



Financially Responsible Pathways to 2025 and Beyond

Presented at the
Maryland Chesapeake Bay WIP
Spring Regional Meeting

Western Region
April 22, 2013



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Allocation of Reduction Responsibility

Meeting the Final Target from the 2010 Loading Levels

Nitrogen – Millions of Pounds Delivered to the Bay

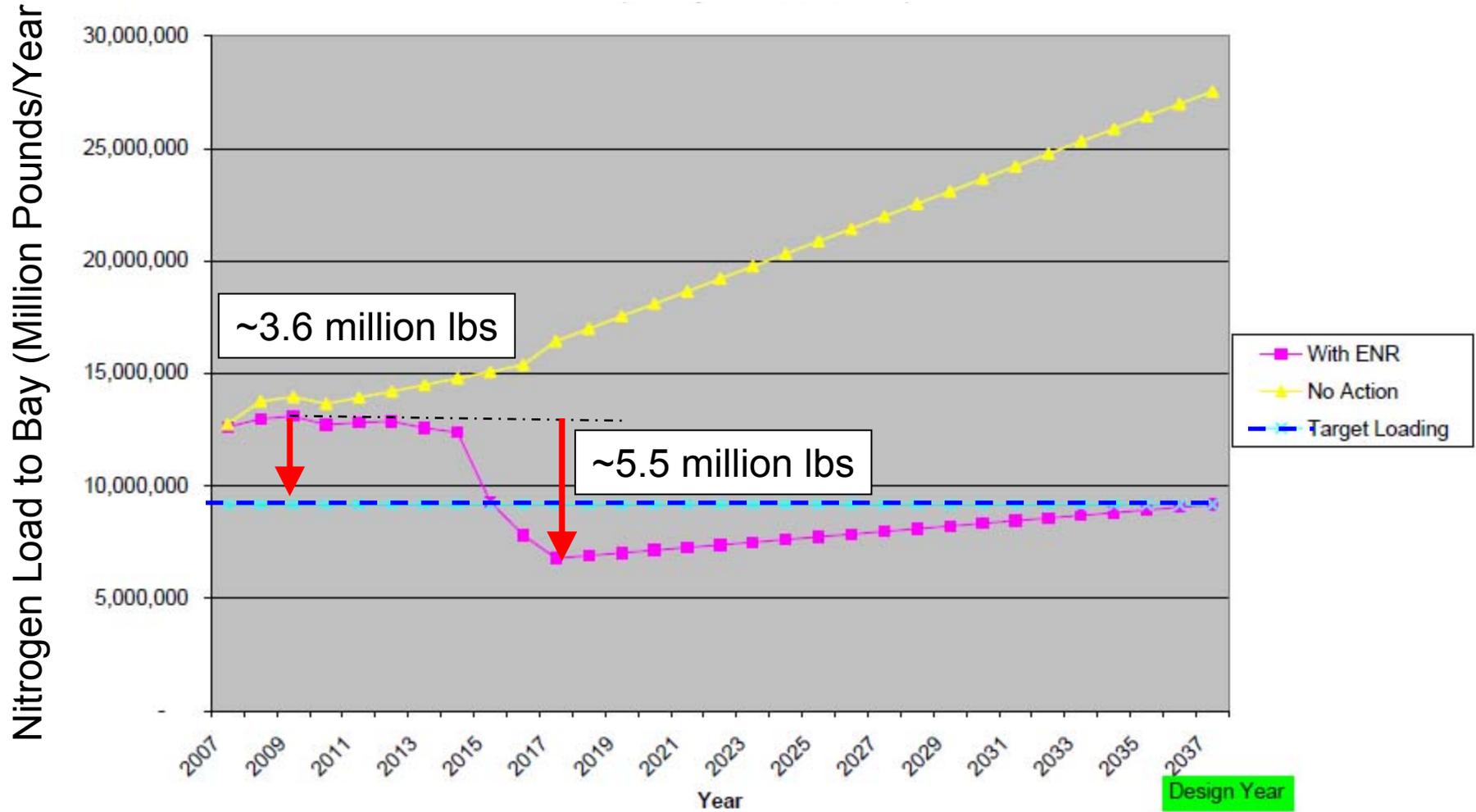
Source Sector	2010 Load	2025 Load	Load Reduction
Agriculture	19.95	15.22	4.73
Wastewater Plants	14.37	8.92*	5.45
Septic Systems	3.00	1.85	1.15
Urban Retrofits	9.48	7.55	1.93

Source: Computed from Table 2, Maryland Phase II WIP.

* Full reduction at 2017 after which loads increase toward a cap of 10.58 million lbs, See Table 3 of Maryland Phase II WIP.



Nitrogen Load Reductions to the Bay Due to ENR Upgrades at 67 Major Municipal Treatment Plants



WIP Costs per Pound Reduced

Costs to Meet the 2025 Final Target from the 2010 Loading Levels

Source Sector	Cost (millions)	Nitrogen Reduced (pounds/yr)	Average Cost/lb Reduced
Agriculture	\$928	4,730,000	\$200
Wastewater Plants	\$2,368	5,450,000	\$400
Septic Systems	\$3,719	1,150,000	\$3,200
Urban Retrofits	\$7,388	1,930,000	\$3,800
TOTAL	\$14,353	13,260,000*	\$900

Source: Computed from Table 2, Maryland Phase II WIP.

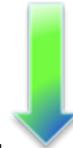
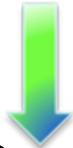
Note: WIP strategy reductions are slightly different than Final Targets. Delivered Loads.

* Includes WWTPs over-reducing their load to create future load allocation.



Addressing WIP Funding Challenges

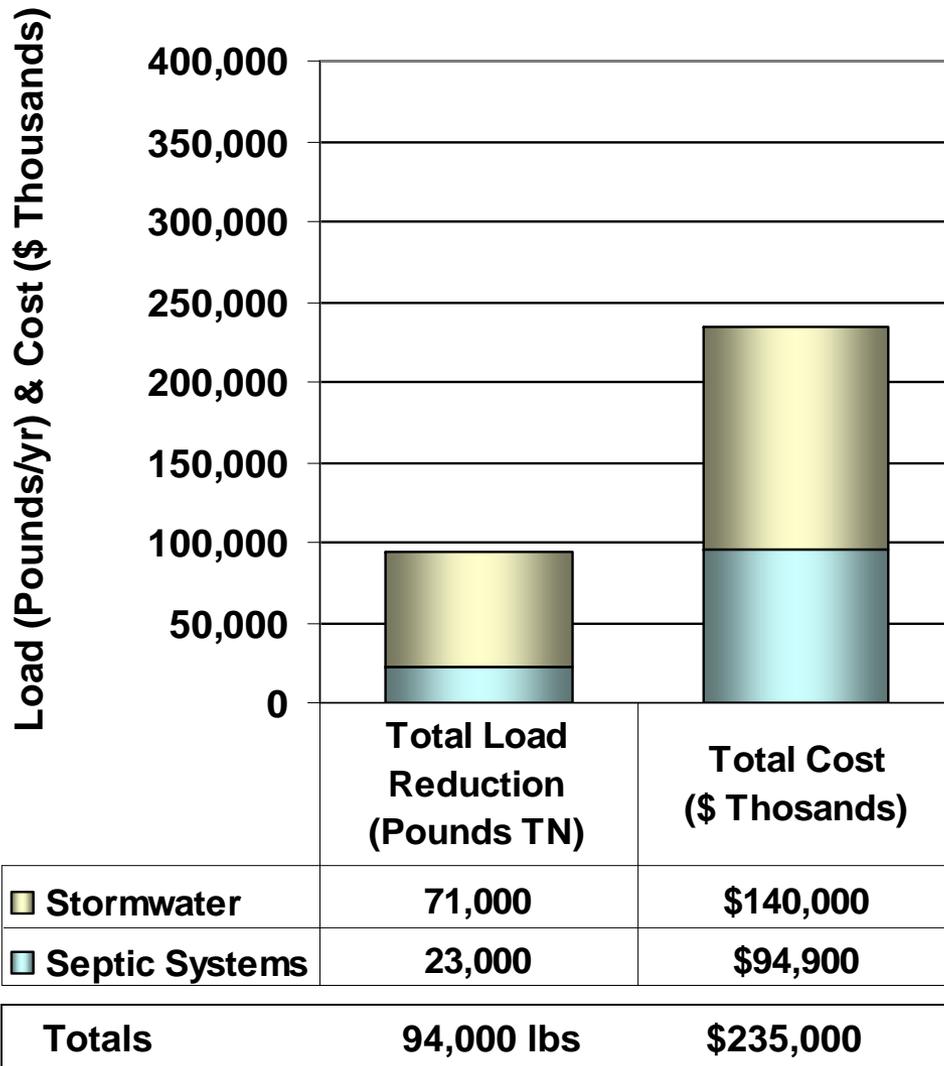
Funding Strategies In General:



1. $\text{Cost} - \text{Revenue} = \text{Funding Gap}$
2. Time Considerations



A Pathway to the 2025 Goal

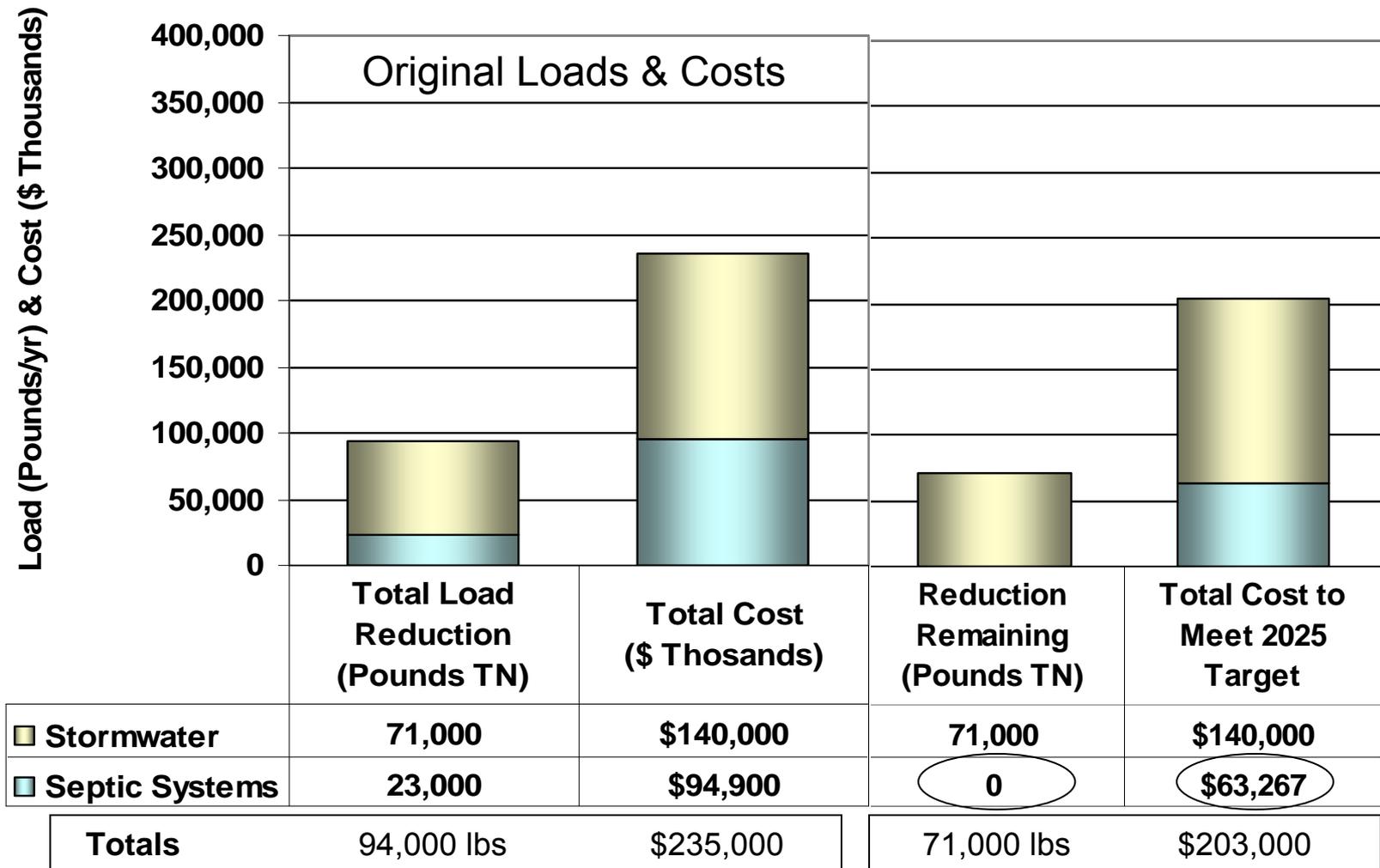


Conceptual Case Study: (Mid-sized County)

Challenge: Reduce Stormwater and Septic Nitrogen Loads

A Pathway to the 2025 Goal

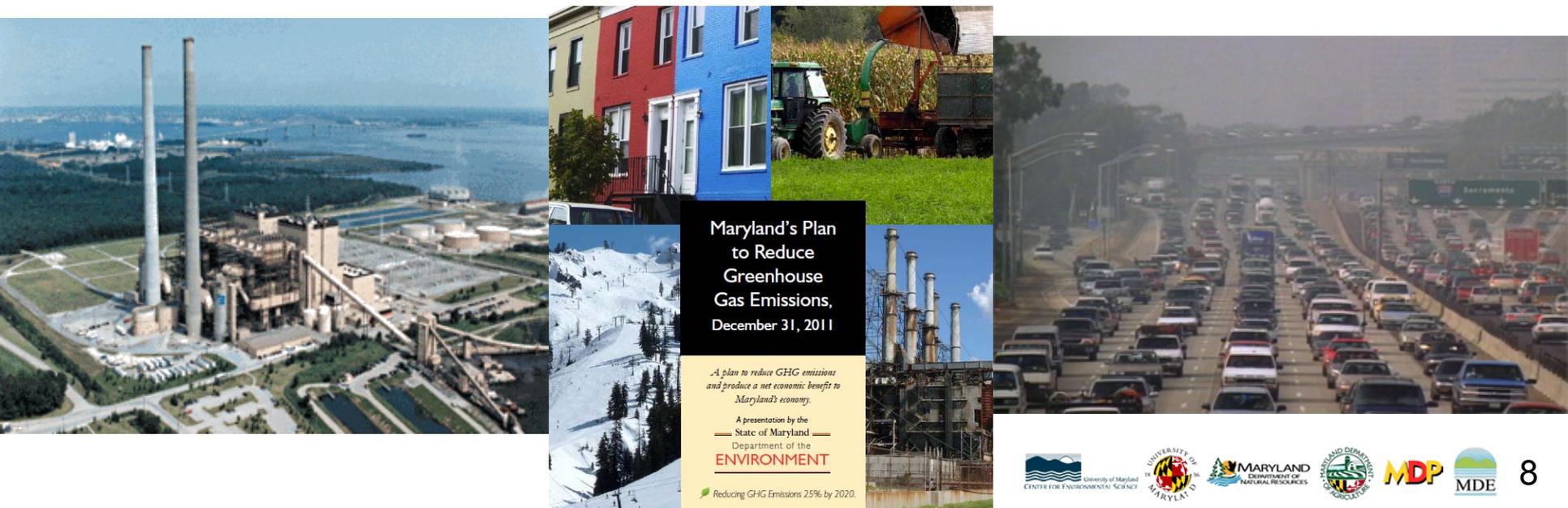
75% Effective Septic BAT



Atmospheric Reductions

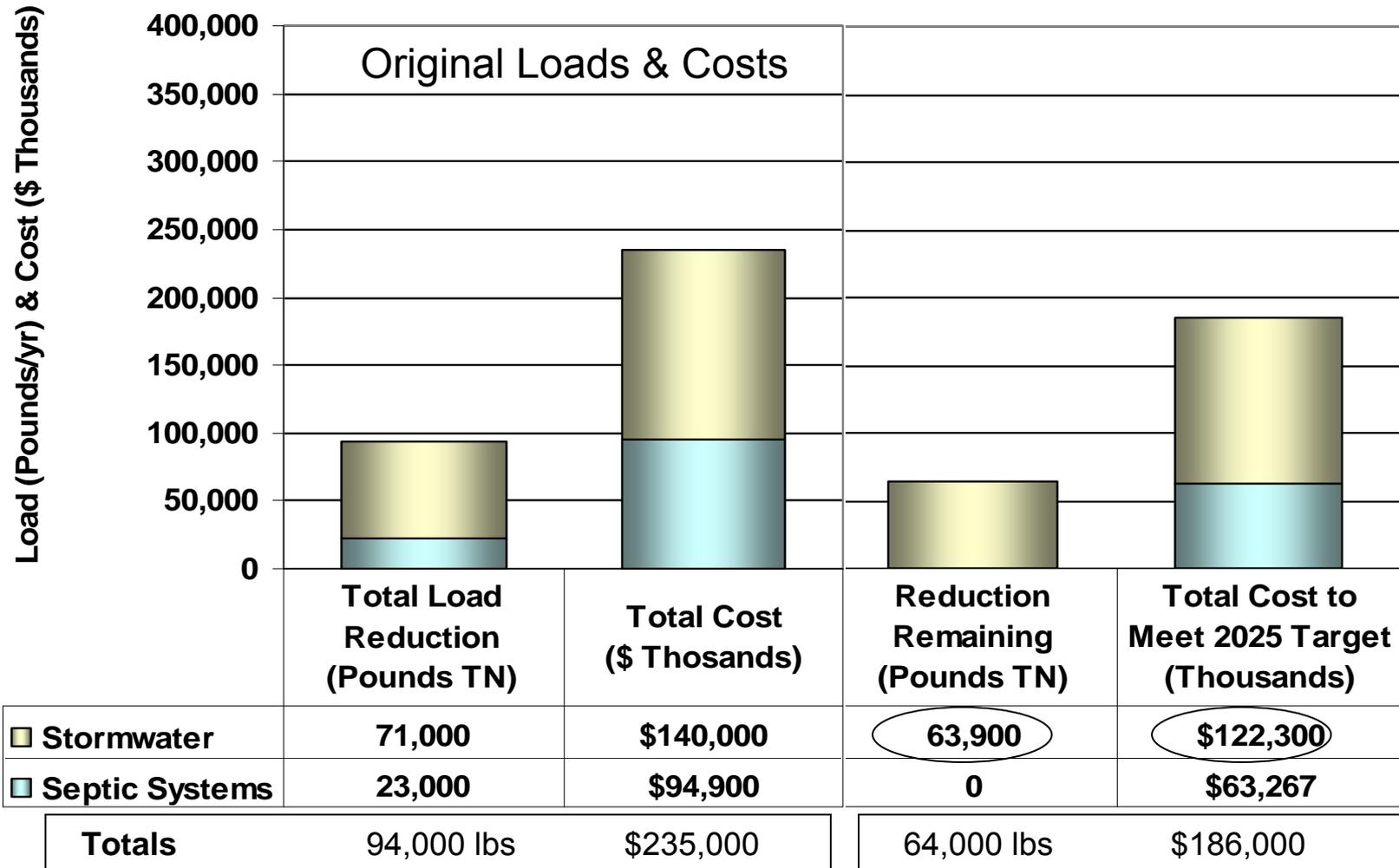
Not all credited in Bay Modeling:

- Maryland Healthy Air Act
- MD Greenhouse Gas Reduction Act 2009
- Maryland Clean Car Program 2007
- Federal Tier 3 Fuel Standards (pending)



A Pathway to the 2025 Goal

Atmospheric Reductions



and 75% BAT for Septic Systems



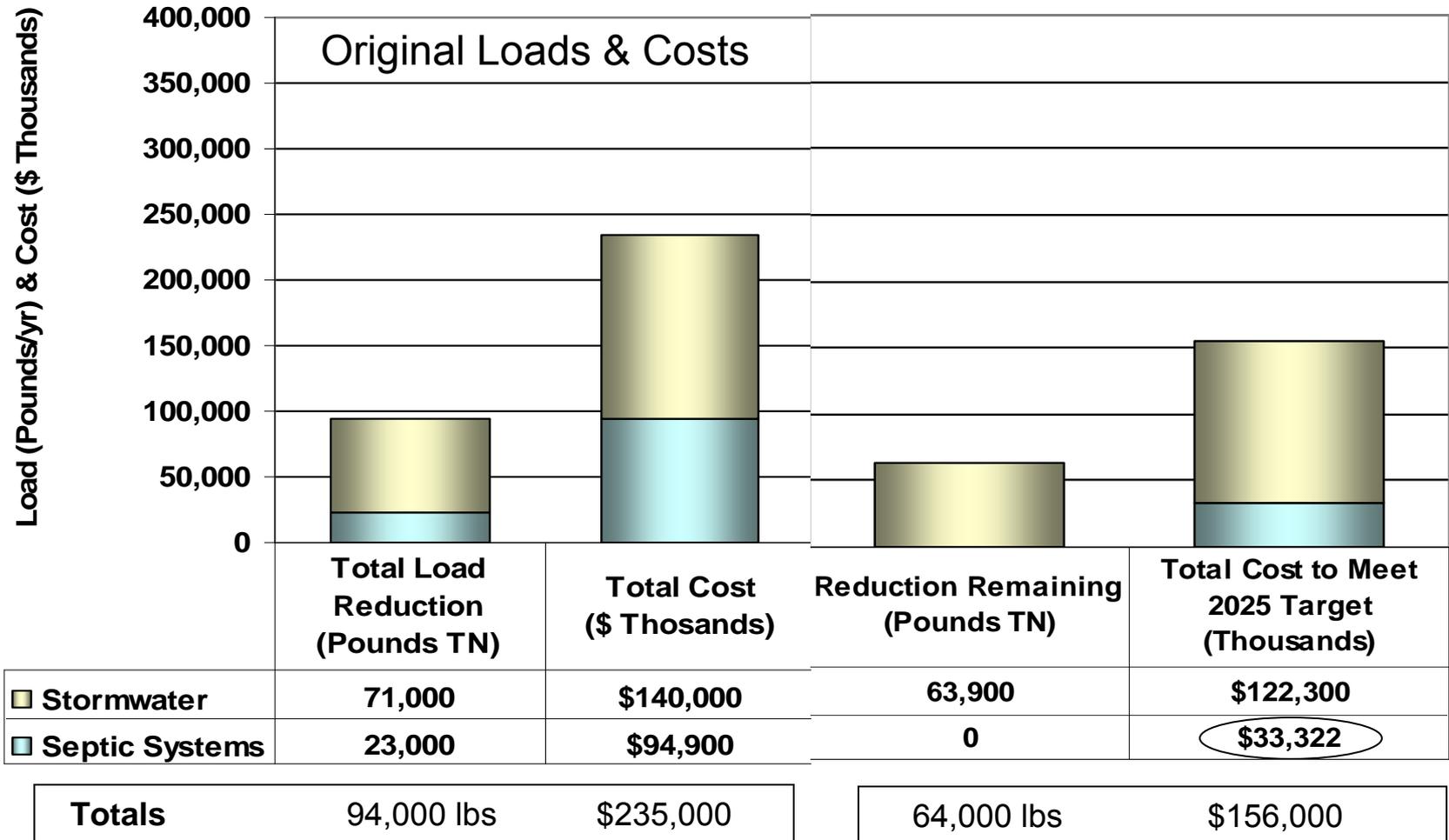
Underlying Implementation Strategy

“... the underlying strategy assigns equitable responsibility for reductions, which is not the least cost approach; however, sectors facing higher costs may pay for reductions from other sectors that have lower costs.”

Maryland Phase II WIP, Section 1.10.2 p. 54

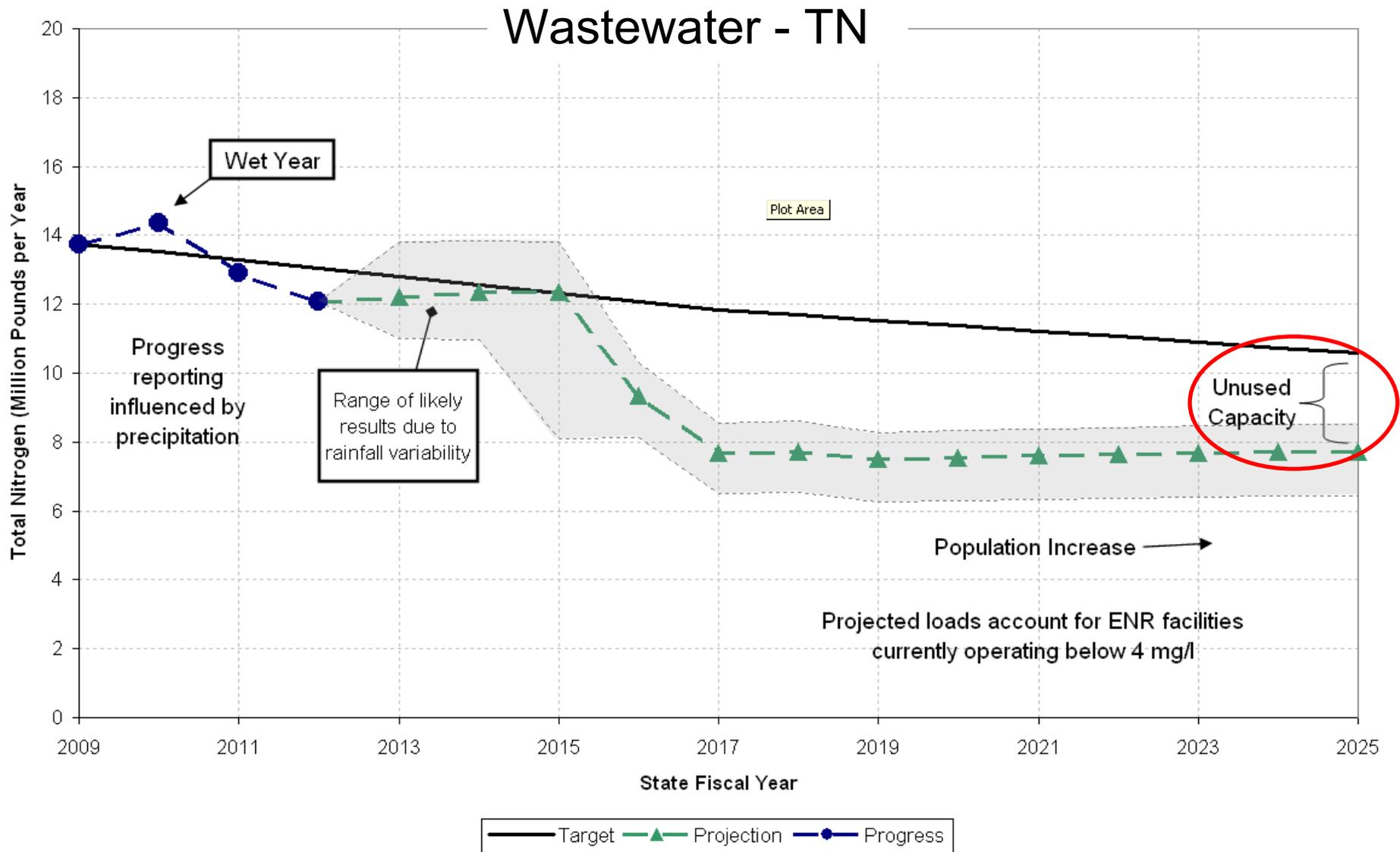
A Pathway to the 2025 Goal

- 1/3 of Septic Systems Upgraded with 75% BAT, and
- After 2017: Purchase Reductions from Ag Sector



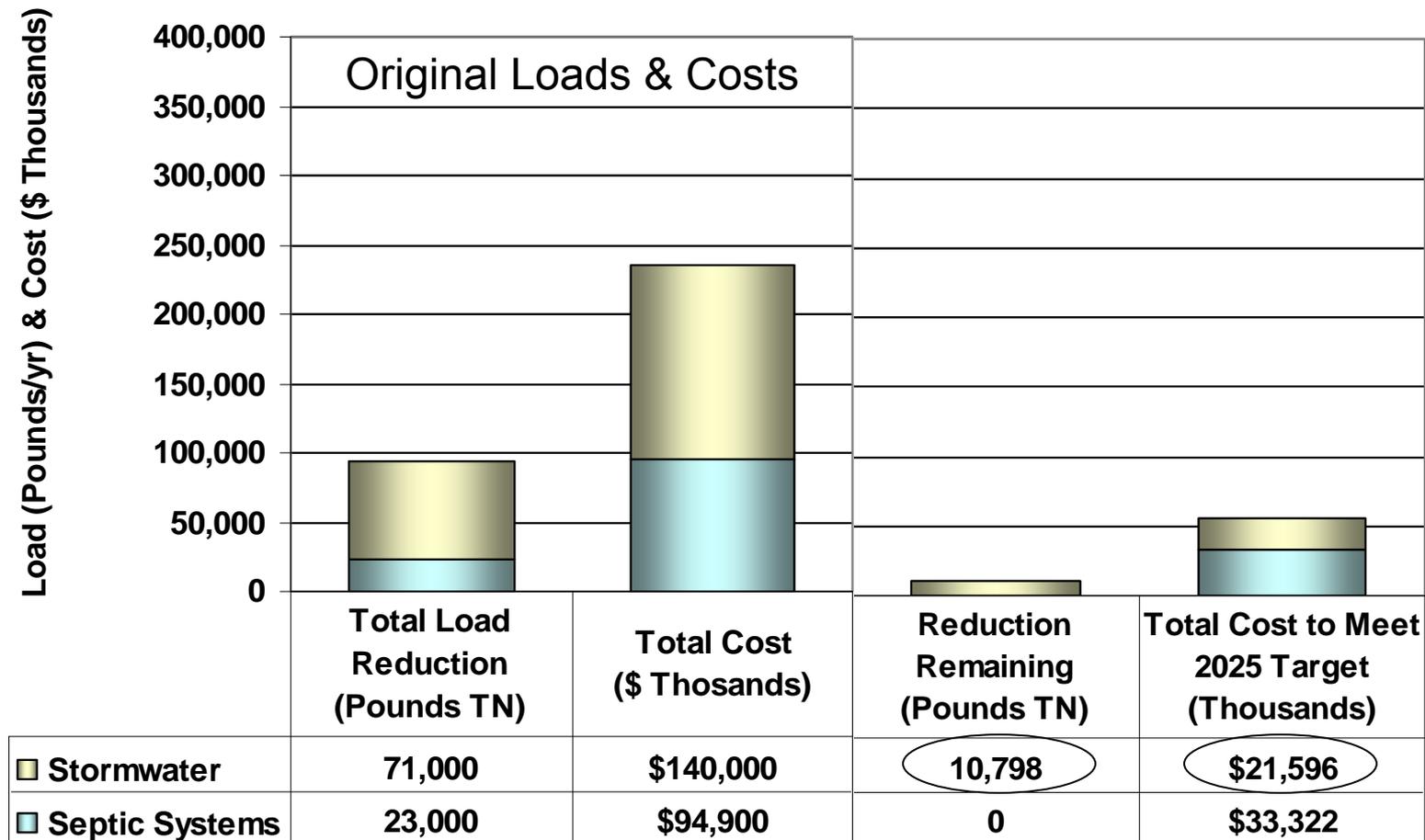
and Air Reductions

Concept: Share Unused WWTP Capacity at 2025



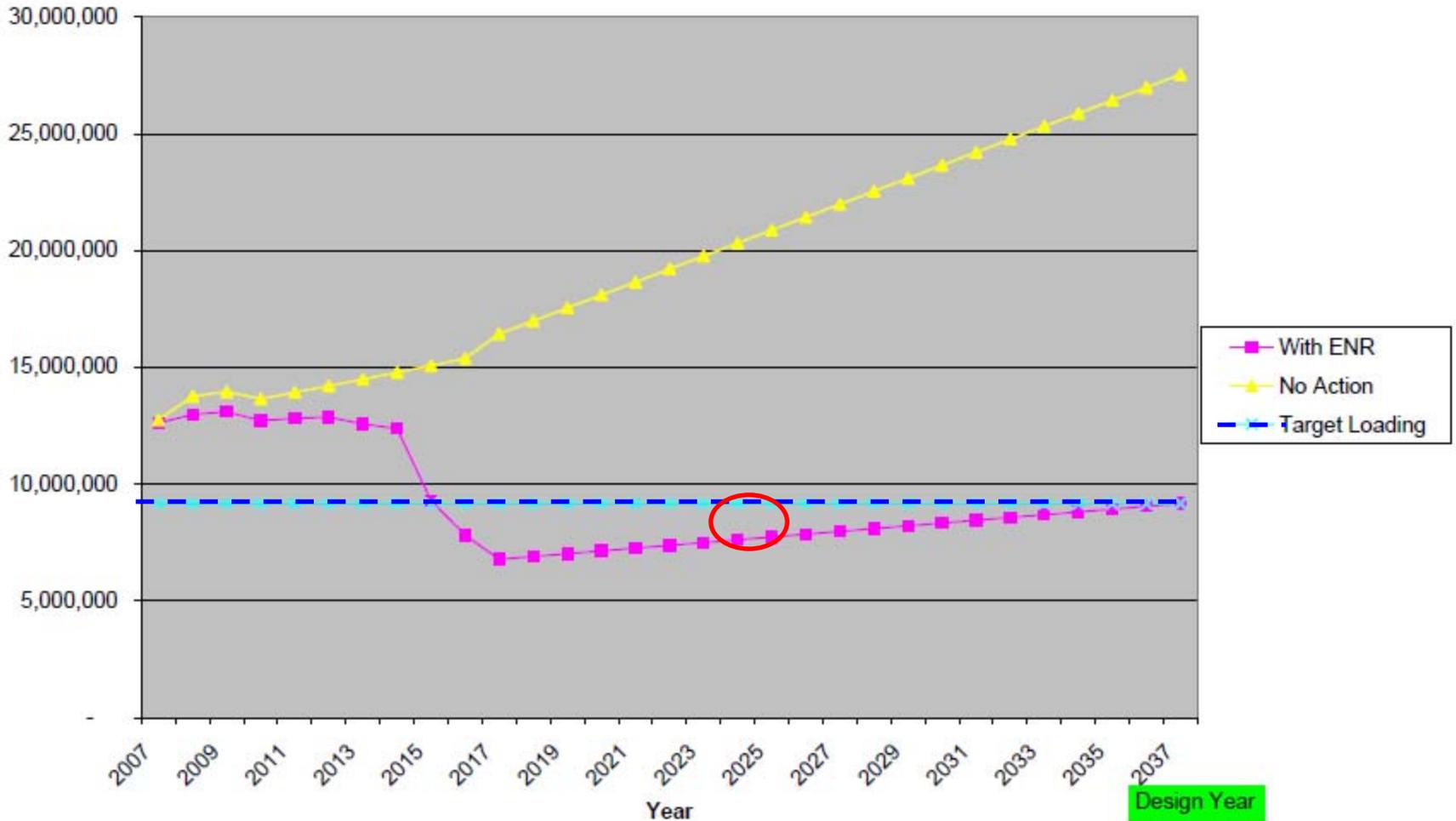
A Pathway to the 2025 Goal

- Borrowing the Shared Unused WWTP Capacity
- Plus Air Reductions



- 1/3 of Septic Systems Upgraded with 75% BAT, and after 2017, 2/3 Purchase Reductions from Ag Sector

Actually "Borrowing" the Unused Capacity, which Must Eventually be "Paid Back" by Around 2037



Nitrogen

Stormwater Retrofits

- Stormwater Reduction = 59,000 lbs TN
- Funding Target: \$122 million
- Revenue Sources:
 - Chesapeake & Coastal Bays Trust Fund*: \$460,000/yr
 - Bay Restoration Fund (after 2018)*: \$740,000/yr
 - Local CIP (Stormwater Fee)**: \$4,500,000/yr
 - TOTAL Annual \$5,600,000/yr

* Assumes funding allocation proportional to % of Households in State: 2.5%

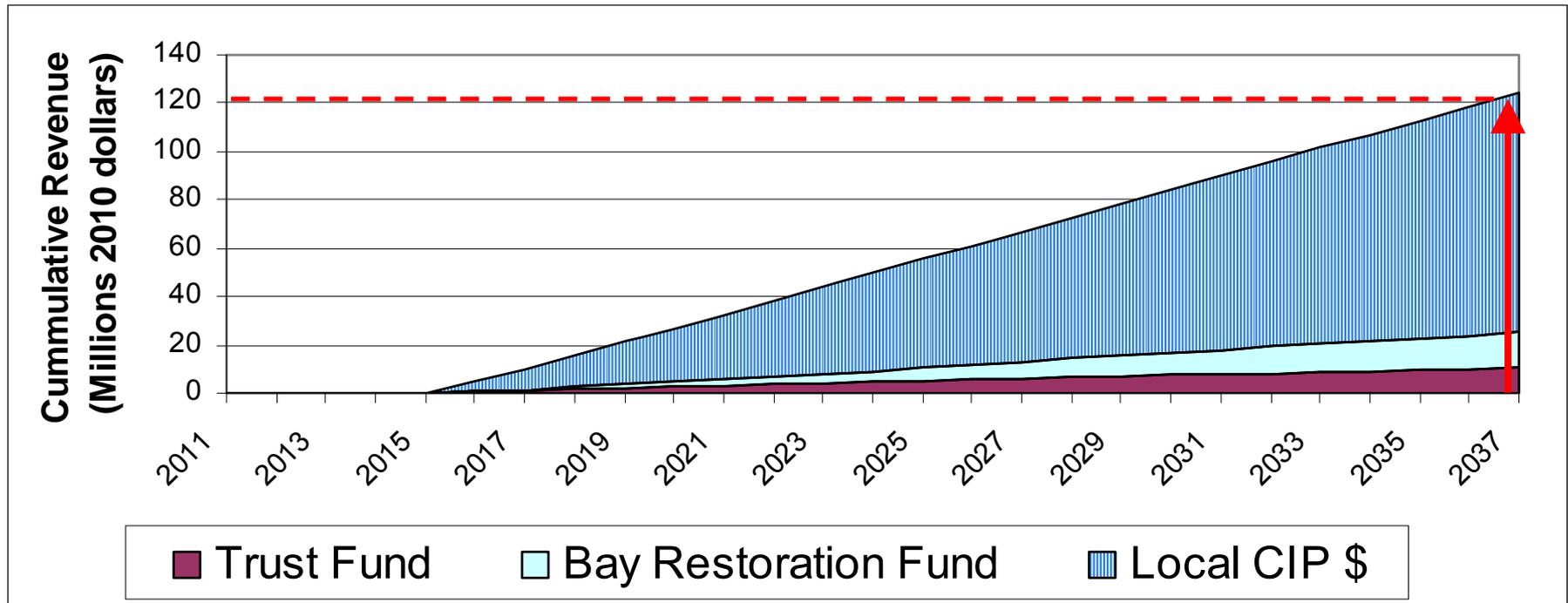
** Assumes \$32/yr/household (\$1.8M/yr) + Commercial/Industrial paying 60% of Total Revenue (\$2.7M/yr).



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Revenue Stream for Funding Stormwater Retrofits



- Chesapeake & Coastal Bays Trust Fund: \$460,000/yr
- Bay Restoration Fund (after 2018): \$740,000/yr
- Local CIP (Stormwater Fee)**: \$4,500,000/yr
- TOTAL: \$5,600,000/yr



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Septic Systems

- Septic System Reduction = 23,000 lbs TN
- Funding Target: \$33 million
- Revenue Sources:
 - Bay Restoration Fund (after 2018)*: \$740,000/yr
 - Local CIP (Septic System Fee)**: \$1,000,000/yr
 - TOTAL Annual \$1,740,000/yr

* Assumes funding allocation proportional to % of Households in State: 2.5%

** \$17/household/yr. No fee for non-residential assumed.

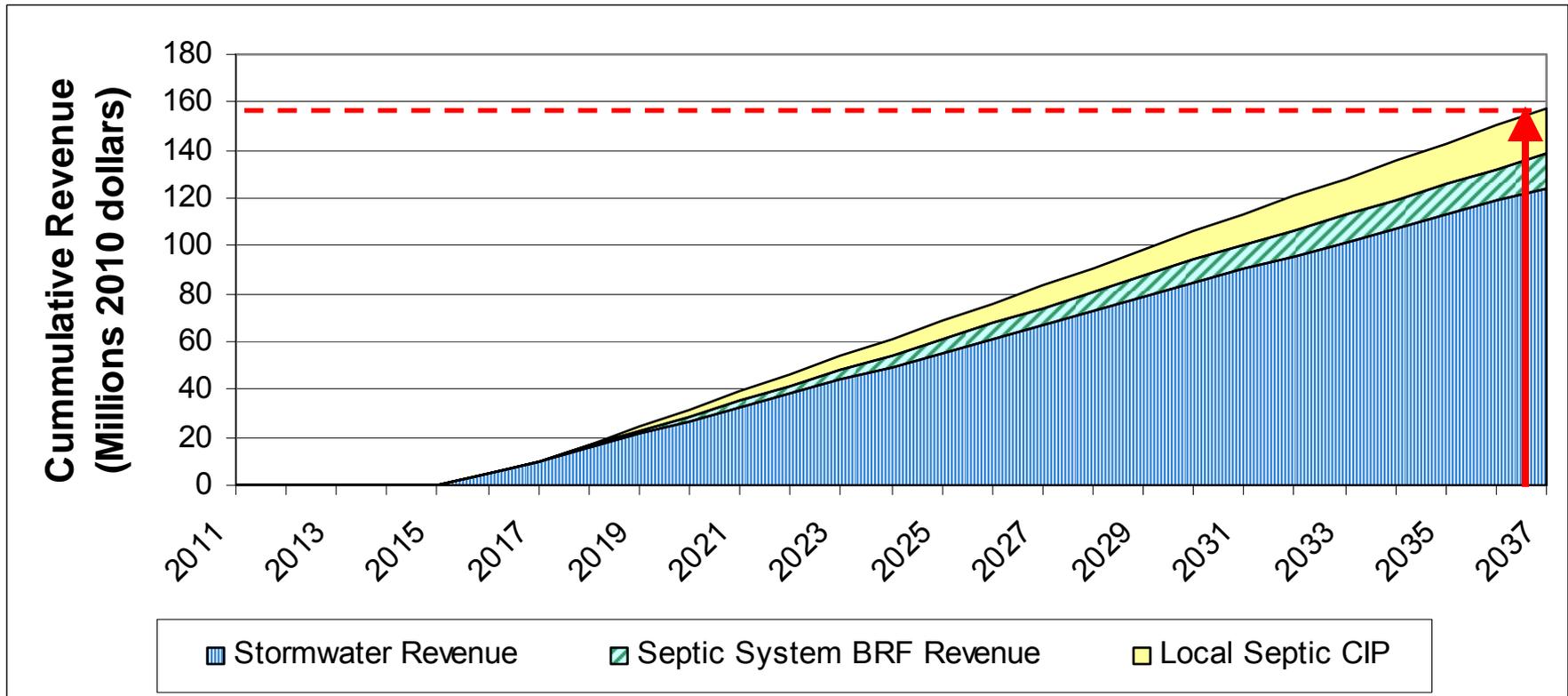


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Follow-thru Beyond 2025

Revenue Stream for Funding Stormwater Retrofits & Septic System



- Stormwater: \$5.6 Million/yr \$122 Million subtotal
- Septic Systems: \$1.74 Million/yr \$ 33 Million subtotal
- Total \$7.34 Million/yr \$155 Million



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Meeting 2025 Target

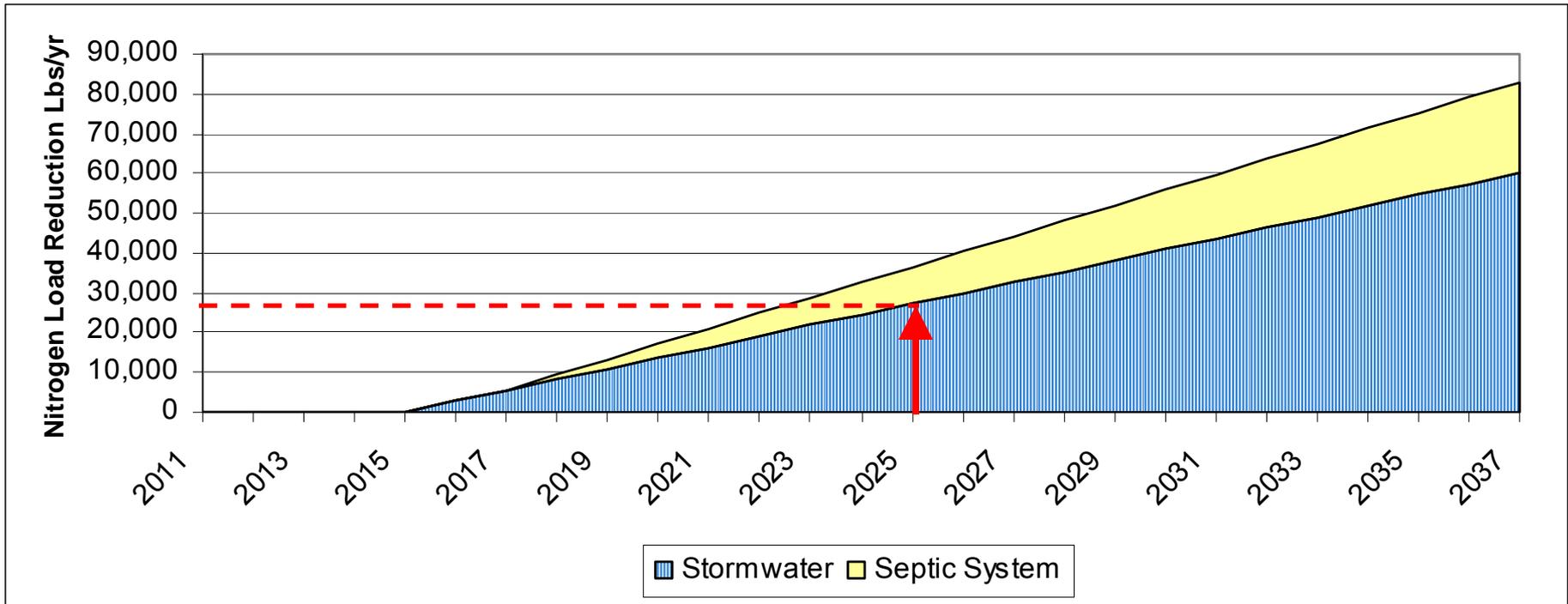
Is the Pace of Septic and Stormwater at 2025 Sufficient to meet Statewide goal, taking into account unused WWTP Allocation?

Recall: 10,700 lbs Stormwater Reduction at 2025 IF Septic Load = 0

However, Septic Load at 2025 = 14,000

Therefore, Stormwater reduction at 2025 must be 24,700 or more

Stormwater Reduction at 2025 = 27,000 > 24,700 ✓

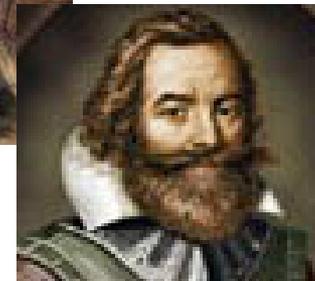




Conclusions and Summary

- Meeting 2025 Target is Financially Viable
- Unused WWTP capacity at 2025 buys time
- Urban sector purchase of Ag credits, after 2017 Midpoint Assessment, could help reduce costs.
- State funding is not sufficient
- New local funding would be necessary
- New federal funding should be considered
- Cost reductions should be explored
- New technologies, e.g., 75% Septic BAT

End



Watershed Implementation Plan

- Nitrogen Load Reductions by Sector

