Confronting Cost Escalation
in Canadian Water Infrastructure Projects

June 2025

CANADIAN WATER NETWORK
Municipal Water Consortium

Summary of Insights

Canadian municipalities are facing unprecedented cost pressures in delivering water infrastructure, driven by inflation, trade policies, supply chain disruptions and workforce shortages. In response, municipal leaders are adopting innovative strategies to manage financial risk and maintain reliable service. This summary highlights key approaches identified through Canadian Water Network's Municipal Water Consortium, including survey insights, roundtable discussions and validation at the 2025 Blue Cities conference.

External drivers of water infrastructure project cost escalation:

High inflation rates over the last 3 to 4 years, especially construction materials

Risk premiums on bids

Skilled labour shortages

Changes in provincial policy (e.g., higher density targets, financial mechanisms)

Internal drivers of water infrastructure project cost escalation:

Increased project complexity

Municipal staff capacity

Delays from approvals, permitting, procurement and multiple concurrent projects

Project scope changes

Proactive strategies to manage cost escalation

1 Long-term debt financing

Spreading repayment over decades helps municipalities manage annual financial impacts and supports intergenerational equity.

2 Reserve funds

Setting aside dedicated reserves allows municipalities to absorb unexpected cost increases without relying on emergency funds or borrowing.

3 Unbundling or bundling projects

Consider how best to bundle projects to reduce financial risk, manage cost escalation and attract a broader pool of bidders.

4 Frequent & regular market sounding

Engaging early and repeatedly with the consulting engineering sector enables utilities to ground-truth cost estimates and monitor inflationary pressures.

5 New project delivery models

Involving contractors earlier through collaborative project delivery models helps identify cost pressures and assign risk effectively.

6 Optimizing internal workflows & communications

Streamlining approvals and procurement through better coordination shortens timelines and reduces cost overruns.

7 Balancing risk in procurement

Flexible, transparent contracts that equitably share risk can lead to more competitive bids and better value for money.

8 Strengthening project management

Clear scope definition, strong governance and real-time tracking tools help prevent scope creep and manage costs.

9 Enhanced engagement & transparency

Transparent communication with the public and Council builds support and understanding of project costs and complexities.

10 Workforce development & readiness

Aligning staffing with project demands and investing in training ensures consistent delivery and continuous improvement.

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Background

Unprecedented increases in water infrastructure costs — driven by inflation, supply chain disruptions, labor shortages and other factors — are placing growing pressure on municipalities across Canada. In response, many are adopting new strategies to manage financial risk and maintain project delivery. This report draws on insights from survey results and roundtable discussions with Canadian Water Network's Municipal Water Consortium, a network of leaders from 26 of Canada's largest water utilities. The findings were further validated at the 2025 Blue Cities conference and the Consortium Leaders' Group meeting held on May 13, 2025, where additional cost drivers and mitigation strategies were identified and incorporated through collective input.

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Project scope changes

Cost escalation is a common challenge

Since the COVID-19 pandemic, water utilities have experienced unprecedented cost escalation during the project bidding process. In some cases, municipalities have received bids in response to requests for proposals that exceed initial estimates by 30%, 50% or even over 100%. As a result, some projects have been postponed, while others have been broken down into smaller sub-projects and reprioritized. Ultimately, these higher costs have contributed to increases in water rates.

Ongoing inflation since the COVID-19 pandemic explains much of this cost escalation, but there are other drivers, including risk premiums due to economic and fiscal uncertainty, supply chain disruptions and workforce shortages, delays due to internal or external factors and slow regulatory agency approvals. Most recently, heightened uncertainty stemming from the threat of U.S. tariffs — and a ripple effect across supply chains and material costs — has added another layer of complexity. The compounding effect of these forces on the pricing of infrastructure projects has an unprecedented impact on municipal infrastructure plans.

Risk Premium refers to the additional cost built into a bid to account for potential uncertainties and challenges that could arise during the project. These risks might include fluctuating material prices, labour shortages, regulatory delays or unforeseen site conditions. By including a risk premium, the contractor aims to protect their financial interests in case these risks lead to higher costs or delays, and to ensure the project remains viable and profitable.

This challenge is especially acute as Canadian municipalities face mounting pressure to address the national housing shortage. Building new homes at the necessary scale is not feasible without the foundational water and wastewater infrastructure that enables the housing development. However, escalating costs and project delays are making it increasingly difficult for municipal and utility water leaders to deliver these critical, housing-enabling infrastructure projects on time and within budget.

To better understand the factors driving project cost increases, members of the Municipal Water Consortium have shared examples of escalating project costs along with strategies for cost containment. This insight equips municipal decision makers to adapt internal processes, proactively manage costs and ultimately deliver greater value to their communities.

Many drivers of cost escalation are outside municipal control

A range of economic and structural forces are contributing to the rising costs of Canadian water infrastructure projects. During the 2010s, historically low inflation created a relatively stable fiscal environment, allowing municipal staff to estimate multi-year project costs with greater confidence. However, the COVID-19 pandemic and its aftermath over the last five years have ushered in a period of sustained inflation, particularly in infrastructure and construction.

The fallout from the COVID-19 pandemic has substantially impacted overall infrastructure project costs. Since 2021, prices for essential materials such as steel, cement and copper have risen sharply. **Figure 1** shows the sharp rise in the cost of various materials commonly used by municipalities between 2005 and 2025. These materials are critical to the construction of water, wastewater and stormwater infrastructure, including pump stations, pipes and treatment facilities. At the same time, labour costs have escalated due to high demand for construction services, combined with a growing shortage of skilled workers. Supply chain disruptions have further compounded these challenges, making it more difficult to reliably source materials and equipment.

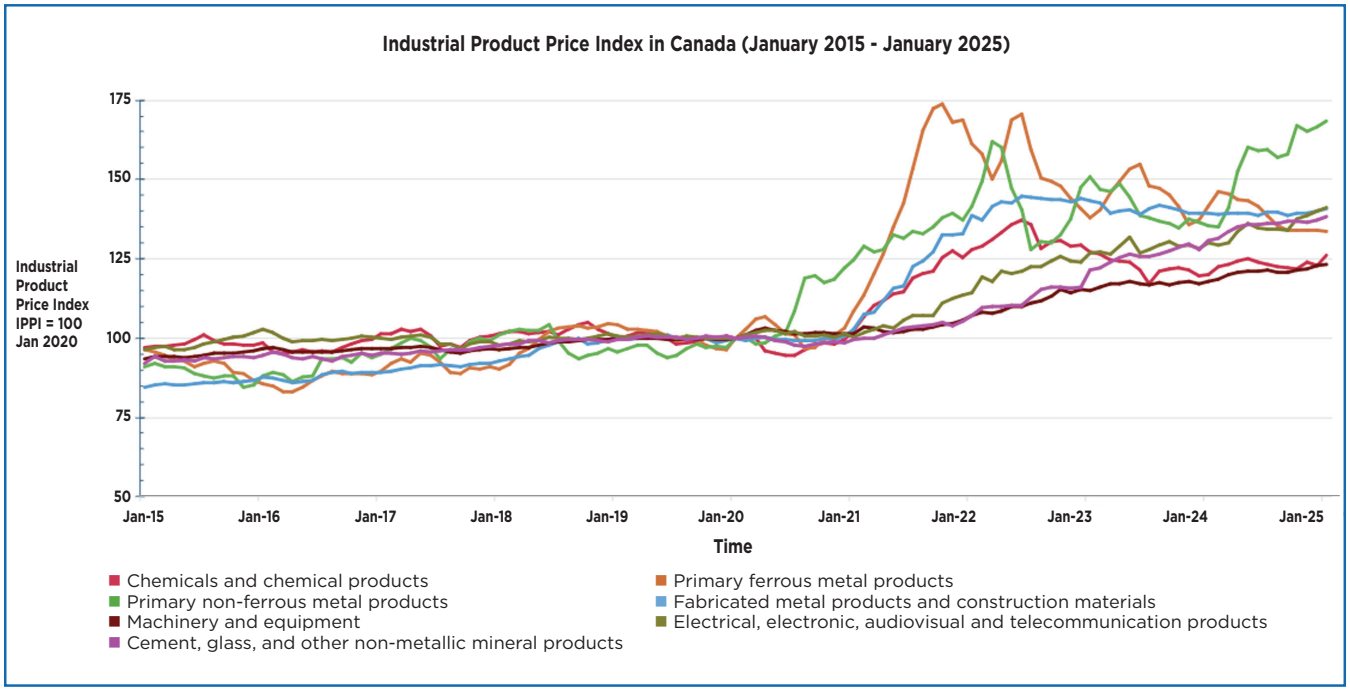

Figure 1. Statistics Canada's Industrial Product Price Index (January 2015 to January 2025) for select materials commonly used by municipal water utilities.[1]

[1] Government of Canada, Statistics Canada. (2025, May 22). Industrial product price index, by product, monthly. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810026601

Economic uncertainty leads to higher risk premiums on construction projects. Given the uncertainty of future costs due to geopolitical and global trade instability, contractors and suppliers add additional contingencies to their bidding price to help them hedge against cost escalation in multi-year projects.

Other external cost drivers include changes in provincial policies such as restricting eligible expenditures paid by development charges, setting ambitious population growth targets and permitting higher residential density. These changes can require redesigning infrastructure projects already in process, resulting in added costs and delays.

Internal cost drivers

Administrative processes within the municipality or utility can also contribute to higher costs and project delays. Coordinating decisions across departments — such as public works, land use planning, permitting, procurement, legal services and Council — can be slow, compounding delays and cost escalation. Given that large infrastructure projects often span several years or even decades, any changes to the original scope can further disrupt timelines and inflate budgets. Finally, the growing scale and complexity of municipal water infrastructure projects make them more difficult to coordinate and implement. In some cases, staff capacity and experience across departments may not align with the demands of these increasingly complex projects.

Cost overruns on already tight budgets leave municipalities with few viable options. They may be forced to absorb the additional costs, incur more debt or scale back projects by eliminating or deferring certain components. Yet deferring parts of a project often leads to higher costs in the future, as inflation, re-mobilization and redesign efforts add to the overall financial burden.

New construction requirements aimed at improving climate resiliency are also adding cost pressures to water infrastructure projects. As extreme weather events such as floods and forest fires become more frequent due to a changing climate, water infrastructure is placed under greater stress. This leads to increased maintenance and repair costs, as well as the need for additional investment to build more resilient systems.

Outlook for 2025:
Fiscal and economic uncertainty to persist

Recent threats of U.S. tariffs and changes to trade policies introduced in 2025 have added new layers of uncertainty to the already complex task of estimating future water infrastructure project costs. Tariffs on key building materials such as steel and aluminum are expected to increase the cost of equipment and supplies manufactured in the U.S. and imported into Canada. The potential for additional tariffs on materials such as copper, along with possible retaliatory measures, further compounds this uncertainty.

Because Canada's water sector relies heavily on U.S. imports for components such as pipe, these trade measures could significantly impact project budgets. There is still considerable uncertainty around how the tariffs will be applied and what goods may be exempt under a new Canada-U.S.-Mexico (CUSMA) trade agreement.

Beyond direct Canada-U.S. trade, U.S. tariffs on components imported from other countries such as China may also raise the cost of finished products. Collectively, these developments are expected to contribute to an economic slowdown in Canada in the latter half of 2025.

Case studies of project cost escalation

Unbundling to manage costs: Water network expansion project – Regina, Saskatchewan

The Water Network Expansion Project in Regina was designed to expand the water network capacity, ensuring reliable services for 310,000 residents, with future scalability for up to 500,000. The project included the construction of a water pumping station, two 42.5 million-litre water storage reservoirs and 8.4 km of 900 mm water supply main. Initially estimated at $109 million, the pre-tender estimate (incorporating engineering and contingency costs) rose to $188 million — over 70% higher than the original budget.

To control costs and accelerate the timeline, **the project was divided into three contracts**. The total cost of the bids received ranged between $147 million and $176 million, leaving a funding gap of $38 million to $67 million. After negotiations, a final project cost of $162 million was agreed on, resulting in a $53 million gap compared to the original budget.

As a result, Regina's Executive Committee and Council were presented with three options:

- Increase the budget by $53 million to allow the full project to proceed; or
- Increase the budget by $12.24 million and defer one of the project contracts to a later date; or
- Postpone the entire project and re-tender it at a future time.

Ultimately, the first option was approved, allowing the project to move forward in its entirety. This decision, however, led to increased municipal debt, impacts on property tax rates and the deferral of other capital projects. To prevent similar cost overruns in future projects, Regina identified **unbundling large projects** as an effective strategy to improve competition and control costs.

Proactive cost management: Wastewater treatment plant upgrade – EPCOR Inc., Alberta

In Edmonton, an electrical upgrade project at the wastewater treatment plant, known as the Auxiliary Control Room Electrical Upgrade (EB-1), faced significant cost escalation. Initially budgeted at $15.6 million, the final guaranteed maximum price (GMP) reached $21.4 million, over 30% higher than the original budget. Rising material and labour costs primarily drove the increase. EPCOR decided to proceed with the project because it was necessary to maintain the infrastructure in a state of good repair.

One key strategy that helped manage the cost increase was the early engagement of stakeholders through the **Construction Manager at Risk (CMAR) model**. By involving stakeholders early in the process, EPCOR enabled project managers to identify cost pressures during the preconstruction phase and address them proactively. While the project required reprioritizing other investments within the annual capital plan, alternative project models are now being considered to help mitigate cost escalation in future projects.

The reality of higher costs: Stormwater pumping station rehabilitation – Toronto, Ontario

Toronto Water's rehabilitation and upgrade of two stormwater pumping stations was part of its infrastructure renewal program. Before tendering, the engineering estimate was $22.2 million. However, the lowest bid came in at $27 million — 21.6% higher.

This cost escalation was attributed to several factors, including underestimations in unit costs, differences in construction methods and significant labour and material price inflation. Ultimately, the project was approved and moved forward. Like other projects facing cost overruns, this situation led to delays and required a reprioritization of the City's annual capital plan. Toronto is now **exploring project unbundling** as a strategy to improve cost control and competitiveness in future projects.

Complexity and uncertainty: North End sewage treatment plant upgrade – Winnipeg, Manitoba

Winnipeg faced significant cost escalation in its sewer treatment plant projects, particularly with the North End Sewage Treatment Plant upgrade. Over the multi-year design period, the budget required continuous adjustment as preliminary designs and cost estimates were refined closer to the tendering stage. The biosolids upgrade component alone increased from an estimated $552 million in 2018 to $1.035 billion by 2023 — representing a 87.5% increase. These figures represent budget estimates rather than final costs, as the project is still in the early stages of a progressive design-build approach.

Rising construction costs were partly due to inflation and market fluctuations, the complexities associated with this type of project, the evolving design requirements, changes in population projections and the impact of concurrent infrastructure projects. The extended time between estimates introduced additional factors that made it difficult to isolate construction-related inflation from other drivers.

Although the city continues to refine its approach to cost forecasting, the scale and complexity of such projects make this an ongoing challenge. The uncertainty surrounding future projects underscores the need for **adaptable project management strategies** and **flexible financial planning**. Looking ahead, effectively managing cost escalation will remain key to maintaining long-term financial sustainability.

Widespread pressures increase infrastructure costs: Steel water main construction – Metro Vancouver, British Columbia

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Metro Vancouver launched a major water infrastructure project involving the installation of approximately 1.4 km of 3.2-metre diameter steel water main and several underground valve chambers. This project was essential to support population growth and expanding water service demands.

Although the cost estimate was updated six to nine months before issuing procurement documents, the bids received were significantly higher than expected. The lowest bid came in about 20% above the engineer's estimate, consuming a substantial portion of the project's contingency funds before construction even began. The second-lowest bid was another 20% higher, reflecting widespread cost pressures across the industry.

Despite these increases, the project proceeded due to its critical role in supporting growth. Staff conducted market sounding and revised cost estimates shortly before procurement to stay ahead of pricing trends. However, persistent inflation in materials and a shortage of skilled labour continued to drive costs upward at a pace that proved difficult to accurately estimate. As a result, the cost escalation led to delays and the reprioritization of other projects in the capital plan. In response, Metro Vancouver identified **unbundling large projects** as a preferred strategy to manage risk, improve cost certainty and attract more competitive bids.

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Proactive strategies to manage cost escalation

Canadian municipalities and water utility managers have adopted several strategies to proactively manage rising infrastructure costs.

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1. Long-term debt financing

Spreading repayment over decades helps municipalities manage annual financial impacts and supports intergenerational equity. This approach also helps avoid sharp increases in water rates or property taxes. The disadvantage of spreading cost over time using debt is the higher total cost due to interest payments. However, depending on prevailing interest rates, the long-term cost burden may be partially offset — especially if municipalities are able to secure low-interest financing — which can make borrowing more affordable and reduce the overall financial impact.

2. Reserve funds

Setting aside dedicated reserves allows municipalities to absorb unexpected cost increases without relying on emergency funds or borrowing. Having money saved allows more flexibility in correcting cost overruns and unexpected expenditures.

3. Unbundling or bundling projects

Consider how best to bundle projects to reduce financial risk, manage cost escalation and attract a broader pool of bidders. In some cases, it may be beneficial to divide large projects into smaller, more manageable phases. This approach can lead to more accurate cost estimation, allow for nuanced risk allocation and potentially attract a broader range of bidders who may be equipped to handle specific project components (but not the entire project). In other situations, bundling smaller components into a single, larger project may be the better option. This strategy can improve efficiency and project management and lower overall costs. It also enables better coordination of resources and leverages economies of scale in procurement and the approvals and permitting processes.

4. Frequent and regular market sounding

Engaging early (in the case of large projects, years in advance) and repeatedly with the consulting engineering sector enables utilities to ground-truth cost estimates, monitor any new inflationary pressures and ensure market alignment through transparent, multi-phase market sounding — well before issuing formal RFPs. For example, some municipalities publish a project pipeline to promote the projects they plan to build in the next number of years. This gives developers advance notice, allowing them time to assess opportunities and prepare to bid when the projects are formally tendered.

5. New project delivery models

Involving design and construction contractors earlier through collaborative project delivery models like CMAR (Construction Manager at Risk) can help identify and address cost pressures during preconstruction and assign risk to the stakeholder most capable of managing it. Another characteristic of new project delivery models is strong project management, which can further enhance delivery speed, thereby reducing delays. A consistent project management framework with clear stage gates, risk protocols and real-time tracking tools can set clear expectations for contractors.

6. Optimizing internal workflows & communications

Streamlining approvals and procurement processes through enhanced internal coordination between municipal departments can shorten project timelines and reduce the risk of cost overruns. A structured model can also assist in selecting the best procurement strategy for each project.

Effective communication across municipal departments helps project delivery by fostering a shared understanding of how infrastructure projects evolve and why precise cost estimates are not always possible. Building common knowledge around key concepts — such as what constitutes an estimate, why costs fluctuate and the complexities involved in project execution — ensures better alignment and more informed decision-making.

7. Balancing risk in procurement

When procurement contracts are rigid or assign an unbalanced share of risk to the contractors, they may inflate their prices to compensate for the uncertainty and potential liabilities they are expected to absorb. By incorporating some flexibility and allowing for negotiated terms, utilities can share risk more equitably. This approach can lead to more competitive bids and better value for money, as contractors are less likely to overprice their services to hedge against unknowns.

Transparency is also key. Clearly outlining expectations around contractor overhead, procurement processes and risk allocation helps all parties understand their responsibilities. Establishing upfront who is responsible for managing changes in risk — whether due to scope, market conditions or unforeseen challenges — can prevent disputes and support more collaborative project delivery.

8. Strengthening project management

In infrastructure planning, the project management triangle — cost, time and scope — guides decision-making. However, under intense pressure to control costs and meet deadlines, scope often receives less attention. This imbalance can lead to unclear expectations and costly scope changes during the design phase, ultimately delaying delivery and increasing expenses. To avoid these issues, it is essential to establish a clear, shared understanding of the project scope from the outset. Early alignment among stakeholders on what the project will and will not include helps prevent scope creep, reduces rework and supports more accurate budgeting and scheduling.

A key enabler of this alignment is strong project governance. Ensuring that every project manager has a dedicated project sponsor is critical. Project managers should not be left to navigate complex decisions alone. Sponsors provide strategic oversight, help resolve conflicts and ensure that scope decisions align with broader organizational goals. This partnership strengthens accountability and supports more consistent, informed decision-making throughout the project lifecycle.

In addition, proactive project tracking, supported by digital project management tools and real-time data analysis, enables municipalities to monitor expenditures closely, detect potential cost overruns early and make timely evidence-based adjustments.

9. Enhanced engagement and transparency

Engaging the public and municipal Council members in ongoing, transparent conversations about the true costs and value of infrastructure projects is essential in managing expectations and building support. Misconceptions often arise around what drives expenses — such as project complexity, scale, scope and construction challenges. Proactively explaining these factors can help stakeholders better understand the reasons behind cost escalation.

Strategies like site tours, drone footage and visual demonstrations can help Council members grasp the magnitude of the work, while tailored internal messaging can clarify why early estimates are subject to change. Helping stakeholders understand the fundamentals of cost estimation, project phasing and market volatility can lay the groundwork for constructive dialogue when budgets need to be adjusted. Integrating engagement into the project management framework fosters trust, sets realistic expectations and reduces resistance to necessary financial decisions.

10. Workforce development and readiness

Aligning staffing levels with project demands can strengthen workforce capabilities and ensure consistent project delivery. This begins with a comprehensive resourcing assessment, the standardization of operational processes and the expansion of targeted training programs. Enhancing cross-divisional coordination further promotes efficiency and collaboration across teams. Additionally, implementing performance metrics enables continuous monitoring of progress and fosters a culture of ongoing improvement, ensuring that projects remain on track and within budget.

The role of provincial and federal governments

Provincial and federal governments can play a critical role in helping municipalities manage rising infrastructure costs.

Key measures:

- **Provide more predictable and longer-term government grant programs**, such as the Gas Tax, which enable municipalities to access stable funding without increasing the financial burden on ratepayers.
- **Improve access to low-interest borrowing** through municipal financing authorities or other government-assisted lending facilities, helping to reduce interest costs and spread repayment over the life of the asset.
- **Explore options to increase municipal access to taxation revenues** such as sales or income taxes to enhance local fiscal capacity (as is the case in other jurisdictions).
- **Allow for more flexible start and end dates on provincial and federal grants**, enabling municipalities to better schedule infrastructure projects during periods of more favourable market conditions — such as times when developer costs are lower — resulting in more cost-effective project delivery.

This document was prepared with the support of Canadian Water Network's Municipal Water Consortium, a national network of 26 member municipalities committed to advancing sustainable, equitable and resilient urban water management. Through CWN's collaborative program, water utility leaders share knowledge, exchange best practices and engage in strategic dialogue to address emerging challenges and shape the future of municipal water systems across Canada. **Learn more: cwn-rce.ca/municipal-consortium**

Summary

While cost escalation has always been a factor in large infrastructure projects, the past five years have brought unprecedented and unpredictable increases. These have been driven by a combination of factors, including the COVID-19 pandemic, economic volatility, workforce shortages, climate-related extreme events, and more recently, U.S. tariffs.

The rising costs of maintaining existing water infrastructure in a state of good repair and building new systems to support population growth highlight the need for more efficient decision-making, robust financial planning and stronger collaboration among key parties involved. Although many costs drivers lie beyond municipal control, there are proactive strategies that can help to manage project expenses more effectively.

Given the added uncertainty of U.S. trade policy shifts and ongoing fiscal pressures, municipalities must continue to explore new forms of collaboration, procurement practices and financing mechanisms. Strengthening these practices will be essential to ensuring the long-term affordability, reliability and resilience of Canada's water infrastructure.

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