



Contents lists available at ScienceDirect

## Journal of Great Lakes Research

journal homepage: [www.elsevier.com/locate/jglr](http://www.elsevier.com/locate/jglr)

## Living on the Edge: How we converted challenges into profitable opportunities



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### ARTICLE INFO

#### Article history:

Received 26 October 2013

Accepted 30 June 2014

Available online 23 December 2014

Communicated by Paul Sibley

#### Index words:

Resilience  
Demand  
Innovation  
Deregulation  
Blue economy

### ABSTRACT

In 2063, the Great Lakes–St. Lawrence River basin is Living on the Edge of system resilience, characterized by poor governance yet good environmental/economic balance. The Great Lakes region benefits from and depends upon human choices and natural forces outside the region pushing and pulling it toward that balance. Choices within the basin are insufficient to maintain system resilience, and there is minimal government involvement in Great Lakes governance. The Great Lakes region perseveres like a pampered but powerless slave, contributing value but lacking liberty. The predominant drivers of change that have brought the basin to this perpetual knife's-edge existence of dependency are the global economy, societal values, and technological innovation. Climate change, energy, and demographics in turn drive those drivers on a global scale, but the region itself has evaded the most extreme climate-change impacts, which proved highly variable through space and time. Global changes in energy demand resulted in the most massive investment in green energy technology in planetary history, dramatically shifting the global demand for wind, solar, wave, and nuclear power. Coupled with aggressive pro-business North American policies and endemic private-sector intellectual capital, the Great Lakes region reemerged as an economic engine to serve the demand. This shift occurred despite the death of cooperative federalism and after decades of ideological politics gutted science-based, citizen-participatory regulatory structures. Governance at local scales remains highly variable, so the Great Lakes region rides on the coattails of past policies. This scenario represents one of four described in the Great Lakes Futures Project.

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### Introduction

In 2013, we cannot predict the future of the Great Lakes–St. Lawrence River basin into 2063 with confidence, but we can posit a scenario for the future state of the region as a system and provide a compelling narrative that unpacks plausible historical pathways leading to the future state of this system. Informed by the parameters of the Great Lakes Futures Project, we consider several drivers of change (aquatic invasive species, biological and chemical contaminants, climate change, demographics and

societal values, economy, energy, governance and geopolitics, and water quantity). The drivers' prominence and significance ebb and flow through space and time like characters in a play but shape the state of the system and define its narrative (Appendix A). In this paper, we also add technological innovation as a driver because its narrative plays a critical role in shaping the Living on the Edge scenario.

We can consider regional policy frameworks as the props and scene setting with which our drivers interact. These are tools that either create connections or divisions among the drivers, directing the flow of the action but not fundamentally controlling our story's drama and conflict. The four main frameworks are the Great Lakes Restoration Initiative (GLRI), the Great Lakes–St. Lawrence River Basin Water Resources Compact (Compact), the Great Lakes Water Quality Agreement (GLWQA), and the Canada–Ontario Agreement Respecting the Great Lakes Basin (COA). In our scenario, which is characterized by poor governance, the GLRI, COA, and GLWQA are de-funded early on, minimizing their influence. The Compact, while dysfunctional, remains intact until the 2050s.

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<sup>1</sup> The Great Lakes Futures Project brought together graduate students and expert mentors from universities and institutions in Canada and the United States. Each paper required collaboration between a number of authors with many of them sharing co-leadership that we denote using a <sup>1</sup>.

We present a future history of the Great Lakes region in five acts, one per decade, looking back from 2063 over the past 50 years with an analytical and synthetic perspective (Fig. 1). We present a plausible narrative of how our system came to teeter on the edge of resilience, where resilience is the “capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Folke, 2006). The final act, set in 2063, includes an extended discussion on the state of affairs and a reflection on the historical evolution leading to the new normal.

Our future history, Living on the Edge, represents the scenario that occupies the upper-left quadrant of a two-dimensional coordinate plane, with the horizontal axis representing the human capacity for change and the vertical axis a balanced environment and economy (Laurent et al., 2015). This scenario is characterized by poor governance and, more generally, a poor human capacity to effect change. External forces are responsible for the most significant changes within the Great Lakes region, and internal decision-making that does exist on the broadest scales is largely impotent. Another feature of this scenario is persistent reactivity to problems rather than proactive policies to prevent them. Our scenario also demonstrates poor governance in the collapse of cooperative federalism across the region. The Great Lakes region has essentially exported its governance; the predominant capacity for change-making inside the basin lies outside the basin.

Despite poor governance and an overall poor capacity for societal change, the Living on the Edge scenario displays good environmental and economic balance. The Great Lakes region experiences economic regeneration that does not disproportionately impinge upon internal environmental systems. Balance is maintained as the economic pressures that have historically impacted the environment negatively – resource extraction, dirty power production, urban sprawl, and industrial pollution – shift over time to become cleaner, less intensive, and more expensive, thus limiting negative externalities. However, the balance remains tenuous because it depends on spillover effects from the pursuit of profitable business. In this scenario, the private sector takes the lead.

So long as environmental benefit remains aligned with economic profit, so long as past policies push and global demand pulls the region forward, and so long as technological innovation pushes back the frontiers of the possible, our system enjoys good balance. Yet should any of these four forces slacken, we expect a rapid descent of the system from a precarious but prosperous life on the edge into the lower-left quadrant described in the Out of Control scenario. The system we describe in

Living on the Edge performs well under certain conditions, but lacks an internal capacity to adapt to all possible changes.

## Future history

### Act I: taking the government out of governance (2013–2023)

*A flurry of government budget cuts and austerity measures in wake of the 2008 Great Recession combine with pro-business policies to deregulate the environmental and natural resource sector...*

Shifting demographics in the US contributed to a second term for President Barack Obama in 2012. However, proactive federal environmental policies continued to fall on deaf ears in Congress, led by Republicans who clung to power in gerrymandered districts and underwritten by powerful corporate interests resistant to regulation, uncertainty, and change – so long as superior economic opportunity remained a key societal value of the American electorate. These conditions had set the stage for the Tea Party movement, characterized by ideological extremists pulling the political discourse and policies to the right throughout the decade.

In Canada, the second consecutive Conservative government majority was won in 2015 and helped to further cement pro-business governance trajectories (Malakoff, 2013). Protective environmental policy took a back seat to a more business-friendly political agenda favoring natural resource development on both sides of the border. At the same time, the mass retirement of government bureaucrat baby boomers and an over-reliance on contractual staff and outsourcing to consulting firms considerably degraded government capacity for Great Lakes basin governance. This vacuum presaged the erosion of federal and subnational government leadership in the region's governance (Jetoo et al., 2015), and proved a perverse catalyst leading to funding cuts to the GLRI, COA, and the GLWQA.

These trends were again seen in the US with the 2016 election of a Tea Party Republican president (Fig. 1). The Tea Party government returned to trickle-down economic policies inspired by Ronald Reagan that gave wider latitude to the largest corporations and weakened both environmental protections and scientific investment in the name of job creation and government downsizing. Canada followed suit with the changes in American environmental policies, as has historically been the case (Hoberg, 1991). With federal policies on both sides of the border providing no incentives for large corporations or utilities to internalize environmental or societal costs, individual corporate actors were left either to self-regulate or follow the markets wherever they

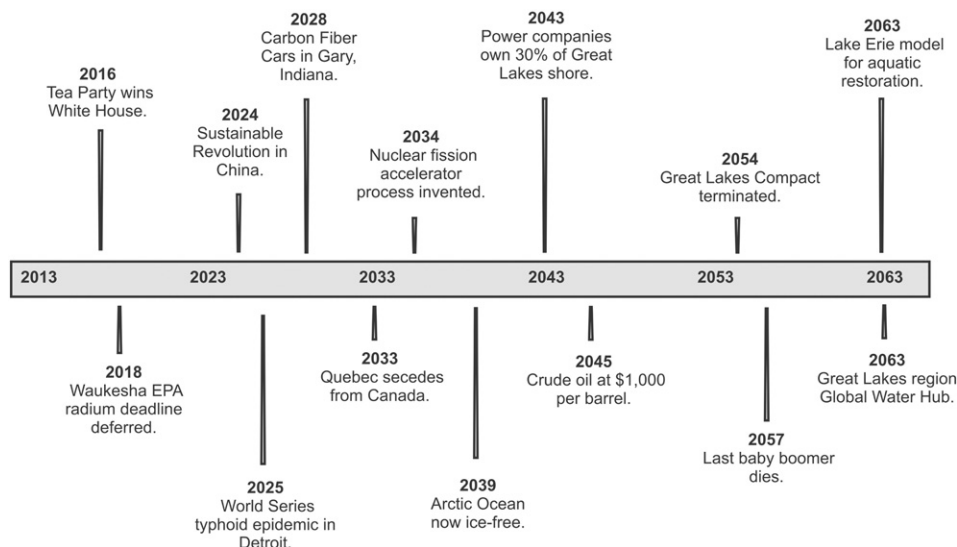


Fig. 1. Timeline of the events occurring from 2013 until 2063 within the Great Lakes–St. Lawrence under the Living on the Edge scenario.

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