

# CONSERVING TREES AND FORESTS IN METROPOLITAN WASHINGTON & 50% TREE CANOPY GOAL

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## Community Forestry Network Forum

August 28, 2024

# Presentation Content

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- Council of Government initiatives
- Overview of “Conserving Trees and Forests in Metropolitan Washington”
- Current canopy levels, and trends
- Possible gains and losses
- Costs of offsetting canopy losses
- Consequences of canopy losses
- The Regional Tree Canopy Goal
- Supporting Target Goals
- Intended use and limitation of Target Goals
- How COG Communities can support the Regional Goal
- Building Partnerships
- The Tree Conservation Cookbook

# COG Tree Canopy Initiatives

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## Voluntary Air Quality State Implementation Plan Measure

- Tree measures included in voluntary 8-hr Ozone mitigation measures (2005)

## Ad-hoc Regional Tree Canopy Workgroup formed (2012)

- Tree Canopy Management Strategy (2018)

## Regional Tree Canopy Subcommittee established (RTCS) (2019)

### Deliverables include:

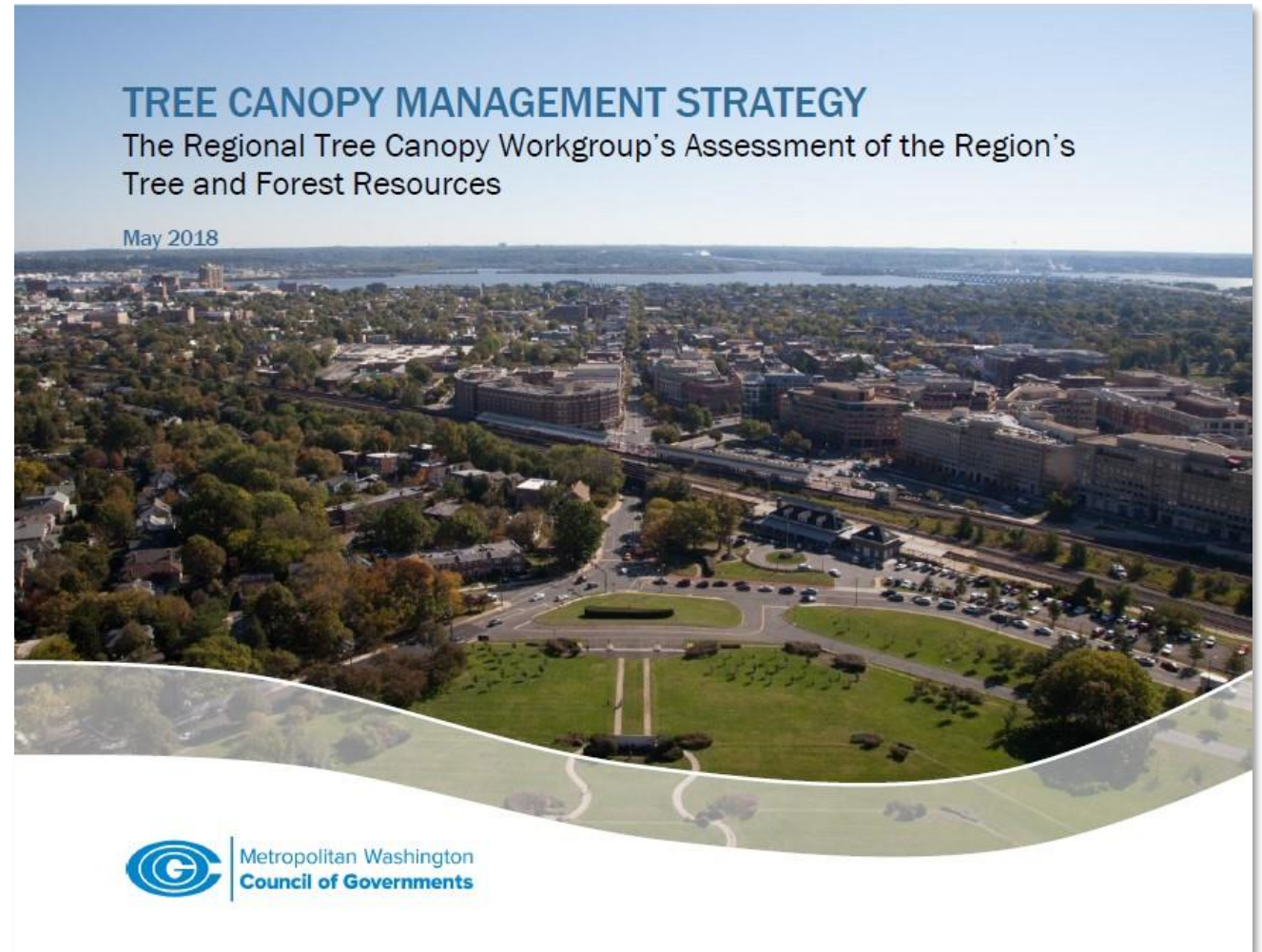
- Tree Conservation Cookbook – (2023)
- Regional Tree Canopy Goals in 3 Volume Report (2024)
  - **Regional Tree Canopy Goal and supporting Target Goals**
- Current Focus: **Regional Tree Action Plan** (2025)

# 2018 Tree Canopy Management Strategy

## Key Recommendations

1. Encourage COG member jurisdictions to conserve and expand urban forests.
2. Establish an on-going forest policy committee to advise COG on issues and trends related to regional trees and forests; develop a regional tree action plan and regional tree canopy goals; and promote, monitor, and realign policies and recommendations as new conditions and trends emerge.
3. Align regional urban forestry initiatives and metrics with the Region Forward Vision

<https://www.mwcog.org/documents/tree-canopy-management-strategy/>



# Conserving Trees and Forests in Metropolitan Washington

Originally three separate reports generated to stimulate local government interest in tree conservation practices and to advocate for a regional tree canopy goal.

**Part 1: A Case for Conserving Trees and Forests in the Metropolitan Washington Region**

**Part 2: Tree Canopy Goals for the Metropolitan Washington Region**

**Part 3: Identifying the Right Level of Tree Canopy for Your Community**

<https://www.mwcog.org/newsroom/2024/04/11/cog-board-adopts-a-new-regional-tree-canopy-goal-climate-energy-conservation-forestry-urban-forestry/>



## CONSERVING TREES AND FORESTS IN METROPOLITAN WASHINGTON

Report on the state of the region's tree canopy and its benefits, the development of new regional goals, and strategies for action at the local level

April 2024





# Conserving Trees and Forests in Metropolitan Washington

## Part 1 focuses on Tree Services and Benefits:

- Exposure to nature is critical to human health and quality of life
- Urban trees can be used to address environmental equity
- Trees can be used to build cohesive neighborhoods and reduce crime
- Trees can be used to increase local retail business and grow healthy economies
- Trees provide cost-effective solutions and great investments
- Trees and forests can be used to mitigate climate change
- Trees can help communities become more climate resilient
- Need to recognize and manage the costs, damages, and risks associated with trees
- Need to monitor threats to our regional tree canopy



# Conserving Trees and Forests in Metropolitan Washington

Part 2 Focuses on Current Canopy Levels, Trends, and Goals

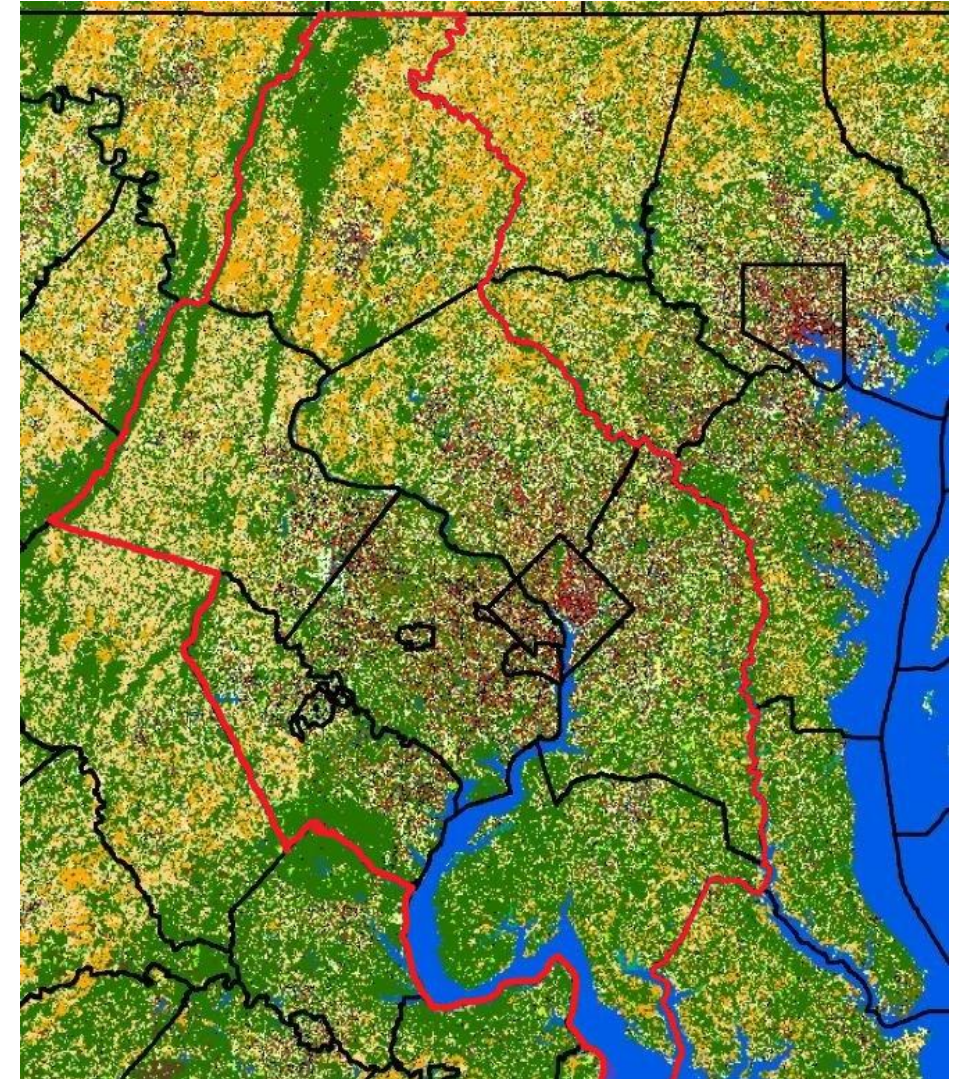
Metropolitan Washington Council of Governments (COG) represents 26 jurisdictions

Current tree canopy coverage for COG membership area (2,213,976 acres) is **estimated at 49.6%\***

Regional tree canopy loss between 2014 and 2018 was 17,133 acres, or **average of 4,383 acres of tree canopy loss each year.\***

If 2014/2018 loss trend were to continue the total area canopy loss would equal **119,932 acres by 2050**

\*Chesapeake Bay Program Land Use/Land Cover Project (CBP 2022 LULC Project).





# Current Canopy Levels and Trends

	Jurisdiction	Total Acreage of Jurisdiction w/o bodies of water <sup>#</sup>	Acres of Tree Canopy 2014	Acres of Tree Canopy 2018	% Tree Cover 2014	% Tree Cover 2018	Acres of Tree Canopy Gain/Loss
1	Arlington County, Virginia	16,638.28	5,647.7	5,655.3	33.9%	34.0%	7.6
2	Charles County, Maryland	292,971.63	198,908.4	198,119.6	67.9%	67.6%	788.9
3	Fairfax County, Virginia	250,252.38	140,120.1	139,299.2	56.0%	55.7%	821.0
4	Frederick County, Maryland	422,776.31	179,592.1	181,709.0	42.5%	43.0%	2,116.8
5	Loudoun County, Virginia	330,071.15	147,938.1	145,075.4	44.8%	44.0%	2,862.7
6	Montgomery County, Maryland	315,589.05	153,264.0	147,479.5	48.6%	46.7%	5,784.4
7	Prince George's County, Maryland	308,890.48	168,099.1	160,808.4	54.4%	52.1%	7,290.7
8	Prince William County, Virginia	214,563.21	122,543.7	121,310.1	57.1%	56.5%	1,233.6
9	City of Alexandria, Virginia	9,558.58	2,639.3	2,658.1	27.6%	27.8%	18.8
10*	District of Columbia	39,120.61	15,235.8	14,760.3	38.9%	37.7%	475.5
11	City of Fairfax, Virginia	3,993.88	1,636.5	1,626.6	41.0%	40.7%	9.9
12	City of Falls Church, Virginia	1,309.72	541.1	536.4	41.3%	41.0%	4.6
13	City of Manassas, Virginia	6,299.49	1,502.4	1,498.9	23.8%	23.8%	3.5
14	City of Manassas Park, Virginia	1,941.63	426.0	424.6	21.9%	21.9%	1.4





# Canopy Trends

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The 2014/2018 trendline provides an opportunity to project future canopy levels and assess the impacts of different methods of tree conservation.

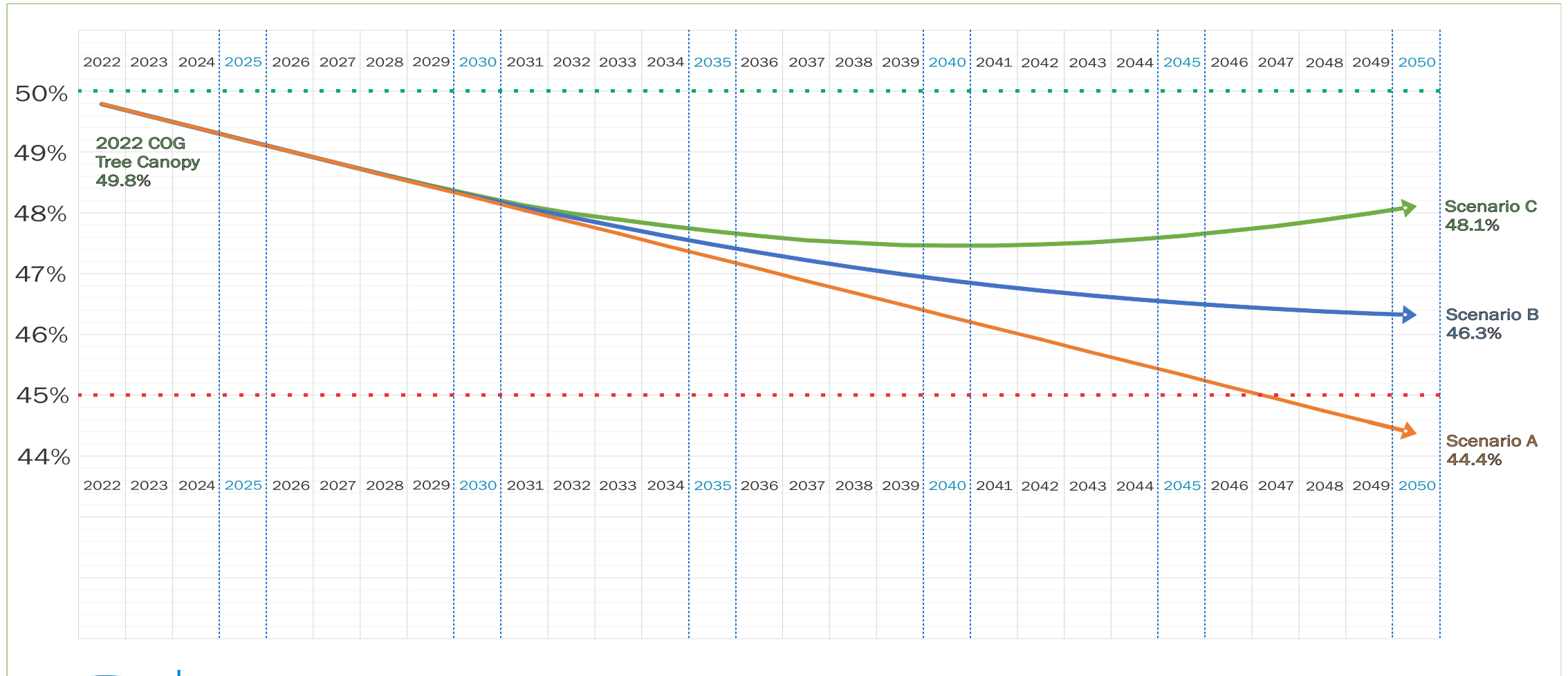
RTCS explored three scenarios involving different levels of tree preservation, tree planting\*, and post-planting quality assurance and replacement practices.

- Scenario A uses 2014/2018 trendline to plot possible canopy trends through 2050. Projects 2050 canopy level at 44.4%
- Scenario B plots impact of planting **109,300 each year in GOG region and increasing tree preservation** associated with land development by 5%.
- Scenario C plots impact of **planting 206,000 trees planted each year and increasing tree preservation** associated with land development by 10%

\* Alternative methods of reforestation and costs are discussed on pages 59 thru 61 of *Conserving Trees and Forests in Metropolitan Washington*

# Possible Gains/Losses

## Graph 1: Projected Changes to COG Region Tree Canopy 2022 to 2050



# Possible Losses and Offset Costs

Table 6. Acres of Tree Canopy Loss associated with Scenarios presented in Graph 1

Scenario	2022 Tree Canopy Coverage	2050 Tree Canopy Coverage	Offset by Tree Planting 2022 to 2050	Offset by Tree Preservation 2022 to 2050	Total Tree Canopy Loss 2022 to 2050
A	49.8 %	44.4%	N/A	N/A	119,932.4 acres
B	49.8 %	46.3%	39,019.2 acres	4,173.6 acres	76,739.6 acres
C	49.8 %	48.1%	74,136.5 acres	8,788.6 acres	37,007.4 acres

Efforts to offset tree canopy losses through tree planting is likely to involve a mixture of reforestation modes saplings, and seedlings. One possible mixture of reforestation practices applied to Scenario B could involve 20 % 2-inch nursery stock trees, 35 % 1.5-inch nursery stock trees, 15 % saplings, 25 % seedlings, and 5 % no-mow/natural succession. This mixture is estimated to cost approximately \$15.2 Million a year to implement with a total cost of \$440 million over a 29-year period.



# Tree Canopy Loss has Consequences

## Environmental Services and Benefits Associated with a 10% loss of our Current Canopy (10% of 50%)

	Annual Air Pollution Removal in LBS	Gallons of Stormwater Runoff Reduced Annually	Tons of Carbon Sequestered Annually
<b>Service</b>	7,983,710/year	616,171,576/year	141,842 tons/year
<b>Monetary Benefit</b>	\$9,643,014/year	\$5,579,099/year	\$26,569,310 tons/year
<b>Accumulated Service over 29-years</b>	231,527,592 lbs.	17,868,975,699 gallons	3,546,051 tons
<b>Monetary Benefit over 29-years</b>	\$279,647,415	\$161,793,881	\$770,510,000

Source: Understanding Your Canopy. Chesapeake Tree Canopy Network. **Services and monetary benefits extrapolated from 2018 tree cover data using iTree Landscape software.** <https://chesapeaketrees.net/understand-your-canopy/>



# Tree Canopy Goal Recommendations

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Three tiers of goals: One overarching regional goal and two supporting “Target Goals”

1. **An overarching goal of 50%.** This identifies the minimum percentage of tree canopy coverage recommended for the entire COG membership area. The time covered - present day until 2050.
2. Intermediate Target Goals based on Population Density and Urbanization.
3. *Smaller Scale Target Goals for General Land Use Categories:*

*“The distribution of tree canopy cover is generally not – and needn’t be – uniform across a municipality or even identical in every neighborhood. A single overarching canopy goal has its merits; for one thing, it is easier to communicate and promote. But at a functional level, it’s more important to break that down into more meaningful pieces, through a finer-scale analysis – by census tract, parcel, land ownership, sub-watershed, or other boundaries or land-use designations”*

*Jeff Leff - Davey Institute / USDA Forest Service.*

# The Regional Tree Canopy Goal

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1. **The overarching regional goal of 50%.** This identifies the minimum percentage of tree canopy coverage recommended for the entire COG membership area. The time covered - present day until 2050.

This goal represents the level of tree canopy RTCS recommends that COG jurisdictions strive to reach and maintain through 2050 (the same timeframe covered by COG's *Regional Forward Vision*).

A 50% tree canopy goal likely represents the ceiling of what is practical to achieve within the COG region.

Setting the goal at this level:

- Straddles the line between aspiration and pragmatism.
- Is compatible with a wide range of socioeconomic, environmental, and ecological concerns.
- Is similar to tree canopy levels found elsewhere in urbanized areas of the Eastern United States.
- Strikes a balance between enjoying the benefits and managing the risks of tree canopy.

# The Regional Tree Canopy Goal

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A detailed analysis of CBP 2022 LULC Project data, local comprehensive land use plans, transportation plans, local zoning maps, regional population projections and green infrastructure plans **suggests that it is feasible to support tree canopy coverage in the 45% to 50% range over the next 25 years**, and possibly more if COG jurisdictions chose to take steps to implement strong tree preservation and planting programs and other actions detailed in the report.

50% Canopy Coverage represents 1.11 million acres of tree canopy distributed throughout 2.21 million acres of the combined landmass of 24 COG jurisdictions.

This amount of canopy could provide similar levels of public health, socioeconomic, environmental and ecological services to those provided by trees and forests in 2018; however, land cover changes could alter the type and level of tree services provided at specific locations as time passes.

# The Regional Tree Canopy Goal

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Supporting a 50% tree canopy goal will require developing effective private/public partnerships and instilling a sense of goal ownership in private citizens, civic associations, private institutions via governmental and non-profit programs. The likelihood of successfully engaging the public appears more viable than ever due to public awareness and concern regarding the impacts of climate change.

**Tree Canopy Losses are Not Inevitable and Can be Reversed**. Tree canopy gains and losses in the DMV region have swung dramatically over the last two centuries and have not always followed the narrative that urbanization decreases tree canopy. To the contrary, the urbanization of non-forested areas can actually result in overall canopy gains over time\*.

\* Leff, M. (2016) The Sustainable Urban Forest, A Step-by-Step Approach. Davey Institute / USDA Forest Service. USFS Philadelphia Field Station.

[https://www.itreetools.org/documents/175/Sustainable\\_Urban\\_Forest\\_Guide\\_14Nov2016.pdf](https://www.itreetools.org/documents/175/Sustainable_Urban_Forest_Guide_14Nov2016.pdf)



# Target Goal supporting the Regional Goal

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- ***Intermediate Target Goals based on Population Density and Urbanization.*** These goals are provided to help communities identify tree canopy goals for watersheds, planning districts, census tracts, and towns and smaller cities.
- ***Smaller Scale Target Goals for General Land Use Categories:*** These target goals identify mature canopy coverage levels that associated with 18 general classes of land use categories encountered in the COG region.

The inclusion of the intermediate and smaller scale target goals reflect a ***“take care of the pennies and the dollars will take care of themselves”*** approach to achieving and sustaining the regional goal.

# Intermediate Goals: Population Density and Urbanization

Human Population Density *	Land Use Description	Tree Canopy Base Percent (2018)	Tree Canopy Target (2050)
Urban Centers			
> 3,000	Densely urbanized	33.5%	35% – 40%
1,500 to 2,999	Urbanized	39.2%	40% – 45%
< 1,500	Suburban/Residential	38.5%	45% – 55%
Other Areas			
> 2,000	Densely Urbanized	40.2%	35% – 45%
1,000 to 2,000	Urbanized	56.7%	55% – 60%
700 to 999	Partly urbanized	56.3%	55% – 60%
300 to 699	Suburban/Residential	50.4%	55% – 60%
< 299	Exurban / Transitioning from agricultural	54.9%	50% – 55%
< 299	Exurban areas – active agriculture	44.8%	40% – 45%

# Target Goals for General Land Use Categories - 1

No	Land Use Type	Examples and Considerations	2018 Canopy Levels	Target Goal 2050
1	Residential, Low	Detached homes, either single-family or duplex. Primary land use type hosting tree canopy	52%	55%
2	Residential, Medium	Single Family homes with medium yards. Attached homes, such as townhomes or single/double storied multi-family buildings	47%	50%
3	Residential, High	Single family homes with narrow setbacks, townhomes, high-rise condominiums & apartment buildings with parking lots and limited open space	36%	35%
4	Residential, Urban High	High rise condo buildings & apartment buildings only	No Data	25%
5	Commercial, Low	Single or double-story buildings, sometimes with parking lots, e.g., office parks	23%	35%
6	Commercial, Medium	Multi-story buildings, with parking lots and/or small parking garages	23%	30%
7	Commercial, High	High rise commercial	23%	25%
8	Mixed Use (Medium)	Commercial mixed with residential or other compatible uses, including high density mixed use. Varied definitions across COG jurisdictions	38%	40%
9	Mixed Use, High	RTCS added this category to differentiate from the conventional Mixed-Use category	38%	25%

# Target Goals for General Land Use Categories - 2

No	Land Use Type	Examples and Considerations	2018 Canopy Levels	Target Goal 2050
10	Industrial and Railway	Manufacturing, Industrial parks, quarries/asphalt/concrete plants, railways, and their immediate rights-of-way	32%	<b>30%</b>
11	Park, Low Development	Natural parks with trails, and minimal constructed facilities (nature centers, bathrooms) and arboreta	No Data	<b>80%</b>
12	Park, Medium Development	Passive recreation (cemeteries, gardens, and golf courses)	No Data	<b>40%</b>
13	Park, High Development	Sports fields, paved plazas, heavy traffic urban parks with high density of buildings	No Data	<b>30%</b>
14	Local Roads	Leading to residential or connecting small residential roads, low speed	No Data	<b>20%</b>
15	Arterials	Transportation within a local community, medium speed	No Data	<b>15%</b>
16	Freeways and Highways	Interstate Transportation, high speed	No Data	<b>15%</b>
17	Airports, Quarries, Landfills & Uses Restricting Tree Growth	Often have space to plant buffers and in areas dedicated to arrivals/departures, parking lot landscaping and pedestrian areas	No Data	<b>10%</b>
18	Agricultural	Consider stream buffers and road buffers, not including commercial forests and nurseries	No Data	<b>25%</b>





# Intended Use of the Canopy Goal Recommendations

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The recommended percentages of tree canopy coverage should be regarded as best management practices and aspiration.

Conditions in Metro DC area may be very different from your jurisdiction. The percentages are not intended to be applied in a prescriptive fashion or to be interpreted as universally applicable.

Determining what the optimal level of tree canopy is for any property or geographic area must be addressed on a site-by-site basis and based on the set of conditions observed at that time.

# Canopy Goals to be Periodically Reevaluated

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Attempting to forecast how regional canopy levels will be impacted by climate change and shifting societal values; economic patterns; housing and transportation needs, etc., contains many uncertainties.

**The regional canopy goal and supporting target goals are viewed as fluid and will be reevaluated once every five years to allow reaction to changing conditions and unforeseeable events.**

An opportunity to project canopy gain/loss trend lines with higher confidence will occur in 2025 and 2030 when the Chesapeake Bay Program is scheduled to release updated CBP LULC data.

# Next steps

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- ✓ Heidi Bonnafon, COG Senior Environmental Planner and RTCS liaison will present an outline of a Regional Tree Canopy Action Plan to the subcommittee for review and feedback on September 10<sup>th</sup>, 2024.
- ✓ RTCS will meet frequently during the remainder of 2024 and 2025 to continue working on the Action Plan which is scheduled to be reviewed by the COG's Climate, Energy and Environment Planning Committee next year.
- ✓ RTCS will begin outreach and education efforts aimed at encouraging support of the regional tree canopy goal by all 24-member COG jurisdictions, non-profit tree planting organizations, civic groups, green industry groups and many others.
- ✓ RTCS will examine changes to tree canopy levels and examine the effectiveness of canopy goals in a 5-year cycle that coincides with the release of updated CBP LULC data

# Supporting the Regional Tree Canopy Goal

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## *Examples of what COG Jurisdictions Can Do*

- Assess the capacity of local their government tree programs
- Use intermediate and smaller-scale target goals to support the regional goal and local climate action plans
- Adopt local tree actions plans and canopy goals if these do not currently exist
- Embed tree conservation objectives in local land development criteria
- Encourage the preservation of existing trees and forests during by-right and in-fill development
- Implement, support, and fund large-scale tree planting and follow-up quality control programs
- Support efforts to mitigate the impacts of climate change, herbivory, invasive plants, and other disturbance regimes on forest and woodland communities
- Increase public outreach and education
- Build partnerships with stakeholders
- Encourage the preservation of forests and trees through deed restrictions, conservation easements, environmental protection overlay districts, transfer of development rights, etc.

# Building Strong Partnerships

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COG, local governments, and non-profits will need to engage stakeholder groups that have on-going operations that involve tree care, forest management, propagate or plant trees for profit, or have potential to organize and lead tree planting and maintenance projects:

- State forestry departments
- Local and regional agencies and authorities that manage governmental properties
- Electric, gas, sewer and water companies and commissions
- Building industry associations
- Tree care organizations and companies
- Landscape and nursery industries
- Large private and institutional landholders
- Neighborhood action groups

*Forming and maintaining these partnerships is likely to be one of the most challenging aspects of the implementing the regional goal.*



# Tree Conservation Cookbook

Prepared in response to a COG request to help jurisdictions better manage, protect, and preserve their urban forests.

Provides examples of regulatory concepts and technical language that are offered as a resource for local jurisdictions when strengthening their existing regulations, policies, and programs, or while creating new ones.

## TREE CONSERVATION COOKBOOK

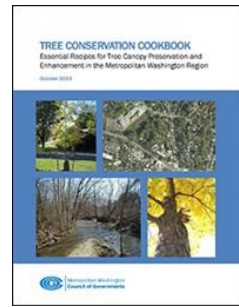
Essential Recipes for Tree Canopy Preservation and Enhancement in the Metropolitan Washington Region

January 2020



Examples include:

- Ordinance applicability
- Expected outcomes
- Plan Submission requirements
- Basis for plan approval
- Protection of exiting trees/forests
- Mitigation of construction impacts
- Management of high-risk trees
- Tree planting standards
- Standards for life expectancy species diversity, pest/disease resistance, environmental suitability, etc.
- Exceptions, deviations, waivers, etc.
- Establishing a tree board
- A basic model Tree ordinance



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# Tree Conservation Cookbook

Publication mimics a cookbook - with contents separated into two categories:

- **17 Essential Recipes** represent “must have” ordinance/policy features
- **7 Side Dishes** represent features that localities may find useful to address specific conditions or concerns

## TREE CONSERVATION COOKBOOK

Essential Recipes for Tree Canopy Preservation and Enhancement in the Metropolitan Washington Region

January 2020





# Tree Conservation Cookbook

Each example provided is classified as originating from *Central*, *Inner*, or *Outer* jurisdictions and associated with a *State*, *County*, *City* or *Town*

- Designations help readers target examples associated with communities similar to their own
- An entry-level model ordinance is provided in Appendix 1

## TREE CONSERVATION COOKBOOK - DRAFT

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## TREE CONSERVATION COOKBOOK

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**Council of Governments**