A Great Lakes Regional Climate Response Framework:

Transboundary Goals, Principles and Prescriptions

Comment Draft, May 7, 2024

I. What does a regenerative and resilient Great Lakes management regime look like? *[Adapted from Great Lakes Ecoregion Network's "The Great Lakes Water Quality Agreement at 50"]*

Any climate strategy for the Great Lakes must align with an overarching vision for a healthy and resilient Great Lakes system. This must include a highly functional management regime that meets the needs of current and future generations. A functional regime will:

- Restore and embrace the chemical, physical and biological integrity framework for cooperation and collaboration across boundaries, jurisdictions, and agencies.
- Establish an ecoregional advisory structure that engages citizen, environmental, municipal, and Indigenous representatives to give advice and recommendations to governments for actions. Each lake, including its upstream connecting river, and the St. Lawrence River, would have an advisory committee and an overarching committee will serve the entire Great Lakes Basin.
- Create a Great Lakes zero-discharge and virtual elimination of toxic pollution strategy with specific actions that embrace precautionary approaches to the licensing and use of toxic chemicals in industrial processes, products, and commerce, and expand monitoring systems that track known persistent pollutants in the open lake environment as well as the health of fish, wildlife, and humans. One goal will be to achieve and sustain water quality that removes the need for fish consumption advisories and protects drinking water sources.
- Give new priority to the physical and biological integrity of the Great Lakes-St. Lawrence ecoregion, including the physical and biological integrity of inland watersheds, from headwaters to coastal wetlands and shorelines, the physical integrity of benthic and aquatic habitat within the Great Lakes, and habitat for native species, especially those under threat from climate disruption.
- Invest in science that supports long-term monitoring, including epidemiological studies for people and wildlife, and analysis of chemical mechanisms and retention in the Great

Lakes biosphere. It will standardize (or align) and expand monitoring systems across the basin.

- Base regulation of, and guide oversight for, toxic chemicals on science-based decision-making.
- Provide a consistent and integrated framework for measuring and reporting progress against established goals and benchmarks and timelines for the Great Lakes system and specific geographical and ecological targets. Include an independent evaluation of the oversight and implementation processes, outcomes, impacts, and influences—possibly by a joint Royal Society of Canada and the U.S. National Academy of Sciences study, or a joint contract with a U.S. and Canadian university.

II. Building a Framework for Climate Coordination

Climate disruption will continue to stress the health and vitality of the Great Lakes and the human communities in the region. GLEN proposes a common set of goals, principles, criteria for effective cooperation, and prescriptions for action across the ecoregion so that the numerous jurisdictions and agencies engaged in Great Lakes management and oversight can pull together to optimize our capacity to solve urgent and significant problems across the region. To do this well, we must:

- Agree upon transboundary system-wide goals and principles for optimizing Great Lakes resilience and adaptation capacity across jurisdictions to provide clear guidance for federal, state/provincial, and local governments and sectors such as manufacturing, agriculture, and urban and regional planning that have a considerable influence on Great Lakes chemical, physical, and biological integrity.
- Implement strategies that identify and quantify impacts through mapping, data collection, research, community interaction and monitoring to guide adaptive management.
- Recognize the disproportionate impacts of increased temperatures and all aspects of climate change on historically disadvantaged communities, noting that climate change is a threat to public health that will exacerbate the existing public health crisis of racism.
- Support solutions that rapidly reduce greenhouse gas emissions as well as promote healthy lakes and communities.

III. Proposed Great Lakes Regional Climate Principles

Water Supply and Use

1. The water in the shared Great Lakes-St. Lawrence basins is not available for out-of-basin-transfers beyond the strict terms of the Great Lakes-St. Lawrence River Basin Sustainable Waters Resources Agreement and the Great Lakes Compact. The Agreement and Compact managers must anticipate and prepare for an equitable, just, and transparent decision-making process in the event that humanitarian requests for water export are triggered by climate-driven events, so that permissions, if any, are rare, carefully weighed, and balance human and ecological needs.

2. As the waters and the water-bearing clouds of the basin are a shared resource of both countries and Indigenous nations, implement a ban on all cloud-seeding activities to prevent interception of potential rain or snowfall events by private or public parties within the basin (subject to regulatory mechanisms related to forest fire or hail-suppression needs).

Drinking Water Safety

3. Drinking-water source-waters in the lakes and tributaries need increased safeguards to protect human drinking water supplies from climate-related threats, including mycrosistin outbreaks, legacy chemicals exposed by fluctuating lake levels, contamination from catastrophic flooding, and bacteria and pathogens from livestock operations or other sources.

Preparedness and Planning

4. Because global threats manifest as local disasters, every urban and rural area needs an adaptation, resilience, and emergency preparedness plan to reduce risks from:

   ❒ flooding (both from impervious surfaces-- pluvial flooding, and riverine flooding--fluvial flooding)
   ❒ drought
   ❒ urban heat-island effect
   ❒ local heat waves and heat, cold, wildfire smoke, and related public health threats
   ❒ severe weather
   ❒ tree canopy loss (from invasive species, development, neglect, and storms)
   ❒ climate-enabled invasive species.

5. States and provinces must undertake comprehensive watershed planning and education for flood and drought conditions which should include climate resilience goals to identify and establish management protocols for

   ❒ flood and "flashiness risks,"
   ❒ pollution and contamination risks and ways to reduce them,
   ❒ opportunities for natural water "capture" storage and infiltration
   ❒ opportunities for natural carbon storage (e.g., in-tact wetlands)
   ❒ drought management practices, including modifications to water use and effluent discharge permits to balance needs for water use between municipal, industrial, agricultural, residential, and ecological needs during periods of low or no water availability in Great Lakes tributary watersheds and low water levels in the Great Lakes.
   ❒ strategies and practices to protect riparian and aquatic habitat.

6. Great Lakes urban and rural areas must anticipate and be prepared for climate migration. Great Lakes communities will need resources, conversations, land-use planning, and climate change risk data to adapt to climate change before social and environmental stressors reach the most vulnerable communities.

Biodiversity and Habitat

7. In tandem with public lands management, Great Lakes fish and wildlife management and conservation must consider the balance between conserving viable native species and anticipating extirpation and potential extinction for some species. Introduction of new, potentially heat-tolerant species—from fish to trees--requires thoughtful consultation on potential risks and benefits, including precaution for potential invasive characteristics. High quality habitat for native species needs priority protection.

8. Shoreline planning and management agencies need to anticipate fluctuating water levels and the impact on habitat, shipping, water utilities, public uses, etc. Dredging or engineering to harden or otherwise protect eroding shoreline that may disrupt neighboring shorelines is not a sustainable solution.

Infrastructure

9. Water intake, treatment and delivery systems, sewage treatment systems, industrial power and public utility power generation, and shipping and transportation systems will face new challenges in a changing climate. Anticipatory and contingency planning in these public and private sectors is essential to reduce or eliminate:
   ❒ impacts that may result from responses to high/low water levels
   ❒ water contamination

❒ habitat disruption
❒ climate-driven effects that may trigger needs for increased water withdrawal, harbor dredging (and the need to store dredge spoils in confined disposal facilities or land applications) or trigger air/water quality alerts
❒ other actions or consequences that would affect ecological or human health.

Mitigation [Carbon and GHG Emission Prevention and Reduction]

10. Climate adaptation/transition, resistance, and resilience enhancement measures are short-stops and merely symbolic if the region does not also take more active and meaningful measures to reduce greenhouse gas emissions. As a leading global center of manufacturing and agricultural production, heavily dependent on automotive transportation, the Great Lakes region must step up to be a global leader in low and no-carbon production. The region has the capacity to:

    ❒ Engage community decision-makers, stakeholders, and rights-holders in advancing emission reduction practices that also improve human and environmental health. This magnifies the "wins" and builds stronger communities.
    ❒ Adopt a holistic systems approach to emission-reduction/elimination strategies that can amplify gains in water conservation, waste reduction, cradle-to-cradle pollution reduction, and materials conservation. The water-energy nexus, i.e., the energy required for pumping, delivery, and treatment of water, is a particular opportunity in the region.
    ❒ Rapidly advance reductions through distributed, democratized, and digital solutions to promote mitigation, adaptation, and resilience.
    ❒ Give new priority to improving public transportation and electric vehicle infrastructure across the region to reduce greenhouse gas emissions and their local and global impacts.
    ❒ Encourage urban and suburban design that promotes mixed use neighborhoods where residents have all their needs within walking distance of their homes.

Science and Knowledge

11. Decision-making across these areas must be informed by science, affected communities, and the cultural values and contributions of Indigenous knowledges, including traditional ecological knowledge (TEK) in sustainable resource management.

III: Elements of a Successful Process (Graphic adapted from *Climate Change and Adaptation in the Great Lakes*, Emerging Issues Working Group of the Great Lakes Water Quality Board, January 2017, and modified and expanded for this document in April, 2024)

Key Elements: A Regional Transboundary Approach to Climate Change in the Great Lakes	
 Shared Vision	• Common vision • Clear call to immediate action • Local and Indigenous engagement is critical • Open declaration to be signed • Messaging should be positive and inclusive
 Coordinated Action	• A staffed, coordinated binational/transboundary effort • Collect, aggregate, and share science and best practices • Framing documents to establish priorities • Funding and capacity
 Accountability	• Vulnerability assessment for communities, populations, habitats, and species • Baseline data needed to assess progress • Accountability will depend on the model used, but any model should incorporate accountability practices. • Adaptive management
 Science/Info/Knowledge	• Aggregate and share research • Incorporate traditional ecological knowledge • Expand the GLWQA Annex to include adaptation/resistance/resilience • Legal tools needed • Species and habitats at risk are a key knowledge gap
 Implementation considerations	• Shared vision is fundamental to implementation • Sector specific implementation is needed • Tools include recognition, certification, and incentives • Challenges include adapting lessons learned across borders, coordinating across sectors and nations

IV: Prescriptions for Action:

Specific steps needed to realize the vision

#1 We call on the four primary institutions that oversee transboundary cooperation on the Great Lakes—the International Joint Commission, the Great Lakes Commission, the Great Lakes Executive Committee, and the Great Lakes Fishery Commission -- to convene a Great Lakes Climate Change Planning and Oversight Team to set common goals, principles, and priorities for action to provide consistent direction for the region's many jurisdictions and federal investments. This team should include Great Lakes nonprofits, and representatives from state/provincial, federal, Indigenous, and local governments. The GLEN Climate Vision Team seeks a role in this endeavor and a seat on the Climate Team. The four primary institutions will compensate volunteer leaders or staff from organizations for their participation.

#2 State/provincial and federal public agencies commit to develop and deploy resources, secure consistent, ongoing public funds, and provide consistent guidance across the region (adjusted, as needed, for local needs) from the vision framework, to provide technical support for local communities and Indigenous governments, and funding to develop community plans and actions that reduce risks as outlined in the principles.

#3 The Great Lakes Climate Vision Framework requires sincere and authentic public engagement led by the four key agencies/institutions in the visioning process. GLEN and other nonprofits in the region will help identify needs and priorities from the many stakeholders and rights-holders in the region. This effort will build constituencies to support solutions.

#4 The U.S. Great Lakes Restoration Initiative and the Canada-Ontario Agreement commit to adopt the Great Lakes Regional Climate Framework as additional guidance for funding and evaluating projects, including objectives for resilience, adaptation, and mitigation as appropriate to the specific project and regional goals.

#5 Local entities such as counties, municipalities, and districts commit to developing climate action plans or community energy plans as called for in the framework principles and establish sustainability and resilience offices (or similar public agencies) with adequate capacity, resources, and authority to advance local policy and practice that aligns with the framework goals.

#6 The Parties to the Great Lakes Water Quality Agreement commit to recommending a new or expanded Annex in the Agreement that includes supporting common goals and

objectives for Great Lakes climate adaptation, resilience and mitigation that are consistent with the Framework and measures for progress and accountability.