



Chesapeake Bay Program
Science. Restoration. Partnership.

Tree Canopy Indicator Update

Status & Trends Workgroup 10/10/18
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Through the Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...



Vital Habitats Goal

Tree Canopy Outcome: Continually increase urban tree canopy capacity to provide air quality, water quality and habitat benefits throughout the watershed. **Expand urban tree canopy by 2,400 acres by 2025.**



State Targets set in Management Strategy

Jurisdiction	Annual Target (New Acres)	2025 Target (New Acres)
Delaware	5	60
DC	40	480
Maryland	45	540
New York	5	60
Pennsylvania	60	720
Virginia	40	480
West Virginia	10	120
TOTAL	205	2460

Outcome set based on targets provided by jurisdictions when Watershed Agreement was drafted

Defining & Measuring Tree Canopy

“In this Management Strategy, we use a broad definition of “urban” tree canopy that includes all sizes of communities. It is important to note that this goal is intended to reflect a *net gain* in acreage of tree canopy, after accounting for canopy losses due to various factors such as development, storms, pests/diseases, and natural mortality. Meeting the goal requires protecting as much of our existing tree canopy as possible and planting enough to both mitigate losses and expand the tree canopy cover by 2,400 acres.”

Defining & Measuring Tree Canopy

- New quantitative outcome in CB Watershed Agreement – no baseline/indicator or tracking systems in place
- Management Strategy proposed to track progress using combination of 1) annual tree planting BMP data, and 2) high resolution land cover dataset, under development at the time
- Over 2018, we formalized and refined a Tree Canopy Indicator proposal, building on these two data sources, and have a Forestry Workgroup-approved version to share today

*See Tree Canopy Indicator Proposal v.3 in meeting materials

Defining & Measuring Tree Canopy

“The proposed Tree Canopy Indicator has two components: 1) urban tree planting BMPs reported by states annually to track progress towards meeting the Bay TMDL; and 2) remotely-sensed changes in tree canopy updated every five years. Both of these components combined represent the annual extent of tree canopy in the Bay watershed, used as our best available estimate for tracking progress for the Tree Canopy Outcome.”

Tree Canopy Indicator- Measuring Progress

1) Reported Tree Plantings

- Track and total 3 Urban Tree BMPs reported to NEIEN
 - Urban Tree Planting
 - Urban Forest Planting
 - Urban Forest Buffer

- Report on annual progress, 2010 – present
- Due to past incomplete data in NEIEN, begin reporting Indicator progress with 2018 progress/history data (available May 2019)

Note: BMPs “expire” in model accounting after 10 or 15 years, when they are expected to be picked up in land cover data

Tree Canopy Indicator Baseline & Progress 2) Land Cover Data

- CBP High Resolution Land Cover data provides best tracking of Tree Canopy gains and losses over time
- 2013 – Our Baseline Estimate
- Updates expected:
 - 2021 release, based on 2018-2019 imagery
 - 2025 release, based on 2023-2024 imagery

These updates will provide the best opportunities to evaluate progress and adapt our management strategies as needed.

Tree Canopy Indicator Baseline & Progress 2) Land Cover Data

What land classes we include as “Community Tree Canopy”

- Tree Canopy over Turf
- Tree Canopy over Impervious
- Urban Forest – only Forest that falls within Census Urban Areas & Clusters

What isn't included:

- Trees on agricultural land
- Forest outside of Census Urban Areas & Clusters

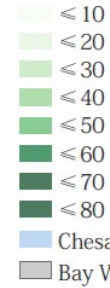
Along the way, we considered...

- Limiting scope to Census Urban Areas & Clusters

But...excludes many smaller communities that are working on tree canopy goals in less developed parts of the watershed

Tree Canopy in 2010 Census
Urban Areas/Clusters

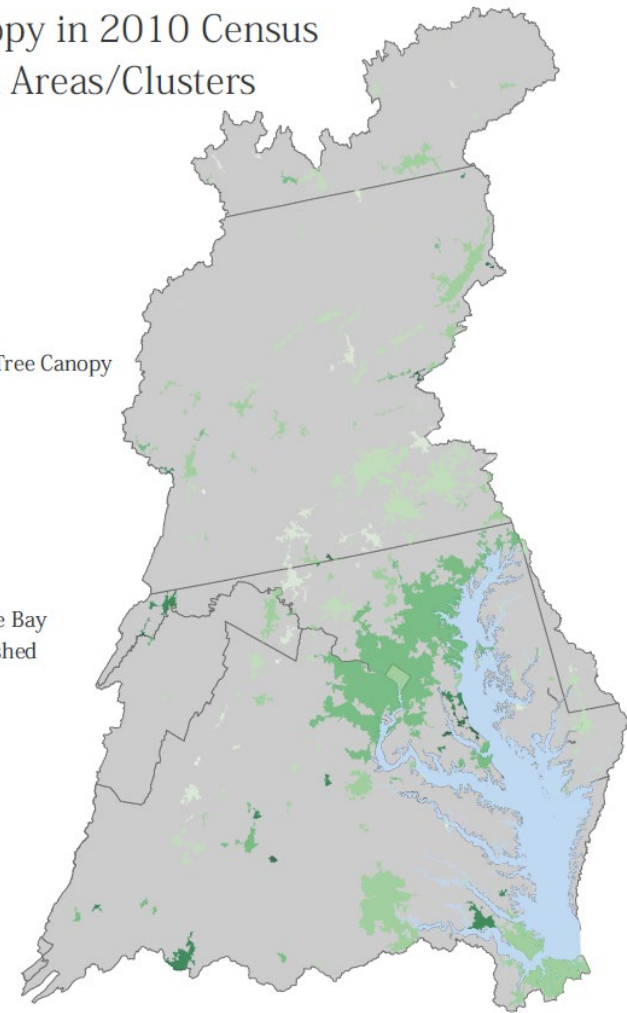
% Community Tree Canopy



Chesapeake Bay
Bay Watershed



0 15 30 60 90 120 Miles

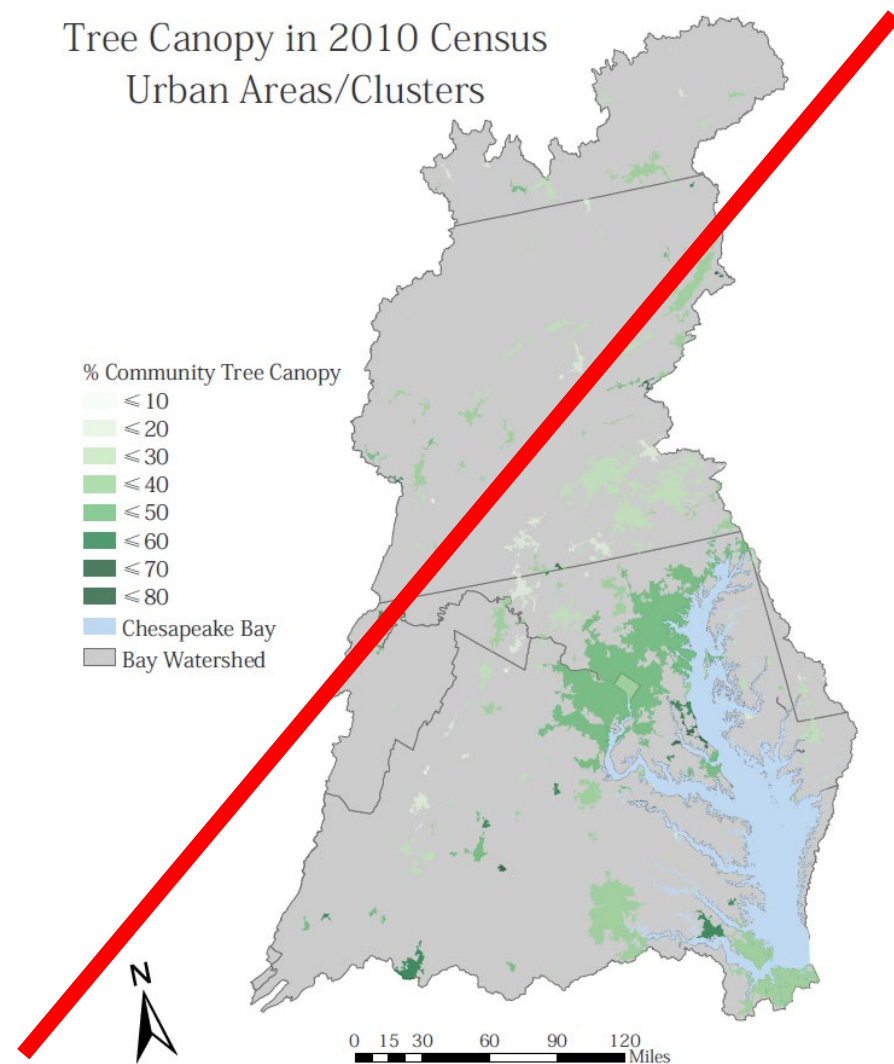
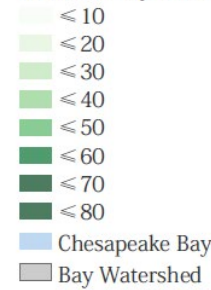


Along the way, we considered...


- Therefore, we decided to use
- Tree canopy land classes everywhere (over turf + impervious)
 - Urban forest = Forest land class occurring within Census Urban Areas & Clusters

Tree Canopy in 2010 Census
Urban Areas/Clusters

% Community Tree Canopy



Proposed Tree Canopy Baseline (2013)



Chesapeake Bay Watershed: Community Tree Canopy - Proposed 2013 Baseline				
Jurisdictions	Total TC (acres)	Total Forest (acres)	Forest in UAUC (acres)	TC + Urban Forest
Delaware	6,320	92,779	3,414	9,734
District of Columbia	8,073	4,477	4,477	12,550
Maryland	317,076	2,124,730	331,308	648,384
New York	50,840	2,291,567	22,058	72,898
Pennsylvania	293,821	8,408,855	148,724	442,545
Virginia	407,940	8,692,212	303,375	711,315
West Virginia	46,069	1,655,951	15,481	61,549
Watershed	1,130,139	23,270,571	828,837	1,958,976

Tree Canopy = Tree Canopy over Turf Grass and Tree Canopy over Impervious (both from Phase 6 land use)

Tree Canopy Indicator Baseline & Progress 2) Land Cover Data

When land cover is updated:

- All newly emergent “tree canopy over turf grass” and “tree canopy over impervious surfaces” that fall outside areas classed as forest in 2013/14 will be added to the total tree canopy
- Lands previously classed as Forest but now appearing as Tree Canopy (ie through development) will not count towards tree canopy expansion
- Tree canopy on land that converts from agriculture to developed will be counted as community tree canopy

Related Next Steps

- Tree Canopy Indicator proposal will be shared at next WQGIT meeting for discussion and approval when ready
- Tree Canopy SRS Review occurring in November
- Will finalize indicator and plan to post on or after May 2019, when BMP progress/history are approved

Discussion