CHESAPEAKE WATER ENVIRONMENT ASSOCIATION

Beyond Nutrients: Case Studies and Tools for Addressing TMDLs

June 8, 2016

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U.S. EPA Chesapeake Bay Program Office

INDICATORS OF IMPROVING ECOSYSTEM HEALTH
WE ARE MAKING PROGRESS

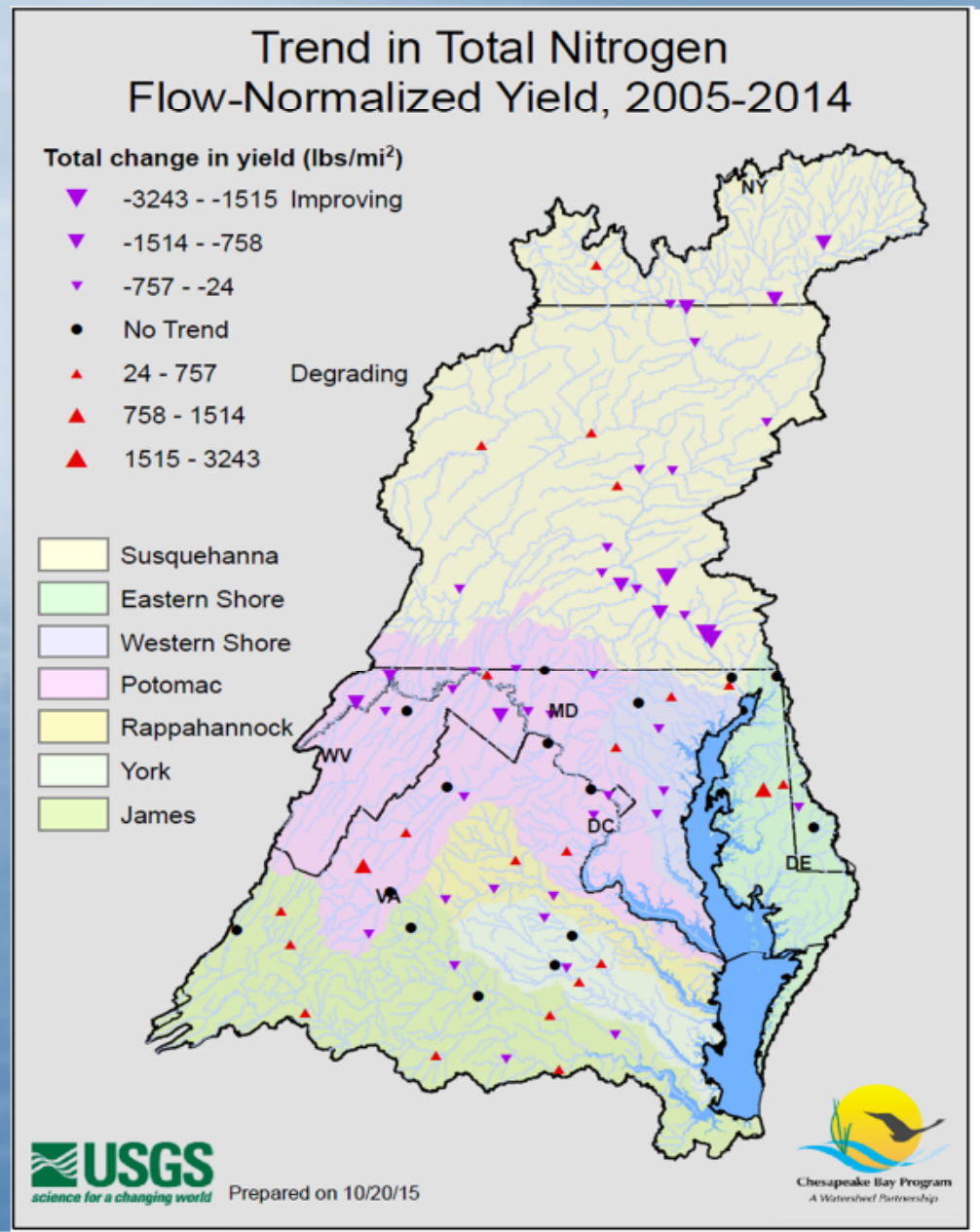
- Blue Crab population
- Bay Grasses
- Water Clarity
- WQ Standards Attainment
- Reducing Pollution

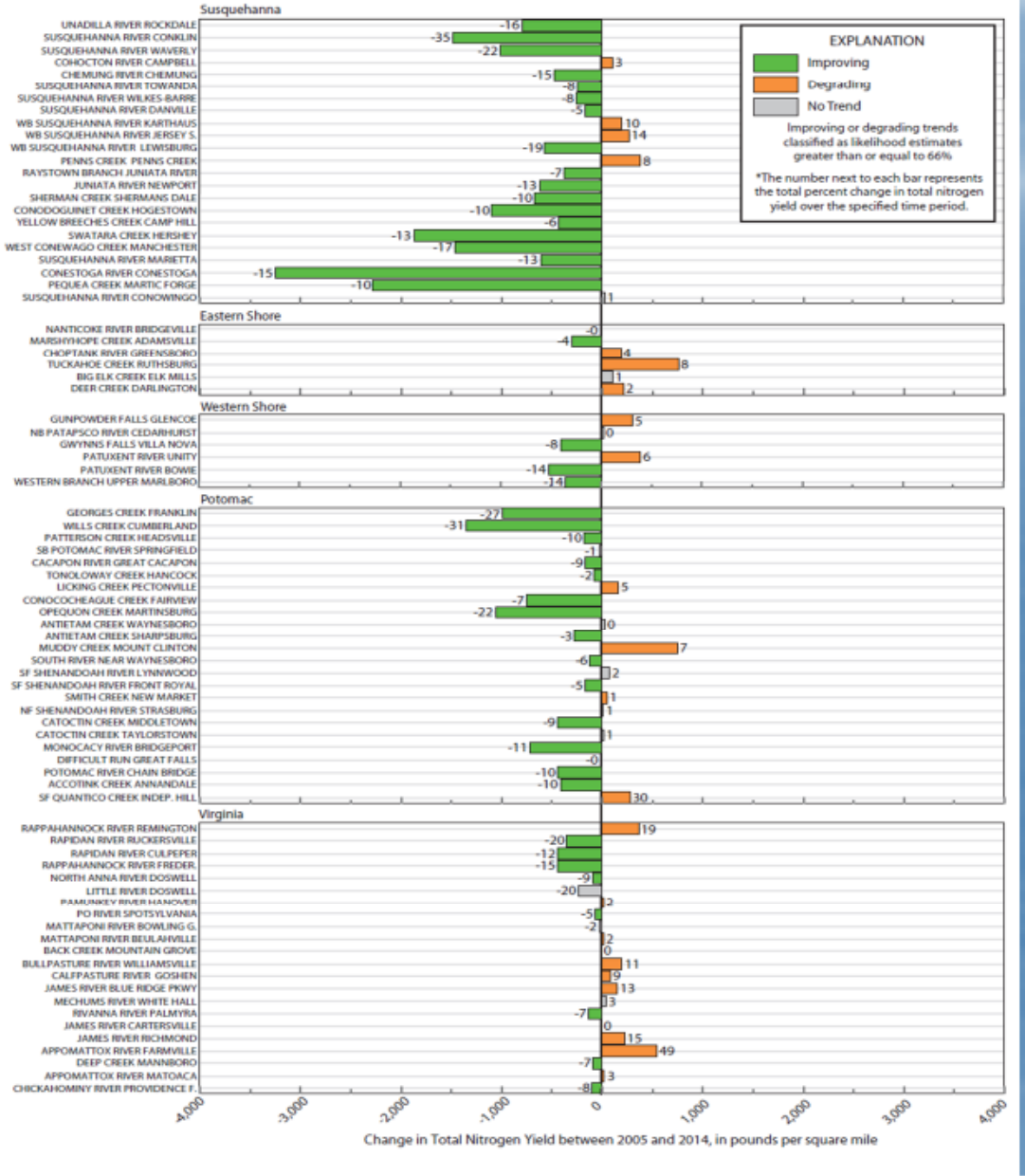
Chesapeake Bay Report Card 2015

University of Maryland Center for Environmental Science

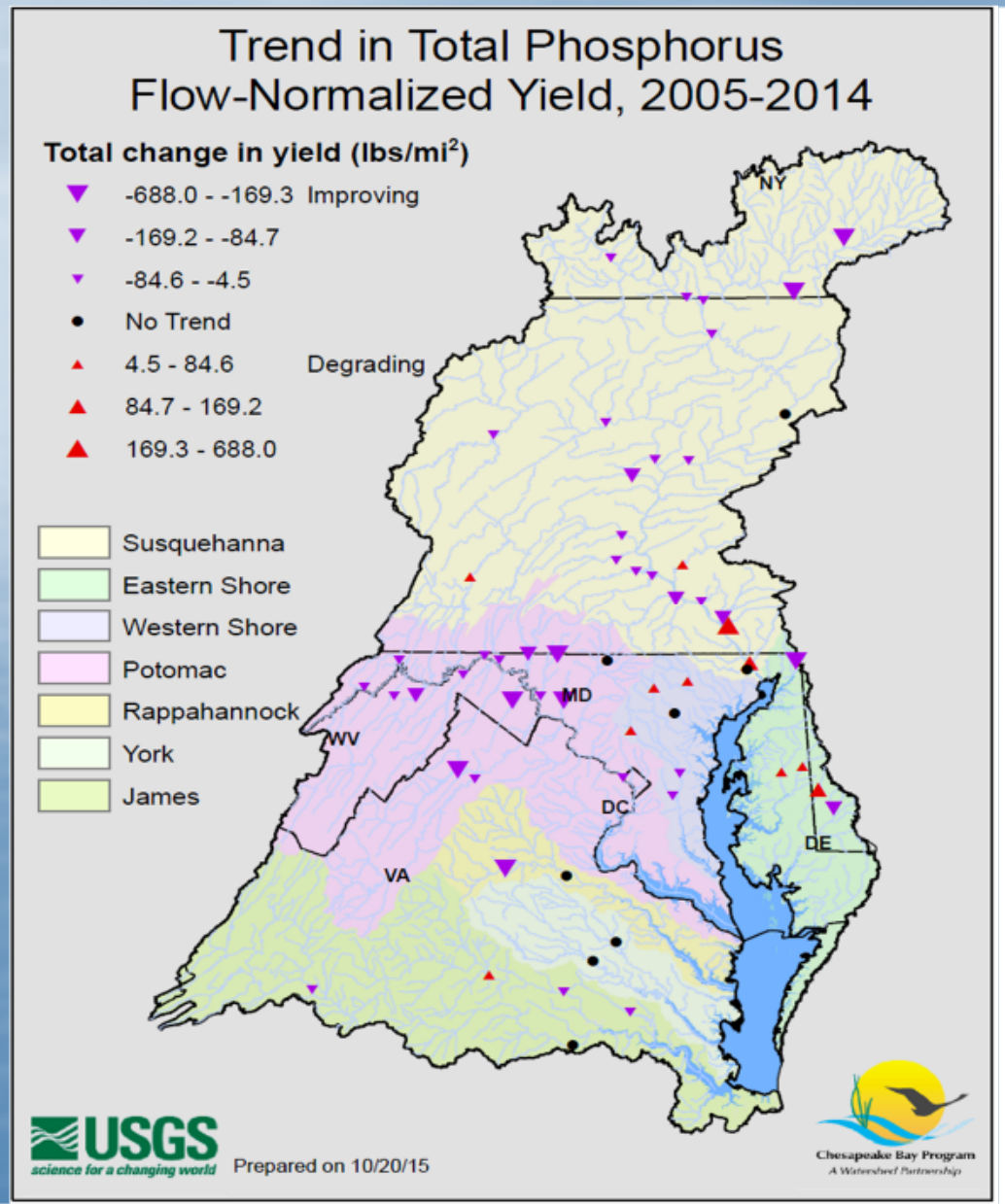
C

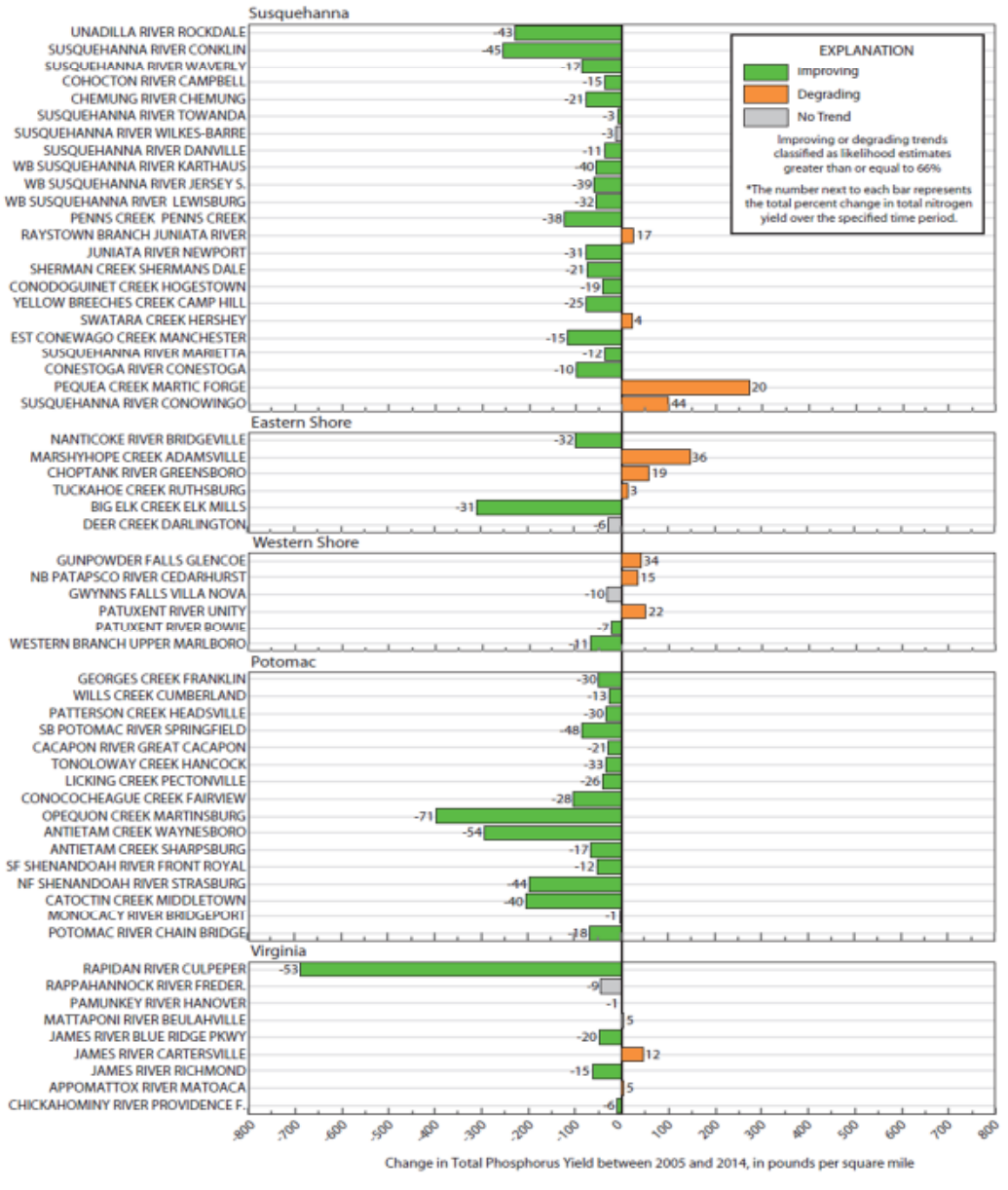
WE ARE SEEING DECREASING TRENDS IN NITROGEN LOADS IN STREAMS AND RIVERS THROUGHOUT THE WATERSHED…



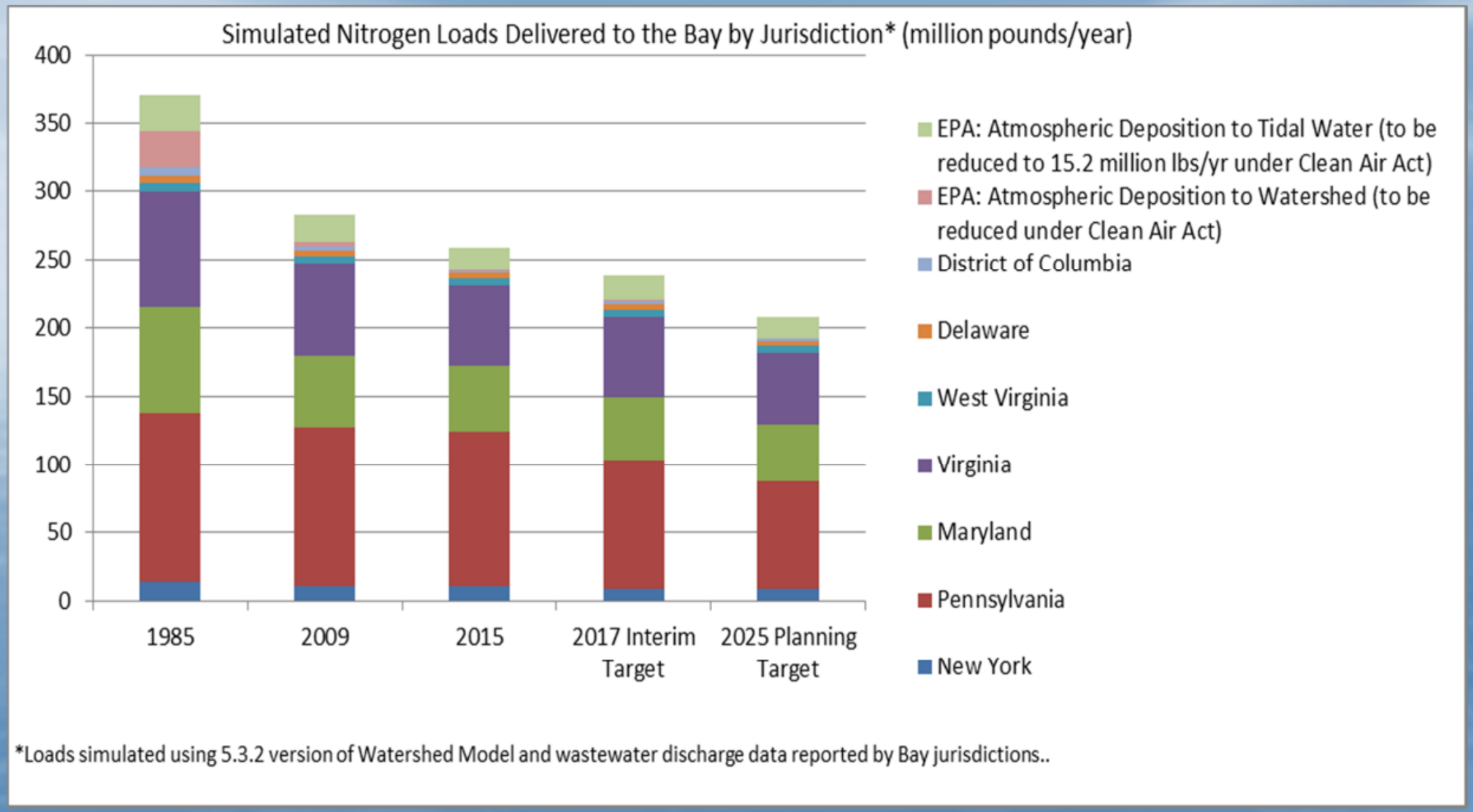


…AS WELL AS DECREASING TRENDS IN PHOSPHORUS LOADS WITH THE EXCEPTION OF THE SUSQUEHANNA @ CONOWINGO





NITROGEN PROGRESS AND GOALS BY JURISDICTION



*Loads simulated using 5.3.2 version of Watershed Model and wastewater discharge data reported by Bay jurisdictions..

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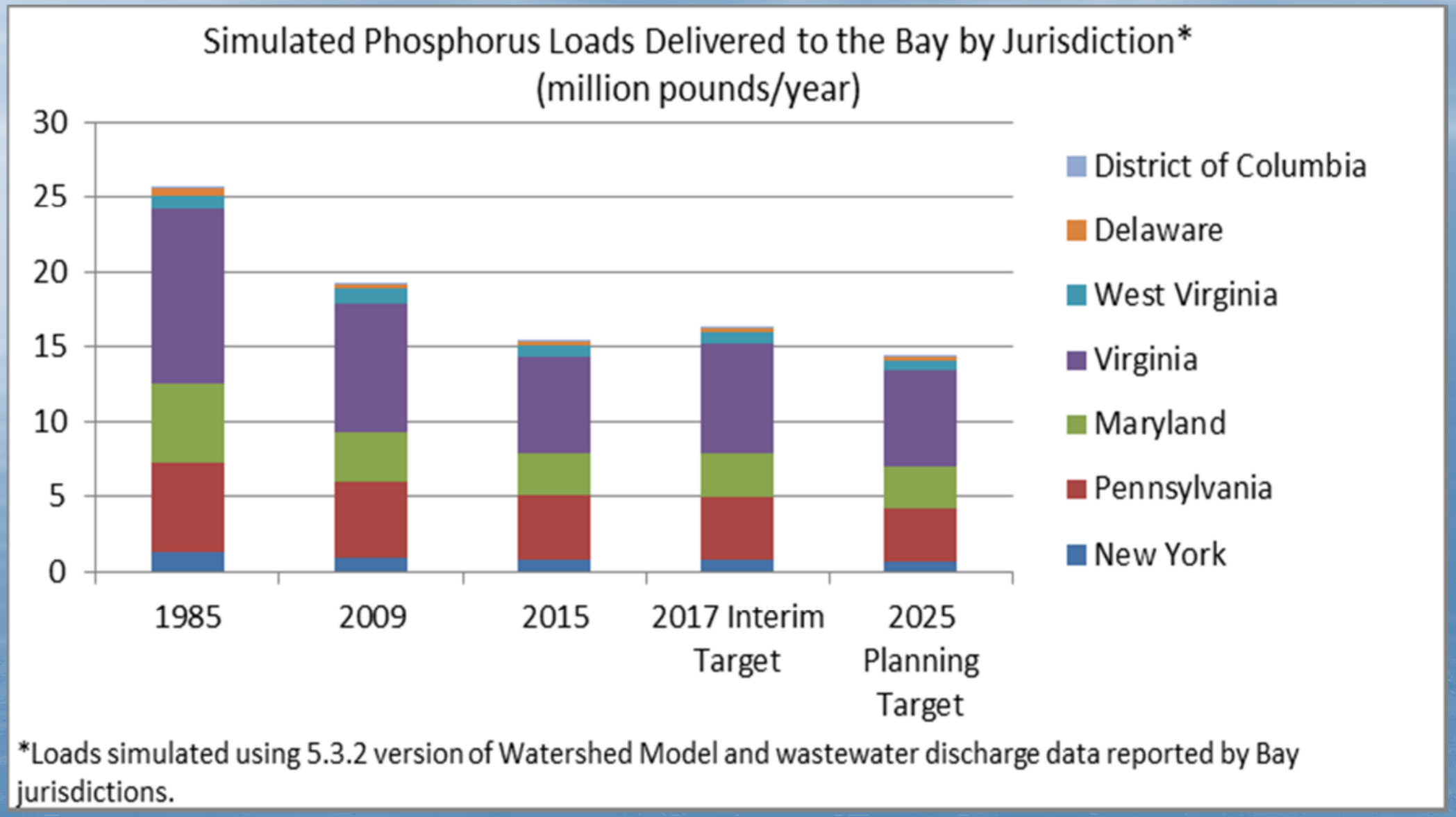

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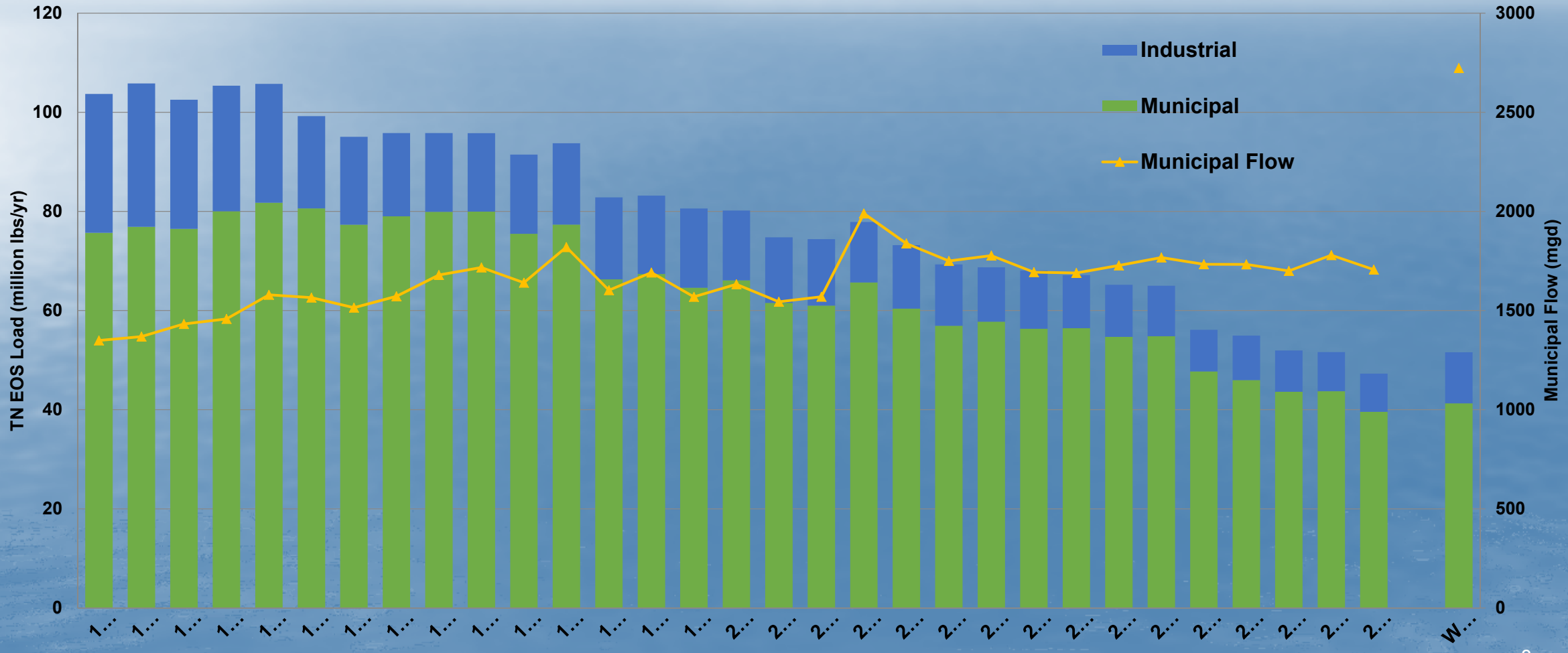
DISCHARGED TOTAL NITROGEN LOADS FROM 472 SIGNIFICANT MUNICIPAL AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES VS. MUNICIPAL FLOW



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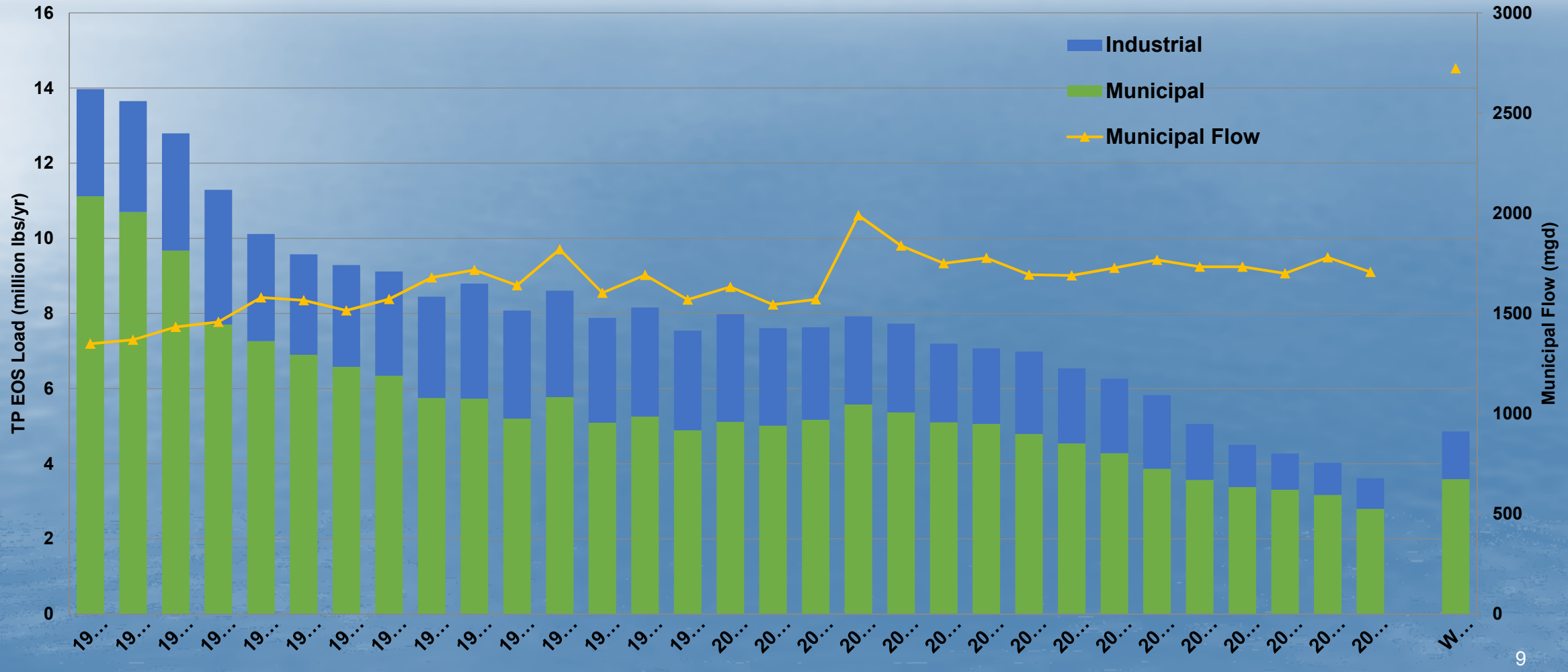
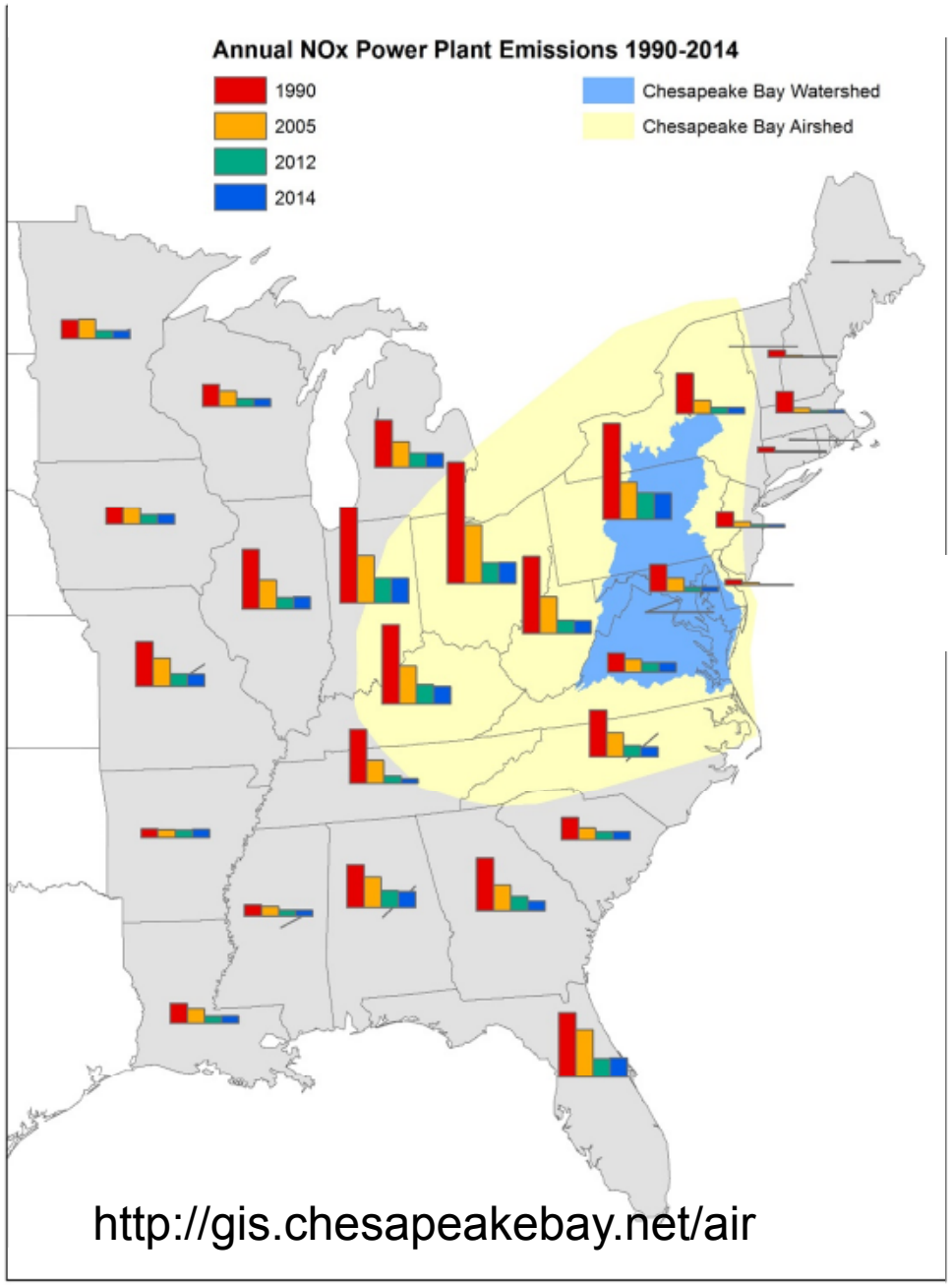
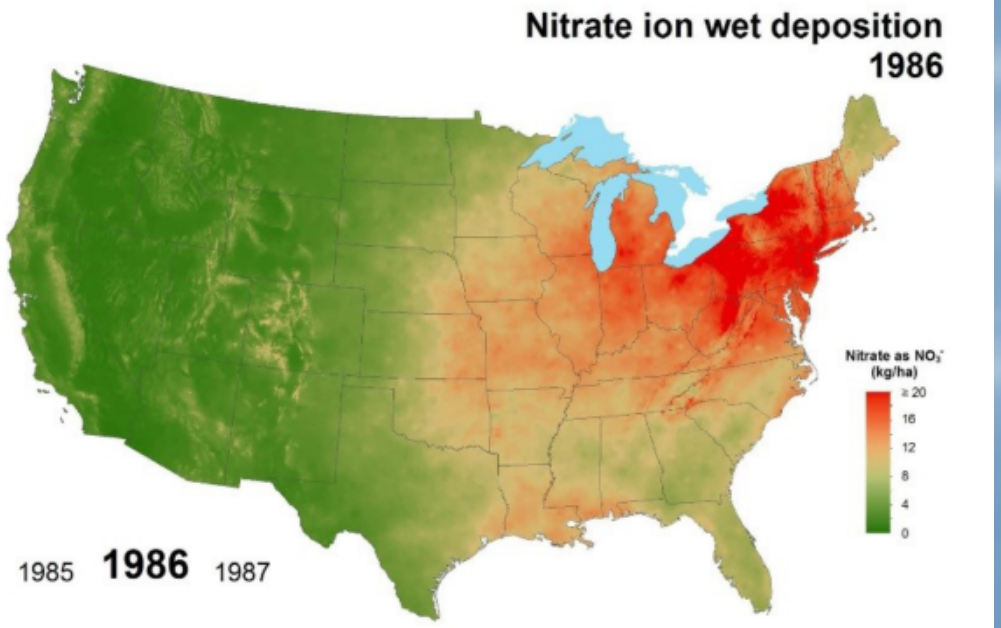
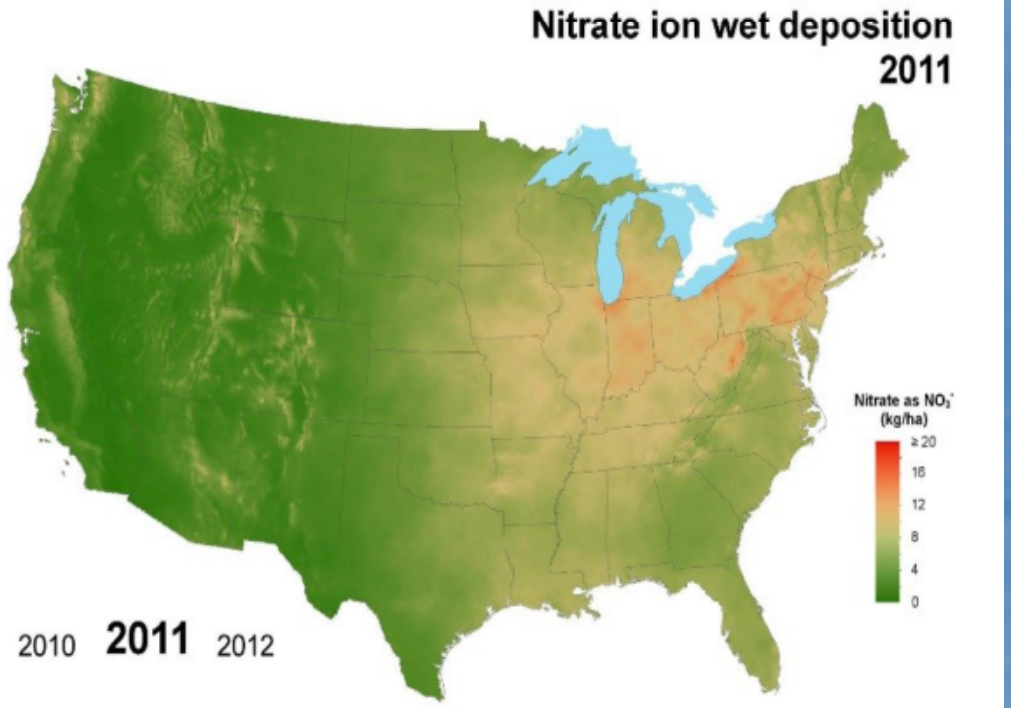


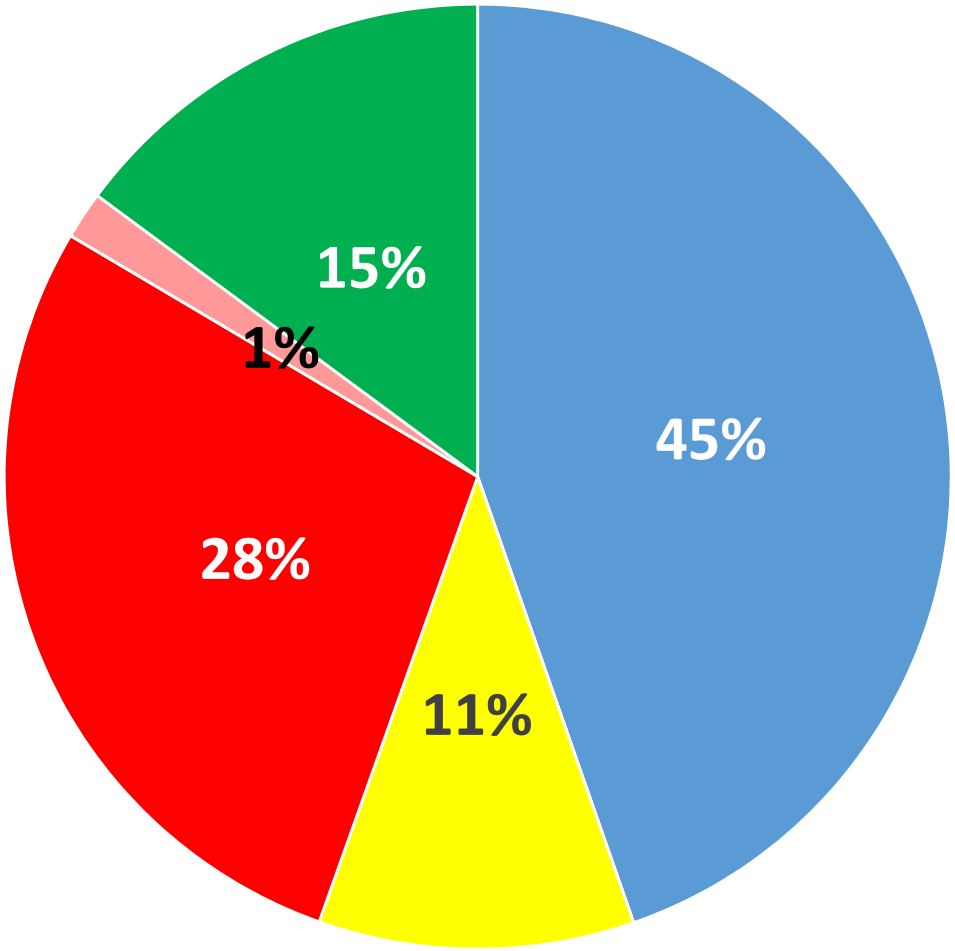

Annual NOx Power Plant Emissions 1990-2014
1990
2005
2012
2014
Chesapeake Bay Watershed
Chesapeake Bay Airshed
http://gis.chesapeakebay.net/air


Nitrate ion wet deposition
1986
Nitrate as NO3- (kg/ha)
≥ 20
16
12
8
4
0
1985
1986
1987


Nitrate ion wet deposition
2011
Nitrate as NO3- (kg/ha)
≥ 20
16
12
8
4
0
2010
2011
2012

Chesapeake Bay Watershed Nitrogen Loads

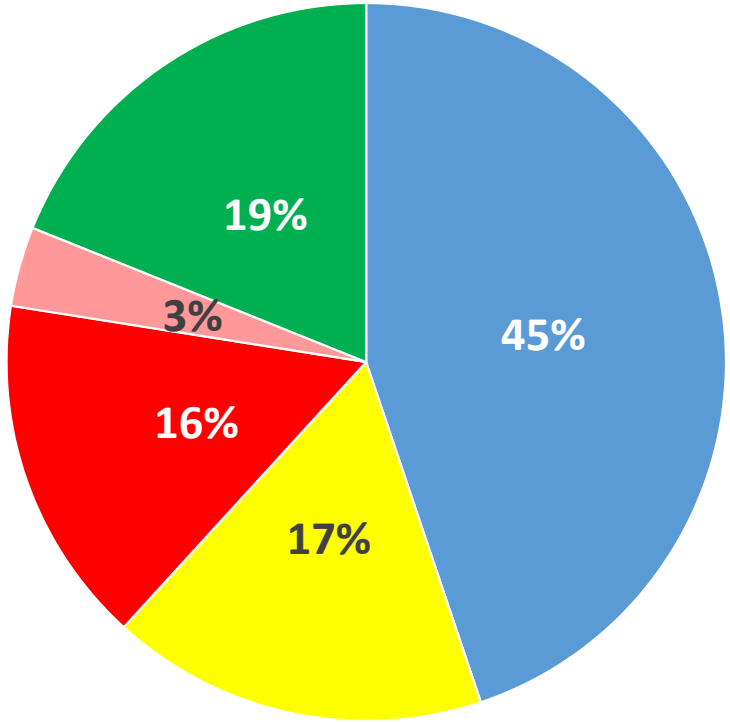
Agriculture | Urban Runoff | Wastewater+CSO | Septic | Forest



1985

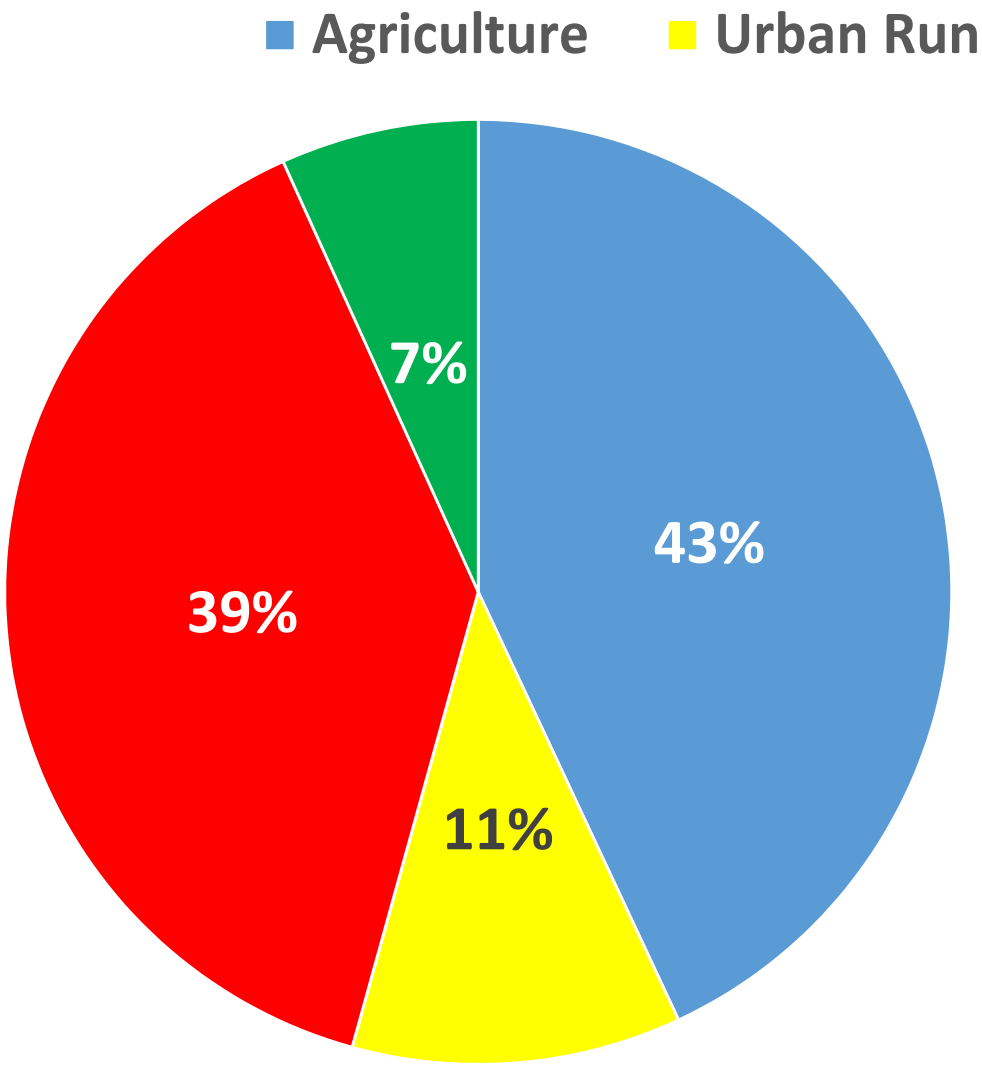
Where did the Nitrogen reductions come from?

Agriculture	39%
Wastewater	59%
Forest	2%



2015

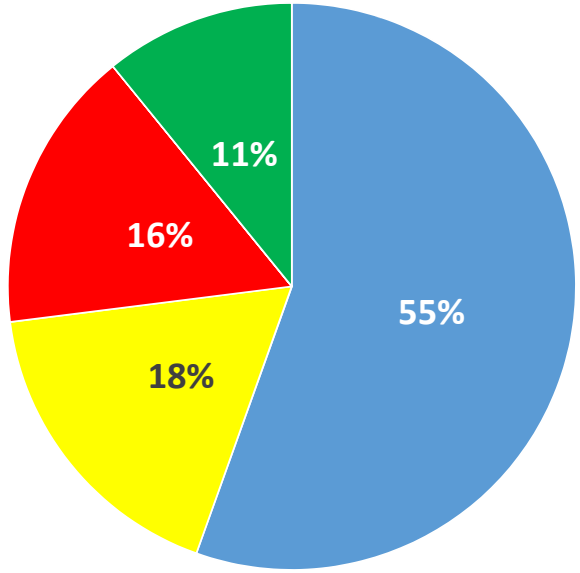
Chesapeake Bay Watershed Phosphorus Loads



1985

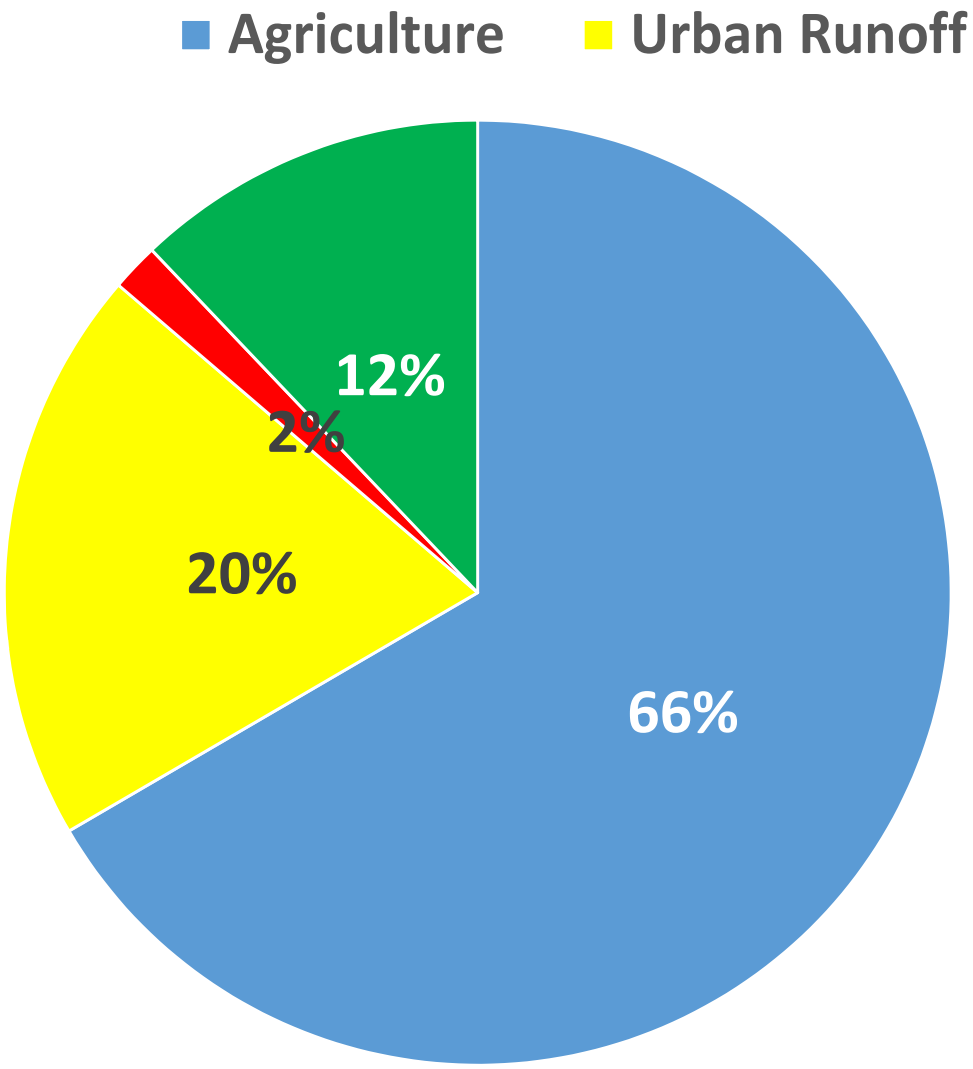
Where did the Phosphorus reductions come from?

Agriculture	24%
Urban Runoff	2%
Wastewater	73%
Forest	1%



2015

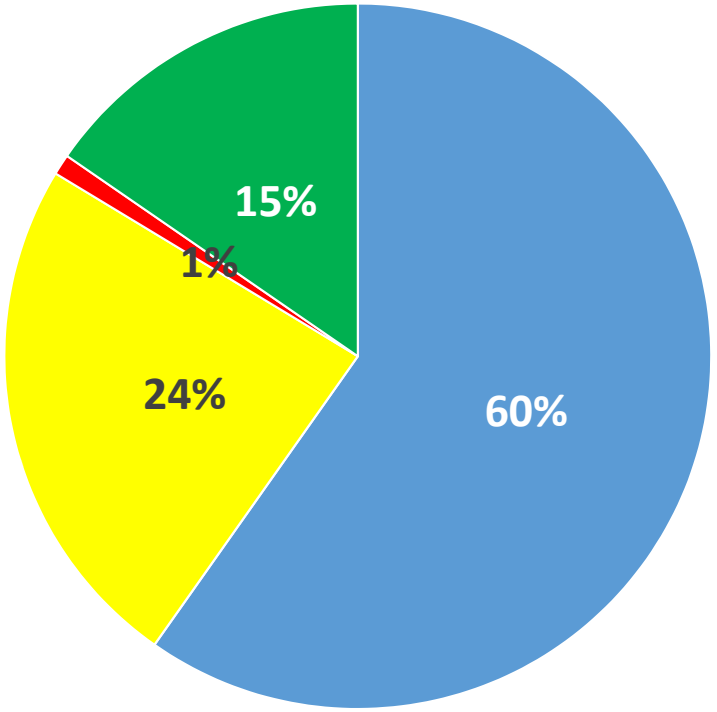
Chesapeake Bay Watershed Sediment Loads



1985

Where did the Sediment reductions come from?

Agriculture	86%
Urban Runoff	7%
Wastewater	4%
Forest	2%



2015

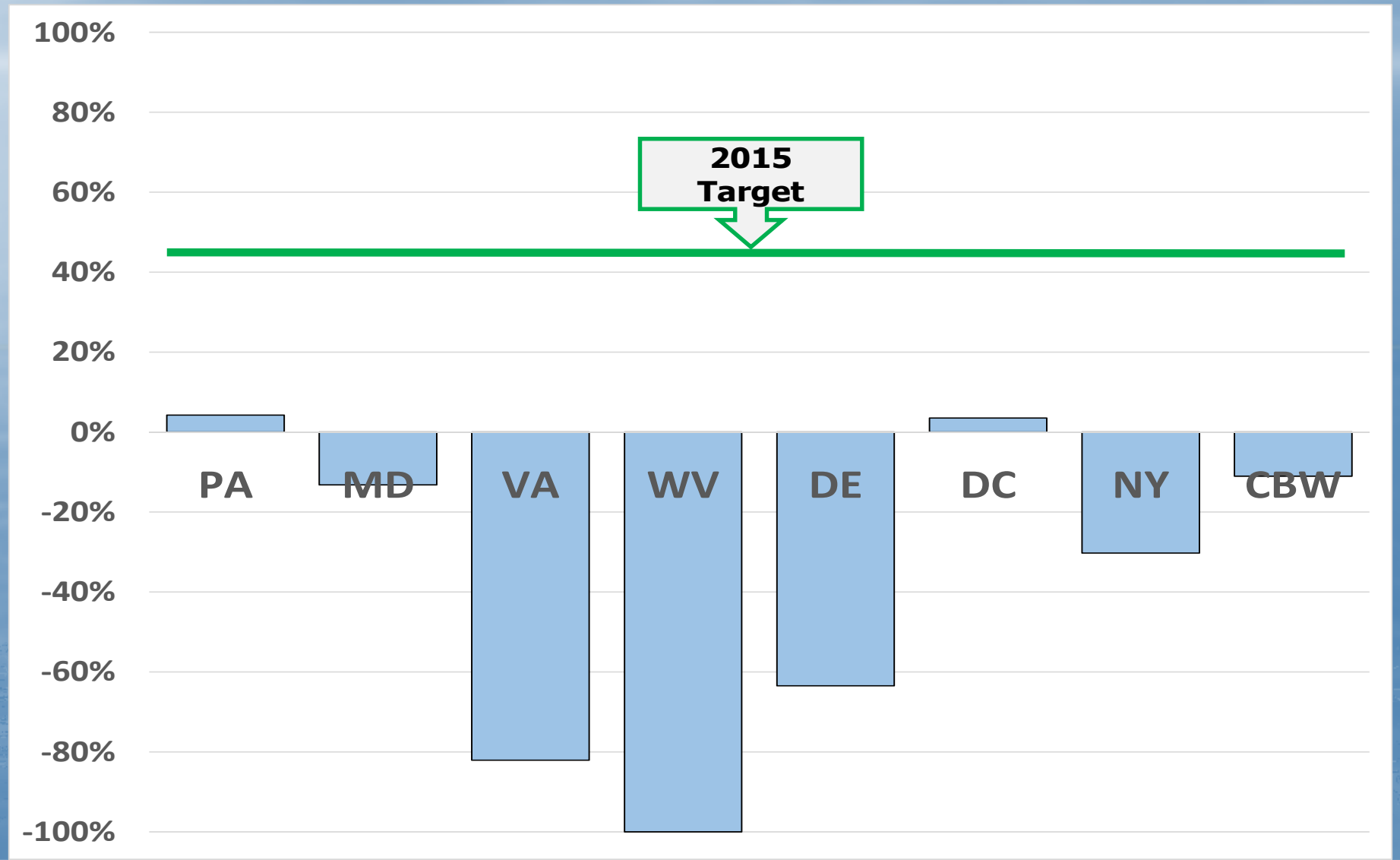
PHASE II WIP COMMITMENTS: LOAD REDUCTIONS FROM 2009 TO 2025

	% Reduction in Statewide Loads			% Reduction in Urban Loads			% Total Load Reductions Attributable to Urban Sector		
	N	P	TSS	N	P	TSS	N	P	TSS
Delaware	26%	31%	27%	13%	12%	5%	4%	2%	5%
D.C.	19%	-68%	5%	13%	22%	16%	5%	N.A.	255%
Maryland	21%	20%	16%	24%	28%	29%	21%	30%	66%
New York	13%	30%	25%	8%	20%	10%	7%	9%	12%
Pennsylvania	30%	29%	28%	41%	45%	50%	20%	24%	39%
Virginia	18%	25%	24%	13%	21%	30%	10%	14%	23%
West Virginia	8%	31%	32%	3%	44%	50%	6%	18%	37%

Negative values indicate increases in loads from 2009 to Phase II WIP planning targets, typically due to increases in wastewater treatment flow up to design capacity.

Percent of Urban Goal Achieved for Nitrogen

(2015 target = 45% of 2009-2025 load reduction)



Percent of Urban Goal Achieved for Phosphorus

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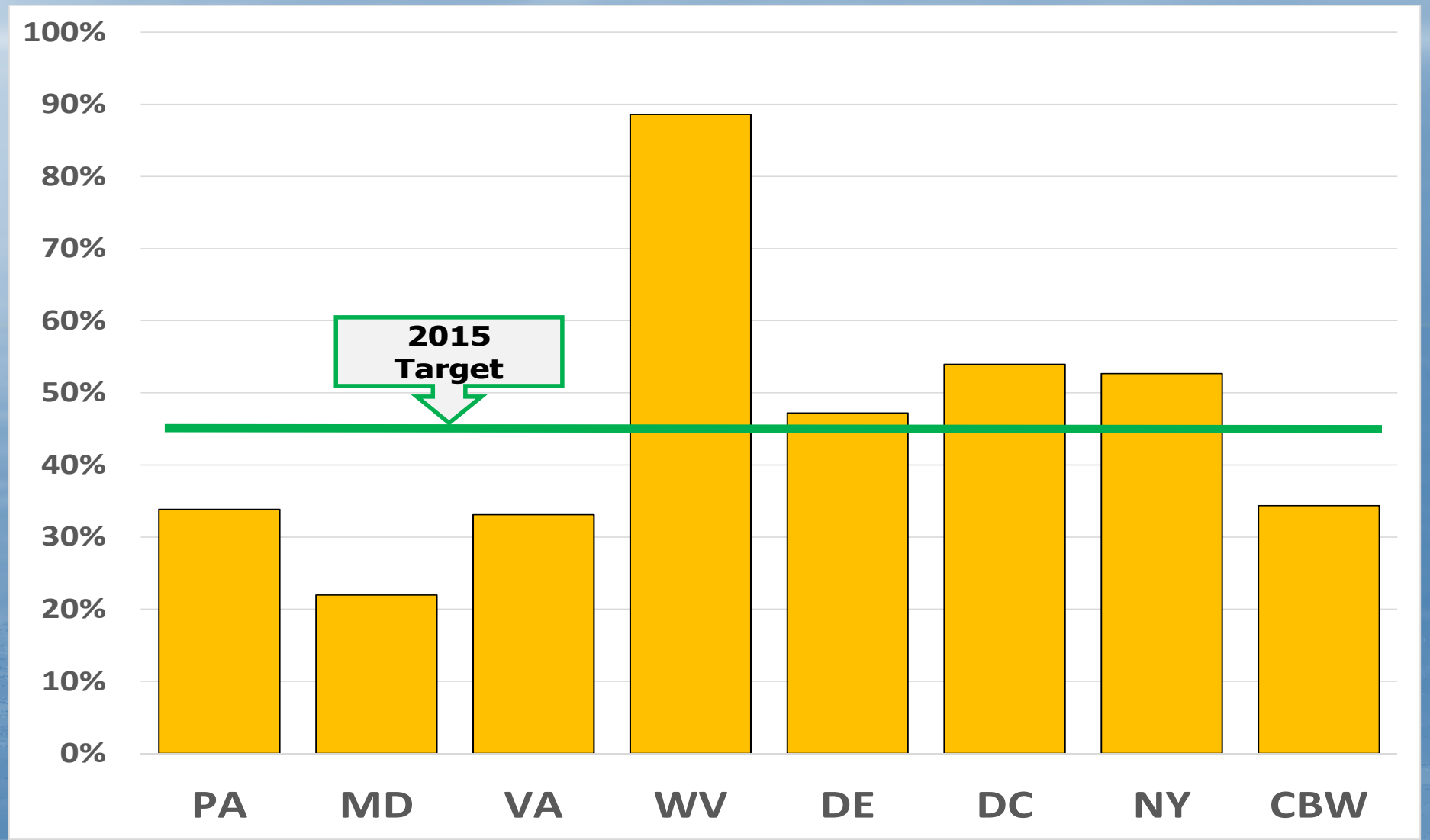

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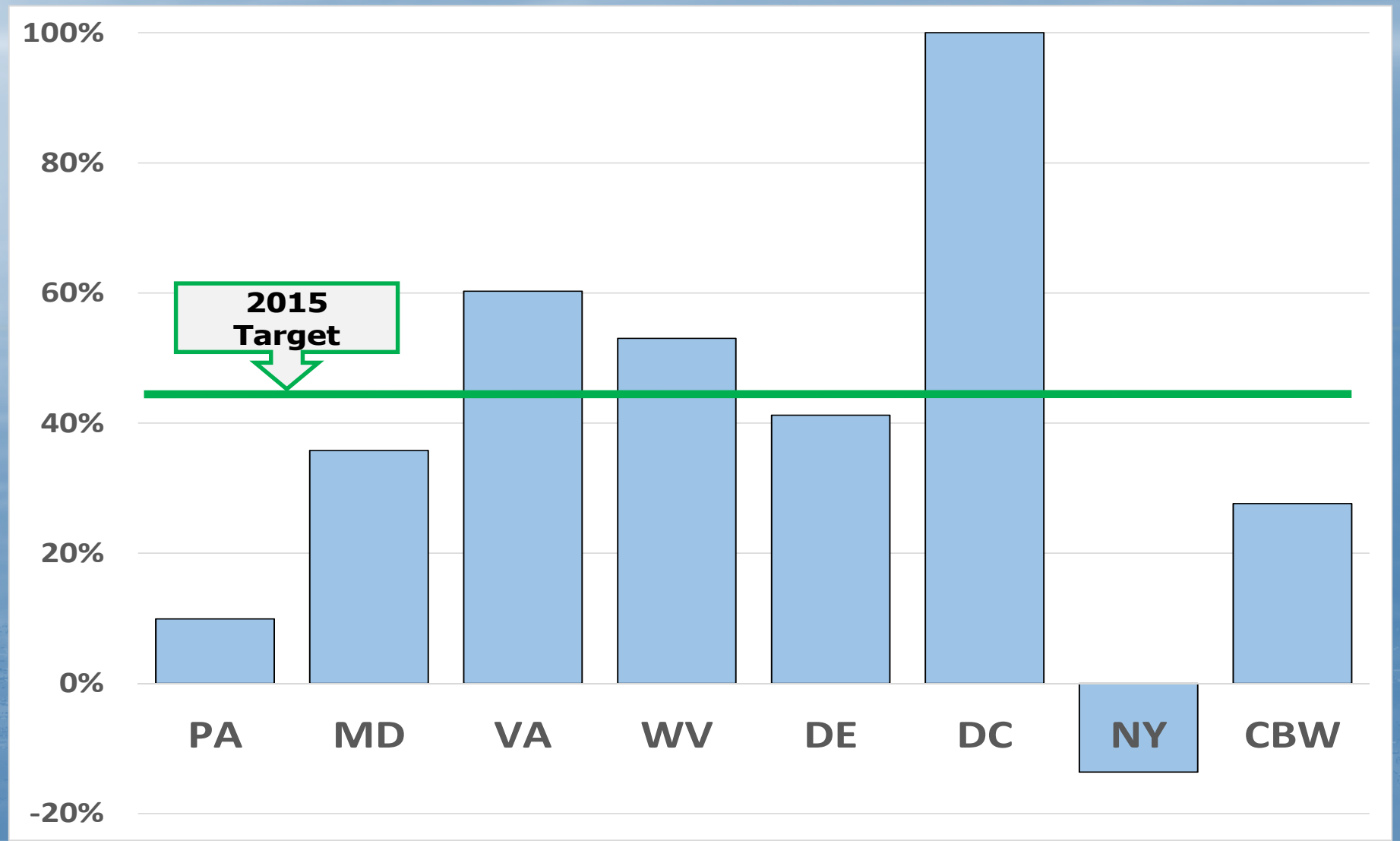

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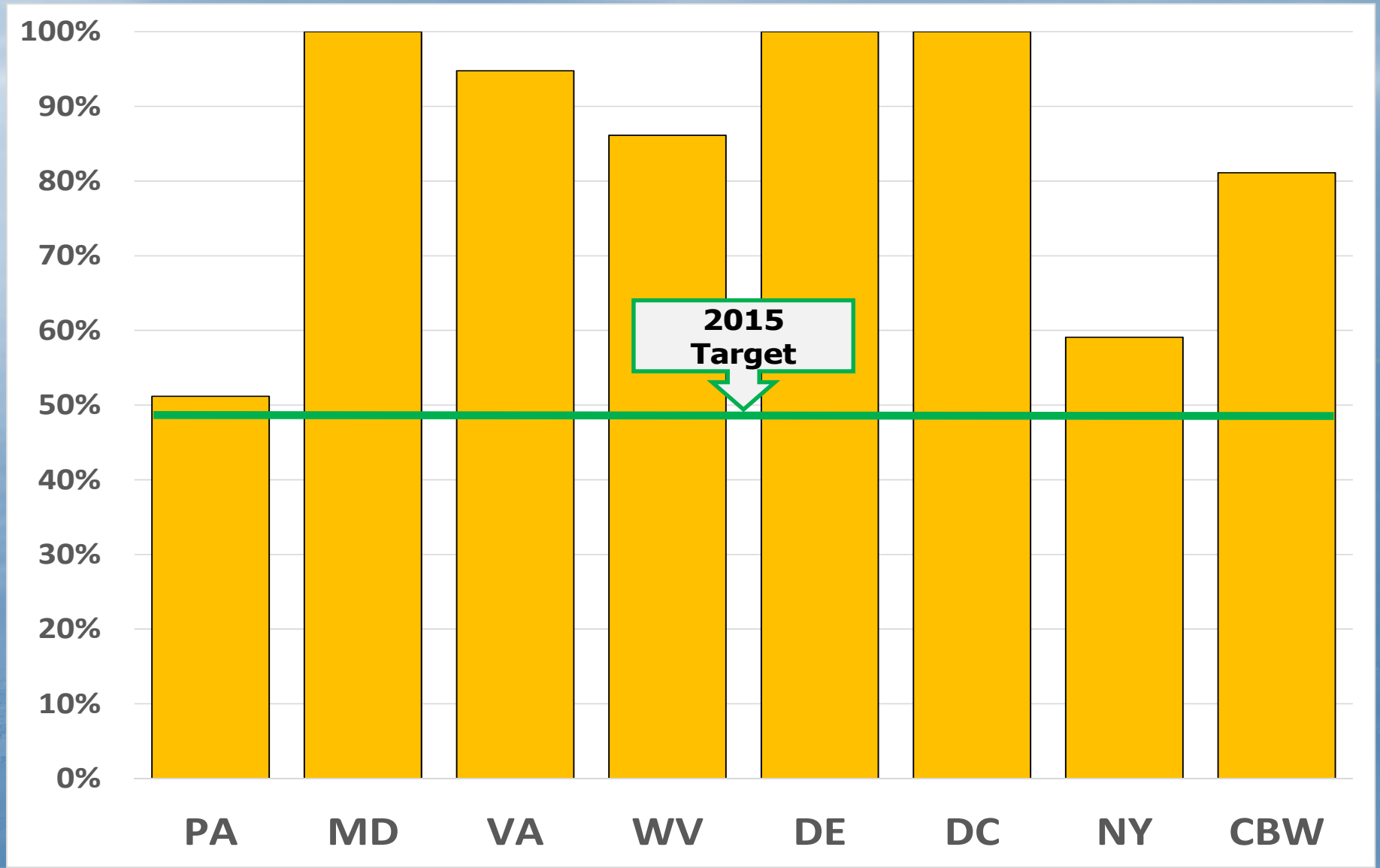
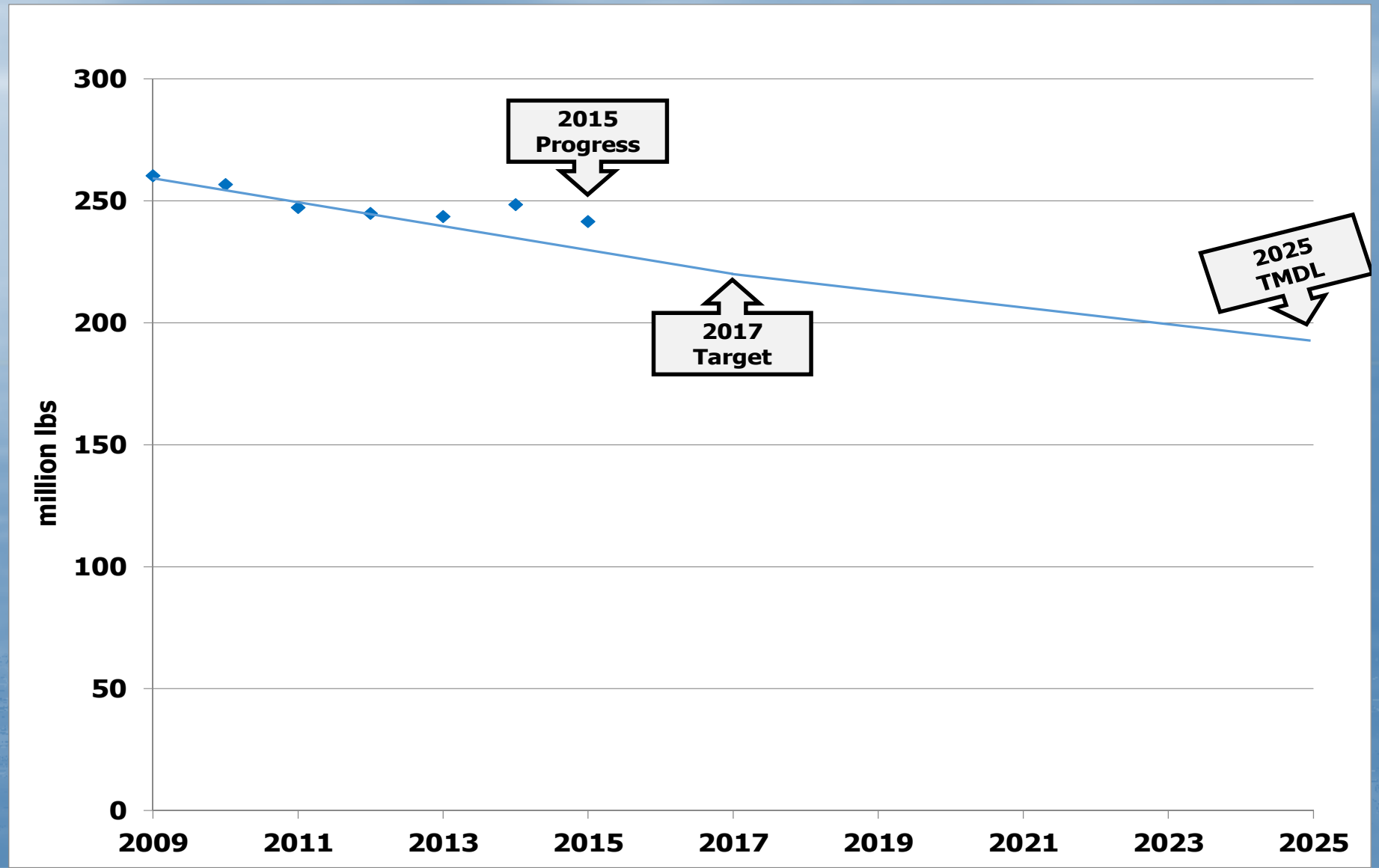


Chesapeake Bay Watershed Nitrogen Loads and Targets



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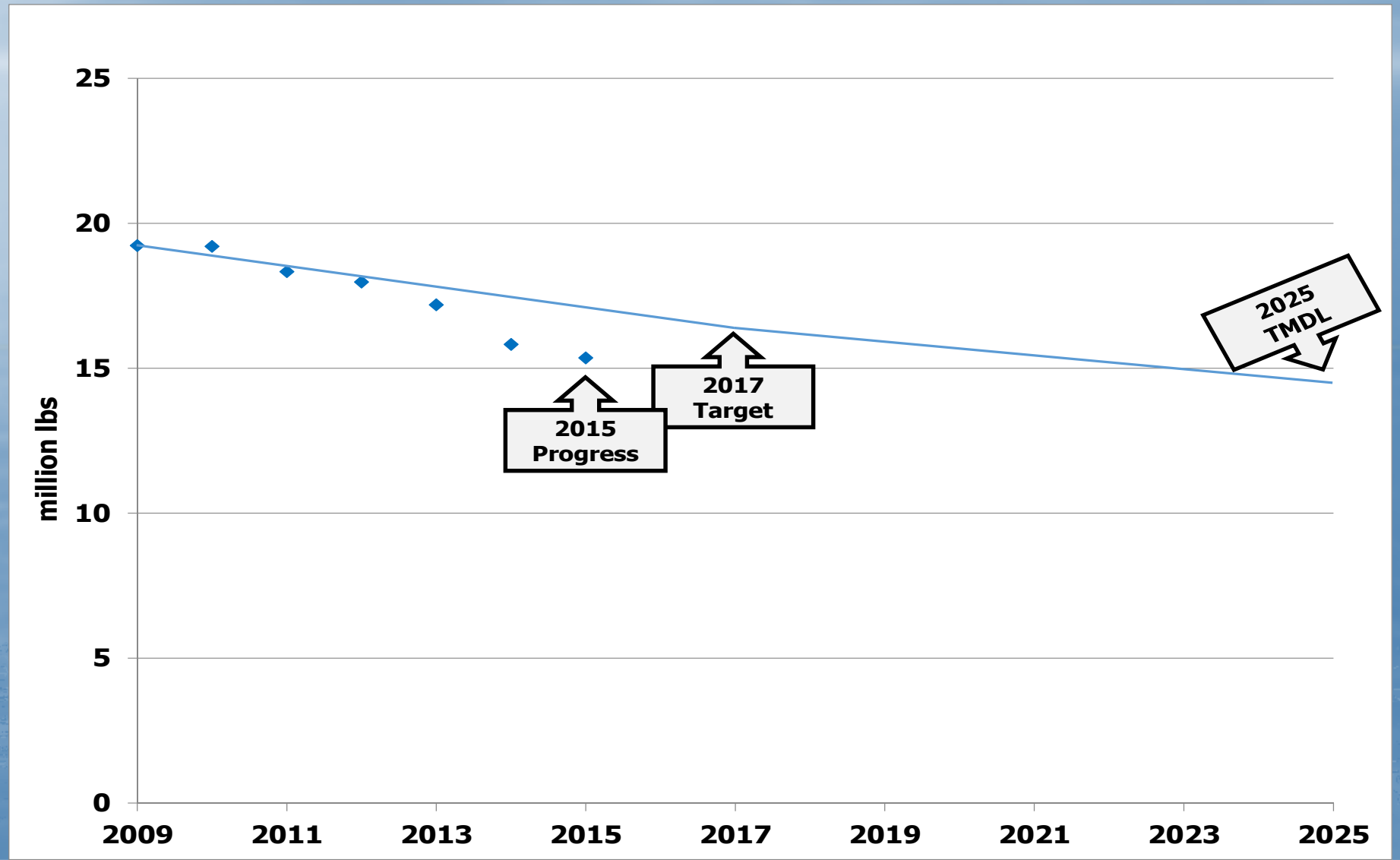
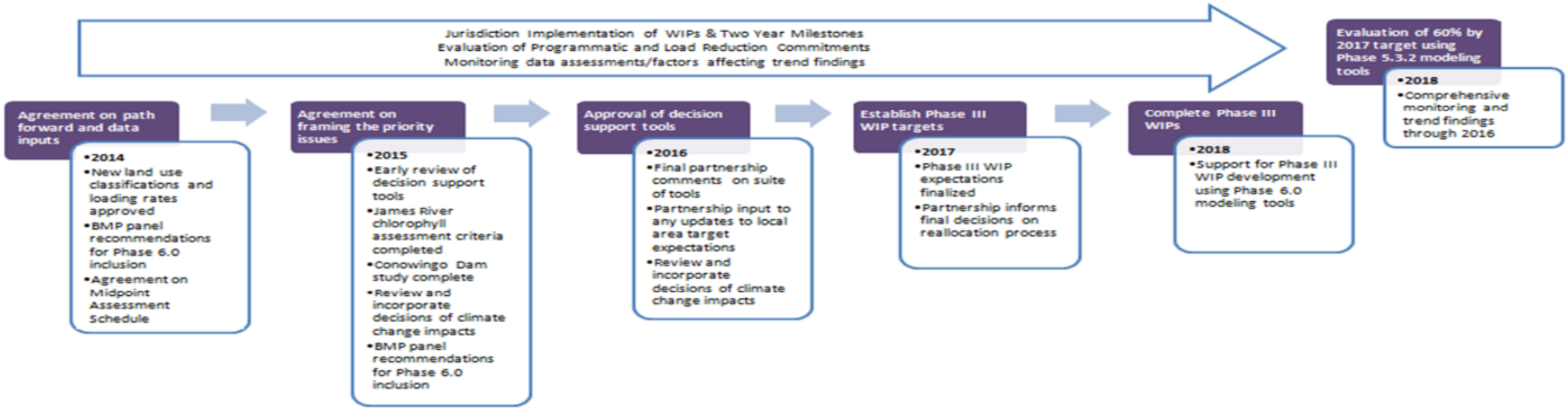


2014-2015 EPA OVERSIGHT STATUS

	Agriculture:	Urban/Suburban:	Wastewater:	Trading/Offsets:
DE	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight
DC	Not Applicable	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight
MD	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight
NY	Ongoing Oversight	Ongoing Oversight	Enhanced Oversight	Ongoing Oversight
PA	Backstop Actions Level	Backstop Actions Level	Ongoing Oversight	Enhanced Oversight
VA	Ongoing Oversight	Enhanced Oversight	Ongoing Oversight	Ongoing Oversight
WV	Enhanced Oversight	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight

Midpoint Assessment Timeline



2017 MIDPOINT ASSESSMENT

- Phase 6 Land Use/Land Cover
- Climate Change
- Local Area Targets
- Phase 6 Model Update
- Conowingo Dam & James River Chlorophyll-a
- 2025 Forecasted Conditions

2017 MIDPOINT ASSESSMENT

- Lag Times and P Saturated Soils
- Water Quality Monitoring Trends
- BMP Expert Panels
- BMP Verification
- BayFAST
- Multiple Benefits

ENVIRONMENTAL FINANCE CENTER

THANK YOU