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'Stopping rules' would say when it's time to shift from debating to acting

David Flores | June 08, 2018



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Tom Fisher, a scientist at the University of Maryland Center for Environmental Studies, retrieves a temperature sensor as part of a best management practice study on South Forge Creek, a tributary of the Choptank River in Caroline County, MD. (Dave Harp)

Science is hard, environmental policy is complicated and regulatory science can seem endlessly confounding.

It does not have to be. Earlier this year, the Chesapeake Bay partners stepped into a time-worn trap, heeding calls from overly cautious states to wait for more refined scientific modeling of climate change impacts before taking action to eliminate pollution in the Chesapeake Bay and its tributaries. Having punted action until 2021 at the earliest, the Bay Partnership needs policies to prevent further delay. An innovative policy tool called “stopping rules” could be the answer.

Chesapeake Bay Program scientists have determined that Bay states need to eliminate an additional 9 million pounds of nitrogen pollution and 500,000 pounds of phosphorus to offset the impacts of climate change and ensure that dissolved oxygen standards can be met in the Bay by 2025.

To be clear, the stakes are much greater than dissolved oxygen levels in the middle of the Bay. Local streams and rivers throughout the watershed face increasing loads of inorganic nitrogen from climate change, which may be responsible for more frequent and intense algae blooms.

Higher water temperatures are likely to worsen those conditions, making them even more detrimental to aquatic plants and animals.

The timing of efforts to offset those climate impacts is also critical because the negative impacts of climate change are projected to increase rapidly beyond 2025. Every dollar spent today on planning, restoration and resilience in any Bay watershed community could save several dollars in the years to come.

The Bay partners, meanwhile, found that modeling completed last year was inadequate to support a commitment to offset a quantifiable load of nitrogen and phosphorus attributable to climate change. These concerns were voiced despite the Bay partners having had numerous opportunities to review and make improvements to the modeling over a period of many months. To cover up their timid decision, the partners committed in March to revisit the proposed climate offset in 2021 and, in the interim, improve the climate modeling, based in part on recommendations from a peer review panel. To their credit, a technical workshop to improve the modeling has been funded and is slated to occur early this fall.

Close observers of the Bay cleanup plan, or Total Maximum Daily Load, will be forgiven for wondering if the partners punted the climate change issue to 2021 because of political unease about their ability to offset the additional pollution.

Maybe it was a purely scientific question.

Regardless, how can we be certain that such political concerns will not lead to delayed action when they return to the decision in 2021? Or at the very least, how can the public identify the amount of weight that non-scientific considerations have on the decision-making process at that time?

Bay Program staff have made commendable research contributions, and the Bay partner jurisdictions' commitment to science-informed decision-making in principle and in practice have led to positive results.

Even though the process is hardly ever perfect or reliable, or the results entirely desirable, the approach has driven meaningful water quality progress. But just as the scientific process strives for an answer, so, too, should we demand that the process of Bay policymaking be improved.

So-called stopping rules are one policy innovation that the Bay partners can adopt to promote greater transparency and accountability, and they should do so before year's end. To clean up the Bay, we need the closure of scientific debates to ensure that decisions can be made and restoration can progress.

Of course, the scientific process thrives on discovery – always deeper inquiry into the intriguing questions of how ecosystems work and are impacted by change. Stopping rules help us reconcile this impasse.

A stopping rule is a set of policies that include an explicit point for closing the consideration of new research and ongoing scientific debate to make a necessary policy decision. Stopping rules recognize practical constraints such as a policy-making institution's available resources and timing, while also ensuring progress on critical protections for environmental and public health by preventing decision-makers from getting bogged down in interminable disagreement.

The policy addresses the perennial problem of paralysis by analysis – when policy makers delay action because defenders of the status quo call for the consideration of new scientific evidence or tangential issues, demand further peer review of research deemed not rigorous or certain enough, or echo siren calls of opportunity to resolve what are truly unresolvable disagreements.

Stopping rules do not foreclose continued scientific debate or additional research. In fact, when done right, they establish objectives for continued research beyond an imposed decision point, as well as opportunities to revisit the decision at a later date and incorporate new scientific findings.

Stopping rules not only ensure policy-making progress but also provide much-needed transparency in the regulatory process. The policy puts all stakeholders – including agency scientists and staff, elected officials and the public – on notice of when and how scientific debate will come to a close to accommodate a critical policy decision.

Among federal regulatory agencies, the U.S. Environmental Protection Agency has been a leader on stopping rules. For example, when the EPA sets standards for smog pollution, its staff assess existing research and then implement a stopping rule when peer review of that assessment is complete to ensure that new rules roll out in a timely fashion. As part of the same policy, an advisory board is authorized to force the closure of debate, even if disagreements about the science persist among some stakeholders.

Absent this stopping rule, the drive to continually consider new evidence or inquiry could indefinitely delay updates to air quality standards. Conveniently, the air quality standard rule-making process is repeated on five-year cycles, ensuring that new findings will be considered in the next round of rule-making.

In the Chesapeake Bay restoration context, the partners should pilot the implementation of a stopping rule on the critical issue of climate pollution offsets. The rule would set an explicit date for closing scientific debate and the collection of evidence in order to commit to numeric nutrient reductions to offset the impact of climate's impact on the Bay. And, it would necessarily be more rigid than the decision made in March 2018 that merely commits to pushing a decision to 2021.

The partners should convene a panel of experts to develop the stopping rule policies. The panel could include some of the same experts that participate in this September's science workshop focused on planning for improvements to the climate modeling tools. As core principles, the stopping rules panel must develop a policy that is clear, adequately detailed, and accessible to all stakeholders, including scientific and nonscientific participants and the public.

More specifically, the panel – and resulting rules – should address four fundamental issues.

- First, the stopping rules should be consistent with the priorities for improving the climate modeling as established at the fall workshop.
- Second, the stopping rules must factor in current and foreseeable funding levels, staffing, technical resources and timing constraints to determine what is reasonably achievable through further modeling before 2021.

- Third, the panel should unequivocally establish that the stopping rule does not expressly or impliedly prevent the continuing collection of data and climate analysis at any time before, during or after decision-making.
- Fourth, the panel should lay out a process for identifying important gaps in research, which ensures that those gaps will be addressed through subsequent efforts that do not delay decision-making in 2021. This collected evidence and research should be used to update the policy decision and corresponding offset commitments, as appropriate, at a later date, for example in 2025 when Bay partners consider pollution reduction goals for 2050.

As it stands, the Bay cleanup is continually held up as a global model of transparent, inclusive, innovative and effective science-driven environmental policymaking. It's high time that the Bay partners adopt the stopping rule innovation to maintain their claim to this impressive mantle. Bay advocates must demand it.

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