



VDOT STORMWATER MANAGEMENT PRACTICES

Senate Finance Committee
Business Meeting
October 5, 2017

PRESENTATION TOPICS

- History of VDOT's Municipal Separate Storm Sewer System (MS4) Program and Chesapeake Bay Total Maximum Daily Loads (TMDL)
- Current VDOT Reduction Requirements and Efforts
- Future VDOT Reductions Requirements and Efforts

VDOT'S MS4 PROGRAM AND ASSOCIATED TMDL REQUIREMENTS

VDOT's Initial MS4 Permit – 2003 under the small MS4 General Permit

TMDL special conditions in permit have steadily increased in both 2008 and 2013 permits

- 2008 Planning Phase for local TMDL
- 2013 Planning Phase for Chesapeake Bay TMDL using EPA sanctioned model

TMDL implementation is ramping up

- Chesapeake Bay TMDL with Virginia's Phase II Watershed Implementation Plan (WIP) commitments incorporated in 2013 permit

CHESAPEAKE BAY TMDL

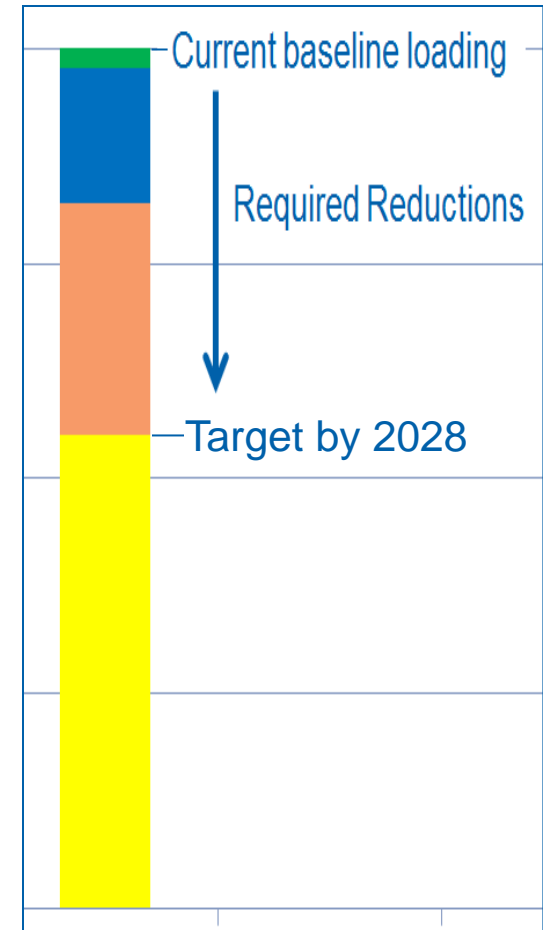
VDOT required to estimate baseline loading and required reduction for sediment (TSS), nitrogen (TN), phosphorus (TP)

Phase implementation from Phase II WIP over three permit cycles

- Achieve 5% reduction by 06/30/2018
- Achieve additional 35% reduction by 06/30/2023
- Achieve additional 60% reduction by 06/30/2028

Achieving the reductions is estimated to be a costly endeavor

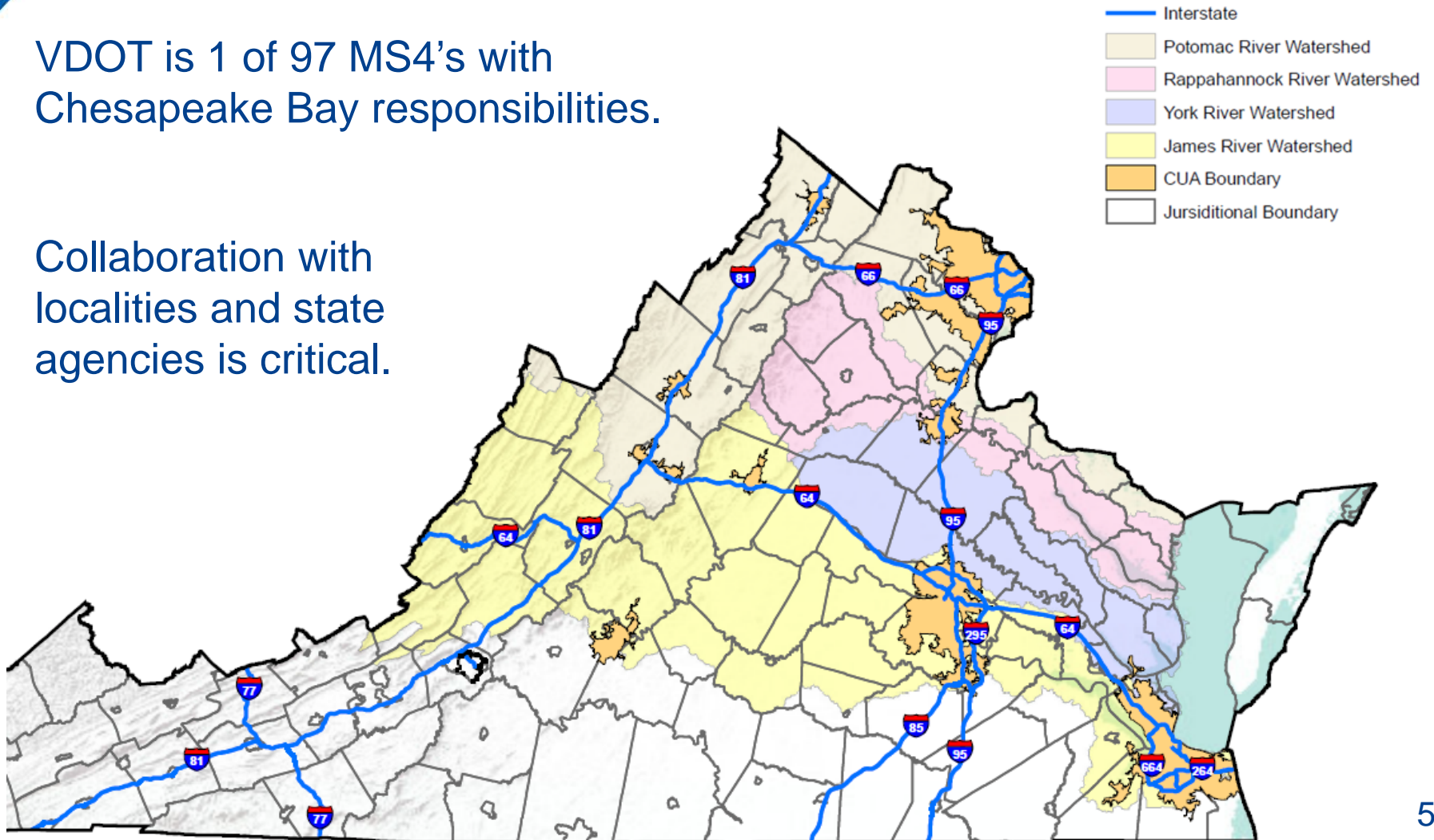
- Estimating the VDOT load and reductions
- Selecting cost effective BMPs to achieve reductions



ESTIMATING VDOT'S MS4 SERVICE AREA

VDOT is 1 of 97 MS4's with
Chesapeake Bay responsibilities.

Collaboration with
localities and state
agencies is critical.



HISTORICAL TMDL SPENDING

Majority of current reductions achieved through:

- Credit for historical stormwater treatment
- Normal street sweeping efforts
- Redevelopment credit through roadway projects

Limited reductions have been through direct efforts

- Stream restoration at a maintenance facility, National Fish and Wildlife Foundation (NFWF) Grant
- Not eligible for Stormwater Local Assistance Fund (SLAF)
- Nutrient credit purchase (similar to compensatory mitigation)

It is difficult to estimate a true cost. However, using a unit cost range of \$8,500 to \$13,500/pound of TP with 670 pounds achieved to date:

- Approximately \$5.7M – \$9M

POTENTIAL COST IMPLICATIONS

In 2011, Senate Finance Committee projected total TMDL costs:

- \$13.6 to \$15.7 billion including wastewater, agriculture, stormwater, on-site septic systems
- Total stormwater capital costs \$9.4 to \$11.5B
 - Annual O&M costs additional \$1.0B to \$1.2B statewide
 - Estimated VDOT costs \$2.1B and \$700 million, respectively
 - Assumed runoff reduction practices

SENATE OF VIRGINIA

Senate Finance Committee

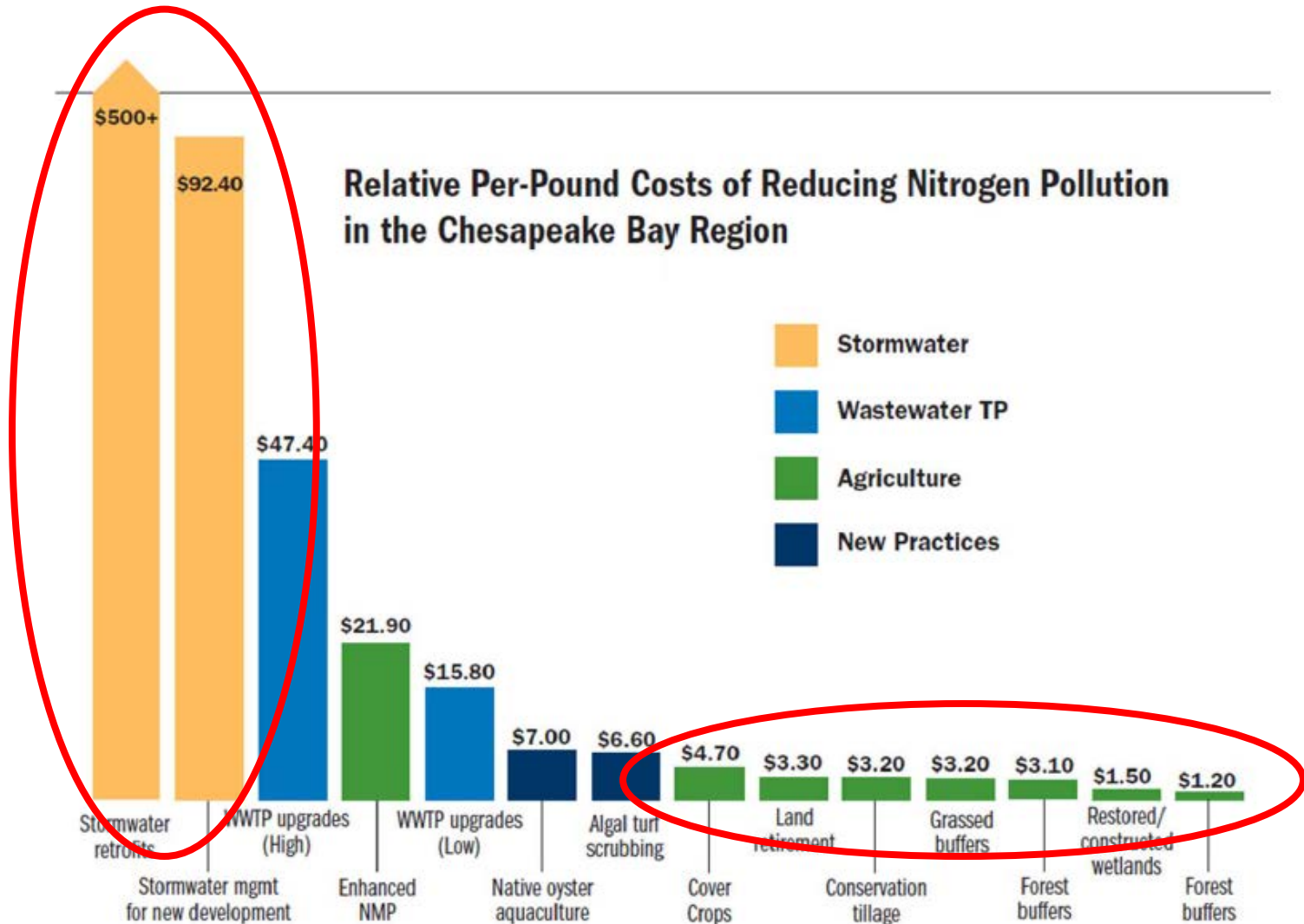
Chesapeake Bay TMDL
Watershed Implementation Plan:
What Will it Cost to Meet
Virginia's Goals?

November 18, 2011



SENATE FINANCE COMMITTEE

BMP COST AS REPORTED BY SENATE FINANCE COMMITTEE



Source: World Resources Institute

January 2010

POTENTIAL COST IMPLICATIONS

MS4s and other stakeholders have refined cost estimates since original report

Regulated Entity	Cost Estimate (millions)
VDOT	\$2,100
Fairfax Co.	\$651 - \$845
Virginia Beach	\$323 - \$429
Richmond City	\$159 - \$305
Suffolk	\$109 - \$211
Lynchburg	\$109 - \$201
James City Co.	\$87 - \$149
Isle of Wight Co.	\$40 - \$79
Surry Co.	\$7 - \$13
Statewide	\$9,400 - \$11,500

Estimates are capital cost only

VDOT BMP TOOLBOX

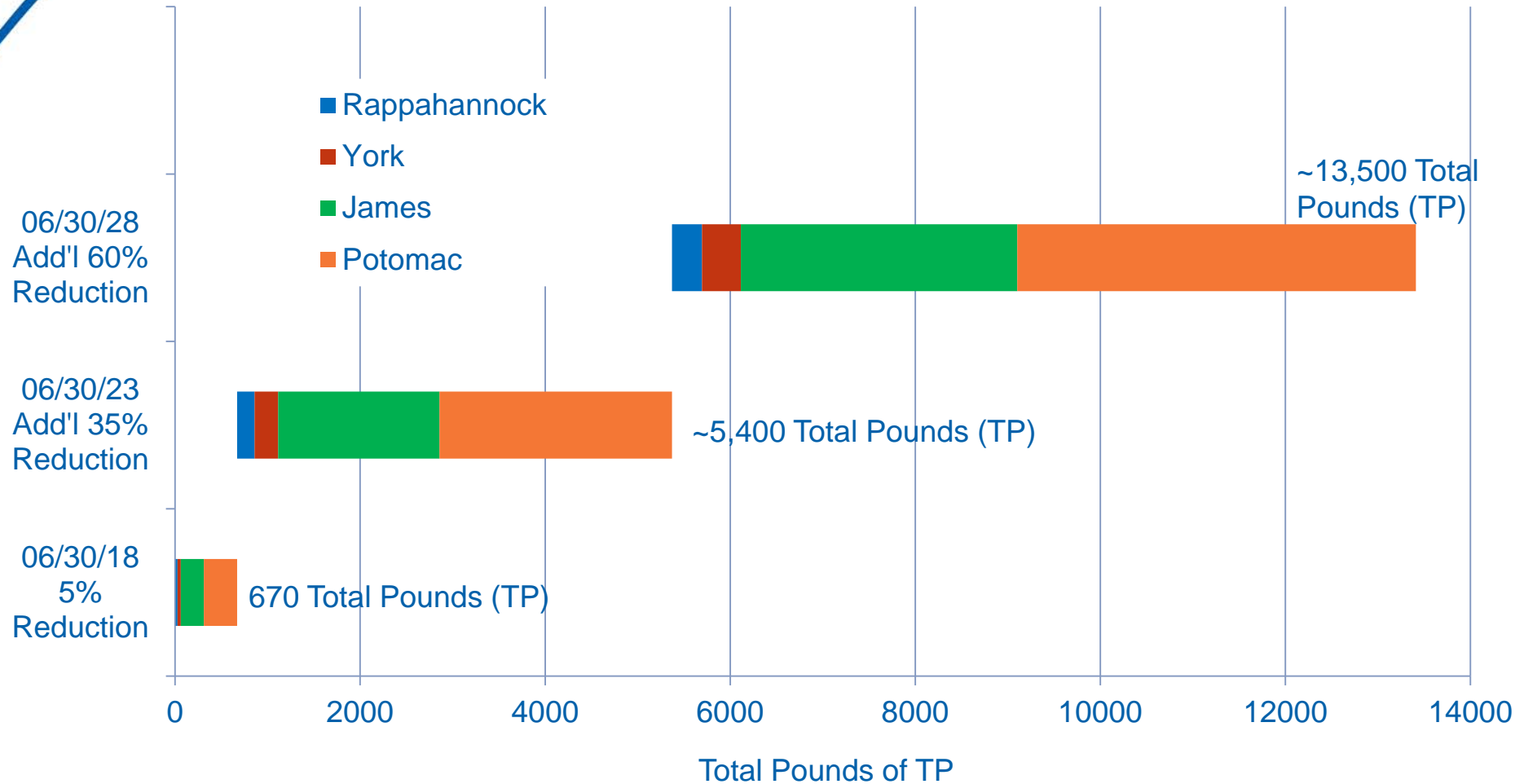
BMP	\$/pound of TP
Turnkey Delivery (stream restoration, land conversion)	\$4,500 – \$7,500
Nutrient Credits (agricultural practices, land conversion)	\$9,600 – \$16,000
Infrastructure Improvement (outfall and channel stabilization)	\$5,000 – \$15,500
Annual O&M Credit (street sweeping, catch basin clean-out)	Refining cost estimates
Structural Retrofits (stormwater management facilities)	\$35,000 – \$45,000

VDOT BMP TOOLBOX

BMP	BMP STATUS
Historical BMPs	Already Implemented
Redevelopment	
Nutrient Credits	
Stream Restoration	Estimated to be used during this permit cycle
Land Cover Conversion	
Channel/Outfall Stabilization	
Street Sweeping	
Catch Basin Clean-out	
Structural Retrofits	In the toolbox for future use

As identified in VDOT's current Action Plan, developed consistent with DEQ Guidance

REQUIRED REDUCTIONS BY PERMIT CYCLE



EXPECTED FUNDING NEEDS

MS4/TMDL investment needed to address requirements

Using a range of \$8,500 – \$13,500/pound of TP

- Approximately \$40M to \$65M will be required to achieve 35% reductions
- Approximately \$70M to \$110M will be required to achieve 60% reductions

Other Considerations

- Future budgets need to address long-term O&M

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