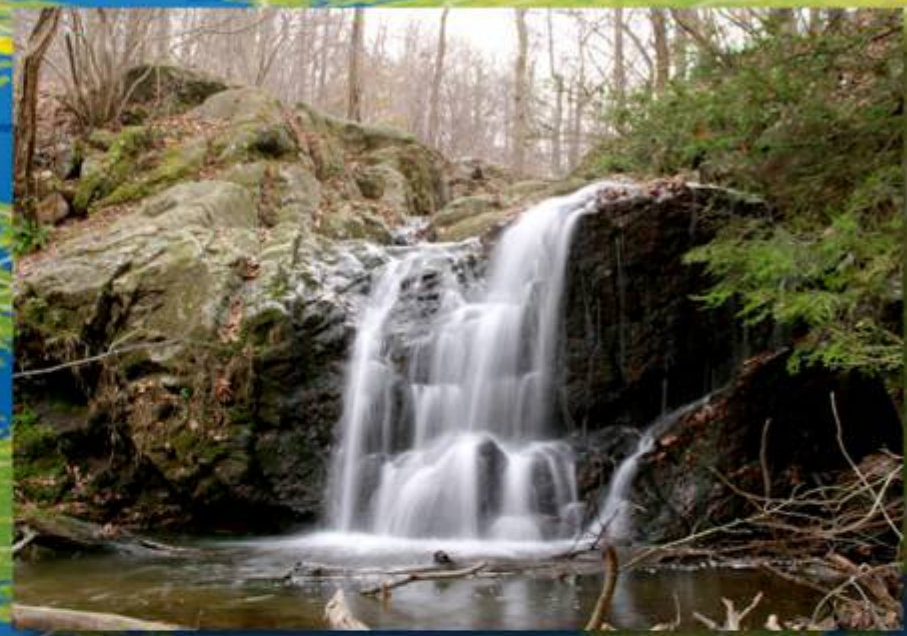
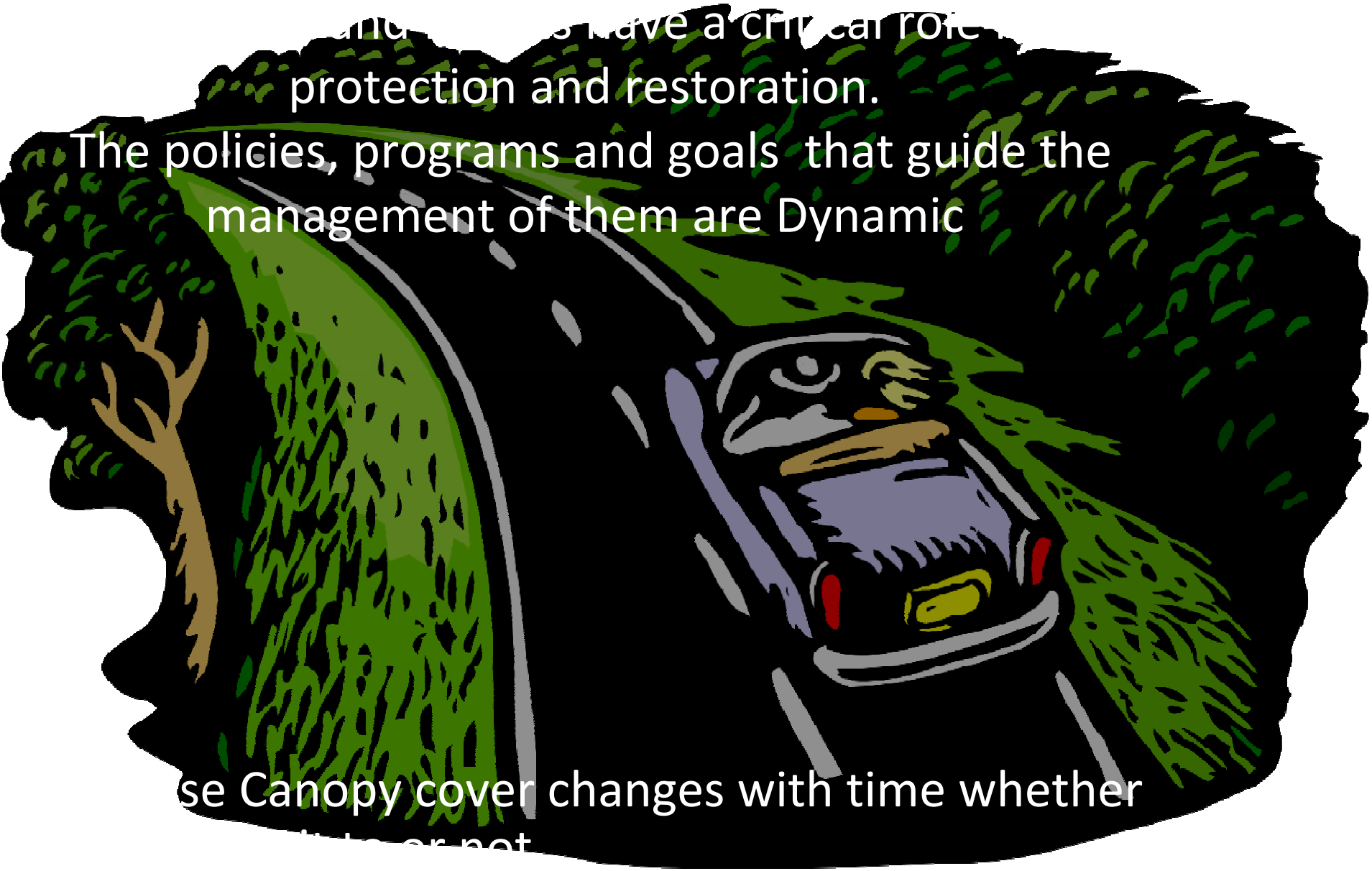
GOVERNING
GREEN

Role of Trees in Air Quality Planning

Center for Chesapeake Communities





protection and restoration.

The policies, programs and goals that guide the management of them are Dynamic

se Canopy cover changes with time whether


Why so important?

“Retaining and expanding forests in the Chesapeake Bay watershed is critical to our success in restoring the Chesapeake Bay.

, due to their ability to capture, filter and retain water, as well as absorb pollution from the air…a reduction in forest area leads to a disproportionate increase in nitrogen loads to our waterways.”

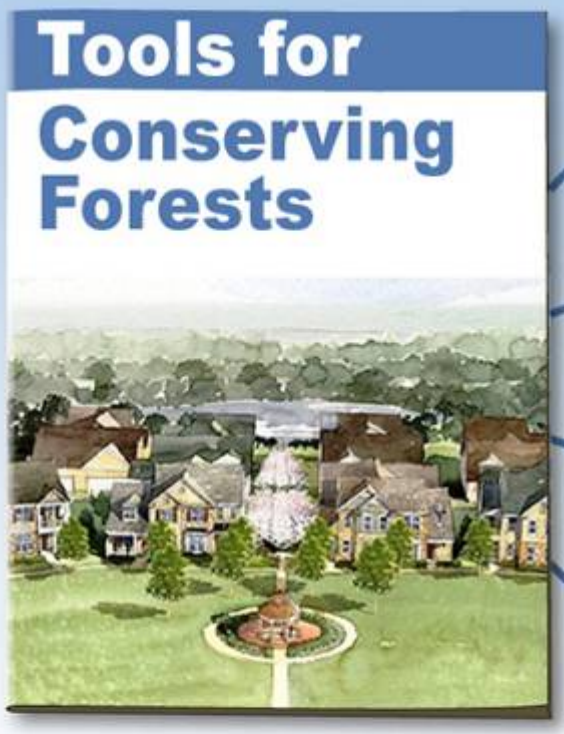
Chesapeake Bay Council

2007


New Driver for Canopy expansion
in Bay water shed = Clean Air Act

Conserve

Implementation Tools



Zoning & Development Ordinances

Financial Incentives

Land Protection

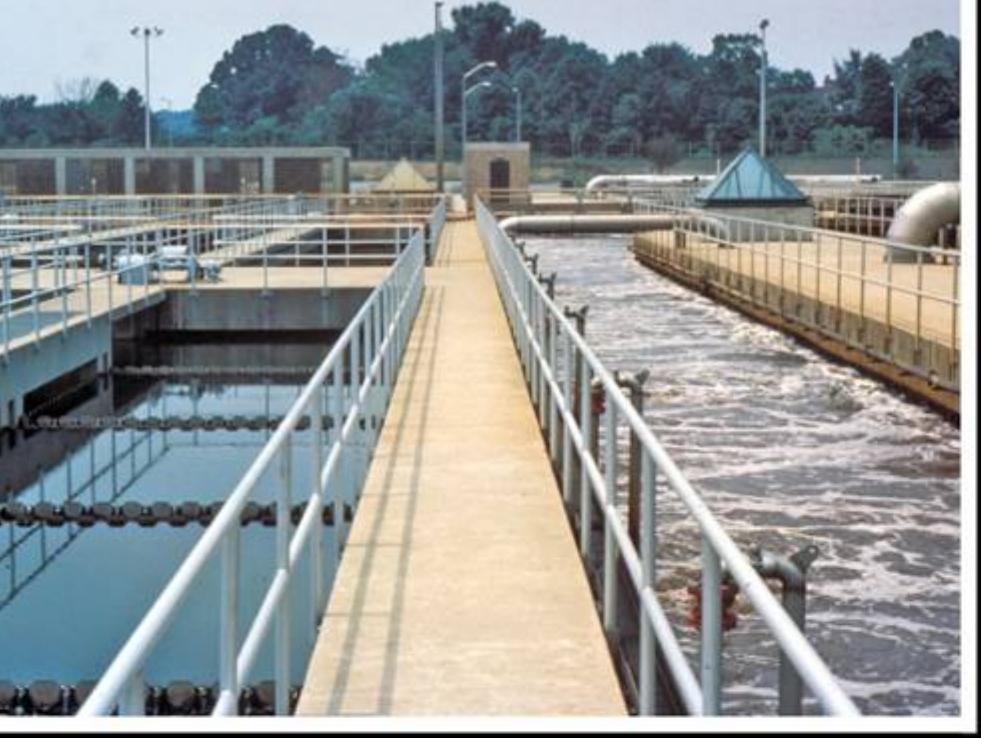
Sustainable Forestry

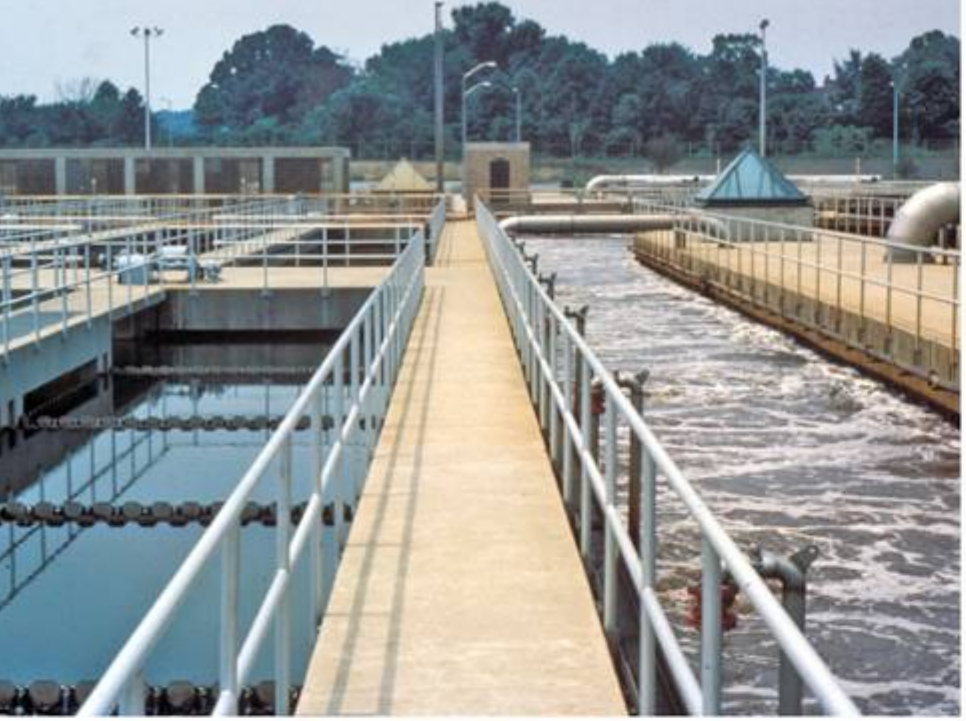
Clean Air Act programs

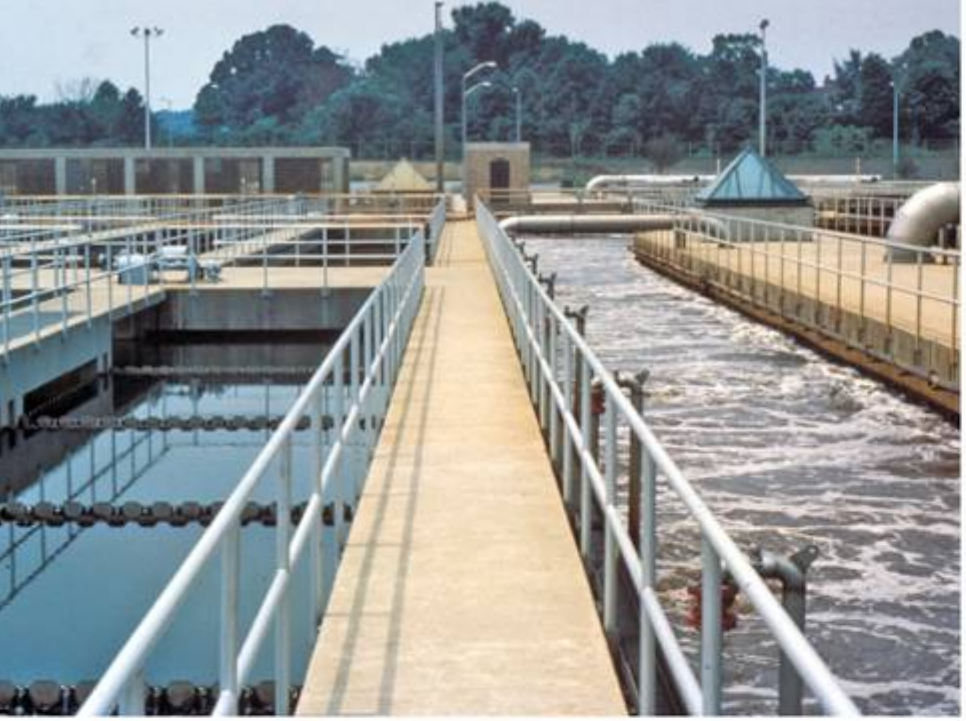
- Can provide significant reductions in the nitrogen loading to the Chesapeake Bay. Preliminary (2009) estimates are that current CAA programs
- Will reduce nitrogen deposition to the Bay and watershed in 2010 by 40% compared to 1985 levels and 46% by 2020. If one looks solely at the deposition of NOx,then the expected reductions are 55% by 2010 and 67% by 2020*

* EPA staff estimate October, 2009

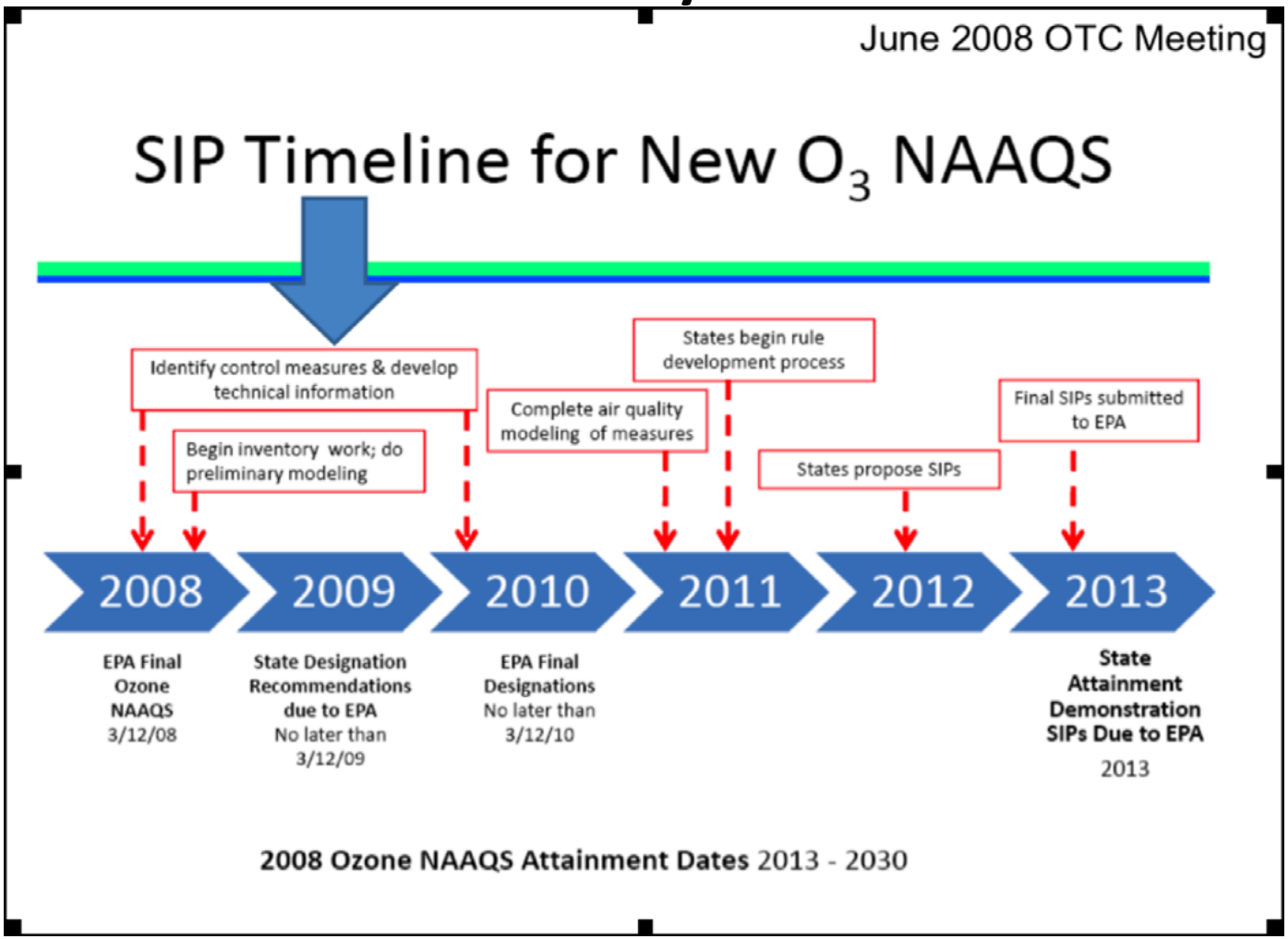
Benefits of Trees and Forest Cover







Looking Ahead to the Next Round of Air Quality SIPs: Role of Urban Forestry



- As a voluntary measure
- In a bundle with other voluntary measures
- As a weight of evidence argument
- As a maintenance measure
- Some issues: what programs are being implemented, timing of trees, modeling complexities, amount of AQ credit or not, better than baseline issue (no net loss), tracking, reporting, maintenance etc.

Increased Tree Canopy Effects

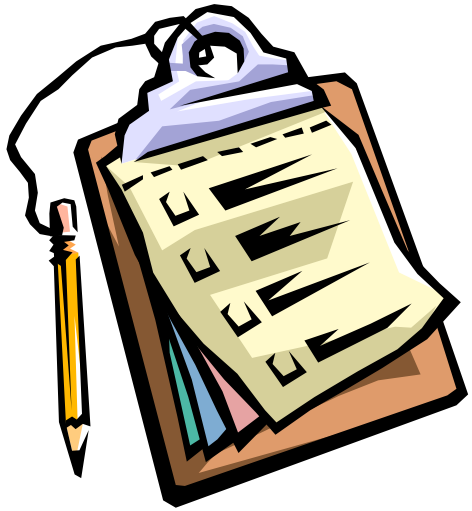
- **Very reactive in ozone chemistry**
- **Modifies heat island effect of by lowering surface temperature**
- **Affects surface winds and boundary layer heights**
- **Changes dry deposition rates**
- **Cooling 1-2 degrees could reduce ozone 2-4 ppb**

Current WOE Findings

- **Study correlating ozone formation and temperature showed 1-2 degree reduction in temperature could result in a 2-4 ppb reduction in ozone**
- **Significant increase in tree cover needed in urban core – on the order of 40% total area (note Urban tree goals)**
- **Low-VOC emitting trees like maples, hawthorns and some species of pines preferred (right tree/right place)**
- **Importance will grow as climate change increases temperature**
- **Present programs should aim at “no net loss”**

Commitment Requirements

Signed Letter



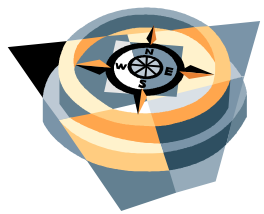
Program Details
Estimate of Benefits

Program Effectiveness Report

Agree to monitor program and provide annual reports on program participation/effectiveness

Local Initiatives ("Bundle")

- **Voluntary Program Requirements**
  - **Commitment Letters from Participating Jurisdictions**
  - **Program Implementation**
  - **Periodic Tracking and Reporting**



SIP Tree Canopy Commitments

- **Measurement and Tracking**
- **Enhance Canopy/Strategic Planting**
- **Public Outreach**
- **Regional Canopy Management Plan**
- **Monitoring and Reporting**

Good News
WE CAN MAKE A DIFFERENCE

WHAT WILL EACH JURISDICTION COMMITMENT TO DO ?

Engage Stakeholders

Find champions !

Measures/ Tools
What government can do-
Maintain Baseline

Conserve priority forests

Restore forest remnants

Reforest public land

Reforest private land

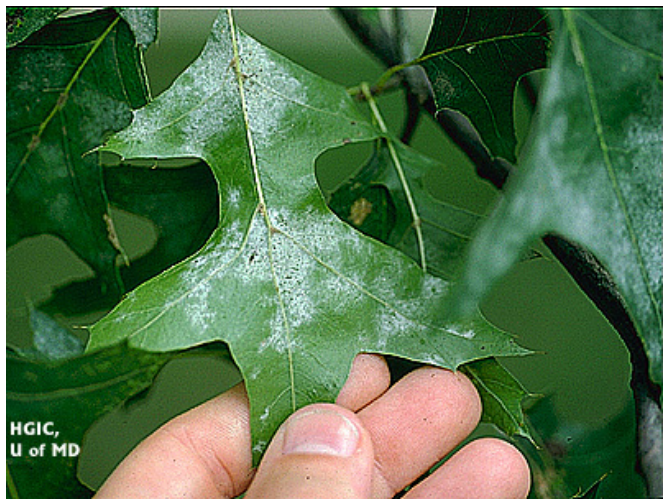
Maintain existing forest canopy

Prevent forest loss during development

Landscaping (including street trees) during land use changes

Future actions
ID needed Legislative - Administrative changes
Program funding opportunities

- **Tree Goals & ordinances**
- **Tree requirements**
- **Mitigation opportunities**
- **Sites, Permitting**



Expand UTC Coverage

- • Planting —documentation of the number, location and species of trees planted
- • Survival—documentation of the number of planted trees that survive through time
- • Canopy expansion —documentation of surviving canopy cover and comparison with
- original baseline and modeled projections

Tracking and Verification

Key Data:

- **Who - Unique identifiers for each Tree planting Program (tool) or Group doing** the planting
- **What - Species data (common and botanical names)**
- **When - date planted**
- **Where - Location data (GIS Location preferred)**
- **Number planted**

Tree Benefits Calculator solution??

Regional Canopy Management Plan

- Every tree counts! Progress toward an online **tree counter tool** to record your efforts.
- The **Tree Benefits Calculator** will track number of trees, types (to monitor regional diversity), and the individual jurisdiction totals &

Estimate AQ Benefits

Goal of our Work

- Provide basis for decision to move urban vegetation to become a creditable measure within the Wash area - SIP