Chesapeake Bay Program
A Watershed Partnership

PHASE 7 MODEL DECISIONS

CLEAN WATER GOAL TEAM

SEPTEMBER 28, 2026

CLEAN WATER GOAL TEAM DECISIONS

- Land Use Change Model—Simulating Future Development in the Watershed
- E3 (Everything by Everyone Everywhere) Scenario Assumptions (Setting Reduction Targets)
- Scenario Base Year (Setting Reduction Targets)
- Long-term Average Hydrologic Period and Critical Period (Setting Reduction Targets)

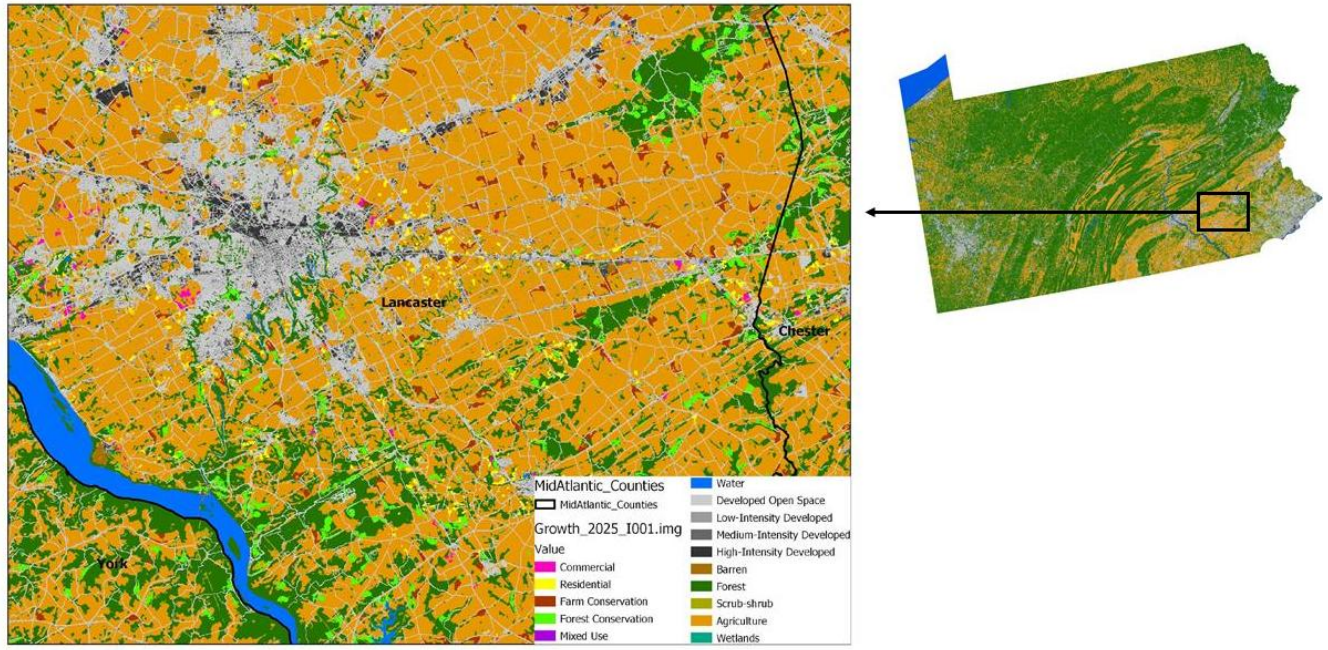
Land Use Change Model

Why Model Future Land Use Conditions?

- Large-scale ecosystem restoration projects take decades to accomplish
- Land use change challenges assumptions behind restoration strategies

How is the Land Use Change Model Used?

- Measuring annual progress--land use change model is used to predict the difference between the land use of the progress year and the latest year that land use was mapped at high-resolution (2022)
- Modeling the effects of future land use and changing environmental conditions on water quality.



Simulated residential, commercial, and mix-use development of farmland and forest in PA

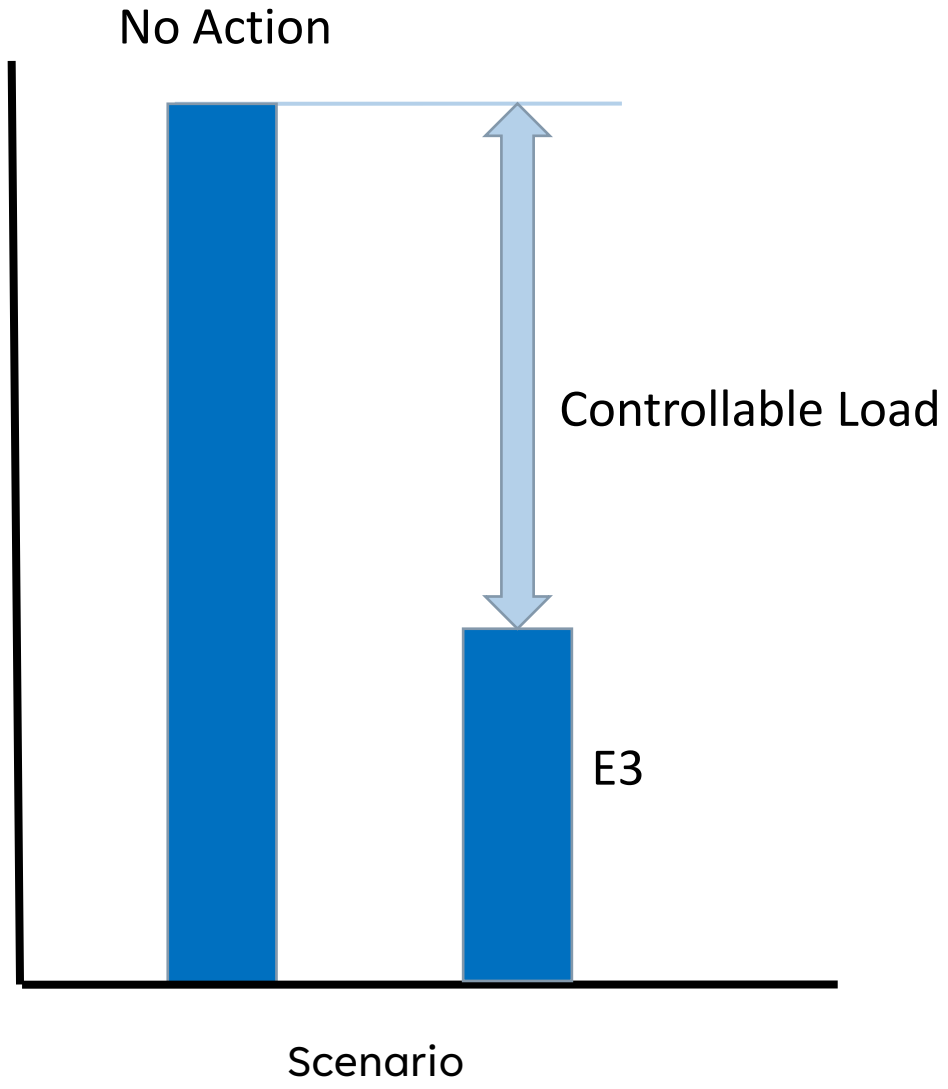
E3 Scenario Assumptions

What is the E3 Scenario?

- Theoretical "**Everything by Everyone Everywhere**" scenario
- Best-case scenario where all possible BMPs and control technologies are applied
- Answers "how low can you go?"

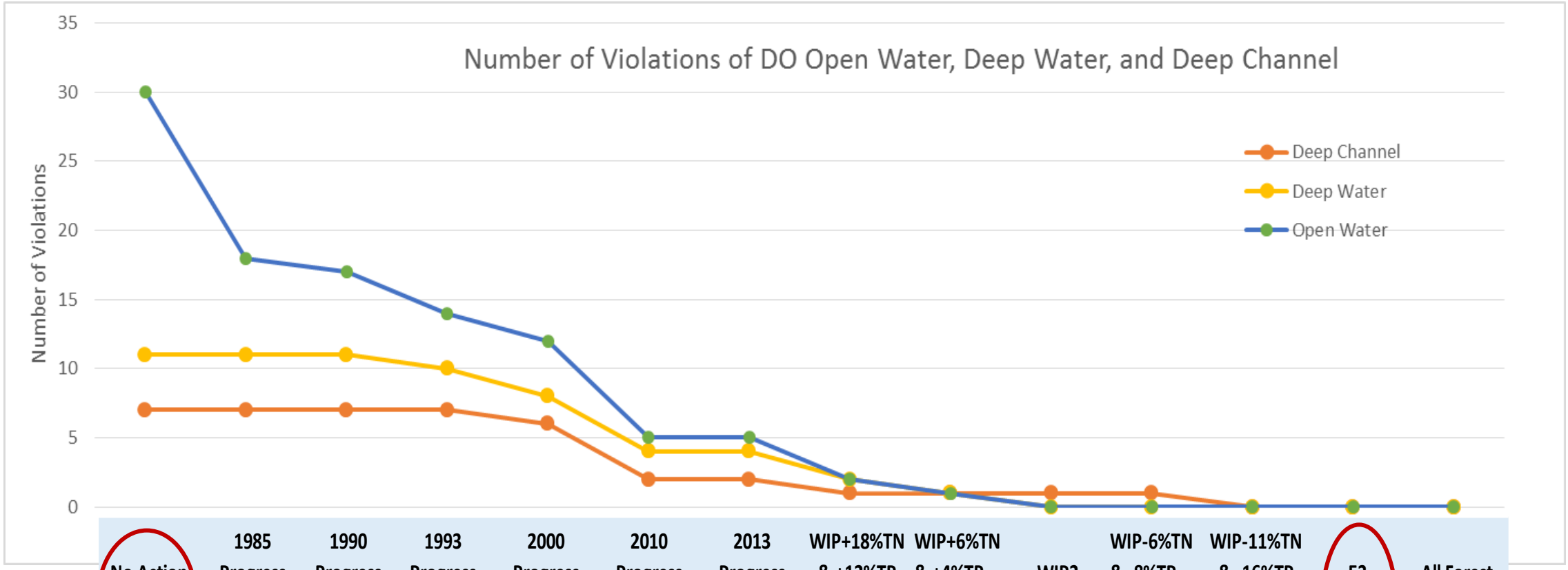
Why is the E3 Scenario important?

- Along with the "No-action" scenario, used to set controllable load.
- Targets will land somewhere in-between



E3 Scenario Assumptions

Assimilative capacity (maximum amount of nutrient load the Bay can handle for the whole Bay) is explored by comparing scenarios.



No Action	1985 Progress	1990 Progress	1993 Progress	2000 Progress	2010 Progress	2013 Progress	WIP+18%TN & +12%TP	WIP+6%TN & +4%TP	WIP2	WIP-6%TN & -8%TP	WIP-11%TN & -16%TP	E3	All Forest
404TN	347TN	338TN	337TN	317TN	266TN	253TN	224TN	205TN	195TN	185TN	174TN	133TN	40TN
41.7TP	30.4TP	27.7TP	23.7	21.9TP	16.9TP	15.9TP	14.8TP	14.4	13.7TP	13.0TP	11.9TP	8.6TP	3.9TP

*A violation occurs when a segment doesn't meet water quality standards under a given loading scenario.

Scenario Base Year

What is the scenario base year?

- Base conditions on which planning target scenarios (including E3 and No Action) are developed.
- A starting point/reference year for comparisons

Why is scenario base year important?

- Used in setting planning targets--No-Action and E3 are based on this year.
- ***Selection of year (2010 or 2022) affects how the partnership accounts for growth and assigns responsibility.***

Key decision considerations

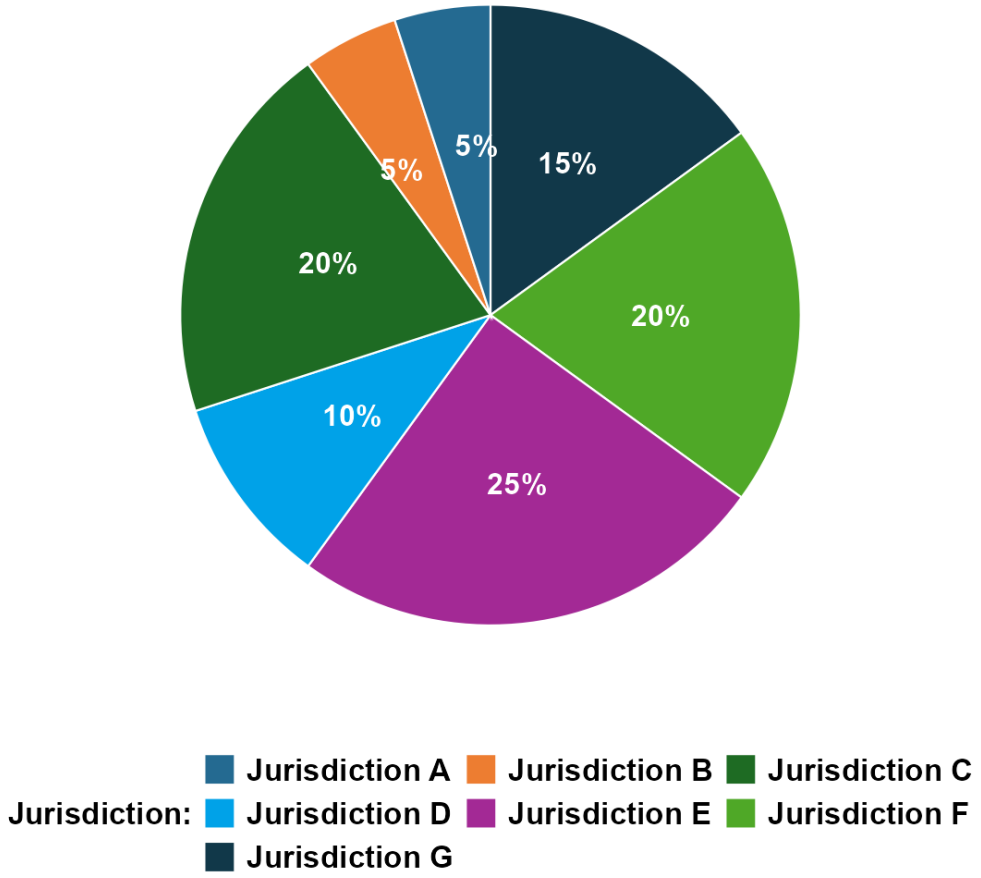
- Based on the TMDL, each jurisdiction is responsible for growth (new or increased loads from changes in land use) that occurs in their jurisdiction.
- The more accurately the landscape is represented, the more accurate the computation of the controllable load can be.

Average Hydrologic Period

What historical amount of pollutants has each jurisdiction contributed?

- Make sure everyone gets a “fair” piece of pie
  - Look at what each jurisdiction has historically contributed
  - 10-year window
  - Representing typical streamflow and runoff conditions
  - Establish fair, long-term percentage of pollutant loading for everyone

Hypothetical Jurisdiction Share of Load

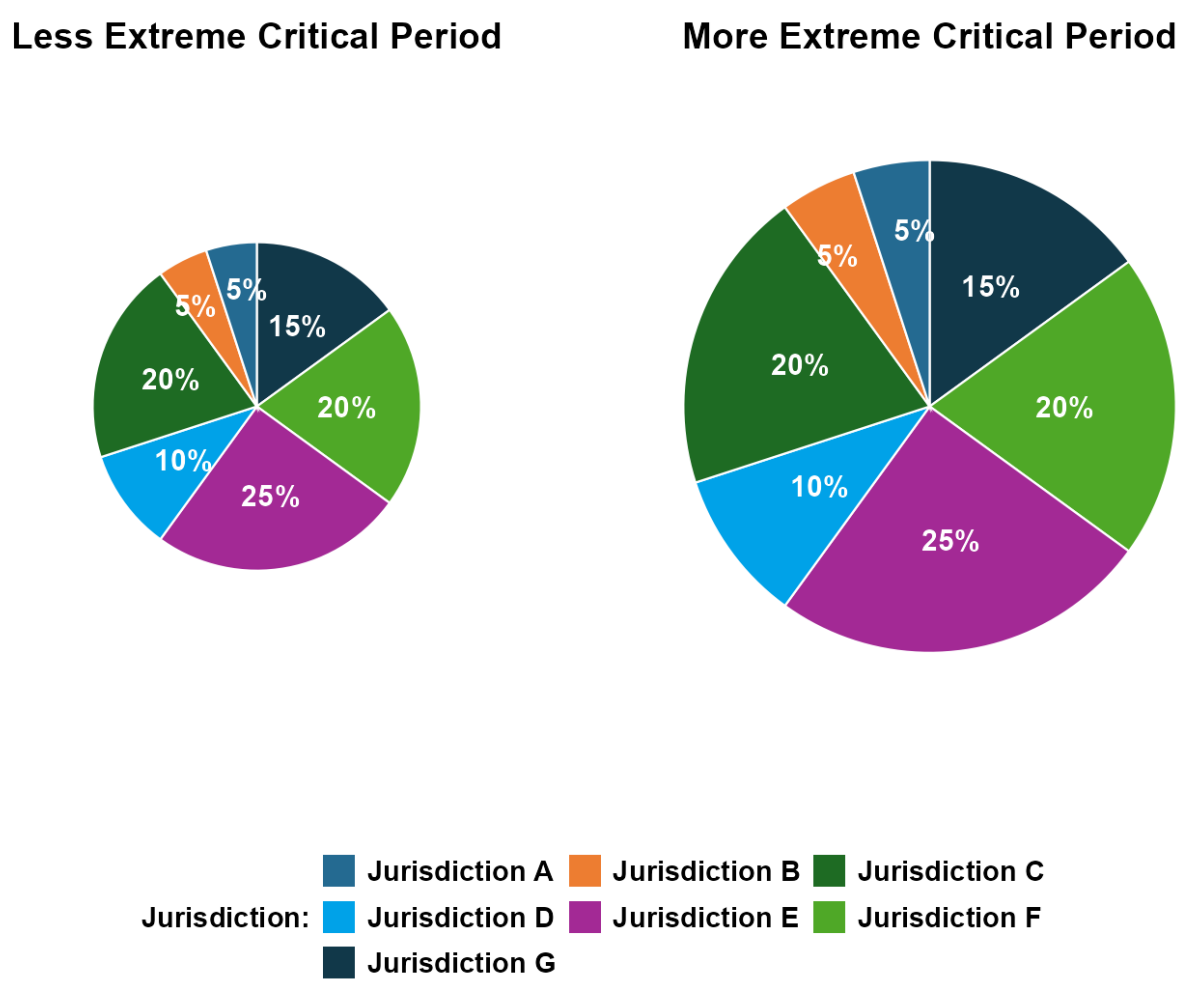


Critical Period

What reductions are needed to meet water quality standards under difficult conditions?

- Determine how big of a pie we must split
  - Calculate how big the pie can be based on the maximum amount of ingredients
  - 3-year window
  - Represents stressful conditions the Bay will experience
  - Used to set pollutant-reduction targets

Hypothetical Jurisdiction Share of Load



Hydrologic and Critical Period

- Reasons to make a change
  - Better data set used to complete the analysis to select a new hydrologic or critical period
  - Data suggests we shift to a more recent period of record to drive our work
- Risk/downside = Schedule delay likely ~ 6-9 months

Ramifications of a delay

- Watershed Agreement commitment to revise targets and WIPs by Dec. 2030.
- Delay will create cascade affecting timeline for model review, target setting, and WIP development
- Model review period to extend into 2028.
- Potentially less time to develop and review WIPs (from 2 years to 1.5)

QUESTIONS