



# Maryland's Climate Pollution Reduction Plan

## Ch2 – Policies - Forestry and Land Use

George Hurtt, Lei Ma, Quan Shen. "Potential Pathways for Growing the Forest Carbon Sink." In Maryland's Climate Pollution Reduction Plan (2024), Appendix Forestry and Land Use Sector Modeling. [PDF](#)

### Science Questions

- What is the role of forests in MD's net-zero emissions goal?
- What are the future pathways for forest carbon sequestration?
- How does planting location affect carbon outcomes?

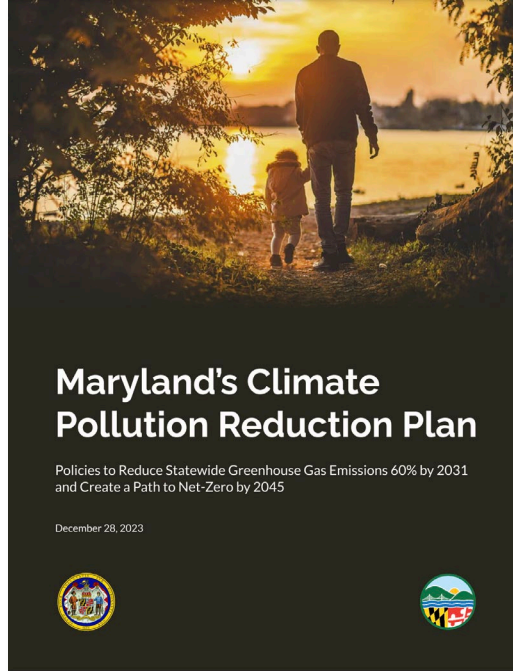
### Method

- Mapped geospatial carbon sequestration rates using EDv3.0 and other drivers (such as NASA MERRA2 meteorology, NOAA CO<sub>2</sub>, and soil properties).
- Modeled four scenarios of potential pathways to expand the forest carbon sink (i.e., 5 Million Trees Initiative, 100K acres, 200K acres, and 400K acres)

### Result/Significance

- Ongoing implementation of current forest policies and programs is expected to remove 7.6 MMTCO<sub>2</sub>e annually by 2045.
- Expanding implementation across 400,000 acres of feasible plantable area could increase the carbon sequestration benefit to an annual removal of 9.1 MMTCO<sub>2</sub>e.
- Remote sensing and mechanistic ecosystem modeling provide important support to climate mitigation policy-making.

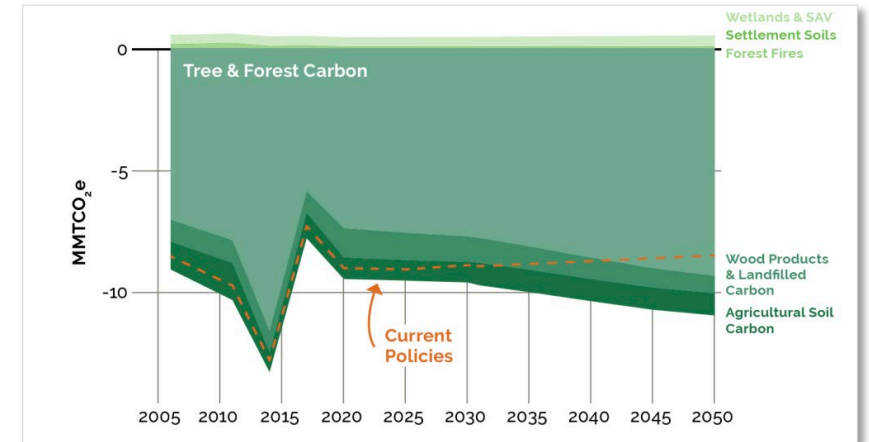
Sponsor: NASA-CMS (80NSSC21K1059) and MDE contract.



### ○ Remote sensing based plantable area



### ○ Historical and projected GHG emissions and sinks of forestry and land use sector



### ○ Four afforestation/reforestation scenarios and associated carbon sequestration

