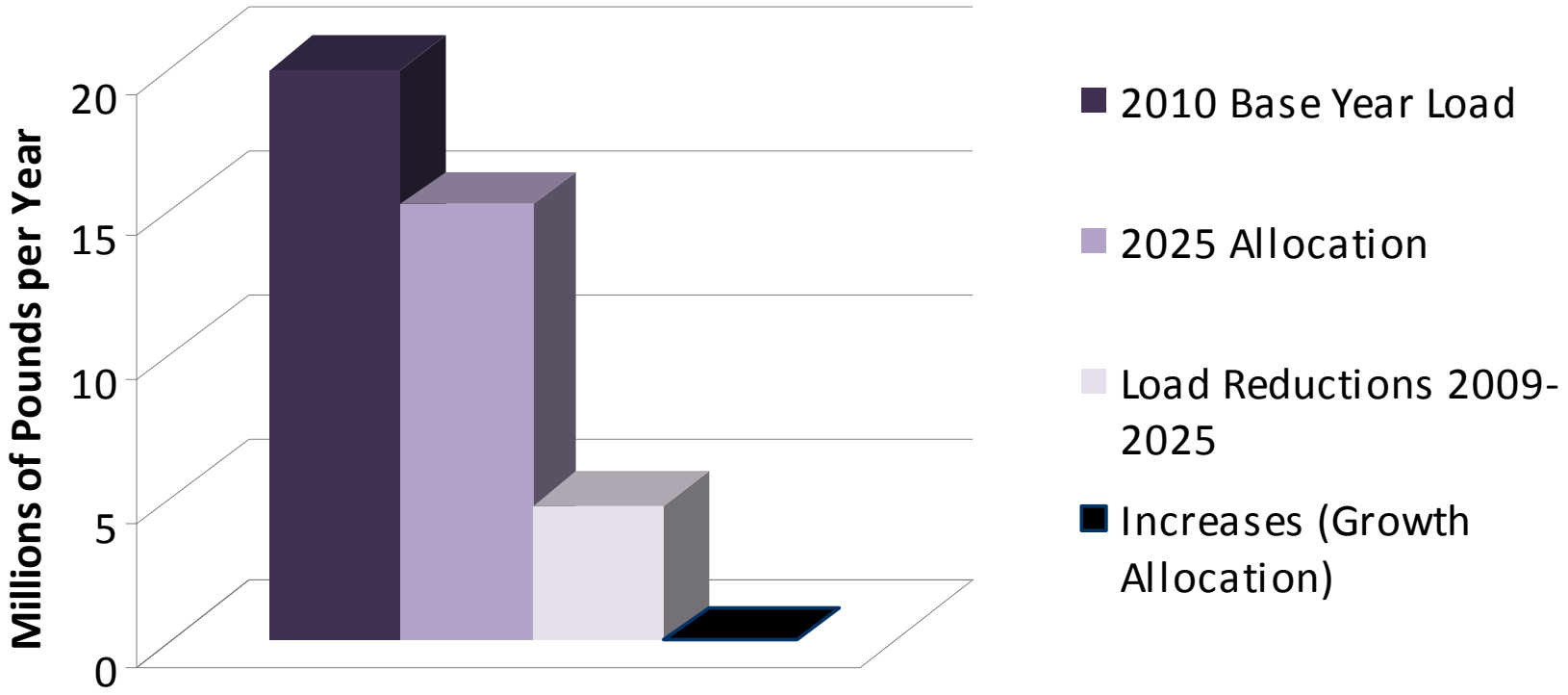
Accounting For Growth

Calculating Offsets

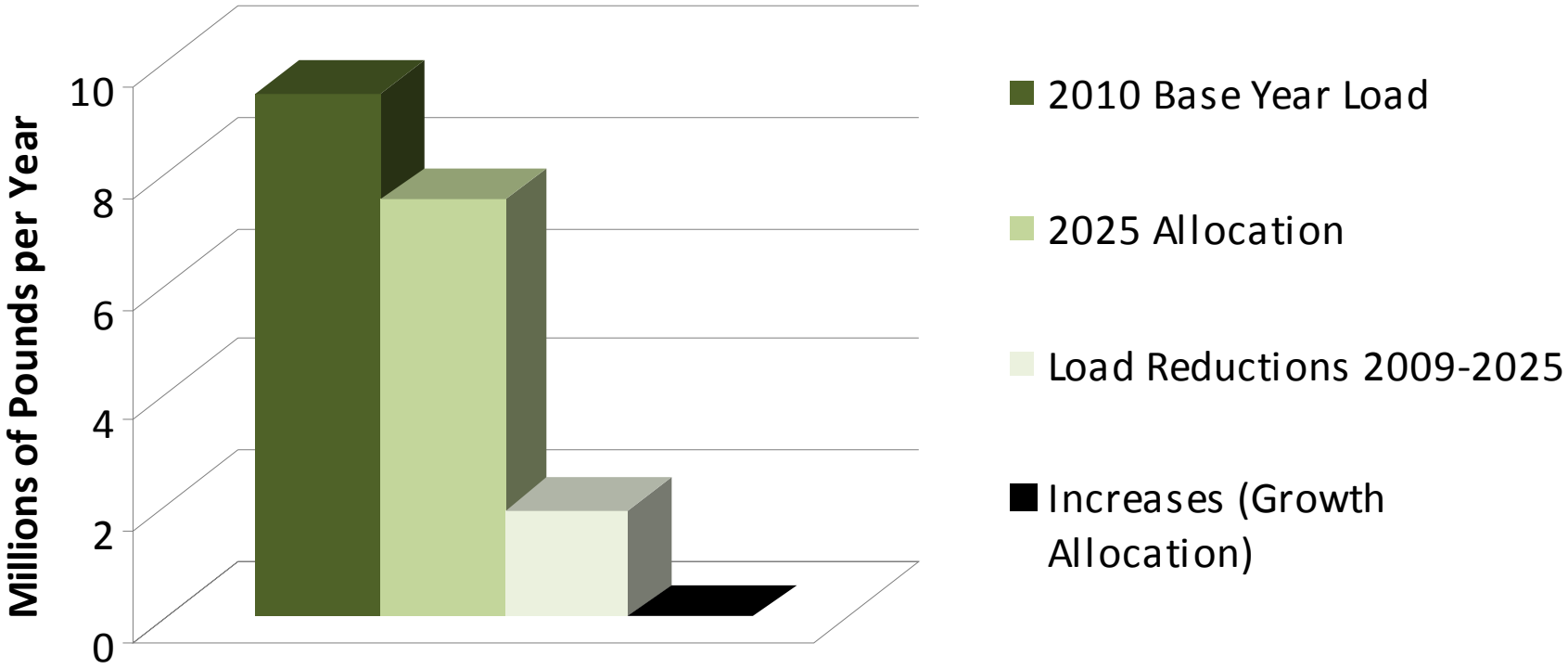
Outline

- Allocations and Contributing Factors
- Addressing New Loads
- Pollutants
  - Nitrogen, Phosphorus, and Sediment
- Source Sectors
  - Offset Calculations/Examples
    - Septic Systems
    - WWTP
    - Air
    - Stormwater

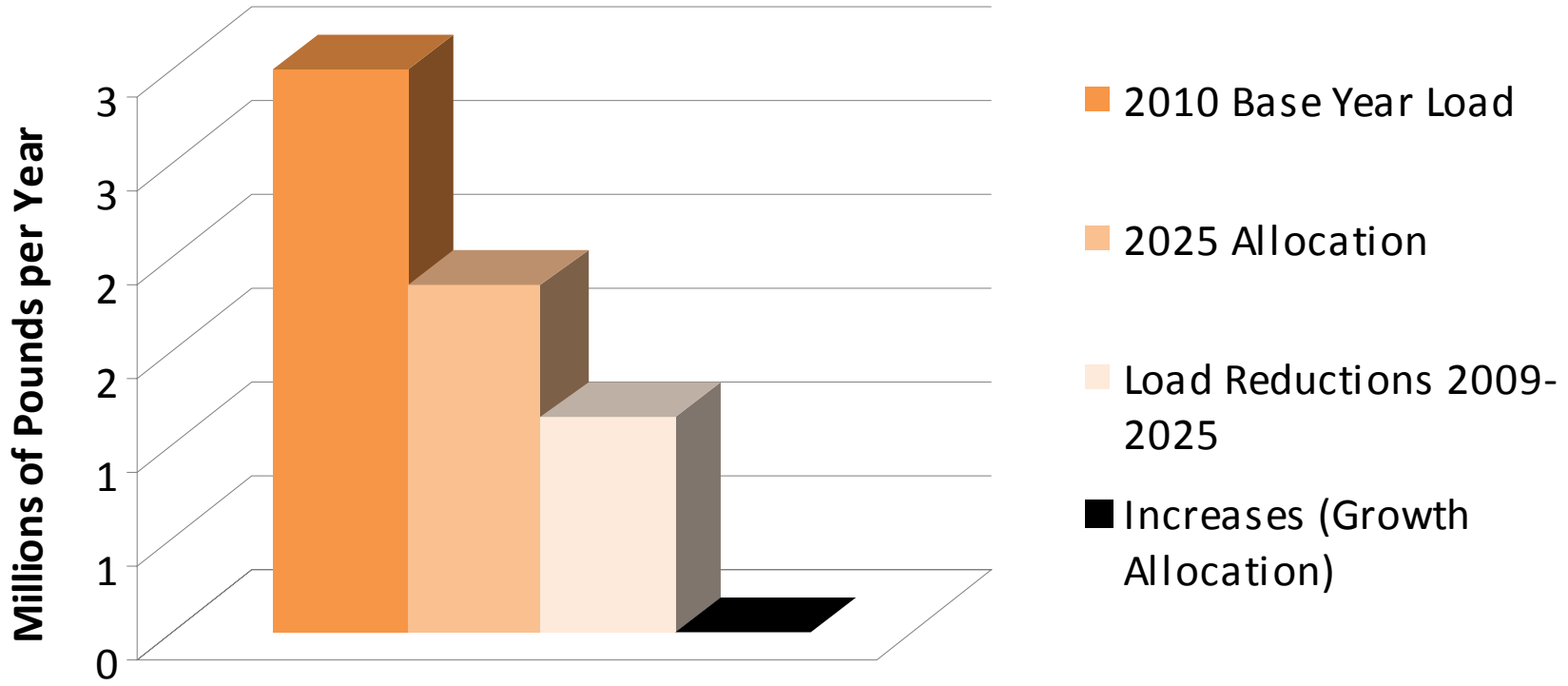
Agriculture: Base Year Loads, 2025 Allocation & Contributing Factors



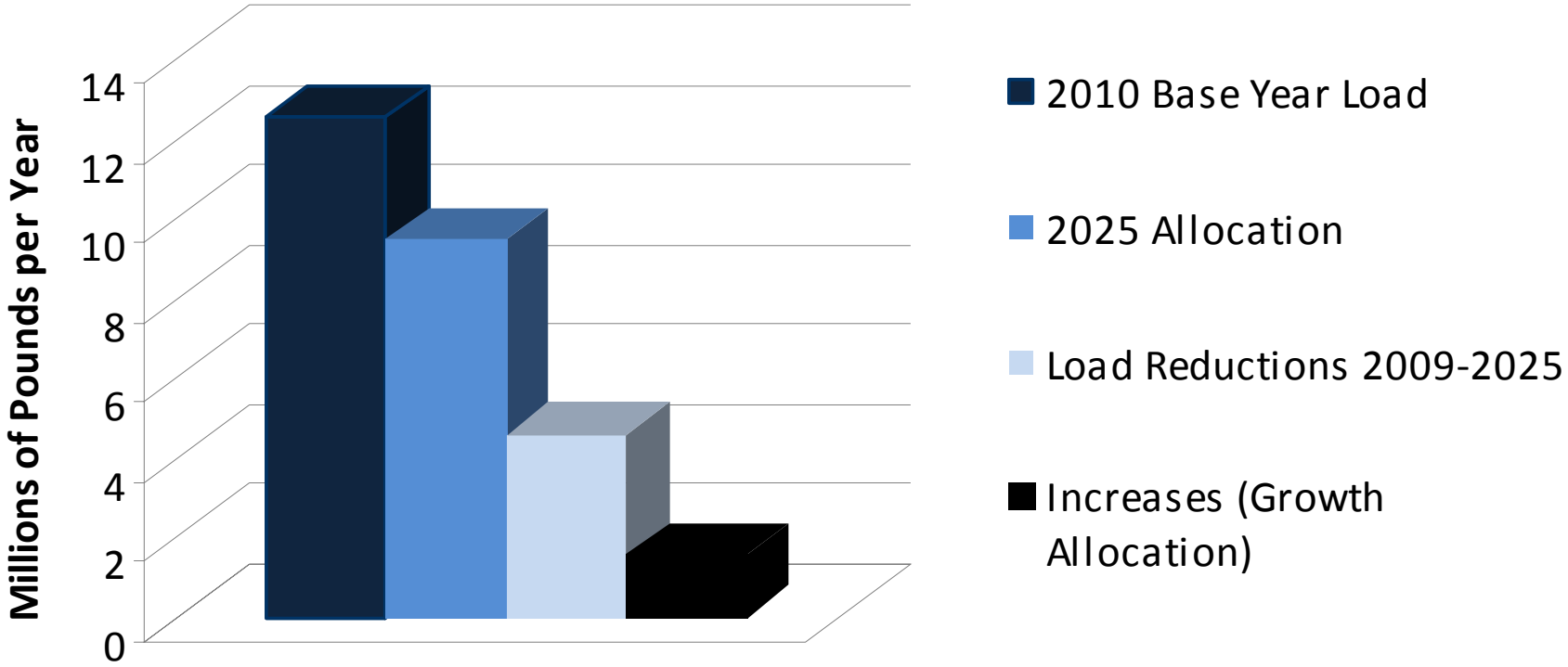
Stormwater: Base Year Loads, 2025 Allocation & Contributing Factors



Septics: Base Year Loads, 2025 Allocation & Contributing Factors



WWTPs: Base Year Loads, 2025 Allocation & Contributing Factors



Addressing New Loads

- Maryland will account for loads from new development in two ways
  - The State has allotted nutrient loads to large wastewater treatment plants that allow them to take sewage from new development, provided they stay below the allocation or "nutrient cap."
  - Other new loads from development (septic loads, wastewater over the nutrient cap and stormwater) must be offset since there is no allocation for them in the WIP

What Will WIP Achieve?

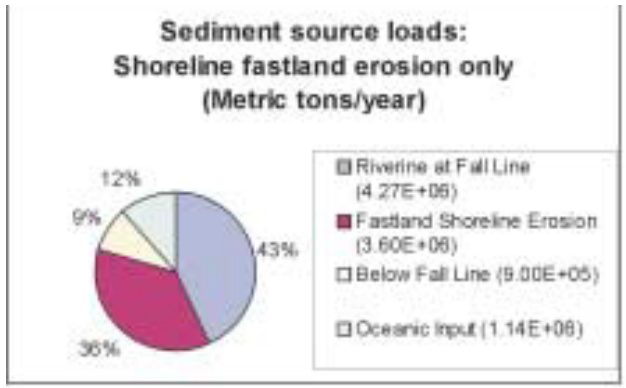
- Bay WIP Reductions includes N, P and Sed

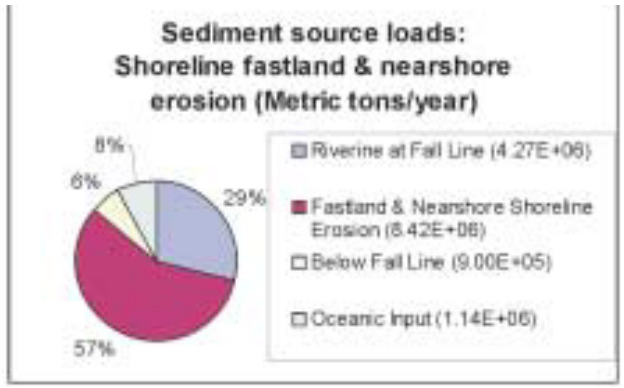
Pollutant	**2010** (mill lbs/year, delivered)	**Target Load** (mill lbs/year, delivered)	**2025 WIP Strategy** (mill lbs/year, delivered)	**% of Target Reduction Achievement**
Nitrogen	52.76	41.17	40.93	102%
Phosphorus	3.30	2.81	2.61	141%
Sediment	1,376	1,350	1,154	854%

- The sediment load reduction needed to meet Maryland's target load for the Bay is achieved 8 times over, by way of the implementation necessary to achieve Maryland's nitrogen and phosphorus target load

Sediment Sources to the Bay

- The Bay Program sediment workgroup indicated that shore erosion accounts for more than half of sediments entering the Bay





- Generally speaking, majority of nutrient input is from upland sources and the majority of sediment originates from the shoreline

Sediment from New Development

- Environmental Site Design
  - TSS reductions (90%) suggest that post development TSS is not a concern
  - TSS reduction is about twice that of nitrogen and phosphorus
  - ESD planning techniques and practices are to be implemented to replicate runoff characteristics similar to “woods in good condition”

Now Which Nutrient?

- Focus on Bay water quality
- The proposed offset was for nitrogen only
- The justification was as follows:
  - Using nitrogen addresses all components of load
    - Stormwater
    - Septic
    - WWTP
    - Air deposition
  - Nitrogen achieves highest relative offset for the stormwater load, meaning nitrogen is more difficult to reduce than phosphorus

Which Nutrient – Considerations

- TN accounts for new septic system loads
- Nutrient limitation in the Bay is complex; literature suggests it varies by season and location
- If both nutrients are added in excess algal growth will not be limited