Concept	Pros	Cons	Recommendation
I. Applicability			
A. Triggers -- What types of activities are subject to the offset policy unless they fall below the threshold or are specifically exempted			
1. Construction that causes a change in land use from the land use category of forest, agriculture, or other undeveloped land (e.g., barren) to developed land (urban and suburban)	• Captures projects that covert undeveloped land to developed land; these projects have no allocation under the WIP.	• This would exclude a potentially large number of activities that increase pollutant load coming off the land yet do not convert it from one land use type to another. • Would not apply where there is no land use change, for example, from medium density residential to high density residential. • Could neglect new loads due to increases in activity or coverage on an existing 'developed' site • A simple conversion from one land use to another could result in very high offset requirements when no physical changes are made to the site.	
2. The alteration of land, or construction or alteration of a structure, that (a) changes or intensifies the use of the land, (2) increases the waste water load, (3) alters the runoff characteristics of a parcel of land, or (4) increases the nonpoint source pollution coming from the parcel	• Addresses the basic purpose of "Accounting for Growth" • Consistent with many other environmental programs. • Could be related to increased impervious area or disturbed area which are already measured in development calculations	• This could be interpreted to include the construction of agricultural structures. • This could include interior alterations that may not alter the load. • Difficult to implement at the State level, would maybe apply to all building permits, which are issued at the local level. • Would need to define the changes in runoff characteristics of a parcel of land. If ESD applied to site and it mimics runoff of forest in good condition, then are the runoff characteristics changed? • Intensification is difficult to define • Increase in waste water load could mean an addition on a home that adds a bedroom. • Does not establish a threshold for the amount of change	

Concept	Pros	Cons	Recommendation
3. Exclude most agricultural activities	• Simplicity • Recognizes farmer's need to adapt	• Would need to define activities that are not exempt • Should be limited to situations where the post-development load is consistent with the 2025 allocation for the post-development use • Agriculture would not pay its fair share especially in the case of large Ag buildings such as hydroponics operations.	
4. Exclude agricultural activities unless the new category has a higher loading rate (e.g., crop) than the previous category (e.g., pasture)	•	• Query – is there already a requirement that if a farmer changes to a practice that results in more pollutant load from his property, the farmer has to address that pollutant load through some other process, like modifying his Nutrient Management Plan?	
B. Thresholds – what size of development has so little impact that it should be excluded for coverage by the policy			
1. No threshold, but provide a simplified payment in lieu for projects less than one acre	• Simple to administer • Minimizes administrative burden for small projects and homeowners • Ensures that most, if not all new development activity is accounted for.	• Could contribute to local water quality impairment if payment-in-lieu is not expended within local subwatershed.	
2. 1 acre (43,000 square feet) of disturbed land	• Can be linked to the NPDES – Construction General Permit that is issued by the State	• May not capture a sufficient percentage of new development in certain jurisdictions to meet the requirements of the Bay TMDL • Could drive development to more, smaller, and less clustered projects to get under the threshold. • Could violate the Clean Water Act (new load to impaired waterway). • Ignores cumulative effects of many smaller projects; likely to underestimate impact of new growth	
3. 20,000 square feet of disturbed land	• Would ensure that a higher percentage of new development was accounted for in Maryland's AFG program, providing greater certainty that the Bay TMDL would be achieved and maintained • Would more equitably distribute responsibility of accounting for growth's impacts to those causing the impacts than does a higher threshold (i.e. if smaller developments are exempt, their impacts would have to be borne by others).	• Would have to be linked to a local jurisdiction issued grading permit, complicating process • <10 % of the disturbed land in Baltimore County is accounted for in grading permits issued for less than one acre of disturbance • Ignores cumulative effects; likely to underestimate impact of new growth.	

Concept	Pros	Cons	Recommendation
4. 5,000 square feet of disturbed land	• Would ensure that an even higher percentage of new development is accounted for in Maryland's AFG program, providing greater certainty that the Bay TMDL would be achieved and maintained • Would more equitably distribute responsibility of accounting for growth's impacts to those causing the impacts than does a higher threshold (i.e. if smaller developments are exempt, their impacts would have to be borne by others).	• Would have to be linked to a local jurisdiction issued grading permit, complicating process • Penalizes small projects such as parent suites for aging in place, driveways, etc. • <10 % of the disturbed land in Baltimore County is accounted for in grading permits issued for less than one acre of disturbance • Ignores cumulative effects; likely to underestimate impact of new growth.	
5. Any new construction that adds an additional dwelling unit or commercial structure to the property	• Simple threshold • Captures all new development likely to add a significant load, regardless of property size.	•	
C. Exceptions – what kinds of beneficial projects should be excluded from coverage by the offset policy[1]			
1. General rule for exceptions	• Could be based on cost of offsets	• Too vague to evaluate: option currently lacks clear expectations and details	
2. Case-by-case exception process administered by MDE	• Similar to the existing, workable PFA exception process	• Vague definition would need to be nailed down. • • Administrative burden to review exception requests. • Could allow new loads to increase in conflict with the TMDL. • Local jurisdictions and the State will have to address any increase in loads due public benefits projects through increased restoration • No net benefit for exclusion because public entity would be responsible for new load regardless	
3. Installation of BMPs	• Local governments will be doing this as part of their WIPs and MS4 Permit requirements; will result in the reduction of pollutant load. • SW Industrial General Permit holders will be required to install BMPs, will result in the reduction of pollutant load • Some businesses, institutions, citizens will be installing BMPs to reduce stormwater utility fees	•	

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[1] This category is easy to misinterpret. It does *not* refer to activities taking place on a development site that is subject to the AfG policy, such as installation of additional BMPs. Rather, it refers to projects that, because of their nature or beneficial environmental effects, should be completely excluded from any obligation to offset the post-development laod, even if otherwise the policy would apply to them.

Concept	Pros	Cons	Recommendation
4. Upgrading or maintenance of BMPs	• Local governments will be doing this as part of their WIPs and MS4 Permit requirements; will result in the reduction of pollutant load. • Has nothing to do with future growth	•	
5. Stream Restoration	• Local governments will be doing this as part of their WIPs and MS4 Permit requirements; will result in the reduction of pollutant load. • Has nothing to do with future growth	•	
6. Upgrading WWTPs without increase in hydraulic capacity	• A beneficial project in that point source loading would decrease	• If there is an increase in impermeable surfaces, stormwater loads might increase without being offset	
7. Upgrading WWTPs simultaneously with increasing hydraulic capacity	•	• If there is an increase in impermeable surfaces, stormwater loads might increase without being offset	
8. Exceptional public benefits projects that further social, economic and environmental sustainability	• These projects provide public benefit and generally use large amounts of land; exempting these projects would ensure that such are not deterred because of the added cost • Not necessarily associated with future growth • •	•	
9. Broad exemption for public works projects, conceivably including transportation projects	• These projects provide public benefit and use large amounts of land; exempting these projects would allow for more public projects to be built • Not necessarily associated with future growth	• Could violate the Clean Water Act. • Local jurisdictions and the State will have to address any increase in loads due public works projects through increased restoration • Could allow new loads to increase in conflict with the TMDL. • No net benefit for exclusion because public entity would be responsible for new loads regardless. • Impacts from these projects could be substantial and exempting them would cause degradation of water quality	
II. Effective Date / Transitioning – When will the regulations take effect and to what extent will they apply to projects in development			
1. January 1, 2014	• An early effective date means that local jurisdictions will not have to take steps to reduce the load from as many projects • Ensures that new development activity is responsible for its load. • Simple to administer – one set of rules for all prospective projects. • Holds the line on cleanup costs to the public.	• Could affect existing projects if grandfathering provisions are not included.	

Concept	Pros	Cons	Recommendation
2. December 31, 2014	• .Proposed to the legislature	• Delay could impact the willingness of offset providers to provide solutions; if delay then maybe a fund could be created to jump start offset markets • Would place a substantial burden for additional pollution reduction on the public or other sectors. • May not meet EPA expectations for new loads under the TMDL • Inadequate time to resolve kinks in the program, incorporate other regulatory changes	
3. December 31, 2015	• Adequate time to resolve kinks in the program, incorporate other regulatory changes	• Not yet proposed to the legislature • Encourages a rush of "bad" projects before effective date. • The longer before the requirements take effect the more load that will have to be reduced by local jurisdictions to account for the increased load due to development • Would place a substantial burden for additional pollution reduction on the public or other sectors. • May not meet EPA expectations for new loads under the TMDL • Higher loads for public at large to offset. • Drags "real" effective date likely to 2017 for projects in the pipeline.	

Concept	Pros	Cons	Recommendation
III. Fee-in-Lieu			
A. Available or not, under what circumstances			
1. No fee-in-lieu	• Actual pollution reduction implementation is preferable because many fee-in-lieu programs have not met their goals. • Reinforces the need to ensure that pollution reduction credits are available and reasonably in place to drive the market. • Strongly encourages on-site minimization and mitigation of new loads • Would aid in stimulating the trading market • Fee-in-lieu programs often fail to provide the promised benefits.	• Credits may not be available in sufficient numbers to meet the demand for offsets, potentially delaying or eliminating development projects • In-Lieu Fees should be a last resort and only applicable if no offset credits are available; also, to the extent fees are collected , they should be eligible to acquire offsets and must be spent within a time certain of collection • Fee in lieu sets ceiling on price of credits. Without this there is no certainty for projects. • Without a carefully established ceiling, perverse economic incentive could drive farmland out of production and create "BMP farms".	
2. No fee in lieu except for projects affecting less than 1 acre	• Ensure that small development projects could proceed by paying a fee, simplifying the process •	• Could contribute to local water quality impairment if payment-in-lieu is not expended within local subwatershed	
3. Fee in lieu only established (and subject to provisions outlined in #4 below) if private nutrient credit market has not generated purchase opportunities.	• Provides relief for developers if need is clearly demonstrated. • Allows for market to develop and set natural price points without interference from a public FIL regime.	•	

Concept	Pros	Cons	Recommendation

4. Add requirements that:
   o Fee-in-lieu can only be made available if adequate capacity to implement offset BMP within a defined period of time (1 year?) is not available in the watershed.
   o fee-in-lieu funds only be spent on BMP implementation (with a defined limit on administrative costs)
   o MDE implements BMP to offset load within a defined period (1 year).
	• Addresses major concerns with existing fee-in-lieu programs	•	

5. Fee-in-lieu available for N and P, payable to the BRF, based on a conservative cost estimate (including O&M for a set time frame) of an urban BMP at a 2 to 1 ratio.	• Ensure that development projects could proceed at all times and not be delayed by a shortage of offsets (pollution reduction credits), potentially avoiding added expense • MDE is able to turn BRF money into septic upgrades quickly and in the future will be able to fund projects that reduce N and P • Increased offset ratio accounts for inefficiencies and uncertainties associated with fee-in-lieu programs. • Public assured that developer has exhausted preferred nutrient reduction strategies and has no private market opportunities before transferring responsibility for pollution reduction to the public. • Sunset sends clear signal and a driver to facilitate the development of a robust private market. • BRF would prioritize projects with higher delivery ratios versus funds spent by local governments further from the Bay.	•	

Concept	Pros	Cons	Recommendation
6. Fee-in-lieu available for N and P, payable to the BRF, o Based on a conservative cost estimate (including O&M for a set time frame) of an urban BMP at a 2 to 1 ratio. o Developer must meet hardship criteria demonstrating that: minimization and on-site mitigation have been exhausted to the maximum extent possible; credits from the private market are unavailable. o Projects are completed in advance using developer-sponsored bond that is repaid through FIL contributions. o FIL is statutorily required to sunset after a period of three years. FIL shall represent a specified declining share of all offset transactions between program initiation and sunset.	• Ensure that development projects could proceed with built in in-lieu constraints to discourage the use of fee beyond fee expense • MDE is able to turn BRF money into septic upgrades quickly and in the future will be able to fund projects that reduce N and P • Increased offset ratio accounts for inefficiencies and uncertainties associated with fee-in-lieu programs. • Public assured that developer has exhausted preferred nutrient reduction strategies and has no private market opportunities before transferring responsibility for pollution reduction to the public. • Sunset sends clear signal and a driver to facilitate the development of a robust private market. • BRF would prioritize projects with higher delivery ratios versus funds spent by local governments further from the Bay.	• Added constraints are likely to prove unduly burdensome and unnecessary, given that the set fee price is likely to be considerably higher (eventually) than cost of credits available for purchase on the market	

Concept	Pros	Cons	Recommendation
7. Establish a fee-in-lieu for N, payable to the BRF for septic upgrades	• MDE is able to turn BRF money into septic upgrades quickly • Fee will reflect actual/existing cost • MDE is able to turn BRF money into septic upgrades quickly due to demand (about $2600 per pound N) • Cost could be based on the average cost (including O&M for a set time frame) of an urban BMP. • If the fee is higher than the average nutrient market price it is unlikely to impede the development of a nutrient trading market	• May not provide P credits developer may need • In lieu fee should be a last resort and should not be viewed as another funding mechanism for the BRF; there should be a clear policy statement that in-lieu fees are payable only if no on-the–ground offsets are available • Unless addressed by policy there is no guarantee that the increased load will be addressed in the same jurisdiction, let alone in the same watershed • May not account for time delay in the implementation of projects. • Average costs run between $2000-$3000 per N pound reduced over 30 year horizon, which makes many projects too expensive to implement if trading market is not cheaper. • Local water quality would worsen, which is unacceptable in areas with local TMDLs. • Difficulty in setting the appropriate price per pound that would not undercut the nutrient trading market. • Greater administrative and financial burden on MDE • Average cost per pound may not provide enough incentive for on-site minimization and mitigation of new loads. • State has a track record of raiding "dedicated funds." • State may not have best site ID for remediation.	
8. Fee in lieu with a 5-year sunset, with the possibility of renewal upon demonstration of program success	• Gives developers a "relief valve" during the start up of the program. • Keeps pressure on fee recipients to spend the money effectively in order to keep the program in place.	•	

Concept	Pros	Cons	Recommendation
B. Payable to whom, and for what purposes			
1. Establish a fee-in-lieu for N, payable to the BRF for septic upgrades	• MDE is able to turn BRF money into septic upgrades quickly • Fee will reflect actual/existing cost • MDE is able to turn BRF money into septic upgrades quickly due to demand (about $2600 per pound N) • Cost could be based on the average cost (including O&M for a set time frame) of an urban BMP. • If the fee is higher than the average nutrient market price it is unlikely to impede the development of a nutrient trading market	• May not provide P credits developer may need • In lieu fee should be a last resort and should not be viewed as another funding mechanism for the BRF; there should be a clear policy statement that in-lieu fees are payable only if no on-the – ground offsets are available • Unless addressed by policy there is no guarantee that the increased load will be addressed in the same jurisdiction, let alone in the same watershed • May not account for time delay in the implementation of projects. • Average costs run between $2000-$3000 per N pound reduced over 30 year horizon, which makes many projects too expensive to implement if trading market is not cheaper. • Local water quality would worsen, which is unacceptable in areas with local TMDLs. • Difficulty in setting the appropriate price per pound that would not undercut the nutrient trading market. • Greater administrative and financial burden on MDE • Average cost per pound may not provide enough incentive for on-site minimization and mitigation of new loads. • State has a track record of raiding "dedicated funds." • State may not have best site ID for remediation.	

Draft 4/12/13

Concept	Pros	Cons	Recommendation
2. Fee-in-lieu available for N and P, payable to the BRF for projects that reduce N and P	• MDE is able to turn BRF money into septic upgrades quickly and in the future will be able to fund projects that reduce N and P • This would only be required if both N and P are required to be offset under underlying policy	• Would require that the fees be spent on projects that likely have a longer lead time than septic upgrades • Again, the In lieu fees should be a last resort and only if no on-the-ground offsets are available • If fees collected, then they should be able to be used to purchase offset credits and should be spent within a year • Unless addressed by policy there is no guarantee that the increased load will be addressed in the same jurisdiction, let alone in the same watershed • May not account for time delay in the implementation of projects.\ • Difficulty in setting the appropriate price per pound that would not undercut the nutrient trading market. • Greater administrative and financial burden on MDE • Average cost per pound may not provide enough incentive for on-site minimization and mitigation of new loads.	
3. Establish a fee-in-lieu for N and P with first right of refusal to local governments.	• Local water quality would be protected, which is required in areas with local TMDLs. • Local governments may have cheaper projects than the BRF and could get more reductions. • Ensure that development projects could proceed at all times and not be delayed by a shortage of offsets (pollution reduction credits), potentially avoiding added expense • Cost could be based on the average cost (including O&M for a set time frame) of an urban BMP. • If the fee is higher than the average nutrient market price it is unlikely to impede the development of a nutrient trading market	• Average costs run between $2000-$3000 per N pound reduced over 30 year horizon, which makes many projects too expensive to implement if trading market is not cheaper. • Counties further from the Bay will not be able to get the same amount of reduction as closer counties with higher delivery ratios • Local governments may appropriate revenue for other purposes • BRF would prioritize projects with higher delivery ratios versus funds spent by local governments further from the Bay.	

Concept	Pros	Cons	Recommendation
4. Fee goes to a dedicated County or Municipality fund for projects that reduce nutrients and sediment	• Ensures that dollars will be spent closer to impacts. • Gives greater assurance that money will be used for the purpose for which it is intended. • Allows maximum flexibility, with deference to local governments • Local water quality would be protected, which is required in areas with local TMDLs. • Local governments may have cheaper projects than the BRF and could get more reductions. • Ensure that development projects could proceed at all times and not be delayed by a shortage of offsets (pollution reduction credits), potentially avoiding added expense • Cost could be based on the average cost (including O&M for a set time frame) of an urban BMP. • If the fee is higher than the average nutrient market price it is unlikely to impede the development of a nutrient trading market	• Average costs run between $2000-$3000 per N pound reduced over 30 year horizon, which makes many projects too expensive to implement if trading market is not cheaper • Local governments may appropriate revenue for other purposes • BRF would prioritize projects with higher delivery ratios versus funds spent by local governments further from the Bay.	
C. Setting the cost of the Fee-in-Lieu			
1. Base fee on the average cost (including O&M for a set time frame) of an urban BMP. The fee is likely to be considerably higher than the average nutrient market price and thus is unlikely to impede the development of a nutrient trading market	• Fee will reflect actual/existing cost • If fees collected, they can be used to buy offsets credits and they should be put to use within 1 year of collection	•	
2. Base on weighted average cost, including O&M for a set time frame) of a range of BMPs	• Fees would more closely reflect actual cost of likely offset BMPs	•	
IV. Which Pollutants			
1. Nitrogen, phosphorus and sediment statewide	• Would ensure that Bay and local TMDL requirements are achieved • Would likely induce a more robust phosphorus credit market • Would meet EPA's requirement that all TMDL pollutants be offset.	• Would place a greater burden and expense on developers • Maryland did not develop sector targets for sediment in the WIP	

Concept	Pros	Cons	Recommendation
2. Nitrogen and phosphorus statewide	• Would ensure that Bay and local TMDL requirements are achieved • Would likely induce a more robust phosphorus credit market	• Would place a greater burden and expense on developers • Development in P-impaired local watershed would still have to be offset in the same watershed using Edge of Stream Loads. • P credits are trading at $20,000 per perpetual pound in VA.	
3. Nitrogen statewide (with approved BMPs) and phosphorus if in a watershed with a local phosphorus TMDL	• Simpler to implement • Would still ensure that Bay and local TMDL requirements are achieved, but at less expense to developers. • Development in P-impaired local watershed would have to be offset in the same watershed. • MDE has demonstrated that Bay P reductions will be met if N reductions are met. • N credits (BMPs), in the vast majority of instances, would address P loads in watersheds of the State not impaired by phosphorus	• There are limits to trading in local TMDL areas which may not make this option beneficial • Assumes P is achieved by controlling for N, which may not be fully vetted. • Potential degradation of local waters if additional P loads are not explicitly considered even in currently unimpaired waters.	
4. Nitrogen statewide and phosphorus and/or sediment if in a watershed with a local phosphorus and/or sediment TMDL	• Would still ensure that Bay and local TMDL requirements are achieved, but at less expense to developers. • Development in P-impaired or sediment impaired local watershed would have to be offset in the same watershed	•	

V. Calculating the Post-Development Load

A. Stormwater

i. Stormwater Loading Factors – Scale, EOS and Delivered Loads

Concept	Pros	Cons	Recommendation
1. Use statewide average loading rates for Delivered Load	• Simple to calculate • Wouldn't place any region of the State at a comparative disadvantage • Avoids model issues at smaller scales that result in huge load jumps to some segments. • Credit market uses delivered loads and can match scales	• Not entirely accurate • Could result in load increases to the bay • Could result in load increases for local Phosphorus or sediment TMDLs • A pound reduced in Western Maryland would be worth the same as one on the Eastern Shore despite the huge differences in the actual delivery to the Bay. • Western Maryland regions have expressed a desire not to become BMP farms due to the low price of land as they have next to zero growth already.	

Concept	Pros	Cons	Recommendation
2. Use statewide weighted average loading rates for Delivered Load	• Simple to calculate • Wouldn't place any region of the State at a comparative disadvantage • Avoids model issues at smaller scales that result in huge load jumps to some segments. • Credit market uses delivered loads and can match scales	• Not entirely accurate • Would have to figure out the scale of averaging and how to weight the average • Likely to underestimate development impacts in critical segments. • Could lead to insufficient offset activity if growth is not evenly distributed across the state.	
3. Use 5 basin loading rates for Edge of Stream and Delivered Load	• Simple to calculate • Avoids model issues at smaller scales that result in huge load jumps to some segments. • Credit market uses delivered loads and can match scales	• Not locally accurate, but more accurate than statewide average • Disproportionately affects Western Maryland regions with lower local delivery ratios compared to other regions in same trib basins (Allegheny versus Montgomery or Frederick in Upper Potomac Trib)	
4. Use 5 basin EOS loading factors for locally-impaired watersheds. Use 5 basin EOS loading factors, followed by 8-digit watershed Delivery factors in all other sub-watersheds.	• Most protective of local water quality	•	
5. Use 5 basin EOS loading factors, followed by 8-digit watershed Delivery factors	• Almost as simple to calculate and would result in a more accurate determination of load • More consistent with Bay Model • Avoids model issues at smaller scales with EOS loads that result in huge load jumps to some segments. • Credit market uses delivered loads and can match scales	• Would likely place some regions of the State at a disadvantage vis-à-vis others • Trading between regions with different delivery ratios are less attractive • Eastern shore regions more likely to become credit generators for other regions in same basin, which could create BMP farms especially where land values are low.	

Concept	Pros	Cons	Recommendation
6. Use 5 basin EOS loading factors, followed by Land River Delivery factors	- Almost as simple to calculate and would result in a more accurate determination of load - More consistent with Bay Model - Avoids model issues at smaller scales with EOS loads that result in huge load jumps to some segments. - Credit market uses delivered loads and can match scales	- More complicated - Would likely place some regions of the State at a disadvantage vis-à-vis others. - Potential for large local variation in offset requirements, raising equity concerns on a parcel-by-parcel basis - Trading between regions with different delivery ratios are less attractive - Eastern shore regions more likely to become credit generators for other regions in same basin, which could create BMP farms.	
7. 8-digit watershed weighted average EOS loading factors	- Easy to calculate - Explicitly takes into account any local Phosphorus or sediment TMDL.	- Not consistent with the Bay Model - Would have to figure out how to weight the average - Would likely place some regions of the State at a disadvantage vis-à-vis others	
8. Use Edge of Stream Loads	Local TMDLs use EOS loads, so EOS loads have to be used for local Phosphorus TMDLs.	- If credit market for N uses delivery ratios, then a jurisdiction with low delivery rates might have to offset five or more times more pollution than a jurisdiction with a higher delivery ratio- this makes no sense because the reductions in these further reaches have less benefit. - Does not have any relationship to impact to the Bay.	
ii. **Stormwater Loading Factors – Adjustments for on-site stormwater BMPs**			
1. Default – 50% reduction of nitrogen and 60% reduction of P for ESD to the MEP	- Simple to calculate - Simplicity is very important	- Does not necessarily calculate the actual pollutant load reduction through the installation of ESD - Would not encourage use of highest performing BMPs	
2. Recognize additional reduction if developer opts to demonstrate the use of more effective BMPs, using EPA's efficiencies	- Would encourage developers to maximize the amount of load reduction through the selection and design of BMPs that provide maximum runoff reduction and treatment - The Nutrient Trading Tool could be used similar to simulation at work group meeting - Existing models for site-specific calculations from other Bay states may be appropriate for use in MD	- More complex to calculate, would need to calculate for each practice - Could add to expense and time, including government review expense and time, to verify calculations - Market credits might be less expensive than added "super" BMPs	

Concept	Pros	Cons	Recommendation
3. Use Expert Panel on performance standards for new development	• Would provide a more scientifically defensible load reduction • Would encourage developers to maximize the amount of load reduction through the selection and design of BMPs that provide maximum runoff reduction and treatment • Would drive the development of more effective BMPs	• More complex to calculate, would need to calculate for each practice • Could add to expense and time, including government review expense and time, to verify calculations • This results in delay and complication • Market credits might be less expensive than added "super" BMPs	
B. On-Site Disposal Systems (OSDS)			
i. OSDS Loading Factors – Location			
1. Use statewide average EOS (edge of stream) loading rate of 42.5%	• Simple to calculate	• Penalizes regions with low delivery ratios • Not accurate • Does not reflect the loading factors that are used in the Watershed Model or perhaps in reality	
2. Use area specific EOS loading rate based on 3 zones (80% in CA, 50% within 1,000 feet of a stream but not in CA, 30% for all others)	• Almost as simple to calculate and would result in a more accurate determination of load • Reflects the loading factors in the Watershed Model • Becomes strong disincentive for septics in the state's most sensitive areas	•	
ii. OSDS Loading Factors Adjustments for efficiency of Nitrogen removal at Edge of Field			
1. Default – 50% nitrogen reduction	• Every approved system must remove at least 50% of the N • Simple direct calculation	• Does not reflect the actual reductions made to the nitrogen load • Does not encourage use of best BAT systems	
2. Use MDE, field verified nitrogen reduction credits based on type of BAT system installed – range 56% to 76% effective	• Scientifically defensible • Promote use of most effective BAT systems • Provides incentive for developers of BAT systems to develop even more effective BATs	• Requires additional calculations • Requires verification of BAT system types installed • May not account for inefficiencies associated with poorly maintained systems.	
3. Use landscape position of OSDS to determine the amount of nitrogen that may be delivered to the stream system	• Used in MAST to determine OSDS loads for existing systems. • Would encourage developers to design sites to provide the least amount of nitrogen delivery from OSDS • Potentially more scientifically defensible • Would provide equability with the reduction requirements for existing OSDS	• Based on stream system used in the Bay watershed model, which does not pick up most 1st, 2nd, and even 3rd order streams. Would have to use the same stream system used in the Bay model. • Requires additional calculations	

Concept	Pros	Cons	Recommendation
iii. Wastewater going to WWTP			
1. If ENR WWTP has capacity within its allocation, no offset needed	• Simple to calculate • Encourages growth in areas with infrastructure to handle its impacts • WWTP would be free to charge appropriate connection charge to eliminate or reduce subsidy	• Could reduce potential for point-to-point trading to reduce existing loads. • Jurisdictions are subsidizing wastewater for development projects if they do not have to contribute to cost. • Could undermine local government ability to collect offsets even where a plant has capacity	
2. If ENR WWTP has no capacity within its allocation, calculate loading at the N and P limits in the WWTP's permit (would require modification of WWTP's NPDES Permit)	•	• Jurisdictions are subsidizing wastewater for development projects if they do not have to contribute to cost.	
3. If non-ENR WWTP has capacity within its allocation, no offset required.	•	• BNR, tertiary treatment facilities and secondary treatment facilities do not meet 3 or 4 mg/L standard and their increased pollution is not accounted for in the Bay TMDL	
4. If BNR and/or Tertiary Treatment, some offset needed	• These plants do not meet 3 or 4 mg/L standard • Could incentivize upgrades	• Jurisdictions are subsidizing portion of wastewater for development projects if they do not have to contribute to cost. • Adds to project cost	
5. If BNR and/or Tertiary Treatment, no offset needed	•	• These plants do not meet 3 or 4 mg/L standard and their increased pollution is not accounted for in the Bay TMDL	
iv. Atmospheric Deposition			
1. Default – use census tract population density to calculate increase in load by household	• Relatively straight forward calculation • Explicit recognition of the impact of development on vehicle miles traveled and therefore, air loads of N. Despite improvements in vehicle emissions, loads from mobile sources are increases because of increases in VMT	• Dependent on the census track densities, which may change over time and is dependent not only on the population size, but also census track size. May not reflect the actual density within the immediate vicinity of the development • Does not take into account individual choices in terms of transportation, nor the continued improvements in vehicle emissions. • Would need much greater amount of scientific justification than has been provided • Captured in the TMDL with each update to the model	

Concept	Pros	Cons	Recommendation
2. Eliminate Atmospheric Deposition calculations from the calculations	• Unless able to provide more detailed scientific justification, it could be assumed that any potential increase due to vehicle atmospheric deposition is accounted for in the margin of safety.	• Reduces or eliminates availability of margin of safety for other considerations. • Fails to account for a known impact of growth • Complicates the science	
3. Use data on historic increases in VMT due to development to estimate increase in load per household	• Relatively straight forward calculation • Explicit recognition of the impact of development on vehicle miles traveled and therefore, air loads of N.	•	
VI. What Allocation, if any, should be given to the Post-Development Load (The difference between the Post-Development Load and the Allocation for the Post-Development Load equals the Offset Needed)			
A. Stormwater			
1. Zero Allocation	• Consistent with 2025 load allocations, makes developer (property owner) responsible for entire post development pollution load (PDL) • Would help local jurisdictions meet reduction allocations by providing additional reductions beyond those created by new development. Rationale – past development has resulted, and continues to result in pollution loads that have to be addressed by local jurisdictions (and the public at large) • Does not require any other party to assume responsibility to offset any part of the PDL • Provides no incentive for land conversion • Calculation is simple and applicable across state • This could be a way to compensate if no atmospheric deposition calculation • Maintains equity in terms of level of effort across sectors.	• Could be perceived as requiring new development to offset/ account for more of their load than do other sectors • Begs question of permanent versus temporary (for a defined term) offset responsibility. New pollution load will have to be offset in-perpetuity • Provides no incentive to preserve additional forest on site • Costs would eliminate projects in many areas • Elimination of loads from previous land use are not accounted for in the Bay TMDL and this scenario requires substantial reductions beyond a nutrient cap	

Concept	Pros	Cons	Recommendation
2. Forest Load Allocation	- Forest cover is the natural condition of the Bay watershed - Requires developers/new property owners to account for only part of the PDL (specifically, the PDL minus forest load) - Provides no incentive for land conversion - Would help local jurisdictions - Calculation is simple and applicable across state	- Inconsistent with 2025 load allocations - Will require another party to assume responsibility to offset part of the PDL (specifically, the forest baseline load) (Query whether there is a reduction required for forest land use, unless there is a timber harvest and that is to offset the load increase from the timber harvest.) - Will give developers a growth allocation for free - Requires projects to exceed "woods in good condition" defined by MDE as 50% reduction of stormwater load from ESD on average. - Costs would eliminate projects in many areas - Elimination of loads from previous land use are not accounted for in the Bay TMDL and this scenario requires substantial reductions beyond a nutrient cap	

Concept	Pros	Cons	Recommendation
3. The lower of the Bay TMDL or Local TMDL allocation for the pre-development land use	• Explicitly incorporates the need to meet local TMDL reductions • May make developers responsible for only part of the PDL (specifically, the PDL minus the TMDL, if local baseline is higher than TMDL)	• May be inconsistent with 2025 TMDL load allocations • May require some other party to assume responsibility to offset part of the PDL (specifically, the PDL minus the TMDL, if local baseline is higher than TMDL) • May give developers a growth allocation for free • May provide incentives for land use conversion • No sector loses an allocation, because the pre-development reductions are achieved • Complications: the predevelopment land use when? How much would the predevelopment land use have been reduced to meet the Bay TMDL and Local TMDL? • More complicated to implement; the predevelopment land use when? How much would the predevelopment land use have been reduced to meet the Bay TMDL and Local TMDL? • Assumes an agricultural baseline is appropriate for developed land if the pre-existing land use was Ag	

Concept	Pros	Cons	Recommendation
4. Pre-development land use load using 2010 Progress Run	• Reflects load changes • Accounts most accurately for the net change in nutrient loading due to land conversion • Makes developers responsible for only part of the PDL (specifically, the PDL minus pre-developed load) • Could result in conversion of agricultural land to preserved open space in meadow or forest	• Does not address all of the pollution load associated with the property and would conflict with State and local agricultural preservation and Smart Growth policies • Inconsistent with 2025 load allocations • Will require another party to assume responsibility to offset part of the PDL (specifically, the pre-developed load) • Introduces many unresolved complex issues about how to calculate pre & post-development loadsi • Will provide an incentive to develop agricultural land • Will give developers a growth allocation for free • Will undermine State and local land preservation objectives, policies and investments • Begs question of permanent versus temporary (for a defined term) offset responsibility. New pollution load will have to be offset in-perpetuity	
5. The lower of the Bay TMDL or Local TMDL allocation for the post-development land use	• Explicitly incorporates the need to meet local TMDL reductions •	• Could result in load increases if the prior land use had a lower per acre loading rate (example forest)	
6. The lower of the post-development TMDL load or the predevelopment load	• Meets Bay TMDL requirements for cap and reductions from offsets • If predevelopment condition is forest, must offset to forest. If heavily polluting predevelopment condition, no windfall.	• Projects would still be prohibitively expensive in many instances • No allocation for new growth in TMDL (but no concomitant reduction from Ag sector in TMDL either). • Unclear what constitutes post-development load but could be the stormwater load after applying BMPs minus a statewide factor (average N reduction requirement for urban statewide is 21%) • Addresses post-development load rather than predevelopment load (however MDE figures show net pollutant reductions from growth of urban sector compared to shrinkage of other sectors).	

Concept	Pros	Cons	Recommendation
7. Bay TMDL pre-development load or actual pre-development land use load, whichever is more restrictive	• Protects against heavily incentivizing conversion of Ag land to development as a credit generating activity. • Likely more equitable to developers in terms of baseline. • Retains the incentive for conversion of non-forest land to forest in development.	• Slightly more complicated than some alternatives	
B. On-Site Disposal Systems (OSDS)			
1. Default is zero	• Simple	• This is true if there are no existing OSDS on site, but often there are OSDS that will be removed as a result of development	
2. Allocation should equal the load from any existing OSDS, adjusted as if they had been upgraded to BAT	• Takes into account the site conditions	• More complex calculation dependent on OSDS location	
C. Atmospheric Deposition			
1. Zero Baseline Load	• Simple	• There is an existing Atmospheric Deposition load, some of which is not locally derived.	
2. Existing Atmospheric Deposition	• Does not hold developer accountable for the existing Atmospheric Deposition Load	• Would require information from the Bay Atmospheric Model to determine regional existing loading rates (Query whether this can be said for every other source and option – no more difficult here)	
3. Do not require offsets for Atmospheric Deposition	• Given the variability in Atmospheric Deposition and remote sources, makes scientifically supportable calculations difficult	• Would not account for a nitrogen source	
VII. How can the Post-Development Load be permanently offset			
1. Offsets must be definably permanent and O&M for offset must be guaranteed in perpetuity	• Minimizes risk to the public in terms of maintaining, replacing, or re-establishing offsets. • Some permanent offsets/BMPs are more effective than shorter term offsets at reducing pollution (and providing other environmental benefits) and would be easier to manage and verify	• Some permanent offsets/BMPs may be more expensive than shorter term offsets; if shorter term offsets are preferentially used, it could limit nutrient market participation and constrain efforts to lower overall Bay restoration costs	

Concept	Pros	Cons	Recommendation
2. Offsets to last for a minimum of 30 years; broker or aggregator can guarantee the term with approval of MDE with financial and other assurances	• Reasonable direct responsibility time frame, allows for a more expansive range of less expensive and easier to finance offsets (supportive of a more robust market) • Thirty years is a good compromise on this position of permanence; the financial assurance would be tied to construction of the BMP and there may also be a FA for monitoring and maintenance; this would not last the entirety of 30 years but would last typically 5-10 years; the 30 year approach could allow for other practices that may be long-term but not forever	• Some entity (probably local jurisdiction) would have to pick up responsibility for the load at the end of the term • May introduce annual or management-based practices into the offset framework, leading to considerable uncertainty and risk to the public. • Some entity would have to pick up responsibility for the load at the end of the term. Many practices last 20 years with questions of who will have to reconstruct practice after that time. • Reduced level of accountability	
3. Offsets to last for a minimum of 30 years; broker or aggregator can guarantee the term with approval of MDE with financial and other assurances; during 30 years, the development could be exempt from or receive credit toward the local jurisdiction's stormwater utility fee. After 30 years, the development pays the utility fee and the local jurisdiction, which assumes the responsibility for the offsets.	• May be perceived as more equitable • Reasonable direct responsibility time frame, less expensive and easier to finance offsets (supportive of a more robust market) • Thirty years is a good compromise on this position of permanence; the financial assurance would be tied to construction of the BMP and there may also be a Financial Assurance requirement for monitoring and maintenance; this would not last the entirety of 30 years but would last typically 5-10 years; the 30 year approach could allow for other practices that may be long-term but not forever	• The local jurisdiction would collect less money in stormwater utility fees during the development's first 30 years • It is not certain that the amount of stormwater utility fees collected beginning year 31 would be sufficient to maintain the offsets.	
VIII. When do the Post-Development load offsets have to be in place			
1. Require that all the offsets be in place before construction of the development begins	• Brings the reductions closer in time to the generation of new load	• Requires upfront expense • In other states, the offsets must be in place at building permit approval stage; even if construction is delayed, the locality has a means to administer the offsets at the same time they are considering building issues	

Concept	Pros	Cons	Recommendation
2. Require that all the offsets be in place for defined phases of the development before construction of that phase can begin	• Spreads out the upfront expense	• This could create administrative issues in ensuring enforcement • Could potentially limit the use of on-site controls to reduce the offset requirement. These would be installed at the time of development • May reduce accountability, transparency, and certainty if subsequent phases of the development are transferred to other management entities. • May reduce economies of scale associated with full offset at the time of initial construction, increasing Bay restoration costs	
IX. Encouraging Sustainable Development Patterns			
A. Definitions			
1. Define redevelopment as pre-development parcel having at least 40% Impervious cover	• Consistency: this is the definition set by stormwater regulations	• Does not promote smart growth where often the redevelopment/revitalization has impervious cover less than 40%	
2. Include in redevelopmnent parcels having pre-development impervious cover of between 20% and 40%, and provide a sliding scale of amount of offset needed	• Supports smarter, more sustainable growth by encouraging redevelopment and revitalization of existing urbanized areas. • Provides a gradational change in the amount of offset needed instead of an abrupt change at 40%	• Would require an additional calculation to determine the amount of offset needed, but not a complex calculation • • Offset owed = 100% - ((Predevelopment Imp % - 20)*X), where X is the amount of reduction in the offset requirement	
3. Definition of infill	• Could use LEED ND definition of infill http://www.usgbc.org/sites/default/files/LEED%202009%20Rating_ND_10-2012_9c.pdf at pages 17-18	• Could fail to account for increases in loads. • A broad definition of infill could severely undercut the accounting for growth program by providing an incentive for greenfield development	
B. Exemptions			
1. No exemptions	•	• Drives development into undeveloped areas due to costs	

Concept	Pros	Cons	Recommendation
2. Exempt redevelopment from any stormwater offset	• Would encourage more redevelopment, these types of development projects are required to provide stormwater management and the post development site would have lower loads than the pre-development site. Much of the future population growth could be accommodated through redevelopment	• Could conflict with MS4 permit requirements. • Could underestimate new loads in certain circumstances • Need to define redevelopment • North Carolina does not exempt but provides a discount in the offsets needed •	
3. Exempt infill from any stormwater offset	•	• Creates new loads and likely violates the Clean Water Act • Need to define infill • Would this burden the MS-4 permit obligations • Will increase loads in conflict with the TMDL unless a load reduction can be demonstrated.	

4. Provide no exemptions but set target load for redevelopment at existing site condition.	• Encourages maximum water quality improvement on redevelopment sites.
	• Accounts for rare cases where post-development load is higher than existing conditions.
	• Provides opportunity for credit generation on-site:
	   - Difference between existing site condition and proportional reduction required under local MS4 permit or urban TMDL allocation is credited to local government.
	   - Difference between proportional reduction required under local MS4 permit or urban TMDL allocation and the post-development load is credited to the developer.
		•	

C. **Recognize other impacts of sprawl development – Using ratios to reflect the overall impact**			
1. Require multiples of offset requirement for less sustainable patterns	• Consistent with State's Phase I and Phase II Accounting for Growth narrative strategies. • Consistent with adopted state growth policies and goals. • Recognizes cumulative impacts of low density greenfield development patterns	• Disincentivizes growth in regions without infill or redevelopment potential • Costs already predicted to disincentivize projects due to septic offsets, size of project	

Concept	Pros	Cons	Recommendation
X. Trading and Credits			
A. A. Credit Generation			
i. On-site Credit Generation			
1. Enhanced site design reduction practices, such as, fingerprinting of layout	• Minimizes disturbance on-site • Could conceivably generate credits if reduction benefits reduce load to forest load (natural state) or better, depending upon post development allocation decision • Reduces impact to local waters	• Would require additional calculations, with accounting benefits being dependent on specific BMPs and location • Would likely be more expensive than simply purchasing nutrient market credits • No BMP efficiencies in CBP	
2. Preservation of forest practices beyond the requirements of the Forest Conservation Act.	• Accounting benefits would encourage developers to preserve more forest on site2. • Would minimize local watershed impacts	• Would require calculation for amount of forest preserved beyond the FCA requirements. • Would require additional land to be placed in reservations of easement or it would need to be verified and enforced, probably by local jurisdictions • Without "credit stacking," would likely be more expensive than simply purchasing nutrient market credits{ NOTE: if this is the case, the price of the credits may be too low…or short term/annual practices are depressing the market} • Could lead to overstatement of nutrient reductions if forest benefits are included in post-development load calculation. • Forest stands may already be accounted for in TMDL current progress model runs. • New recommendations coming from CBP Forest workgroup require net increase of forest at 12-digit scale, so credit for forest preservation not likely.	

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[2] We need to careful about allowing preservation to get credit-restoration is ok but not preservation

Concept	Pros	Cons	Recommendation
3. Reforestation/afforestation practices beyond the requirements the Forest Conservation or local riparian buffer requirements	• Would result in additional forest being planted with resultant reduction of impacts to local water quality, or local water quality improvement • Would provide more options for on-site mitigation • Use CBP efficiencies	• Would require additional calculations, with credits being dependent on location of the planting • Would require longer term maintenance agreements with the developers to ensure viability of the plantings • Without "credit stacking," could be more expensive than simply purchasing nutrient market credits	
4. Credit for on site stream restoration. Would need to be approved by local jurisdiction to assure that it fits in with local policy and restoration efforts[3]	• Would result in improvement of local water quality and aquatic habitat. • This could be integrated with other mitigation projects • Would provide more options for on-site mitigation • Use CBP efficiencies	• Requires coordination with local jurisdiction on acceptability of stream restoration • Requires additional permitting • Without "credit stacking," may not generate market interest due to its comparative cost vi-a-is other market credits	
ii. **Off-Site Credit Generation**			
1. Credit for capturing offsite drainage and providing treatment (retrofit). Credit based on loading to the new facility and the type of facility installed using the CBP document on stormwater retrofitting credits	• Would help local water quality and result in limited impacts from the new development • Efficiencies exist for credit	• Would require the developer to provide additional stormwater engineering design and calculations, as well as, permitting and construction • May not generate market interest due to its comparative cost vi-a-is other market credits • Would need easements or protections in trading markets	
2. Expand and convert a SWM facility that is immediately adjacent to the project, would need land on the project to achieve the expansion	• Would help local water quality and result in limited impacts from the new development • Efficiencies exist for credit	• Would require the developer to enter into negotiations with facility owner • Would require additional the developer to provide additional stormwater engineering design and calculations, as well as, permitting and construction • May not generate market interest due to its comparative cost vi-a-is other market credits • Would need easements or protections in trading markets.	

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[3] Why would localities have the right to limit this practice? It would be better to adopt specific protocols and calculations for stream restoration

Concept	Pros	Cons	Recommendation
3. Conversion of existing stormwater facilities for greater pollutant removal. This would need to be approved by local jurisdictions, but would probably involve the conversion to privately owned facilities	• Can provide improved water quality in the local vicinity of the project. • Runoff Reduction method draft efficiencies could be used.	• Requires additional stormwater engineering and permits • May be constraints in the ability to upgrade a facility • Would require prior local jurisdiction approval • May not generate market interest due to its comparative cost vi-a-is other market credits • Would need easements or protections in trading markets.	
4. Installation of denitrifying OSDS systems. Need to be sure it does not conflict with local TMDL requirements. Have owners register their systems as available for installation	• Would accelerate the upgrades to OSDS to BAT. • Since fresh waters a usually not impaired by nitrogen, could target OSDS in watersheds that have higher nitrogen delivery to the bay. • Could be a means to address problem OSDS where the owner has financial constraints. • CBP program removal efficiencies exist	• Would require prior local jurisdiction approval • May not generate market interest due to its comparative cost vi-a-is other market credits • Would need easements or protections in trading markets.	
5. Possibility for a variety of offsite reforestation offsets	• Could accelerate the increase in forest cover • Provides a source of permanent credits.	• Would require prior local jurisdiction approval. • Would require additional planting plans, easements, and maintenance agreements to assure survivability • Without "credit stacking," may not generate market interest due to its comparative cost vi-a-is other market credits • Need to verify that efficiencies exist for practices • Would need easements or protections in trading markets	
6. Generate credits through exceeding the requirements for redevelopment by installing greater SWM or planting. Maybe not available for revitalization projects	• Would encourage developers of redevelopment sites to go beyond the legal requirements of development resulting in acceleration of water quality improvement • Efficiencies exist in CBP	• Additional engineering, permitting, maintenance, easements, etc • May not generate market interest due to its comparative cost vi-a-is other market credits • Would need easements or protections in trading markets	

Concept	Pros	Cons	Recommendation
7. Other project identified by a local jurisdiction for urban credit options (connection of package treatment plant to WWTP with ENR, installation of spray irrigation for land application of treated wastewater, etc.)	• Could result in water quality improvements that go beyond what the local jurisdictions is required to do. Would allow the local jurisdiction to identify other options that could address TMDLs other than those associated with nutrients	• May have variability in what local jurisdictions identify as additional options. • Would potentially need State approval • May not generate market interest due to its comparative cost vi-a-is other market credits • May reduce or eliminate alternatives needed to meet existing load reductions under the TMDL • Would need easements or protections in trading markets.	
B. Credit Certification, Verification and Transparency			
1. Establish independent audit controls.	• Essential for credibility of the program (and market) and to prevent cheating	• Difficult to implement, more costly.	
2. Use existing MDA verification policies	• Policies in place	• A certification process by state is necessary; MDA process would work • Not satisfactory to all	
3. All trades to be in a publicly accessible, on-line database established by State and used to calculate progress	• Essential for credibility of the program and to prevent cheating • Provides for multiple uses • Simplicity, consistency in calculations for AfG across State	• Ledger could reflect trades but there is no need for contracts and pricing to be posted, this is interference with the market	
C. Regulation of Brokers and Aggregators			
1. None	• The standards for certification, verification and financial assurances are the most important focus • Does not limit participants in the market • No third party review, but place a heavy focus on the certification process, that will serve as a de facto standard for market participants	• No formal eligibility determination	
2. Third party review	• Formal standard for eligibility	• This is cumbersome and may become political • Who reviews? What standards? • It may limit market participants	
D. Restrictions on Trading Geographies			
1. Interstate	• Allowed by EPA	• Degrades water quality in state • Other states' policies not as well developed, greater risks to buyers	

Concept	Pros	Cons	Recommendation
2. Statewide	• This is the essence of trading to find the most cost effective means of reducing loadings • The NTT can be adopted to allow statewide trades that take into account local baselines, delivery ratios and loading rates • This maximizes the benefits of trading while being compliance with the science standards • This allows for the most densely populated regions to have adequate offset supply	•	
3. 3 regions	• Already adopted by NTT although it could easily migrate to a statewide tool	• Limits trading regions and offset supply	
4. County-wide	• Blends the need for local improvements for local pollution generation with a geography that is easier to manage	Extremely limiting by reducing demand and supply Not warranted to achieve Bay-wide objectives Would make offsets more expensive •	
5. Limit trading to within the local jurisdiction, unless the development occurs on nutrient impaired local segment, then offsets must come within this smaller watershed	• Encourages wise management of offset generation capacity. • Best protects local water quality	• May limit credit market and/or increase costs.	
6. Limit trading to within the basin, unless the development occurs on a nutrient impaired local segment, then offsets must come within this smaller watershed	• Allows for development of trades • Provides some protection for local water quality. • Preserves regional equity and level of effort. • Promotes and consistency between the offset required and the delivered efficiency of the offsetting BMPs. • Minimal increase in market constraints and increased cost, per findings of the Chesapeake Bay Commission study on nutrient credit trading.	•	
7. Use a hierarchical trading geography local first expanding ultimately to State or even inter-state	• Would address local water quality impairments • Would still provide the developer of ultimately obtaining credits for development	• Could cost the developer more depending on the availability and cost of local offset credits.	
8. Within impaired watershed	• Ensures that new loads in an impaired sub-watershed are offset where they occur, not resulting in a local violation.	• Not all impaired watersheds will immediately have credits available (could allow FIL where that is the case)	

Concept	Pros	Cons	Recommendation
E. Credit Stacking			
1. Allow/encourage the "stacking" of additional (e.g., forest conservation, wetlands mitigation, carbon sequestration credits, etc.) for BMPs	• Would support the generation and sale of the most environmentally beneficial (and often more costly) pollution reduction credits (BMPs) • More likely eligible in Forest Conservation projects, Farm Bill projects and carbon	• Would require additional policy adjustments and legislation • There are federal prescriptions on using mitigation acreage for another credit purpose; although an offset project could integrate with additional acreage • Should only be allowed for those actions that go beyond regulatory requirements • Difficulty ensuring "additionality	
F. Cross-sector Trading			
1. Allow any sector (primarily urban sector/local jurisdictions) to trade with another sector (primarily agricultural sector) to more cost effectively reduce their TMDL load allocation	• Could significantly reduce the cost of meeting assigned Bay TMDL load allocations and accelerate the Bay's restoration • Would remove a significant impediment (cost) and increase local jurisdiction involvement in Maryland's Bay restoration efforts • Trading is all about finding the most cost effective means to reduce loadings and there should not be arbitrary constraints on sector trading • Allow any sector (primarily urban sector/local jurisdictions) to trade with another sector (primarily agricultural sector) to more cost effectively reduce their TMDL load allocation	• Stormwater sector is limited by NPDES MS4 permits with concept of impervious surface reduction as represented by one acre-inch of flow in addition to pollutant reductions that make trading difficult. This flow volume has no trading equivalent at this time, and stormwater permits require 20% reductions of untreated impervious area, not pollutant reductions. • Industrial dischargers have 20% impervious area reduction requirements based on type of pollutant onsite and may not be able to participate in nutrient trades.	
2. Allow any sector (primarily urban sector/local jurisdictions) to trade in time with another sector (primarily agricultural sector) to provide more time for planning and funding	• Could significantly reduce the cost of meeting assigned Bay TMDL load allocations and accelerate the Bay's restoration • Would remove a significant impediment (cost) and increase local jurisdiction involvement in Maryland's Bay restoration efforts • Would spread the cost of addressing stormwater over a longer period of time making it more affordable to address existing urban loads • Allow any sector (primarily urban sector/local jurisdictions) to trade in time with another sector (primarily agricultural sector) to provide more time for planning and funding	•	

Concept	Pros	Cons	Recommendation
XI. Ratios to increase margin of safety and accelerate Bay restoration			
1. Require that the load be offset as a 1:1 ratio	• Trades have 10% premiums and retirement ratios and sector conversions result in net reductions at the state scale. • Definition of baseline already includes reductions from previous land uses except when using pure predevelopment scenario.	• Would this provide a margin of safety for trades or for the Bay? • Would not account for cumulative impacts and other impacts (such as air deposition from VMT) that may be left out of the final policy.	
2. Require a retirement ratio of 10% to 15% for all trades	• Would provide a margin of safety, ensuring that the program is genuinely accounting for ALL new pollution load • 10% credit premium plus retirement already built into the policies of the Ag nutrient trading program	• Would increase development costs beyond the straightforward requirement of 1lbs new pollution load per 1 lbs pollution offset • Would eliminate some projects. • Need to be careful that significant costs are not added to the price of offsets • May not account for cumulative impacts and other impacts (such as air deposition from VMT) that may be left out of the final policy	
3. Require that the load be offset at a higher than 1.1 ratio to provide for a margin of safety (1.5: 1, or 2:1)	• Would provide an even greater margin of safety, better ensuring that the program is genuinely accounting for ALL new pollution load	• Would further increase development costs beyond the straightforward requirement of 1lbs new pollution load per 1 lbs pollution offset • Would eliminate some projects • A 1:1 with a retirement ration is more intellectually honest • Very hard to come up with science to support MOS ratio	
4. Require a higher ratio (3:1, or 4:1) if the Bay TMDL is not achieved by 2025	• Provides a backstop to ensure that new or increased loads are not being added to an impaired water body, preserving reasonable assurance of TMDL compliance.	• This is a penalty that may undermine the basis of trading in the first instance • Would further increase development costs beyond the straightforward requirement of 1lbs new pollution load per 1 lbs pollution offset. • Would eliminate some projects.	
5. Allow for innovation in the type of BMPs/ practices eligible to participate	• Recognize that markets will evolve and promote incentives that will support innovation of practices based on science	• There needs to be some sort of definition of eligible practices in the early stage of the marketplace	