E3 and No-Action Model Scenarios

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Agriculture Workgroup Meeting
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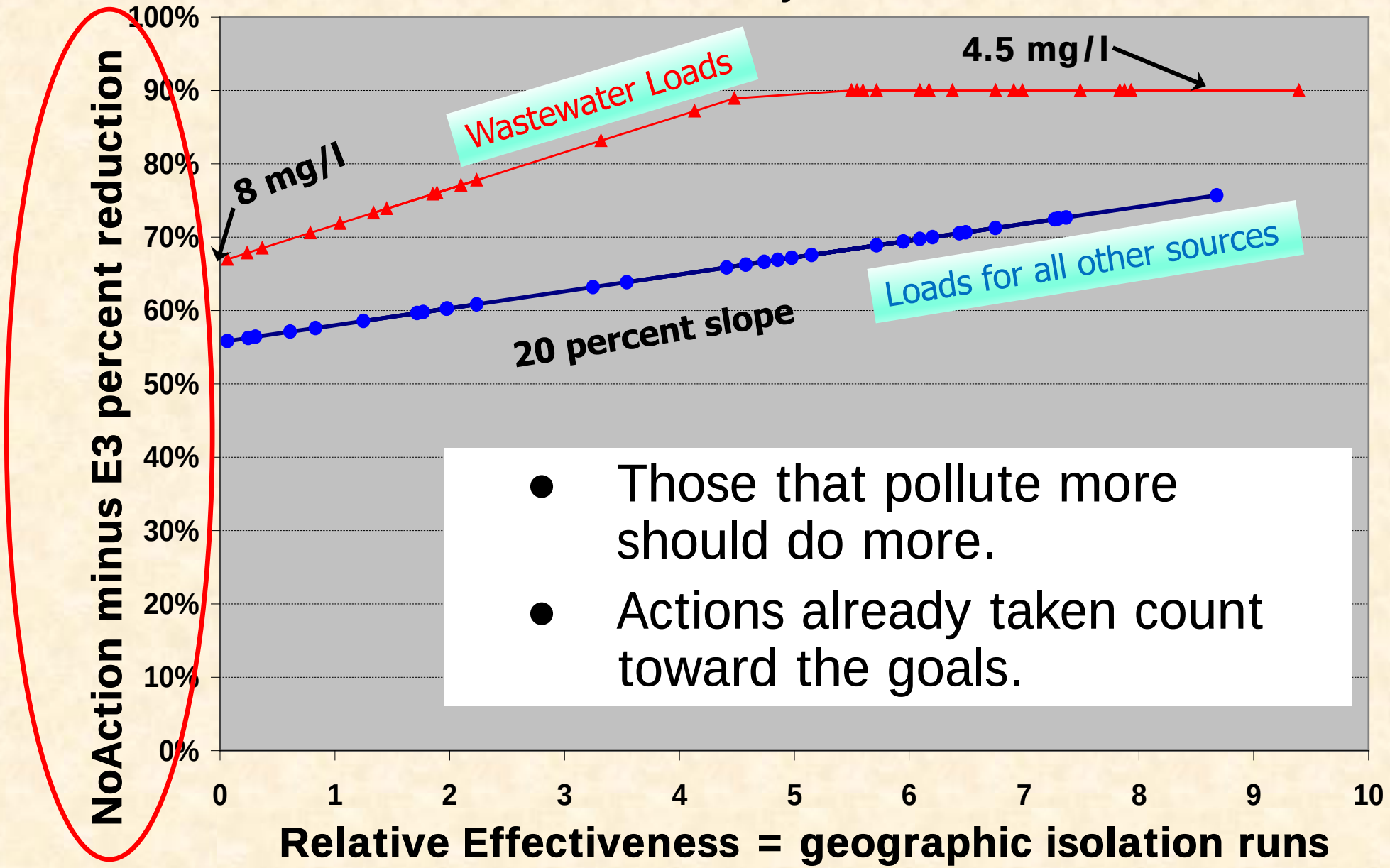
Phase 6 E3 Model Scenario

Status and Decision Request

- Agriculture Workgroup approved definition of E3 July 20th
- July 24th, WQGIT asked the Workgroup to provide a final agricultural E3 and No-Action scenario to them August 28th
  - Request included a review of the implementation levels for BMPs and possible geographic limitations of E3 BMPs.
- Refinements for the following Phase 6 E3 BMPs will be discussed:
  - manure incorporation
  - manure injection
  - manure transport
  - shoreline erosion control.
- Decision: The AgWG will be asked to approve a FINAL version of the Phase 6 agricultural No Action and E3 scenarios to be presented at the WQGIT August 28th Conference Call for approval

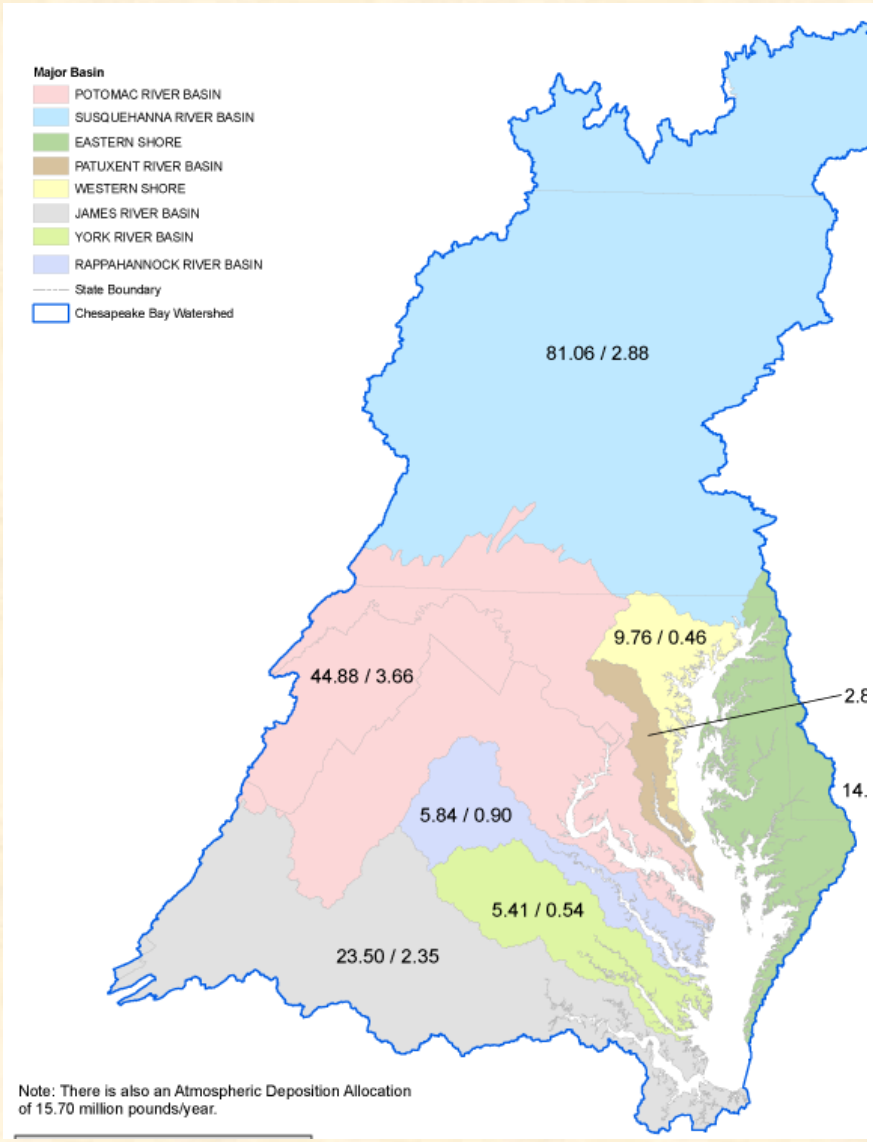
Phase 5 Planning Target Methodology

"Hockey Stick"

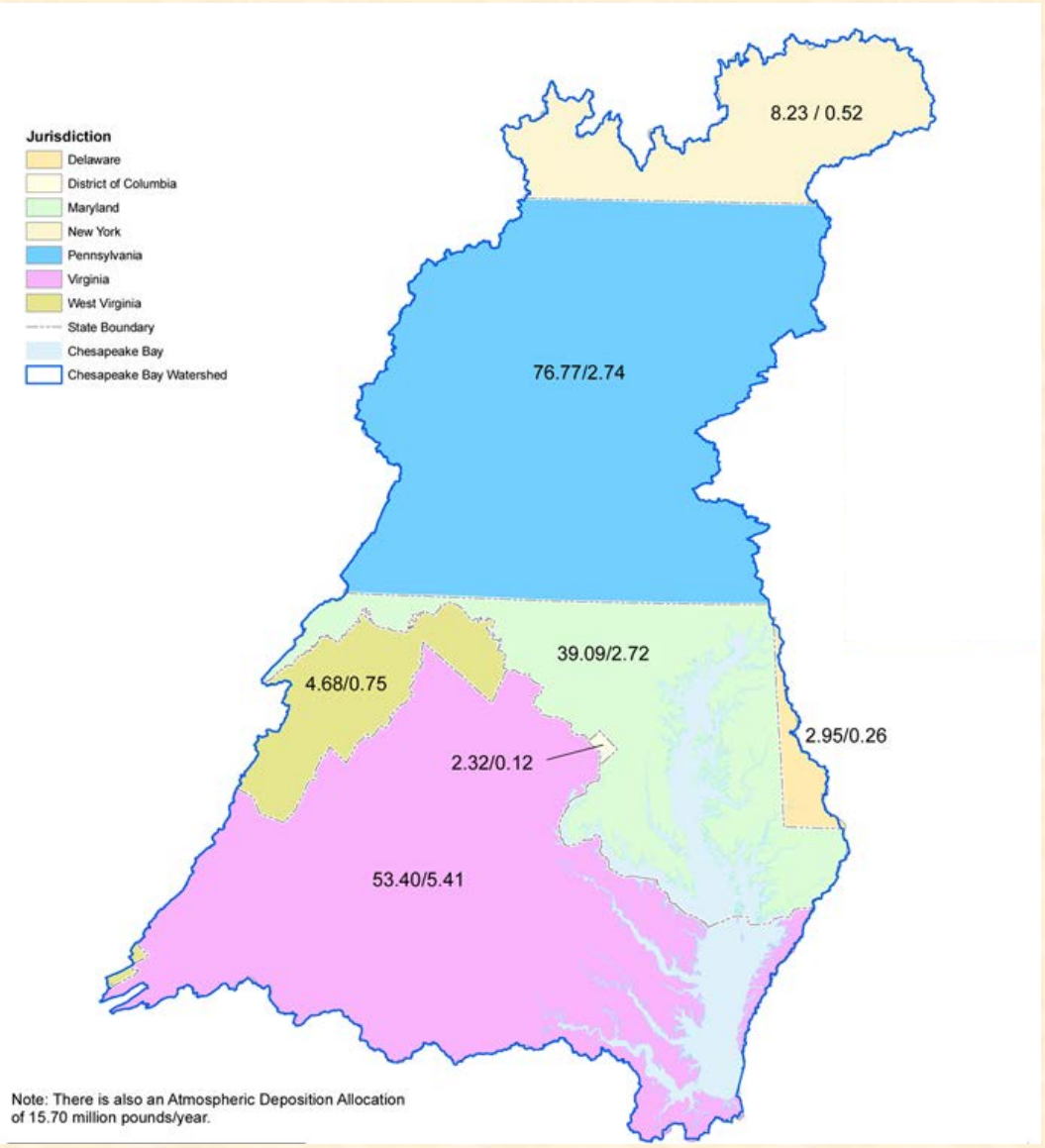


- Those that pollute more should do more.
- Actions already taken count toward the goals.

Pollution Diet by River



Pollution Diet by State



Phase 6 E3 Model Scenario

Points to Consider

- Planning targets are for all sources in an area. They do not determine the amount needed from each sector
  - Moving the WWTP line up or down means that more or less is expected from **state-basins** with high loading from WWTPs
- Choice of WWTP line is set. Choice of E3 does not affect the total necessary reduction from NPS to establish planning targets
- Choice of E3 affects the planning targets of state-basins that are dominated by ag or urban
  - Choice of E3 does not determine reductions necessary from ag or urban. These are set through WIP process

Phase 6 E3 Model Scenario

Tutorials on E3 and Planning Targets

Water Quality GIT

- Dec 15, 2015
- June 27, 2016
- Oct 24, 2016
- Nov 14, 2016
- Jan 9, 2017
- Jan 23, 2017
- June 26, 2017
- July 24, 2017
- Aug 14, 2017

Agriculture WG

- Sep 15, 2016
- Oct 5, 2016
- April 20, 2017
- June 29, 2017
- July 20, 2017

Urban Stormwater WG

- May 17, 2016
- June 21, 2016
- July 26, 2016
- Sept 20, 2016
- Oct 6, 2016
- Nov 15, 2016
- June 27, 2017

Waste Water Technical WG

- Aug 2, 2016
- Sep 13, 2016
- Oct 4, 2016

Forestry WG

- Nov 2, 2016
- May 3, 2017

Phase 6 E3 Model Scenario

Agriculture & Forestry BMPs

Agriculture & Forestry	*Bold italics indicates changes since Oct, 2016 version*
Phase 6 BMP	**E3 Implementation Level**
Nutrient Management Core N, Nutrient Management Core P	100% of all available agricultural landuses
NM Supplemental: N and P Placement, N and P Rate, N and P Timing	100% of all available agricultural landuses
Tillage Management-High Residue/Minimal Soil Disturbance	100% of row crops (excluding corn silage and soybeans), and low input specialty crops
Tillage Management-Conservation Tillage	100% of select row crops including corn silage and soybeans, and high input specialty crops; excludes mushrooms, greenhouse and container nursery
Tillage Management-Low Residue Tilage	100% of select high input specialty crops including potatoes, peanuts, tobacco; excludes mushrooms, greenhouse and container nursery
Cover Crop	81% of row crops; not associated with small-grain production and high input specialty (excludes mushroom, greenhouse and container nursery; early, drilled, rye
Commodity Cover Crop	19% of row crops; associated with small-grain production; early, drilled, wheat
Cover Crop Composite	100% of row crops and high input specialty crops; excludes mushroom, greenhouse, and container nursery
Off Stream Watering Without Fencing	100% of all available livestock pasture
Prescribed Grazing	100%; includes PIRG acres
Forest Buffer-Streamside with Exclusion Fencing	*Pasture land within 30m of all streams and rivers that's unbuffered - from high-resolution land cover (originally 5% of pasture for Phase6, 10% for Phase5)*
Pasture Management Composite	100%
Forest Buffers	*Crop land within 30m of all streams and rivers that's unbuffered - from high-resolution land cover (originally 6% of cropland for Phase6, 15% for Phase5)*
Wetland Restoration	1% of available crops and pasture
Land Retirement to Ag Open Space and to Pasture	7% of available crops and pasture
Tree Planting	*1% of available crops and pasture*
Composite of Buffers, Wetland Restoration and REL	*Total land use change not to exceed 15%*

Phase 6 E3 Model Scenario

Agriculture & Forestry BMPs

Agriculture & Forestry (continued)	*Bold italics indicates changes since Oct, 2016 version*
Alternative Crops	1% of row crop
Soil Conservation and Water Quality Plans	100% over all available agricultural land uses
Manure Injection	*All liquid manure from dairy & swine on relevant crops (types and tillage) that receive manure, excluding crops w/ manure incorporation*
Manure Incorporation; Low Disturbance	*All dry manure from poultry, beef, horses, sheep, and goats on relevant crops (types and tillage) that receive manure, excluding crops w/ manure injection*
Manure Transport	Will be added based on excess of crop goal; Includes benefits of Manure Treatment Technologies
Livestock Waste Management Systems	100% of all livestock production areas
Poultry Waste Management Systems	100% of all poultry production areas
Animal Waste Management Systems	100% of all animal production areas
Barnyard Runoff Control	100% of beef and dairy facilities
Loafing Lot Management	100% of beef and dairy facilities
Animal Feed Operations	100% of beef and dairy facilities
Dairy Precision Feeding and/or Forage Management N	100% of Dairy @ TN = 24% reduction
Dairy Precision Feeding and/or Forage Management P	100% of Dairy @ TP = 28% reduction
Biofilters and Lagoon Covers	100% of Dairy and Swine, excludes manure storage for dry manure/stackable manure
Non-Urban Stream Restoration	*15% of low-order agriculture stream miles are restored @ twice the default Stream Restoration value*
	Stream miles from Chesapeake Conservancy synthetic data layer at lower order than National Hydrography Dataset (NHD)
Shoreline Erosion Control	*Any practice along agriculturally-dominated tidal shorelines that prevents and/or reduces tidal sediments to the Bay*
	Shoreline practices can include living shorelines, revetments and/or breakwater systems and bulkheads and seawalls
	Using new buffer data set of buffered:unbuffered shoreline to define domain

Phase 6 E3 Model Scenario

Urban, Forestry & Septic

Urban, Forestry & Septic	*Bold italics indicates changes since Oct, 2016 version*
Phase 6 BMP	**E3 Implementation Level**
Stormwater Management - New Development	**100% of new development has Runoff Reduction BMPs sized for 2.0 inch Impervious area**
Stormwater Management - Retrofits	**Runoff Reduction Retrofits sized to treat 1.5 inch Impervious area for 75% of each urban land use type (accommodates physical limitations)**
Stormwater Management Composite	**100% of area that can be managed through these techniques**
Erosion & Sediment Control	**100% of construction sites are treated to ESC Level 3 and have high-risk Urban Nutrient Management plans**
Urban Nutrient Management	**100% eligible Pervious Cover has Urban Nutrient Management Plan implementation which is split 20% High Risk and 80% Low Risk**
Forest Buffers	*All turfgrass (no canopy) within 30m of all streams and rivers that's unbuffered - from high-resolution land cover*
Urban Tree Canopy	*10% gain (2,400 additional acres) of canopy from now (2013) by 2025*
Street Cleaning	**100% of Transport Impervious Cover swept using SCP-1**
Advanced Grey Infrastructure Nutrient Discovery Program & Storm Drain Clean Outs	**5% of Urban N and P load removed due to both credits**
Urban Stream Restoration	*15% of urban stream miles are restored @ twice the default Stream Restoration value*
	Stream miles from Chesapeake Conservancy synthetic data layer at lower order than National Hydrography Dataset (NHD)
Shoreline Erosion Control	*Any practice along urban-dominated tidal shorelines that prevents and/or reduces tidal sediments to the Bay*
	Shoreline practices can include living shorelines, revetments and/or breakwater systems and bulkheads and seawalls
	Uses new buffer data set of buffered:unbuffered shoreline to define domain
Septic Connections	**10% of septic systems connected to wastewater treatment facilities**
Septic Denitrification Enhanced	**100% of systems remaining after connections**
Resource BMPs	*Bold italics indicates changes since Oct, 2016 version*
Forest Harvesting BMP	**100% of Harvested Forest area**
Forest Conservation	*No net loss of true forest*
DiploidOysters3	*MD = 112 M oysters; VA = 280 M oysters*

Phase 6 E3 Model Scenario

Agriculture Versus Urban Implementation Levels

- 100% implementation means 100% of the specific landuse area the BMP applies to, not 100% of all agriculture or urban land.
- Only Conservation Plans cover 100% of total agriculture land = crop + pasture
- Nutrient Management, for example, covers 100% of all eligible landuses (crops), and about 65% of total agriculture land
- Stormwater Management through Performance Standards covers about 85% of total urban land

Phase 6 E3 Model Scenario

Schedule

For final versions of Phase 6 scenarios and development of Planning Targets, we need:

- Decision on what year to use for No-Action and E3 scenarios – after assessing options
  - Initial scenarios are 2010 background conditions
- Workgroups can review model results of No-Action, E3, Phase II WIPs with Phase 6 model, etc.
- Geographic isolation runs
- Approved model – after fatal flaw review by partnership; September, 2017

Phase 6 E3 Model Scenario
Definition

- Chesapeake Bay TMDL Appendix J
- The E3 Scenario is an estimate of the application of management actions ... with the theoretical maximum practicable levels of managed controls on all pollutant load sources. There are no cost and few physical limitations to implementing BMPs for point and nonpoint sources in the E3 scenario.
- Generally, E3 implementation levels and their associated reductions in nutrients and sediment could not be achieved for many practices, programs and control technologies when considering physical limitations and participation levels.