)—that demonstrably offset runoff impacts. In such cases, applicants must submit supporting documentation, including site-specific calculations demonstrating that effective imperviousness does not exceed the base threshold.”

CANOPY AS CLEAN WATER INFRASTRUCTURE

Integrate Trees into Stormwater Code

“All new commercial developments over one acre and all new residential developments over five acres shall submit, in writing, a plan demonstrating how at least 25% of stormwater management requirements will be met through natural systems, including preserved canopy, bioretention areas, or permeable surfaces.”

Establish Riparian Buffers

“All new development shall maintain a minimum 100-foot forested buffer along perennial streams and wetlands, measured from the top of the bank. Development within these buffers is prohibited except for minimal crossings. A minimum 50-foot forested buffer shall also be maintained along intermittent streams, with similar restrictions on disturbance.”



**Eastern red cedar
(*Juniperus
virginiana*)**

APPENDIX

Suggested Code Updates

CANOPY AS CLEAN WATER INFRASTRUCTURE (CONT.)

Facilitate Conservation Easements

“Developments located within designated priority conservation areas may receive credit toward open space, buffer, or tree preservation requirements through the permanent protection of land under conservation easement. Such easements must be recorded with the county, prohibit future development, and preserve existing trees or vegetation in perpetuity. Easement lands may be located on-site or, with approval, off-site within the same watershed or green infrastructure corridor.”

Incentivize Preservation Through Stormwater Credits

“Development projects that retain a minimum of 20% of pre-existing tree canopy shall be eligible for a reduction of up to 25% in required on-site stormwater detention volume, provided that preserved trees are healthy, mature, and protected during construction. Preserved canopy must be documented via aerial imagery or tree survey, and shown on approved plans. Projects utilizing this credit may qualify for a density bonus, additional design flexibility, and/or expedited review.”

Establish Watershed Protection Overlay Districts

“Establish Watershed Protection Overlay Districts in priority watersheds. Require at least 40% tree canopy coverage through preservation or new planting, alongside impervious surface limits and mandatory riparian buffers of 100 feet along perennial streams and 50 feet along intermittent streams.”

STRENGTHEN & ENFORCE PROTECTIONS

Revise Performance Subdivision Rules

“All new commercial developments over one acre and all new residential developments over five acres shall submit, in writing, a plan demonstrating how at least 25% of stormwater management requirements will be met through natural systems, including preserved canopy, bioretention areas, or permeable surfaces.”

Identify & Strengthen Protections for High-Value Natural Areas:

“Any proposed development within designated floodplains, wetlands, or Significant Natural Heritage Areas shall be subject to an Environmental Impact Assessment. Zoning classifications—including but not limited to R-20—shall not constitute entitlement to full build-out when site conditions are demonstrably unsuitable due to conservation value, flood risk, or critical habitat. Projects may be subject to density reductions or additional mitigation based on EIA findings.”



Loblolly pine
(*Pinus taeda*)

APPENDIX

Suggested Code Updates

STRENGTHEN & ENFORCE PROTECTIONS (CONT.)

Adopt Conservation Resource Areas (CRAs)

“Development projects shall identify and map significant ecological resources, including mature forests, riparian buffers, wetlands, and habitat corridors. A minimum of 50% of these areas shall be preserved in perpetuity through a recorded conservation easement or deed restriction. Development shall be clustered outside of designated CRAs, with permitted density transferred to the site’s buildable portions. Preserved land may count toward open space requirements. Density bonuses may be granted for exceeding minimum preservation standards.”

Preserve Trees Through Final Buildout

“Tree coverage requirements shall apply to the overall subdivision site and to each individual lot therein. All preserved trees and associated CRZ protection areas shall be shown on final plats. Required protective measures, mitigation conditions, and replanting requirements shall be recorded and enforced as conditions running with the land, remaining in effect through all phases of development and ownership until a Certificate of Occupancy is issued.”

Enforce Professional Preservation Education

“All general contractors and site supervisors for projects with Tree Save Areas or preservation plans must complete an approved preservation training program before land disturbance. Documentation shall be submitted with permit applications and retained for inspection.”

RETHINK ‘ESSENTIAL SERVICES’

Mandate Alternative Routing Analyses

“All development or infrastructure proposals involving essential services shall submit an Alternative Routing Analysis. No route disturbing the critical root zone of a protected tree may be approved unless the applicant demonstrates, in writing, that all reasonable alternatives were explored and found infeasible. City and County agencies shall coordinate with urban forestry staff during early planning to identify tree protection opportunities. Projects that avoid canopy impacts may qualify for reduced mitigation requirements.”

Integrate Tree Protection into Preliminary Planning

“All public infrastructure and utility projects shall coordinate with the Urban Forestry Division or Sustainability Office during the preliminary planning phase. Tree preservation considerations must be documented in master planning documents and GIS-based siting. Plans shall show efforts to avoid tree impacts and identify significant canopy, critical root zones, and other sensitive areas prior to technical review. Infrastructure projects that lack early coordination and avoidance shall not be deemed complete for submittal.”



American
serviceberry
(Amelanchier
arborea)

APPENDIX

Suggested Code Language

RETHINK “ESSENTIAL SERVICES” (CONT.)

Codify CRZ Avoidance

“Utility trenching and installation within the CRZ of protected trees shall be prohibited unless performed by air-spade excavation or other low-impact techniques under the supervision of a certified arborist.”

Protect Sensitive Areas

“Tree protection plans for essential services shall include root pruning specifications, mandatory protective fencing requirements prior to construction, and post-construction monitoring for a minimum of two years to assess tree health and implement corrective measures.”

“Damage to protected trees resulting from unauthorized utility work shall result in doubled mitigation fees and may trigger a stop-work order until a revised tree protection plan is approved.”

SET HIGHER STANDARDS (REPLACEMENT & MITIGATION)

Tree Mitigation Fund

“Mitigation funds collected under this ordinance shall be deposited into a dedicated Tree Mitigation Fund, exclusively dedicated to urban forestry initiatives within the City/County, including: tree planting, replacement, and establishment programs; maintenance, care, and preservation of existing public trees; urban tree canopy assessments and management planning; acquisition or conservation easements of land specifically for the purpose of tree preservation; and educational programs, community outreach, and administrative costs directly associated with urban forestry efforts. The City/County shall publicly report the status of the Tree Mitigation Fund as part of the annual budgeting process and make it available for public review and comment. Reports shall clearly detail: total funds received (including date, amount, and source of all mitigation payments); detailed expenditures (including project descriptions, locations, amounts spent, and dates); fund balance; budget forecasts outlining anticipated income and planned expenditures.”

“Unauthorized removal of protected trees shall incur mitigation fees at double the standard rate. Repeat violations trigger stop-work orders.”

Canopy Coverage Goals

“When protected trees are removed, mitigation shall be calculated based on the total square footage of canopy lost. Replacement shall be achieved through planting new trees sufficient to restore the lost canopy area within ten years of planting, or payment of an equivalent fee based on the cost of planting replacement canopy.”



American dogwood
(*Cornus florida*)

APPENDIX

Suggested Code Language

SET HIGHER STANDARDS (CONT.)

"When an applicant proposes a site design preserving at least 25% more canopy than minimums, the Planning Director may administratively approve reasonable deviations from dimensional standards, parking requirements, or site configuration standards, provided deviations do not compromise public safety or stormwater compliance."

Soil Quality & Volume

"Each large canopy tree shall be provided a minimum of 600 cubic feet of non-compacted soil at least 3 feet deep. Tree planting sites must be excavated to remove construction debris and backfilled with amended soil consistent with ANSI A300 standards. Soils shall meet a minimum infiltration rate of 0.5 inches per hour, and compaction shall not exceed 85% Proctor density unless structural soil or suspended pavement systems are used."

Selection & Diversity

"At least 75% of all trees, shrubs, and herbaceous plants in any required landscape plan shall be native to the southeastern U.S. or naturalized species proven to support local ecosystems. Sites planting more than 20 trees must also meet species diversity requirements. Up to 25% of required plant material may be non-native but non-invasive, subject to staff approval. Any planting list with more than 25% non-native species must include written justification and a mitigation strategy, such as supplemental native plantings, pollinator habitat, or wildlife-supportive design features. Developments that exceed the 75% native requirement—particularly those planting 100% native species—may qualify for reduced buffer widths, expedited review, or landscape credit bonuses."

"All required tree plantings must be native or regionally adapted species selected for drought tolerance, pest resistance, and compatibility with urban environments. No more than 25% of new plantings in a development may be of the same species, and no more than 10% may be of the same cultivar."

"Required replantings must be trees of equal or greater quality—not shrubs or pine plugs. Pines are acceptable only when planted in equal or greater DBH to the removed tree."

Maintenance & Establishment Periods

"All newly planted trees shall be subject to a two-year establishment period, during which the property owner or responsible party shall ensure regular watering, mulching, and inspection. Tree replacements shall be required for any tree that fails to survive the establishment period. A maintenance agreement must be submitted prior to final approval, detailing roles, schedule, and contact information."



Black cherry
(*Prunus serotina*)



Thank you for joining us under the canopy.

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Alliance for Cape Fear Trees

acftrees.org

7 Beauregard Drive, Suite 2

Wilmington, NC 28412

contact@acftrees.org

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