

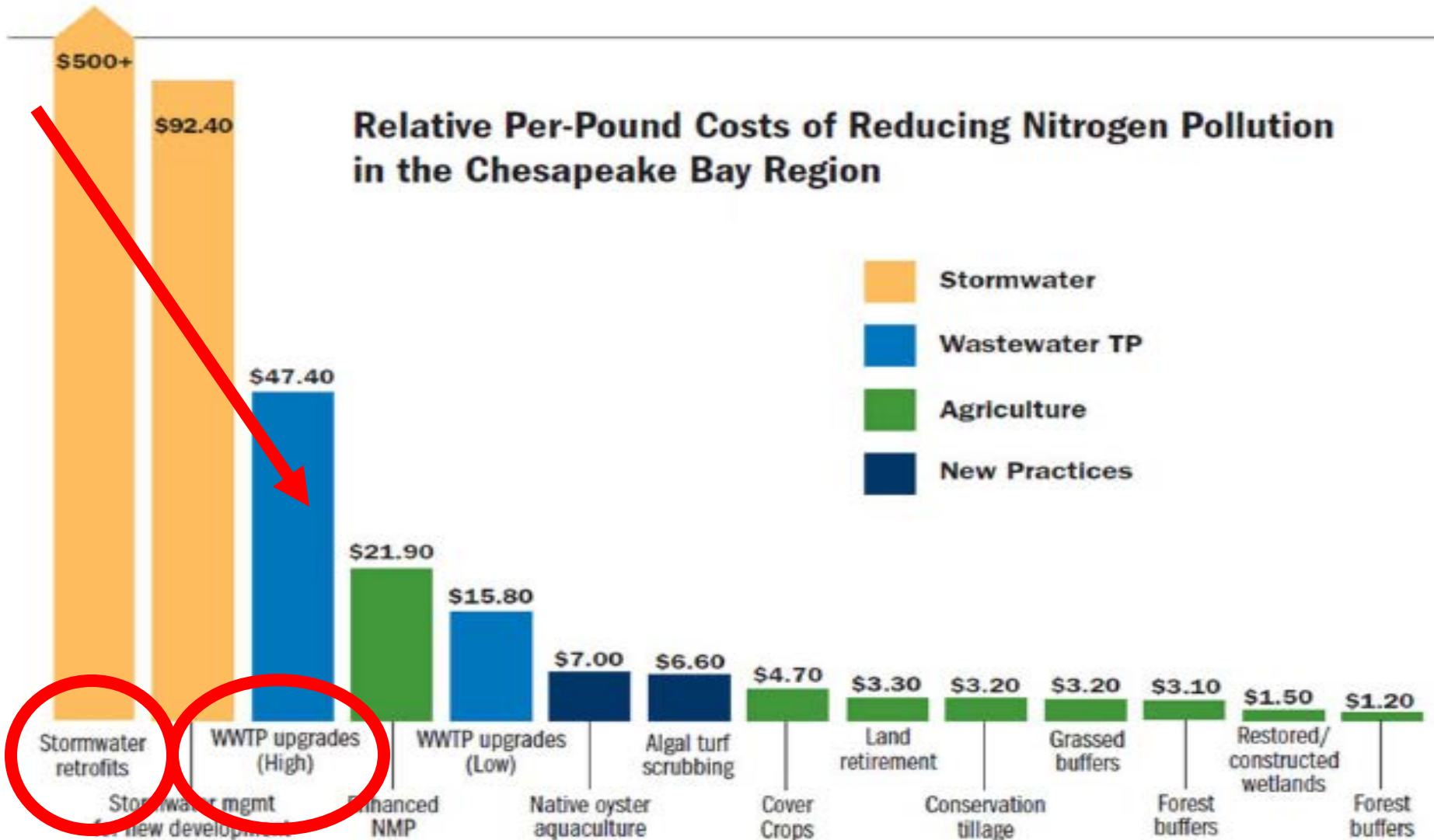
**METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
CHESAPEAKE BAY & WATER RESOURCES POLICY COMMITTEE
NOVEMBER 16, 2018**

WATER QUALITY CREDIT TRADING IN VIRGINIA

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WWTP : MS4 Retrofit Efficiencies

Relative Per-Pound Costs of Reducing Nitrogen Pollution in the Chesapeake Bay Region



Source: World Resources Institute

Wastewater Plants

- First authorized in 2005
- Large (105+ facility) market
- Bay TMDL is the driver
- Substantial annual trading volume 2011 to Present
- High level of activity for load reductions
- Plus, some initial activity for WWTP growth offsets under TMDL (new or expanded treatment plants)



2017 WWTP Credits

Table 1 Credits Generated, Credits Used and Credit Surplus

	NITROGEN			PHOSPHORUS		
	Credits Generated	Credits Used	Credit Remainin g	Credits Generate d	Credits Used	Credit Remainin g
Potomac	1,336,887	14,270	1,322,617	117,233	7,218	110,015
Rapp York	217,683	2,293	215,390	26,292	1,394	24,898
	305,482	9,991	295,491	26,032	0	26,032
	2,989,87		2,917,06			
Upper James	0	72,804	6	214,307	18,458	195,849
Lower James	829,635	0	829,635	61,884	0	61,884
Eastern Shore	15,033	257	14,776	1,374	0	1,374

Municipal Stormwater (MS4)

- First authorized in 2012
- Bay TMDL is the driver
- Permits ramp-up over 15 years
- Limited activity to date, but increasing activity
- First trade completed 2017
- Approximately 15 bilateral (WWTP→MS4) trading agreements in effect today

What's A Pound of Phosphorus Worth?

- **Nutrient Exchange (Annual)**
 - \$5.70 (2018)
- **MS4 Retrofits (Perpetual)**
 - Est. \$5,000 - \$25,000+
- **Nonpoint Nutrient Banks (Perpetual)**
 - Est. \$10,000 - \$20,000

New Development

- First authorized in 2009
- Virginia Stormwater Management Program Regulation setting statewide site design requirements is the driver
- Sets phosphorus performance standard (0.41 lbs/acre/year)
- Authorizes off-site compliance measures
- Significant activity level

Nonpoint Source Nutrient Banks

	Credits Approved	Credits Used	Credits Available
N	37,233	21,630	15,548
P	5,748	3,374	2,365

Estimate of Credit Sales Revenue to Date

If P Credit @ \$10,000/lb = \$34 Million

If P Credit @ \$20,000/lb = \$67 Million

Local Water Quality Protection

- **WWTPs**
 - Narrative LWQ provision
 - To date has been applied to segregate James River into Upper and Lower trading regions
 - If necessary, could “unwind” annual credit trades by adding treatment at Buyer facility
- **MS4s**
 - Same as WWTPs, including “unwinding” if necessary
- **Land Development**
 - More permanent implications, so more rigorous limitations
 - Tiered approach to preferred (tighter) trading geography

Local Water Quality (cont.)

Nonpoint Source Nutrient Trading

December 6, 2016



Chesapeake Bay Watersheds

- Chesapeake Bay
- Locality
- HUC-8
- Potomac
- Rappahannock
- York
- James
- Eastern Shore/Chesapeake Bay

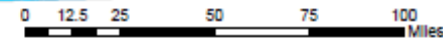
Southern Rivers Watersheds

- Atlantic Ocean
- Albemarle
- Chowan
- Roanoke
- Yadkin
- New
- Holston
- Clinch/Powell
- Big Sandy



Nutrient Banks by Watershed

- | | | | | |
|-----------------------|-----------------------|------------------------|--------------------|----------------------|
| POTOMAC: | P13 - Red Hill Farms | JAMES: | J13 - Greyfields | ROANOKE: |
| P1 - Buena Vista | P14 - Kinsale | J1 - Wildwood Farm | J14 - Gold Hill | Rn1 - Hawkins Forest |
| P2 - Swinging Bridge | P15 - Edgely | J2 - Malvern | J15 - Farmville | Rn2 - Glade Hill |
| P3 - Elk Run | P16 - Montross | J3 - Cranston Millpond | J16 - Namozine | NEW: |
| P4 - Wampler Road | RAPPAHANNOCK: | J4 - Swiss Dixie | J17 - Millboro | N1 - Stallone Farms |
| P5 - Holy Cross Abbey | Rp1 - Rappahannock | J5 - Eastern Henrico | J18 - Willis River | N2 - Hiwassee |
| P6 - Midland | Rp2 - Culpeper | J6 - Layne | ALBEMARLE: | |
| P7 - South River | Rp4 - Pristine Waters | J7 - Leinster | A1 - Pigeon Hill | |
| P8 - Autumn Lane | YORK: | J8 - Stone Tavern | CHOWAN: | |
| P9 - Wentworth Road | Y1 - Pamunkey Farms | J9 - Dungeness | C1 - Dillon Grove | |
| P10 - Bowen | Y2 - Healy's Pond | J10 - Shaefer | | |
| P11 - Owl Run | Y3 - York | J11 - Buckingham | | |
| P12 - Cross Junction | Y4 - Clover Creek | J12 - Prince Edward | | |



WWTP Capacity Protection

- WWTP Nutrient Allocation Protection Is Essential
- State Review of WLAs for Municipal WWTP Tied to 20-Year Anniversary of Bay TMDL (2030)
- Trading & Exchange Participation Is Entirely Voluntary
- No WWTP Wasteload Allocation Modification Is Needed
- Exchange-Based Trades Limited to 5-Year Term
- Interest in Building Effective, Protective Long-Term Offsetting Methods that Protect Locality WWTP Investments

FOR MORE INFORMATION

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