Land Policy BMPs and Crediting Conservation towards the Bay TMDL
Frequently Asked Questions

1) How and who developed the Conservation Plus family of land use scenarios, also known as Land Policy Best Management Practices (BMPs)?

The Conservation Plus family of land use scenarios was initially developed during a day-long joint meeting of the Chesapeake Bay Program's (CBP) Land Use Workgroup (LUWG) and Local Government Advisory Committee (LGAC) in June 2017. For more information, see: https://www.chesapeakebay.net/what/event/local_government_advisory_committee_june_2017

During this meeting, an ideal conservation and policy scenario was drafted that included elements of forest and farmland conservation and growth management. Over the following six months, the LUWG agreed to divide elements of this scenario into three distinct thematic scenarios: Forest Conservation, Agricultural and Soil Conservation, and Growth Management. These three scenarios were then renamed "Conservation Plus" scenarios and are referred to as "Land Policy BMPs" by the CBP Partners. The elements that compose each of these three Land Policy BMPs (e.g., conserving all large forest patches, increasing infill and redevelopment by 10%) originated from the joint LUWG/LGAC meeting and subsequent LUWG monthly meetings.

The default elements for the three Land Policy BMPs are listed below. Each state will consider including one or more of these elements, as described or modified, in their state-custom Land Policy BMPs for inclusion in their Phase III Watershed Implementation Plans. States may also develop new elements, such as specifying an anticipated amount of forest conservation per county, for inclusion in their custom Land Policy BMPs.

Forest Conservation:

- Conserve riparian zones (default width = 30m)
- Conserve wetlands (USFWS National Wetlands Inventory (NWI), State Designated Wetlands, and Potential Conservable Wetlands (PA only))
- Conserve all lands subject to inundation due to sea level rise (default = 1m rise by the year 2100)
- Conserve all lands surrounding National Wildlife Refuges (default = 1-mile buffer)
- Conserve all large forest tracts (default >= 250 acres)
- Conserve Bay shorelines (default = 305m buffer (~1000-ft) of the tidal Bay and Atlantic shorelines)
- Conserve all high-value forest and forested wetlands identified by the Chesapeake Conservation Partnership

Growth Management:

- Increase proportion of growth occurring as infill/redevelopment (default = 10% per decade)
- Increase urban densities (default = 10% per decade)
- Increase proportion of urban vs rural growth (default = 10% per decade)
- Expand sewer service areas (default = ~1 mile)

- Avoid growth on all soils unsuitable for septic systems (based on depth to bedrock, drainage class, saturated hydraulic conductivity, and flood frequency)

Farmland Conservation:

- Conserve all farmland within designated Agricultural Districts
- Conserve all lands within the floodplain (default = 100-year recurrence interval)
- Conserve all lands with flooded soils (default = frequently flooded)
- Conserve all prime farmlands and farmland of state importance
- Conserve potential restorable wetlands (applies only to PA farmland)
- Conserve all high-value farmland identified by the Chesapeake Conservation Partnership

2) How are the nutrient and sediment pollution load reductions associated with each of the Land Policy BMPs computed?

Pollutant loads (pounds of nitrogen, phosphorus, and sediment) from Land Policy BMPs are estimated using the Chesapeake Assessment Scenario Tool (CAST). CAST has been designed to help jurisdictions develop their Phase III Watershed Implementation Plans and estimate pollution loads from all BMPs, including Land Policy BMPs. The effects of land use planning and land conservation actions on future land uses and septic systems are simulated using the Chesapeake Bay Land Change Model (CBLCM) in combination with future estimates of crop type, hay, and pasture acres and animal populations extrapolated from the Census of Agriculture (1982 -2012), and annually reported acres of land under construction. These forecasted/extrapolated land use, septic, and animal population data are combined with traditional BMPs in CAST to form the final 2025 land use datasets associated with each Land Policy BMP. Within CAST, pollutant loads resulting from the Land Policy BMPs can be estimated on one of two base conditions: Historic Trends or Current Zoning. To estimate pollutant load reductions from Land Policy BMPs, CAST users should compute loads for a 2025 base condition (e.g., Current Zoning) and from the same 2025 base condition with the addition of a Land Policy BMP. To be comparable, these CAST scenarios should include the same wastewater and BMP datasets (e.g., "2017 Wastewater" and "2017 Progress v9"). Once these two scenarios are produced, comparative reports can be generated in CAST showing the differences in pollutant loads resulting from the Land Policy BMP. Note that the "Current Zoning" base condition has been accepted as the official 2025 baseline used by the CBP Partners to evaluate the effects of Land Policy BMPs on 2025 conditions. The CAST tool is available for use by the public following registration on the site and it has excellent documentation and help screens.
For more information, see:
https://cast.chesapeakebay.net/

3) When will the Land Policy BMPs be produced and available in CAST?

In June of 2018, the CBP created and distributed two partnership-approved 2025 base conditions (Historic Trends and Current Zoning) that represent current estimates of growth with and without zoning. At the same time, the CBP created and distributed three "Conservation Plus" Land Policy BMPs described in FAQ#1. Jurisdictions, localities, and the public may access these base conditions and Land Policy BMPs in CAST and are encouraged to monitor changes in base conditions in their local area.

By October 19, 2018, the CBP will create and distribute one additional set of Land Policy BMPs for each of the seven jurisdictions across the watershed that better each jurisdiction's, draft combined approach

to forest and farmland conservation and urban, sewer and septic growth management actions. CBP staff are currently working with jurisdictions to develop and finalize these Land Policy BMPs. Once released in CAST, jurisdictions, localities, and the public are encouraged to investigate expected changes in nutrient loads resulting from these new Land Policy BMPs.

From October 19, 2018 through April 12, 2019, the CBP will create and distribute additional draft Land Policy BMPs. Localities are encouraged to work directly with their jurisdictional Phase III WIP leads to direct the creation of each jurisdiction's official Land Policy BMP, alternatives, or revisions. For example, after reviewing a jurisdiction's official Land Policy BMP, certain localities may wish to change the size threshold for conserving forested tracts, from say a 100-acre to 50-acre minimum. Jurisdictions should work collaboratively with local stakeholders prior to submitting additional Land Policy BMPs to the CBP. The CBP will then work with each jurisdiction to review and revise the additional Land Policy BMPs and will only post them in CAST upon request by each jurisdiction. Results of additional Land Policy BMPs will be posted on a rolling basis between January 1, 2019 and April 12, 2019.

4) Do Land Policy BMPs (e.g., conservation and planning actions) only apply to areas projected to experience growth and development by 2025 and beyond?

The Land Policy BMPs apply everywhere--to all Bay watershed counties. They will have minimal near-term impact on pollutant loads in counties that are not expected to experience significant development through the year 2025. However, the effects of Land Policy BMPs on pollutant loads will increase through time beyond 2025 as human and some farm animal populations continue to grow. The population of the Bay watershed is expected to increase by ~ 1 million persons per decade through the year 2050.

5) What effects do Land Policy BMPs have on pollutant loads and how do they compare with engineered BMPs?

Land Policy BMPs affect pollutant loads by changing the spatial patterns of land use and extent of future greenfield development. They are most effective in high-growth counties, but their impact varies depending on the elements included in the Land Policy BMP and the spatial pattern of these elements within a county. For example, the Forest Conservation Land Policy BMP may have little impact in a county dominated by farms and urban land.

Land Policy BMPs can reduce the amount of future development by increasing infill, redevelopment, and densities. They can change the spatial patterns of growth by displacing growth from one area (e.g., forests) to another (e.g., farmland). The impact of these changes on pollutant loads is not always intuitive. For example, conserving forests in the last undeveloped parcel served by sewer could displace growth to areas served by septic which would increase pollutant loads. Likewise, conserving both forests and farmland in areas zoned for high-density development could displace growth to lower-density areas, increasing the future development footprint and associated pollutant loads. For these reasons, jurisdictions are encouraged to take a balanced approach to developing their custom Land Policy BMPs that include elements of growth management with forest and farmland conservation.

The effectiveness of both land policy and engineered BMPs can vary considerably depending on the extent, type, and location of the BMPs, and the type of land to which BMPs are applied. Land Policy

BMPs can be more effective than engineered BMPs at reducing nutrients and sediment – and vice versa. Unlike engineered BMPs, however, Land Policy BMPs may have comparatively minimal maintenance costs once actions are implemented and their effectiveness may increase over time as human populations continue to grow.

6) Are the Land Policy BMPs trying to stop growth and development?

No. For all scenarios, county-level population, housing, and employment projections must be accommodated within their respective counties. These projections are produced independently by each state and provided to the Chesapeake Bay Program Office. This approach is taken by design because states and counties depend on their demographic and employment projections for a variety of fiscal and infrastructure planning purposes. Therefore, it makes sense to use them as the basis for envisioning potential alternative futures. This design decision also means that leapfrog development is not currently simulated in any of the future land use scenarios. "Leapfrogging" is a real phenomenon where demand for growth accompanied by new development seemingly leaps across county or state boundaries to take advantage of amenities, lower costs of living, tax differentials, or other relative economic advantages. Leapfrogging can create bedroom communities which are sometimes separated from work destinations by substantial commuting distances. However, as more local governments adopt consistent growth management policies and programs which can be reflected in their Land Policy BMPs, the likelihood of leapfrog development will diminish.

Future population and employment can be accommodated within a county in a variety of ways that have differential impacts on the environment. Simulating these ways and their impacts is the purpose of the Land Policy BMPs. For example, one county might accommodate future growth mostly through infill and redevelopment resulting in minimal greenfield development, i.e., the conversion of forests and farms. Another county could accommodate the same amount of growth as a mix of moderate and low-density development in rural areas resulting in relatively high amounts of land conversion. The pollution impacts of future development are largely dependent on design, engineering, wastewater treatment technologies, and pre-development land use conditions.

7) Why did the CBP Partners agree to credit land use policies and land conservation actions for reducing pollution to the Bay?

Maintaining forests has always been implicitly "credited" in the CBP Partner models because forests have the lowest per-acre pollutant loads compared to any other land use. Converting forests to a non-forest use results in an increase in loads. For the Phase 6 model, however, the CBP Partners have decided to explicitly credit conservation for its role in avoiding future land conversion. This is uniquely possible for the Bay TMDL due to the broad spatial and long temporal scale of the restoration effort. When faced with the decision to establish restoration plans on 2010, 2017, or 2025 land use conditions, the CBP Partners decided in 2017 to establish them on 2025 land use conditions because: 1) Bay TMDL mandates that jurisdictions must "account for growth" in pollutant loads in their Phase III Watershed Implementation Plans; 2) Jurisdictions are planning to implement BMPs through the year 2025; 3) the population of the Bay watershed will increase by another 1 million people from 2017 to 2025 (an increase of 2 million over 2010 levels); and 4) the long-term trend of increasing poultry populations is expected to continue through 2025. Moreover, the pollutant load reductions achieved by the year 2025

must be maintained into the future and the CBP Partners appreciate that the value of land conservation and land use planning will increase over time.

8) How can conservation organizations qualify for credit under the TMDL for the lands that they conserve?

Land conservation and land use policies such as zoning do not result in instantaneous reductions of nutrient and sediment pollution from a parcel of land unless accompanied by changes to land cover, use, or management. Rarely do they individually result in quantifiable avoidance of land conversion. This is because conserving a single parcel of land in its current state through easement, fee-simple acquisition, or policies may only shift development pressure to other equally attractive and eligible parcels. This concept is termed "leakage" in conservation literature. Changing future land use patterns or reducing the extent of future greenfield development is more likely to occur through the collective conservation efforts of multiple organizations combined with land-use policies and other actions.

As with engineered BMPs, "credit" for Land Policy BMPs in the TMDL context has two phases. Initially, "credit" means formal and quantitative recognition in a jurisdiction's Phase III WIPs of the contributions towards reducing nutrient and sediment loads to the Bay attributable to collective land use planning and land conservation actions. Phase III WIPs include planned actions to be implemented from 2018 – 2025 to achieve each jurisdictions' pollution load reduction targets. Each Bay State and the District of Columbia have the option of including Land Policy BMPs in their Phase III WIPs which will be developed through 2018 and finalized in 2019. If the Land Policy BMP used in a jurisdiction's Phase III WIP results in lower pollutant loads than the Current Zoning baseline scenario, the conservation actions and land use policies included in their Land Policy BMP will be credited towards achieving the pollutant reductions. Final "credit" for all BMPs is obtained when the planned load reductions documented in the Phase III WIPs are observed in environmental monitoring data.

The verification process for Land Policy BMPs has not yet been finalized by the CBP Partners. As of May 2018, it is anticipated to be different than the verification approach used for engineered BMPs. This is because engineered BMPs are assumed to have individual effects on reducing pollution. In contrast, land use policies and land conservation actions are assumed to <u>not</u> have individual effects due to the possibility of leakage and other factors beyond the control of planning and conservation organizations. For these reasons, the role of land use planning and land conservation actions in achieving pollutant reductions will be primarily verified through monitoring land use change. The CBP Partners will monitor land change every two years through hot-spot analyses and every 4-5 years through repeat high-resolution land cover mapping. If observed changes in land cover/use show patterns and rates of change that are highly inconsistent with the Land Policy BMP used in jurisdictions' Phase III WIPs, jurisdictions will have an opportunity to modify their Land Policy BMP and/or modify their land use planning and conservation efforts in their 2-year milestones. If water quality monitoring data affirms that load reduction targets have not been met, jurisdictions will be expected to implement additional BMPs to further reduce loads, possibly including more aggressive land use policies and conservation to prevent loads from further increasing.

In addition to this approach, jurisdictions can include the amount of new land conservation implemented in each county in their WIP Progress reports. These data are already being reported to the

CBP but not all records have included an acquisition date needed to track progress and to help target conservation investments. The Chesapeake Conservation Partnership is working with the CBP Partners to ensure all future reporting includes implementation dates for easements and fee-simple acquisitions.

9) Can any permanently conserved land qualify for credit under these BMPs, not just forest and farmlands?

Yes. Land use types are simplified in the CBP models such that any lands that are not already developed are represented as either forest/wetlands or grass/herbaceous lands. Therefore, if newly protected areas are undeveloped, they will qualify for credit.

10) Do the scenario elements (e.g., preserving all large forest tracts or prime farmland) need to be fully implemented in a county to receive "credit" under the Bay TMDL towards offsetting future growth and development?

As described in FAQ #8, conservation actions and land use policies included in a jurisdiction's Land Policy BMP will be credited towards achieving pollutant reductions if the Land Policy BMP is estimated to produce lower pollutant loads in 2025 than the Current Zoning baseline scenario. If the estimated pollutant reductions are realized in 2025, conservation actions will be credited as contributing to those reductions to the extent that they were implemented.

11) Do working forest lands qualify for TMDL credit?

Working forests, e.g., forests designated for and subject to periodic harvest, qualify for unique BMPs that are designed to control sediment. If working forests are mapped and a jurisdiction agrees to include them in the Land Policy BMP used for developing their Phase III WIPs, then they could contribute to avoiding future land conversion if there are documented commitments to sustain them as "working forests" into the future. Currently, no working forest lands, as defined above, are included in Land Policy BMPs due to the lack of data on their status and locations.

The Chesapeake Conservation Partnership has mapped potential working forests, defined as:

- Multiple Value Woodlots: These are blocks of contiguous forest ranging in size from 50 to 500 acres; and/or
- Forests Conducive to Timber Harvests: These are defined as areas of harvestable contiguous forest blocks 500 acres or larger with less than 30% slopes.

In the absence of mapped polygons of timber harvest areas, these CCP criteria could be adopted for use in a jurisdiction's Land Policy BMP to reflect the area of potential "working forests."

12) Who selects future scenarios/Land Policy BMPs used in the Phase III WIPs and how can land trusts engage in the process of designing and including them in a jurisdiction's Phase III WIPs?

State regulatory agencies such as MDE in Maryland, DEQ in Virginia, and DEP in Pennsylvania are the lead agencies in charge of Phase III WIP development. These agencies typically coordinate with other state agencies and local governments in developing their WIPs although each jurisdiction may handle the process a little differently. Interested land trusts should contact their jurisdiction's lead agencies for Phase III WIP development to find out how best to get involved. Land trusts should also coordinate/communicate their involvement with their state conservation agencies and local governments in their respective service areas. Such contacts should be initiated as soon as possible (i.e., May-June 2018) to ensure consideration of conservation actions. Information that may be useful to state agencies include historic rates of conservation activity (acres of conservation per year per county) and the average parcel/patch size of conserved lands per county.

Jurisdictional contacts for Phase III WIP development are listed here:
https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-watershed-implementation-plans-wips

13) Are there any other ways that the CBP recognizes or acknowledges the importance of permanently conserved lands?

If engineered BMPs such as riparian tree plantings are placed on permanently conserved lands and land trusts monitor and maintain the condition of those BMPs, their efforts can be recognized in the BMP verification process, e.g., through extending or eliminating the typical expiration date for those BMPs.

Finding suitable sites for restoration activities is sometimes difficult, particularly given access and ownership restrictions. Land trusts and other land conservation programs that have ongoing relationships with owners of conserved land can serve as important connections to landowners who may want to improve the stewardship of their lands by installing water quality BMPs. If easement conditions allow for the placement of engineered BMPs on conserved lands, such lands could serve as restoration banks for public and private entities involved in implementing BMPs. Land trusts are encouraged to work with their state and local agencies to promote this concept.

For more information on BMP verification, please see:
https://www.chesapeakebay.net/who/group/best_management_practices_bmp_verification_committee

14) What role do the Chesapeake Conservation Partnership (CCP) priority maps play in the crediting conservation process?

Forests and wetlands in the CCP valued lands map (thresholded at values >=13) are used as one of the elements in the Forest Conservation scenarios (with and without zoning) and farmlands in the CCP valued lands map (thresholded at values >=13) are used as one of the elements in the Agricultural and Soil Conservation scenario. Jurisdictions may choose to use these and other CCP datasets as elements in their customized Land Policy BMPs (a.k.a. future land use scenarios). The CCP datasets can also be used to help guide where conservation occurs on the landscape and several states want to include county-level land conservation rates (acres per decade per county) in their Land Policy BMPs. For example, if 1000 acres of forest conservation are expected to occur in a County X over the next decade, the CCP

forest conservation priority map can be used as a weighting factor to influence the spatial location of conservation as simulated using the Chesapeake Bay Land Change Model. This will cause conservation to occur more frequently in areas identified by the CCP as high-valued landscapes compared to areas with relatively lower values.

For more information, see: http://www.chesapeakeconservation.org/index.php/our-work/chesapeake-conservation-atlas-2/our-valued-lands/