



**Maryland**  
Department of  
the Environment

# **Maryland's Phase III WIP**

## Planning for 2025 and beyond

Maryland Sustainable Growth Commission Meeting  
Gaithersburg City Hall Gallery  
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# Goals for Maryland's Phase III WIP

- Develop robust partnerships
- Think “One Water”
  - Healthy streams, reservoirs and bay
- Include local priorities
- Ensure climate resiliency and mitigation
- Promote innovation
- Foster economic growth



*Maryland*  
**BROOK TROUT**



**FRESH  
LOCAL**

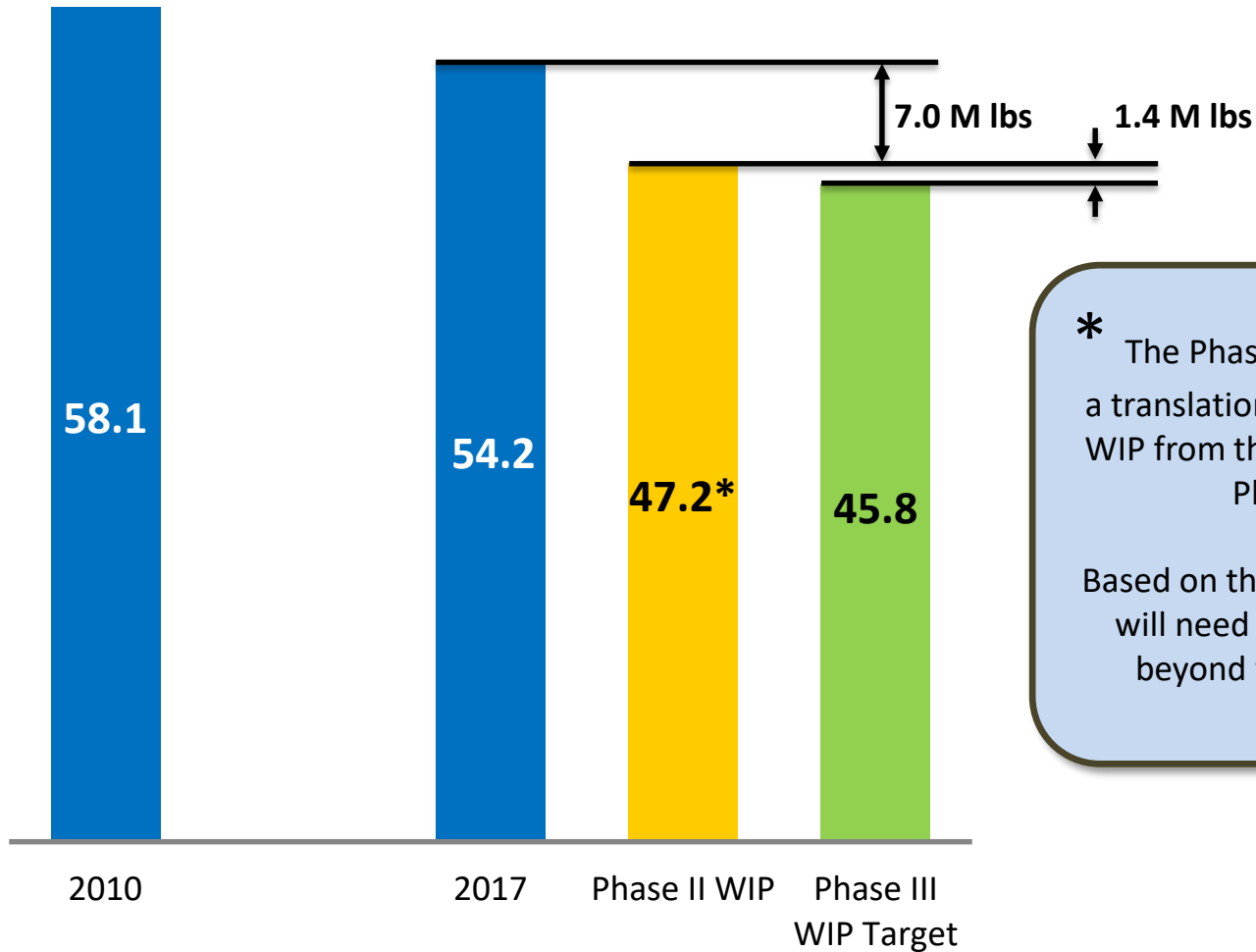


## Overview

- Maryland will have a realistic plan for meeting its Phase III WIP targets by 2025 ...
- ... but will need to consider future challenges
  - Growth beyond 2025
  - The impacts of climate change
  - Reliance on certain practices to meet 2025 goals
- Plot a course for continued implementation past 2025



# Maryland's Phase III WIP Target



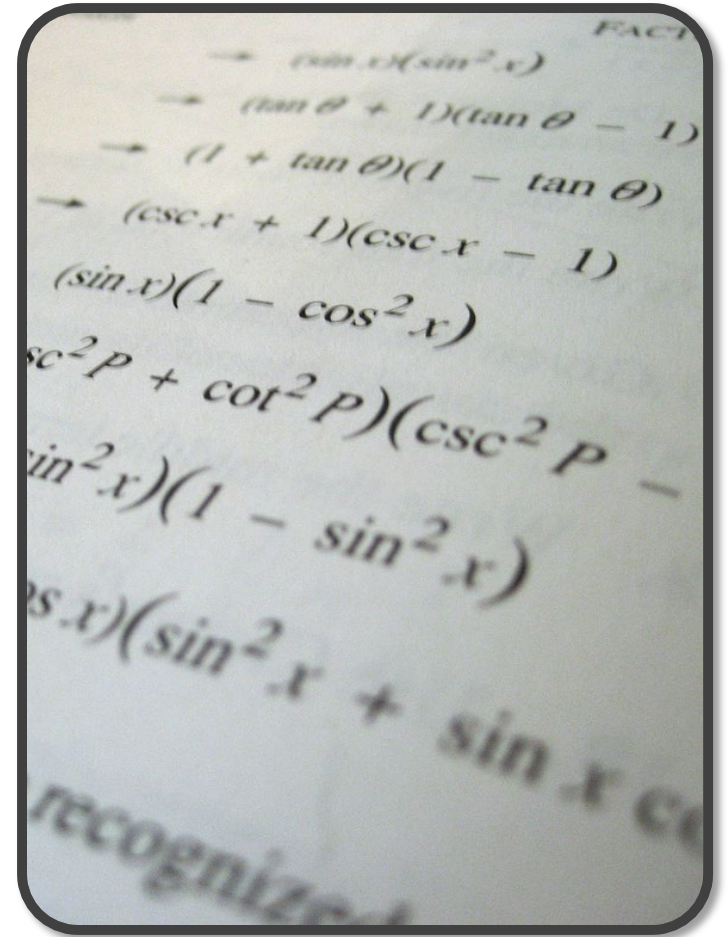
\* The Phase II WIP load is based on a translation of Maryland's Phase II WIP from the Phase 5 model to the Phase 6 model.

Based on this translation, Maryland will need to achieve reductions beyond what was previously planned.



# About this presentation

- Analyses based on Phase 6
  - Latest version of the Chesapeake Bay Watershed Model
  - P6 CAST
- All numbers are draft
  - Need public reaction and feedback
  - These numbers will likely change
- Last statewide engagement opportunity prior to Draft Phase III WIP release in April





# Maryland's trajectory

- Trajectories based on:
  - Current permits
  - Historic performance
  - Planned projects
  - Current commitments
  - Appropriate level of funding
  - Estimated 2025 growth
- Four Sectors
  - Agriculture
  - Wastewater
  - Stormwater
  - Septics
- Statewide
  - Phase III WIP Targets



The trajectories presented today are not the state Phase III WIP goals.  
Goals will be established in the final Phase III WIP document.



# Agriculture | Implementation

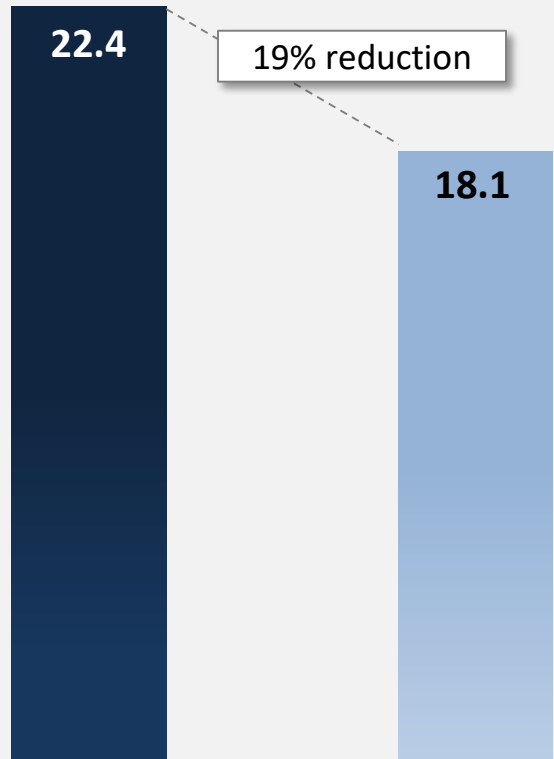
- 23 Soil Conservation District Meetings
  - Updated commitments
    - Latest practices approved by Expert Panels through the Chesapeake Bay Program Partnership
- Key activities from 2017 to 2025
  - Tracking & reporting
    - Accurate accounting of all conservation practices currently on the ground
  - Additional implementation of management practices
  - Nutrient management compliance



# Agriculture | 2025 Projections

## Nitrogen

million pounds to the bay

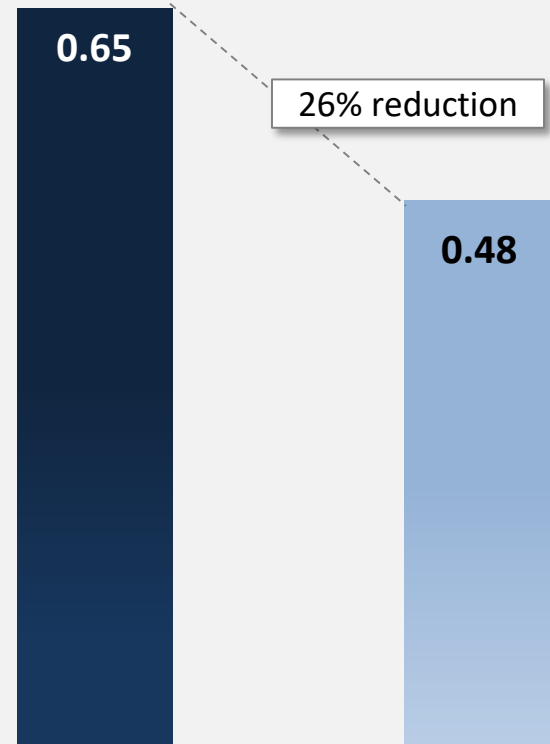


Actual 2017

Projected 2025

## Phosphorus

million pounds to the bay



Actual 2017

Projected 2025

*Based on Phase 6 CAST: 2017 Progress scenario*





# Wastewater | Implementation

## UPGRADES

- Major municipal upgrades
  - Back River WWTP
    - Upgrade complete in 2017
    - 26% of 2017 Maryland flows
  - Patapsco WWTP
    - Upgrade in 2019
    - 10% of 2017 Maryland flows
  - All major upgrades complete by 2022
- Minor municipal upgrades
  - 6 in operation
  - 14 planned by 2025

## PERFORMANCE INCENTIVES

- Bay Restoration Fund (BRF) Operation & Maintenance Grants
  - Must operate at 3.0 mg/L nitrogen (or below)
  - 49 of 57 ENR facilities received grants in 2017
- Water Quality Trading Program
  - Must operate below 3.0 mg/L nitrogen
- Clean Water Commerce Act
  - Must operate below 3.0 mg/L nitrogen



# Wastewater | Growth to 2025

- Average Municipal Flow
  - 585 million gallons per day
    - 2009 to 2017
  - approx. 120 gallons per day per capita
- Estimated growth to 2025
  - 280,000 people
    - *From 2017 MDP estimates\**
  - Flow: +35 million gallons per day



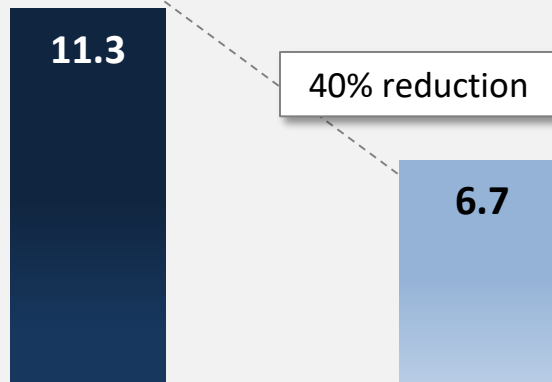
\* <https://planning.maryland.gov/MSDC/Documents/popproj/TotalPopProj.xlsx>



# Wastewater | 2025 Projections

## Nitrogen

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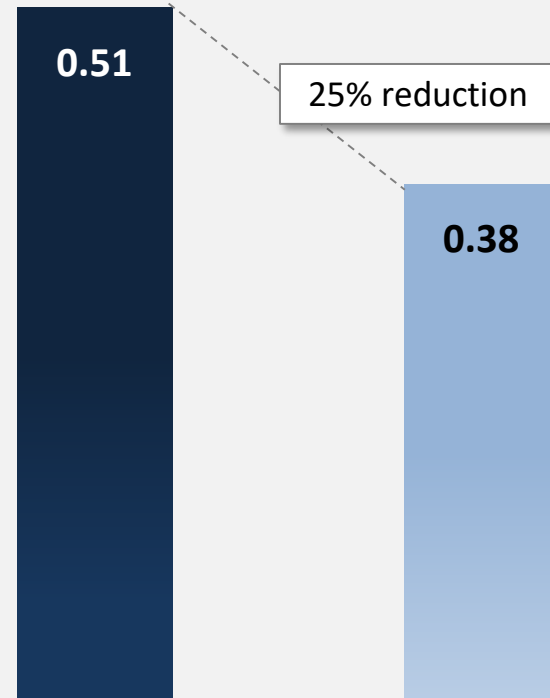


Actual 2017

Projected 2025

## Phosphorus

million pounds to the bay



Actual 2017

Projected 2025

Based on Phase 6 CAST: 2017 Progress scenario



# Stormwater | Trajectory

## Legacy stormwater

- Current Phase I MS4 Permits
  - 20% retrofit of impervious acres
    - 35,000 impervious acres
- Current Phase II MS4 Permit
  - 20% retrofit of impervious acres
    - 15,000 impervious acres
- Non-MS4 Jurisdictions

## New Stormwater

- Urban growth
  - 2,900 acres of new development per year
    - 900 acres impervious
  - Environmental site design

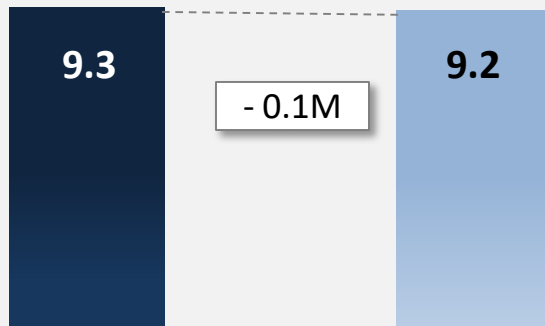




# Stormwater | 2025 Projections

## Nitrogen

million pounds to the bay

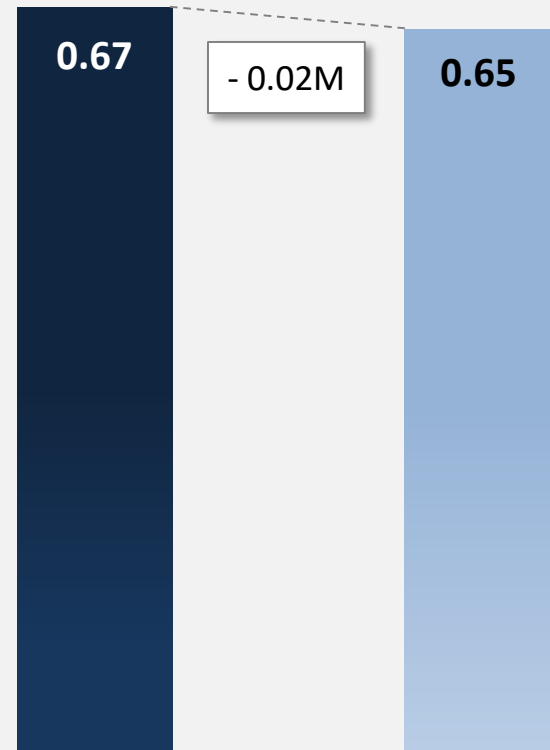


Actual 2017

Projected 2025

## Phosphorus

million pounds to the bay



Actual 2017

Projected 2025

*Based on Phase 6 CAST: 2017 Progress scenario*



## Septic | Trajectory

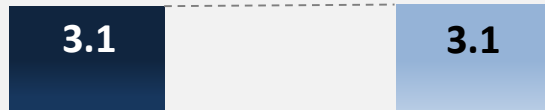
- Over 400,000 systems statewide
  - 7.7 pounds of nitrogen per system per year
- 1,200 upgrades per year through Bay Restoration Fund
- 1,700 new systems each year
  - Best Available Technology (BAT) for new systems within 1,000 feet of tidal waters



# Septic | 2025 Projections

## Nitrogen

*million pounds to the bay*



Actual 2017

Projected 2025

## Phosphorus

*million pounds to the bay*

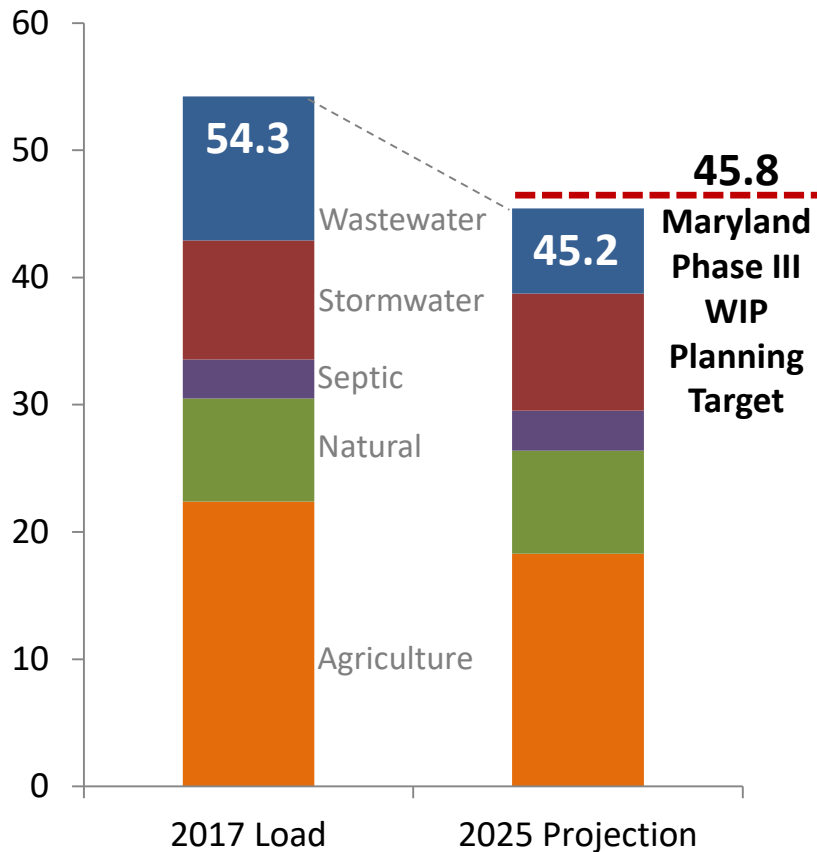
No phosphorus loads associated with septic systems in CAST



# Statewide | Projection

## Nitrogen

Million pounds delivered to bay from Maryland



Potential 8.8-million-pound (16%) reduction

These numbers are not final.

They are draft projections of Maryland's 2025 nitrogen load.

These are being provided for public feedback.

Both this analysis and today's feedback will be taken into consideration in Maryland's final Phase III WIP.

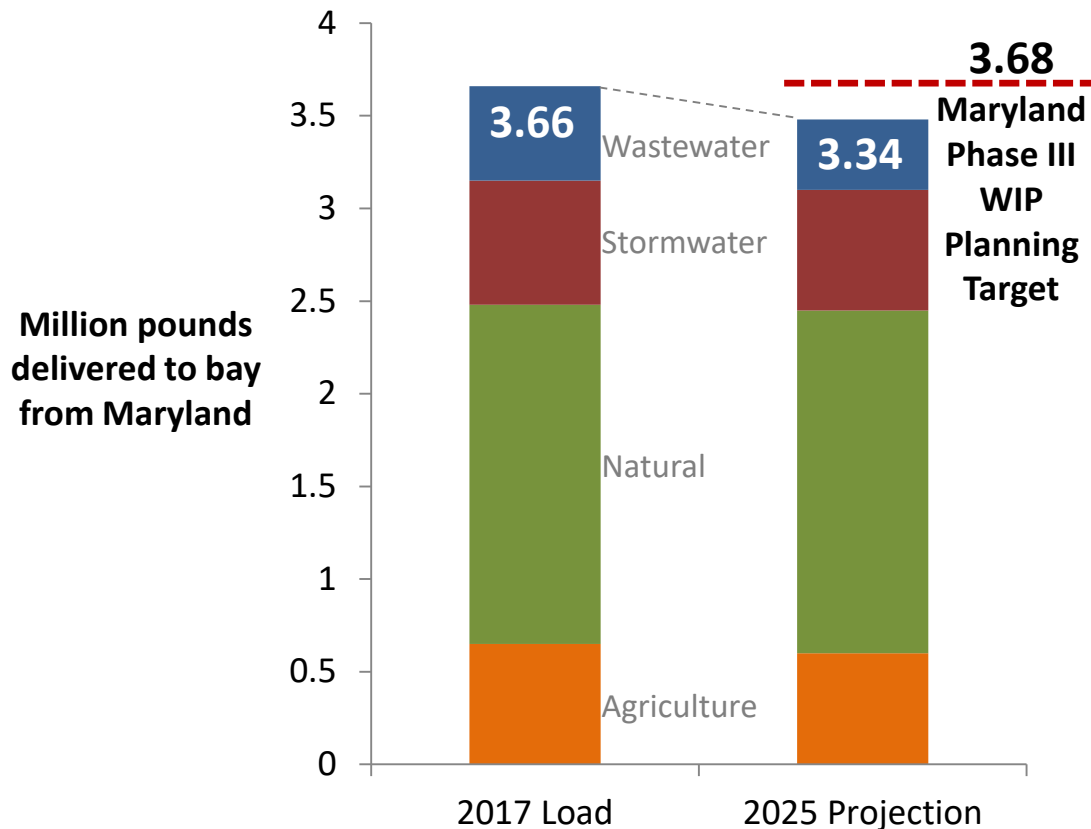
The state's Phase III WIP will differ from the numbers presented here.





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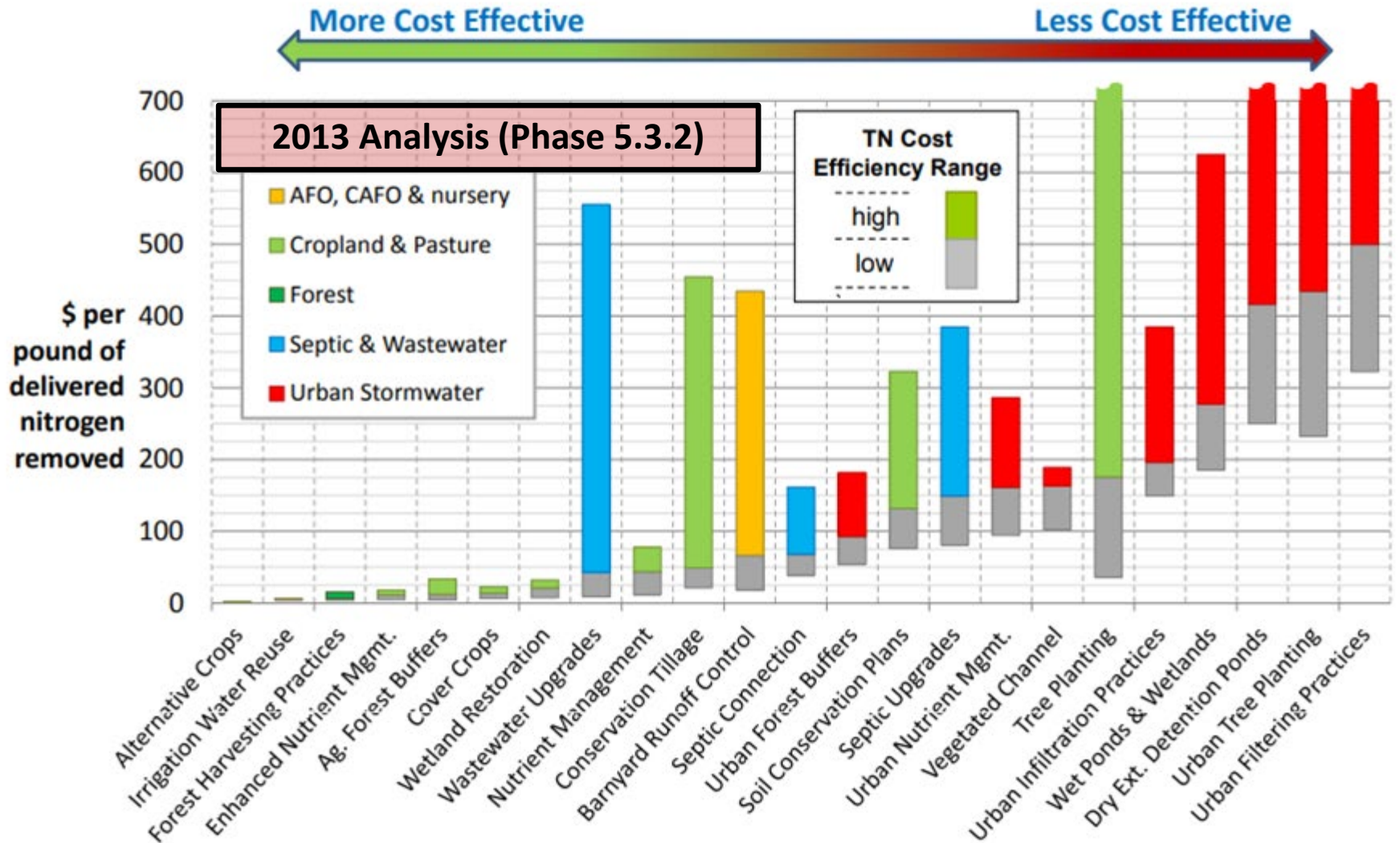
# Thinking beyond 2025

- Agriculture and wastewater provide most of our expected reductions out to 2025
- Need to consider
  - Population growth of 35,000 per year
  - Potential further reductions to address climate change
  - The Bay TMDL specifies additional reductions from stormwater and septics
- Need to plan for continued implementation beyond 2025
- Building long-term capacity
  - Permanent rather than annual BMPs
  - Reductions for after 2025 need to be planned today



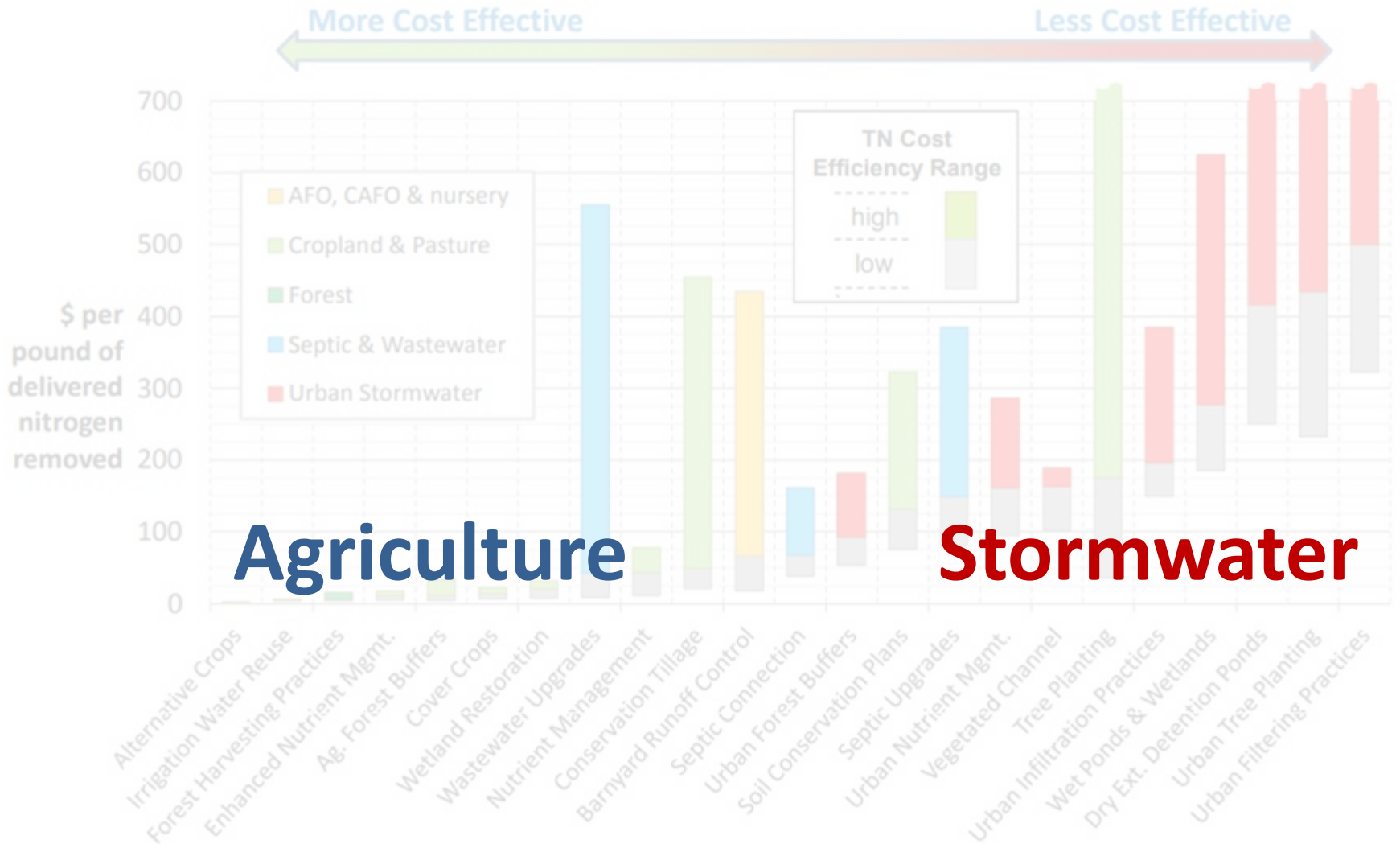


# BMP Cost Effectiveness



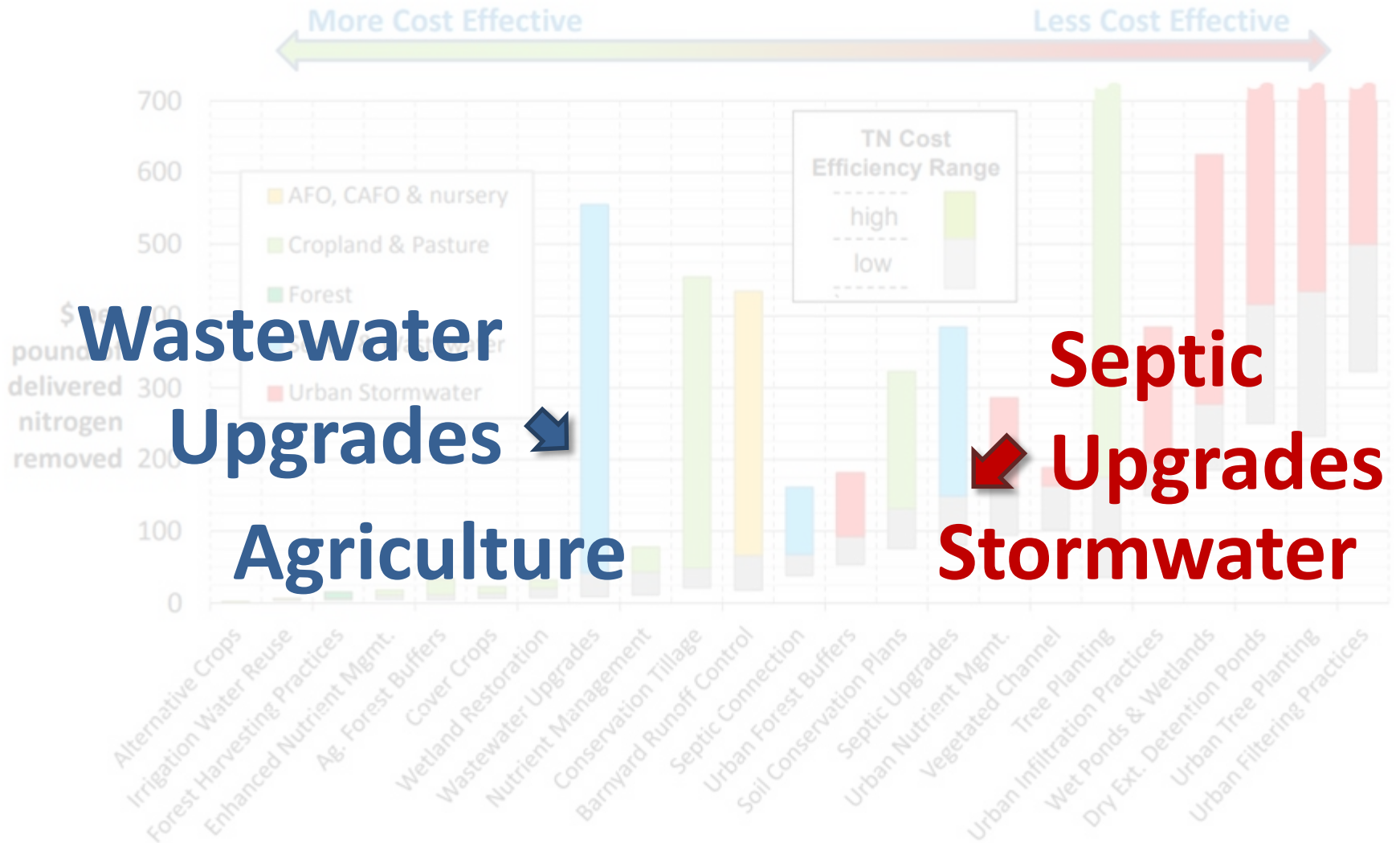


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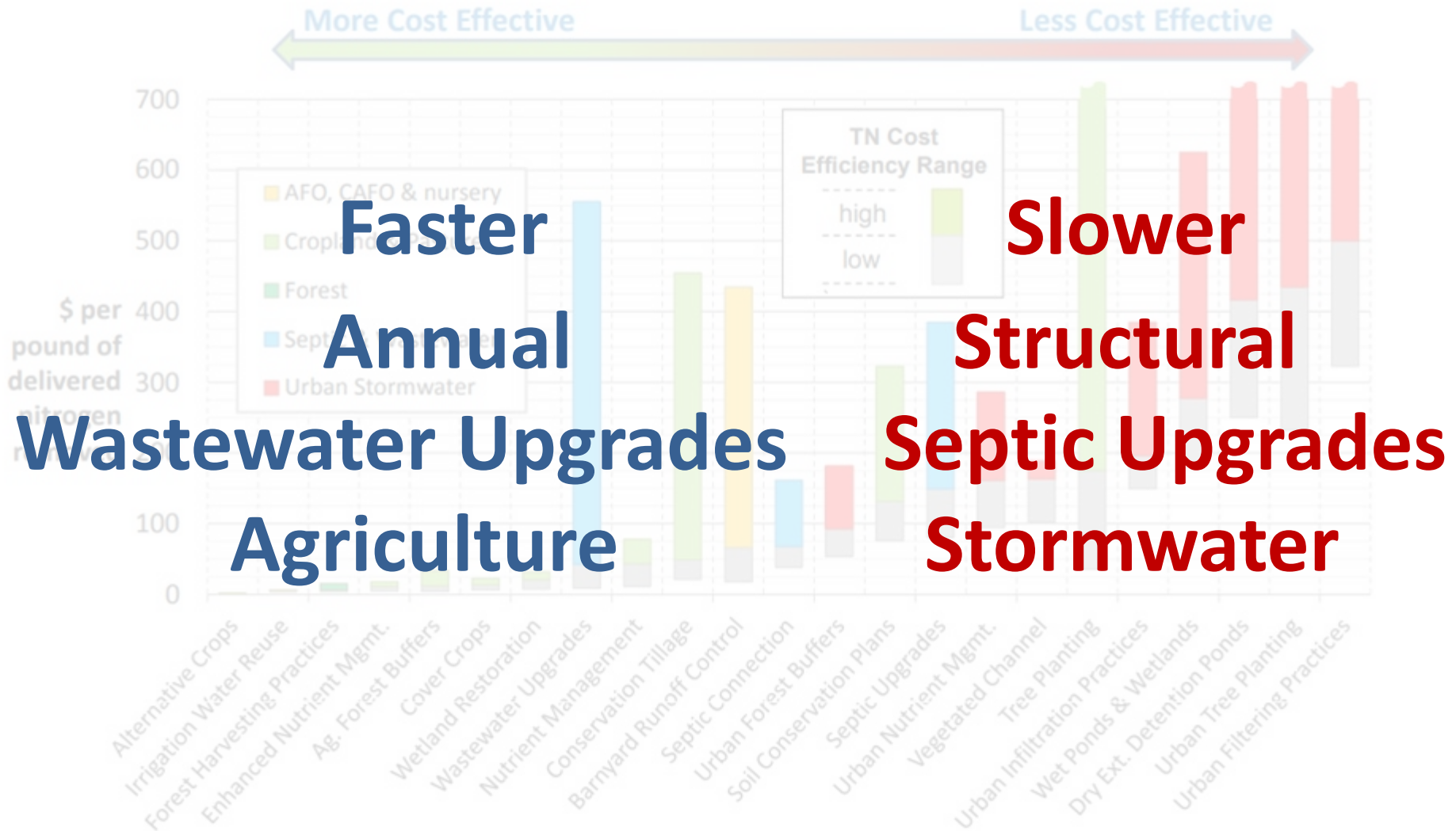


# BMP Cost Effectiveness





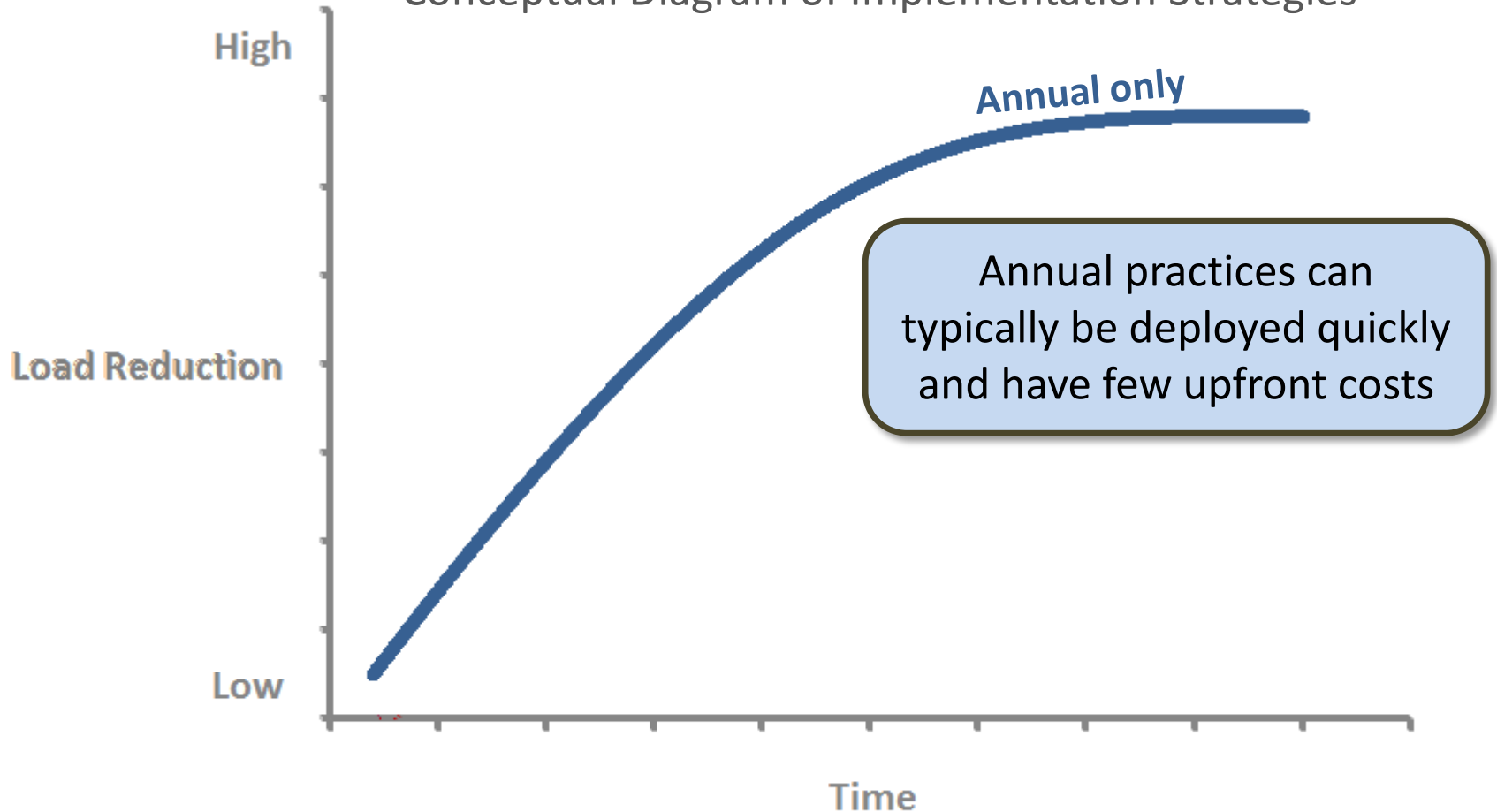
# BMP Cost Effectiveness





# Restoration with annual & structural practices

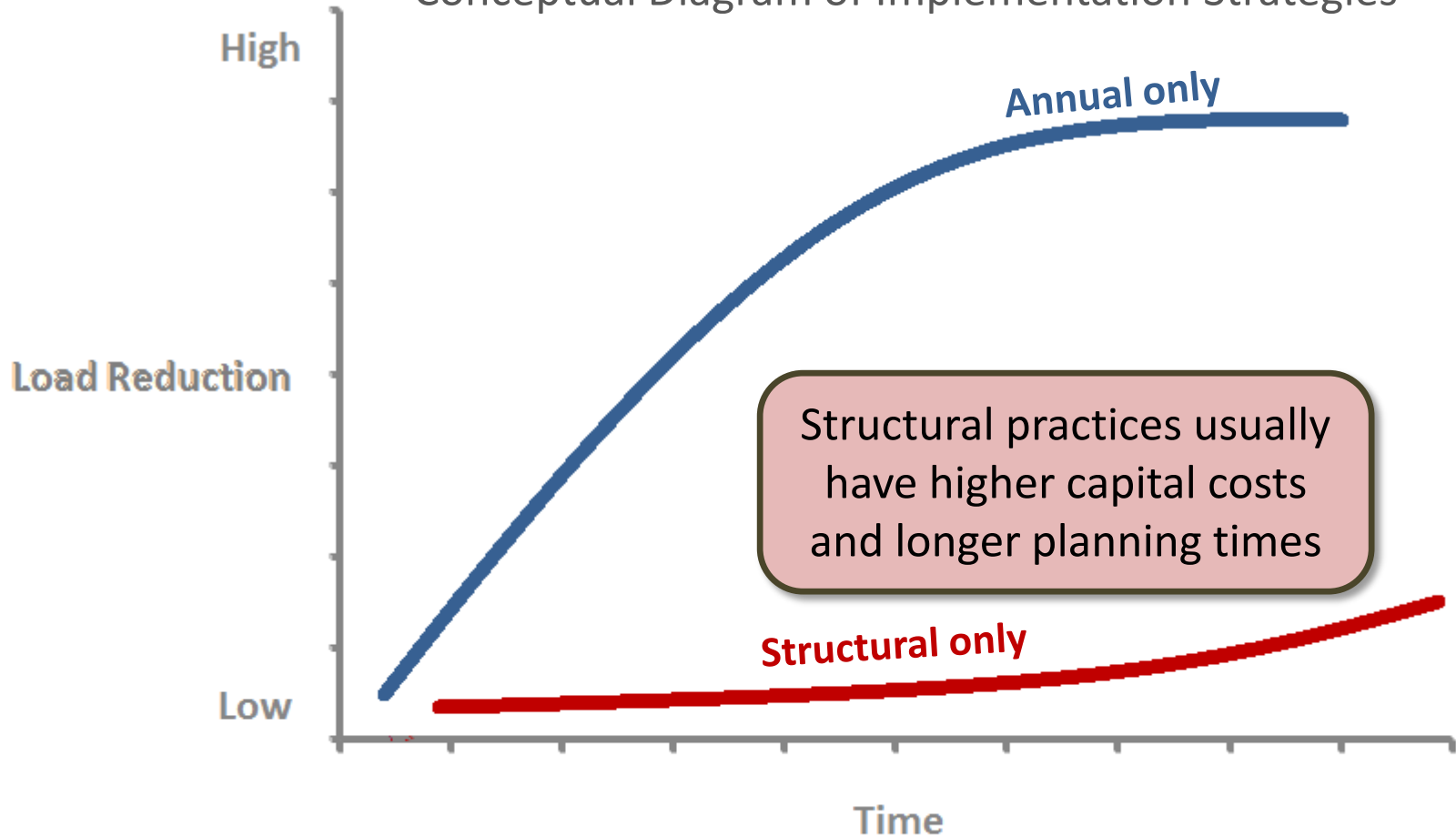
Conceptual Diagram of Implementation Strategies





# Restoration with annual & structural practices

Conceptual Diagram of Implementation Strategies

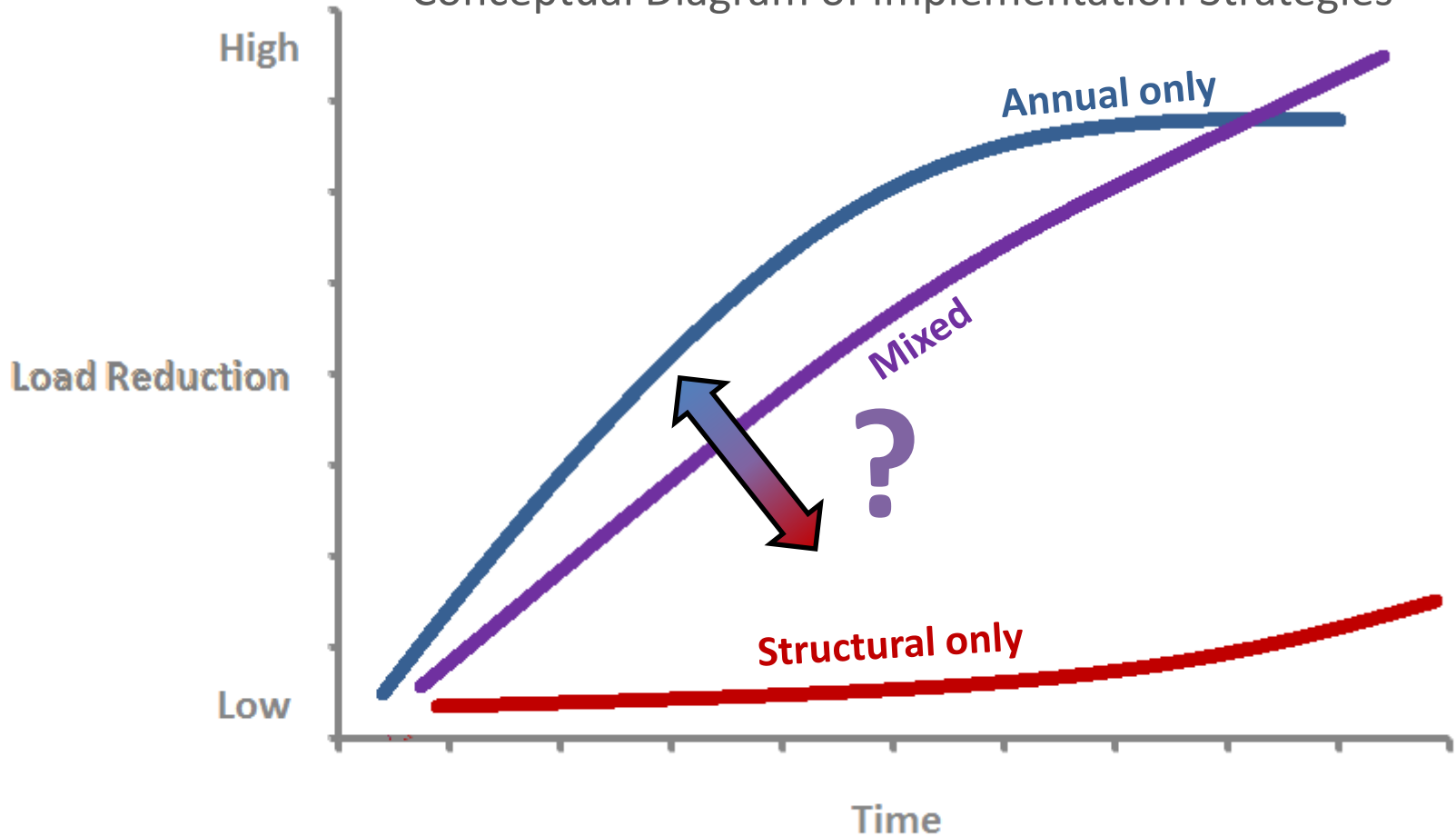






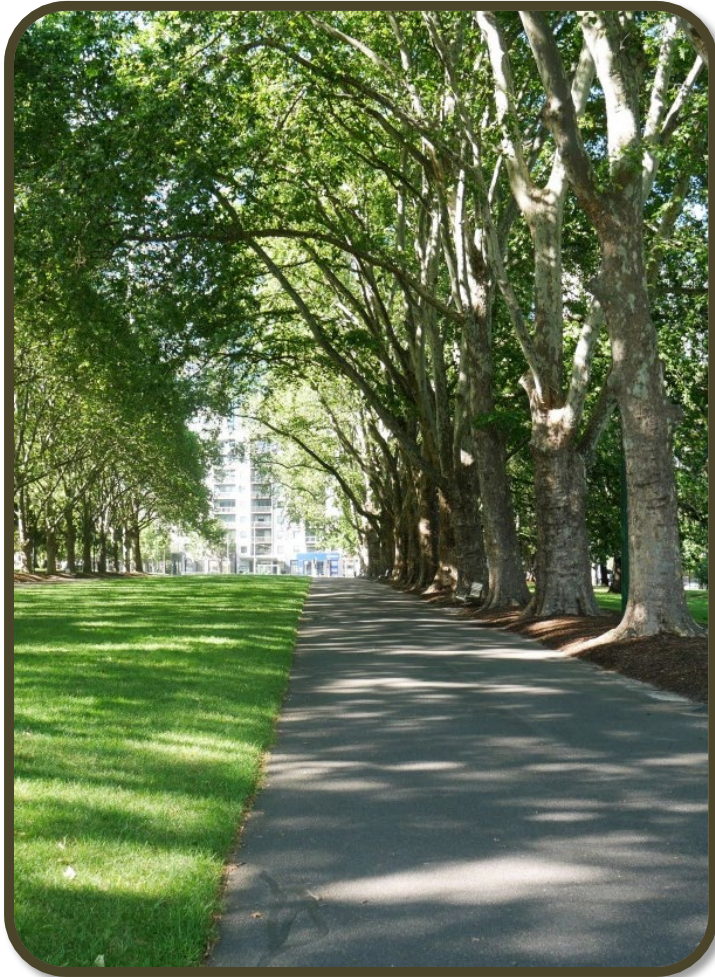
# Restoration with annual & structural practices

Conceptual Diagram of Implementation Strategies





# Restoration with structural practices



- Long-term investment
- How to maximize the benefit?
  - Think beyond nutrients
  - Think beyond 2025
- Upkeep
  - Will the practices work properly?
  - Will the practices be maintained?
  - How can we be sure?
- Establish a reasonable pace



# Benefits of Stormwater Management

- Local water quality & TMDLs
  - Nearfield water quality benefits
    - Healthy streams
      - Sediment/hydrology
      - Temperature/trout
    - Healthy lakes
      - Phosphorus/eutrophication
      - Sedimentation
- Water quantity
  - Flood control and mitigation
  - Climate change adaptation
- Greener communities
- Focus on local priorities



Sometimes nutrient reductions may be a secondary benefit



# Holistic Approach to Septic Implementation



- Public health
  - Drinking water
    - Nitrogen
    - Bacteria
  - Shellfish harvesting
    - Bacteria
  - Concentrated areas
    - Clusters
    - High-density of individual systems
    - Bermed infiltration pond (BIPs)
    - Mobile home parks, campgrounds, marinas
- Cost effectiveness
  - Sewer connections?
  - Replace with small wastewater plants?
  - Pace of implementation



# Building Long-Term Capacity

- Stormwater
  - Long-term vision
  - Focus on building better BMPs
- Septic
  - Pace defined by funding/incentives
  - Continue upgrades with Bay Restoration Fund
  - Refocus and address legacy issues
- Wastewater
  - Invest in new technologies
  - Fund minor upgrades
- Agriculture
  - Leverage new technologies
- Market-based approaches



# What now?

- Today we presented:
  - Sector trajectories
  - Broad framework for addressing long-term challenges
  - County-wide summaries
- We need your feedback
  - Today
  - In writing by January 4, 2019
- Trajectories and feedback will be used to generate Maryland's Phase III WIP in April 2019
  - State plan
  - Establish county-wide goals
- Public review period from April 12 to June 9, 2019
- Final Phase III WIP Report in August 2019
- Adaptive management through 2025 and beyond



## Summary

- Maryland will have a realistic plan for meeting its Phase III WIP targets by 2025 ...
- ... and will consider future challenges
  - Reliance on certain practices to meet 2025 goals
  - Growth beyond 2025
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