

## Smart Water Cities for a Sustainable Future: Defining, Necessity, and Policy Pathways for Canada's Urban Water Resilience

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**Abstract :** The concept of a "Smart Water City" is emerging as a framework to address critical urban water challenges, integrating technology, data, and sustainable management practices to enhance water quality, conservation, and accessibility. This paper explores the definition of a Smart Water City, examines the pressing need for such cities in Canada, and proposes policy pathways for their development. Smart Water Cities utilize advanced monitoring systems, data analytics, and integrated water resources management to optimize water usage, anticipate and mitigate environmental impacts, and engage citizens in sustainable practices. Global examples from regions such as Europe, Asia, and Australia illustrate how Smart Water City models can transform urban water systems by enhancing resilience, improving resource efficiency, and driving economic development through job creation in environmental technology sectors. For Canada, adopting Smart Water City principles could address pressing challenges, including climate-induced water stress, aging infrastructure, and the need for equitable water access across diverse urban and rural communities. Building on Canada's existing water policies and technological expertise, it propose strategic investments in digital water infrastructure, data-driven governance, and community partnerships. Through case studies, this paper offers insights into how Canadian cities could benefit from cross-sector collaboration, policy development, and funding for smart water technology. By aligning national policy with smart urban water solutions, Canada has the potential to lead globally in sustainable water management, ensuring long-term water security and environmental stewardship for its cities and communities.

**Keywords :** smart water city, urban water resilience, water management technology, sustainable water infrastructure, canada water policy, smart city initiatives

**Conference Title :** ICSC 2025 : International Conference on Smart Cities

**Conference Location :** Montreal, Canada

**Conference Dates :** May 24-25, 2025