



MEMO

To: Office of Science and Technology Policy (OSTP)
From: Jane Elder
Date: November 16, 2022
Regarding: Development of a U.S. Ocean Climate Action Plan (OCAP)

This memo is in response to the following notice:

<https://www.federalregister.gov/documents/2022/10/04/2022-21480/ocean-climate-action-plan>

1. *Background information.* Please briefly describe the role that you/your organization has in ocean-based climate solutions. If relevant, please describe how you/your organization engages with underserved communities.

The Great Lakes Ecoregion Network (GLEN) is a new bi-national (U.S./Canada) organization founded by experienced Great Lakes leaders to foster partnerships to protect water quality and the ecosystems within the Great Lakes Basin. Our early focus has been on the Great Lakes Water Quality Agreement and its role in shaping effective strategies to safeguard the chemical, physical, and biological integrity of Great Lakes ecosystems. We recognize the unique lived experiences of underserved communities in the region, and aspire to engage with issues they identify and to work with them to develop and implement solutions.

2. *Critical Actions.* What ocean-based climate solutions should be considered, and over what time scales? What are specific examples of ocean-based climate mitigation and adaptation activities that the United States should seek to advance? Which are higher priority? Are there actions that should be avoided, and if so, why?

From a Great Lakes perspective, it is urgent to understand that the Great Lakes are an already-stressed ecosystem which climate change is making worse. It is also important to understand that unlike the oceans, the Great Lakes are a vital source of drinking water for forty million people in the United States and Canada, and although the Great Lakes Compact largely prevents out-of-basin water diversions, we should anticipate pressures to export lake water to drought-stricken regions, and the need to defend, and potentially expand the Compact's protections.

Lake Superior is considered to be the fastest warming large lake in the world. Solutions and actions should focus on sustaining native biodiversity to the extent possible and the vital ecological functions that sustain life in the lakes, including those functions that protect and sustain water quality, and, therefore, drinking water for human communities.

In a project led by the Great Lakes Water Quality Board in 2018 and 2019, participants identified these priorities for research related to climate change impacts and the strategies to address them in the Great Lakes:

- Storm water and runoff
- Habitat
- Biodiversity
- Safe drinking water
- Effects related to warming lake waters (examples include loss of species and habitat, harmful algal blooms, transpiration and loss of ice cover, and volatilization of toxic chemicals).

Because climate-driven disasters tend to be experienced locally, participants identified watershed-scale planning (for resilience and adaptive capacity) as the top priority for coordination at the local and watershed-scale, and within that planning, the following priority needs for climate-responsive plans and actions:

1. Agricultural practices
2. Storm water practices
3. Emergency preparedness
4. Coastal protection.

3. *Knowledge, Science, and Technology*. What are important questions, issues, and unknowns that need to be addressed? What existing technologies might advance implementation of ocean-based climate solutions, and what innovations are needed?

- What kind of research is needed to implement and evaluate the effectiveness and impacts of ocean-based climate solutions?

Research priorities recently recommended by GLEN to the U.S. and Canadian Governments (the Parties to the Great Lakes Water Quality Agreement) include the following.

- 1) The Parties should expand the research focus to include multi-lake and system-wide assessments on how the changing conditions in the lake ecosystem will affect water quality, temperature, biological life (including habitat changes and at-risk species), lake levels, coastal wetlands (and other coastal and near-shore habitat), and human health and commerce.
- 2) Within this broad recommendation, we further flagged the need to better understand:
 - Climate change-induced changes in watershed hydrology, including loss or degradation of upland or wetland habitat, flood risk/resilience, and downstream impacts, including human communities and near-shore waters;
 - Climate's role in nutrient transport and toxic chemical mobilization;
 - Climatic "multiplier effects" related to agricultural activities, eutrophication, and harmful algal blooms in multiple nearshore areas of the lakes.

- 3) We also urged the Parties to acknowledge the need for social science and economic research, including its value in addressing multiple stressors affecting the lakes (from agricultural practices to water-dependent economic activity), and to guide responsive strategies for coastal areas and at risk and/or underserved communities.

- How can Indigenous knowledge be highlighted to inform solutions?

There is growing awareness and appreciation for indigenous knowledge in Great Lakes strategies and climate strategies. More concerted efforts would include developing more formal programs integrating TEK and western science at various scales and involving multiple stressors, through collaboration with Tribes, First Nations, and Métis in the basin, and intentionally collaborating with indigenous leaders in the design, planning and implementation processes to advance resilience and adaptation. (The same could be said for engaging representatives from highly-impacted or underserved communities.)

To better ensure wider engagement, we must emulate practice in the field that re-designs what sitting at “the table” looks like, including providing funding for participation (travel, housing, etc.), and compensation for shared wisdom. We further need to be willing to adapt meeting and other engagement practices to enable voices to be heard in culturally respectful ways, and be willing to acknowledge and address other environmental challenges that may have higher urgency in specific communities.

- What are important questions, issues, and unknowns that need to be addressed?

Who is in charge of coordinating climate strategies for the Great Lakes? This is not a rhetorical question, but an urgent question of who is authorized and capable to lead a concerted collaboration on research, strategy, and implementable climate-response actions in the Great Lakes region. Most federal agencies in the United States lack a specific statutory mandate to drive on-the-ground changes related to climate change resilience or adaptation. Thus, we are left with artfully using the existing mandates under the Clean Water Act, disaster planning, the Farm Bill, etc., and a patchwork of state policies. Possible mechanisms to coordinate collaboration include expanding the mandate of the Great Lakes Water Quality Agreement, or those of other bi-national bodies. See further suggestions on coordination under question 5.

4. *Environmental Justice, Diversity, Equity, and Inclusion.* How can the benefits of ocean-based climate solutions be shared equitably?

- How should we engage communities in local implementation?

We need to better engage state, provincial, federal, and Indigenous decision-makers in responsive climate action that will support Great Lakes resilience and adaptation, and to increase awareness of which agencies are undertaking work where research findings are relevant and have state or local applications. Watershed-based and community-led action *within a larger regional framework* is important for authentic and effective outcomes and constituency building. Dialogue among these leaders at all stages (including problem identification and planning) will also identify gaps that are preventing decision-makers from using findings. This will not happen organically, but will need intentional leadership from public agencies to convene workshops, listening sessions, webinars, etc.

- How should we ensure that ocean-based climate solutions are implemented in ways that do not harm underserved communities?

Make sure underserved communities have decision-making power and are involved in shaping solutions based on their experience and local knowledge.

- What opportunities exist for training and employing a diverse and inclusive blue workforce in implementing ocean-based climate solutions?

Myriad. Climate-smart watershed design and restoration throughout the region is one example.

5. *Partnerships and Collaboration.* What solutions can/should come from outside of government?

- Where and how can the Federal government partner with external stakeholders across regions and sectors to effectively mitigate and adapt to climate change through ocean-based climate solutions?

In 2019 the Great Lakes Water Quality Board urged that the region convene a “network of networks” to coordinate action for a Great Lakes climate response. To succeed, this network would need to include indigenous nations, and nongovernmental leadership, from academic institutions, environmental and other NGOs, and businesses (including agriculture) engaged in climate solutions. The summary report can be reached through this link:

https://ijc.org/sites/default/files/2019-11/WQB_ClimateAdaptationandResilience_Sept2019.pdf.)

To the best of our knowledge, the Parties have taken no steps in the direction of organizing this network, nor has any other Great Lakes body. We strongly recommend that the United States and Canada form a Great Lakes Climate Coordination Council, working Great Lakes bodies such as the International Joint Commission, the Great Lakes Fishery Commission, the Great Lakes Commission, the Great Lakes Indian Fish & Wildlife Commission, the Great Lakes Executive Committee, the Great Lakes & St. Lawrence Cities Initiative, NOAA’s Great Lakes Regional Collaboration Team, federal environmental agencies, and other relevant regional bodies, including states and provinces.

6. *Additional Comments:* Please provide any other input that you believe is pertinent to this RFI, within the page limit.

Whether through the proposed multi-agency council, or through a designated agency’s leadership, Great Lakes communities and local governments need guidance about environmental management practices that help (or harm) the Great Lakes in the context of climate change. State by state, or even lake by lake, local actions may have lake-wide or system-wide implications. With so many jurisdictions involved in Great Lakes management, we are concerned that there is no coordinating oversight to achieve cohesive regional strategies that support responsive local action but also protect the larger lake ecosystem.

Many local actions are now taking place outside of the context of the whole Great Lakes, but cumulatively, these actions may help or hurt overall Great Lakes resilience. (Some communities are hardening shorelines, for example.) We can, and should be able to do more than pursue isolated ad hoc and reactive actions in an ecoregion as significant as the Great Lakes. Federal strategies should foster dialogue and strategies among decision-makers and implementers who are currently undertaking mitigation, adaptation, and resilience actions and planning in the Great Lakes region.

Until there is a lead agency or coordinating body, it is important that some entity—perhaps NOAA or EPA in partnership with a Canadian counterpart— is tracking the status of current state, provincial and federal climate response actions that will influence Great Lakes water quality, habitat, commerce, and recreation, ranging from wetlands restoration to flood and erosion management plans.