MAST Training Webinar

(Maryland's Assessment and Scenario Tool)

— July 19, 2011 —

Overview of Today's Webinar

- Introduction: (20 min)
  - Bay models
  - Phase II Expectations
  - Allocation
- MAST Presentation (45 min)
  - About MAST
  - Application: On-line MAST Demonstration
- Summary & Next Steps (20 min)
  - Developing WIP Team Scenarios: Process
  - Hands-on MAST Training Sessions: Synopsis
  - Upcoming Training Dates & Webinars
- Q & A Session (30 min)

Introduction: Background & Orientation

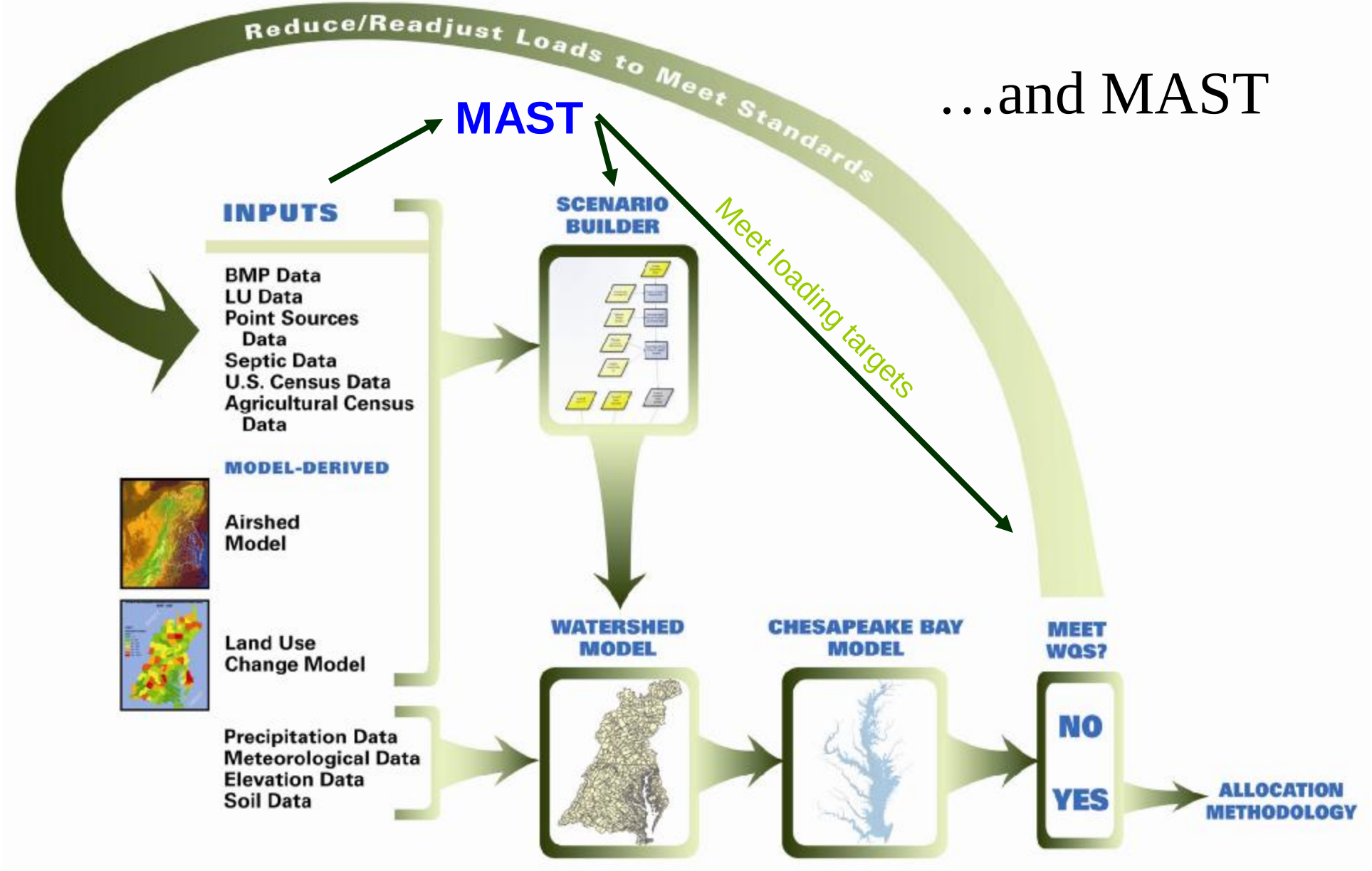
Lee Currey, MDE

- Chesapeake Bay Program Modeling System
- Expectations for the Phase II WIP
- The Allocation Process

Definitions

- **Watershed Model** – Used to estimate nitrogen, phosphorus and sediment loads from the land that are delivered to the Bay
  - **Phase 5.3.2 –** The revised watershed model used for the Phase II WIP
- **Scenario Builder** – Pre-processor for the Phase 5.3.2 watershed model
- **Chesapeake Bay Model** – Hydrodynamic, water quality and sediment transport model for the Bay tidal waters
- **MAST** – Maryland Assessment and Scenario Tool.

Chesapeake Bay Partnership Models



Reasons to Use MAST

- MAST is designed to be consistent with the EPA CBP P5.3.2 watershed model BMP and loading estimates, which is being used to "grade" the Phase II WIP and milestone progress
- MAST exports scenario information for direct input into EPA models as required for the Phase II WIP
- Need a consistent process for input and evaluation of 24 WIP teams scenarios
- EPA will adopt MAST to work at the Bay watershed scale (continued operation and maintenance)
- MAST is open to WIP teams (no fee) and facilitates transparency in the WIP development process

Model Calibration

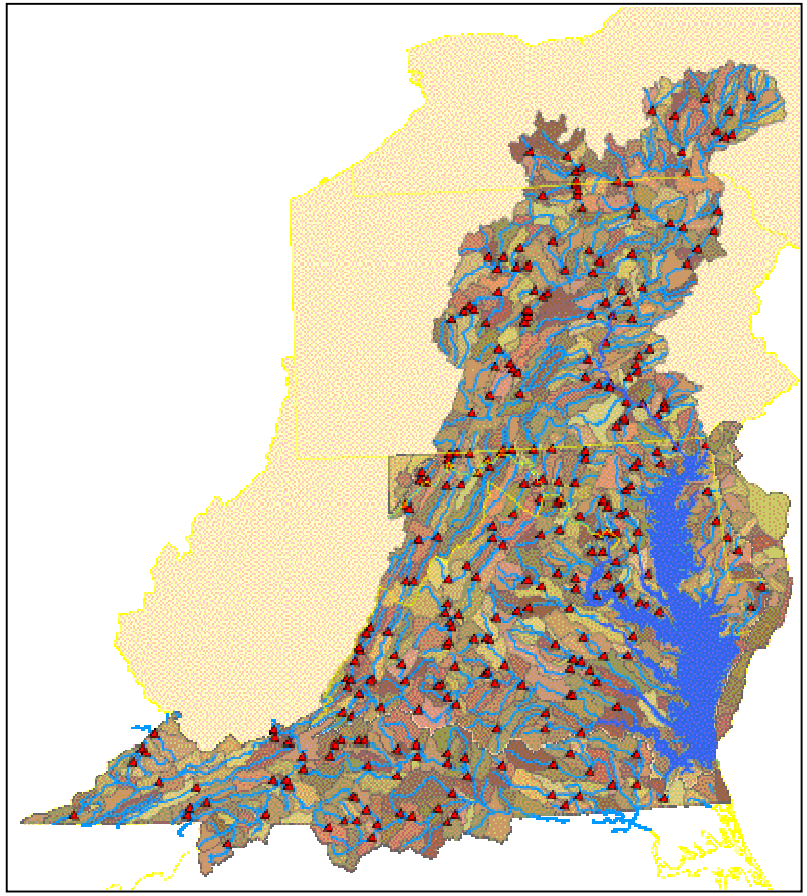
Why? …Simulate real world conditions

- Land Simulation Targets
  - Literature (loading targets)
  - Monitoring
- River Simulation
  - Monitoring data
  - flow and concentration
  - Loads
- Tidal Model
  - Monitoring data

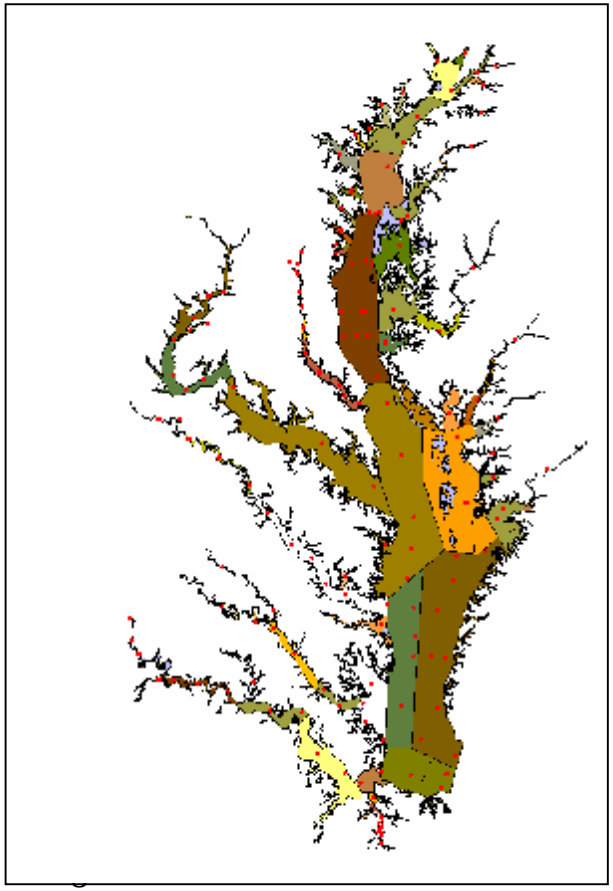
- Generates Loads
- Automated and Repeatable

Model Calibration Data

Watershed
Calibration sites ~ 300
Simulation Years = 20

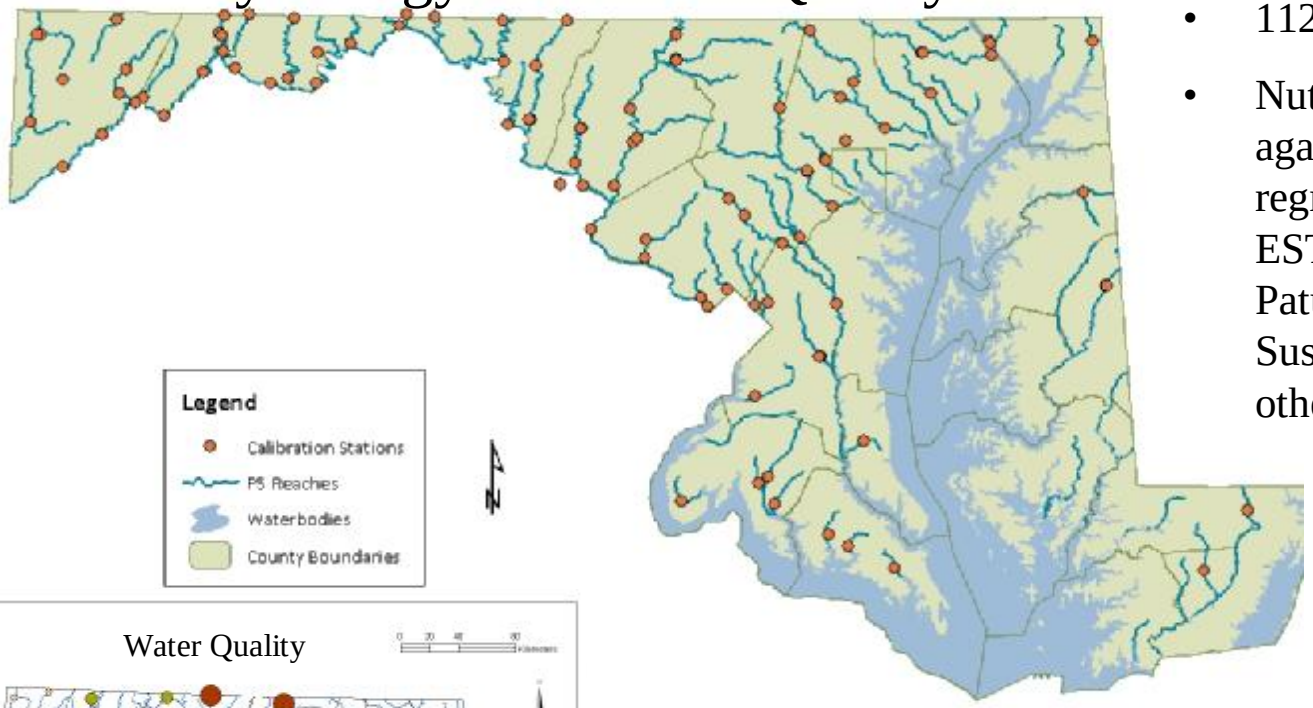


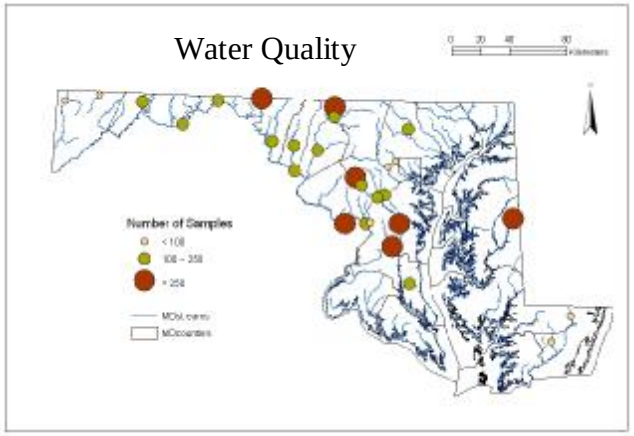
Chesapeake Bay
Calibration sites ~ 120
Simulation Years = 20



P5 MD Calibration Stations

Hydrology and Water Quality





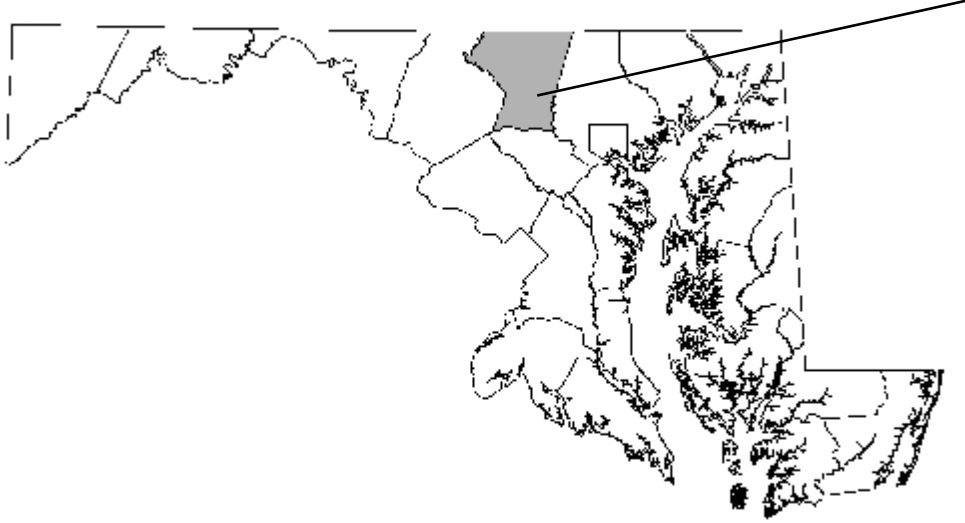
- 112 monitoring stations in MD
- Nutrient loads calibrated against USGS statistical regression model ESTIMATOR at Potomac, Patuxent, Choptank, and Susquehanna Fall Lines and 7 other locations in MD

Calibration Review

- Who?
  - Chesapeake Bay Program subcommittees and workgroups
  - Bay partners
- What?
  - Inputs
  - Processes
  - Land targets
  - Automated methodology
  - Hydrology
  - Water quality
  - Calibration efficiency (model skill)
  - Validation

EPA Expectations for Phase II WIP

- Clear, quantitative goals: Local area strategies and allocations to meet 2017 and 2020 load reduction targets
- In Maryland, “local area” = land within geographic boundaries of 23 Counties and Baltimore City (WIP Teams)



EXAMPLE OF LOCAL ALLOCATION TABLE:

CARROLL COUNTY PHASE II WIP LOAD REDUCTION ALLOCATIONS BY SOURCE SECTOR

Total Nitrogen (million lbs/year)					
Source Sector	2010 Progress	2017 Allocation	% Reduction	2020 Allocation	% Reduction
UrbanReg					
UrbanNonReg					
Agriculture					
CAFO					
Septic					
Forest					
Air					
WWTP & CSO					
Total					

EPA Expectations for Phase II WIP

- Input deck that demonstrates local area strategies combined will meet Bay Water Quality Standards
- MD Phase II WIP Report will include:
  - Revised Maryland-Major Basin allocations
  - Description of Phase II process – How State engaged local and federal partners to develop the Plan
  - Local area allocations by source sector and implementation strategies (BMP levels and/or programmatic milestones)
  - How local progress will be tracked and reported
- Schedule: Draft due to EPA – Dec. 1, 2011
  Final due – March 30, 2012

The Allocation Process

How are the final allocations determined?

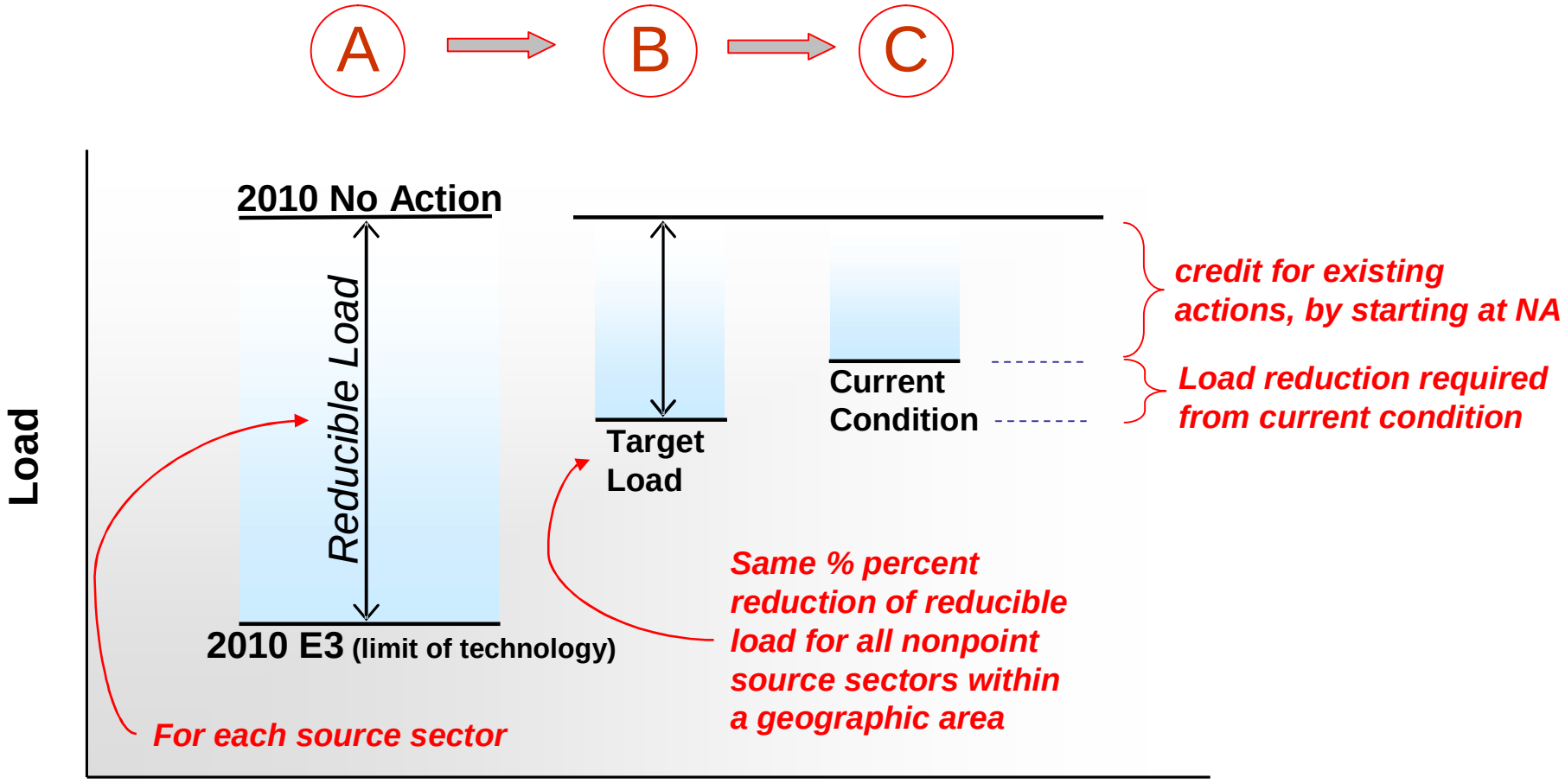
- Principles: **Equity, Credit,** and **Relative Effectiveness**
  - Equal levels of effort among nonpoint source sectors
  - Credit given for reduction practices reported to date
  - Consideration of geographic proximity and relative impacts of local area load reductions on Bay water quality
- Public participation and review of allocation process during Phase I WIP

Final Allocation Process - Step by Step

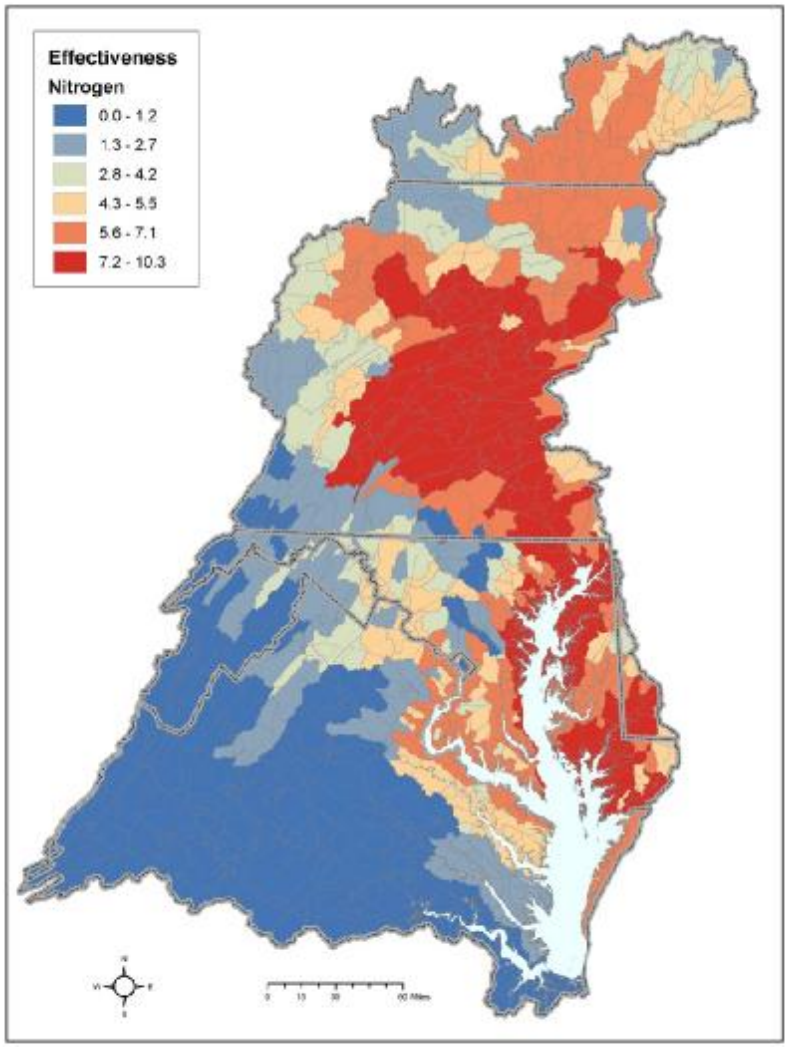
Step	Sector	Assumptions
1	Forest	Current Progress
2	Major Municipal	ENR Cap Strategy
	Major Industrial	Tributary Strategy Cap
	Minor Municipal	Tributary Strategy Cap
	Minor Industrial	Current Progress
3	Urban	Equitable reductions based on Reducible Load (NA to E3) and relative effectiveness
	Agricultural	
	Septic systems	

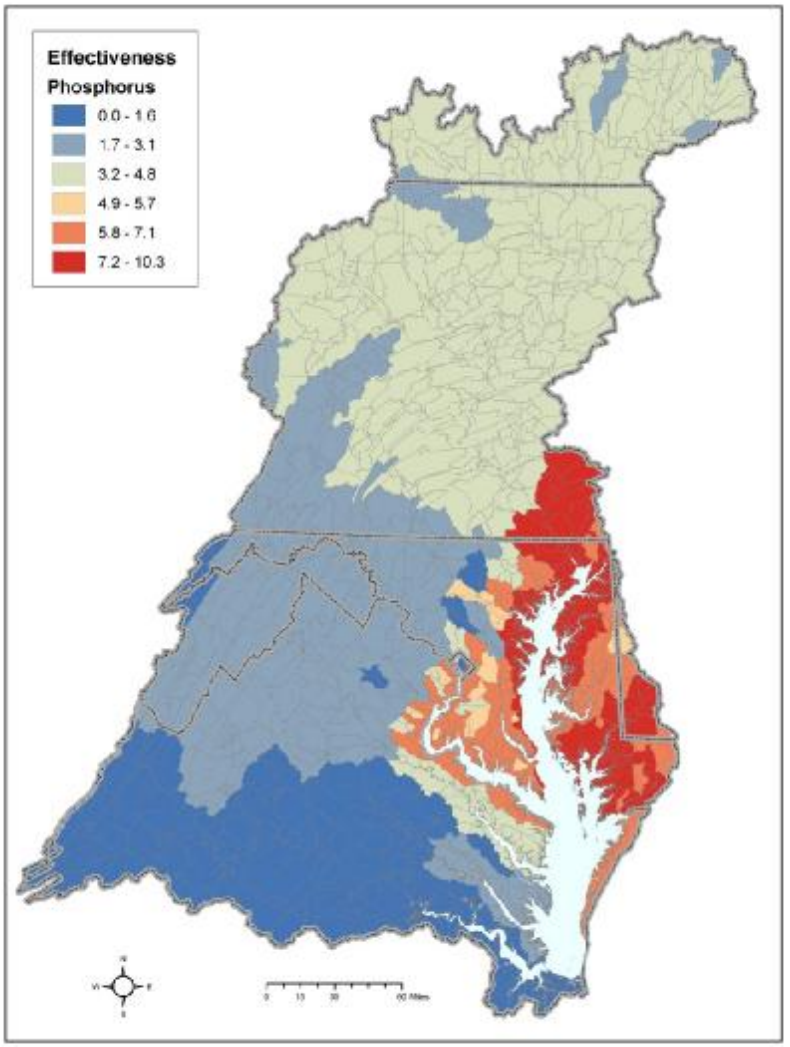
…Meets statewide allocation provided by EPA…

Step 3 Details: Urban, Ag, Septic Loads



Relative Effect of a Pound of Pollution on Bay Water Quality





Allocations Summary

- Include Edge of Stream (EOS) and Delivered (DEL) Load
- Within the county geographic extent (WIP team)

- By Source sector (multiple categories within each source sector)

Total Nitrogen (million lbs/year)					
Source Sector	2010 Progress	2017 Allocation	% Reduction	2020 Allocation	% Reduction
UrbanReg					
UrbanNonReg					
Agriculture					
CAFO					
Septic					
Forest					
Air					
WWTP & CSO					
Total					

MAST Presentation

Olivia Devereux

Interstate Commission on the Potomac River Basin

- About MAST
- Application: On-line Demonstration

MAST – A PLANNING TOOL

MAST CAN ANSWER:

- Did I meet the allocations?
- Am I hitting the targeted load?
- Which BMPs or combination of BMPs give the greatest load reductions?

YOU NEED TO KNOW:

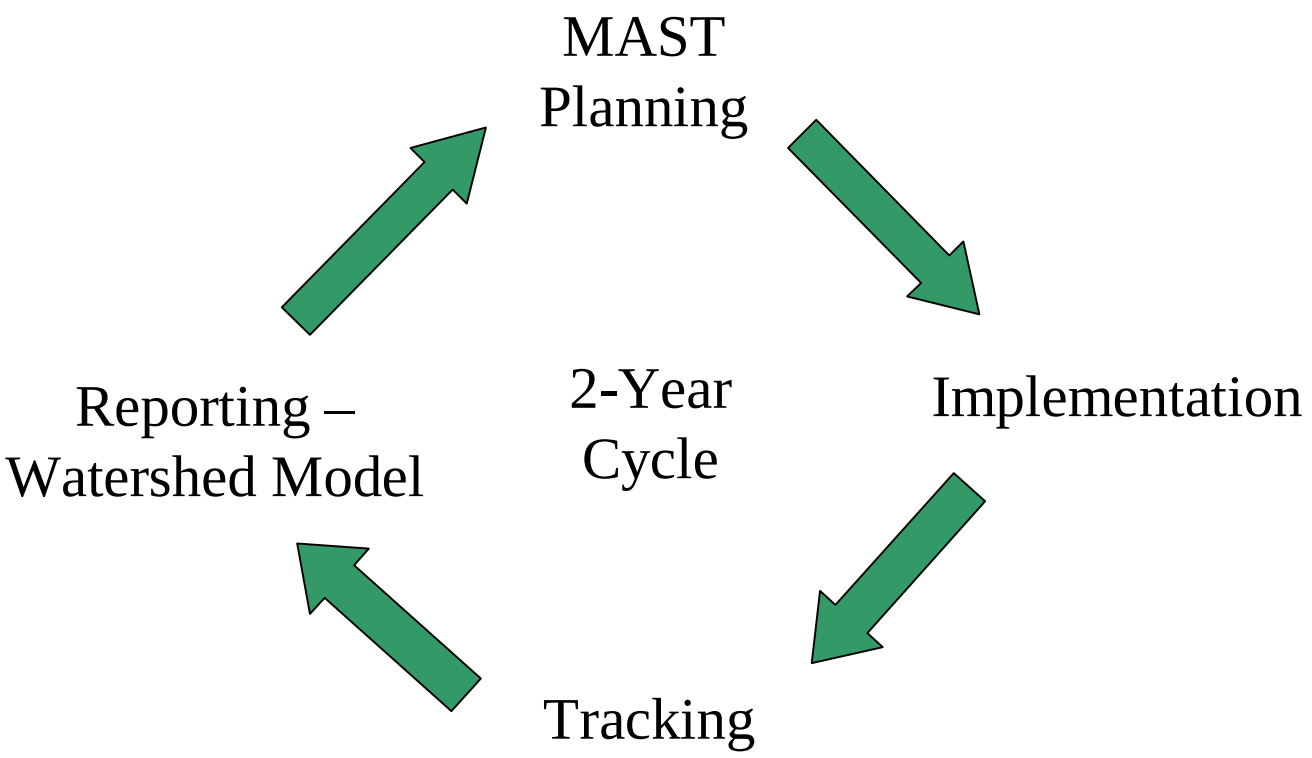
•Which BMPs to use

•Target load

BMP Costs

- Not currently implemented in MAST
- Output of MAST allows calculation of a unit load (lb/A)
- With the cost of each BMP in your local area, you can calculate costs of your scenario

An Adaptive Process



MAST CAN…

- Serve as a data management system
- Is Replicable, Consistent, and Transparent
- Facilitate an adaptive process, scenario development is iterative
- Facilitate stakeholder involvement
- Inform stakeholders of the implications of decisions

MAST OUTPUTS

- Land use acres available
- Changes in the acres of each land use
- BMPs submitted
  - Lists the BMPs in your scenario
  - Shows your notes for each BMP. The notes field is your justification.
  - Shows which BMPs it was not possible to credit
- Loads for each land use
  - Edge of stream (EOS)
  - Delivered to the Chesapeake Bay (DEL)
- Inputs to the Chesapeake Bay Program's Scenario Builder

A TOOL FOR MULTIPLE USERS

MAST can accommodate many simultaneous users

- On line
- Private log in
- Private and public scenarios

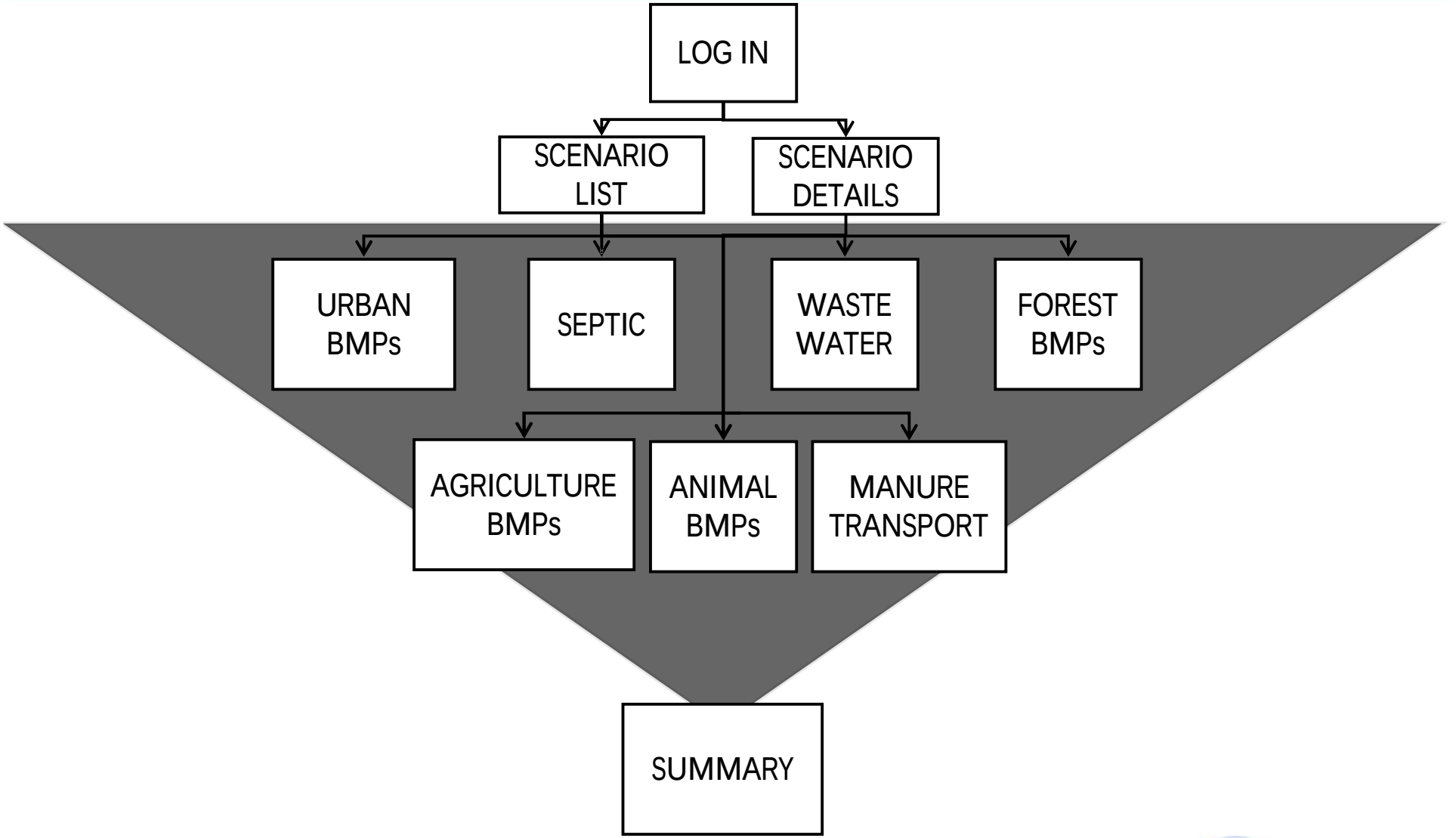
PLANNING YOUR SCENARIO

- **What do I need to know to use it?**

- Chesapeake Bay Program vocabulary
  - –Land Use names
  - –BMP names
  - –Geographic areas
- Initial idea of which BMPs you want to implement
  - –MAST will help you refine BMP choice

- **What don't I need to know?**
  - –Calculations and formulas

DATA INPUT SEQUENCE

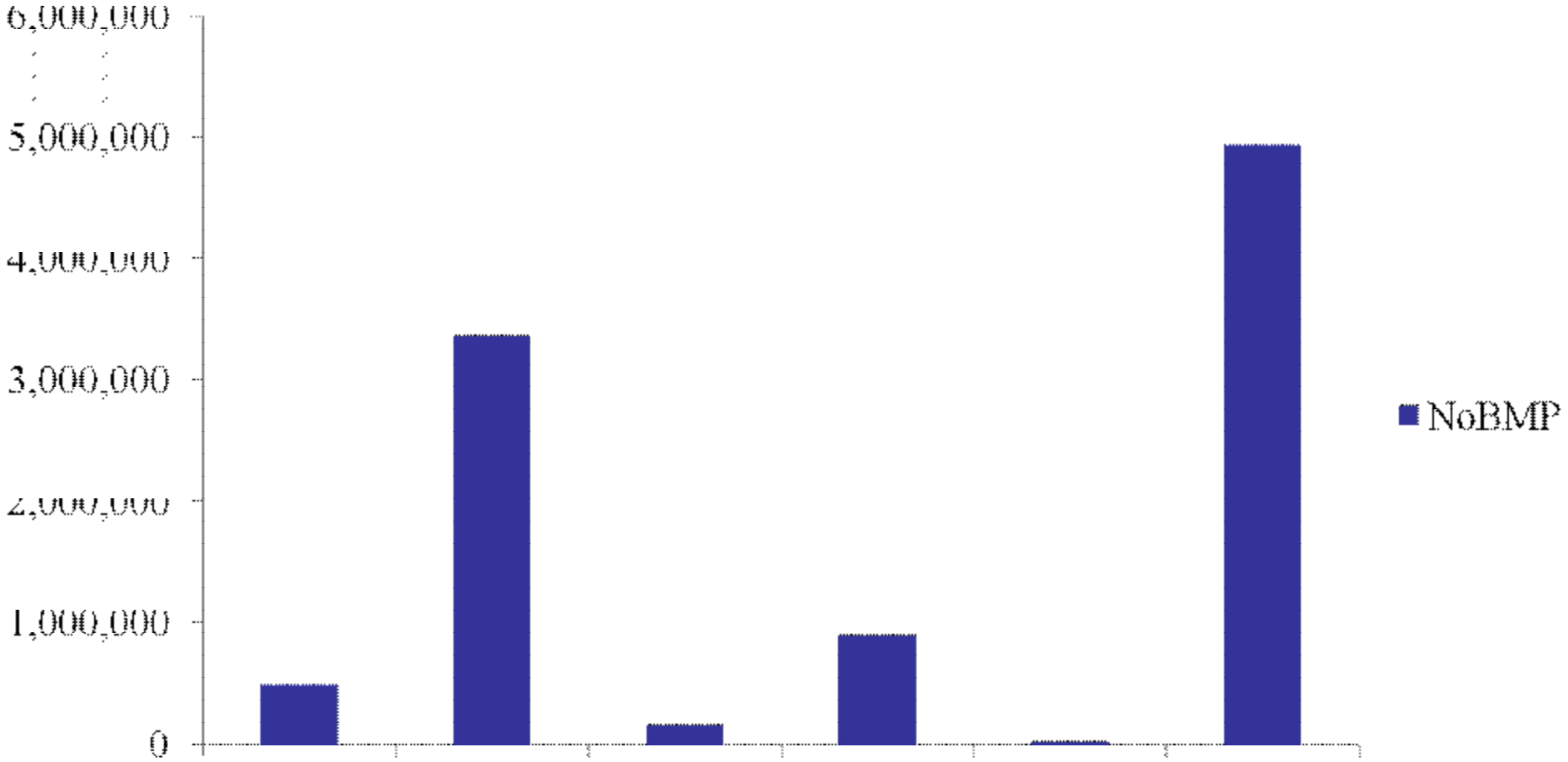


Application

An On-line MAST Demonstration

WWW.MASTONLINE.ORG

Scenario Results



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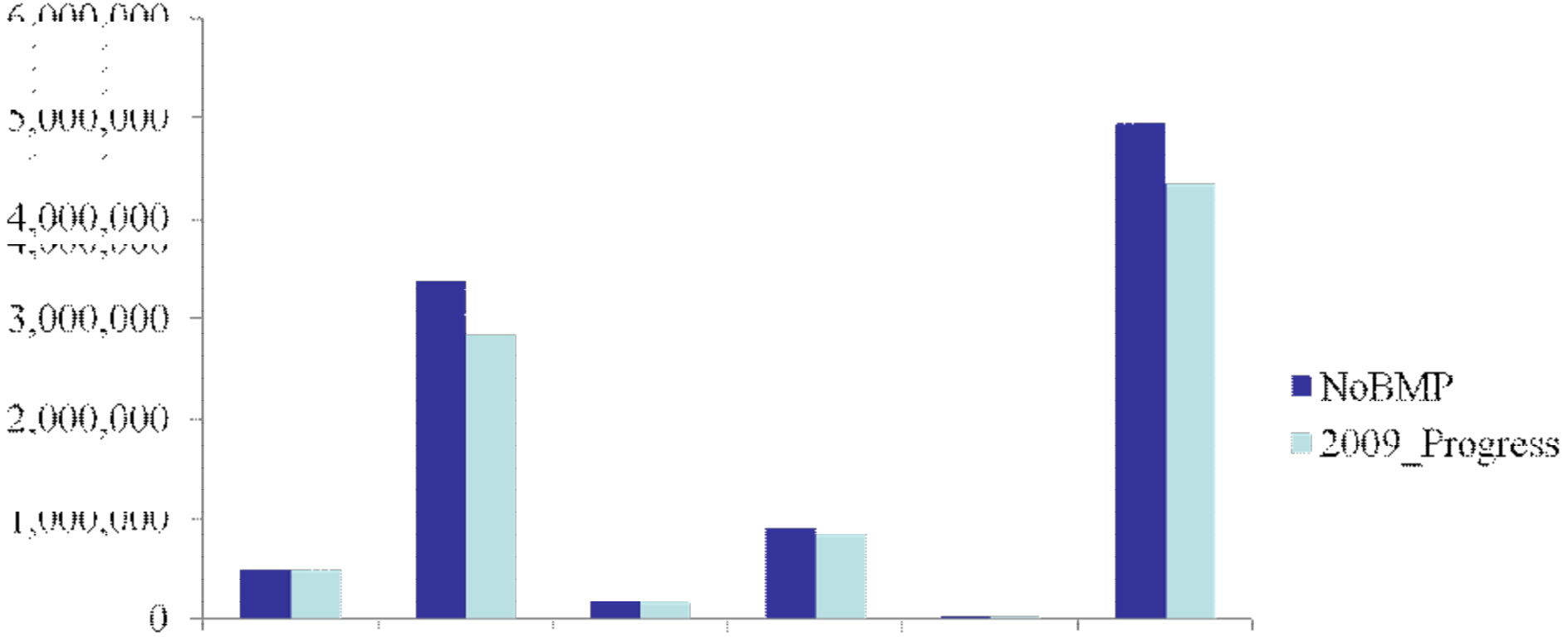

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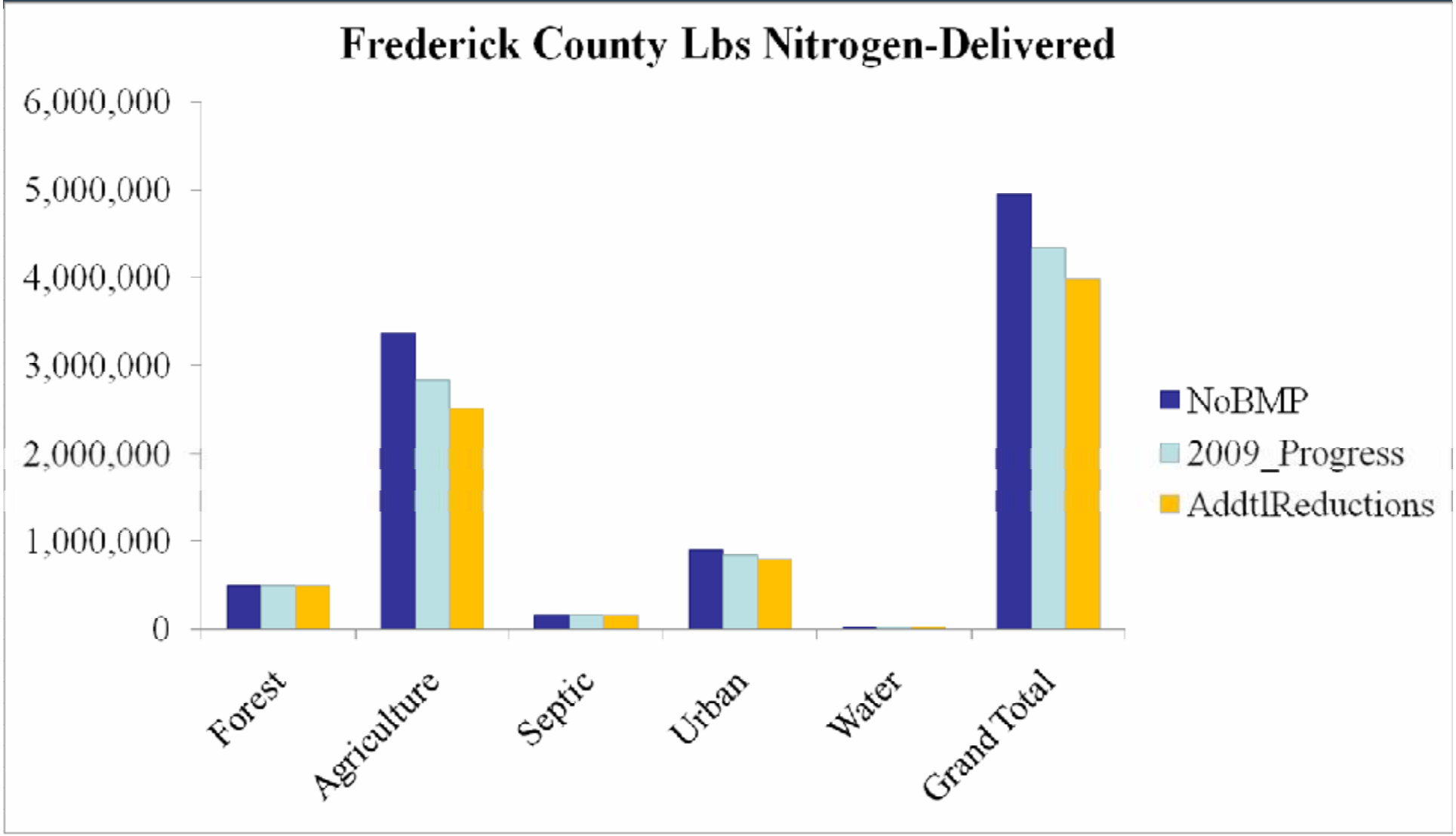


MORE INFORMATION AT IN-PERSON TRAININGS

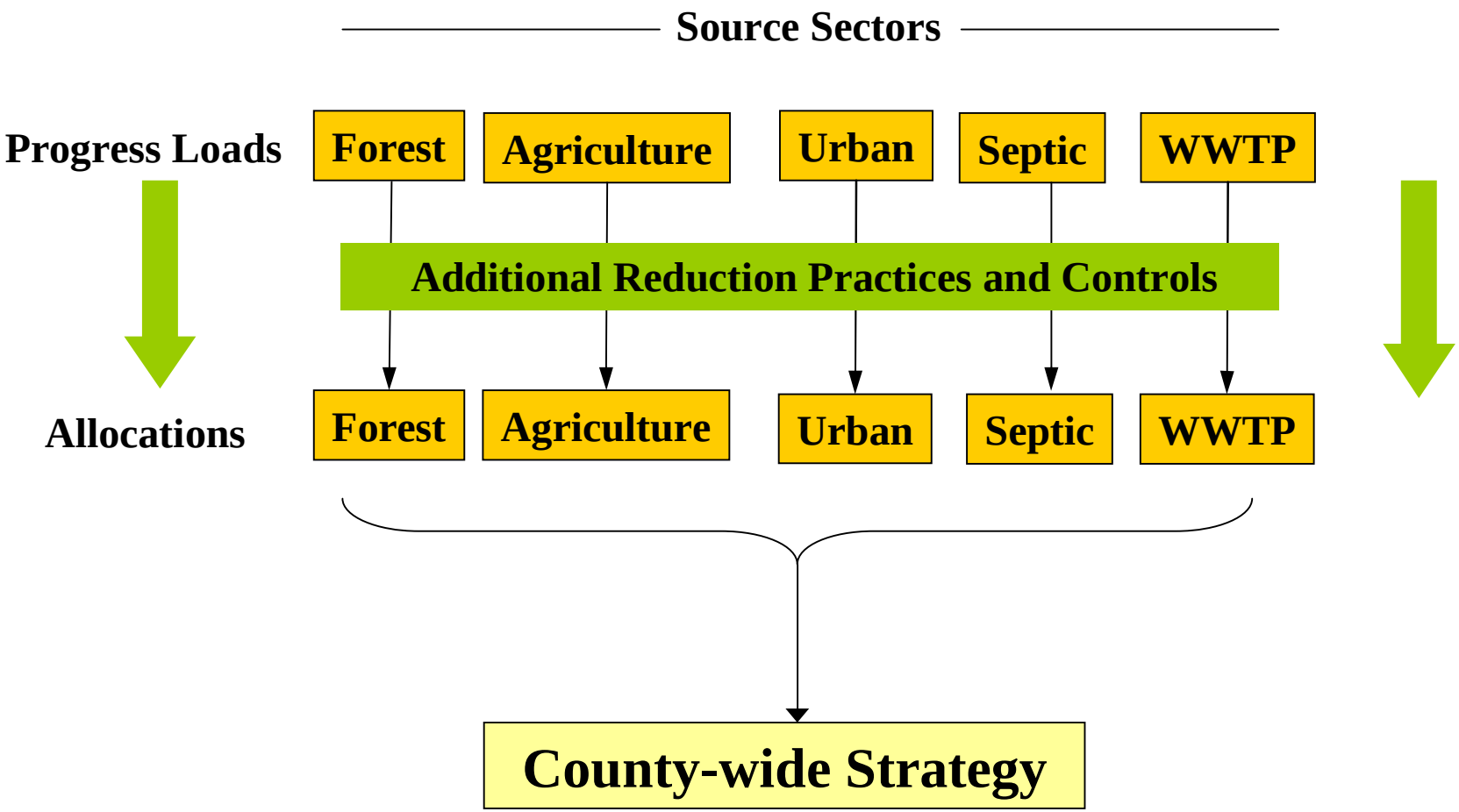
- Tips to optimize reductions
  - BMP Calculation Sequence and Groups
- BMP Definitions
- Chesapeake Bay Program Land Use Definitions

Summary & Next Steps

Lee Currey, MDE

- Developing WIP Team Scenarios: Process
- Hands-on MAST Training Sessions: Synopsis
- Upcoming Training Dates & Webinars

Developing WIP Team Scenario



Developing a WIP Team Scenario

- Start by working together within sectors, using allocations for each source sector
- Iterative process – revise implementation levels to adjust sector strategies as needed
- Use MAST to
  - Answer questions
    - *What strategies are most effective?*
    - *Did I meet my source sector allocation?*
  - Document decisions
  - Bring sector scenarios (strategies) together to review County-wide results
- Timeline: State will compile Local Team Scenarios in October for draft input deck runs in Bay Model by Nov. 1

Hands-on MAST Training Synopsis

- What will be covered?
  - More details on MAST inputs and output
  - Hands-on instruction: How to use the on-line tool to input BMPs to build a local reduction strategy
  - Training Materials and MAST Users Guide
- Objectives
  - Understanding how to use MAST to facilitate Local Team strategy development for Phase II WIP
  - Understanding how MAST relates to Bay Model (Strategies are common language)

Upcoming Events

- Hands-on MAST Training Sessions
  - MDE – Montgomery Park
  - Local Team Training Sessions: July 21, 26, 28, and Aug. 2 - 9:45 am to 2:30 pm
  - Contact: For any questions call Nan Lyon at 410-537-3325 or email **nlyon@mde.state.md.us**
- Phase II WIP Webinar for MS4 Stormwater Managers: TBA
- Phase II WIP Webinar for Federal Facility Managers: TBA

MAST Training Webinar

Q

Questions & Answers

A