LOOKING LONG-TERM

Capital planning efforts and nutrient load expectations in the years beyond 2025

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Chesapeake Bay Program
Wastewater Treatment Workgroup
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Agenda Item #

Metropolitan Washington
Council of Governments

Outline

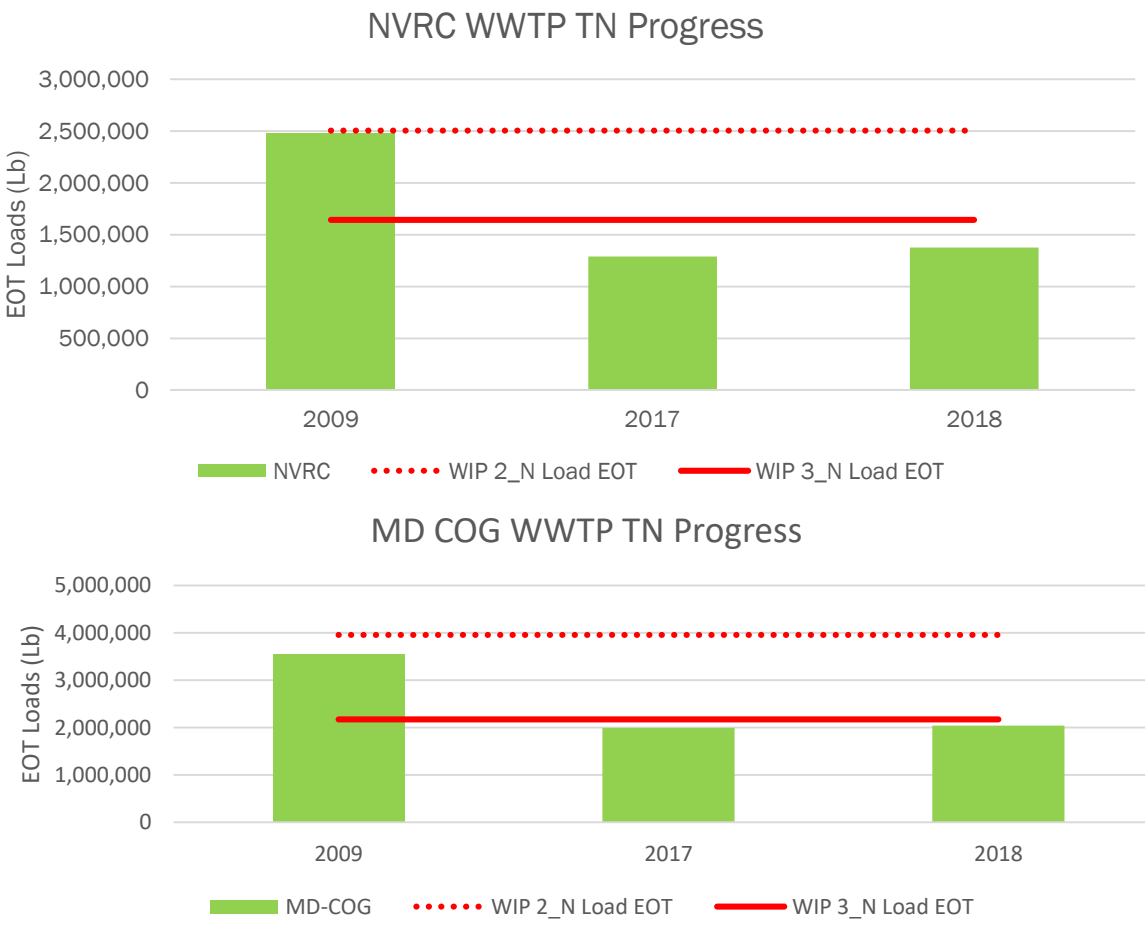
- COG Region Nitrogen Loading Data from WIP scenarios
  - All data downloaded from CAST-2017
  - 2009, 2017 and 2018 Progress as well as 2025 WIP II and 2025 WIP III scenarios
  - Used EOT (same as delivered loads in WIP II scenario)
  - Compared data to 2010 TMDL wasteload allocations
- Long Range Planning Considerations

CAST Geography For This Analysis

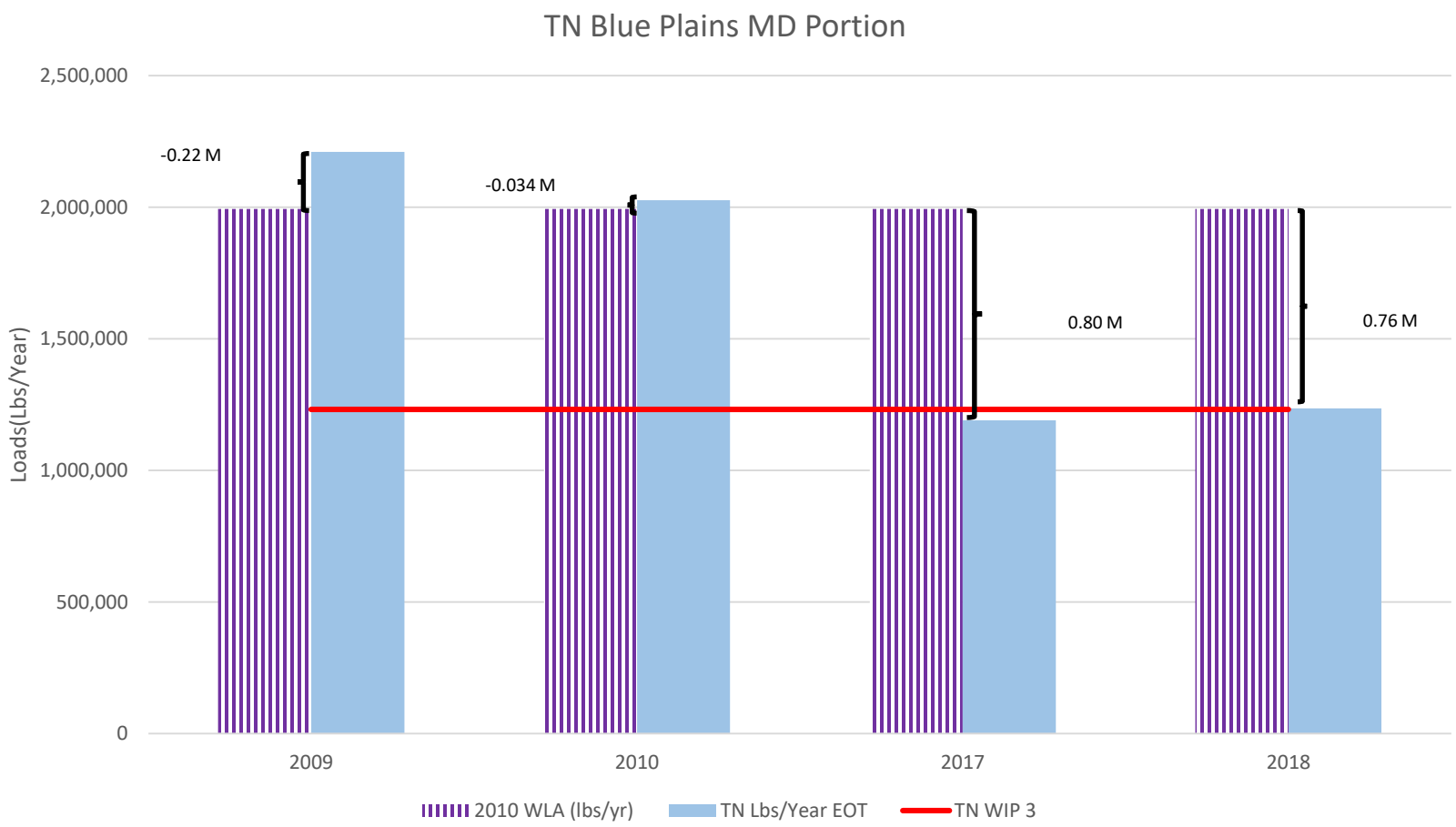
- COG Region Maryland = counties of Frederick, Montgomery, Prince George's and Charles
  - Includes WSSC portion of Blue Plains flows and loads
- COG Region Virginia = same region as covered by the Northern Virginia Regional Commission
  - Includes northern Virginia portion of Blue Plains flows and loads
- District of Columbia
  - Includes District's share of Blue Plains flows and loads

Wastewater Loads under WIP Scenarios

- WIP II wastewater loads were based on cap loads
  (In COG region, 4 mg/l and design flows)
- Maryland and Virginia based WIP III wastewater loads on assumed performance
  (Projected 2025 flows and concentrations below 4 mg/l)
- Blue Plains ENR performance exceeds the District's WIP III reduction needs



Performance Compared toCap and WIP III Loads



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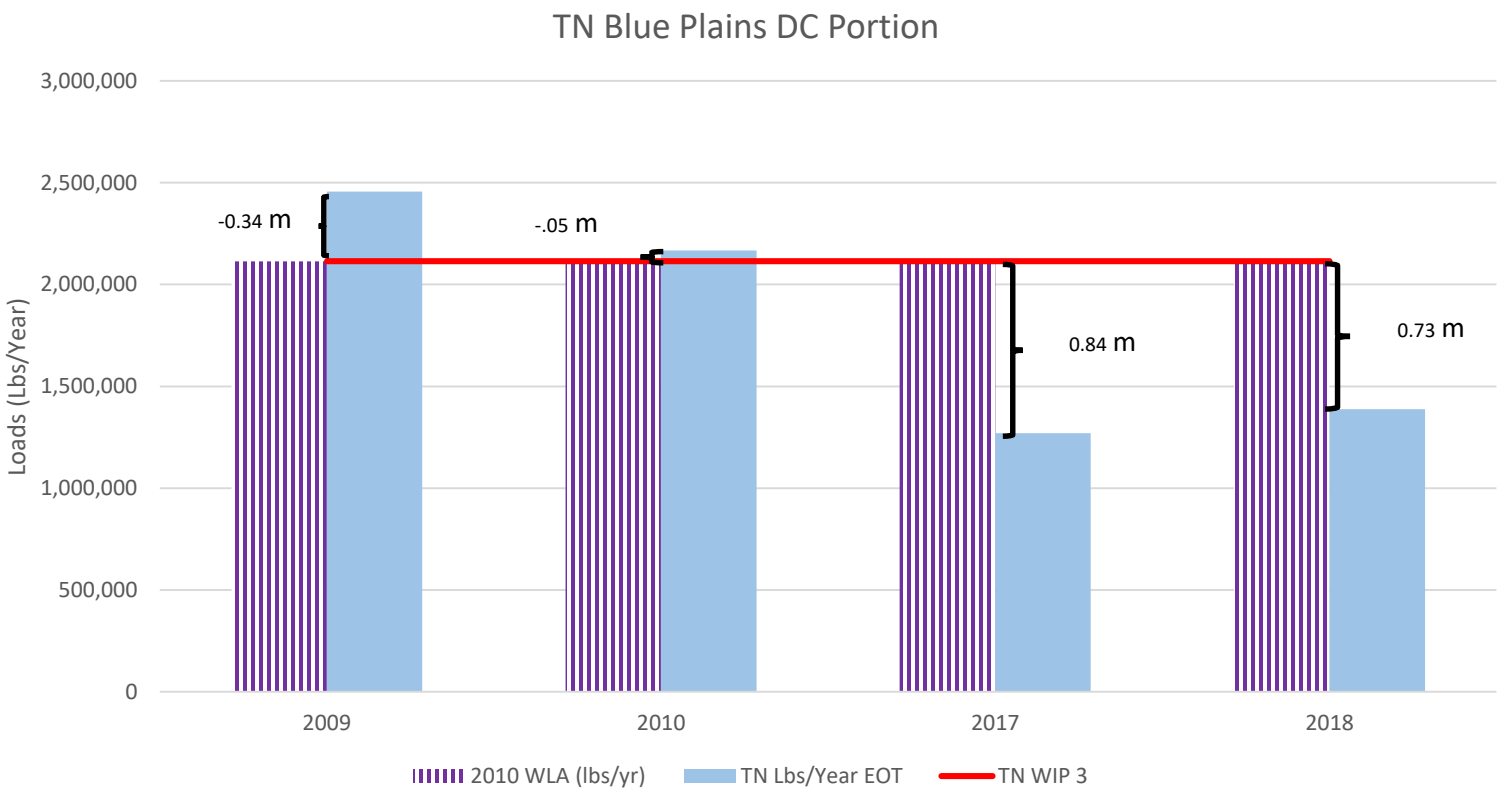

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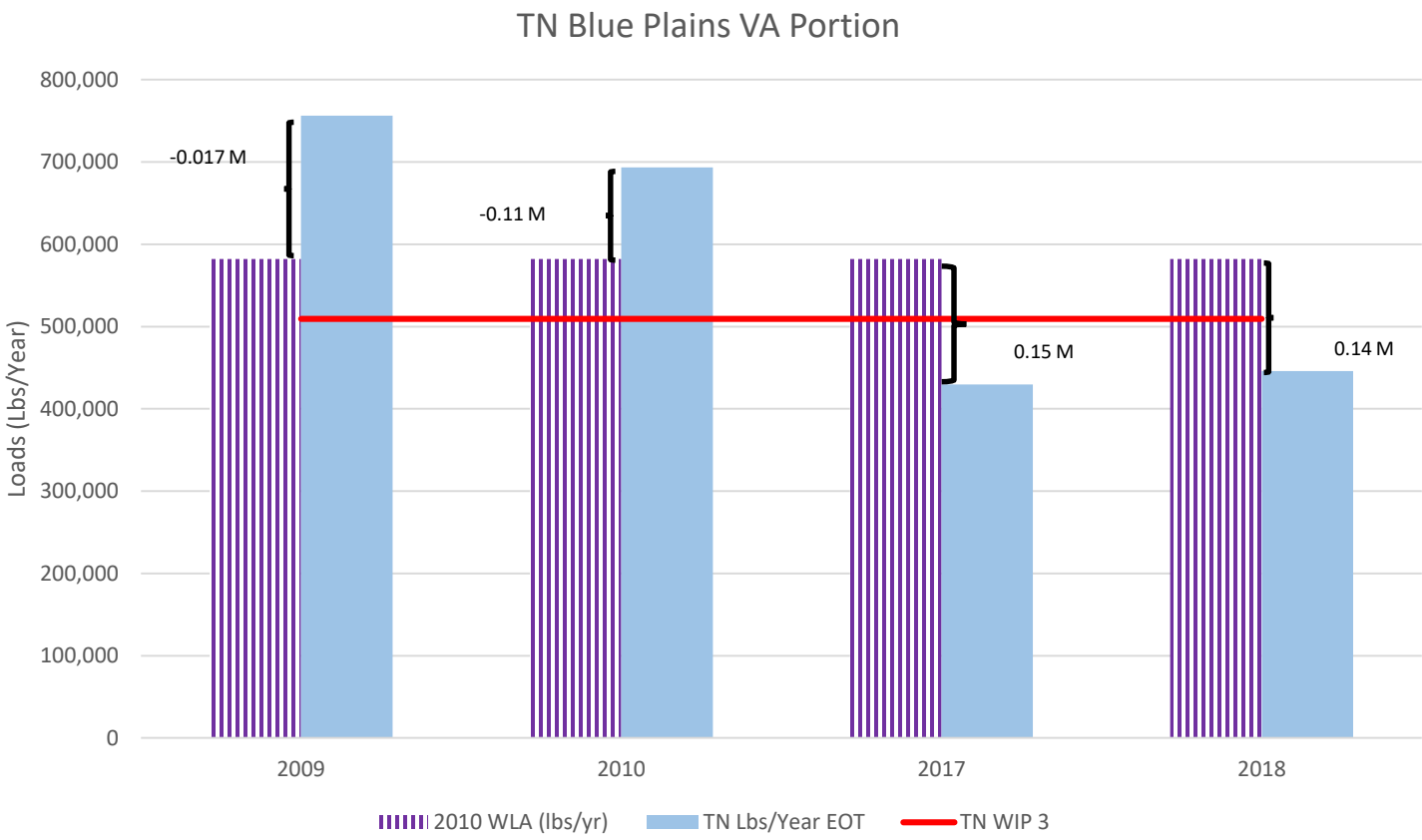

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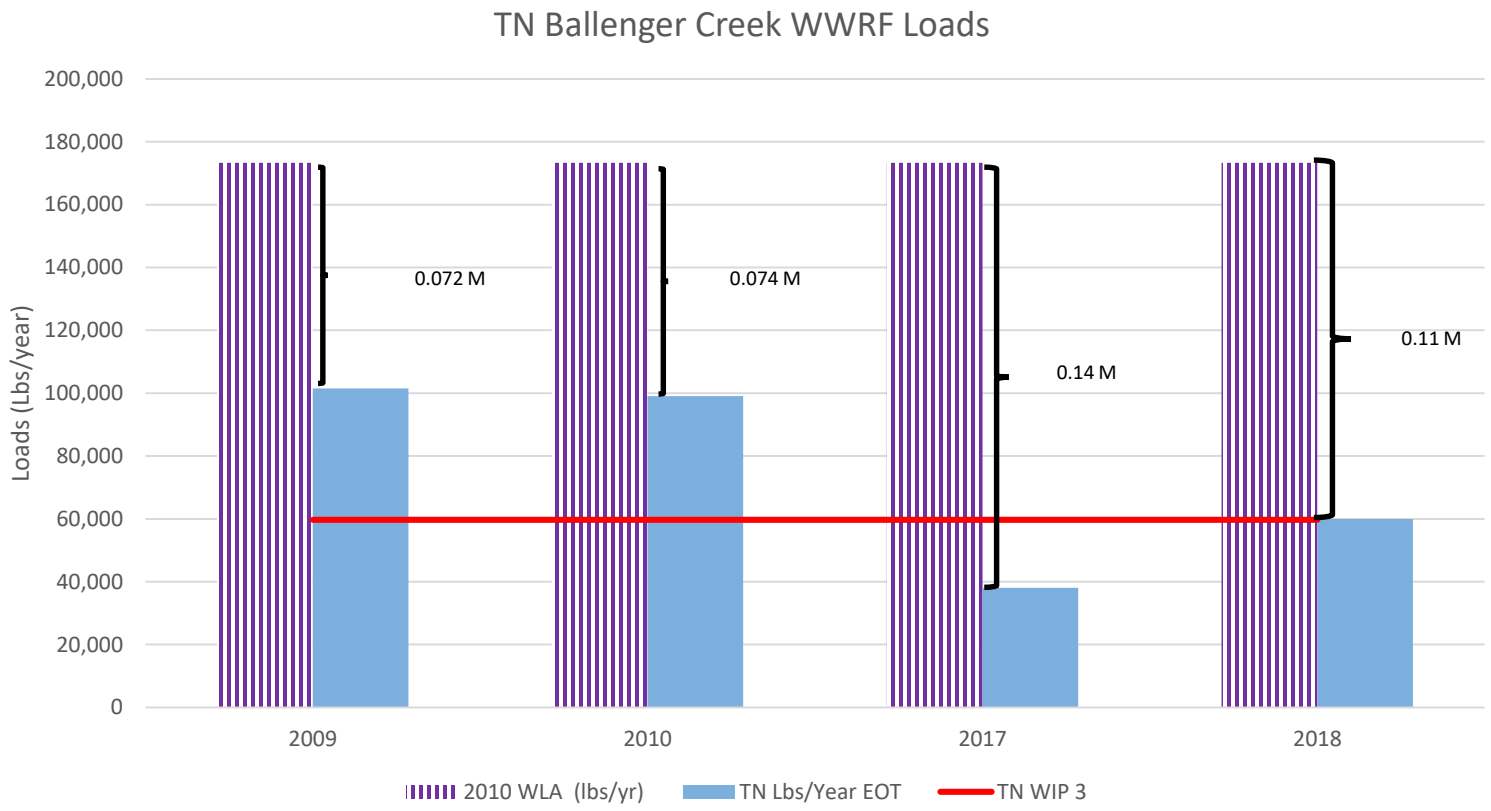

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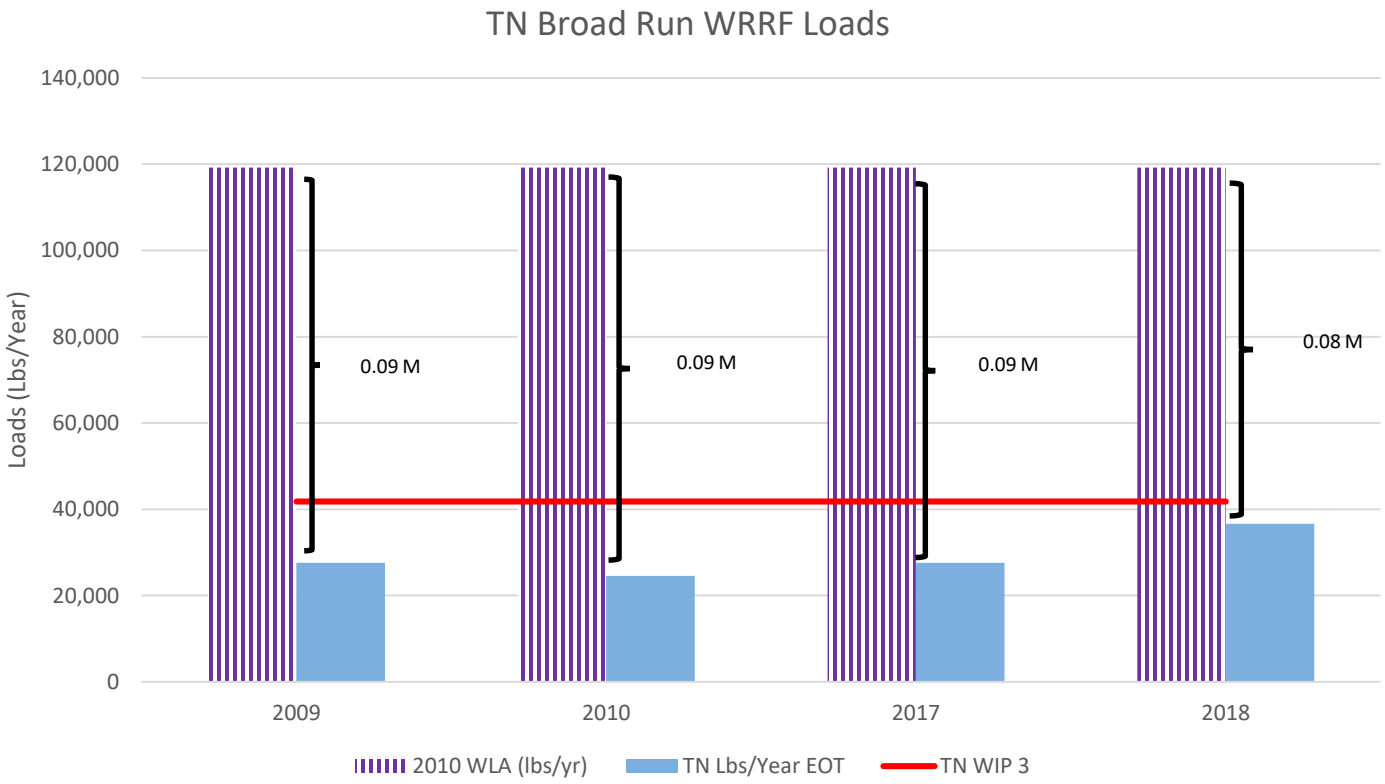
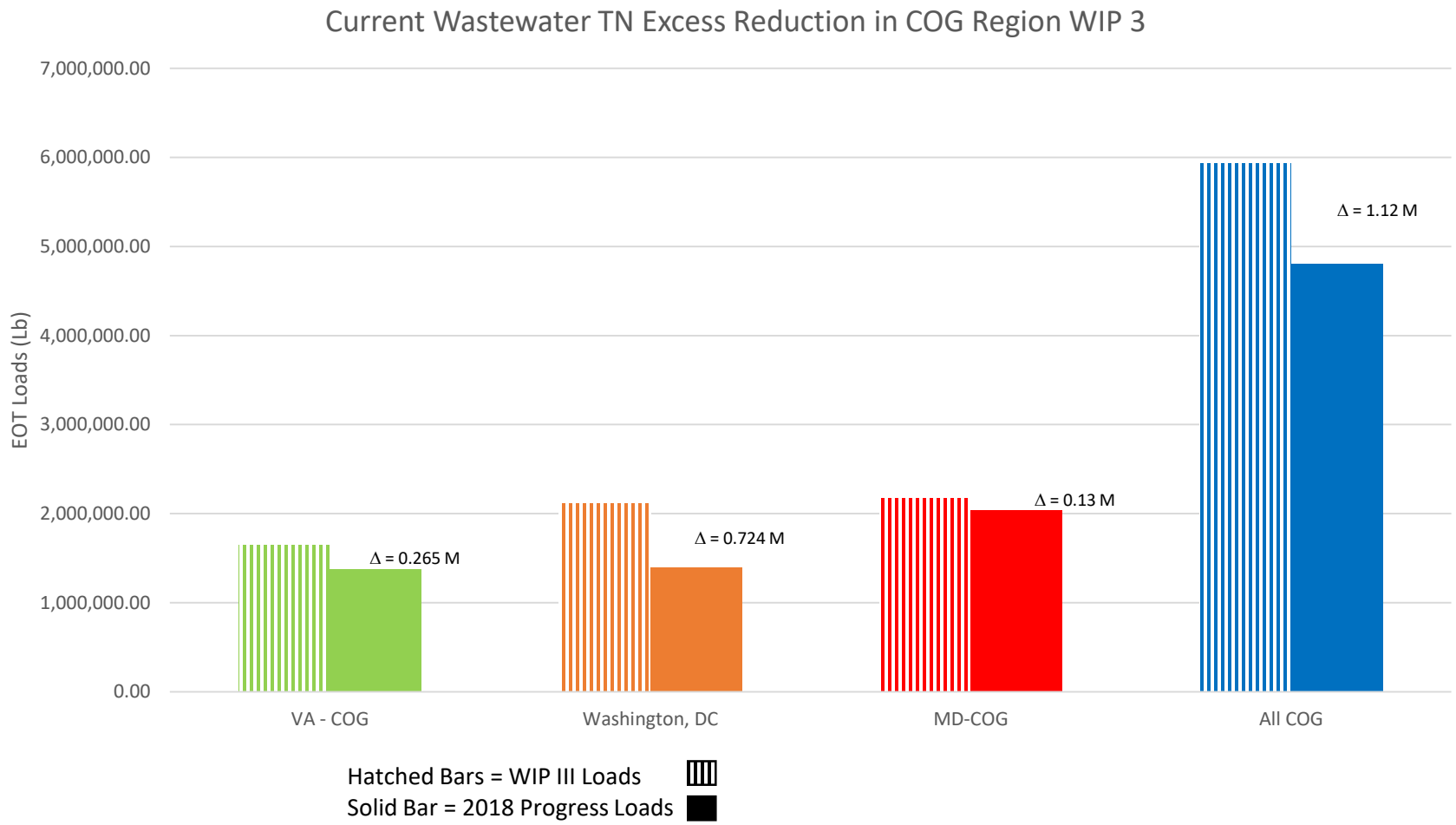
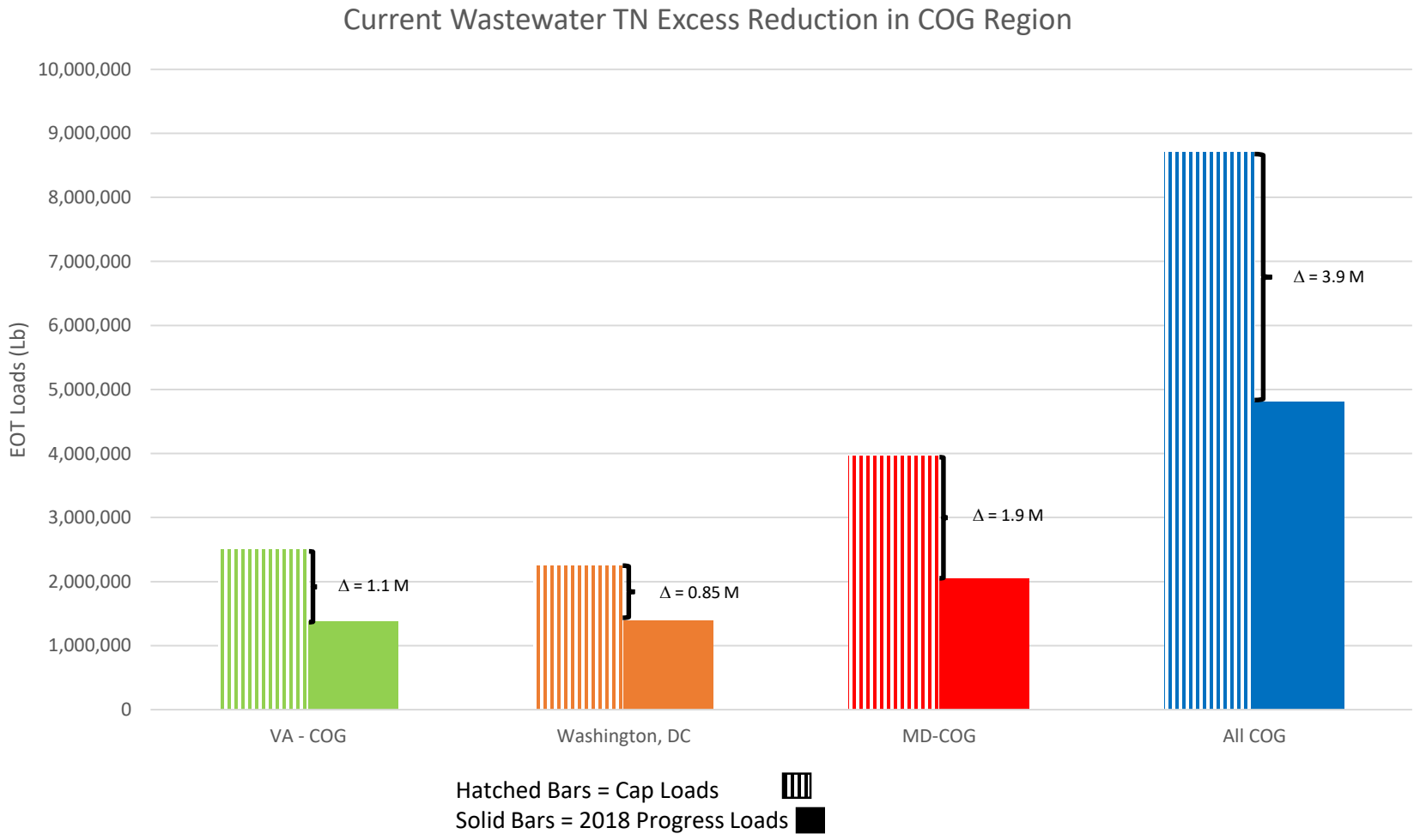


Regional Performance vs. WIP III Loads



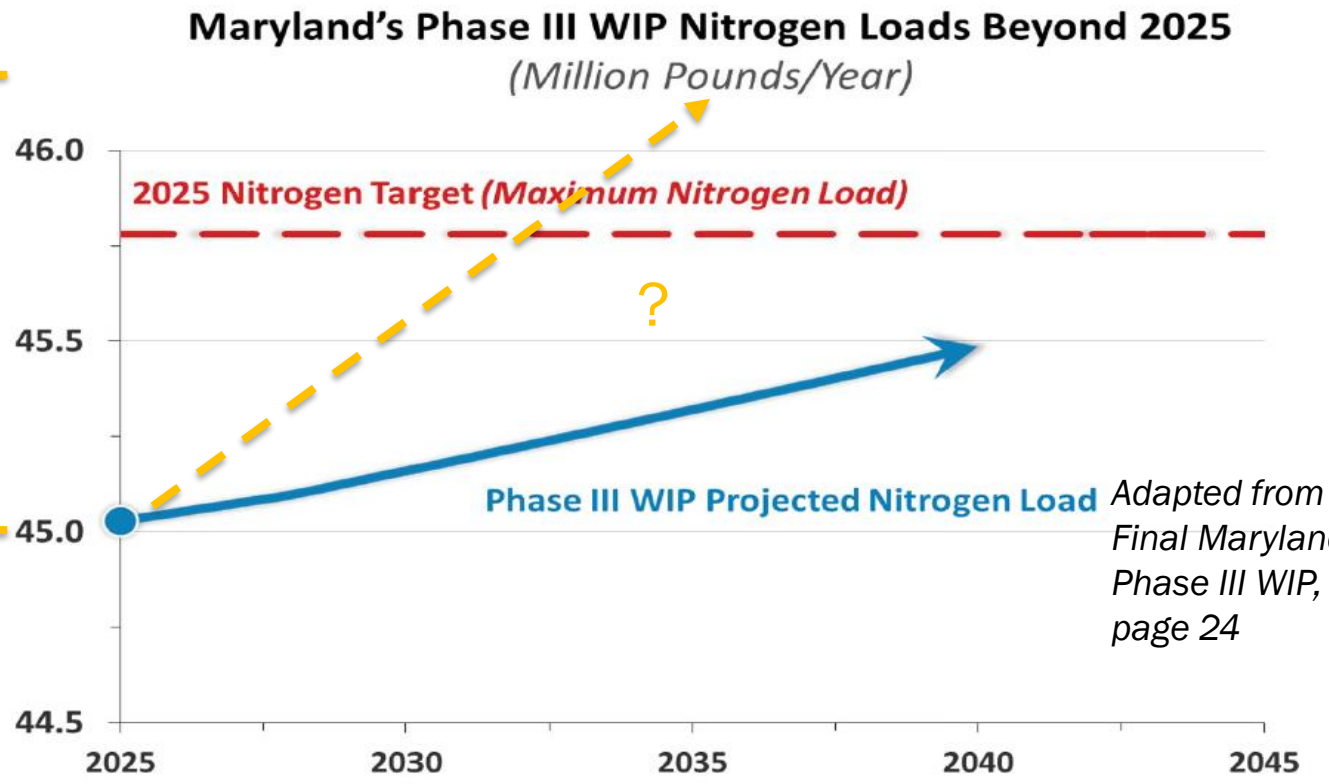
Regional Performance vs. Cap Loads



Wastewater Loads Post 2025

Cap Load – WIP III =1.4 million pounds

(just in COG region)



Adapted from Final Maryland Phase III WIP, page 24

Source: Maryland Phase III WIP Scenario; CAST 2019

Post 2025 Planning Implications

- Through 2025 attaining WIP III reduction targets depends on continued collective wastewater performance below cap loads

- If treatment technology stays the same, loads will increase post 2025 as wastewater flows and influent nutrient concentrations (strength of waste) continue to increase

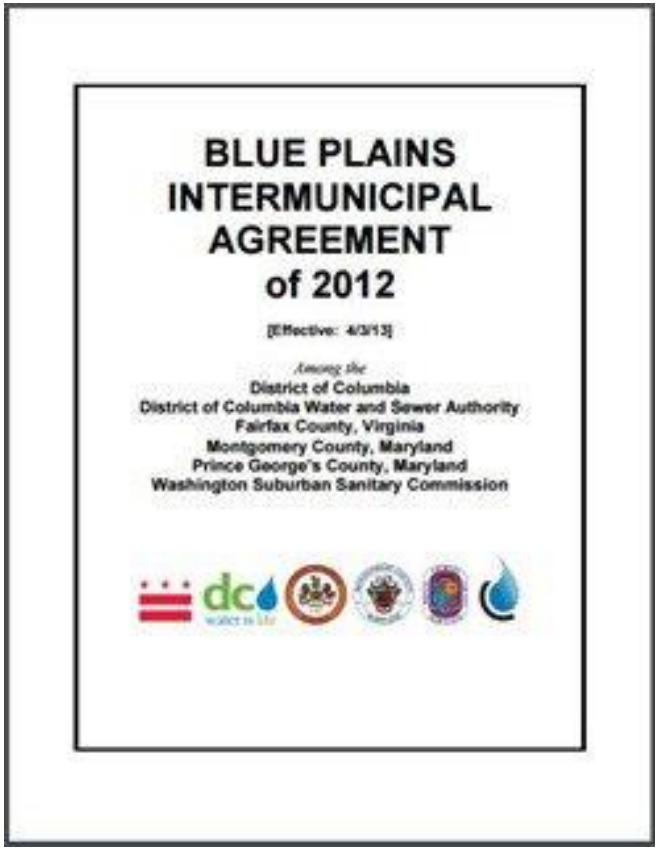
- State expectations for wastewater loads post 2025 need to be coordinated with utilities' long-range capital improvement plans (e.g., utilities are planning now for capital improvements in 2040 and beyond).

COG's Role in Regional Wastewater

- COG's support includes:
  - monitoring and analysis on a wide range of issues associated with the region's WWTPs
  - regular forums for the Water Resources Technical Committee (WRTC) to discuss technical issues and to develop policy recommendations for the Chesapeake Bay and Water Resources Policy Committee (CBPC)
  - active engagement in EPA's Chesapeake Bay Program restoration efforts – which have significant regional implications for the region's water quality, wastewater, biosolids, and stormwater programs.
- COG also provides specialized wastewater and biosolids support to the Parties to the 2012 Blue Plains Intermunicipal Agreement (IMA), who share in the services provided by the Blue Plains Wastewater Treatment Plant.

Blue Plains Intermunicipal Agreement

- Cooperative agreement to equitably allocate wastewater treatment capacity as well as shared capital and operating expenses of about $822 million per year at the Blue Plains advanced wastewater treatment facility in the District of Columbia, the largest such facility in the world.
- COG assisted in the development of the agreement and supports the Parties with its implementation.



Blue Plains IMA Commitments

- Allocate capacity at Blue Plains and in the Potomac Interceptor
- Share Capital Costs and Operating & Maintenance Costs
- Define financial and operational commitments
- Define the rights and responsibilities of the Parties
- Establish a commitment to cooperate, coordinate and resolve disputes
- Support regional growth and development
- Protect the Potomac River, Anacostia River, and the Chesapeake Bay

Blue Plains Long Term Planning Study

- Updated flow projections for all users
  - Demographic data
  - Flow management actions and plans
  - Flow factors
  - Infiltration and inflow assumptions
  - Updated base year flows
- Water quality issues, loading limits, state or federal regulations with potential to impact treatment and/or permit
- Updated peak flows
- Trend data and analysis to assess potential impacts on flow allocations, peak flow limitations

Water Utility Capital Planning

- Capital infrastructure costs account for a significant portion of utilities' total costs.
- Long-term planning is required to schedule major infrastructure improvements and spread the capital costs over many years in order to avoid having to raise rates significantly in any one year to pay for a capital project that was unplanned.
- Capital improvement options: rehabilitate, replace or install new assets.
- Without proper planning, risk not being able to pay when they need to, leading to deteriorating service, and public health and environmental risks.

[Source: UNC Environmental Finance Center]

Capital Planning Considerations

- Level of service expected
  - Current
  - Future (e.g. decreased flows / increased loads, regulatory requirements)

- Condition Assessment (e.g., asset age vs. expected service life)

- Sources of Funding
  - Ratepayers / customers
  - External (grants, loans, etc.)

- Time Horizon

Example: DC Water Capital Improvement Plan

- Types of expenditures that are capitalized:
  - Enhancement
  - Refurbishment
  - Replacement

- Capital Project
  - 30 years average life
  - financed with long term debt

- Capital Equipment
  - 3+ years life
  - individual component cost $5,000+
  - financed with short-term debt or cash

Example: DC Water Capital Improvement Plan

Project Evaluation Criteria

Mandates	Health & Safety	Board Policy	Potential Failure	High Profile Good Neighbor	Good Engineering High Payback	Good Engineering Lower Payback
Agreements, Regulatory standards, Court orders, Issues and Permits requirements, Stipulated Agreements, Etc.	Required to address Public Safety	Undertaken as a result of the Board's commitment to outside agencies	Related to Facilities in danger of failing, or critical to meeting permit requirements	Address Public concerns	Need to fulfill Mission and upgrade Facilities	Lower priority Projects

Discussion

- Through 2025 attaining WIP III reduction targets depends on continued collective wastewater performance below cap loads
- If treatment technology stays the same, loads will increase post 2025 as wastewater flows and influent nutrient concentrations (strength of waste) continue to increase
- State expectations for wastewater loads post 2025 need to be coordinated with utilities' long-range capital improvement plans (e.g., utilities are planning now for capital improvements in 2040 and beyond).
- Benefits to coordinating information?