



Numeric Progress for the Urban Sector Mid-Point

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Urban Stormwater Workgroup Meeting
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How do we measure progress?

- 1) Trends from monitoring data throughout the estuary
- 2) Trends in monitored loads from the non-tidal water network
- 3) Reported programmatic achievements
- 4) Reported BMP implementation levels
- 5) Modeled loads

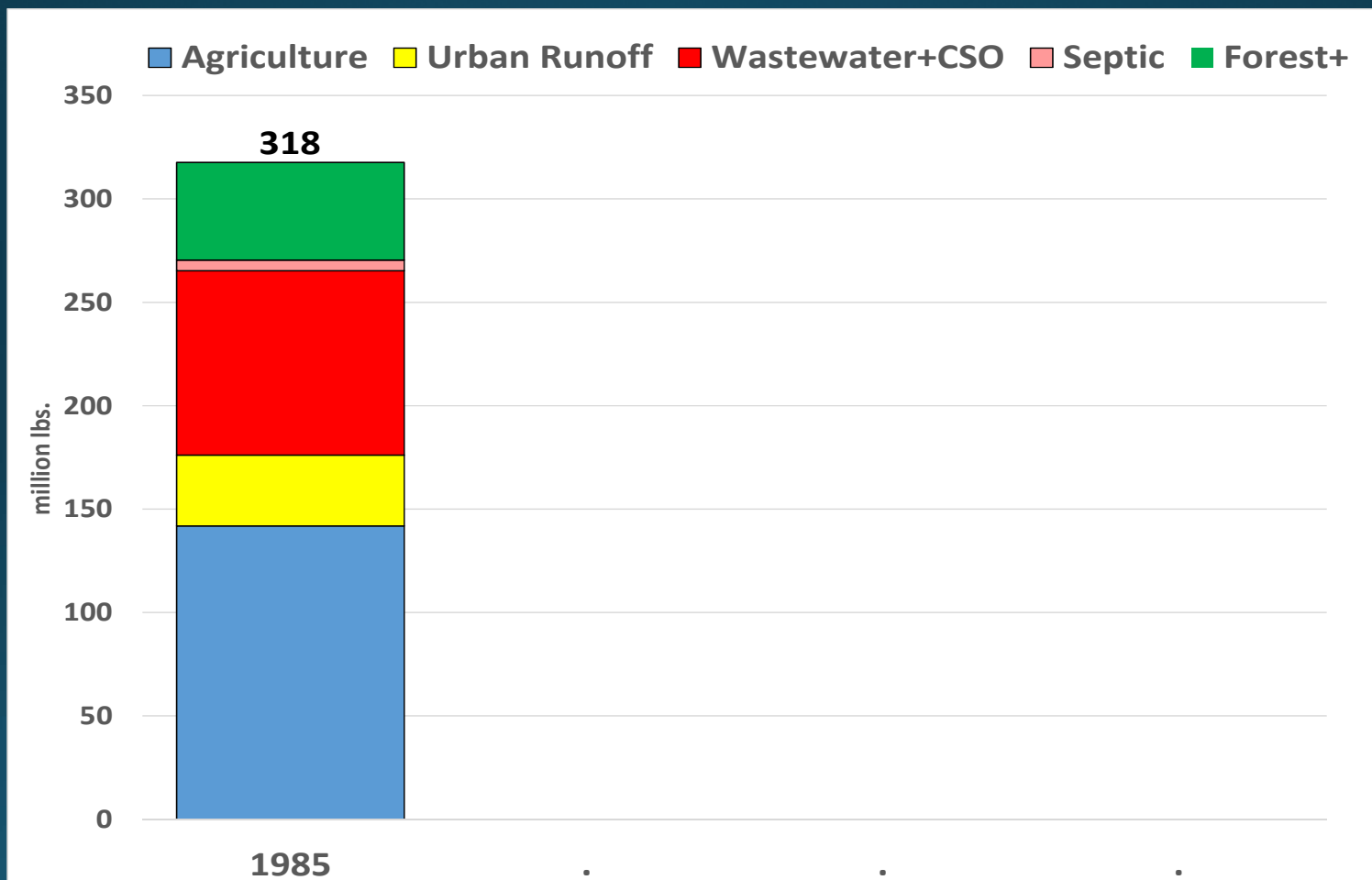


Progress Toward TMDL Goals

- Did jurisdictions make or miss the mid-point 60% goal and by how much, why or why not?
 - 60% goal is 60% of the difference between 2009 and 2025 loads for nitrogen, phosphorus and sediment

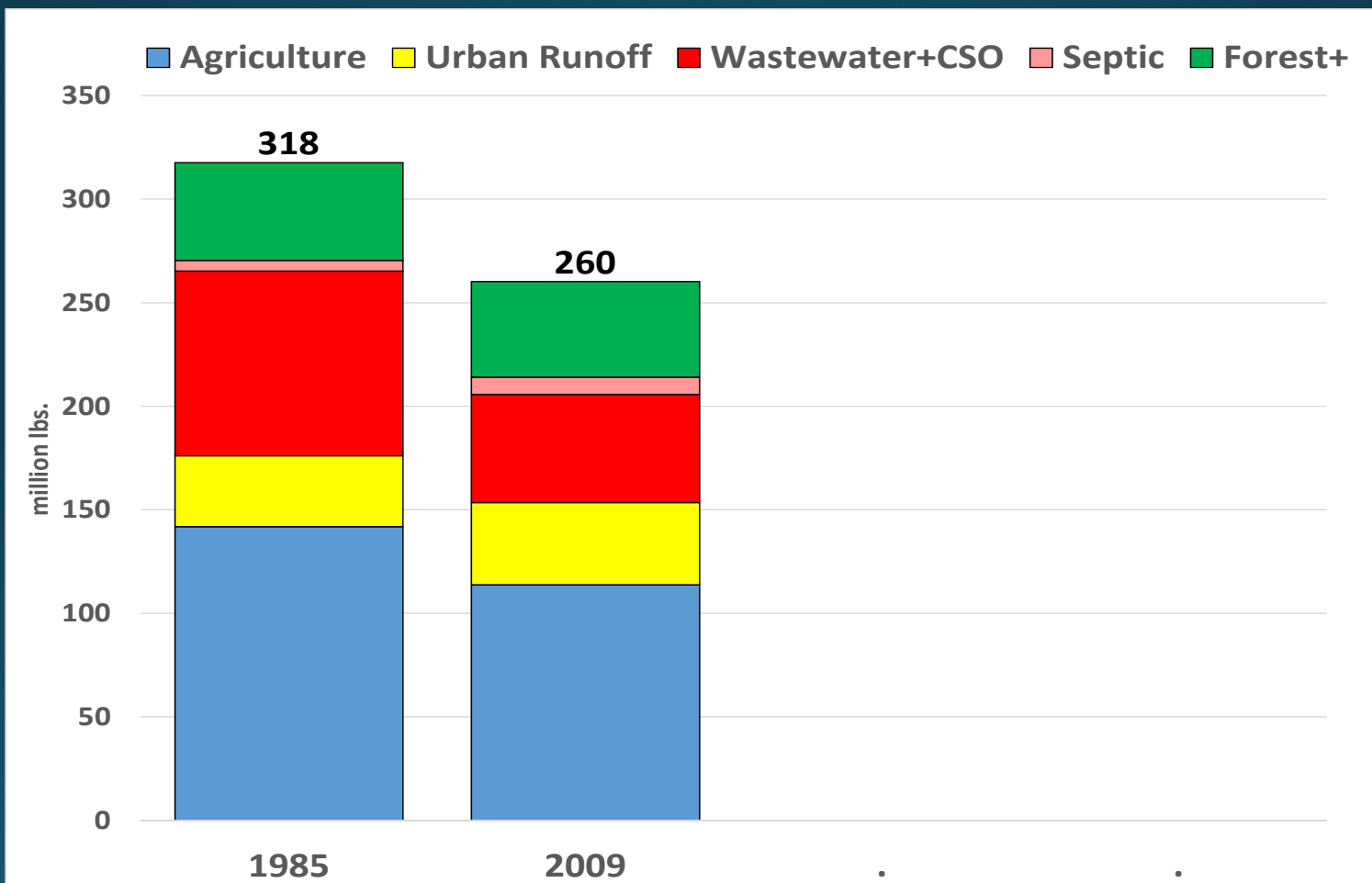


Chesapeake Bay Watershed Nitrogen Loads



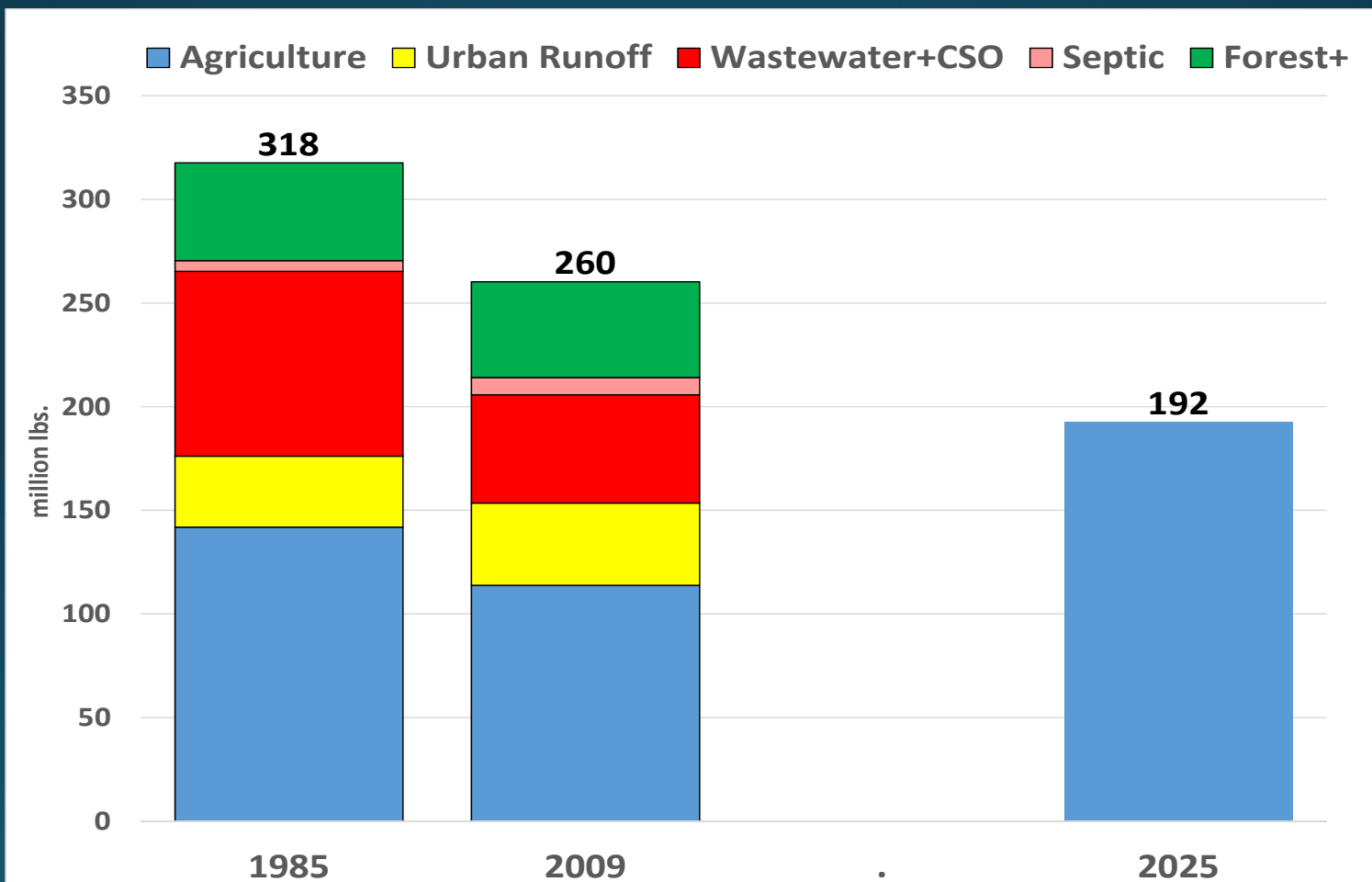


Chesapeake Bay Watershed Nitrogen Loads



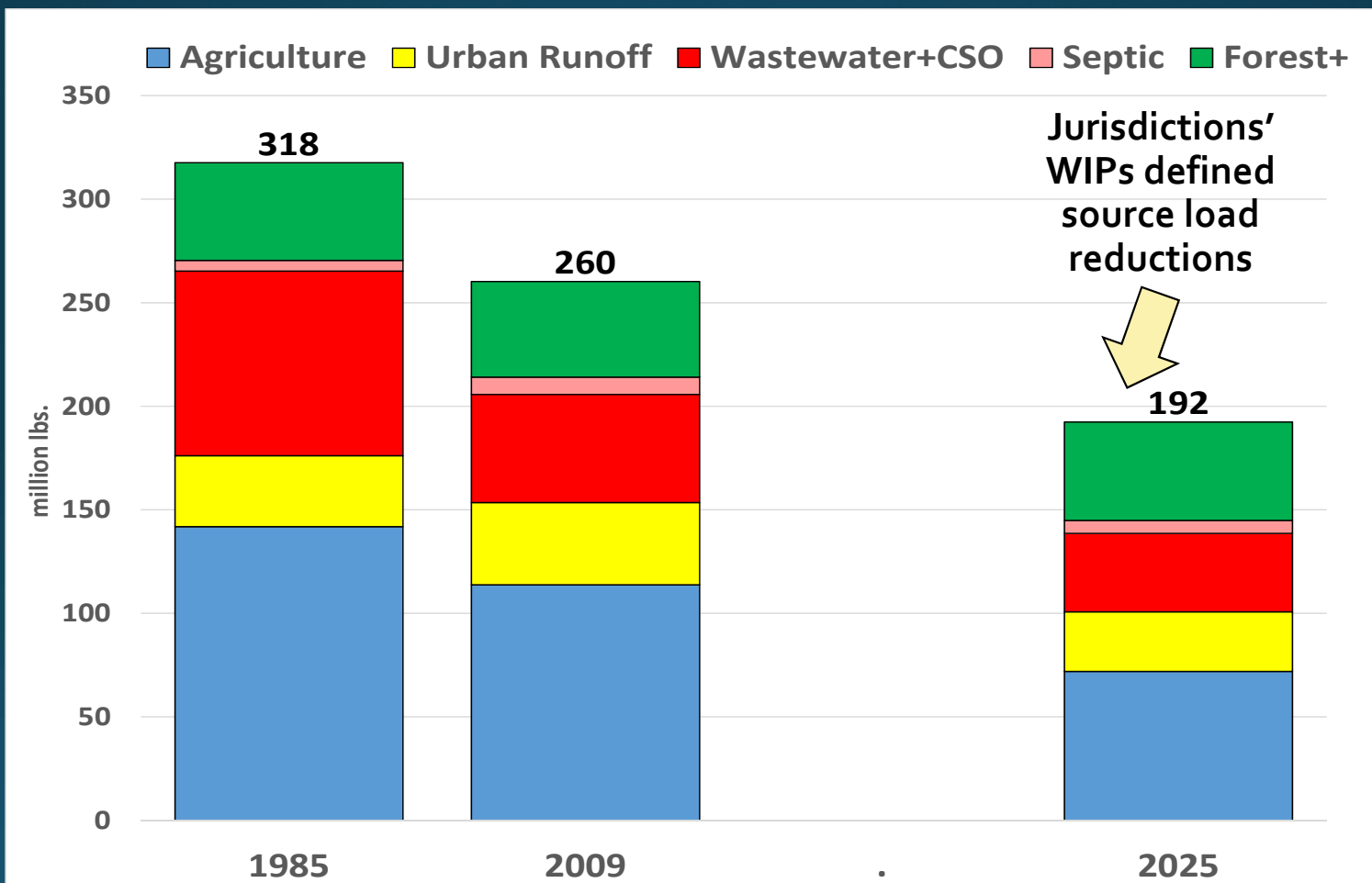


Chesapeake Bay Watershed Nitrogen Loads



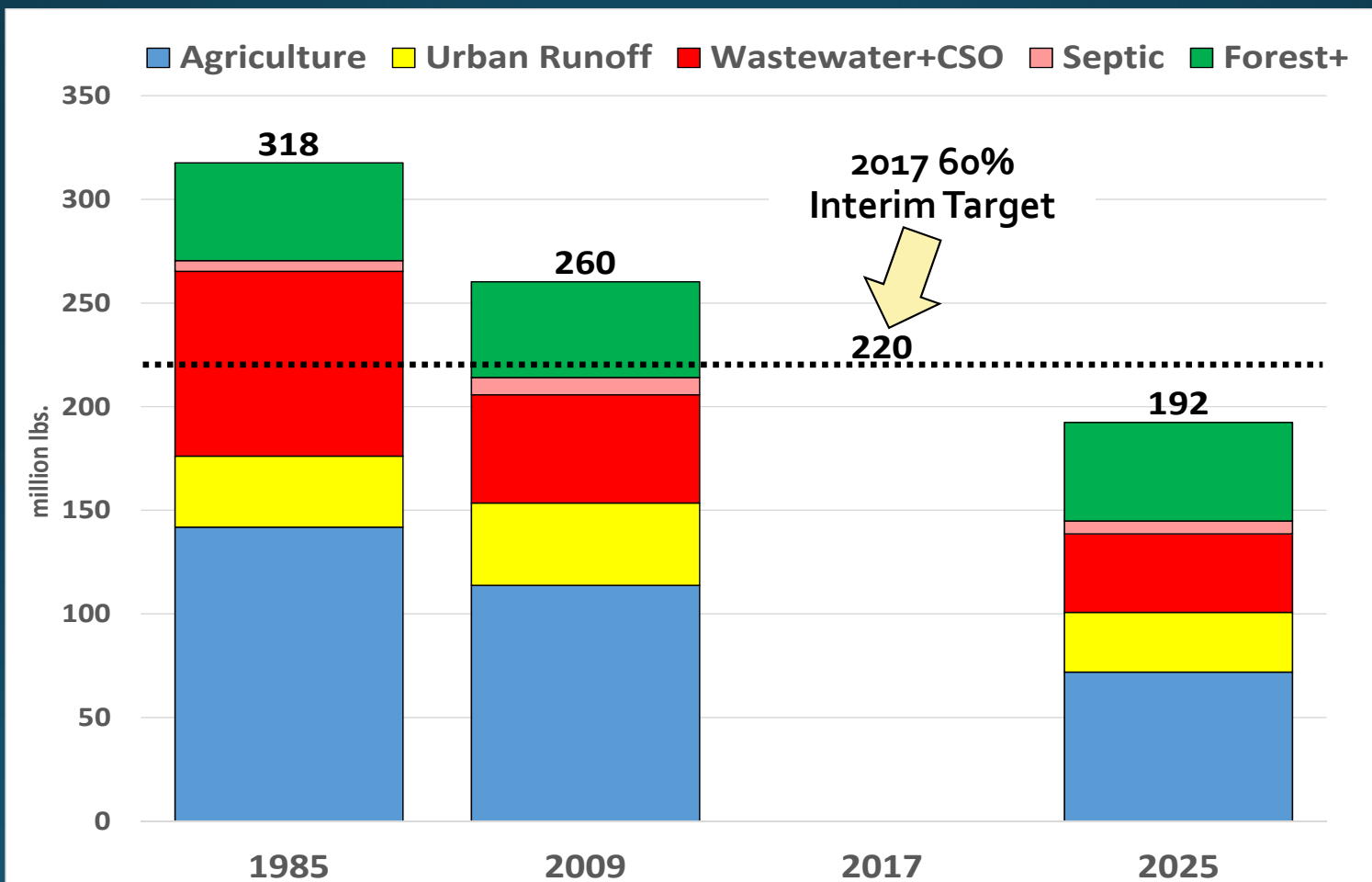


Chesapeake Bay Watershed Nitrogen Loads



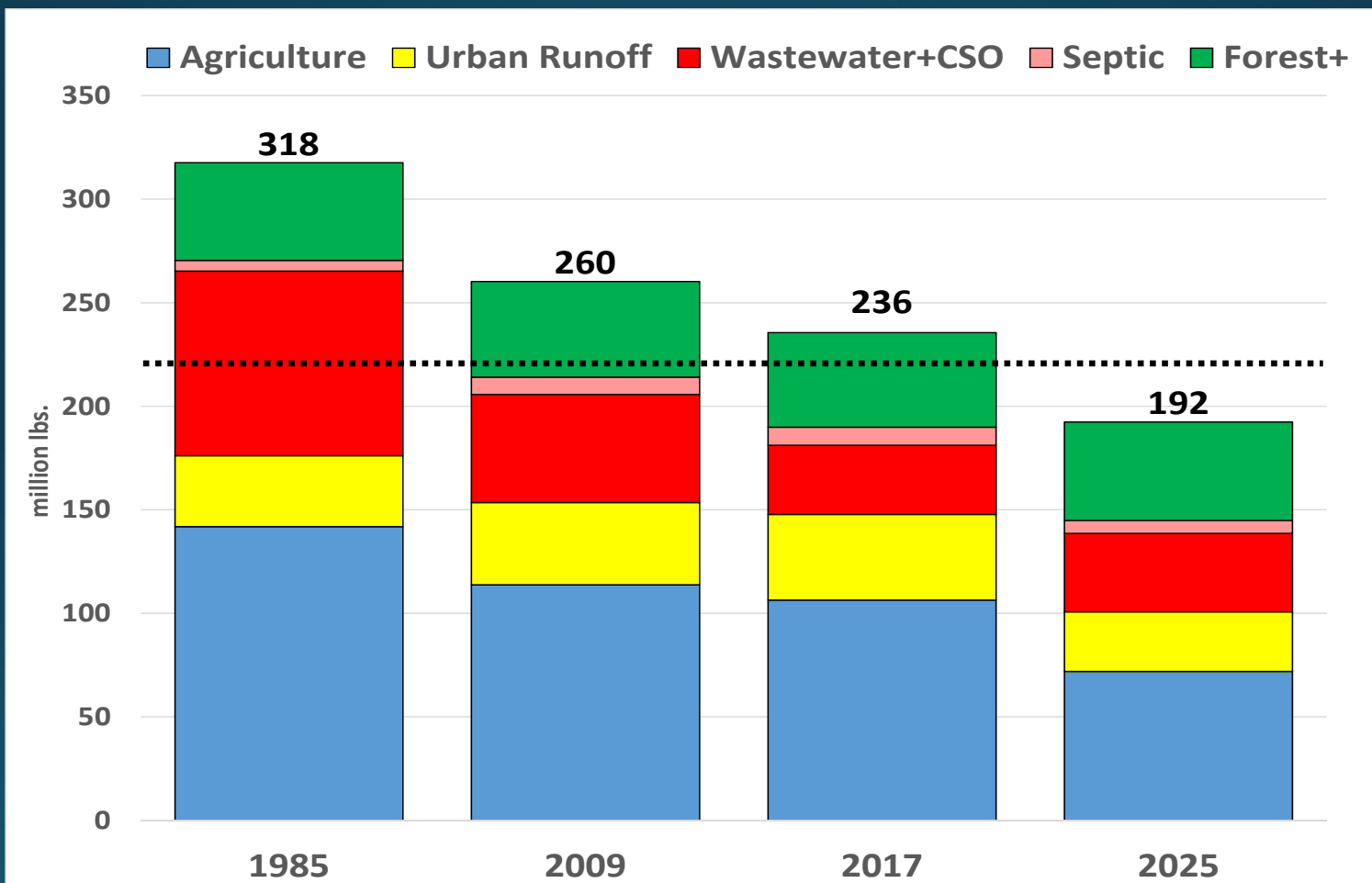


Chesapeake Bay Watershed Nitrogen Loads





Chesapeake Bay Watershed Nitrogen Loads





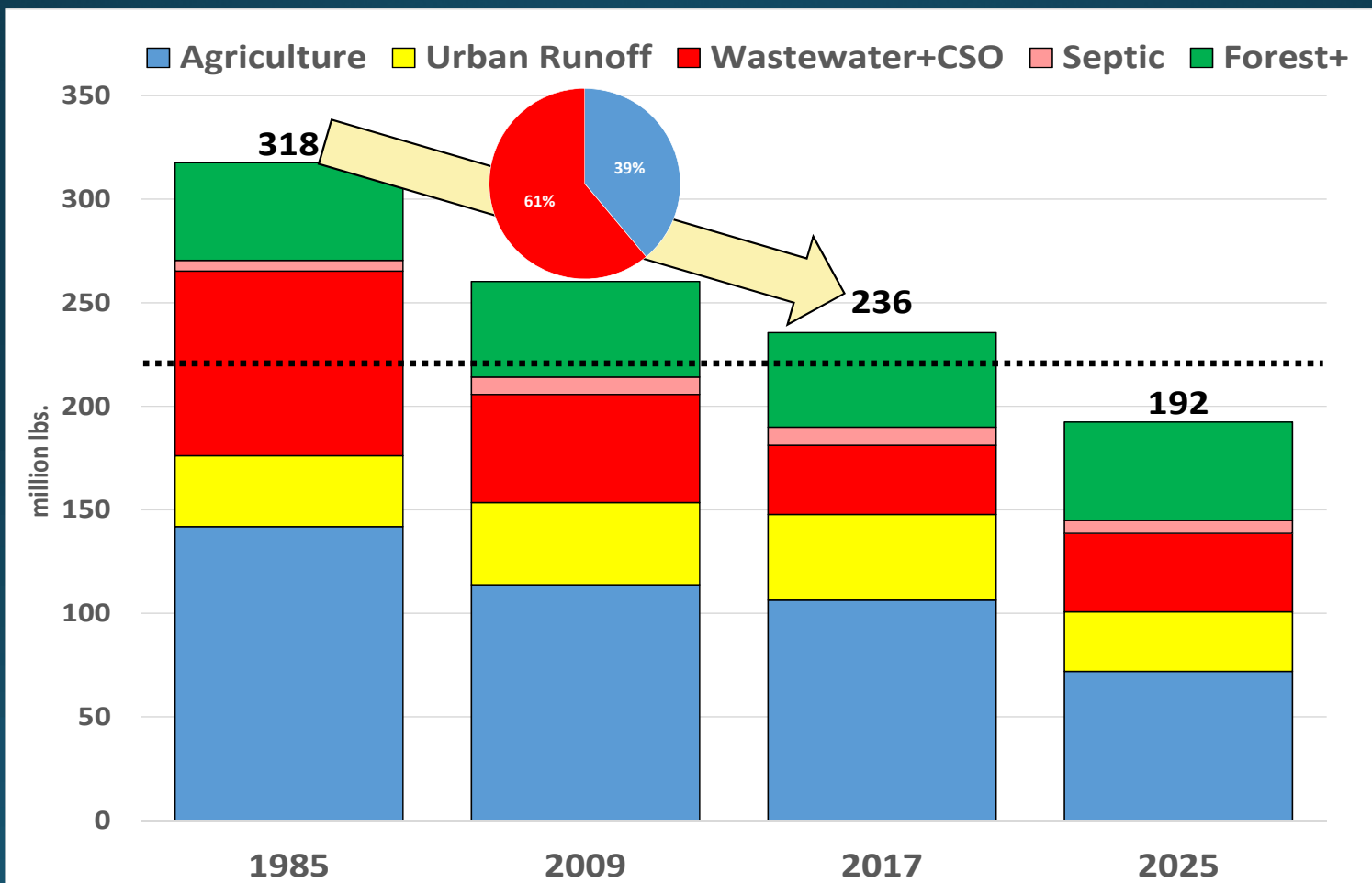
2017 Progress Load Review Chesapeake Bay Watershed

For 2017, the goal is to achieve 60% of the planned 2009-2025 load reductions

- 2017 Nitrogen is at 36% of this goal
 - The only source meeting the 60% target is wastewater
- 2017 Phosphorus is at 86% = better than the target
 - Agriculture and wastewater have achieved mid-point goals
- 2017 Sediment is at 66% of its goal

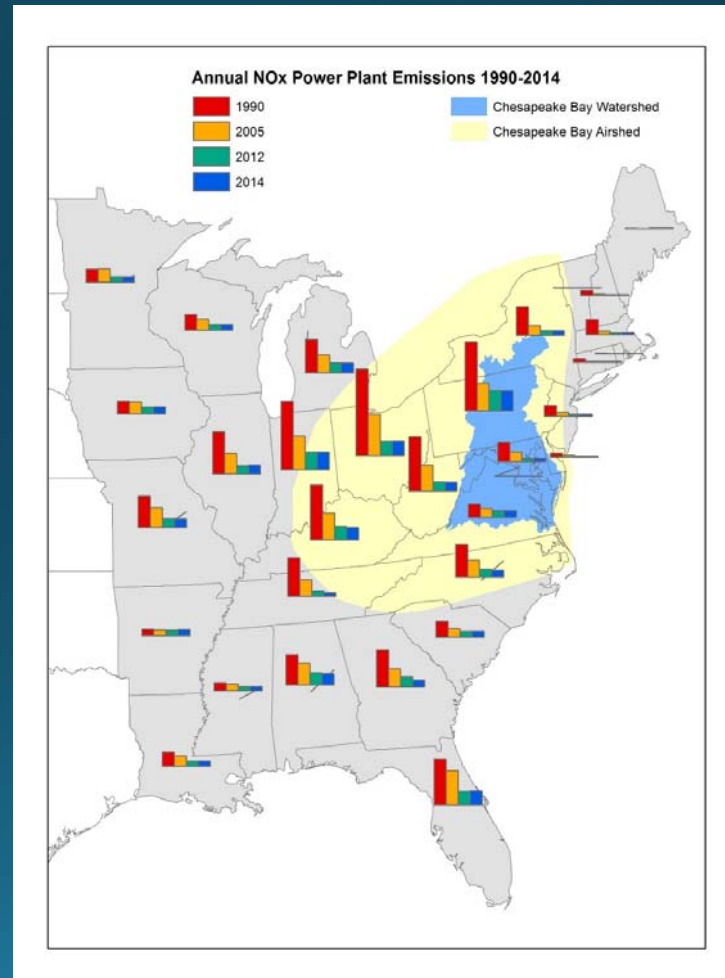
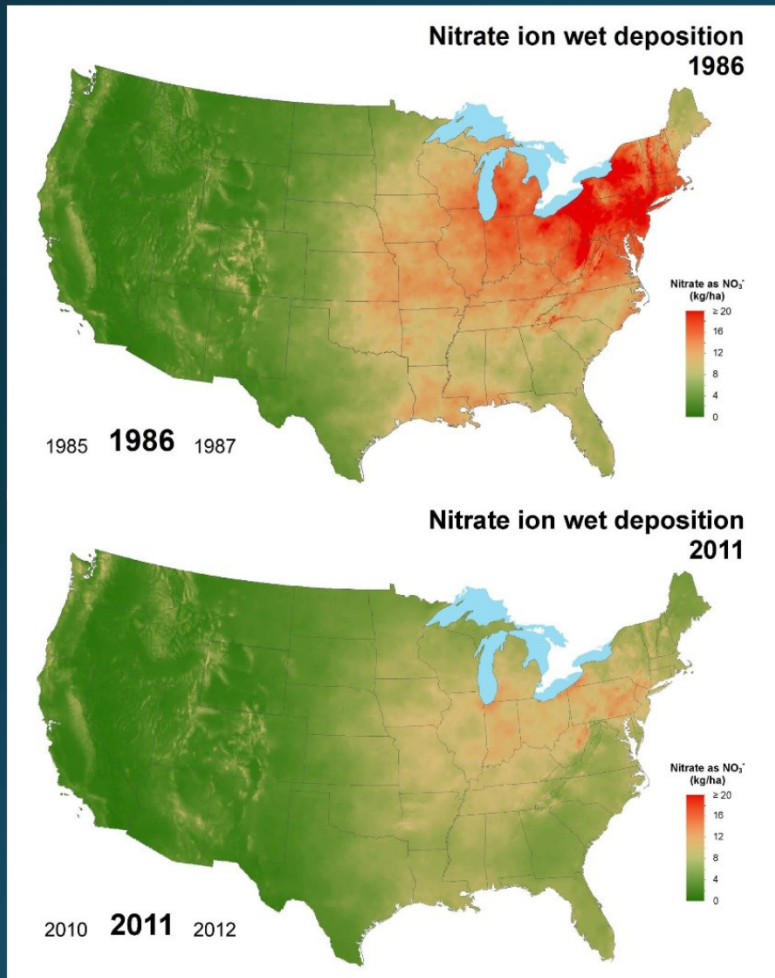


Where did the load reductions come from?





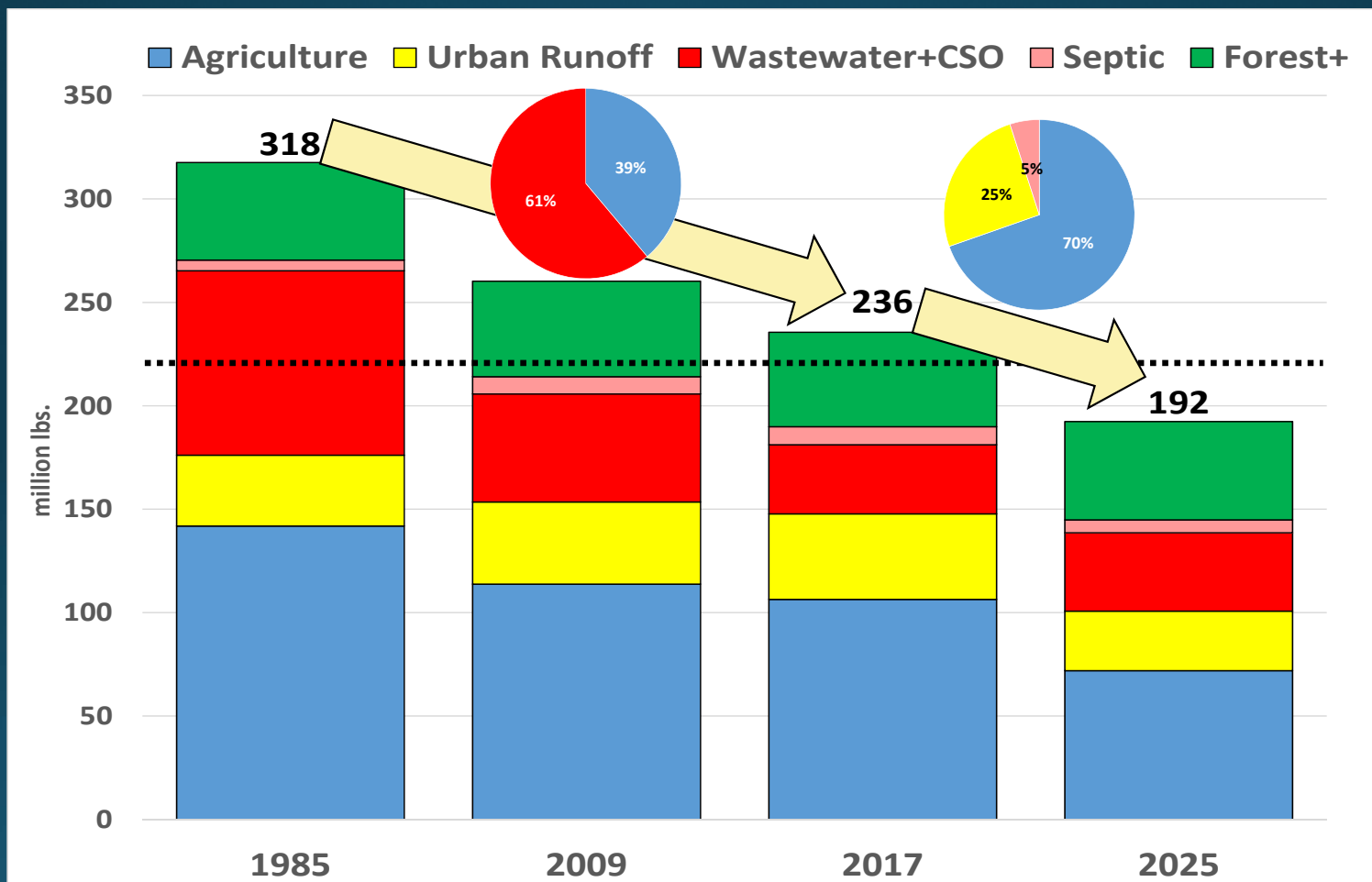
Where did the load reductions come from?



Clean Act Air Implementation by the states has resulted in a 35 million pound reduction of Nitrogen loads to the Chesapeake Bay from 1985 to 2015

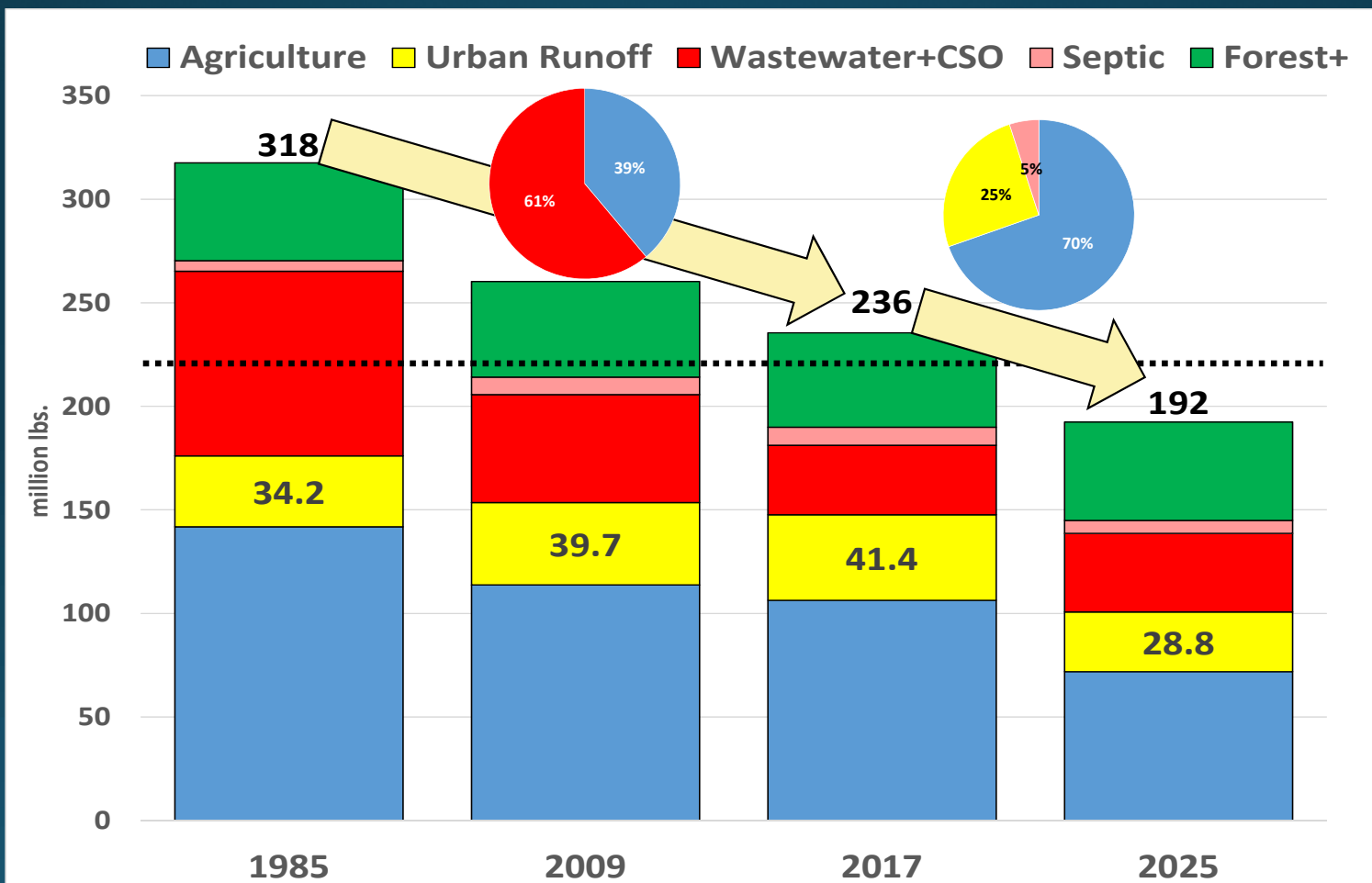


Where will future reductions come from?





Where will future reductions come from?





2017 Progress
Chesapeake Bay Watershed
Composite
3/15/18

CBW Percent of Goal Achieved by Source

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	7.46	41.86	18%
Urban Runoff	-1.66	10.90	0%
Wastewater+CSO	18.72	14.32	100%
Septic	-0.32	2.13	0%
Forest+			
AllSources	24.72	67.86	36%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	2.163	3.118	69%
Urban Runoff	0.261	0.920	28%
Wastewater+CSO	1.668	1.023	100%
Forest+			
AllSources	4.120	4.772	86%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	716	1,443	50%
Urban Runoff	105	692	15%
Wastewater+CSO	32	-319	100%
Forest+			
AllSources	886	1,335	66%

- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($< 55\%$ of 2009-2025 reduction)

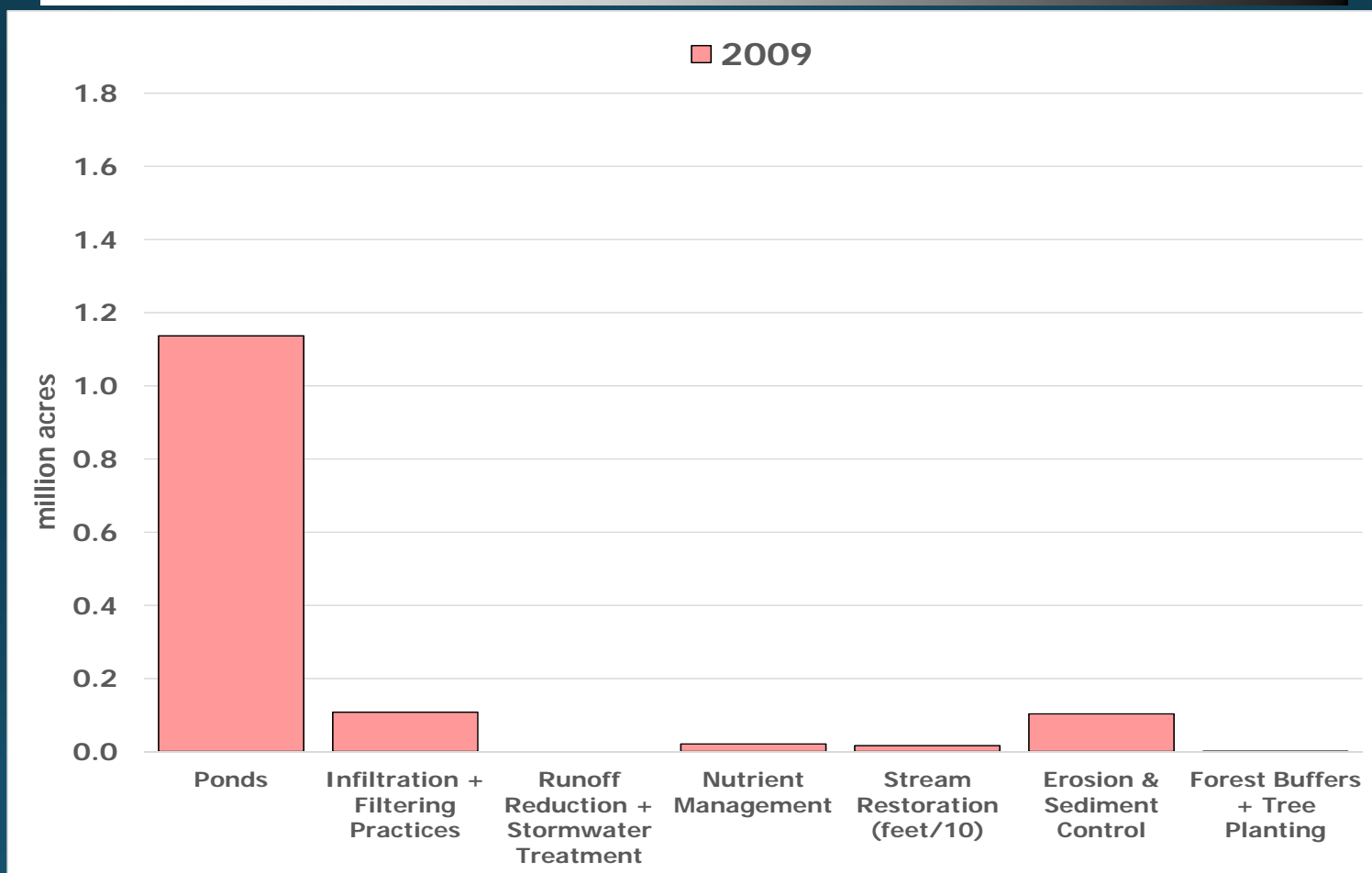
CBW Loads-Goals

	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
	TOTN	TOTN	TOTN	TOTN	TOTN	TOTN
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	113.80	108.02	106.34	88.68	97.65	71.93
Urban Runoff	39.70	41.44	41.36	33.16	41.17	28.80
Wastewater+CSO	52.18	36.42	33.46	43.59	36.04	37.86
Septic	8.42	8.71	8.73	7.14	8.57	6.28
Forest+	46.16	45.61	45.63	46.97	46.27	47.52
AllSources	260.25	240.19	235.53	219.53	229.71	192.39
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
	TOTP	TOTP	TOTP	TOTP	TOTP	TOTP
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	10.546	8.404	8.383	8.675	8.021	7.428
Urban Runoff	3.010	2.771	2.749	2.458	2.670	2.090
Wastewater+CSO	3.972	2.526	2.304	3.359	2.410	2.950
Forest+	1.701	1.671	1.673	1.874	1.696	1.990
AllSources	19.229	15.372	15.109	16.366	14.796	14.457
						-0.651906289
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
	TSS	TSS	TSS	TSS	TSS	TSS
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	5,295	4,645	4,579	4,430	4,263	3,852
Urban Runoff	2,019	1,968	1,914	1,604	1,870	1,327
Wastewater+CSO	87	67	55	278	107	406
Forest+	1,274	1,239	1,241	1,563	1,264	1,755
AllSources	8,675	7,920	7,790	7,874	7,503	7,341

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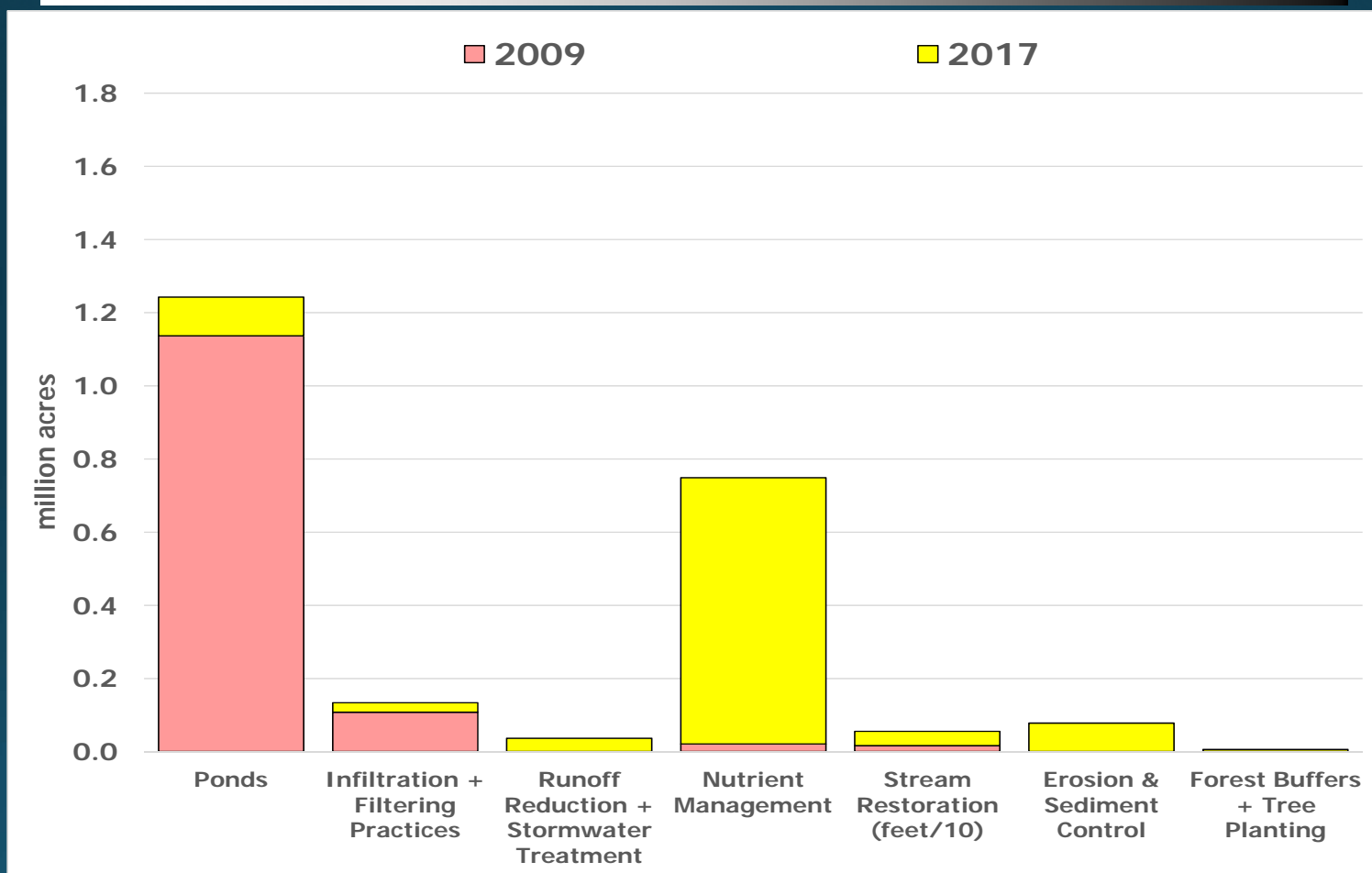


Urban BMP Implementation



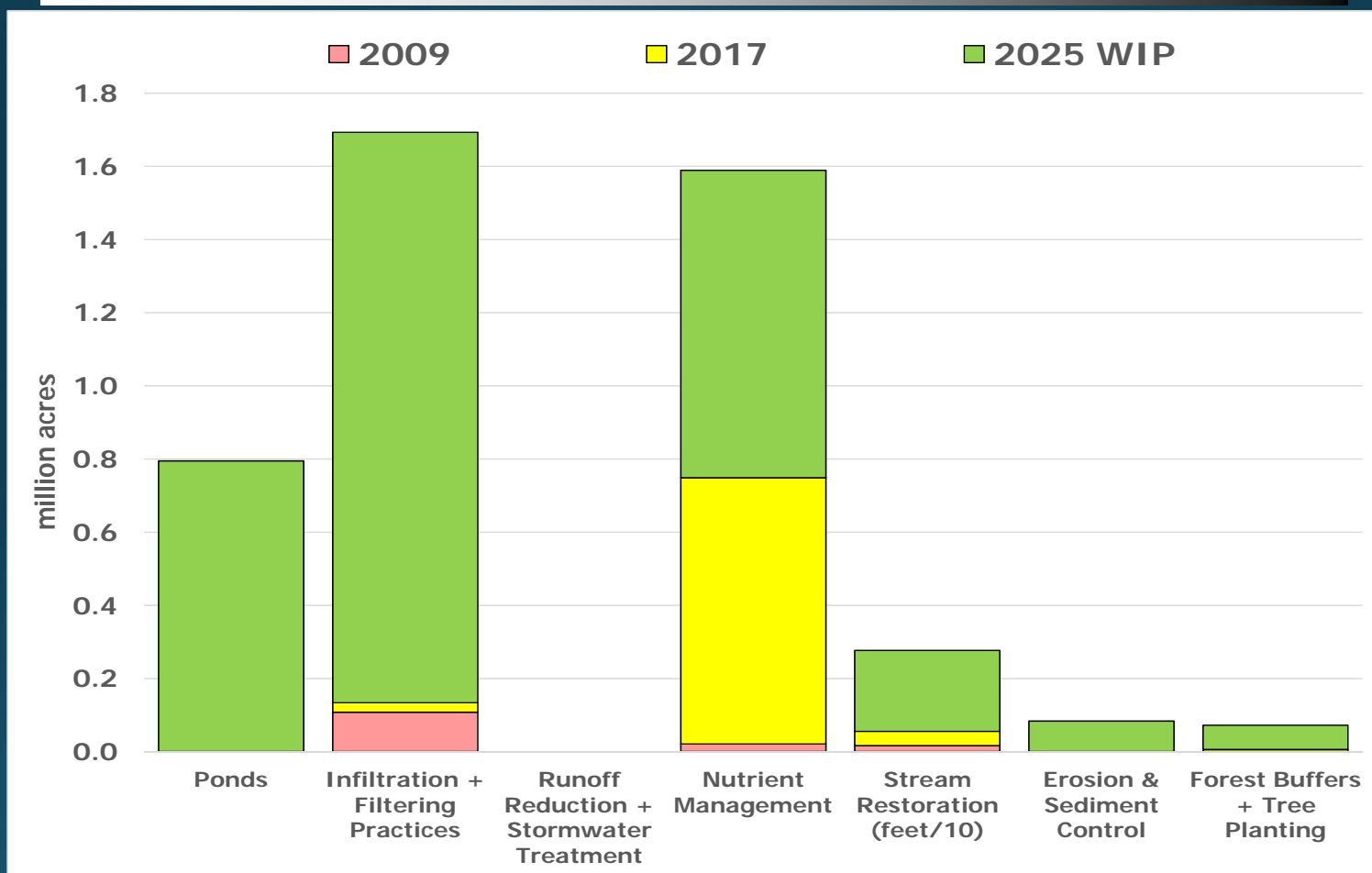


Urban BMP Implementation





Urban BMP Implementation





2017 Progress
Pennsylvania
3/15/18

PA Percent of Goal Achieved by Source

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.67	27.08	2%
Urban Runoff	-0.09	7.15	0%
Wastewater+CSO	5.19	3.22	100%
Septic	-0.24	0.59	0%
Forest+			
AllSources	5.61	37.64	15%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.230	0.900	26%
Urban Runoff	0.077	0.343	23%
Wastewater+CSO	0.471	0.174	100%
Forest+			
AllSources	0.783	1.413	55%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	216	585	37%
Urban Runoff	43	282	15%
Wastewater+CSO	2	-166	100%
Forest+			
AllSources	267	699	38%



Loads meet trajectory targets (>= 60% of 2009-2025 reduction)



Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)



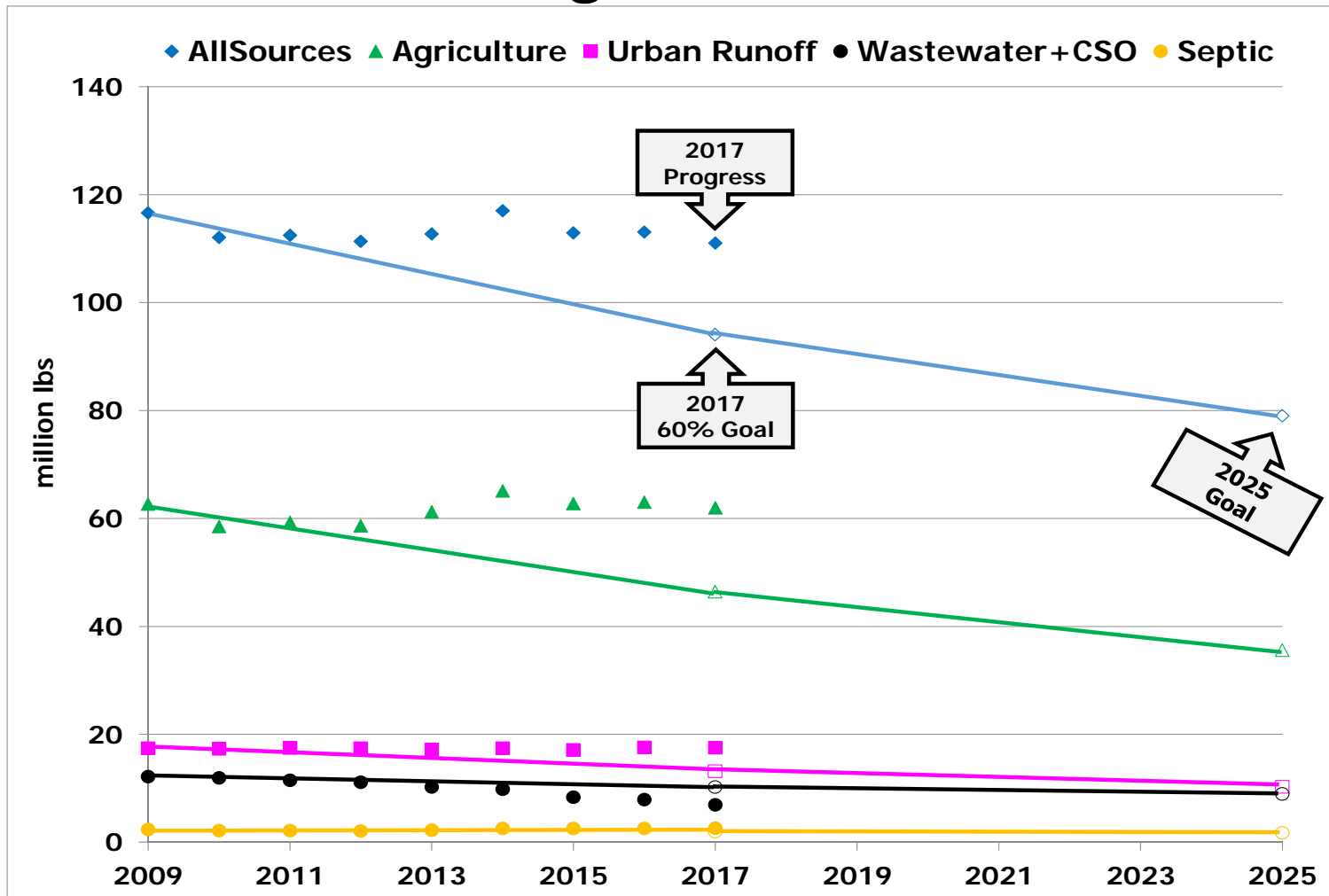
Loads don't meet trajectory targets (<55% of 2009-2025 reduction)

PA Loads-Goals

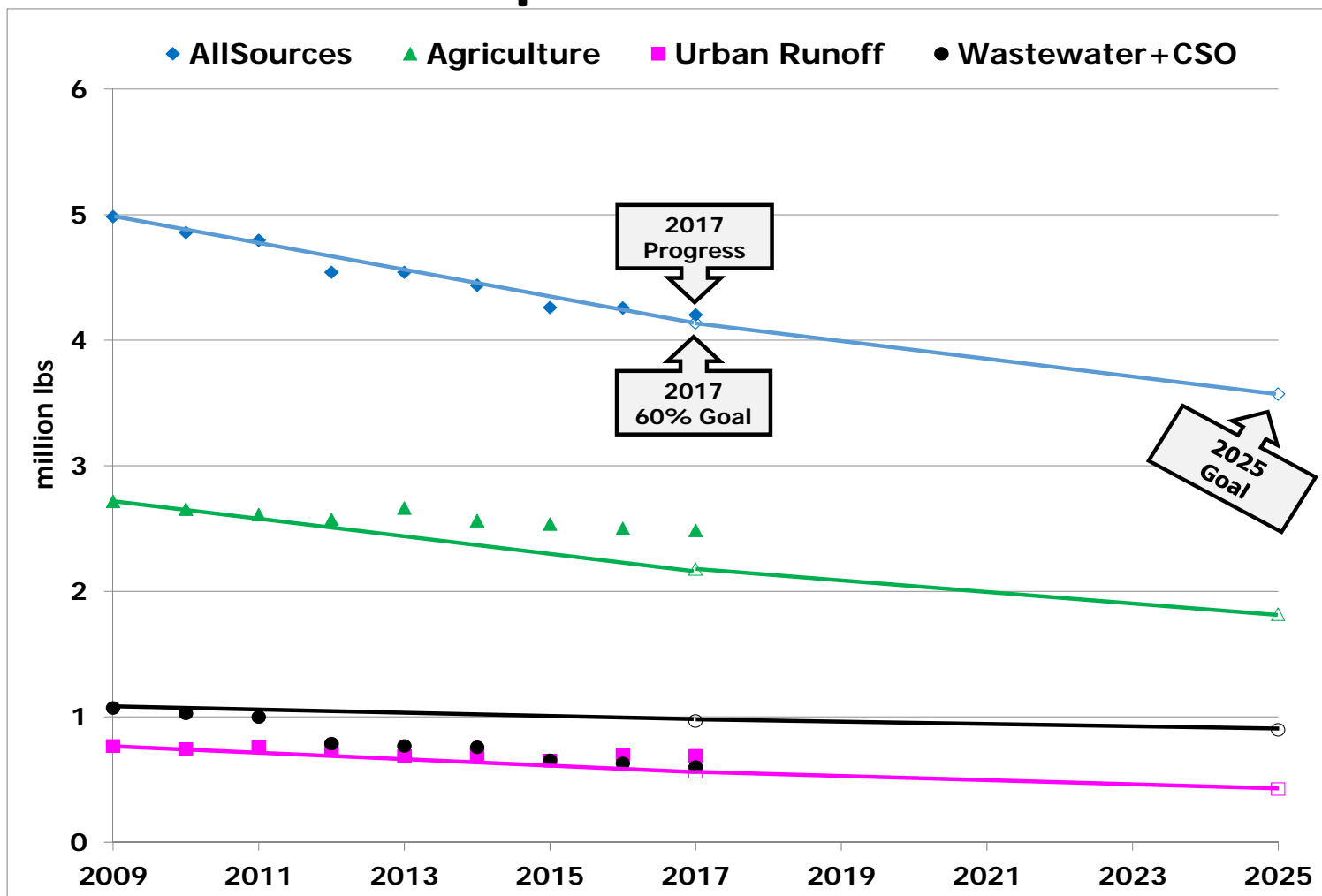
Nitrogen						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	62.66	63.01	61.99	46.41	55.67	35.58
Urban Runoff	17.41	17.58	17.50	13.12	17.41	10.26
Wastewater+CSO	12.14	7.89	6.95	10.21	8.34	8.92
Septic	2.33	2.57	2.57	1.98	2.40	1.74
Forest+	22.10	22.04	22.03	22.33	22.22	22.49
AllSources	116.64	113.08	111.03	94.05	106.04	79.00
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	2.716	2.501	2.485	2.176	2.413	1.816
Urban Runoff	0.767	0.700	0.690	0.561	0.665	0.424
Wastewater+CSO	1.071	0.630	0.600	0.966	0.653	0.897
Forest+	0.431	0.426	0.426	0.433	0.428	0.435
AllSources	4.984	4.257	4.201	4.136	4.160	3.571
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	1,677	1,504	1,460	1,326	1,293	1,092
Urban Runoff	560	530	517	391	492	278
Wastewater+CSO	21	20	20	121	25	187
Forest+	386	381	380	388	381	389
AllSources	2,644	2,434	2,377	2,225	2,191	1,945

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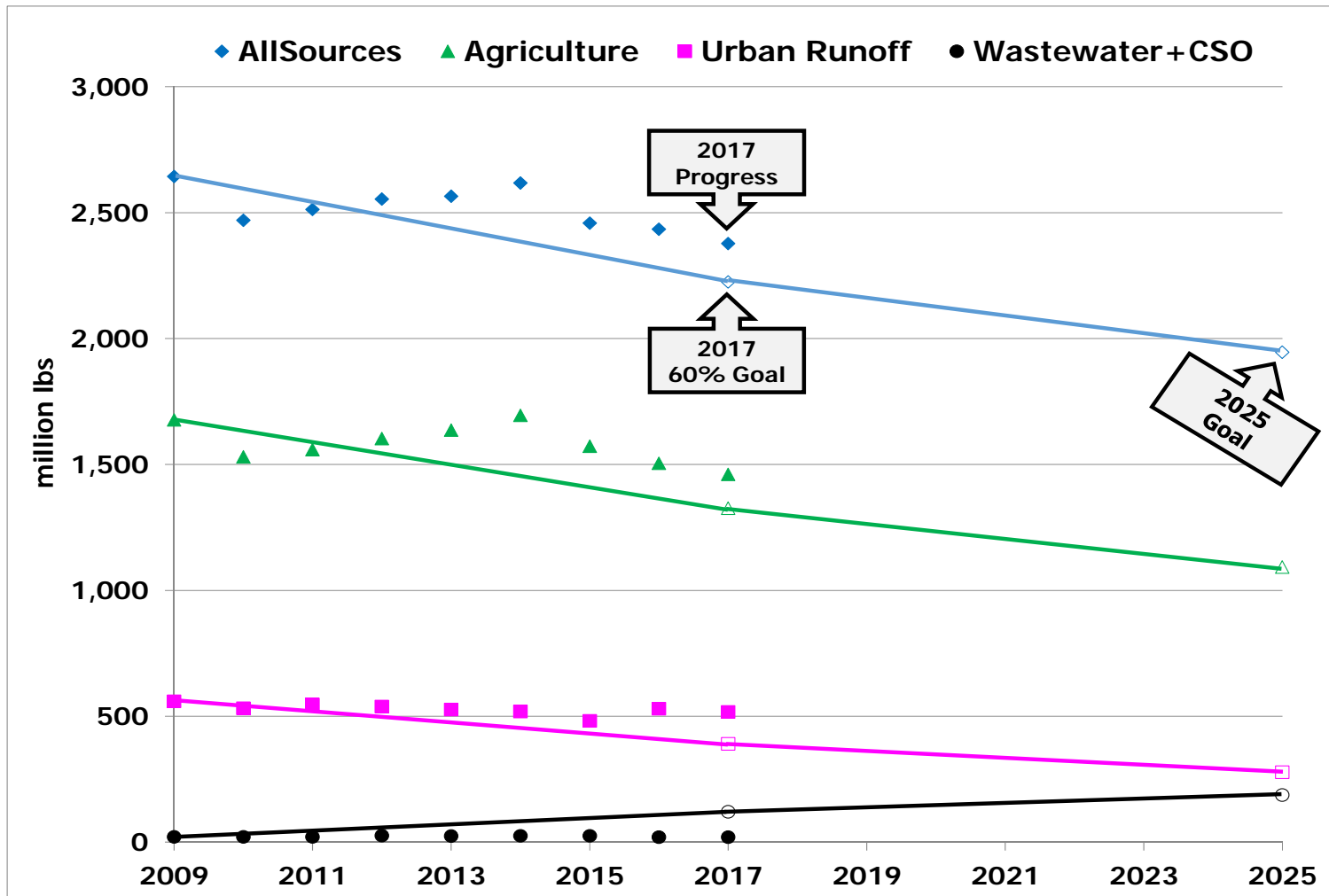
PA Nitrogen Loads-Goals



PA Phosphorus Loads-Goals



PA Sediment Loads-Goals





2017 Progress
Maryland
3/15/18

MD Percent of Goal Achieved by Source

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	2.22	4.55	49%
Urban Runoff	-0.30	2.22	0%
Wastewater+CSO	2.87	3.20	90%
Septic	0.12	1.12	11%
Forest+			
AllSources	5.04	10.78	47%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.209	0.145	100%
Urban Runoff	0.046	0.225	20%
Wastewater+CSO	0.317	0.128	100%
Forest+			
AllSources	0.574	0.491	100%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	171	-63	100%
Urban Runoff	40	166	24%
Wastewater+CSO	2	-51	100%
Forest+			
AllSources	214	45	100%

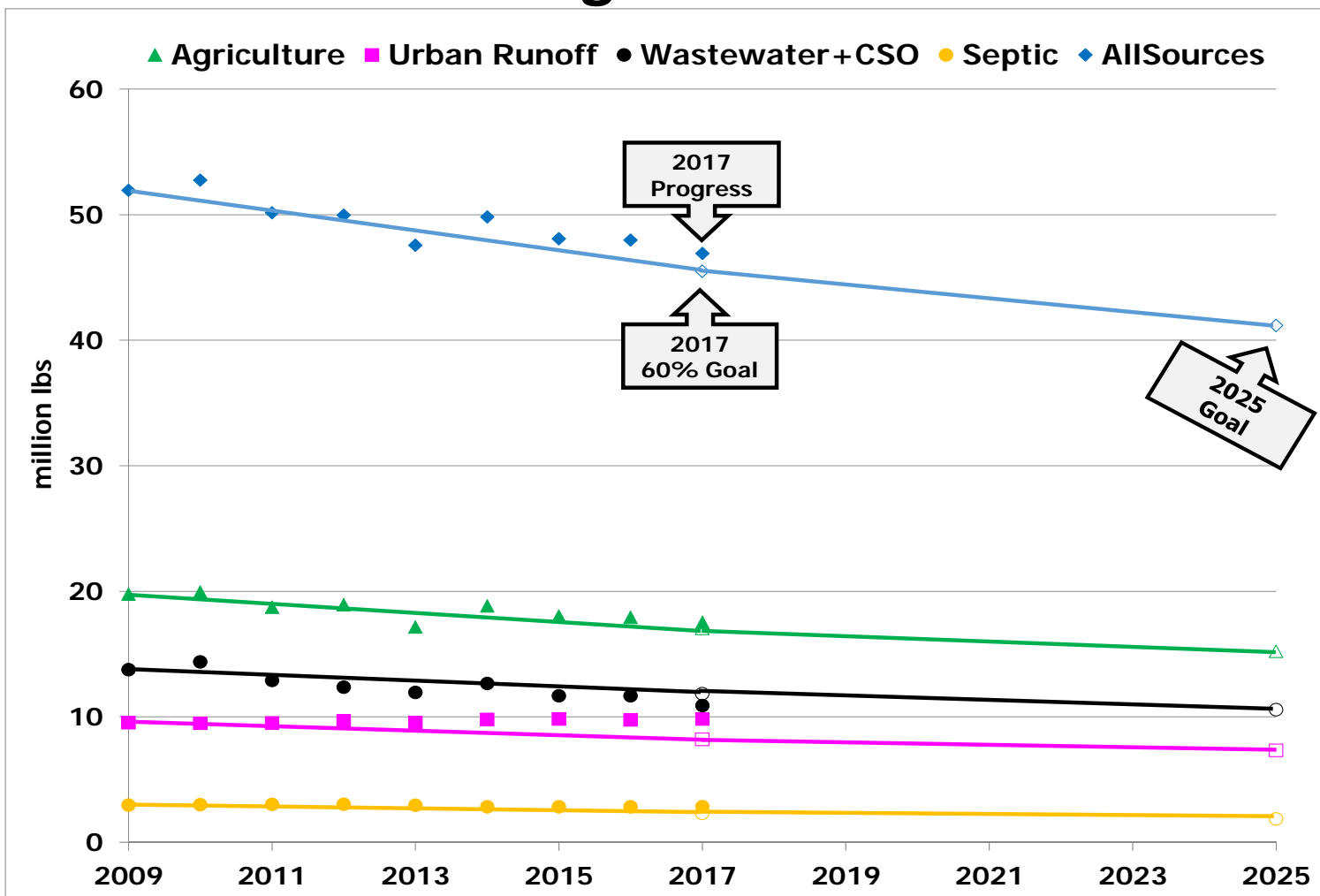
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MD Loads-Goals

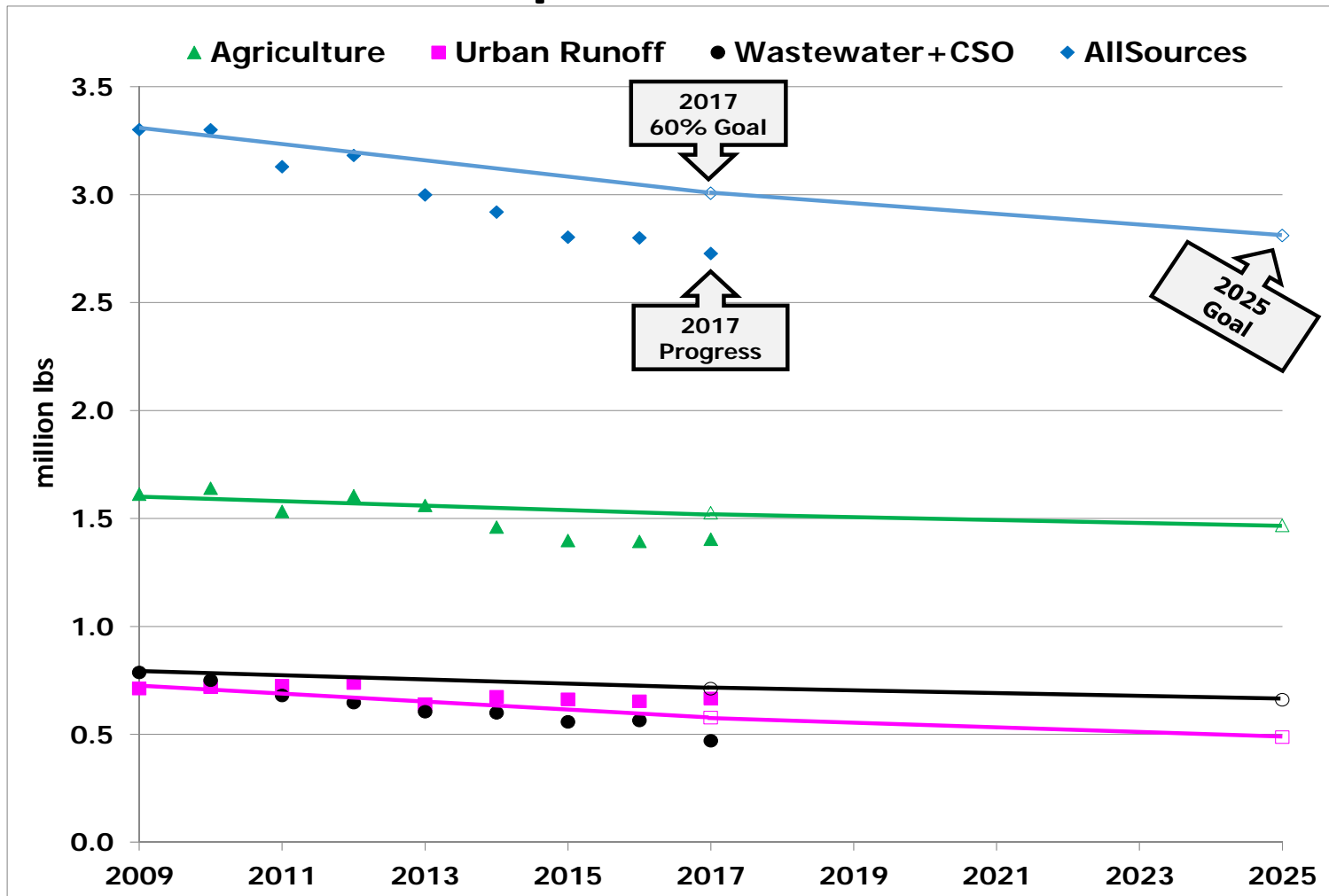
Nitrogen						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	19.76	17.93	17.54	17.03	16.64	15.21
Urban Runoff	9.53	9.76	9.83	8.20	9.80	7.31
Wastewater+CSO	13.75	11.67	10.89	11.84	9.56	10.56
Septic	2.97	2.84	2.85	2.30	2.86	1.85
Forest+	5.92	5.79	5.79	6.11	5.87	6.24
AllSources	51.95	47.99	46.90	45.48	44.72	41.17
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	1.613	1.394	1.404	1.526	1.301	1.468
Urban Runoff	0.712	0.653	0.666	0.577	0.648	0.487
Wastewater+CSO	0.787	0.565	0.470	0.710	0.494	0.659
Forest+	0.190	0.188	0.189	0.194	0.190	0.196
AllSources	3.301	2.800	2.727	3.006	2.633	2.810
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	744	576	574	782	590	808
Urban Runoff	514	483	475	415	496	348
Wastewater+CSO	12	14	10	42	41	63
Forest+	125	123	123	128	125	131
AllSources	1,395	1,195	1,181	1,368	1,252	1,350

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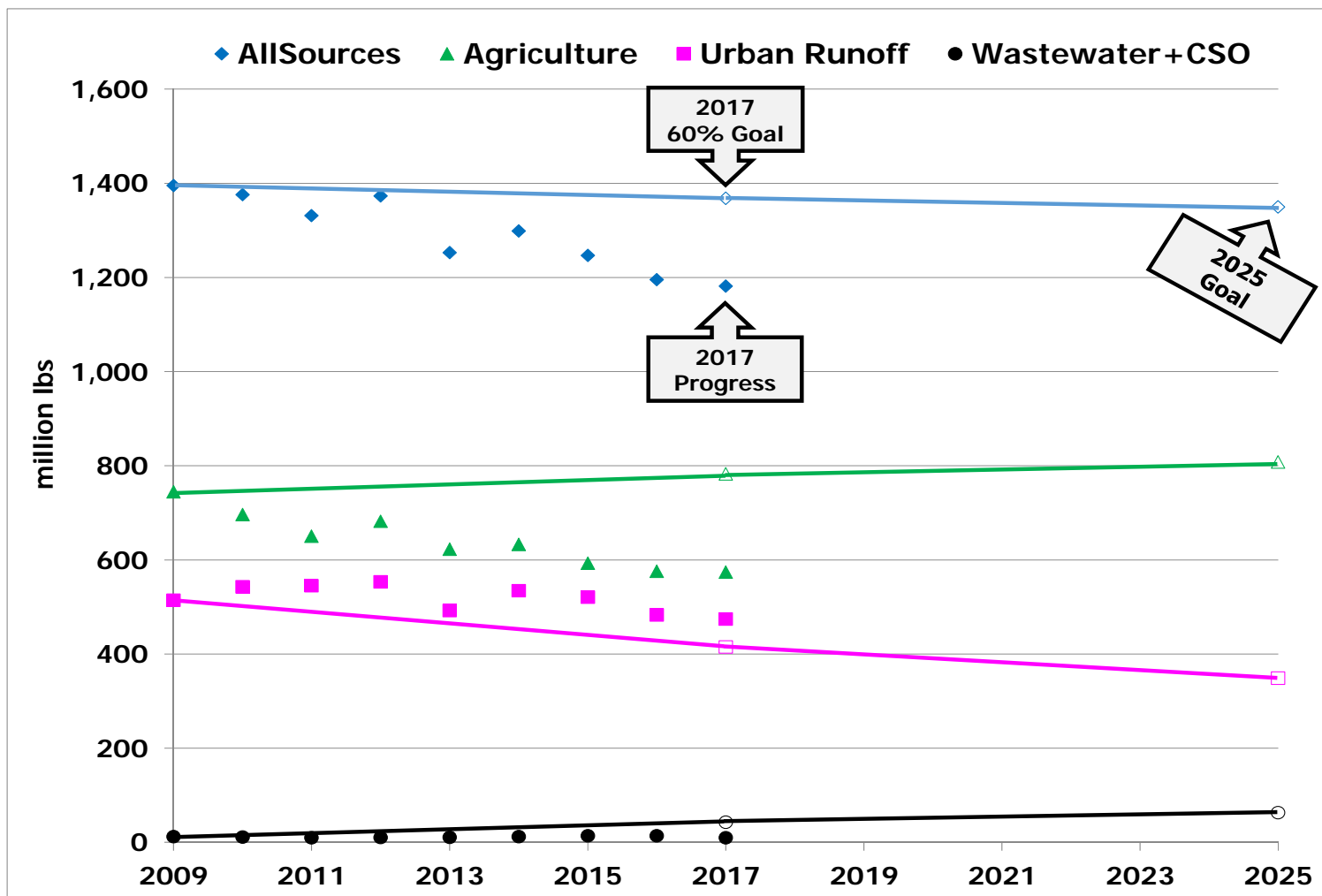
MD Nitrogen Loads-Goals



MD Phosphorus Loads-Goals



MD Sediment Loads-Goals





2017 Progress
Virginia
3/15/18

VA Percent of Goal Achieved by Source

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	3.61	7.28	50%
Urban Runoff	-1.14	1.33	0%
Wastewater+CSO	9.53	7.15	100%
Septic	-0.16	0.38	0%
Forest+			
AllSources	12.22	15.54	79%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	1.404	1.684	83%
Urban Runoff	0.076	0.270	28%
Wastewater+CSO	0.738	0.584	100%
Forest+			
AllSources	2.238	2.270	99%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	243	801	30%
Urban Runoff	-31	207	0%
Wastewater+CSO	29	-99	100%
Forest+			
AllSources	265	492	54%

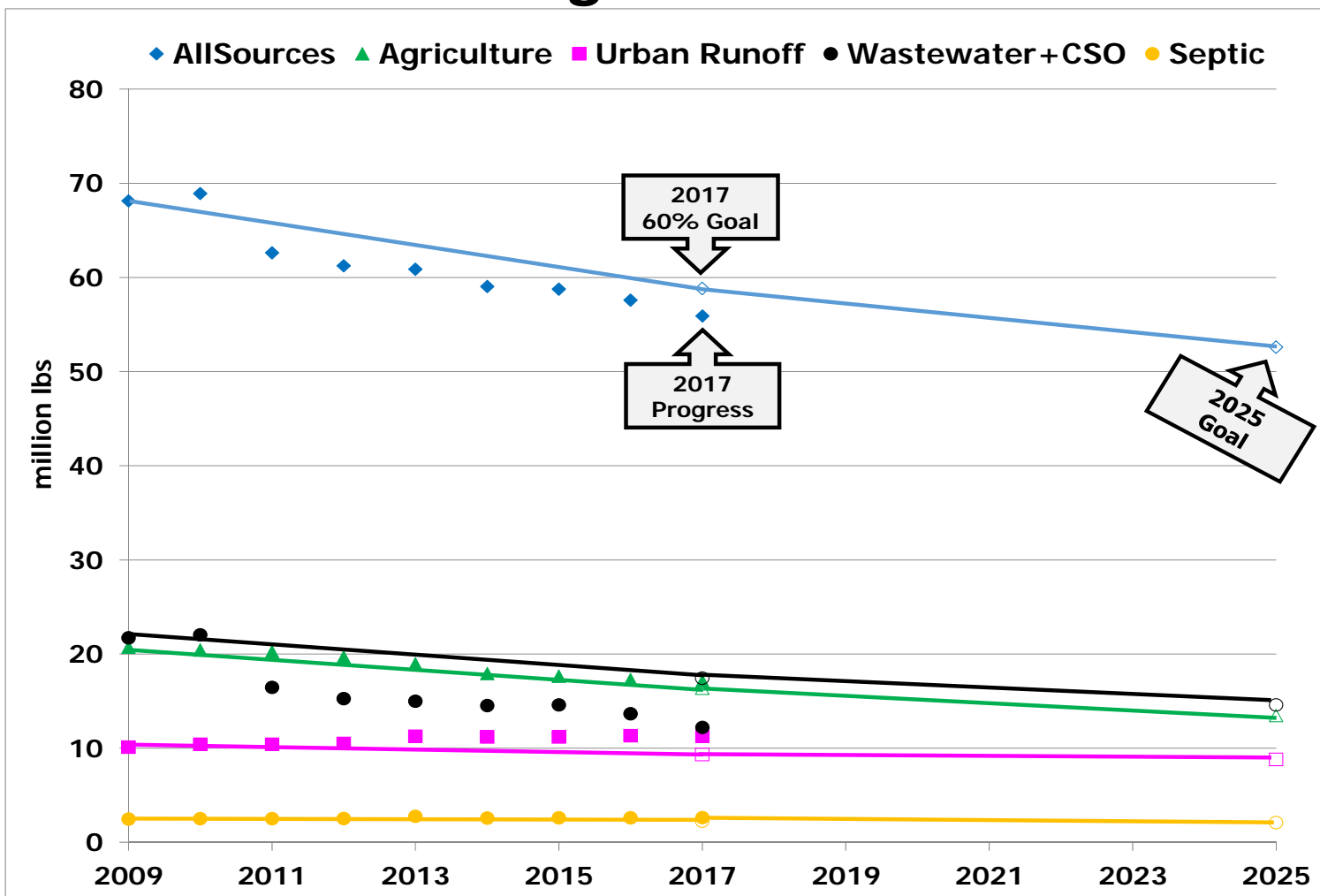
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VA Loads-Goals

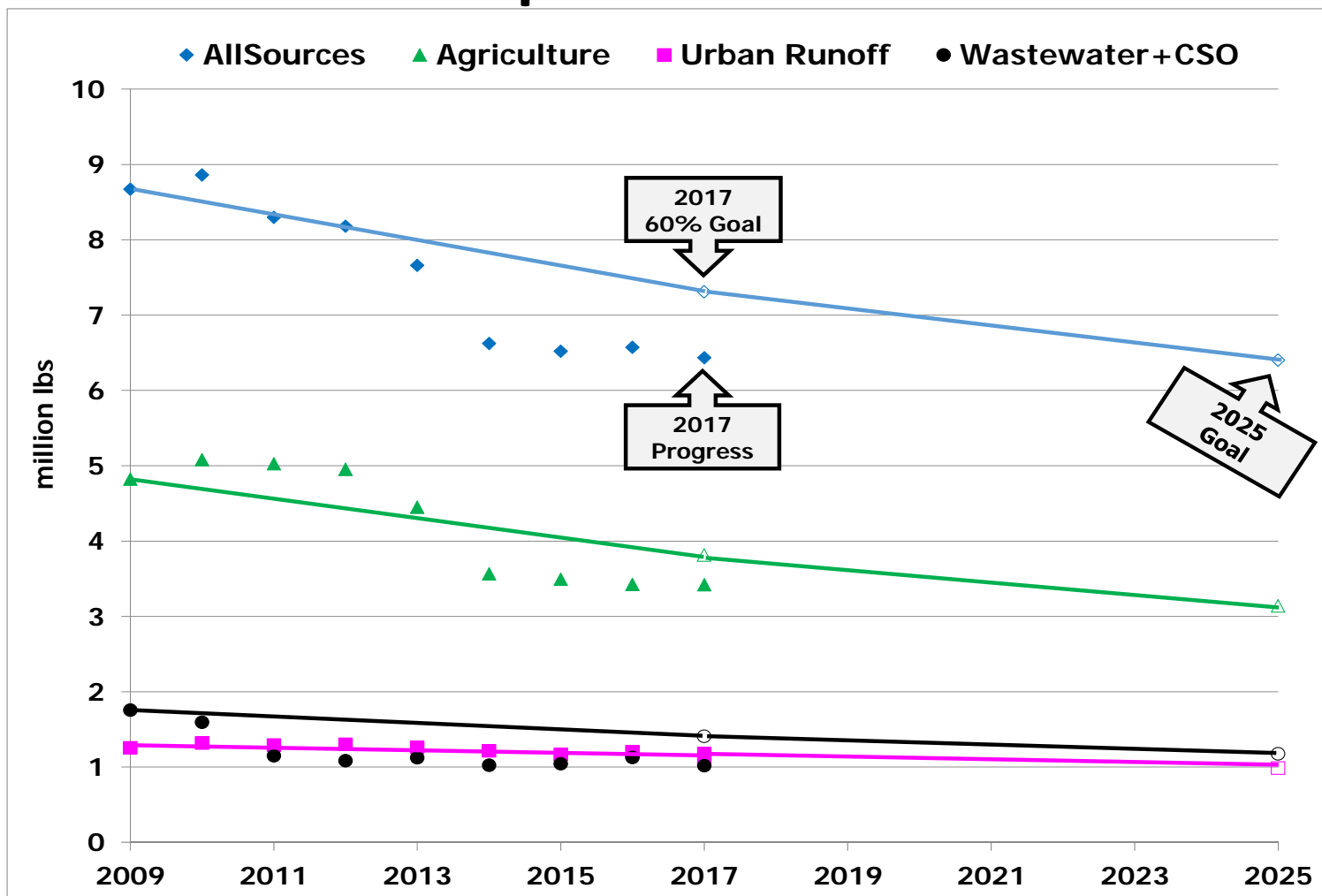
Nitrogen						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	20.73	17.29	17.12	16.36	15.84	13.45
Urban Runoff	10.12	11.34	11.26	9.32	11.20	8.79
Wastewater+CSO	21.73	13.64	12.20	17.44	14.59	14.58
Septic	2.47	2.61	2.63	2.24	2.62	2.09
Forest+	13.08	12.68	12.71	13.44	13.08	13.68
AllSources	68.13	57.57	55.91	58.80	57.33	52.59
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	4.824	3.425	3.420	3.813	3.220	3.139
Urban Runoff	1.255	1.204	1.179	1.093	1.143	0.985
Wastewater+CSO	1.757	1.128	1.019	1.406	1.045	1.173
Forest+	0.836	0.814	0.815	0.997	0.835	1.105
AllSources	8.672	6.571	6.434	7.310	6.242	6.402
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	2,410	2,185	2,167	1,929	2,003	1,609
Urban Runoff	698	763	729	574	687	491
Wastewater+CSO	47	27	18	107	30	146
Forest+	587	562	564	838	584	1,005
AllSources	3,743	3,537	3,478	3,448	3,305	3,251

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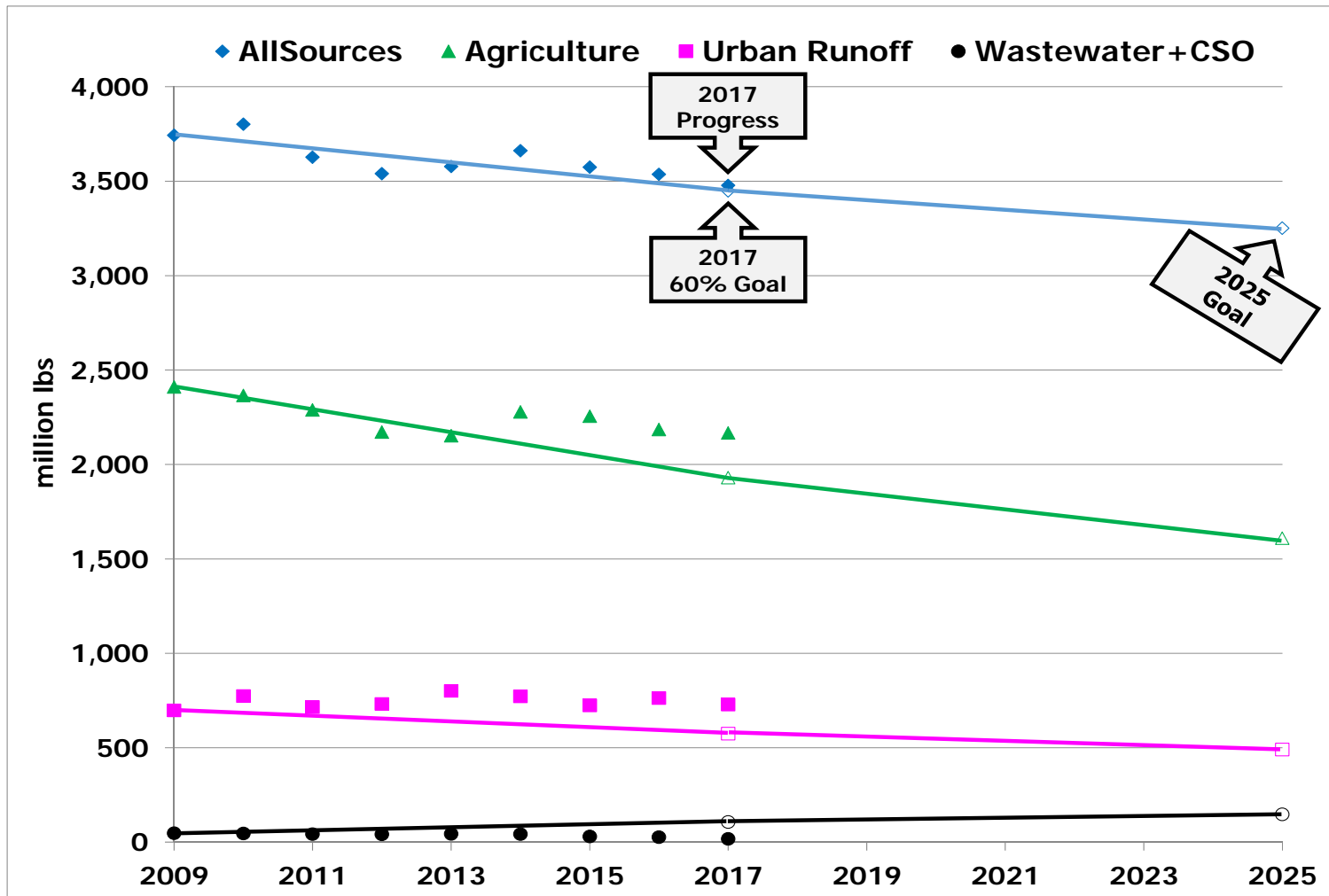
VA Nitrogen Loads-Goals



VA Phosphorus Loads-Goals



VA Sediment Loads-Goals





2017 Progress
West Virginia
3/15/18

WV Percent of Goal Achieved

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.31	0.39	80%
Urban Runoff	-0.08	0.03	0%
Wastewater+CSO	0.09	0.03	100%
Septic	0.02	-0.01	100%
Forest+			
AllSources	0.37	0.44	84%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.124	0.154	80%
Urban Runoff	0.044	0.051	86%
Wastewater+CSO	0.078	0.070	100%
Forest+			
AllSources	0.246	0.265	93%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	64	90	71%
Urban Runoff	48	53	91%
Wastewater+CSO	0	-1	100%
Forest+			
AllSources	114	73	100%

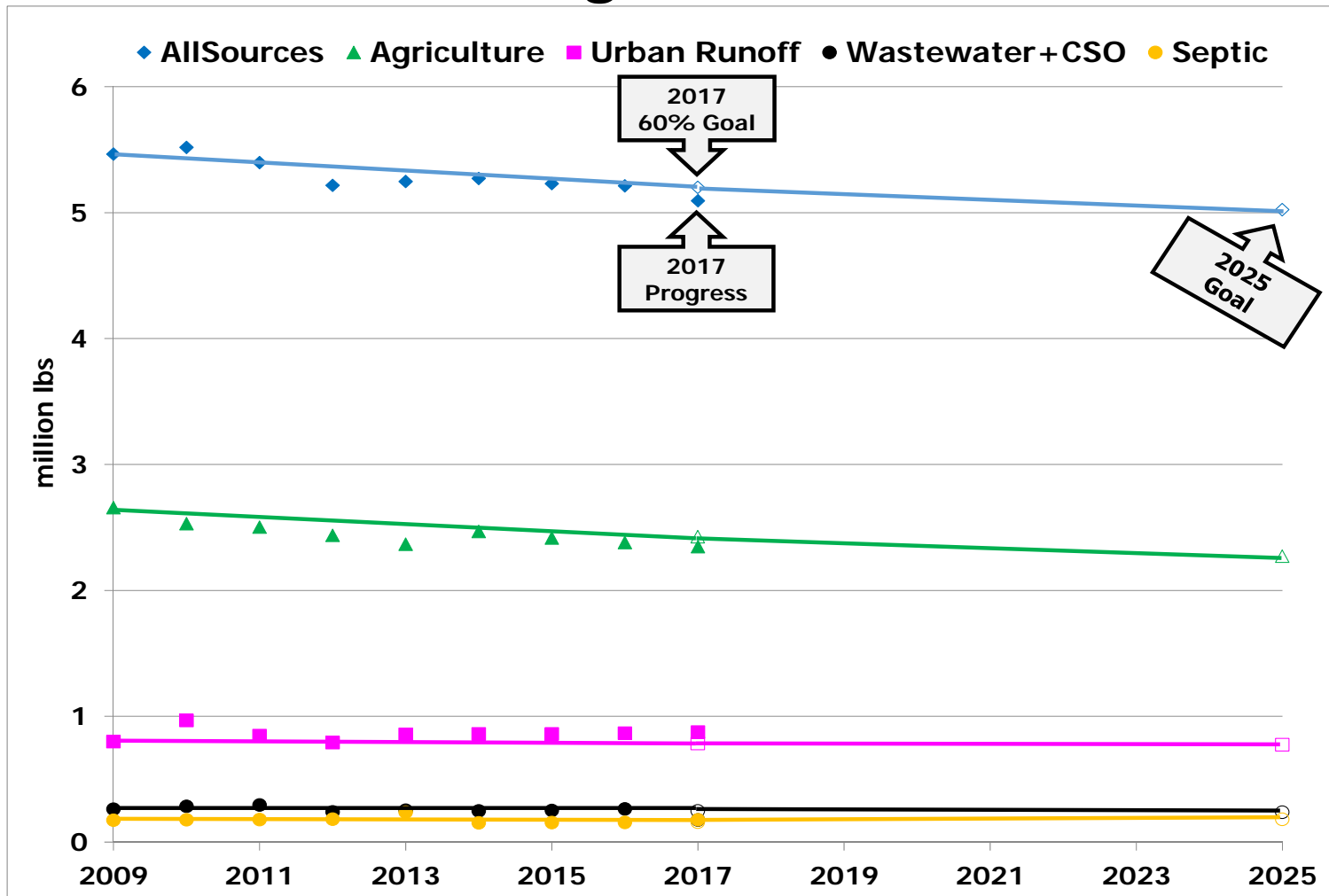
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WV Loads-Goals

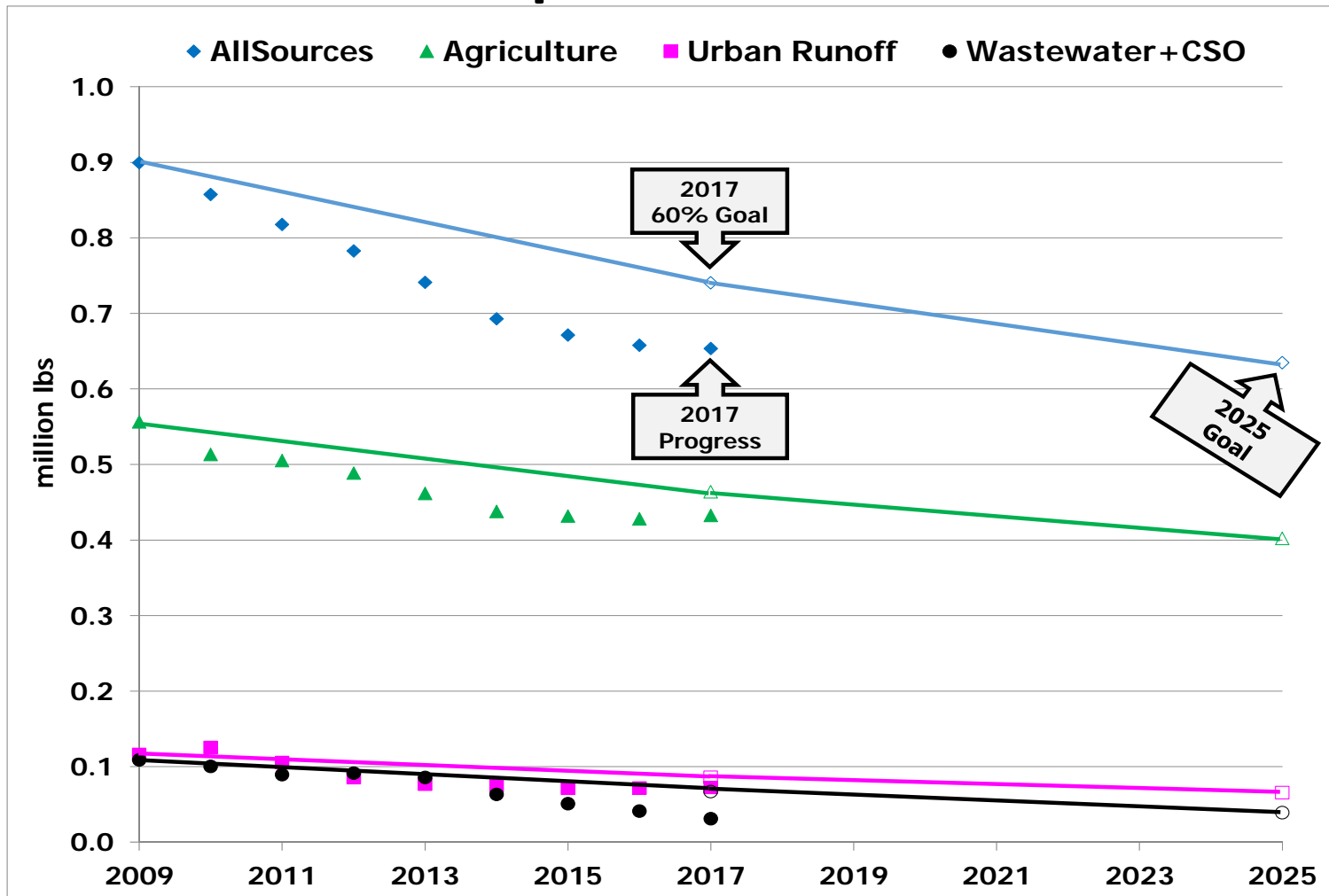
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	2.66	2.38	2.35	2.43	2.38	2.27
Urban Runoff	0.80	0.87	0.87	0.78	0.87	0.77
Wastewater+CSO	0.26	0.26	0.18	0.25	0.24	0.24
Septic	0.17	0.16	0.16	0.18	0.16	0.18
Forest+	1.57	1.55	1.54	1.57	1.54	1.56
AllSources	5.47	5.21	5.09	5.20	5.19	5.02
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0.556	0.428	0.433	0.464	0.439	0.402
Urban Runoff	0.116	0.072	0.073	0.086	0.072	0.065
Wastewater+CSO	0.109	0.041	0.031	0.067	0.039	0.039
Forest+	0.118	0.117	0.117	0.124	0.117	0.128
AllSources	0.899	0.658	0.653	0.740	0.666	0.635
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	268	205	204	214	207	178
Urban Runoff	105	56	57	73	55	52
Wastewater+CSO	1	1	1	2	2	2
Forest+	72	70	70	113	70	140
AllSources	445	332	331	402	334	373

- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($<55\%$ of 2009-2025 reduction)

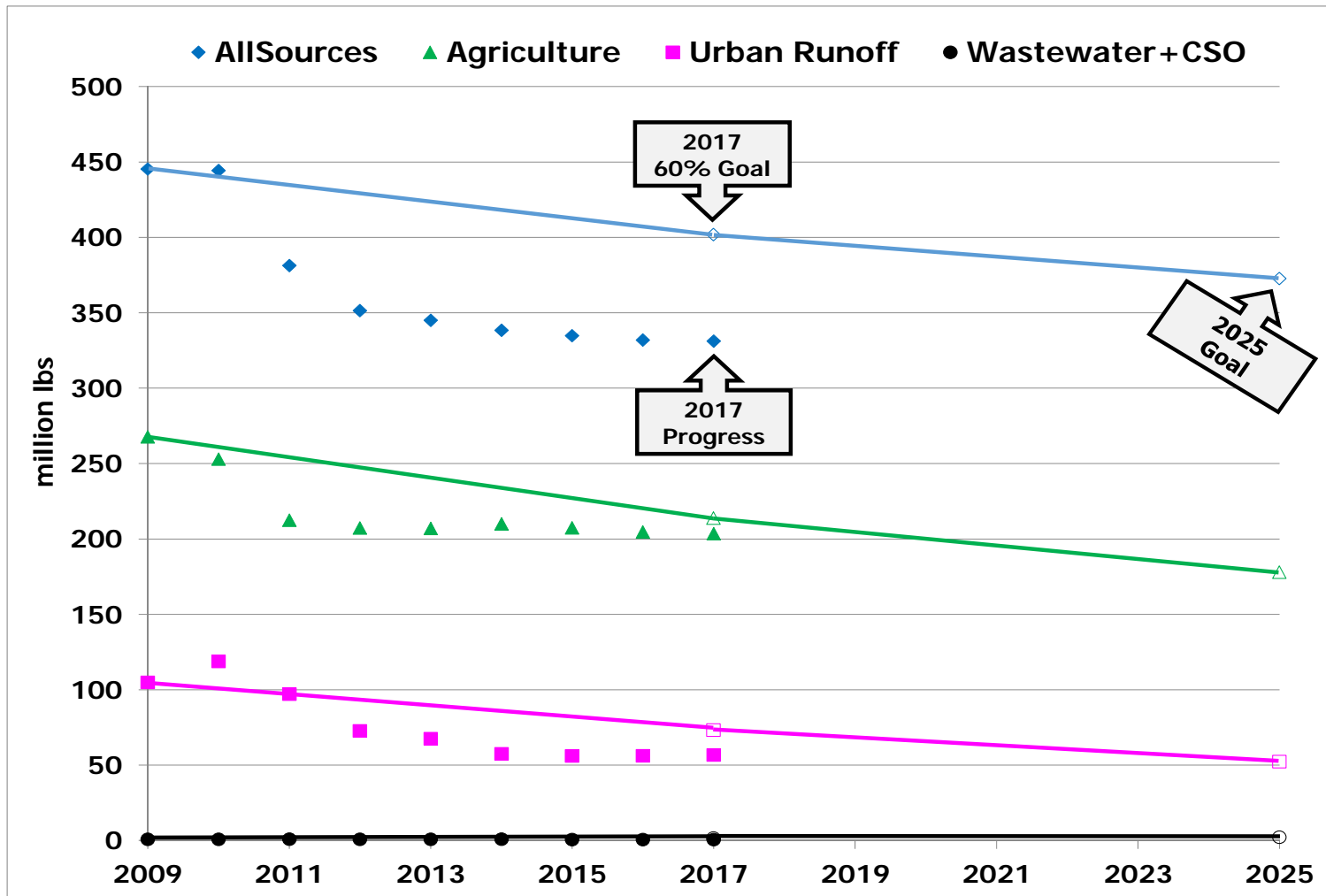
WV Nitrogen Loads-Goals



WV Phosphorus Loads-Goals



WV Sediment Loads-Goals





2017 Progress
Delaware
3/15/18

DE Percent of Goal Achieved

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.30	1.07	29%
Urban Runoff	-0.04	0.05	0%
Wastewater+CSO	0.09	-0.08	100%
Septic	-0.02	0.06	0%
Forest+			
AllSources	0.34	1.08	32%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.075	0.072	100%
Urban Runoff	0.001	0.003	32%
Wastewater+CSO	-0.002	-0.005	100%
Forest+			
AllSources	0.073	0.068	100%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	13	-1	100%
Urban Runoff	2	1	100%
Wastewater+CSO	0	-1	100%
Forest+			
AllSources	16	-1	0%

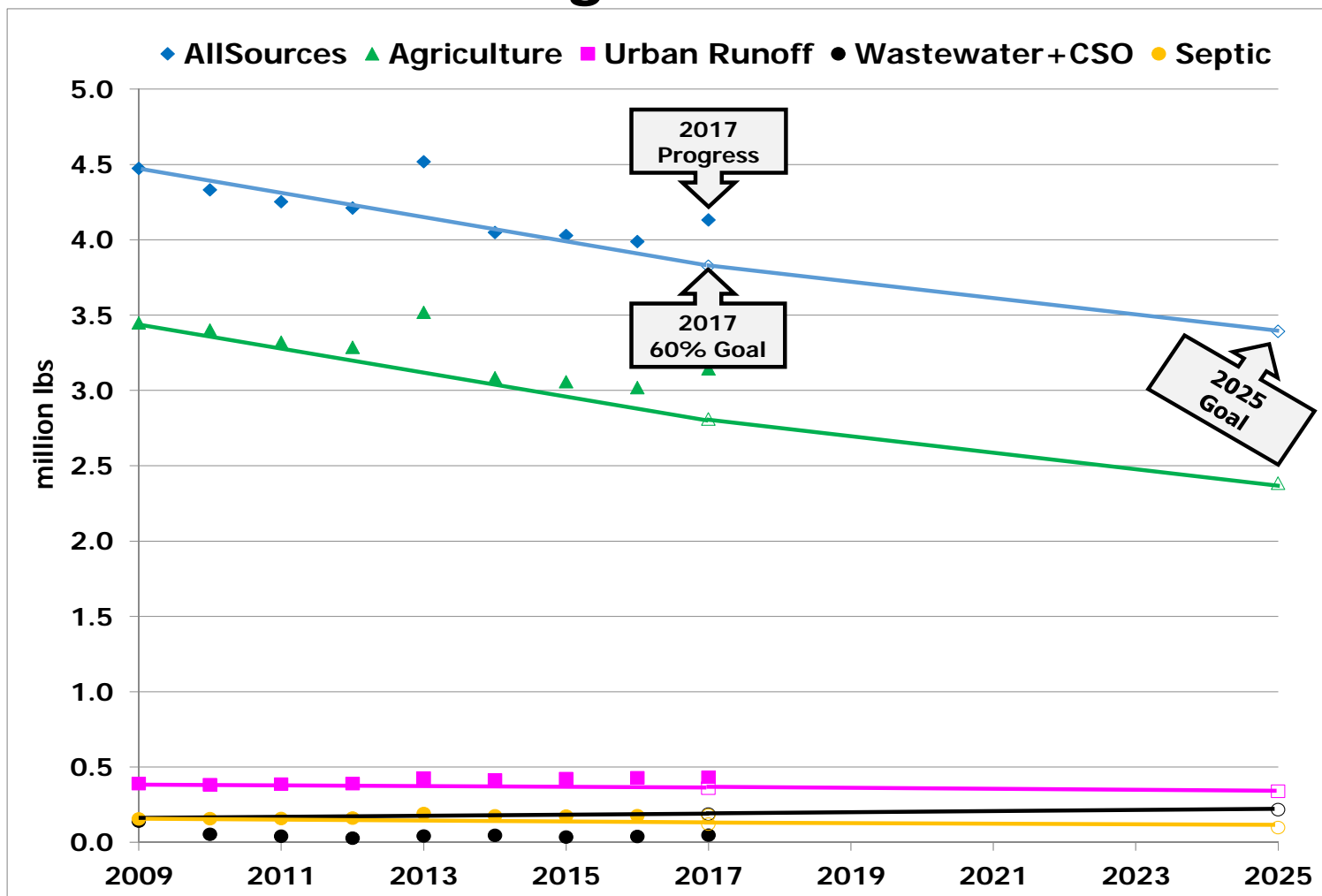
- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($<55\%$ of 2009-2025 reduction)

DE Loads-Goals

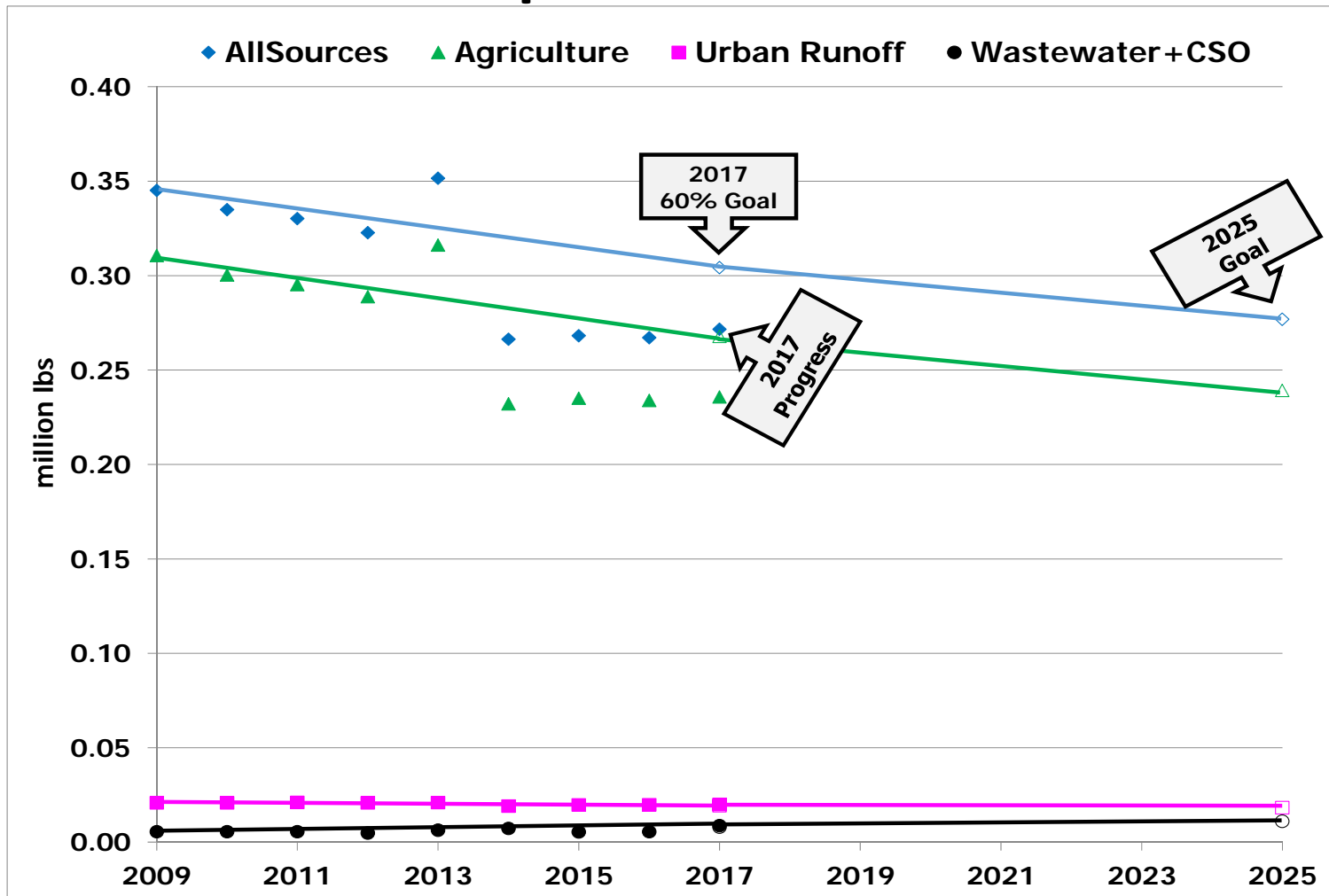
Nitrogen						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	3.45	3.02	3.14	2.81	2.80	2.38
Urban Runoff	0.39	0.43	0.43	0.36	0.43	0.34
Wastewater+CSO	0.14	0.04	0.05	0.19	0.03	0.22
Septic	0.15	0.18	0.18	0.12	0.18	0.10
Forest+	0.34	0.33	0.33	0.35	0.33	0.35
AllSources	4.47	3.99	4.13	3.82	3.78	3.39
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0.311	0.234	0.236	0.268	0.225	0.239
Urban Runoff	0.021	0.020	0.020	0.019	0.020	0.018
Wastewater+CSO	0.006	0.006	0.008	0.009	0.005	0.011
Forest+	0.008	0.008	0.008	0.008	0.008	0.008
AllSources	0.345	0.267	0.272	0.304	0.259	0.277
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	64	48	51	65	43	65
Urban Runoff	29	27	27	28	30	27
Wastewater+CSO	0	0	0	1	0	1
Forest+	6	6	6	6	6	6
AllSources	99	80	83	99	79	100

- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($<55\%$ of 2009-2025 reduction)

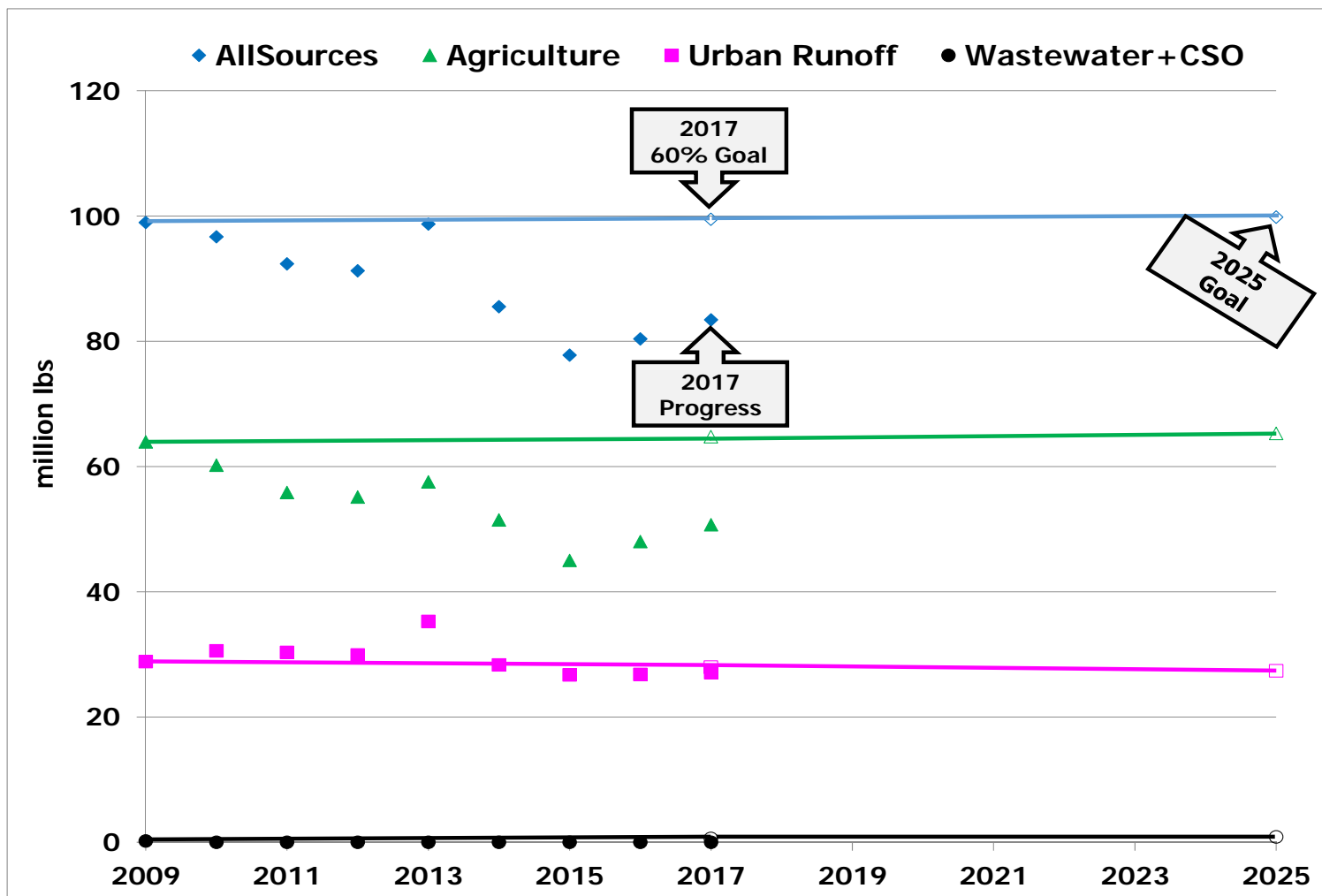
DE Nitrogen Loads-Goals



DE Phosphorus Loads-Goals



DE Sediment Loads-Goals





2017 Progress
District of Columbia
3/15/18

DC Percent of Goal Achieved

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0	0	0
Urban Runoff	0.001	0.026	4%
Wastewater+CSO	1.300	0.495	100%
Septic	0	0	0
Forest+			
AllSources	1.302	0.504	100%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0	0	0
Urban Runoff	0.0020	0.0036	54%
Wastewater+CSO	-0.0051	-0.0521	100%
Forest+			
AllSources	-0.0031	-0.0490	100%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0	0	0
Urban Runoff	0.46	2.14	22%
Wastewater+CSO	0.42	-1.28	100%
Forest+			
AllSources	0.91	-0.44	100%

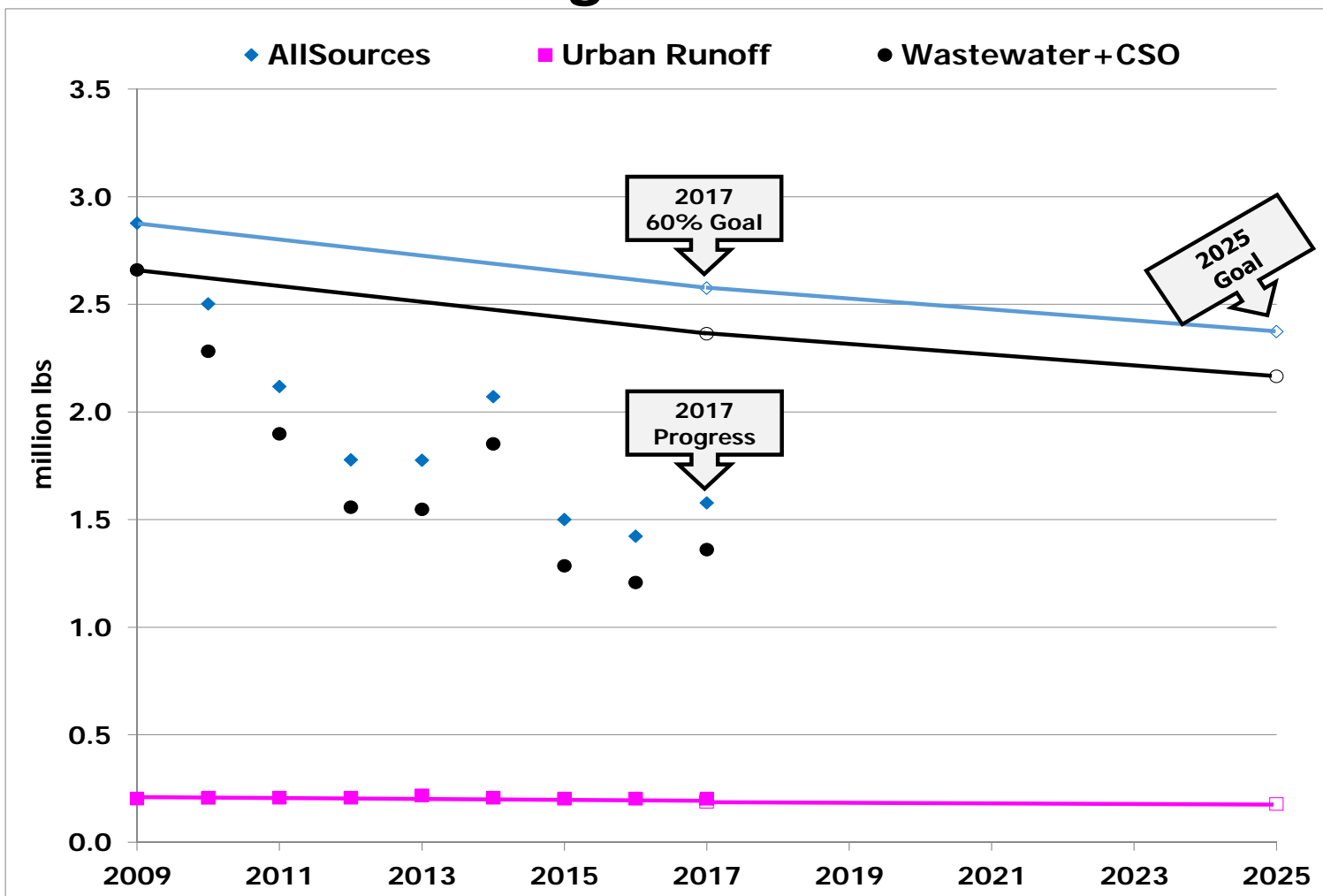
- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($< 55\%$ of 2009-2025 reduction)

DC Loads-Goals

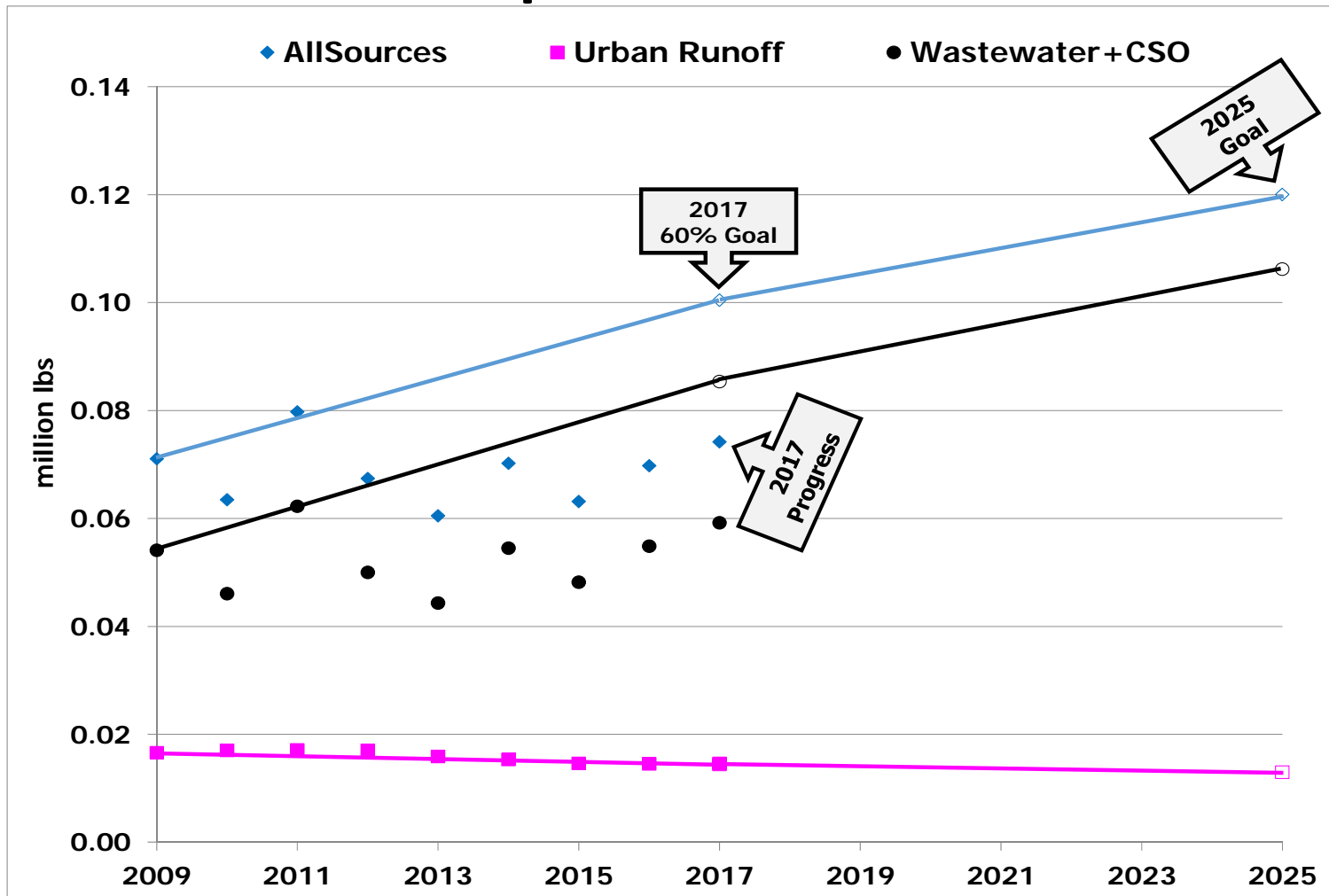
Nitrogen						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0	0	0	0	0	0
Urban Runoff	0.204	0.202	0.203	0.188	0.199	0.178
Wastewater+CSO	2.660	1.208	1.360	2.363	1.285	2.165
Septic	0	0	0	0	0	0
Forest+	0.013	0.013	0.013	0.024	0.013	0.031
AllSources	2.877	1.422	1.575	2.575	1.496	2.373
Phosphorus						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0	0	0	0	0	0
Urban Runoff	0.0166	0.0145	0.0146	0.0144	0.0135	0.0129
Wastewater+CSO	0.0541	0.0549	0.0592	0.0854	0.0482	0.1062
Forest+	0.0004	0.0004	0.0004	0.0007	0.0004	0.0009
AllSources	0.0711	0.0698	0.0742	0.1004	0.0621	0.1200
Sediment						
	2009	2016	2017	2017	2017	2025
	Progress	Progress	Progress	60% Target	Milestone	Target
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0	0	0	0	0	0
Urban Runoff	13.3	12.7	12.8	12.0	12.2	11.1
Wastewater+CSO	3.2	2.8	2.8	4.0	3.0	4.5
Forest+	0.5	0.4	0.4	1.2	0.4	1.8
AllSources	16.9	16.0	16.0	17.2	15.5	17.4

- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($< 55\%$ of 2009-2025 reduction)

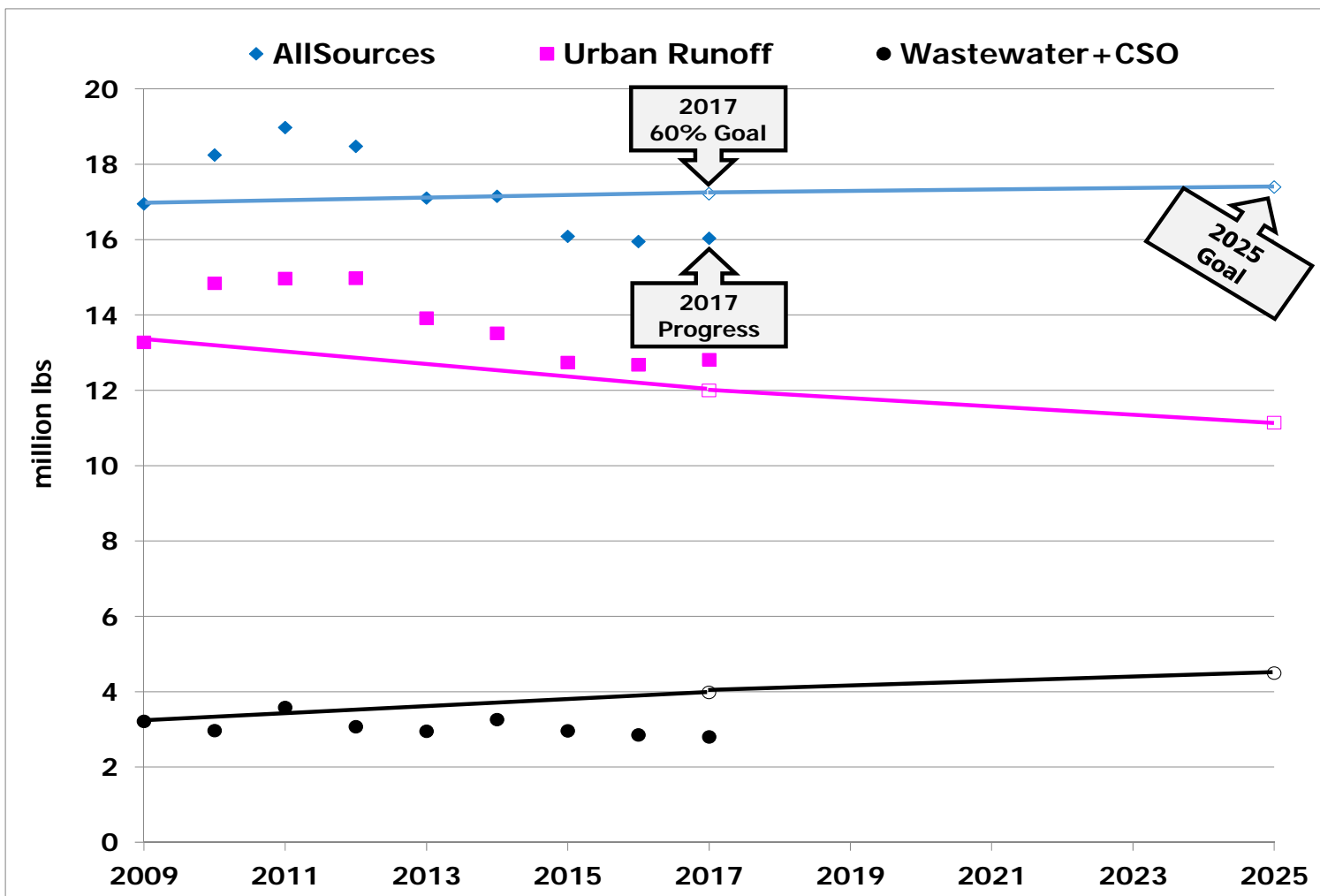
DC Nitrogen Loads-Goals



DC Phosphorus Loads-Goals



DC Sediment Loads-Goals





2017 Progress
New York
3/15/18

NY Percent of Goal Achieved

Nitrogen			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.34	1.50	22%
Urban Runoff	-0.02	0.10	0%
Wastewater+CSO	-0.36	0.31	0%
Septic	-0.04	0.00	100%
Forest+			
AllSources	-0.17	1.87	0%
Phosphorus			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	0.122	0.162	75%
Urban Runoff	0.014	0.025	58%
Wastewater+CSO	0.072	0.125	58%
Forest+			
AllSources	0.208	0.313	66%
Sediment			
	Reduction Achieved	Reduction Required	Percent Progress
	2009-2017	by Bay TMDL	Towards 2025 Target
Source	(M lbs/year)	(M lbs/year)	(%)
Agriculture	9	32	27%
Urban Runoff	3	-20	100%
Wastewater+CSO	-1	0	0%
Forest+			
AllSources	10	27	36%

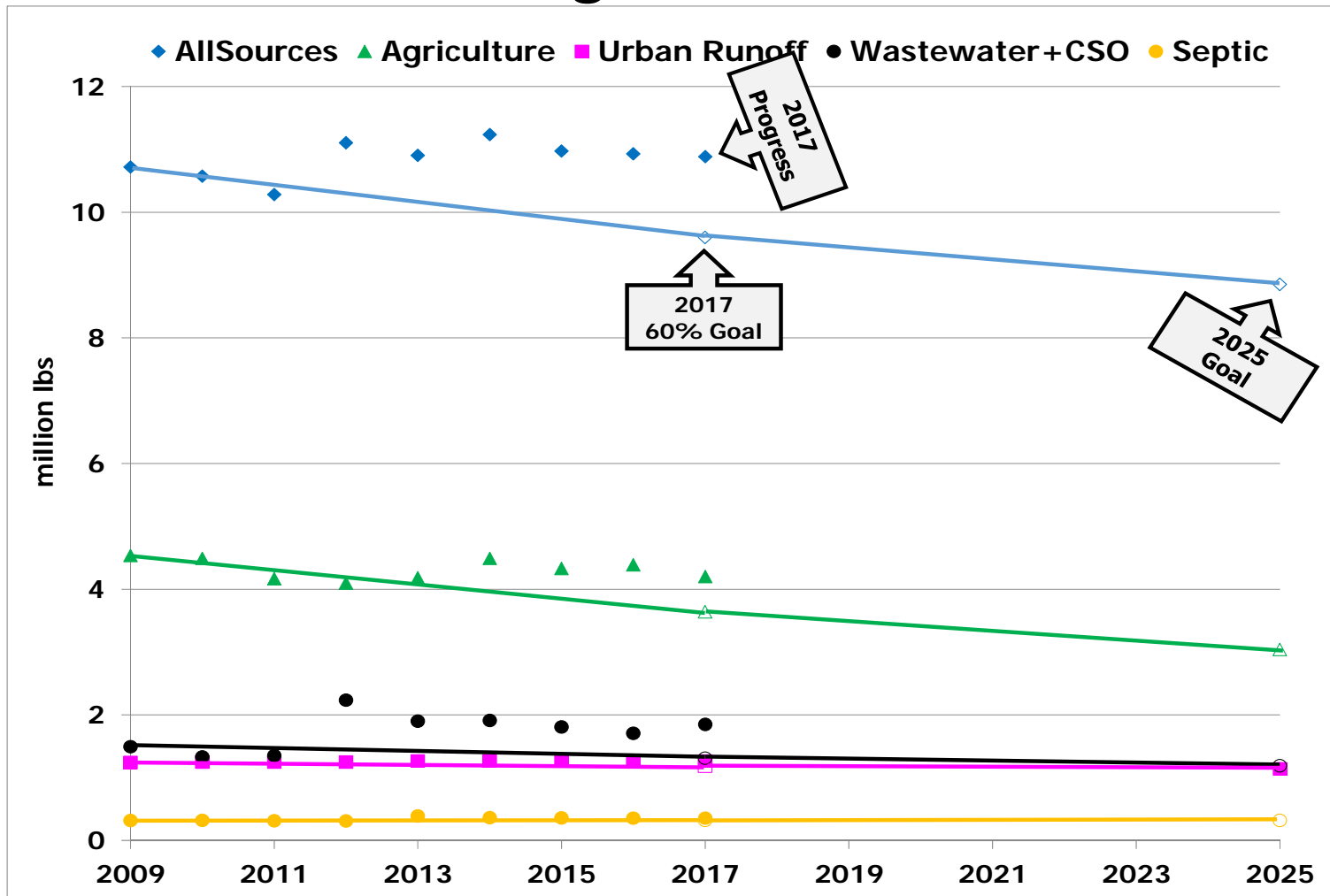
- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
- Loads don't meet trajectory targets but are within 5 percentage points (55%-60%)
- Loads don't meet trajectory targets ($< 55\%$ of 2009-2025 reduction)

NY Loads-Goals

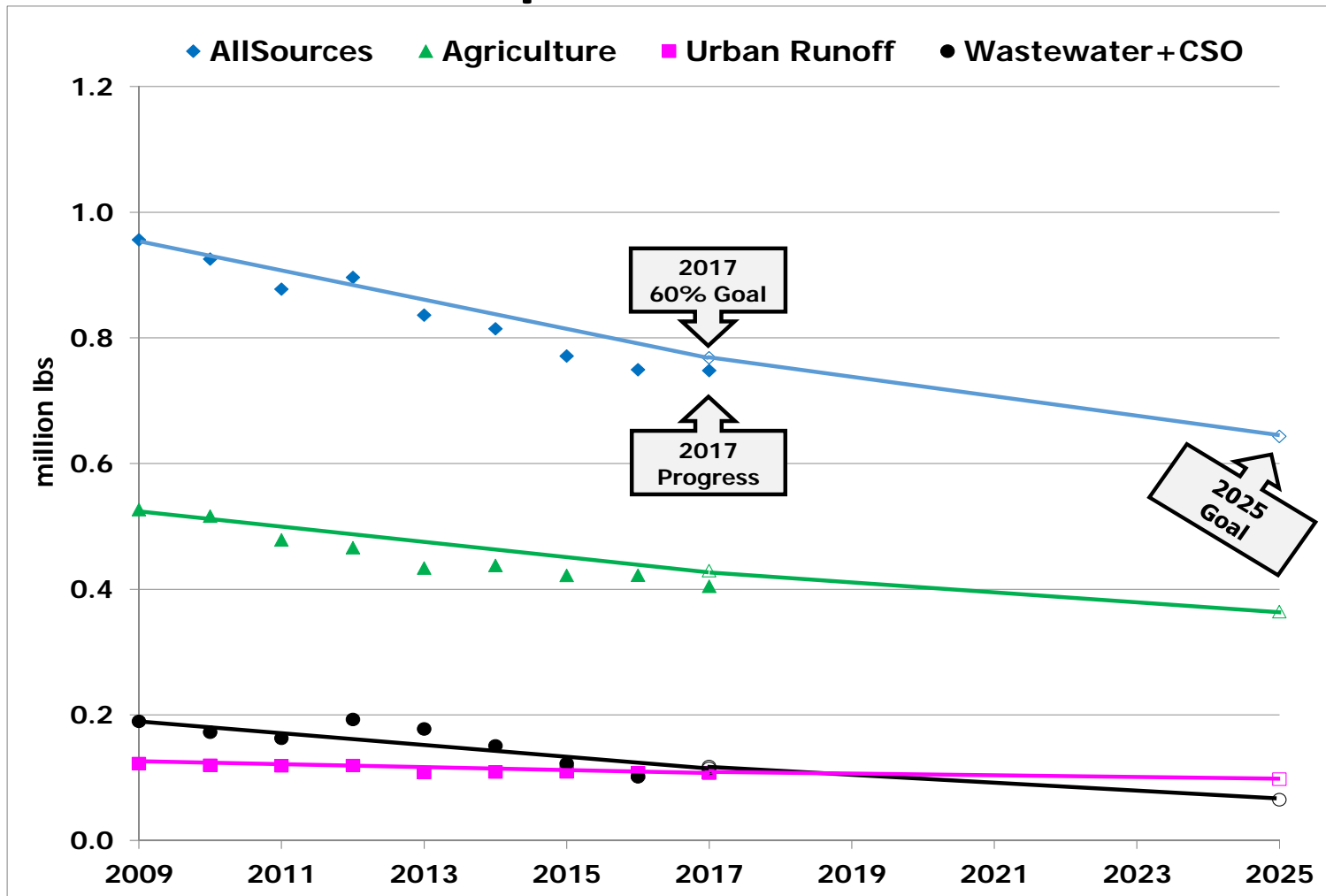
Nitrogen								
	2009	2016	2017	2017	2017	2017 60% Target	2025	2025
	Progress	Progress	Progress	Progress II	60% Target	Based on WIP	Target	WIP
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	4.54	4.39	4.20	4.20	3.64	3.64	3.04	3.04
Urban Runoff	1.24	1.26	1.26	1.26	1.18	1.18	1.14	1.14
Wastewater+CSO	1.49	1.71	1.85	1.85	1.31	1.57	1.19	1.62
Septic	0.32	0.36	0.35	0.35	0.32	0.32	0.32	0.32
Forest+	3.13	3.21	3.22	3.22	3.15	3.15	3.16	3.16
AllSources	10.72	10.93	10.88	10.88	9.60	9.85	8.85	9.28
Phosphorus								
	2009	2016	2017	2017	2017	2017 60% Target	2025	2025
	Progress	Progress	Progress	Progress II	60% Target	Based on WIP	Target	WIP
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)	(M lbs/year)
Agriculture	0.527	0.422	0.405	0.405	0.429	0.429	0.364	0.364
Urban Runoff	0.122	0.108	0.108	0.108	0.107	0.107	0.098	0.098
Wastewater+CSO	0.190	0.102	0.117	0.117	0.115	0.132	0.065	0.094
Forest+	0.117	0.118	0.118	0.118	0.116	0.116	0.116	0.116
AllSources	0.956	0.749	0.748	0.748	0.768	0.786	0.643	0.672
Sediment								
	2009	2016	2017		2017		2025	
	Progress	Progress	Progress		60% Target		Target	
Source	(M lbs/year)	(M lbs/year)	(M lbs/year)		(M lbs/year)		(M lbs/year)	
Agriculture	132	128	124		113		100	
Urban Runoff	100	97	97		112		119	
Wastewater+CSO	3	3	3		2		2	
Forest+	97	98	98		88		82	
AllSources	332	325	322		315		304	

- Loads meet trajectory targets ($\geq 60\%$ of 2009-2025 reduction)
 - Loads don't meet trajectory targets but are within 5 percentage points
 - Loads don't meet trajectory targets ($< 55\%$ of 2009-2025 reduction)
- New York's Progress and Milestone loads are compared to 2 targets for 2017 60% and 2025: 1) based on meeting Phase II WIP planning targets necessary to meet water quality (blue); and 2) based on NY's Phase II WIP commitments for 2025 (purple).

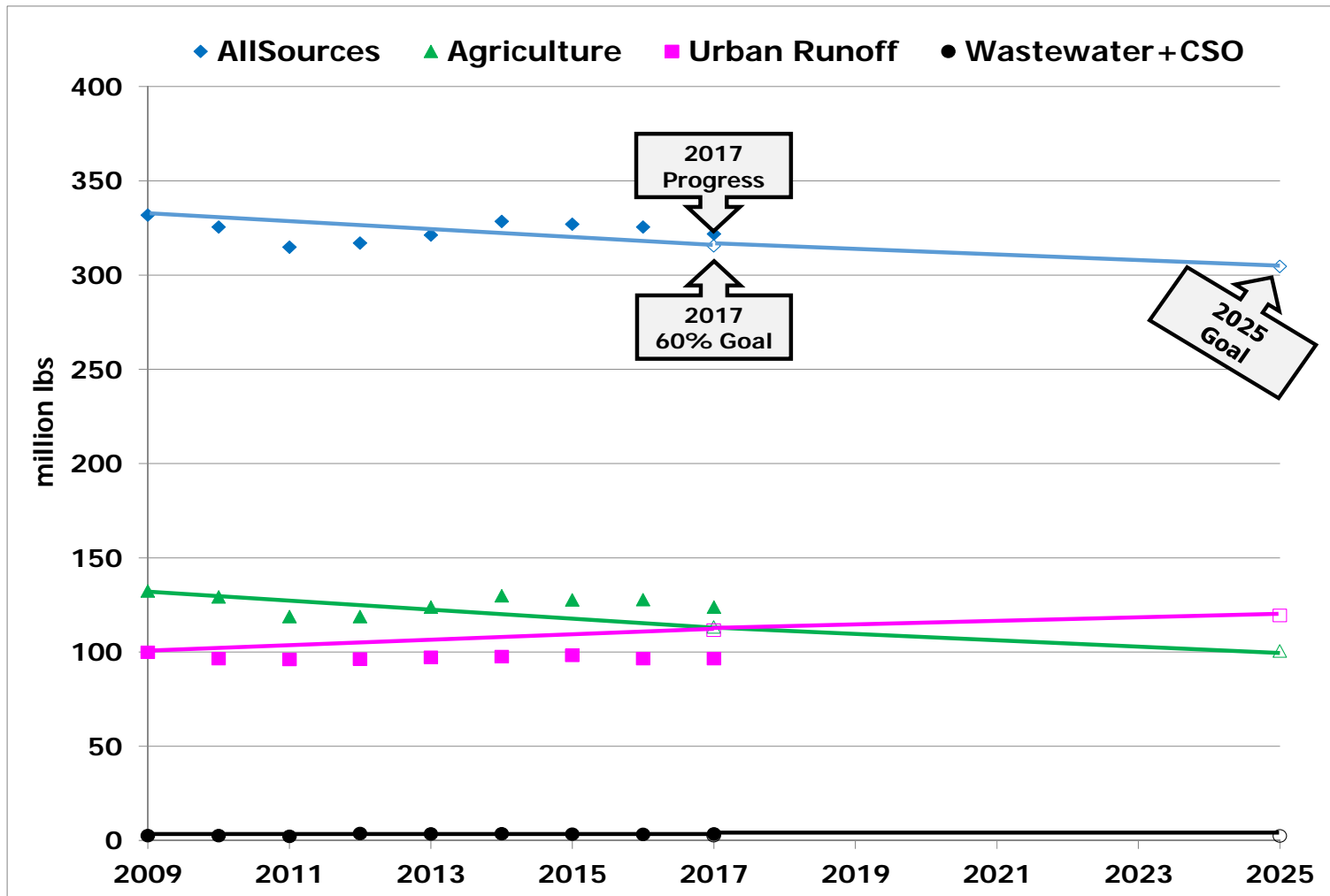
NY Nitrogen Loads-Goals



NY Phosphorus Loads-Goals



NY Sediment Loads-Goals





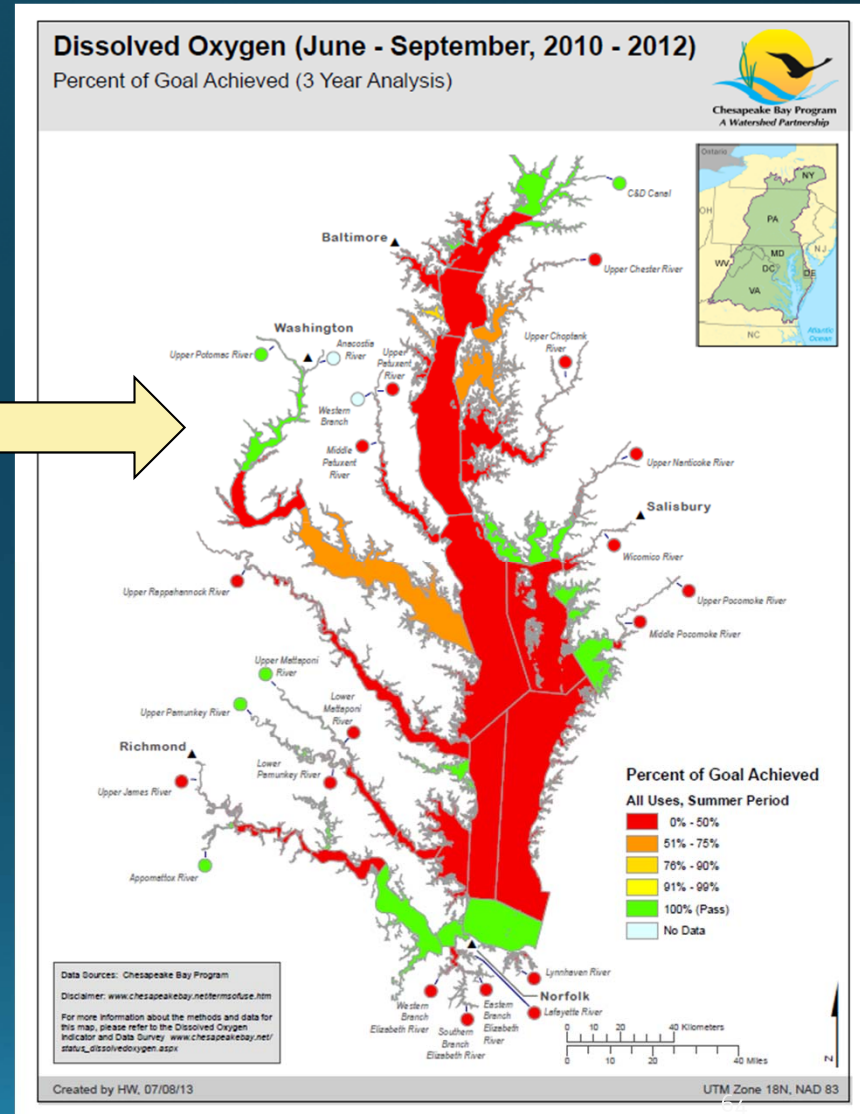
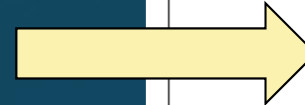
How do we measure progress?

- 1) Trends from monitoring data throughout the estuary
- 2) Trends in monitored loads from the non-tidal water network
- 3) Reported programmatic achievements
- 4) Reported BMP implementation levels
- 5) Modeled loads



Chesapeake Bay Impairments

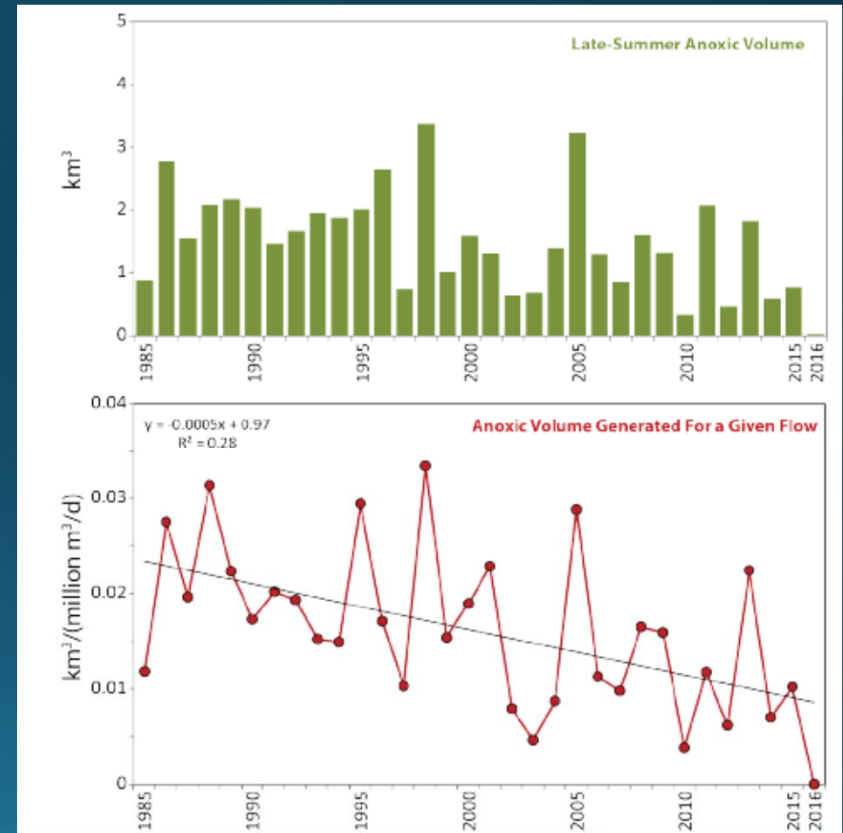
- Dissolved Oxygen
- Chlorophyll a
- Water Clarity (SAV Abundance)



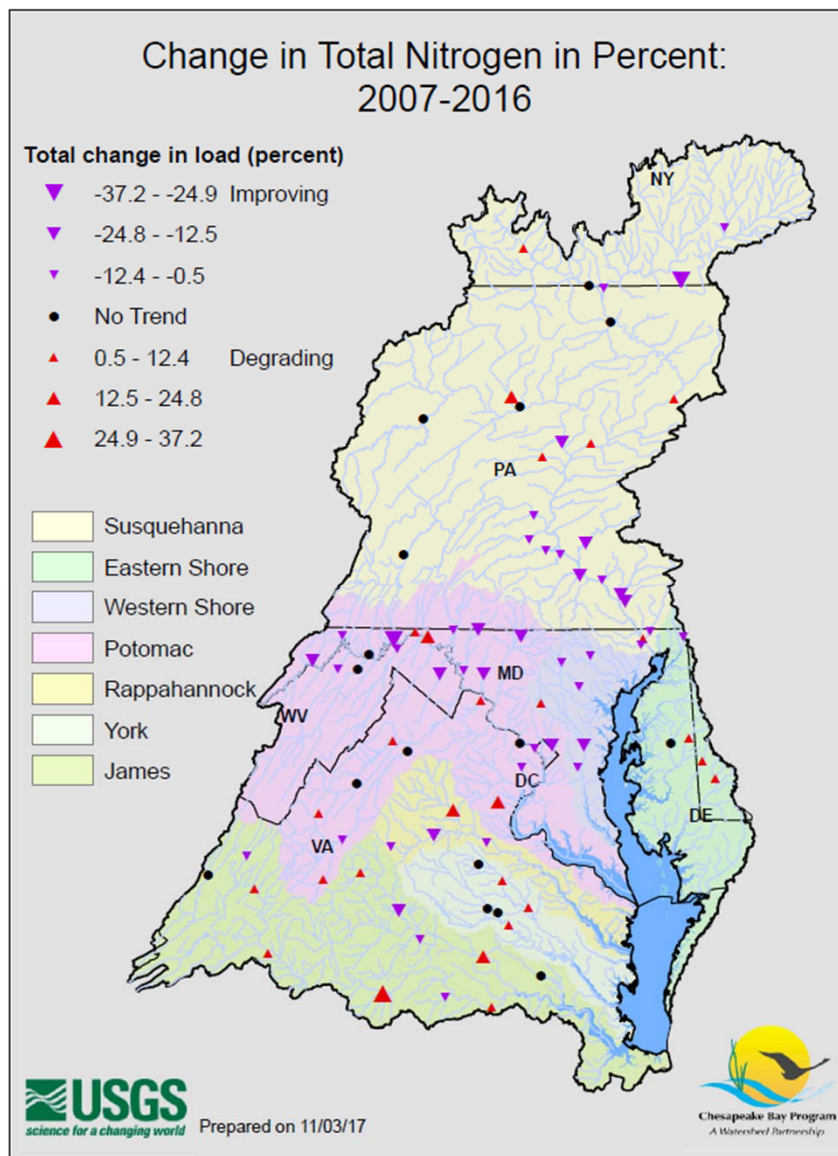


Progress Toward TMDL Goals

- The Bay and watershed are responding to 30+ years of our individual and collective actions.
- We are at a tipping point for Bay restoration.



Source: Testa, 2017 unpublished



Progress Toward TMDL Goals

Trends in short-term Nitrogen loads - describe whether relative water-quality conditions (independent of flow) are improving, degrading, or not changing.

The trend results are our best tool for linking watershed management and watershed conditions to water-quality change.