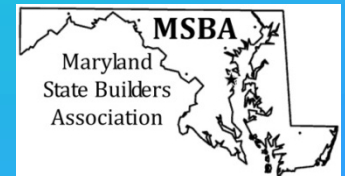


# **Septic Systems and Future Growth**

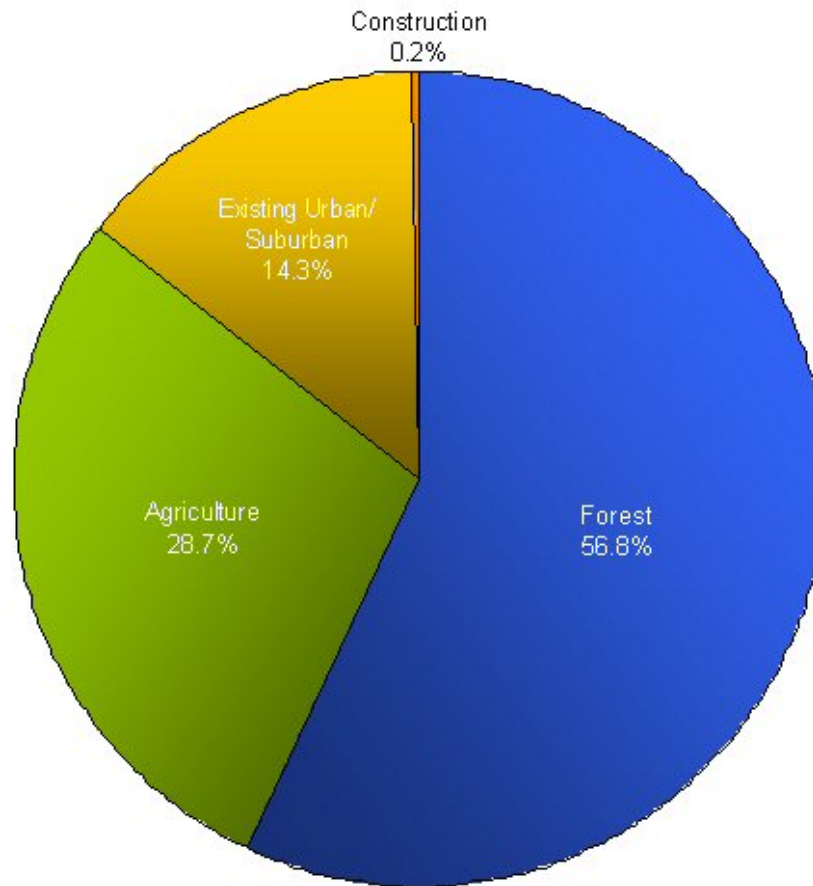
**August 16, 2011**

**Maryland Farm Bureau and MACO**



**New Construction took 8,646 acres or .148%  
(less than 20/100s of 1%) of the 5,900,000 acres in Maryland**

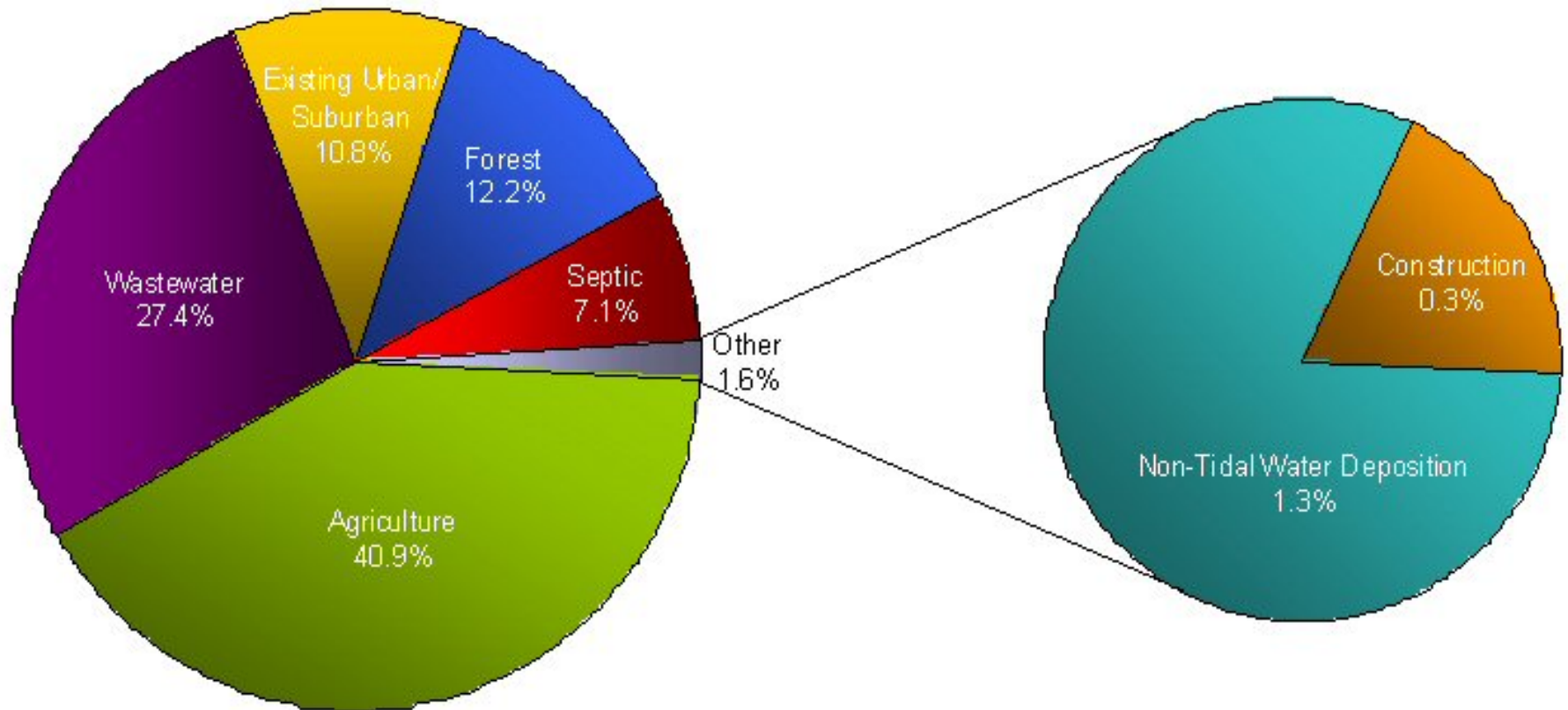
**Phase 5.3 Chesapeake Bay Model Results\* Breakdown of All Maryland Land Uses (2007)**



\*Based on Phase 5.3 Model released 5/19/10

**New Construction's contribution of the *nitrogen* pie is 163,598 lbs. or .30% (less than 30/100s of 1%) of the total**

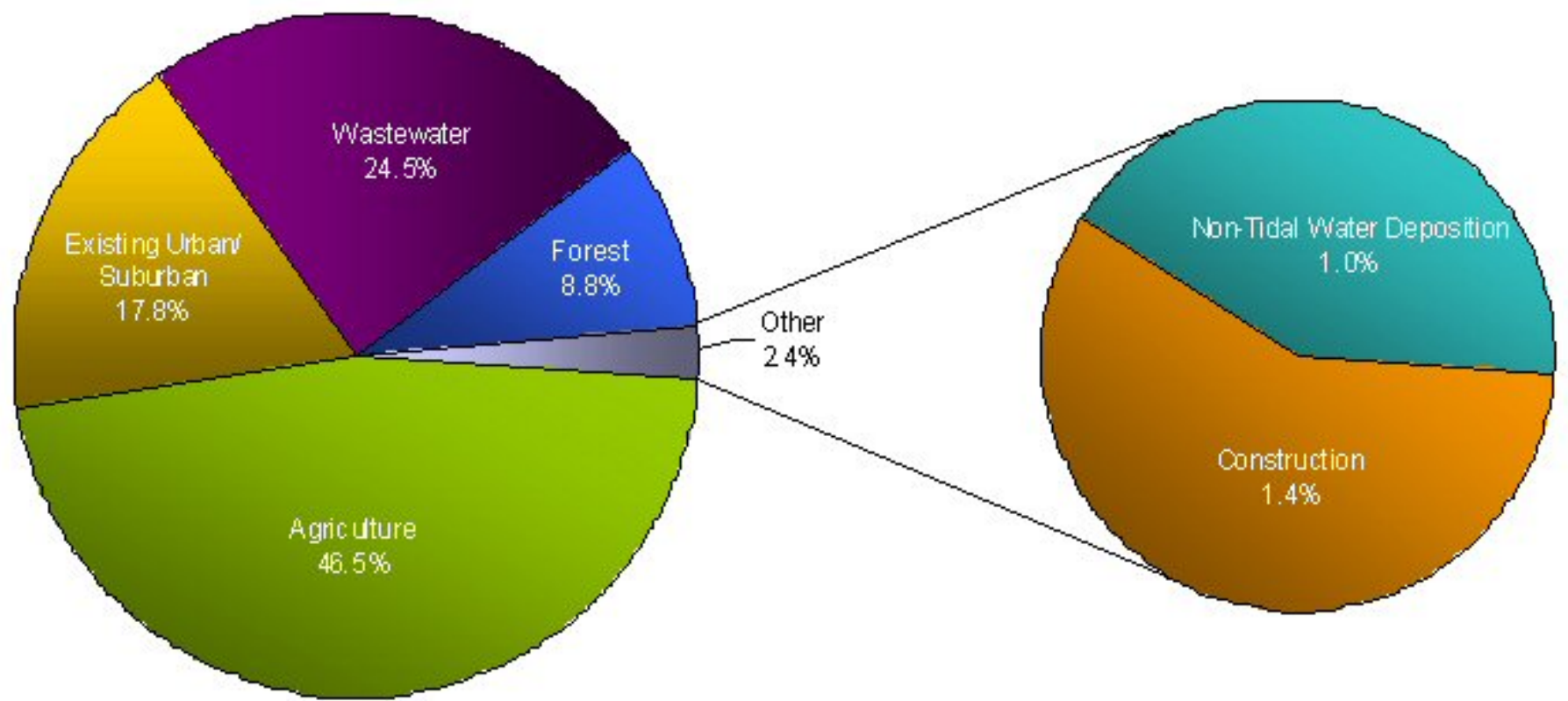
**Phase 5.3 Chesapeake Bay Model Results\* for Maryland Total Nitrogen Loading (2007)**



\*Based on Phase 5.3 Model released 5/19/10

# New Construction's contribution of the *phosphorus* pie is 54,164 lbs. or 1.44% of the total

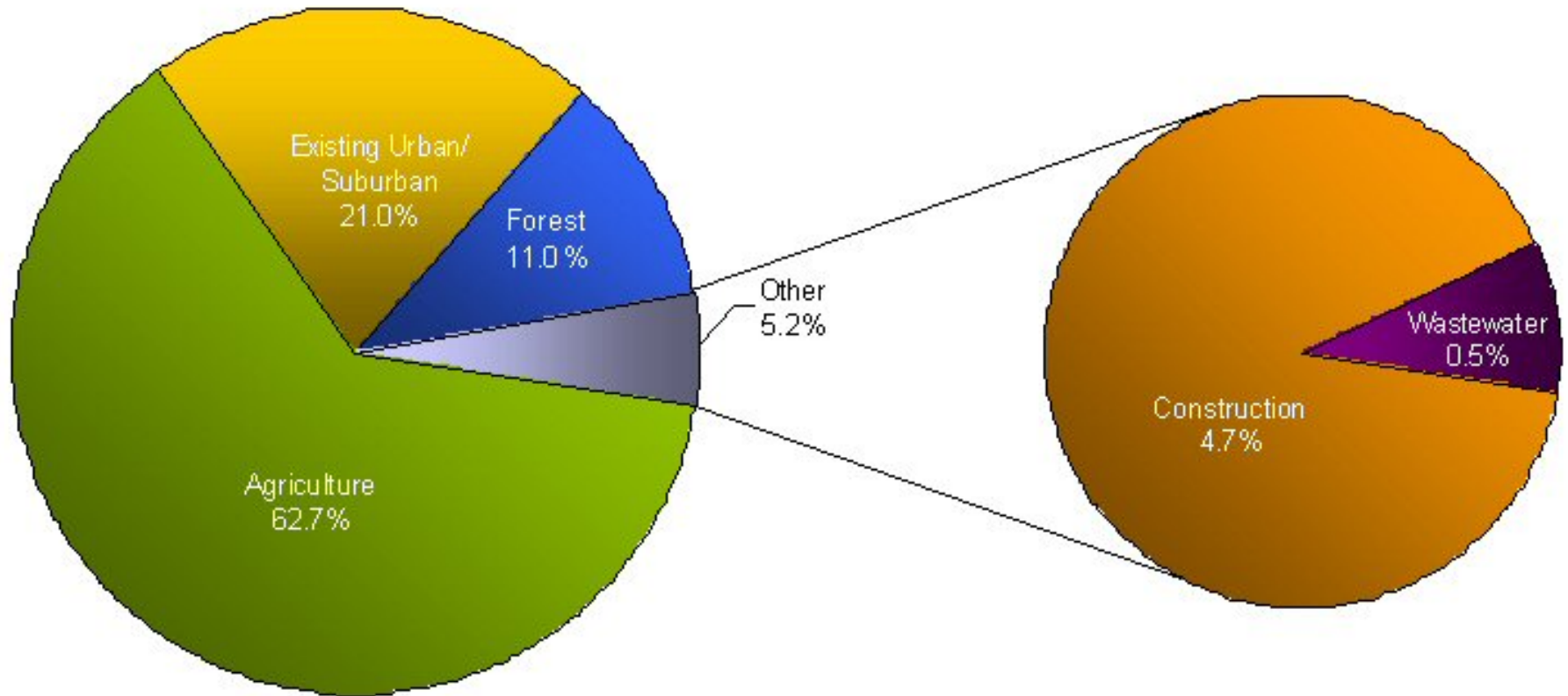
Phase 5.3 Chesapeake Bay Model Results\*for Maryland Total Phosphorus Loading (2007)



\*Based on Phase 5.3 Model released 5/19/10

**New Construction's contribution of the *sediment* pie is  
38,043 lbs. or 4.72% of the total**

**Phase 5.3 Chesapeake Bay Model Results\* for Maryland Sediment Loading (2007)**



\*Based on Phase 5.3 Model released 5/19/10



**Current**  
**Home Building Market**  
Maryland, 2011



# Values



Foreclosures  
Lending  
Debt Ceiling  
Mortgage Interest Deduction  
GSE Reform

# Permits

2009	6,400
2010	8,614

# Through May

2011	4,697
2010	5,522



# **Maryland's WIP Strategies**

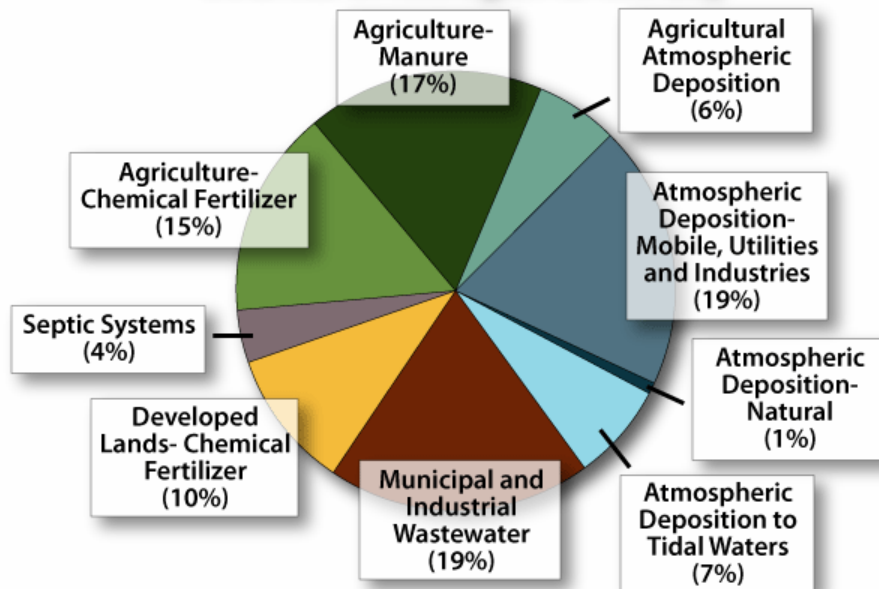
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## **Septic Developments**

December 2010

# How much do the 420,000 septic systems in Maryland contribute to the Nitrogen load to the Bay?

**Sources of Nitrogen to the Bay**



	NY	624,505	16,839,687
	PA	4,056,765	103,876,572
	MD	3,606,376	53,200,291
	VA	3,505,270	73,843,532
	WV	470,797	6,681,004
	DE	238,844	4,554,934
	DC	0	2,945,887
<b>Chesapeake Bay Watershed</b>		<b>12,502,557</b>	<b>261,941,906</b>
<b>MD Septics % of MD Load</b>			<b>6.77%</b>
<b>MD Septics % of Total Bayshed Load</b>			<b>1.38%</b>

Note: Does not include loads from the ocean or tidal shoreline erosion. Wastewater loads are based on measured discharges; other loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009). Values do not add up to 100% due to rounding.

# WIP Strategy No. 1

		<u>Cost</u>	<u>Cost/System</u>
Projected upgrade of 535 septic systems per annum in the CRITICAL AREA:	5,700	\$80,500,000	\$14,122.81
Nitrogen lbs. reduction per system	11.44	50% reduction	
<b>Total Nitrogen lbs. reduced</b>	<b>65,208</b>		
<i>% of Total Nitrogen Reduction Goal</i>	<b>0.631%</b>		

**Cost per lb. Reduced**

**\$1,234.51**

## WIP Strategy No. 2

		<u>Cost</u>	<u>Cost/System</u>
Connect Failing Systems to Public Sewer:	930	\$35,700,000	\$38,387.10
Nitrogen lbs. reduction per system	20.592		
<b>Total Nitrogen lbs. reduced</b>	<b>19,150.56</b>		
<i>% of Total Nitrogen Reduction Goal</i>	<b>0.1853%</b>		
<b>Cost per lb. Reduced</b>		<b>\$1,864.18</b>	

## WIP Strategy No. 3

		<u>Cost</u>	<u>Cost/System</u>
Require all systems in critical area be converted to BAT ( <i>Cannot be completed by 2017</i> )	27,552	\$358,200,000	\$13,000.87
Nitrogen lbs. reduction per system	11.44		
<b>Total Nitrogen lbs. reduced</b>	<b>315,194.88</b>		
<i>% of Total Nitrogen Reduction Goal</i>	<b>3.05%</b>		
<b>Cost per lb. Reduced</b>		<b>\$1,136.44</b>	

## Summary of Septic WIP Strategies

**Total Nitrogen lbs. reduced** **399,553.44**

***% of Total Nitrogen Reduction Goal*** **3.866%**

**Cost per lb. Reduced** **\$1,187.33**

## Bay Restoration Fund – BAT Grants

No. of OSWD systems	\$411,000
Annual BRF fee at -	\$30.00
% - BAT Grant Allocation	60%
<b>Total Annual Revenue</b>	<b>\$7,398,000.000</b>
Average Cost of BAT Upgrade	\$14,123
No. of BAT Grant Systems/Per Annum	524
Nitrogen Reduction per BAT Conversion	11.44
Annual Reduction in Nitrogen – lbs.	5,993
Cost per pound	\$1,234.51
<b>No. of BAT Upgrades 2010 – 2017</b>	<b>5,243</b>
<b>WIP Goal</b>	<b>5,700</b>

**(Short) – WIP Goal**

**-457**

## Bay Restoration Fund – BAT Grants

No. of OSWD systems	\$411,000
Annual BRF fee at -	\$60.00
% - BAT Grant Allocation	60%
<b>Total Annual Revenue</b>	<b>\$14,796,000.000</b>
Average Cost of BAT Upgrade	\$14,123
No. of BAT Grant Systems/Per Annum	1,048
Nitrogen lbs. reduction per BAT Conversion	11.44
Annual Reduction in Nitrogen – lbs.	11,985
Cost per pound	\$1,234.51
<b>No. of BAT Upgrades 2010 – 2017</b>	<b>8,386</b> <i>(note 1)</i>
<b>WIP Goal</b>	<b>5,700</b>

**Over – WIP Goal**

**2,686**

## BAT Conversion Impact

Lbs. of Nitrogen Reduced:

Persons per household	2.6 persons
Nitrogen release per person	8.8 pounds
Lbs. per household	22.88
<b>BAT System Reduction per unit, 50%</b>	<b>11.44 pounds</b>
<b>Total Nitrogen lbs. Reduction</b>	<b>4,701,840</b>

<b>Total Costs/Lb.</b>	<b>\$1,234.51</b>
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## Retrofit of Existing OSWs Systems

### Retrofit Costs:

Existing OSWS Systems	411,000
Average cost per unit to upgrade	\$14,123

**Total Retrofit Costs**

**\$5,804,000,000**

**MYTH:** Redevelopment is the solution to upgrading older communities built prior to modern stormwater regulations.

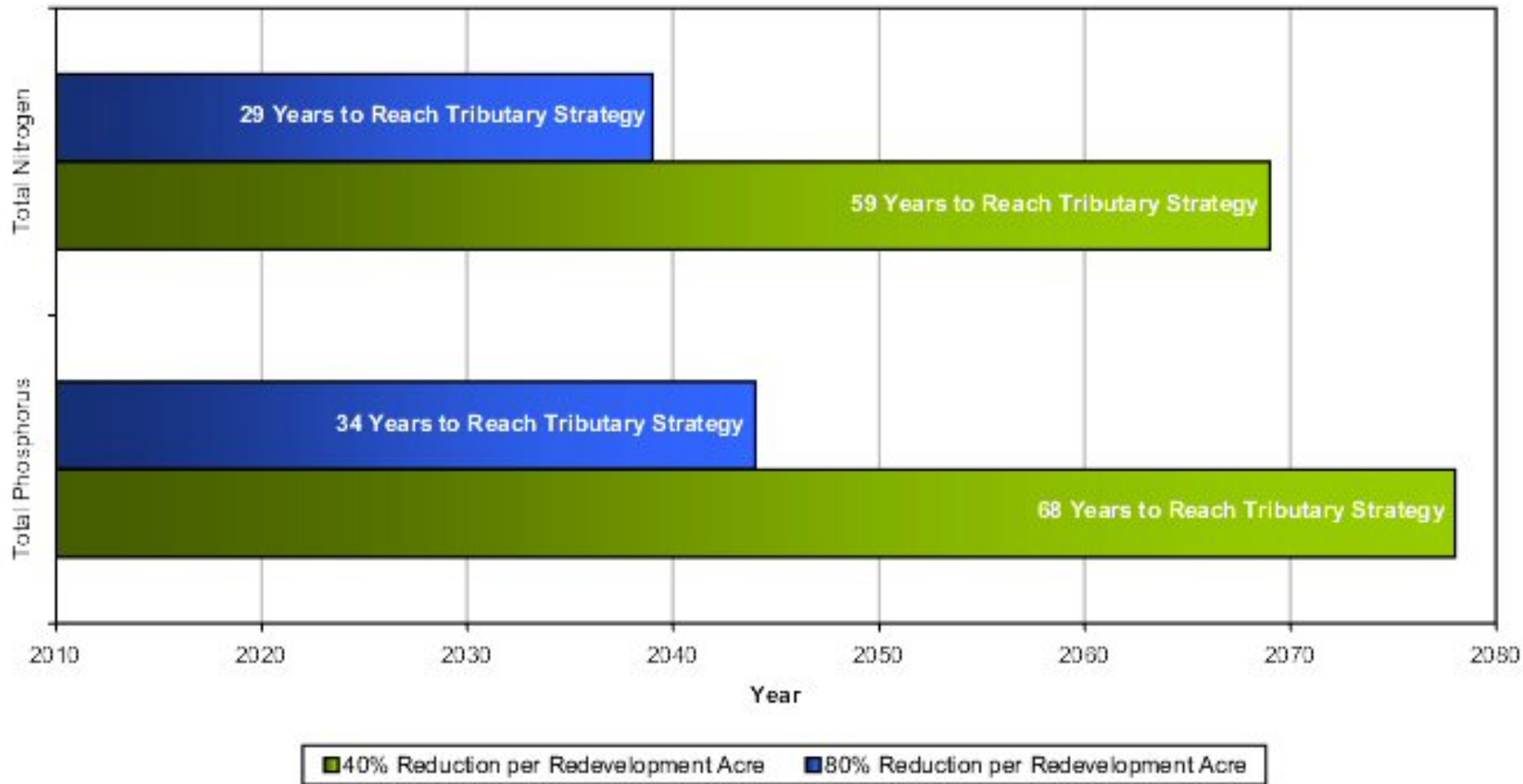
**FACT:** To reach the 2010 Tributary Strategy goal for the Phase 5.3 Model (released 5/19/10), urban Total Phosphorus (TP) and Total Nitrogen (TN) loading in Maryland need to be reduced by 27.9% and 24.1% respectively (*see Table below*).

Nutrient	2007 Load (lb/yr)	Tributary Strategy Goal (lb/yr)	Required Reduction (lb/yr)	Required Reduction (%)
TP	721,123	563,779	157,344	27.9%
TN	6,098,277	4,914,473	1,183,804	24.1%

**FACT (continued):** Redevelopment has the potential to reduce TP and TN loads through better stormwater and nutrient management than were employed during a site's original development. The reduction potential varies widely based on the BMPs employed. Therefore, WSSI used two gross ballpark assumptions to determine the nutrient load reduction potential of redevelopment: that redevelopment reduces both TP and TN loading to 40% below current loading rates and 80% below current loading rates (*see Table below and chart on next page*).

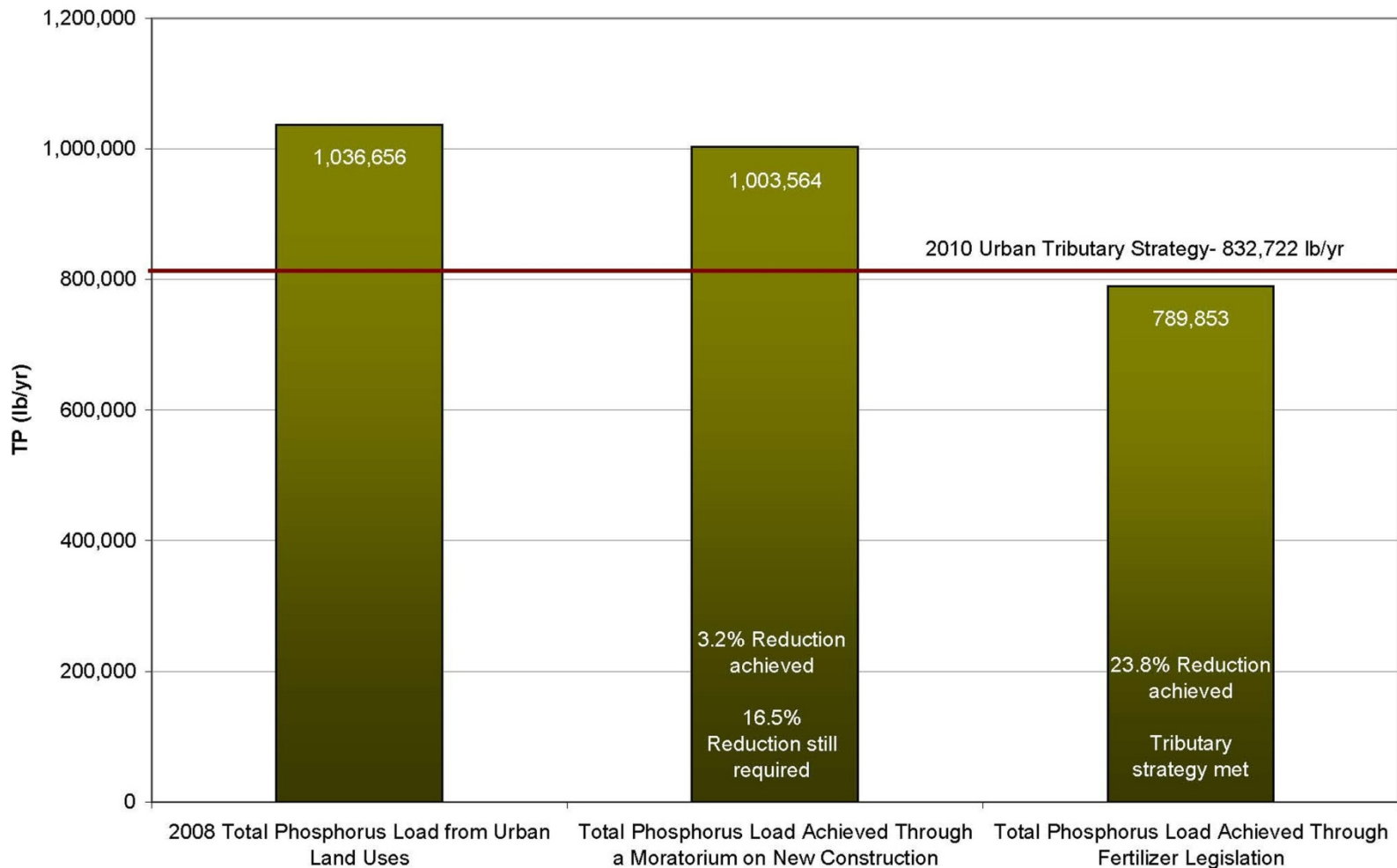
	Urban Land Area (Acres)	Required Reduction to Meet 2010 Tributary Strategy	Reduction per Redeveloped Acre (Assumed)	Required Redevelopment (% total urban area)	Required Redevelopment (acres)	Years to Reach Tributary Strategy
TP	842,417	27.9%	40%	69.8%	588,007	68
			80%	34.9%	294,004	34
24.1%		40%	60.3%	507,977	59	
		80%	30.1%	253,568	29	

## Years to Reach 2010 Urban Tributary Strategy through Redevelopment for TP and TN\* Total



\*Based on Phase 5.3 Model released 5/19/10

# Total Phosphorous Achievable Through a Moratorium on New Development vs. Fertilizer Legislation



# **Cost of Clean Up**

**MD WIP Clean Up Through 2017 – \$10 Billion**

**Add on Economic Costs – \$11 Billion**

**Total – \$21 Billion**

**Cost per Maryland Household – \$9,750**

# Where's the Money for the Clean Up Program

- Federal
- State
- BRF fee
  - increase
- SW Fee

