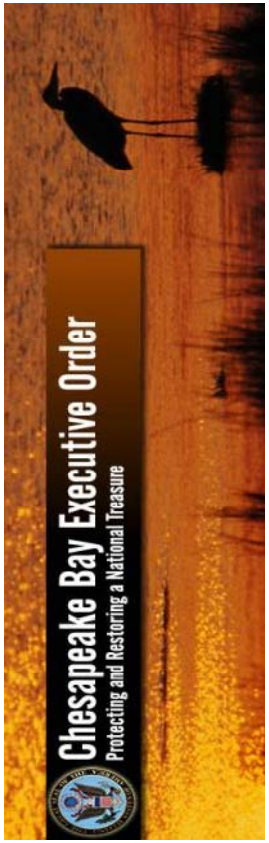
Restore Clean Water

Goal:
Reduce nitrogen, phosphorus, sediment and other pollutants to meet Bay water quality goals for dissolved oxygen, clarity, chlorophyll-a and toxic contaminants.



OUTCOMES

Water Quality Meet water quality standards for dissolved oxygen, clarity/underwater grasses and chlorophyll-a in the Bay and tidal tributaries by implementing 100 percent of pollution reduction actions for nitrogen, phosphorus and sediment no later than 2025, with 60 percent of segments attaining water quality standards by 2025. *(Current condition: 89 of the 92 segments of the Bay and its tidal waters are impaired.)*

Monitoring

- CBPO Tidal and Nontidal Monitoring Networks
- Factors Affecting Trends (FAT)
- Monitoring of desired water quality outcome and reduction goals

Assessing Performance

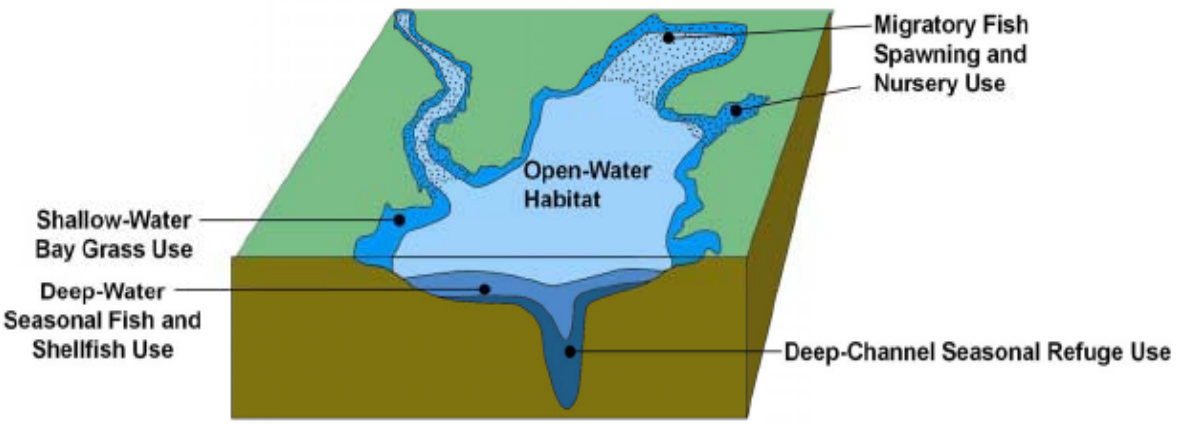
- Bay TMDL
  - 100% practices in place by 2025
- Executive Order
  - 60% of segments in attainment by 2025*
- Partnership Water Quality Indicator
  - Metric for monitoring desired outcome
  - Useful for establishing interim goals

** In tidal waters*

Water Quality Indicator

Purpose:
To measure progress toward the achievement of Chesapeake Bay water quality standards.

- 92 tidal Bay segments
- 291 designated-use segments
- Weighted, area-based approach

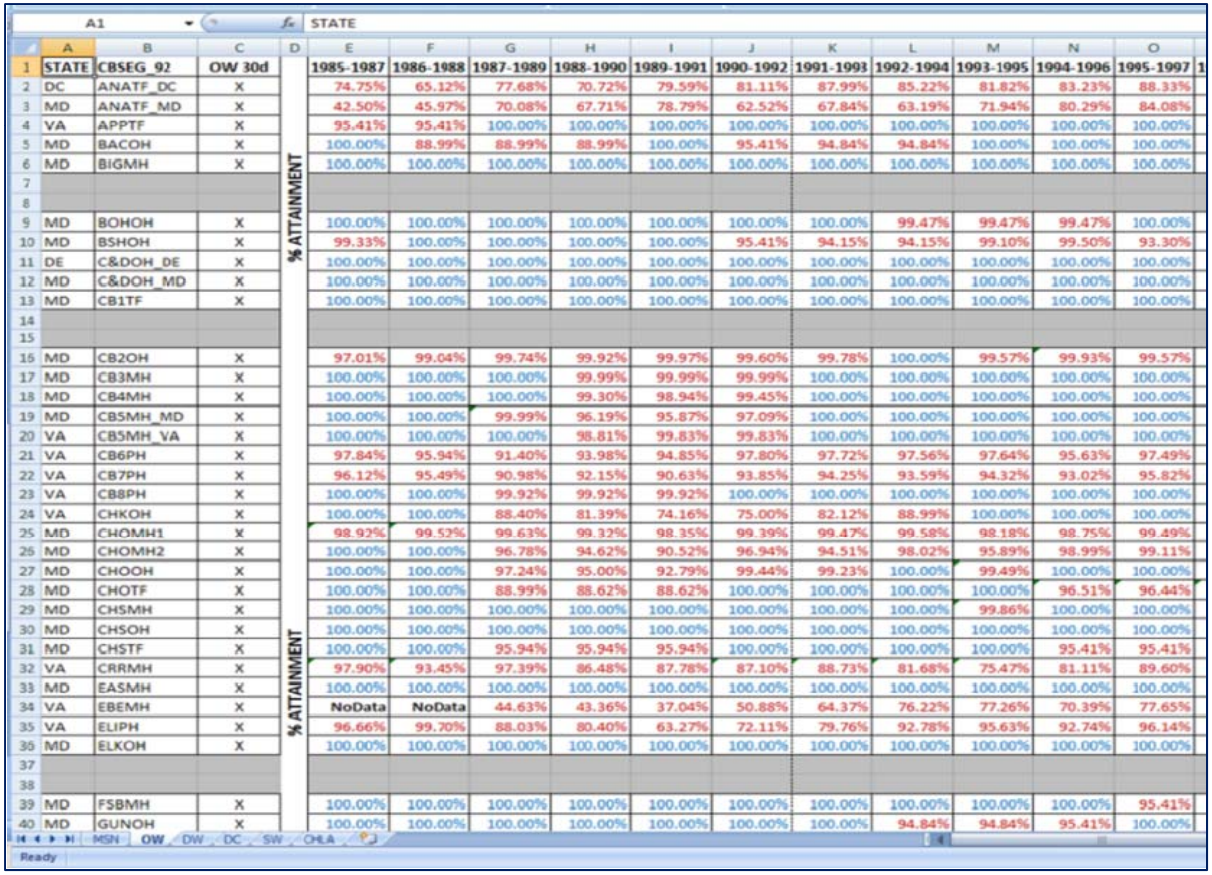


Setting Interim Expectations

- Assume validation of the umbrella criteria
  - Fully assess attainment across all segments, uses, and criteria
- Interim value based on:
  - An evaluation of the 1985-2011 time series of criteria attainment
  - Driving towards 60% attainment by 2025 as the current end point

Analyses: 1985-2011

For each designated use, developed a comprehensive spreadsheet of attainment status for the rolling 3-yr periods for each applicable segment



	STATE	CBSEG_92	OW 30d		1985-1987	1986-1988	1987-1989	1988-1990	1989-1991	1990-1992	1991-1993	1992-1994	1993-1995	1994-1996	1995-1997
2	DC	ANATF_DC	X	% ATTAINMENT	74.75%	65.12%	77.68%	70.72%	79.59%	81.11%	87.99%	85.22%	81.82%	83.23%	88.33%
3	MD	ANATF_MD	X		42.50%	45.97%	70.08%	67.71%	78.79%	62.52%	67.84%	63.19%	71.94%	80.29%	84.08%
4	VA	APPTF	X		95.41%	95.41%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
5	MD	BACOH	X		100.00%	88.99%	88.99%	88.99%	100.00%	95.41%	94.84%	94.84%	100.00%	100.00%	100.00%
6	MD	BIGMH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
7															
8															
9	MD	BOHOH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.47%	99.47%	99.47%	100.00%
10	MD	BSHOH	X		99.33%	100.00%	100.00%	100.00%	100.00%	95.41%	94.15%	94.15%	99.10%	99.50%	93.30%
11	DE	C&DOH_DE	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
12	MD	C&DOH_MD	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
13	MD	CB1TF	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
14															
15															
16	MD	CB2OH	X		97.01%	99.04%	99.74%	99.92%	99.97%	99.60%	99.78%	100.00%	99.57%	99.93%	99.57%
17	MD	CB3MH	X		100.00%	100.00%	100.00%	99.99%	99.99%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%
18	MD	CB4MH	X		100.00%	100.00%	100.00%	99.30%	98.94%	99.45%	100.00%	100.00%	100.00%	100.00%	100.00%
19	MD	CB5MH_MD	X		100.00%	100.00%	99.99%	96.19%	95.87%	97.09%	100.00%	100.00%	100.00%	100.00%	100.00%
20	VA	CB5MH_VA	X		100.00%	100.00%	100.00%	98.81%	99.83%	99.83%	100.00%	100.00%	100.00%	100.00%	100.00%
21	VA	CB6PH	X		97.84%	95.94%	91.40%	93.98%	94.85%	97.80%	97.72%	97.56%	97.64%	95.63%	97.49%
22	VA	CB7PH	X		96.12%	95.49%	90.98%	92.15%	90.63%	93.85%	94.25%	93.59%	94.32%	93.02%	95.82%
23	VA	CB8PH	X		100.00%	100.00%	99.92%	99.92%	99.92%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
24	VA	CHKOH	X		100.00%	100.00%	88.40%	81.39%	74.16%	75.00%	82.12%	88.99%	100.00%	100.00%	100.00%
25	MD	CHOMH1	X		98.93%	99.52%	99.63%	99.32%	98.35%	99.39%	99.47%	99.58%	98.18%	98.75%	99.49%
26	MD	CHOMH2	X		100.00%	100.00%	96.78%	94.62%	90.52%	96.94%	94.51%	98.02%	95.89%	98.99%	99.11%
27	MD	CHOOH	X		100.00%	100.00%	97.24%	95.00%	92.79%	99.44%	99.23%	100.00%	99.49%	100.00%	100.00%
28	MD	CHOTF	X		100.00%	100.00%	88.99%	88.62%	88.62%	100.00%	100.00%	100.00%	100.00%	96.51%	96.44%
29	MD	CHSMH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.86%	100.00%	100.00%
30	MD	CHSOH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
31	MD	CHSTF	X		100.00%	100.00%	95.94%	95.94%	95.94%	100.00%	100.00%	100.00%	100.00%	95.41%	95.41%
32	VA	CRRMH	X		97.90%	93.45%	97.39%	86.48%	87.78%	87.10%	88.73%	81.68%	75.47%	81.11%	89.60%
33	MD	EASMH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
34	VA	EBEMH	X		NoData	NoData	44.63%	43.36%	37.04%	50.88%	64.37%	76.22%	77.26%	70.39%	77.65%
35	VA	ELIPH	X		96.66%	99.70%	88.03%	80.40%	63.27%	72.11%	79.76%	92.78%	95.63%	92.74%	96.14%
36	MD	ELKOH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
37															
38															
39	MD	FSBMH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.41%
40	MD	GUNOH	X		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	94.84%	94.84%	95.41%	100.00%

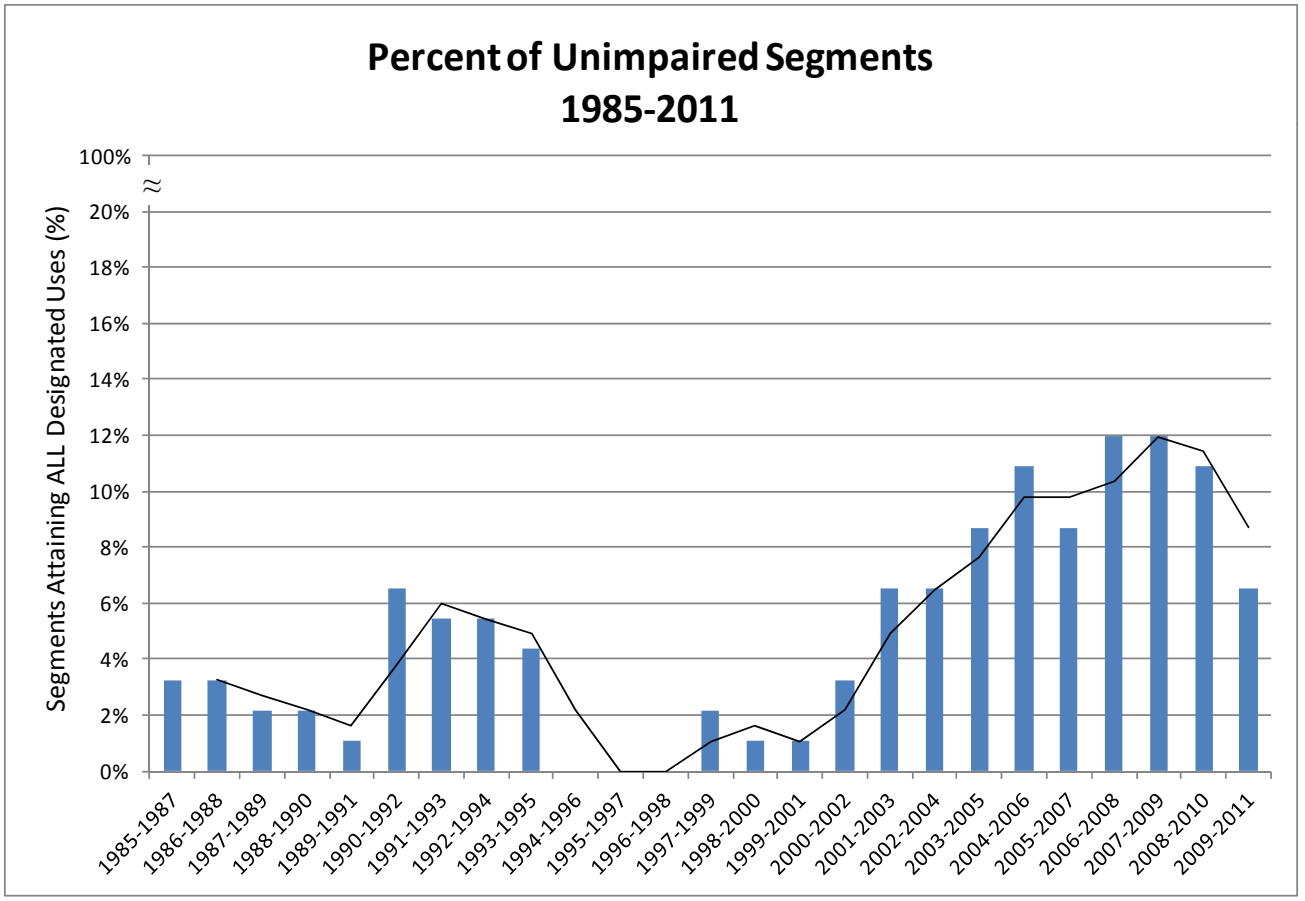
> 560,000 data points *per parameter*

Collectively:
> 28 million data points analyzed!

92 Bay Segments

Baywide:

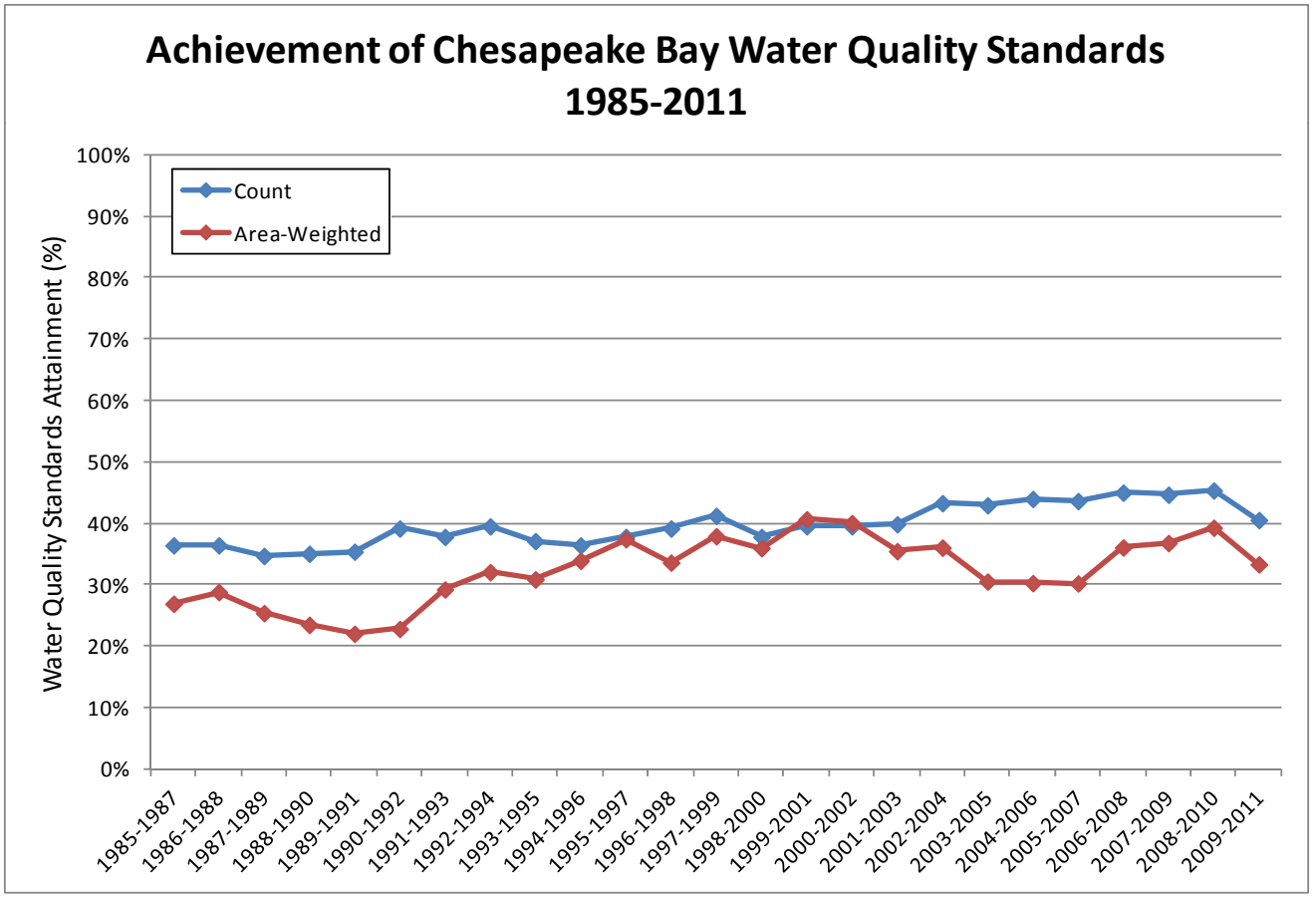
Total number of tidal Bay segments attaining all applicable designated use criteria



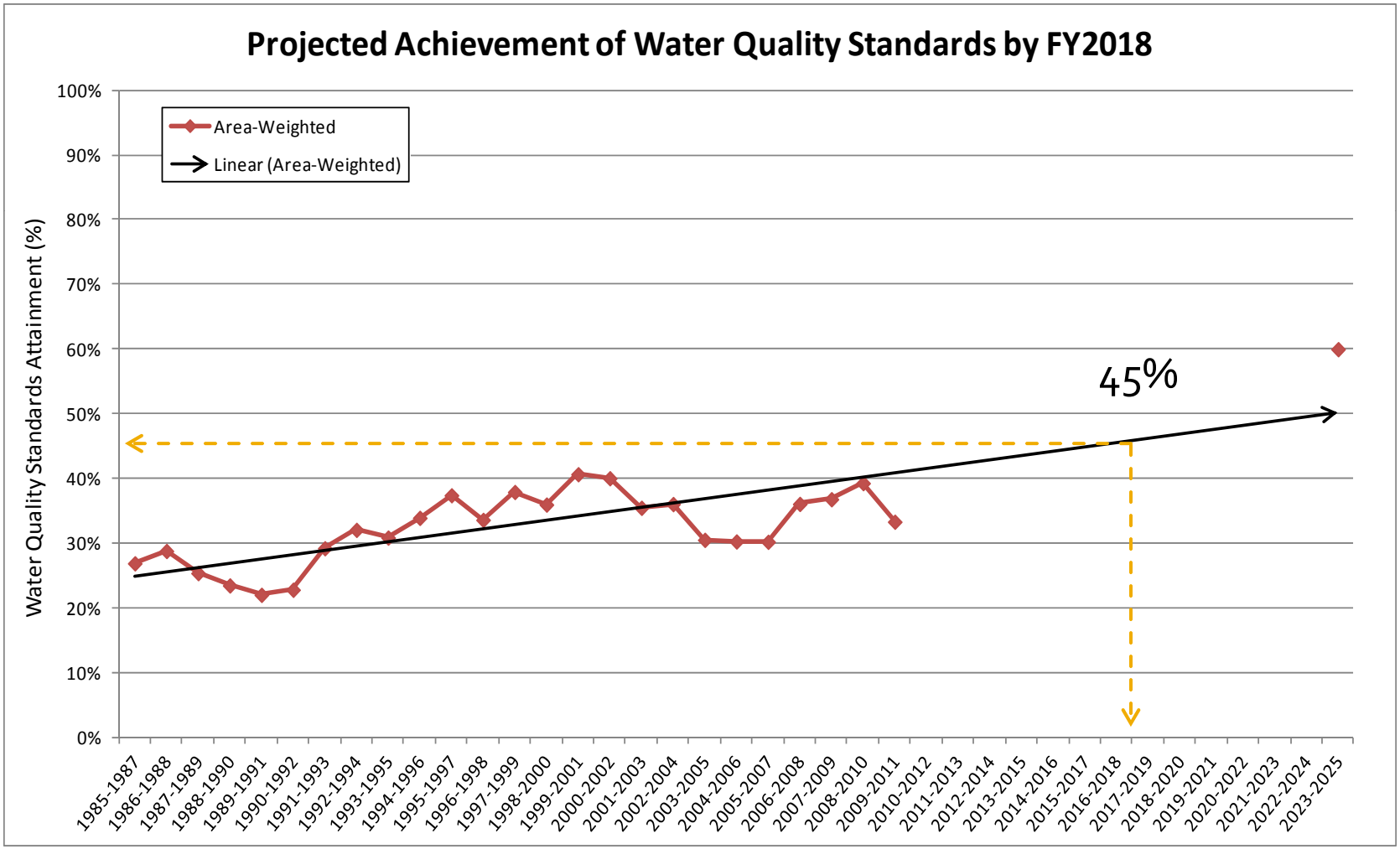
291 Designated-Use Segments

Baywide:

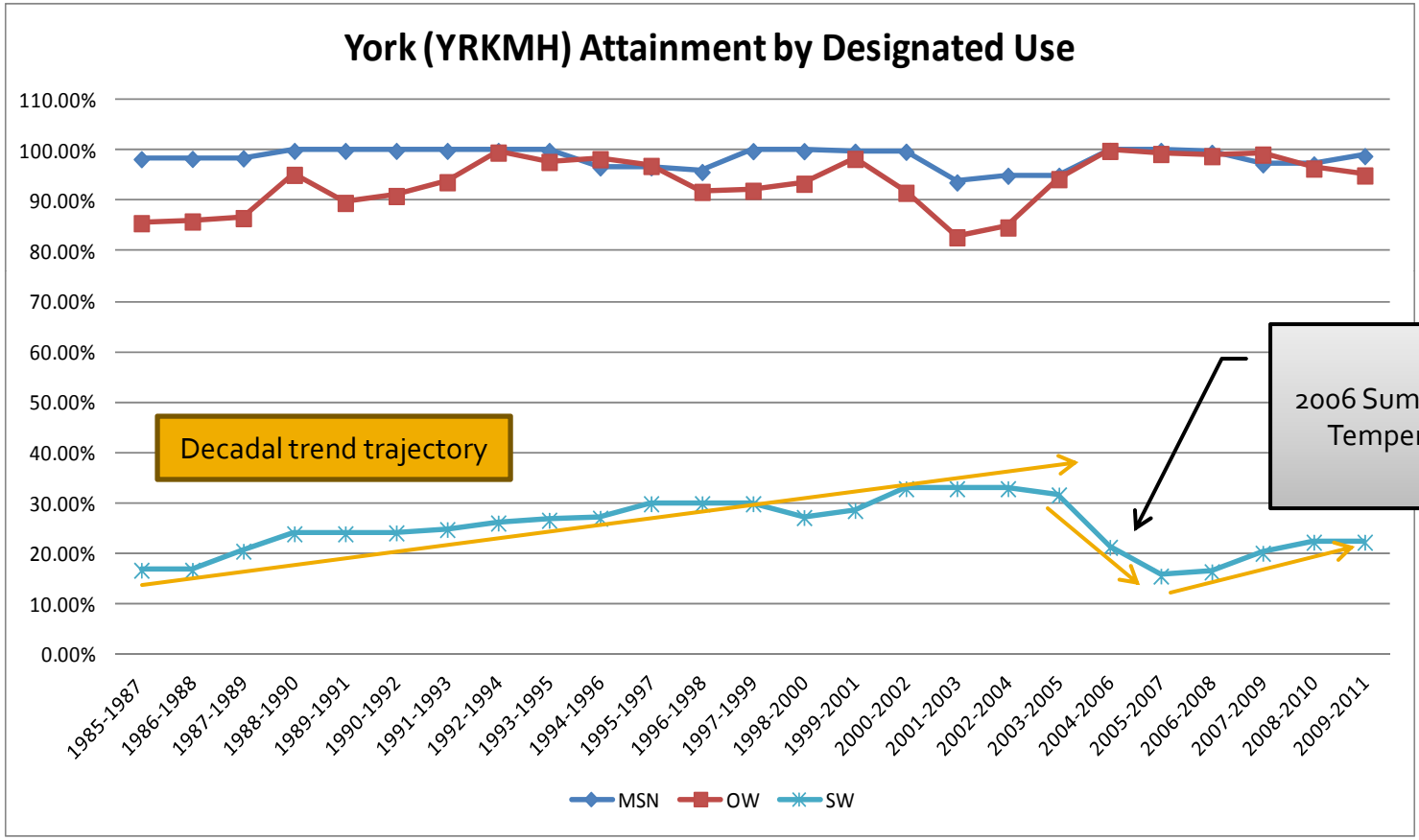
Total number of designated-use segments attaining their applicable criteria



FY2018 Target

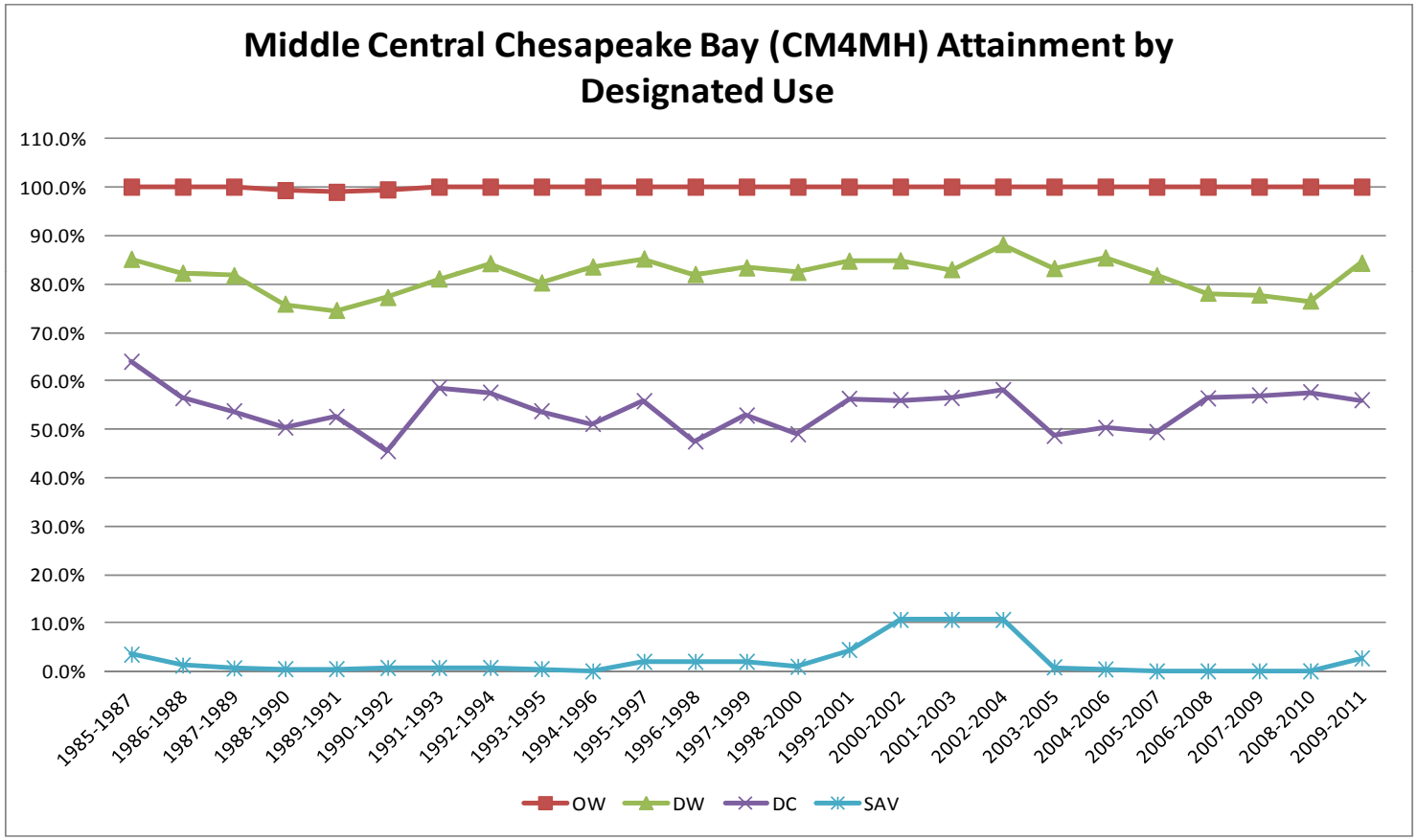


Virginia Lower York River



Improving trend in shallow-water Bay grasses WQS attainment through 2005; then 2006 summer high temperatures depleted eelgrass populations, which have yet to recover fully years later.

Middle Central Chesapeake Bay



No noticeable trends in deep water and deep channel designated use criteria attainment over time. Consistent with Bay WQ model scenario findings: need an additional 20-30+ mil. lbs more N reduction to effectively reduce abundant algal populations to enable oxygen to increase.

Continuing Efforts

- Criteria Assessment Protocols
  - Workgroup working on next criteria addendum for Partnership review, approval by 2015
- Explaining Long-term Estuarine Water Quality Trends
  - Applying recently approved assessment methodology to decades of data
  - Use Bay water quality model to forward *project* possible trajectories of water quality responses as we continue to set/work towards milestones

Adaptive Management

- What can we learn from the observed trends to feedback to our ongoing management efforts?
- Are we on track for 60% attainment of water quality standards by 2025?
- Growing evidence that we need to make informed adjustments to current efforts to ensure our goals are achieved