

Meeting Maryland Chesapeake Bay TMDL Allocations: Facilitating Stakeholder Involvement In Nutrient Modeling

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Environmental mathematical models can be applied to enhance understanding of complex physical phenomena and allow informed decision making, which when combined have significant policy, economic and accountability implications.. Recent advancements in the EPA Chesapeake Bay Program Modeling System (Bay Model) have increased its complexity, improving accuracy and predictability, but this has resulted in less accessibility and transparency for local decision makers. Maryland recognizes the need for and benefit of communicating this model, and particularly providing accessibility to the EPA suite of models in a simple and transparent tool.

Maryland's Assessment and Scenario Tool (MAST) was developed to function as an on-line accessible scenario development and management tool. It enables local planners, decision-makers and stakeholders to assemble nutrient and sediment load reduction strategies in the form of quantified assemblages of best management practices to meet the pollution reduction goals of the Chesapeake Bay TMDL and the State's Phase II Watershed Implementation Plan (WIP). The tool brings transparency to this process by opening up what for the lay person is the "black box" of the EPA models through the practical application of these complex modeling systems.

Through extensive outreach, including webinars and hands-on MAST training sessions, Maryland's local and federal WIP development partners are learning that MAST makes the Bay Modeling inputs and results understandable and accessible. MAST is used to provide approximate scenario load results in several seconds, merge many scenarios together, and then directly link with the Bay Model, which takes several hours to run, to obtain more detailed results. The timely results of MAST allows it to function as a sensitivity analysis tool by isolating and assessing the benefit of different practices in specific geographic locations and also function as a decision management tool by quickly screening many initial management decisions across several source sectors. Ultimately MAST will directly link the narrowed down management options to the Bay Model for final verification of water quality standards attainment through generation of an "input deck" to the model. Above all, MAST illustrates the practicality and transparency of modeling and in the process empowers stakeholders by providing them the ability to see the underlying input information and quickly predicting the results of their proposed load reduction strategies. All of which are key objectives in complex environmental decision making.

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