Preparing for CBP in 2025 and Beyond

Water Quality Goal Implementation Team

June 27, 2022

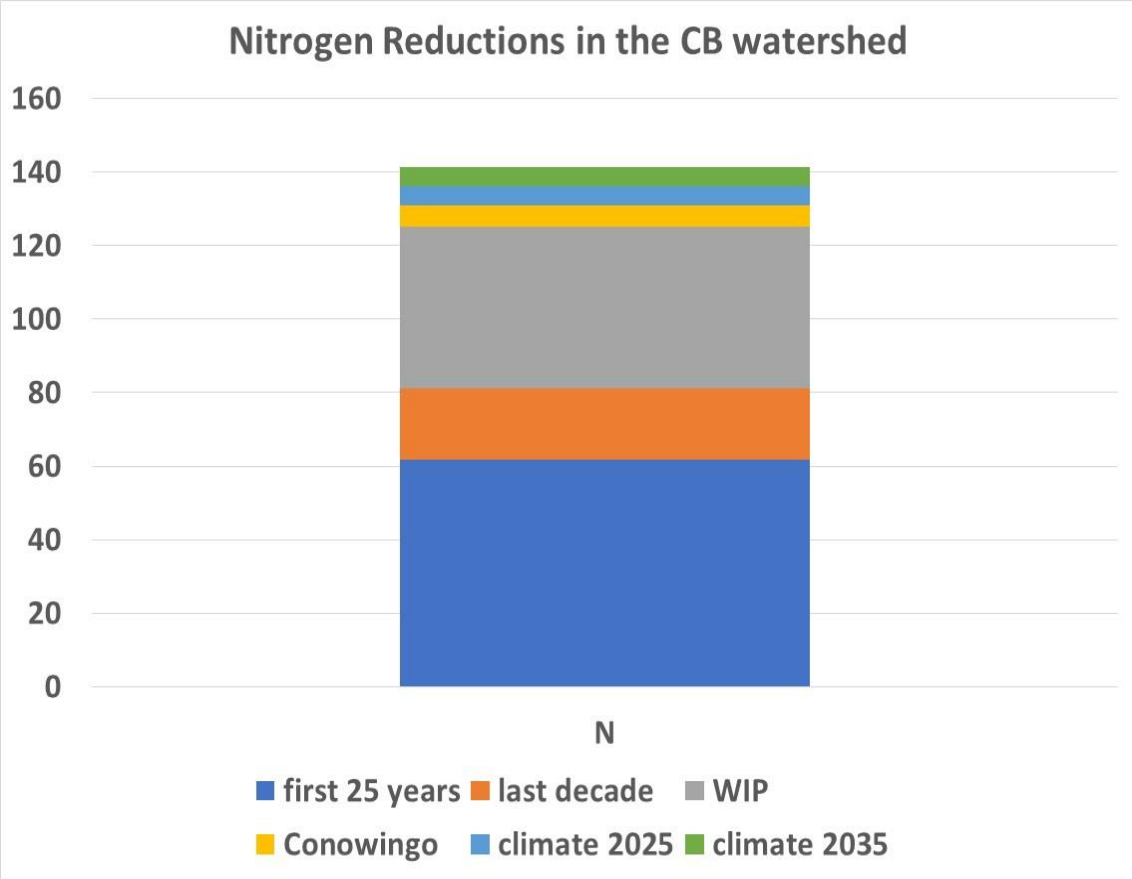
Lew Linker (EPA)
linker.lewis@epa.gov

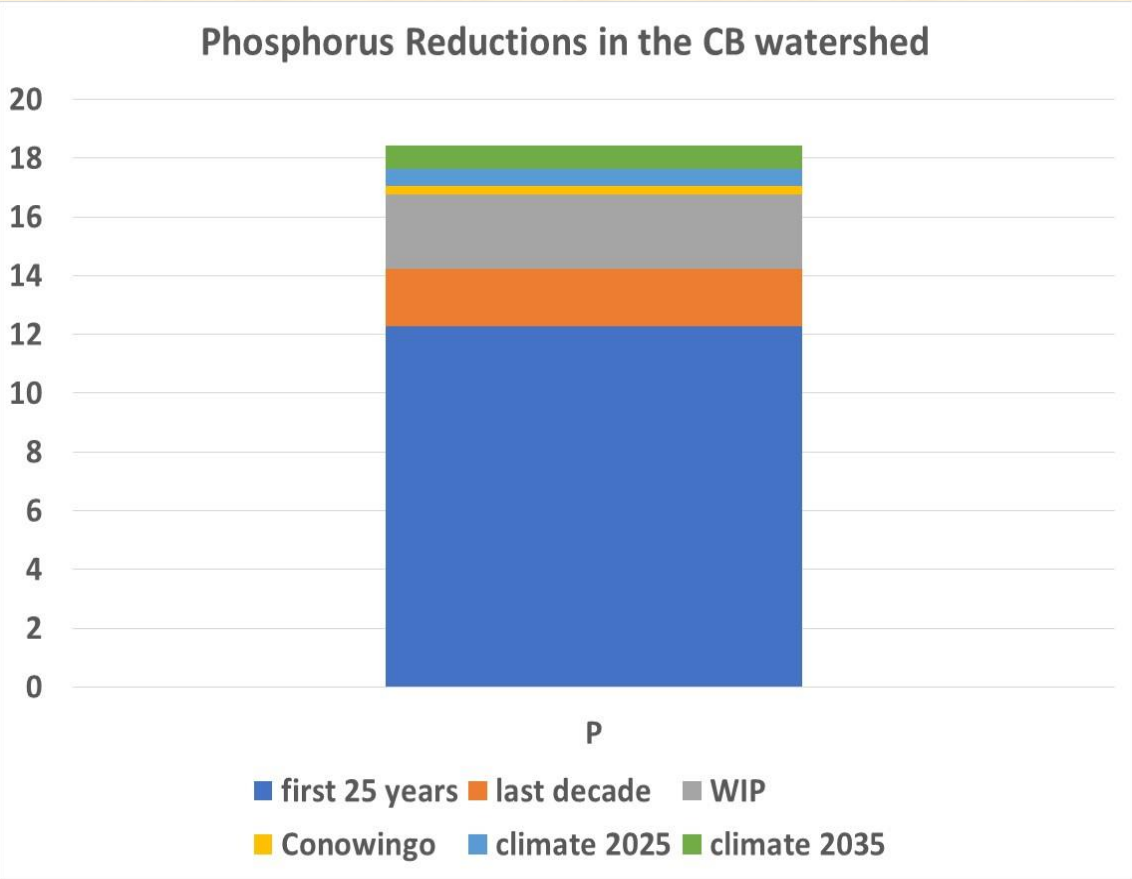
Chesapeake Bay Program
Science, Restoration, Partnership

The CBP Climate Change Assessment

- EPA plans to release a Request for Applications (RFA) this summer to support 1) a forward-looking analyses of future impacts and challenges due to climate, growth, and energy generation intended to inform CBP programs and restoration efforts at federal, state, and local levels and 2) climate-ready BMPs will be assessed and quantified for use in the CBP partnership's Phase 7 suite of modeling tools. Feedback from the WQGIT on the overall scope of the RFA will be requested.

CBP Nitrogen and Phosphorus Load Reductions





Source: Modeled load reductions from CAST-2019

Future Climate Change, Future Growth, Future Flows, Future Flooding, and Future Energy Mixes

A forward-looking deep analysis and technical synthesis could be used to provide insight, options, and guidance for CBP programs and implementation at the federal, state, and local levels. In the assessment of the 2025 CBP Goal (to take place in 2026) it would be helpful for a deep analysis to investigate the CBP partnership's history of initial expectations of the Tributary Strategies and the Bay TMDL Watershed Implementation Plans (WIPs; Phases 1-3) and examine the unanticipated impacts from climate change and growth in the past and going forward to 2050 using watershed-wide and local scale examples for future growth and climate change. The analysis should examine future flows, flooding, public safety, property protection, and environmental infrastructure protection.

Future Climate Change, Future Growth, Future Flows, Future Flooding, and Future Energy Mixes

Included would be an evaluation on options for how federal, state, and local programs in the CBP partnership can adjust and adapt to future challenges focusing on the nexus of climate change, management actions, flooding, public safety, and private and public property protection. An aspect could include using the CBP high resolution land use data to spatially simulate floodwaters from future climate change hydrologies and assess the disruption in ecosystem services and to critical environmental infrastructure. Estimates would include using appropriate intensity, duration, and frequency (IDF) curves that are climate adapted. Finally, estimates of atmospheric deposition of nitrogen under future energy mixes with the ongoing decarbonization of the energy sector for sectors of energy generation, mobile sources and other sectors will be made.

Future Climate Change, Future Growth, Future Flows, Future Flooding, and Future Energy Mixes

Climate ready Best Management Practices (BMPs) will be assessed and quantified for use in the 2027 CBP partnership's nutrient and sediment targets that will address 2035 climate change challenges to the 2010 Chesapeake Bay Total Maximum Daily Load (Bay TMDL). A synthesis of data and research is needed to understand how climate change impacts BMP performance. The BMP climate resilience assessment will include pollutant removal performance under future climate change and needed changes in maintenance, BMP life cycle and maintenance, siting and design, and others. Adaptation options for BMPs, BMP treatment trains, etc., will be included. Lessons learned by the CBP partnership to develop a better understanding of BMP responses, including new and other emerging BMPs, to climate change conditions over next 10 to 50 years and to support implementation of climate adapted BMPs will be included. Following recommendations of the STAC 2022 Report: A Systematic Review of Chesapeake Bay Climate Change Impacts and Uncertainty: Watershed Processes, Pollutant Delivery, and BMP Performance application of a 1) mechanistic BMP modeling studies of urban and agricultural BMPs under base and future climate hydrologies will be utilized, 2) development of mechanisms of quantifying BMP efficiency uncertainty under climate change, and 3) develop of information for an expert panel assessment, if needed, to determine recommended alterations to CBP BMP efficiencies under different climate and BMP design criteria.

EC Directive No. 21-1 Collective Action for Climate Change

Apply the best scientific, modeling, monitoring, and planning capabilities of the Chesapeake Bay Program. Emphasize the continued need to update best management practice design standards to account for the impacts of climate change, using leading predictive models and tools, to ensure investments made today continue to yield benefits even as the climate changes.

Future Climate Change, Future Growth, Future Flows, Future Flooding, and Future Energy Mixes

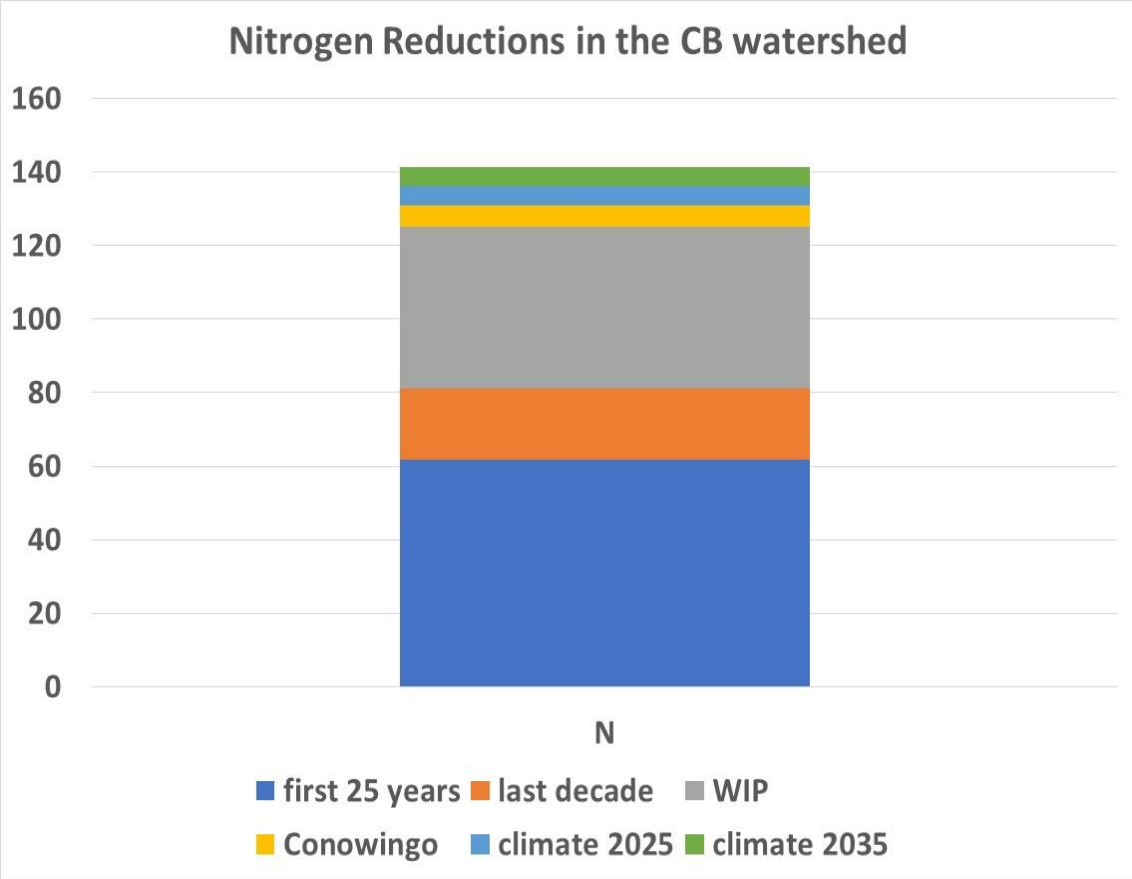
Cobenefits for living resources and habitat will be examined including tree planting, cover crops, urban stormwater practices, and tidal marsh restoration, carbon sequestration, and improved agricultural soils. Cobenefits of climate adapted stormwater BMPs and associated include reduced flooding, improved public safety, and property protection.

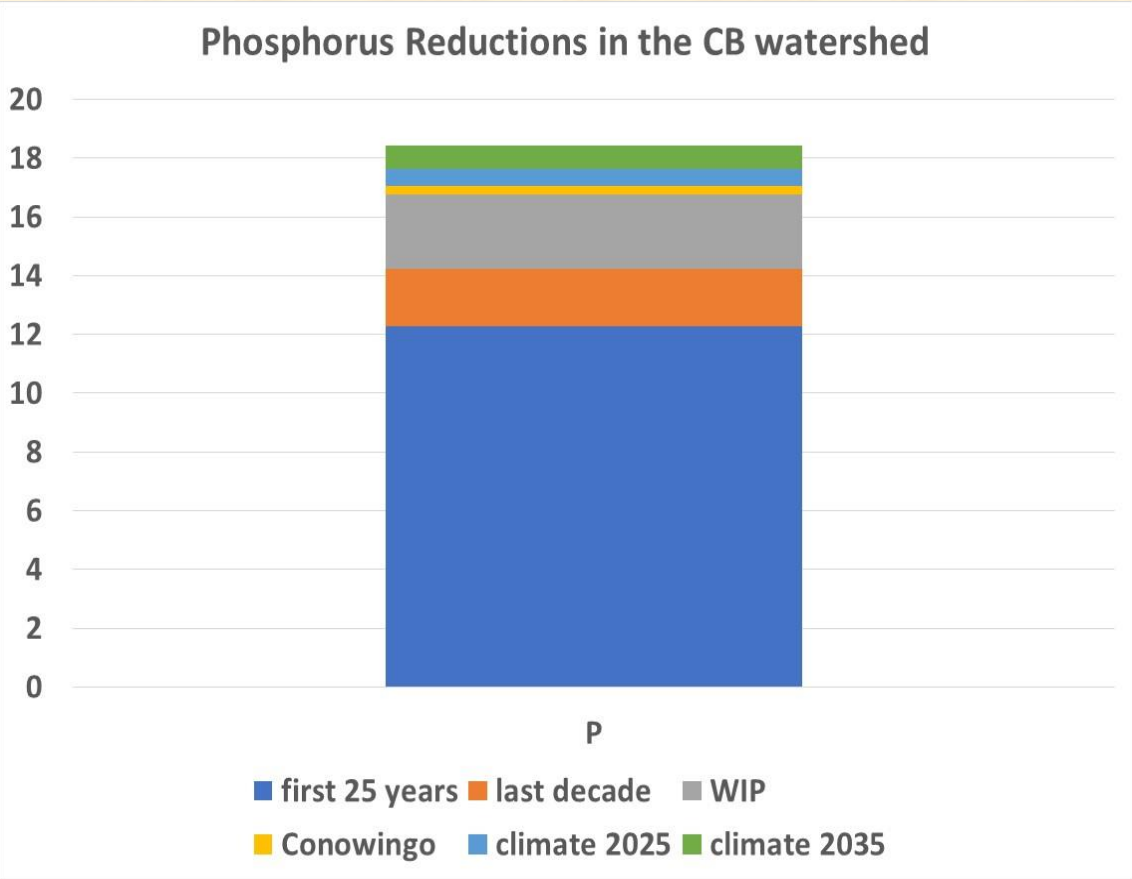
EC Directive No. 21-1 Collective Action for Climate Change

Connect Chesapeake Bay restoration goals with emerging opportunities in climate adaptation, mitigation, and resilience.

- Recognize, and where feasible, assess and adopt the water quality practices that sequester greenhouse gases, and the climate mitigation practices that reduce nitrogen pollution to watersheds.
- Prioritize the adoption of farming and forestry best management practices to maximize the co-benefits of improved water quality, resilience, carbon sequestration and soil health.
- Promote greenhouse gas mitigation through restoring coastal ecosystems and enhancing green infrastructure throughout the watershed.

CBP Nitrogen and Phosphorus Load Reductions





Source: Modeled load reductions from CAST-2019