



Department of the Environment

Maryland State Capital Funding Programs Point Source Nutrient Reduction Chesapeake Bay Restoration

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Environmental Management of Enclosed Coastal Seas

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Presentation Overview

Nutrient (Nitrogen & Phosphorus)
Reduction From Wastewater Treatment
Plants (WWTP) discharging to Surface
Waters (Point Sources) in the Chesapeake
Bay Watershed

1. Bay Restoration Fund (WWTP & Septic)
2. Water Quality Revolving Loan Fund



MWQFA Administered Programs

Water
Quality
Revolving
Loan Fund
(WQRLF)

Provides financial assistance for a wide variety of projects to protect or improve the quality of Maryland's rivers, streams, lakes, the Chesapeake Bay and other water resources

Drinking
Water
Revolving
Loan Fund
(DWRLF)

Provides financial assistance for a wide variety of projects to facilitate compliance with national primary drinking water standards that protect or improve the quality of Maryland's drinking water resources

Bay
Restoration
Fund
(Wastewater)

Provides grants for the upgrade of major wastewater treatment plants with Enhanced Nutrient Removal (ENR) technologies, the upgrade of existing sewerage distribution systems and the incremental cost of wastewater treatment plant ENR operations and maintenance

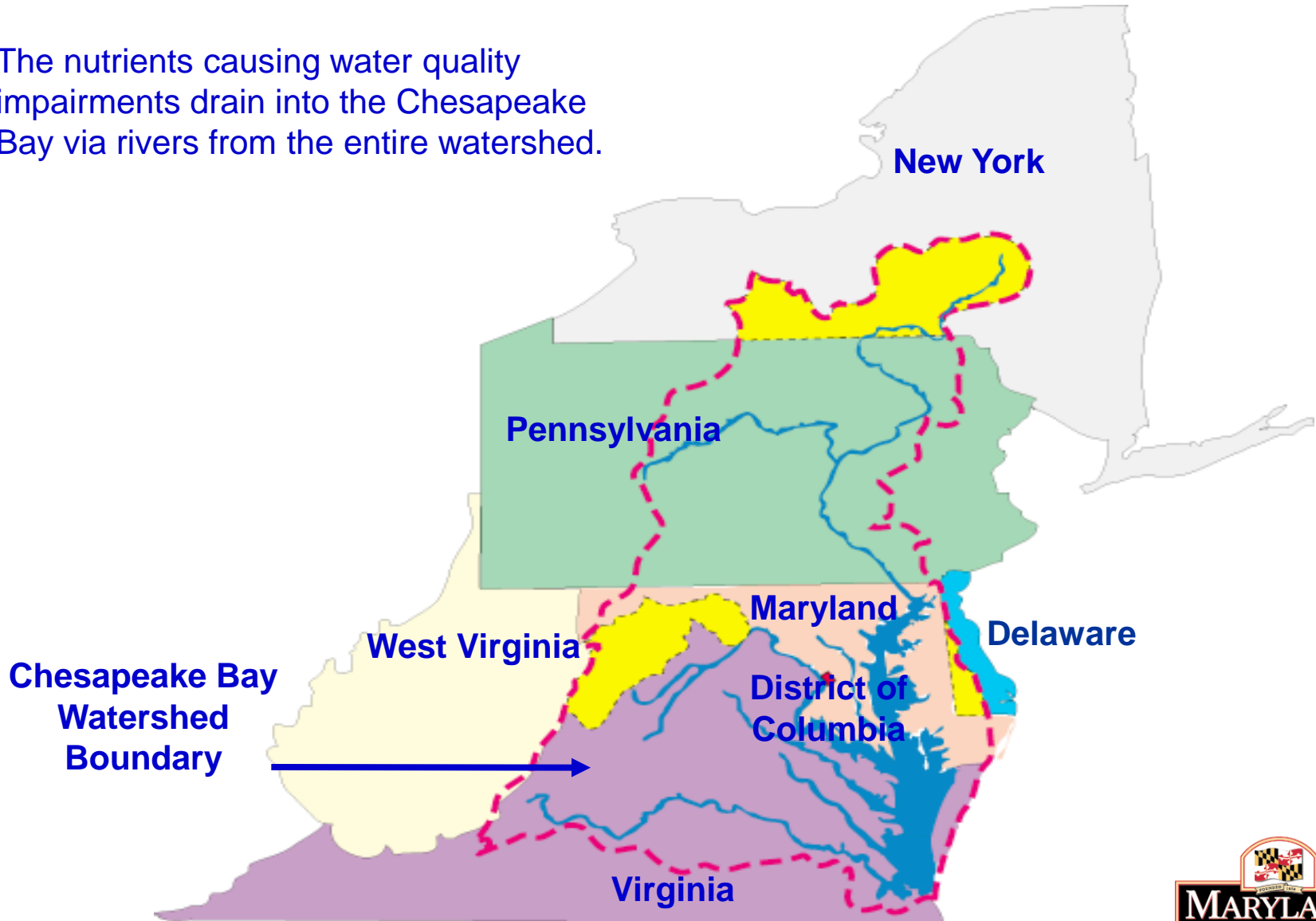
Bay
Restoration
Fund
(Septic)

Provides grants and loans for the upgrade of septic systems with nitrogen removal best available technologies. (Also grants for cover crops through Maryland Department of Agriculture)



Chesapeake Bay Watershed

The nutrients causing water quality impairments drain into the Chesapeake Bay via rivers from the entire watershed.





Chesapeake Bay Watershed

- Includes parts of six states - Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia, and the entire District of Columbia.
- About 150 rivers and streams make up the 64,000-square-mile Bay Watershed
- The Susquehanna River provides about 50 percent of the fresh water coming into the Bay—an average of 19 million gallons of water per minute.
- The Bay watershed is home to 17 million people and growing.

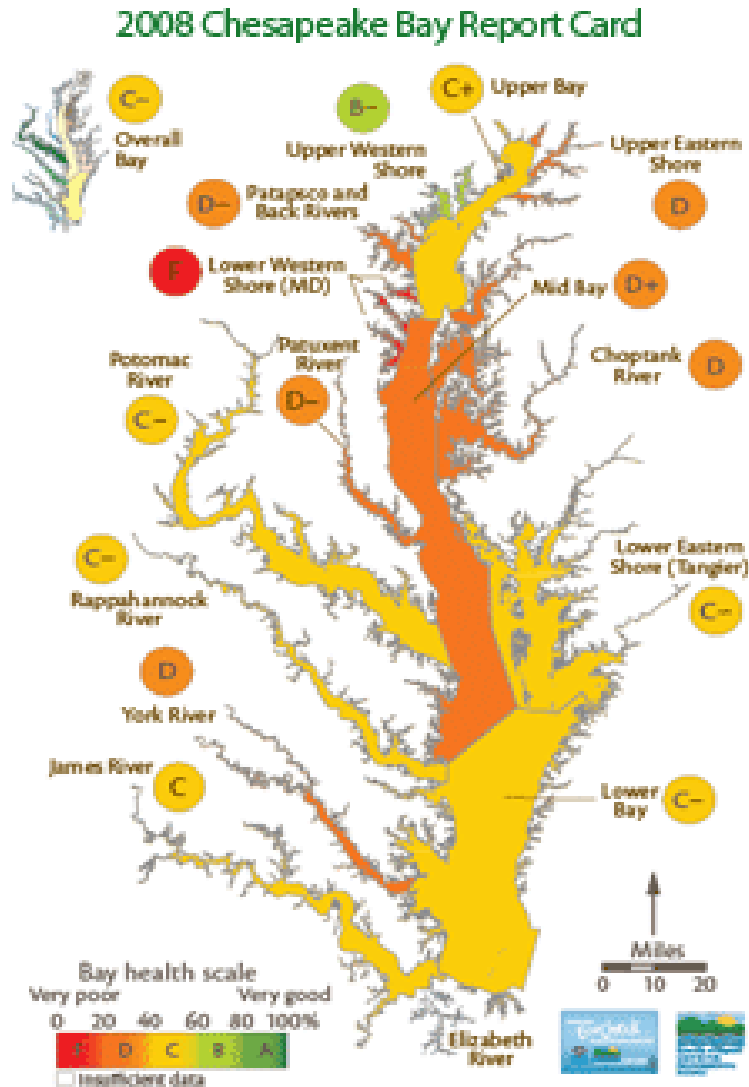


Sources of Nutrients

Sources of Nutrients to the Chesapeake Bay are:

- Fertilizer from farms, lawns, golf courses etc.
- Sewage treatment plants, industrial wastewater facilities, septic systems and animal manure
- Stormwater runoff
- Air pollution from vehicles, coal burning power plants and industries

Chesapeake Bay Habitat Health Report Card: 2008



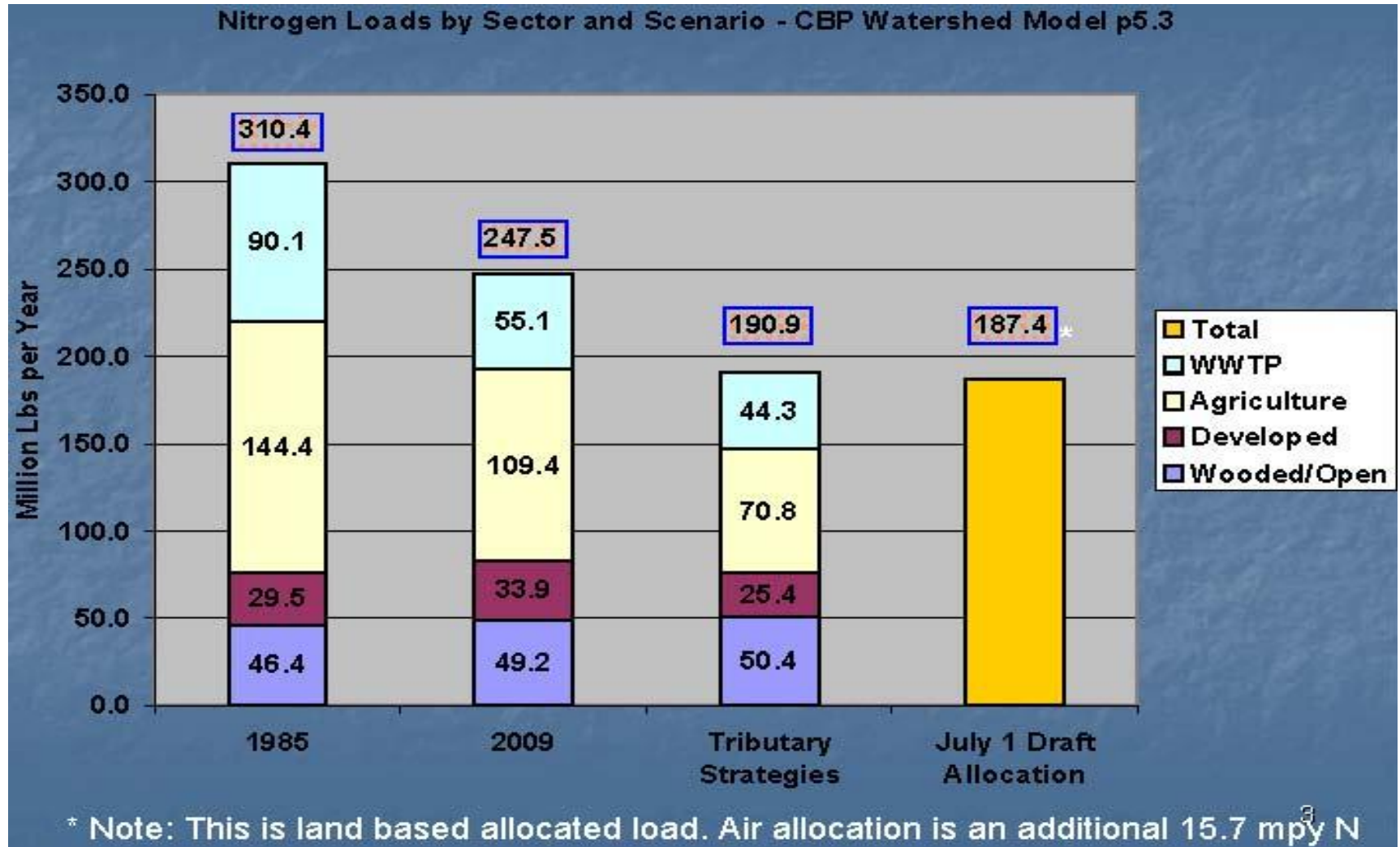
Source: The University of Maryland Center for Environmental Science (UMCES)

EPA – Bay TMDL

TMDL: Total Maximum Daily Loading

- US EPA is enforcing the Federal Clean Water Act by establishing Bay-wide TMDLs.
- River and stream segments to have max. pollution loading limits.

Nitrogen TMDL





Nitrogen Max. Loading Allocation - Bay States

July 1, 2010 Draft Allocations

	Nitrogen Allocation (million pounds/year)	
PENNSYLVANIA	76.77	
MARYLAND	39.09	
VIRGINIA	53.40	
DISTRICT OF COLUMBIA	2.32	
NEW YORK	8.23	
DELAWARE	2.95	
WEST VIRGINIA	4.68	
SUBTOTAL	187.44	
ATMOSPHERIC	15.70	
BASIN-WIDE TOTAL	203.14	





Example: MD Maximum TN by Sector

(million lbs per year)

Total Nitrogen (TN) Loading - By Sector

Sector	Progress Thru 2009	Final Target Load	% Reduction Needed
Urban Regulated	5.098	4.099	20%
Urban Non Regulated	0.551	0.459	17%
Agriculture	17.713	13.603	23%
CAFO	0.080	0.079	0%
Septic	4.007	2.479	38%
Forest	7.133	7.133	0%
Air	0.691	0.686	1%
WWTP & CSO	14.148	10.547	25%
Total	49.421	39.086	21%





History - Bay Restoration (WWTP) Fund

In 2004 Maryland amended the Environment Article of the Annotated Code of Maryland to establish the Bay Restoration Fund as a special, continuing, nonlapsing fund to be administered by MWQFA



2004

The Statute implemented the Bay Restoration Fee on January 1, 2005 to be paid by the users of wastewater facilities & users of onsite septic systems/ holding tanks



2005

MWQFA issues the first Bay Restoration Fund Revenue Bonds



2008





Maryland Bay Restoration (WWTP) Fund

Customers of all (~170 municipal) wastewater treatment plants (WWTP) and owners of industrial WWTP pay into the fund

Fee: \$2.50/month per household (or EDU) collected by the sewer billing authority or County Government

Fees collected are deposited with the State Comptroller each quarter for transfer to MDE

Annual Revenue: ~\$55 million from WW users

1 EDU = 250 gallons per day average flow





Maryland Bay Restoration (Septic) Fund

All Users on On-Site Sewage Disposal Systems (Septic Systems) pay into the BRF (septic) fund

Fee: \$2.50/month (\$30/yr) year collected by the water billing authority or County Government

Fees collected are deposited with the State Comptroller each quarter for transfer to MDE (60%) and MD Dept. of Agriculture (40%)

Annual Revenue: ~\$14 million from OSDS users

Use: MDE Septic nitrogen removal upgrade grants; MDA for Cover Crops grants





Maryland Bay Restoration (WWTP) Fund

Goal: Provide grants to upgrade the existing 67 major municipal WWTP with Enhanced Nutrient Removal (ENR) technologies by 2017 to meet the point source targets under the Chesapeake Bay TMDL/Watershed Implementation Plan

More cost-effective to undertake ENR are major WWTP.
Minor WWTP may not need to upgrade for ENR.

Use BRF fee revenue as collateral for payment of debt service on revenue bonds issued to expedite financing

ENR: WWTP upgrade to achieve effluent quality of Annual Avg. Nitrogen < 3 mg/l; Phosphorus < 0.3 mg/l

Major WWTP: Design Flow > 0.50 million gallons/day





Maryland Major Wastewater Facilities

There are ~170 Wastewater Treatment Plants (WWTP) designed to treat ~525 million gallons per day of sewage from Maryland

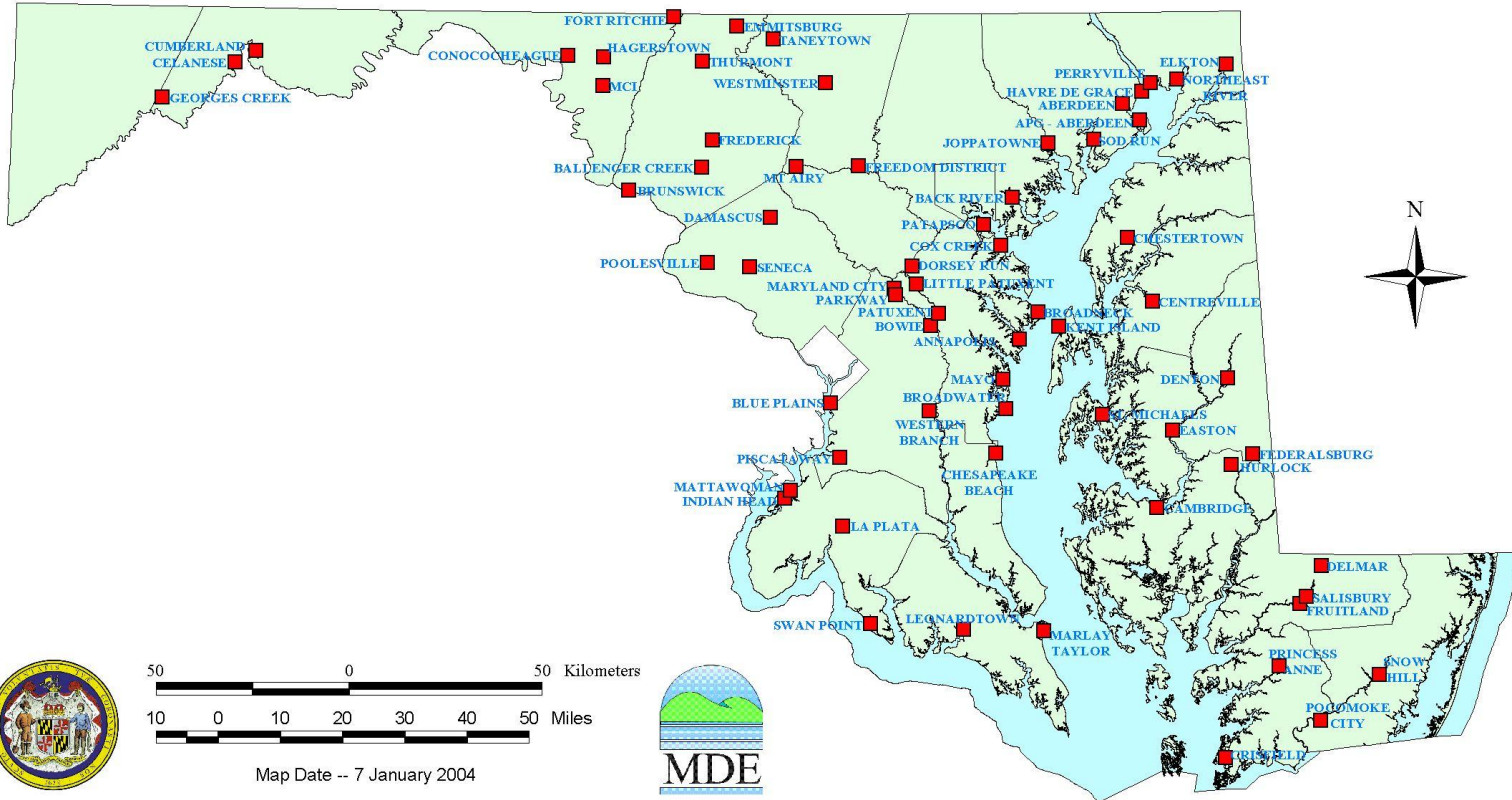
67 WWTP are classified as Major (Sewage design flow > 0.50 million gallons per day) that account for ~95% of the Maryland flow in to the Chesapeake Bay

Upgrades to the major 67 WWTP are estimated to reduce total nitrogen (TN) loading to the Chesapeake Bay and its tributaries by ~7.5 million pounds annually

As of June 2011, the estimated ENR capital cost to upgrade the 67 Major WWTP is \$1.4 billion

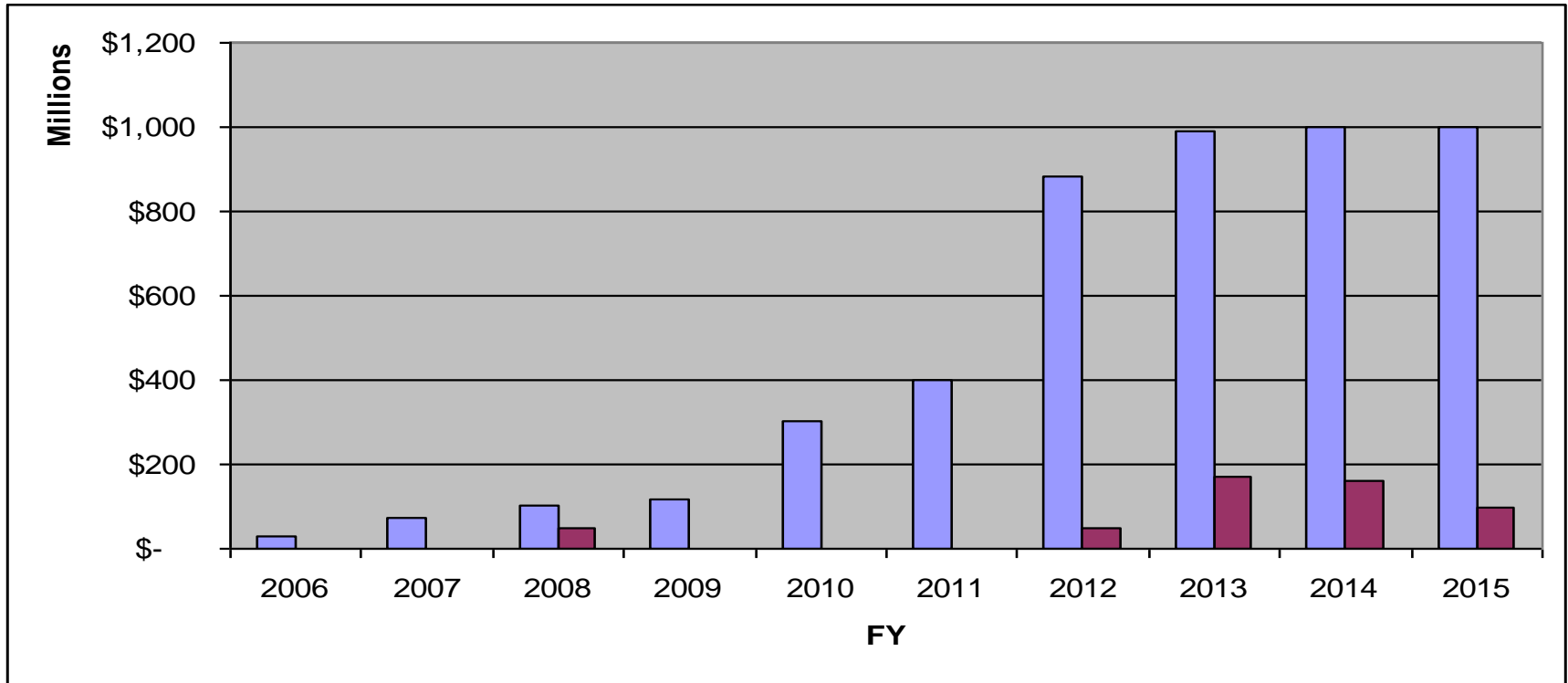


Maryland's Major Wastewater Treatment Plants in the Chesapeake Bay Watershed





Projected Cumulative Grant & Bond Issuance Bay Restoration Fund

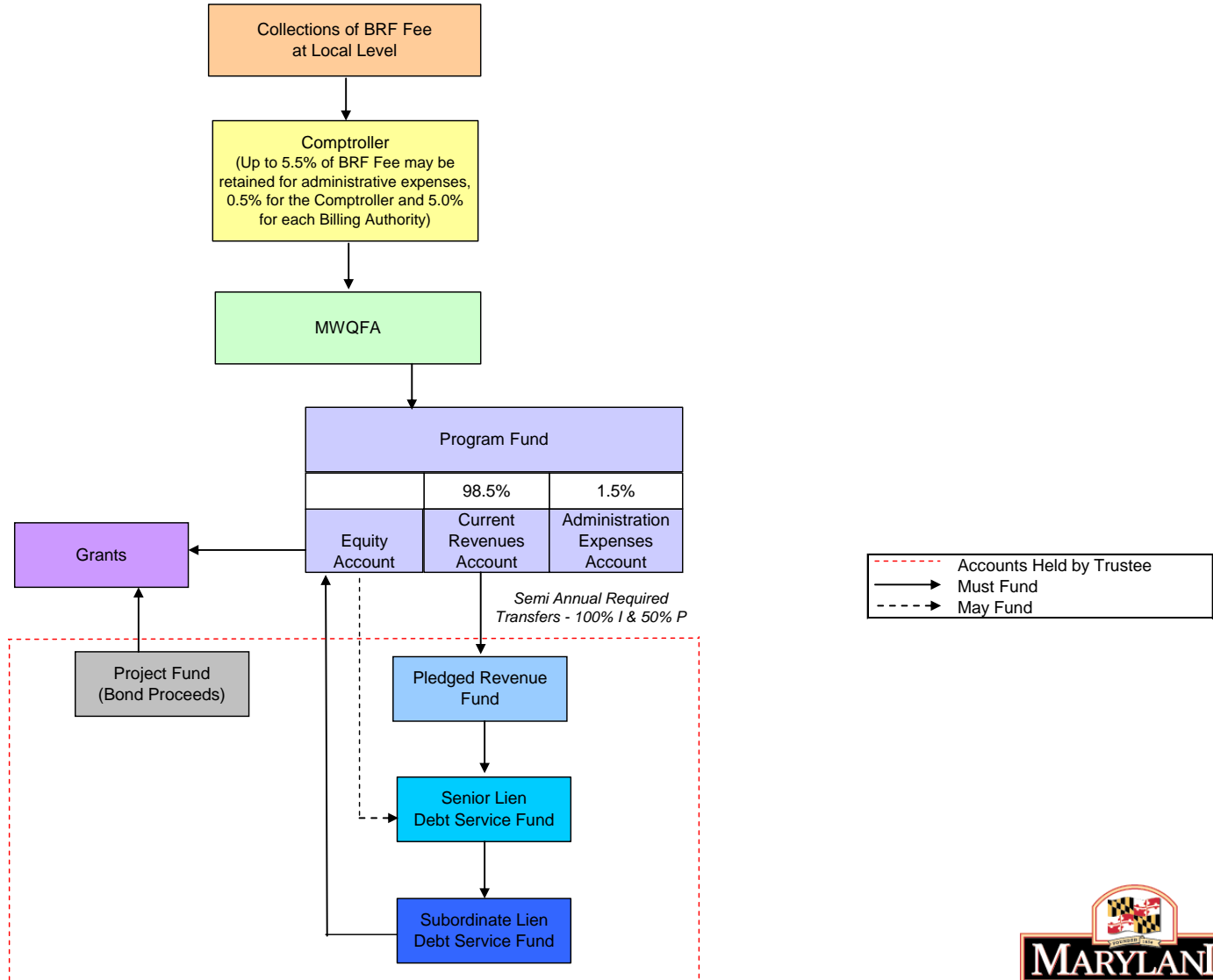


Total ENR Funding Need (67 WWTP Upgrade): ~\$1.4 billion (May 2011 estimate)
Bay Restoration Fund Capacity: ~\$1.0 billion using cash and revenue bonds
Funding Shortfall: ~\$400 million based on current fee level and bonding capacity





BRF Financing Mechanism Flow of Funds





Revenue Bond Indenture Provisions

- State Law permits only up to 15-year bond amortization
- Additional Bonds Test at 1.10 times debt service coverage
- Bond proceeds to be used to provide ENR grants
- No Debt Service Reserve Fund
 - Reflective of the fact that the Bay Restoration Fee is collected statewide from WWTP users at a flat rate of \$30 per year per households.
 - Commercial users pay fee based on \$30 per year per EDU (avg. 250 gpd usage), which is estimated to account for less than 25% of the total BRF WWTP fee revenue
- Balance in Program Fund Equity Account (not a pledged revenue for bonds) provides additional security for debt service, if needed





Water Quality Revolving Loan Fund Sources of Capital

- Federal Capitalization Grants
- State Match (20% of Federal Funds)
- Revenue Bonds issued by MWQFA
- Investment Earnings
- Loan Principal & Interest Repayments (net of revenue bond debt service)





Water Quality Revolving Loan Fund

- Funds water quality improvement capital projects
- Annual Budget: ~\$150 million
- Funding: Primarily below market interest rate loans (up to 20-year term), secured by Sewer Revenues/GO pledge
- Current interest rate (including fees): 2.7% standard; 1.6% Disadvantaged Communities
- Additional subsidies of up to \$1.5 million loan forgiveness (grant) to Disadvantaged Communities
- Project selection based on project priority ranking
- Project application solicited annually (Dec-Jan)





WQRLF – Sources & Uses

SOURCES (From inception in 1989 through 6/30/2011)

\$ Million

Federal Capitalization Grant	\$ 796 (including one time 2009 Stimulus \$)
State Match Funds	\$ 140
Revenue Bonds	\$ 213
Investments Earnings	\$ 136
Loan Repayments (P&I)	<u>\$ 694</u>
	\$1,979

USES

Capital Financing for Loans	\$1,679 (loan forgiveness also permitted in future)
Bonds Debt Service (P&I)/Reserves	\$ 262
Transfers Out (WQ/DW)	\$ 11
Operating Expenses	<u>\$ 17</u>
	\$1,979





WQRLF Project Selection Priority System

- Used to score and rank project applications
- Projects are evaluated for their Environmental Water Quality, Public Health and Other Benefits
- Projects selected in priority order for funding
(must be ready to proceed within the funding cycle)
- Priority system does not determine additional subsidies (A separate disadvantaged community criteria is used)





WQRLF Project Priority System

- **Threshold Requirement (Sewerage) - Project must:**
 - Be included in the County Water/Sewer Plan
 - Provide service within a County Priority Funding Area (unless exempted due to public health concerns)
 - **Projects Primary Benefit (max 35 points)**
 - Environmental Water Quality (WQ) Benefit, or
 - Public Health (PH) Benefit
 - **Projects WQ/PH Compliance Status (max 30 points)**
 - **Projects Cost Efficiency (max 10 points)**
 - **Projects Sustainability Benefits (max 25 points)**
- Maximum Total Score: 100 points**





WQRLF Priority System

ENVIRONMENTAL WATER QUALITY (Max 35 points)

Projects address nutrient reduction and other water quality problems (e.g., WWTP upgrades, Stormwater BMP, MS-4)

NUTRIENT REDUCTION TO CHESAPEAKE BAY

Nitrogen Reduction: ___ lbs/yr or Phosphorus Reduction: ___ lbs/yr (use one w/highest score)

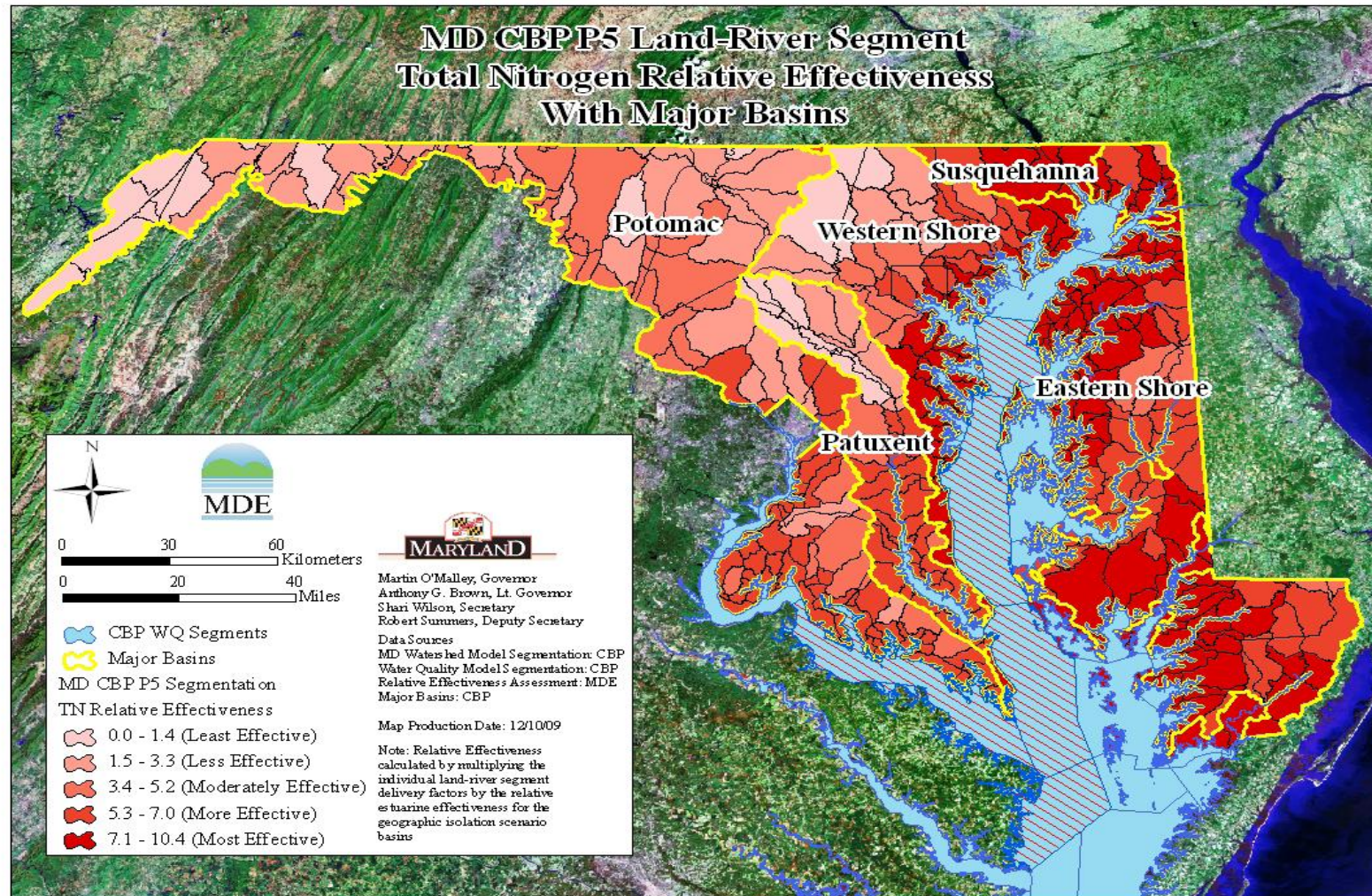
High (> 200,000 lbs/yr)	15	High (> 65,000 lbs/yr)	15
Medium (>10,000 & ≤ 200,000 lbs/yr)	10	Medium (>3,500 & ≤ 65,000 lbs/yr)	10
Low (> 0 & ≤ 10,000 lbs/yr)	5	Low (> 0 & ≤ 3,500 lbs/yr)	5

Relative Effectiveness (TN): _____ or (TP): _____ (use TN or TP w/highest score)

Most Effective (> 7.5)	20
More Effective (>5.5 & ≤ 7.5)	15
Moderately Effective (>3.5 & ≤ 5.5)	10
Less Effective (> 1.5 & ≤ 3.5)	5
Least Effective (≤1.5)	0



Example: TN Relative Effectiveness





Additional Subsidies (New) Disadvantaged Community

Qualifying Criteria:

- Sewer user rate per year per Equivalent Dwelling Unit (EDU) > 1% of Community Median Household Income (MHI); or
- Project is physically located and benefits an MDE approved Environmental Benefit District; or
- Project is physically located and benefits a community with MHI less than 70% of State MHI; or
- Sewer user rate would need to increase by >20% to achieve financial capacity (MDE determination)

Additional Subsidy (*New*):

- Up to 87.5% of Loan forgiveness (grant), not to exceed \$1.5 million. (Total available funding limited by federal statute)

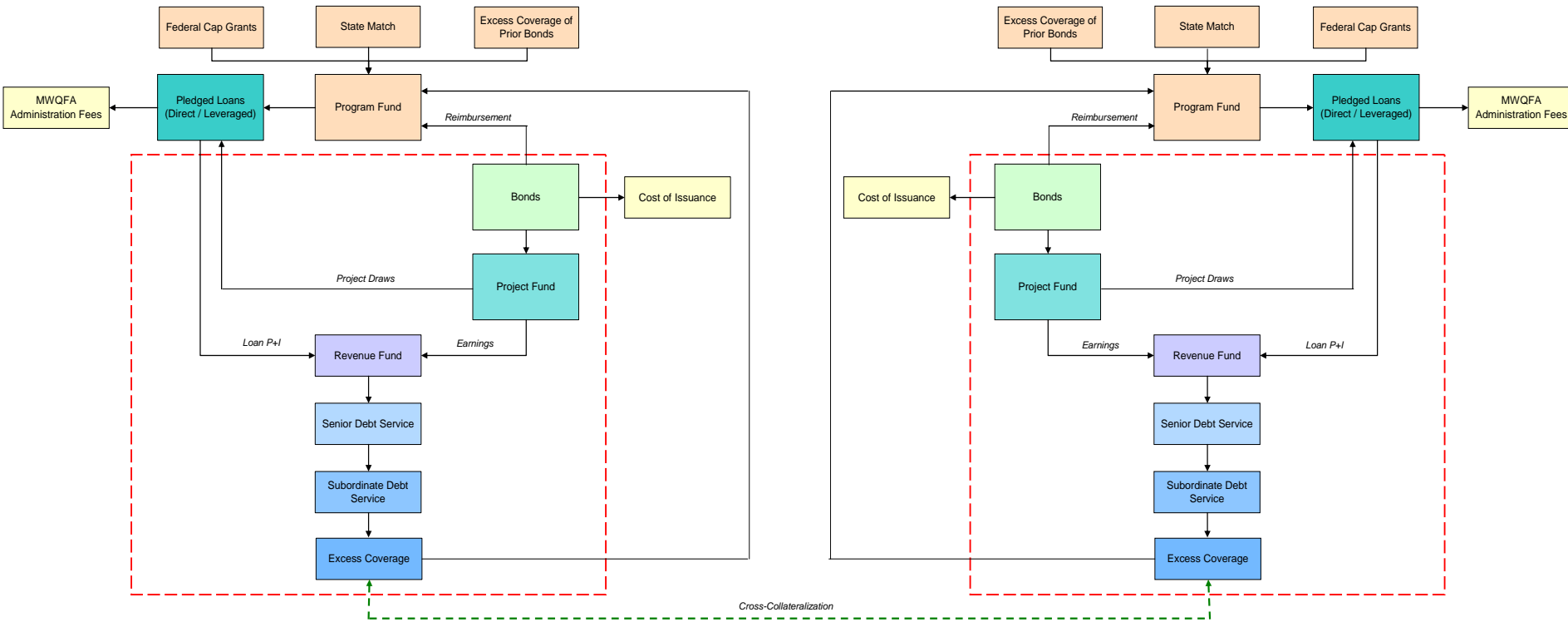




Flow of Funds – RLF Bond Indenture

Clean Water SRF Program

Drinking Water SRF Program



--- Master Trust Indenture
--- Cross-Collateralization





RLF Bond Indenture - Highlights

Cash Flow Model that pledges most current loans

Cross-Investment between WQRLF & DWSRF bonds

WQRLF & DWRLF bonds can be issued together

No Debt Service Reserve Fund

Additional Bonds Test of 1.10X





Maryland Department of the Environment

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