

# Aligning for Growth: Proposed Conceptual Approaches

Presented to  
Maryland's  
Trading Advisory Committee  
*November 17, 2016*



# Purpose of the AfG Policy

- Policy for the Phase III WIP
- Clarity on how the NPS pollutant load cap is ensured
- Transparency on the where allocations for new land development NPS loads will come from
- Public interest in certainty and closure on these matters

# Background

- Bay TMDL: Allocations were set for states
  - State (Bay Cabinet) divided allocation among sectors
  - We must reduce existing loads to meet allocations
  - We must maintain the load cap in perpetuity
- Allocations for Growth
  - Allocation for wastewater: Built-in growth capacity
  - No allocation for new loads in the other sectors, specifically:
    - Stormwater loads from new development, and
    - OSDS loads from new development

ASIDE: We are not addressing loads from future farm animals in this policy discussion. EPA understands that this will be considered after the Phase 6 model is adopted.

# Background (cont'd)

- 2012 Policy Development Activities
  - Draft regulations presented
  - Eight meetings held around the State
  - Ended without broad consensus
- 2013 Policy Development Activities
  - AfG Stakeholder Work Group
  - 10 Work Group meetings
  - Various Committee meetings
  - Significant Negotiations including legislative leaders
  - Final AfG Work Group Report published August 2013

# Key Considerations

1. Create policies and procedures to re-divide the nutrient allocation pie as land use changes
2. Ensure that development is consistent with the nutrient cap
3. Consider both local and Bay water quality
4. Collect information needed for these purposes

A photograph of a whole pie with a scalloped crust, with three slices cut out and placed in front of it. The pie is set against a white background with a faint circular shadow.

**What is the Policy on  
Re-dividing the Pie when  
Land Uses Change, and  
Why it is Important?**



BEFORE: Ag & Forest

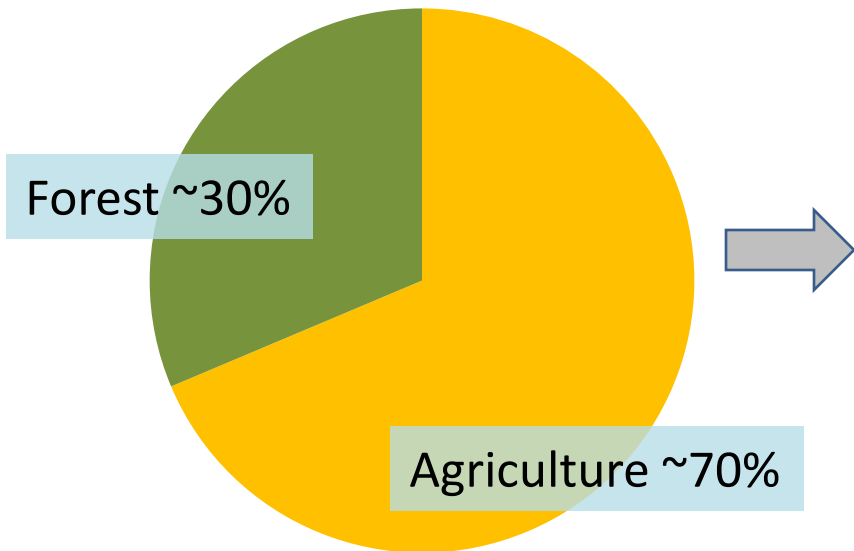


AFTER: Developed Land

# Currently No Explicit Policy on Re-dividing the Pie

Case Study: ~68,000 acres developed between 2009 - 2015

Share of the Pie 2009\*



Re-dividing the Pie 2015\*\*

## A Default Process is in Place:

- Agriculture sector assumes a reduction towards its Bay goal.
- New septic & stormwater receive no slice of the pie.
- Existing septic & stormwater sectors must reduce more to account for zero allocations.

\* Nitrogen Load Involved: ~ 500,000 lbs (EOS) or 300,000 lbs (Del)


\*\* New Sewer loads are covered by existing capacity; therefore, are not reflected in this accounting.



# Why is it important to have an explicit policy on re-dividing the pie as land use changes?

- The default policy is not sustainable:
  - Stormwater pollutant reductions from existing urban areas cannot overcome zero allocations to new urban areas: TN loading rate grew ~150,000 lbs/yr (2009 -2015)\*.
- Default is inconsistent with point source policy:
  - When a point source discharge ends operations, the allocation reverts to the State to be reallocated.
- Even if new loads could be reduced by the existing urban sector, it raises questions of fairness.
- Reallocations must be subject to public process.

\* Delivered to the Bay.



**Ensure development is  
consistent with the  
nutrient cap**

# Aligned policies that promote sustainable development

- Advanced Stormwater Management (2007)
- Forest Conservation Act (1991)
- Point Source Cap Management strategy (2008 PS Trading Policy under review)
- Enhanced Nutrient Removal (ENR) Upgrades at Major WWTPs (2004)
- Comprehensive Local Planning and Zoning Structures: Approved water and sewer planning requirements and adequate public facility ordinances
- Sustainable Growth and Agricultural Preservation Act (2012)
- Priority Funding Areas Act (1997), and the requirements of HB 1141 and HB2, and the Agricultural Stewardship Act

Explicit NPS nutrient load accounting is \*not\* addressed by these policies.

# Elements of the Proposed Offset Policy

- Point sources secure allocations from existing plant loading capacity or must secure offsets.
- The nonpoint source offset policy will depend on the policy for re-dividing the pie as land use converts.
  - The State proposes reallocating load from existing land to new stormwater and septic sources.
  - Shortfalls from reallocation process must be offset.
- Analyses will likely be conducted at a development site scale; however, the way this is done will strive for larger scale flexibilities.

# EPA CBP Nitrogen Loading Rates

## WIP Implementation Nitrogen Loading Rates:



**Agricultural Land**  
16 lbs/ac yr



**Forest Land**  
3 lbs/ac yr



**Urban Runoff ESD**  
Stormwater: 4 lbs/ac yr

## Septic System Unit Load (Conventional)

Location (Zone)	TN lbs/yr (EOS)	Pass Through Pct
Critical Area	18.6	80%
Within 1000' of a Stream	11.6	50%
Everywhere else	7.0	30%
Average	9.9	42%

*LOADS REPRESENT STATEWIDE (EOS) RATES*

Treatment	TN lbs/yr
WWTP secondary treatment	10.8
WWTP BNR treatment	4.8
WWTP ENR treatment	2.4
WWTP with allocated capacity	0

# Calculating Potential Offsets

## Approach 1: Offset Threshold Approach

- Determine the location of agricultural and forested land on which future development is likely to occur for a defined area (major basin, 8-digit basin, locally-defined area).
- Set the Offset Threshold Loading Rate: Calculate the area-weighted average unit load of forest and agriculture at WIP implementation levels for the defined area.
- For each development in the defined area, compare the post-development unit load to the threshold. If it is below the threshold, no offset is needed.



# Calculating Potential Offsets

## Approach 2: Before & After Approach

Calculate loads before & after. If post-development load is lower than pre-development load, no offset is needed.


WIP Implementation Nitrogen Loading Rates:

	<b>Agricultural Land</b> 16 lbs/ac yr
	<b>Forest Land</b> 3 lbs/ac yr
	<b>Urban Land</b> Stormwater: 4 lbs/ac yr Septic: 10 lbs/system Sewer: 0 lbs (use capacity)

Before	After	Change
<b>Scenario 1: Ag converted to Urban</b>		
	→ 	-12   -2 ↓   ↓

<b>Scenario 2: Forest to Urban</b>		
	→ 	+1   +11 ↑   ↑

Range reflects sewer vs septic loads:



**Consider Local and Bay  
Water Quality**



# Consider local and Bay water quality

Are net nutrient loads increasing from urban growth?

Depends on the geographic scale considered.

- **Large Scale:** For aggregate development, statewide or on the major basin scale, current model estimates indicate net nutrient loads are decreasing.
- **Site Scale:** For development at a site level, nutrient loads may increase or decrease depending on the characteristics of the development.

A photograph of a whole pie and four slices of pie on a white plate. The pie has a golden-brown, fluted crust and a smooth, light brown filling. The slices are arranged around the whole pie, with two on the left and two on the right. The text "Do we have access to the information needed?" is overlaid in the center of the image in a bold, black, sans-serif font.

**Do we have access to the  
information needed?**

# Do We Have Access to the Information Needed?

## **Yes, but it's not all currently collected and reported:**

- Simplified pre-development land cover can be deduced: Forest & Wetlands (delineated), Ag, other.
- Post-development land cover is known (used for stormwater calculations).
- Post-development stormwater controls should be known, but reporting needs improvement.
- Post-development septic systems are known.
- Several tools exist, such as eNOI, MS4 geodatabase, but none are fully functional.

# Key Take-Aways

- Policy needed on re-dividing the allocation pie as land use changes. This policy sets the rules to determine if and how much of an offset would be required
- Two site level offset analysis options being considered
- Information management will be a significant element of these policies
- Potential growth in agricultural loads will be addressed separately.

# Next Steps

- More detailed briefing at December 12 TAC
  - Reallocation rules proposed by the State
  - Examples of two offset options and how they would be implemented
  - State to write policy based upon feedback
- Share policy with TAC and consider additional meeting(s) in 2017
- Closure on core policy: Spring/Summer 2017
- Implementation thereafter; use in Phase III WIP

A round pie with a scalloped crust, cut into four slices, with the word "Discussion?" overlaid in the center.

**Discussion?**