CONSERVING TREES AND URBAN FORESTS IN METROPOLITAN WASHINGTON REGION

Regional Tree Canopy Goals

Jeffrey King, Director, COG Climate Energy and Air Programs
Michael Knapp, Chair, COG Regional Tree Canopy Subcommittee (RTCS)
Brian LeCouteur, COG Principal Forester

Chesapeake Bay Policy Committee
January 19, 2024

Metropolitan Washington
Council of Governments

Agenda Item # 3

Briefing Outline

Background and Committee

Report Contents

Recommendations

Regional Success Story

Next Steps

Background

History of COG Tree Canopy Initiatives

- 2008 National Ambient Air Quality Standards (NAAQS) for Ozone
  - Voluntary Measure - State Implementation Plan (2005)
- 2012 COG-Climate Energy environment Policy Committee (CEEPC)
  - Ad-hoc Regional Tree Canopy Workgroup Established
  - Tree Canopy Management Strategy Developed (2018)
- 2019 COG Bard Establishes Regional Tree Canopy Subcommittee under CEEPC
  - ✓ Regional Resource Guide on Tree and Urban Forest Conservation (Cookbook)
    (Based on recommendations contained in 2018 report)
  - ✓ Regional Tree Canopy Goals
  - Regional Tree Action Plan

COG Board of Directors Resolution R7-2019 (RTCS)

COG Board of Directors Resolution R7-2019 February 13, 2019

"The board endorses the establishment of a Regional Tree Canopy Subcommittee of CEEPC…which would be charged with protecting, managing, and expanding urban forestry assets for health and quality of life; optimizing urban forest programs; **developing a regional urban forest action plan and canopy goals**; inspiring the community to take ownership of efforts to protect and expand urban forests; and integrating urban forestry with Region Forward and meeting Chesapeake Bay water quality goals."

COG Regional Tree Canopy Subcommittee

District of Columbia:
District of Columbia, James Woodworth
District of Columbia, Earl Eutsler
District of Columbia, Stephen Gyor
Casey Trees, Mark Buscaino

Maryland:
Montgomery County, Michael Knapp *
Maryland Department of Natural Resources, Iris C. Allen
Prince George County MNCPPC, Kim Finch
City of Bowie, Rick Kellner
Montgomery County, Laura Miller
Frederick County, Shannon Moore
Department of Natural Resources, Anne Hairston-Strang
Maryland Sustainable Forestry Council, Gary Allen

Virginia:
Fairfax County, Charles Smith
Department of Forestry, Jim McGlone
Fairfax County, Brian Keightley
Loudoun County, Kyle Dingus,
City of Falls Church, Kate Reich
Arlington County, Vincent Verweij

COG Staff:
Brian LeCouteur, RTCS Staff Liaison
Jeffrey King
Karl Berger
Phong Trieu
Kelsey Boatwright

Report Contents

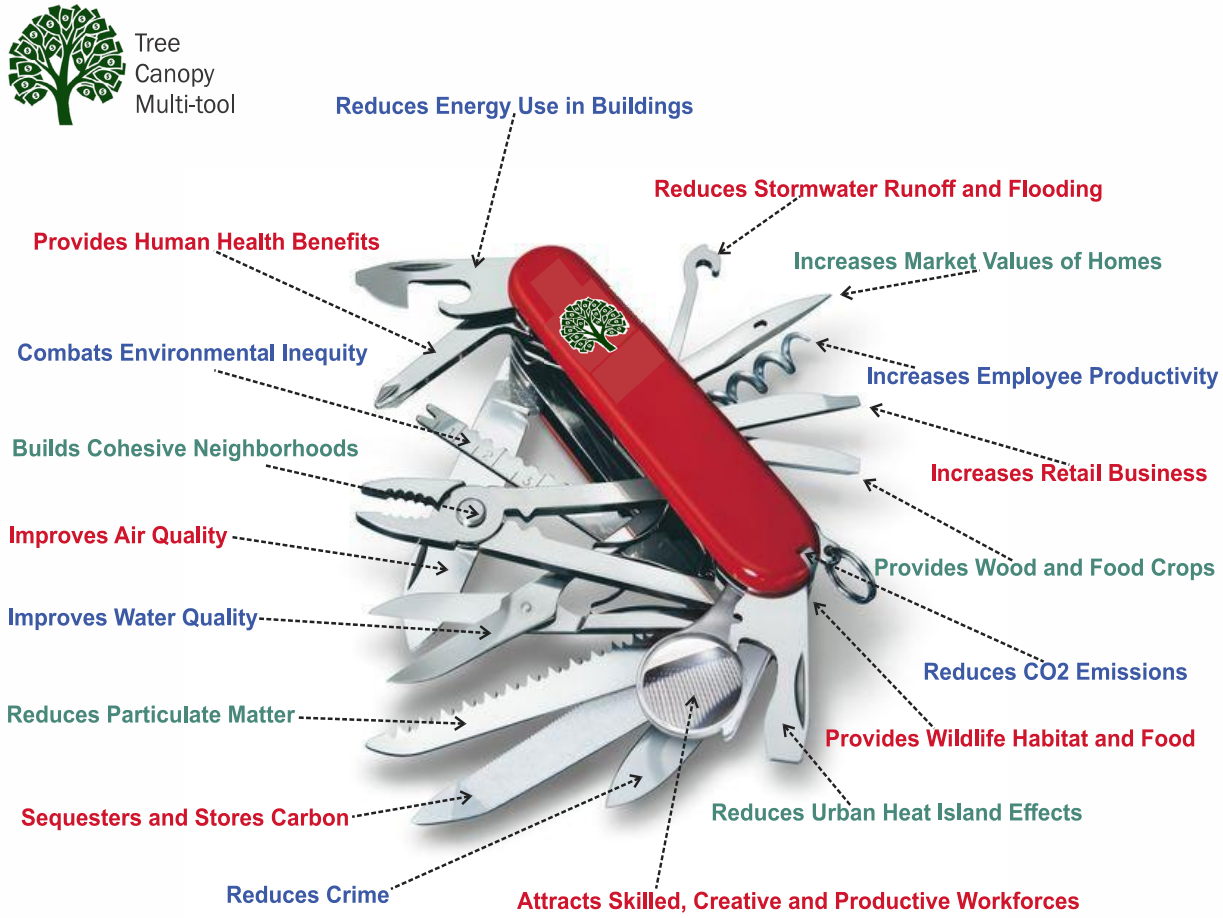
Part 1: *A Case for Conserving Trees and Forests in the Metropolitan Washington Region,* presents ten incentives to build and maintain strong tree conservation programs; why collaborative management of our tree and forests is needed in addition to local efforts; and recent tree canopy gain/loss trends for the region.

Part 2: Tree Canopy Goals for the Metropolitan Washington Region, recommends three tiers of canopy goals including an overarching goal for the entire COG region; intermediate goals for different densities of human population and levels of urbanization; smaller scale goals for general categories of land use; plus, a list of metrics that can be used to monitor the success of these goals and the sustainability of our tree and forest resources.

Part 3: *Identifying the Right Level of Tree Canopy for Your Community,* presents processes and tools that COG jurisdictions can use to identify achievable canopy goals that straddle the line between aspiration and pragmatism while balancing a wide range of socioeconomic, environmental, and ecological concerns.

Hyper-Functionality of Trees

Over four decades of research demonstrates that trees and forests contribute significant levels of environmental and ecological services and should be regarded as an indispensable component of public infrastructure. More recent research has revealed the positive relationships between urban forests, public health, equitable communities, and vibrant economies.



Current Canopy Levels and Recent Trends

Tree Canopy in the report corresponds to four classes of land cover* associated with forests, woodlands and individual trees.

A national analysis conducted by the U.S. Forest Service in 2014 found that 40% to 60 % urban tree canopy is attainable under ideal conditions in forested states.

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

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

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

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

Jurisdictional Canopy Levels and Recent Trends

	Jurisdiction	Total Acreage of Jurisdiction w/o bodies of water#	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

Source: Chesapeake Bay Program Land Use/Land Cover Project (CBP 2022 LULC Project).

Potential Future Canopy Levels

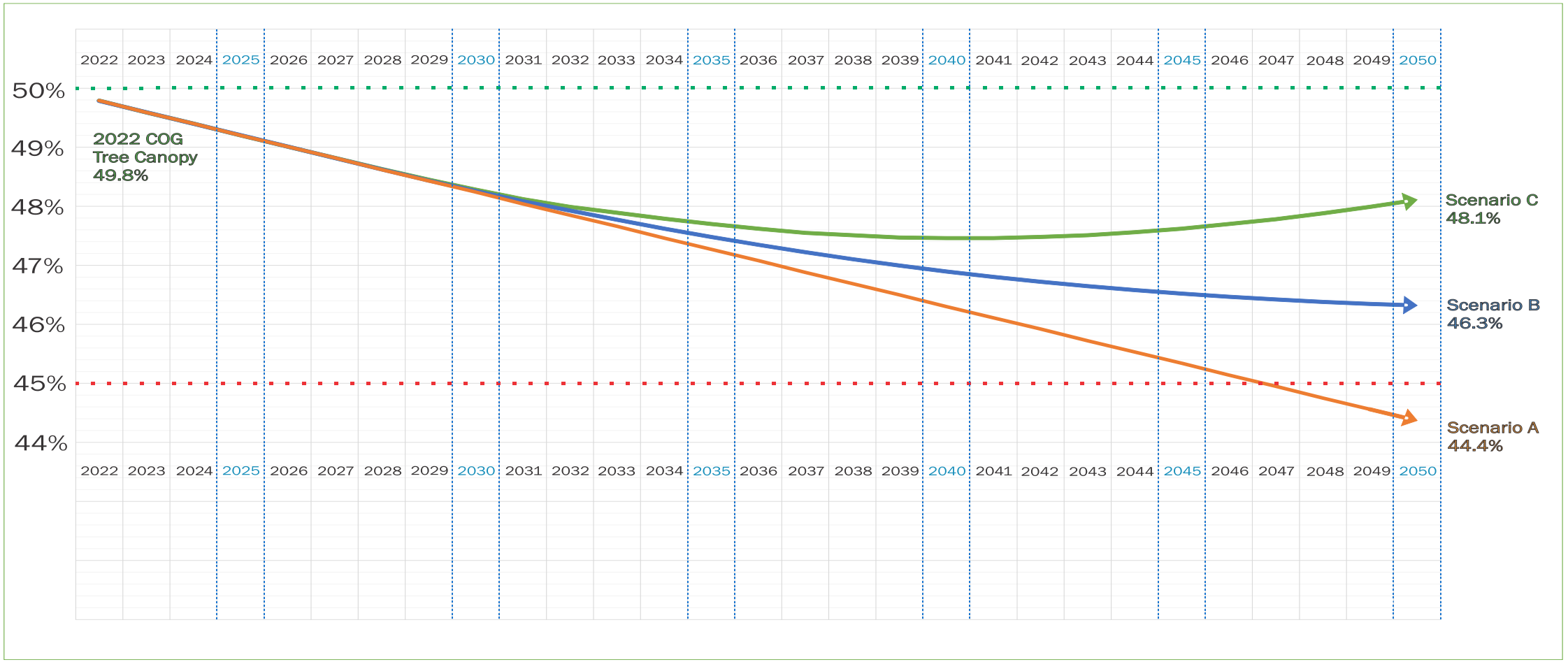
The 2014/2018 trendline provides an opportunity to project future canopy levels and to assess the impacts of different methods of tree conservation.

Three alternative projections for 2050 based on different levels of tree preservation, tree planting, and post-planting quality assurance/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%

Possible Gains/Losses

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



Tree Canopy Loss has Consequences

Environmental Services and Benefits Associated with a 10% loss of Existing Canopy

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

The RTCS report recommends three tiers of 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 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.

3. ***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 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%

* Per Square Kilometer OR Per 0.4 Sq. Miles OR Per 260 acres

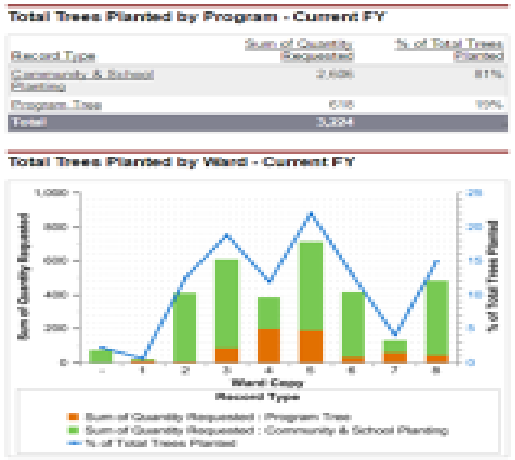
Target Goals for General Land Use Categories - 1

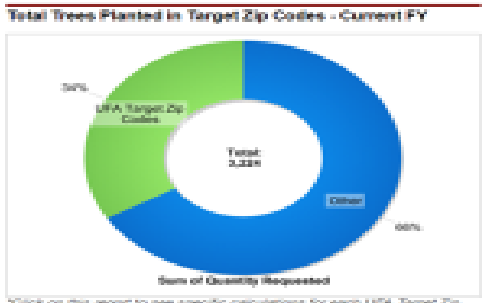
No	Land Use Type	Examples and Considerations	2018 Canopy Levels	Target Goal 2050
1	Residential, Low	Detached homes, either single-family or duplex. Primary land use type hosting tree canopy	52%	55%
2	Residential, Medium	Single Family homes with medium yards. Attached homes, such as townhomes or single/double 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%

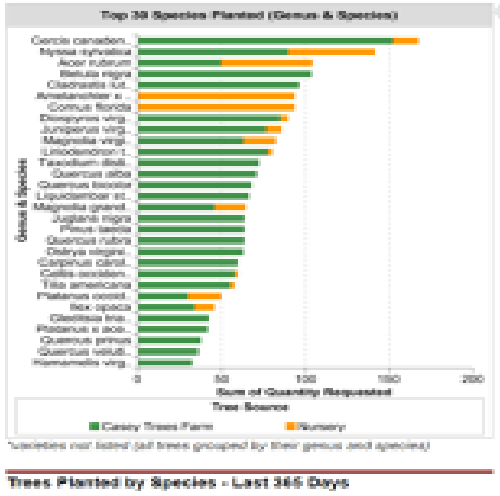
Target Goals for General Land Use Categories - 2

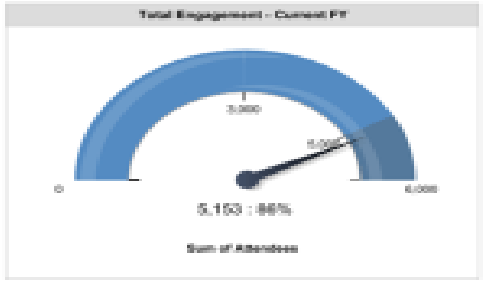
No	Land Use Type	Examples and Considerations	2018 Canopy Levels	Target Goal 2050
10	Industrial and Railway	Manufacturing, Industrial parks, quarries/asphalt/concrete plants, railways, and their immediate rights-of-way	32%	30%
11	Park, Low Development	Natural parks with trails, and minimal constructed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

Regional Potential Based on Local Success Story









FRAMEWORK & ASSESSMENTS

#1 CANOPY GOAL
40% by 2032

#2 INVENTORY
3-5 Year Rotation

#3 ENGAGE PROGRAM STRATEGIES
Tree Planting, Advocacy, Education, etc.

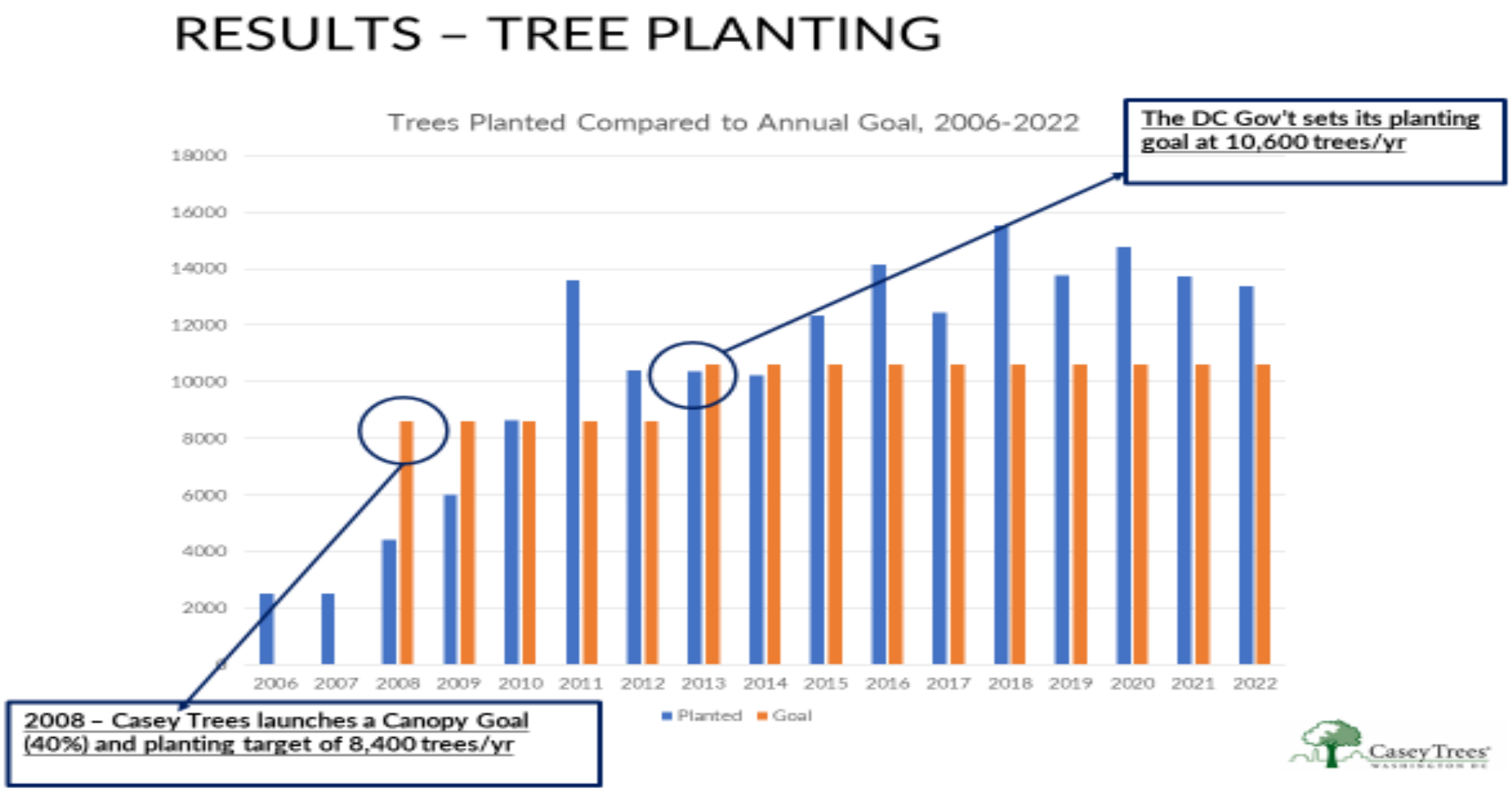
#4 REPORT PROGRESS
Tree Report Card

#5 ASSESS/MODIFY

#6 REPEAT

Casey Trees

Regional Potential Based on Local Success Story



Regional Potential Based on Local Success Story

OVERALL RESULTS

Citywide Investment increased from $1M to $25M

A+ 2016

Tree Planting increased from 500 to 14,000/Year

Street Tree Spaces at 95% Stocking

Urban Forest Advisory Council Formed

Tree Protection & Replacement Laws Enacted and Enforced

Agency Guidelines Modified to Better Care for and Plant City Trees

Four administrations spanning 22 years have maintained or increased tree budgets

Casey Trees

Intended Use of the Canopy Goal Recommendations

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

They are not intended to be applied in a prescriptive fashion or to be interpreted as universally applicable to every scenario.

Just as individual jurisdictions must identify conservation objectives based on the unique set of conditions present within their geographic boundaries; 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.

Tree Canopy Goal Recommendations

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.

For this reason, the percentages expressed in these goals may ultimately prove less valuable than creating an expectation within COG to periodically reexamine and report on the status of the region's tree and forests.

RTCS recommends that the regional goal and supporting target goals be viewed as fluid and 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.

Tree Canopy Goal Recommendations

An analysis of CBP 2022 LULC data, comprehensive land use and transportation plans, local zoning maps, regional population projections, and green infrastructure plans suggests that it is feasible to support a tree canopy coverage of 45% to 50% over the next 25 years.

COG's record of leadership for regional initiatives and goals should be extended to trees.

COG can provide leadership at the national level by adopting/endorsing the regional tree canopy goals.

Jeff King

Director of Climate, Energy, and Air Programs
(202) 962-3238
jking@mwcog.org

Michael Knapp

Chair, Regional Tree Canopy Subcommittee
(240) 777-6335
Michael.Knapp@montgomerycountymd.gov

Brian LeCouteur

COG Principal Environmental Planner / Technical Manager Regional Forester
(202) 962-3393
blecouteur@mwcog.org

mwcog.org

777 North Capitol Street NE, Suite 300
Washington, DC 20002

Metropolitan Washington
Council of Governments