Calgary

2026

WATER EFFICIENCY PLAN

Together we are water wise

Contents

Water & Land Acknowledgement

The Bow and Elbow Rivers are vital to the First Nations People – as lifelines they include water, food, medicines, spiritual connection, and all things bestowed to them by Creator for their source of life.

As Long As the River Flows by artist Jadyn Williams

Indigenous relationships with water emphasize a reciprocal bond – water is not merely a resource to be used but a sacred relative and living entity to be respected and protected. Traditional Knowledge Keepers teach us to acknowledge the land and offer gratitude for Mother Earth's gifts, emphasizing the interdependence of land, water, people, and animals.

Calgary is located within the ancestral lands and traditional territories of the Siksikaitsitapi comprising of the Kainai, Siksika, Piikani, and Amskaapipiikani First Nations, and the traditional lands of the Îethka Nakoda Wîcastabi First Nations, comprised of the Chiniki, Bearspaw, and Goodstoney First Nations, and the Tsuut'ina First Nation of the Great Dene Nation. These lands are also home to the Métis Nation of Alberta, Battle River Territory. We offer respect to all Indigenous people who have made the Calgary area their home.

We acknowledge our responsibility to listen and learn from one another and from the water. Protecting the health of the Bow and Elbow rivers is part of safeguarding physical and spiritual wellbeing, preserving traditions, and ensuring that future generations can maintain sacred relationships with water. As treaty people, we commit to improving water efficiency and advancing drought resilience as part of a reciprocal relationship with water and a shared path of reconciliation.

Executive Summary

From river to tap and back again, water connects all of us. The City of Calgary ("The City") is committed to delivering safe, reliable water services today while preparing for the needs of tomorrow. The *Water Efficiency Plan* sets a renewed, shared direction for managing Calgary's water demand, to support a growing city, protect the water supply, and steward the rivers we share.

CALGARY IS A BIG CITY ON TWO SMALL RIVERS

Calgary's water security is under pressure. Rapid population growth, a limited water supply in southern Alberta, and aging infrastructure strain our water services. Climate change adds to the challenge with hotter summers, less reliable river flows, and the risk of more frequent droughts. These challenges affect all Calgarians and require a collective response.

Managing water demand is key to servicing Calgary's water needs while optimizing the capacity of our infrastructure. While much was achieved through the previous *Water Efficiency Plan*, overall water demand is starting to trend upward, water efficiency gains have plateaued, and issues such as water loss and peak day demand require attention. These shifts signal the need to renew our shared focus on water efficiency.

TOGETHER WE CAN MAKE EVERY DROP COUNT

Water efficiency is a key strategy to manage Calgary's water demand and reduce risks, both in the short-term as infrastructure is upgraded and in the long-term within the context of a finite supply. By investing in water efficiency and conservation, Calgary will:

- Strengthen water infrastructure and service reliability
- Support quality of life and economic growth
- Build resilience to drought and a changing climate
- Protect the Bow and Elbow Rivers today and for future generations

RENEWING OUR DIRECTION

The Water Efficiency Plan sets a clear goal: **reduce per capita water demand** by 20 per cent by 2040. It also includes a suite of interim targets for total and residential per capita demand, peak day demand, river withdrawals, water loss, and water meter technology replacement.

The Water Efficiency Plan was developed through technical research, public and industry engagement, and water demand modelling. It is a key action under the 2023 *Drought Resilience Plan* and aligns with Calgary's broader strategies for water management, climate resilience, and responsible city growth. Calgarians have come together to reduce water demand before, reducing per capita water demand by 30 per cent since the 2005 *"30-in-30" Water Efficiency Plan*.

TAKING ACTION

Achieving the goal and targets will require coordinated action by The City, Calgarians, and the industrial, commercial, and institutional sector. The actions in this plan aim to:

- Reduce water loss and improve infrastructure efficiency
- Modernize water metering infrastructure and data systems
- Promote water-wise landscaping and outdoor water management practices
- Expand access to water efficiency programs for Calgarians
- Support water-efficient community and economic growth

The 11 key actions in this plan will be reviewed and renewed in alignment with City business planning and budgeting cycles to stay relevant and actionable. The City is also committed to accelerating water demand management through the Water Transformation Program.

The message is clear: Calgary's future depends on water. By managing water demand together, we can ensure reliable water services for residents and businesses, while reducing both immediate and long-term risks to Calgary's water system. Together we can protect rivers, strengthen the resilience of the water supply and support a thriving city for generations to come.

Our 2050 Vision

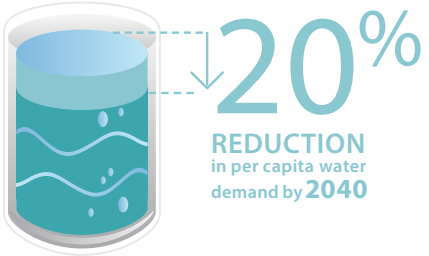
Water efficiency has been embedded as a key part of Calgary's integrated water management approach. It supports protecting the rivers we share, strengthening community resilience, and ensuring water is available for all — now and into the future.

BY 2050, WE ENVISION A CALGARY THAT:

- Practices water-wise habits as part of everyday life
- Uses the right water for the right purpose
- Designs landscapes that don't rely on treated drinking water
- Plans community growth and economic development with water in mind
- Leverages real-time data to guide education and action
- Manages a resilient and reliable water infrastructure system

2040 GOAL

To protect the rivers we share and support a growing city, Calgary is committed to a **20 percent reduction** in per capita water demand by 2040



Reaching our goal requires coordinated action by The City, Calgarians, and businesses. Everyone has a role to play – and benefits from – making every drop count and building a water-resilient Calgary. The City of Calgary will lead by example and enable shared progress.

Together, we are water wise.

Pathway to 2040

Water Efficiency Goal

20% reduction
in per capita water demand by **2040**

Target

Per capita demand
315 LPCD by 2030
285 LPCD by 2040

Note: LPCD is litres per capita per day.

Focus Areas	Targets	Actions
Fixing leaks and optimizing system performance	**Reduce Water Loss** Initial target: 3.0 infrastructure Leakage Index (ILI) by 2030	Action 1. Advance the Accelerated Water Loss Program
Using data and technology to make better decisions	**Water Meter Replacement** 100% transition to advanced metering technology by 2031	Action 2. Continue the Water Meter Replacement Program
Protecting water availability during high-demand times	**Peak Day Demand** Remain below 908 ML/day through 2040	Action 3. Introduce an Outdoor Watering Schedule Action 4. Expand the Water Managed Sites Program
Protecting the Bow and Elbow Rivers	**River Withdrawals** Remain below 233,000 ML/year through 2040	Action 5. Strengthen Water Efficiency Regulations, Standards and Design Guidelines
Planning for a financially sustainable water future	**Residential Demand** 160 LPCD by 2030 150 LPCD by 2040	Action 6. Pursue Conservation-Oriented Rate Structures
Empowering Calgarians and businesses to use water wisely	**Residential Demand** 160 LPCD by 2030 150 LPCD by 2040	Action 7. Expand Access to Water Efficiency Programs Action 8. Introduce Residential Landscape Transformation Education and Incentives Action 9. Promote Indoor Water Use Education and Incentives
	Institutional, Commercial and Industrial (ICI) Demand Establish target(s) by 2030	Action 10. Implement a Water Efficient Business Program Action 11. Support Water Efficient Industrial Commercial, and Institutional Growth

Note: Actions are shown next to primary focus areas and targets, but can contribute to multiple focus areas.

Foreword

Water is the foundation of Calgary's health, economy, and quality of life. It shapes how our city grows, how our communities function, and our efforts to strengthen Calgary for future generations. As Calgary moves forward, using water wisely is no longer optional. Water efficiency is essential to our future as a resilient and thriving city.

Calgary's water story is defined by our location in southern Alberta. We are a growing city of over 1.5 million people supported by two relatively small rivers, the Bow and the Elbow. Periods of drought and long-term climate shifts remind us that water scarcity is not something far off in the distant future. It is a present and ongoing consideration that calls for thoughtful stewardship and shared responsibility.

This updated *Water Efficiency Plan* marks the beginning of Calgary's next chapter in water efficiency. It reflects The City of Calgary's commitment to leading by example by integrating water efficiency into operations, public programs, and long-term planning. Efficient water use supports a reliable and resilient water system, reduces strain on our infrastructure and helps ensure that investments made today continue to serve Calgarians well into the future.

At the heart of this plan is a simple idea. Together, we can do more. Water efficiency is not achieved by municipal government alone. It can be achieved thanks to everyday actions made by all Calgarians, at home and at work. When we work together, small actions add up to a meaningful impact. The effort of all Calgarians strengthens our city's resilience and reinforces our shared values of stewardship and care for the place we all call home.

We are optimistic about Calgary's capacity to be adaptive, innovative, and be a leader in water efficiency. At the same time, we are clear-eyed about the challenges that come with managing a limited water supply in a growing city. This updated *Water Efficiency Plan* is an invitation for all Calgarians to be part of the solution, to use water thoughtfully and to help strengthen a livable, prosperous and sustainable city for generations to come. Together we can protect the water that sustains Calgary.

Nicole Newton
Director, Climate & Environment

Nancy Mackay
Director, Water Services

Part 1: Foundations for action - understanding Calgary's water system

1.1 INTRODUCTION

Calgary's water system is the backbone of our city, essential for every home, business, and community service. When Calgarians turn on the tap, they expect safe, reliable drinking water. We rely on water for hospitals and firefighting, to run businesses, to grow gardens and keep parks healthy, to fill local pools and flood ice rinks, and so much more.

Yet Calgary is a big city on two small rivers. A limited water supply, rapid population growth, and aging infrastructure strain our water system. Climate change adds to the challenge with hotter summers, less reliable river flows, and the risk of more frequent droughts.

Water efficiency is critical in Calgary's context. It means making the most of every drop - ensuring that residents and businesses have what they need while managing the risks facing Calgary's water system.

The *Water Efficiency Plan* provides a strategic approach to help manage water demand in Calgary. It sets a clear vision, goal, targets, and actions to reduce the strain on Calgary's water system while supporting safe, reliable, and affordable water services for Calgarians and regional customers.

This plan was initiated through the 2023 *Drought Resilience Plan*, at a time when drought issues were top of mind across Southern Alberta. Since then, the need for water efficiency has become even clearer. In 2024 and 2025, major breaks on a key underground watermain disrupted Calgary's water supply and triggered major water restrictions. These events shone a spotlight on Calgary's water system and underscore why water efficiency must be a core strategy for resilience. Water efficiency helps to ensure we use our existing infrastructure efficiently, reduces the risk of service impacts, and increases operational flexibility - protecting our water supply, the infrastructure that delivers it, and the wellbeing of Calgarians.

The plan is organized into three parts:

- **Part 1: Foundations for action — Calgary's water system and use** establishes the context for action. It provides an overview of Calgary's water system, key drivers for action, and past and current water use trends. It also outlines how the plan aligns with broader City strategies and policies, ensuring a coordinated approach to managing water demand and advancing water efficiency.
- **Part 2: Framework for action — structure and approach** sets the direction for Calgary's water efficiency efforts. It outlines how the plan was developed, presents the long-term Vision and 2040 Goal, and defines key indicators and targets. Together, these elements provide a clear commitment for reducing water demand and strengthening resilience toward 2050.
- **Part 3: Calgary's water efficiency Action Plan** translates strategy into action. It details the Action Plan, including priority focus areas and priority actions for implementation by The City, residential customers, and the industrial, commercial, and institutional sector. These actions are designed to deliver measurable water savings and represent the pathway for achieving the 2040 Goal, and related targets of this plan.

1.2 DRIVERS FOR ACTION

Four key drivers underscore the need for a renewed *Water Efficiency Plan* within Calgary's unique context:

Rising demand for water

Calgary is among Canada's fastest growing cities, having experienced record population growth in recent years[1, 2]. In 2024, Calgary's population was approximately 1.5 million people[3]. Since 2005, Calgary has grown by more than half a million residents[2], increasing the number of homes, businesses, and institutions connected to the municipal water system. In the past 5 years alone, Calgary's population has grown by 19 per cent, increasing total water demand[3].

Strained infrastructure systems

Calgary operates one of Canada's most complex water utilities, providing drinking water to approximately one in three Albertans. The City's water infrastructure includes advanced treatment processes, high-pressure transmission mains, 20 pressure zones and process control systems. However, Calgary's water system is increasingly strained as aging infrastructure, growing demand, limited river supply, and climate-driven pressures converge. Recent major watermain failures in 2024 and 2025 further underscore the urgent need to strengthen resilience, redundancy, and long-term water efficiency[4]. Preserving water service during critical infrastructure outages or repairs relies on curbing water demand.

> Most Calgarians are concerned about the city's water future. At the same time, most Calgarians report already taking steps to conserve water and are willing to do more[6].

Shared and limited water sources

Calgary relies on the Bow and Elbow rivers, which also serve other municipalities, First Nations, industries, and irrigation districts within the broader South Saskatchewan River Basin (SSRB). In the SSRB, water resources are allocated according to Alberta's *Water Act*, which provides licences to water users. Since 2006, the SSRB has been closed to new surface water licences. As outlined in Calgary's *Drought Resilience Plan*, collaboration across the region, diversification of water supply, careful management of water licences and use of legislation and policy tools is essential to make the most of the water available.

Climate risks to water availability

Calgary's water supply is increasingly vulnerable to the impacts of climate change. Rising temperatures, shifting precipitation patterns, and the risk of multi-year droughts are expected to impact both surface and groundwater availability. Earlier snowmelt, reduced summer flows, and long-term glacial retreat will change when, and how much, water is available in the rivers. These changes are projected to affect the reliability of Calgary's water supply during periods of high demand[5].

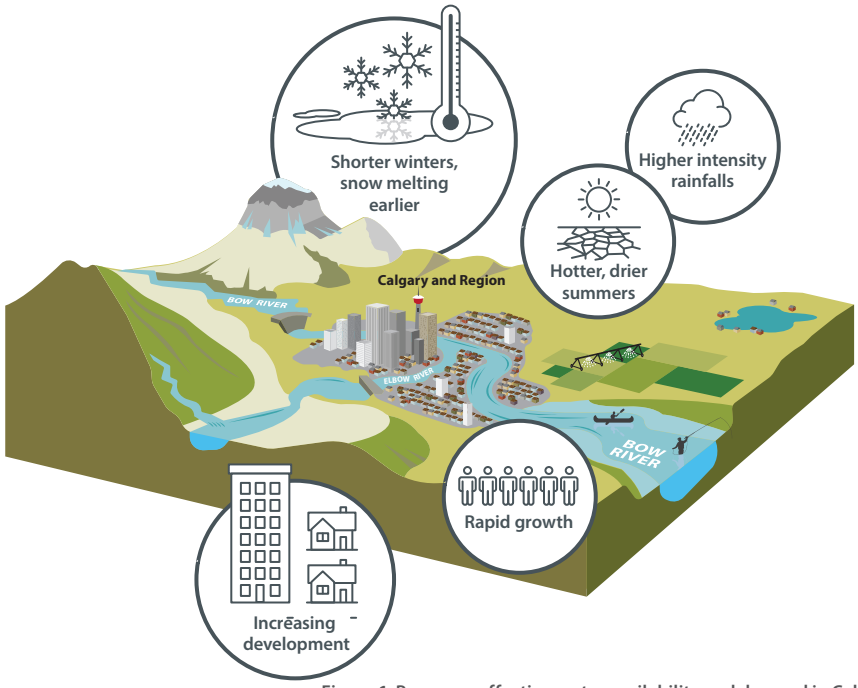


Figure 1: Pressures affecting water availability and demand in Calgary.

A LOOK BACK: 2005 *WATER EFFICIENCY PLAN*

The 2005 *"30-in-30" Water Efficiency Plan* set a goal to reduce per capita water demand by 30 per cent over 30 years – from 518 litres per capita per day (LPCD) in 2003 to 350 LPCD by 2033 – while maintaining river withdrawals at 2003 levels (212,500 ML/year) despite a growing population.

From 2003 to 2016, per-capita water use was reduced by 30 per cent, as a result of a range of water efficiency actions, including universal water metering, efficient fixtures, public conservation programs, and more. However, efficiency improvements have since plateaued. Since 2016, total river withdrawals and overall water demand have also begun to rise, driven by rapid population growth, development across Calgary and surrounding communities, and increased water loss through system leakage.

These trends signal the need for renewed action to conserve, find efficiencies, and build resilience for a growing city. We know that water efficiency works. From 2003 to 2024, the population served by Calgary's water system grew by more than half a million, while total water demand rose by only 4 per cent. That's a big increase in population, but thanks to proactive planning and long-term investments in water efficiency, The City has kept water withdrawals steady.

1.3 BENEFITS OF WATER EFFICIENCY

Water efficiency means making the most of the water we have. It is defined by the Alberta Urban Municipalities Association as: "accomplishment of a function, task, process, or result with the minimal amount of water feasible."[7] In this plan, water efficiency and water conservation – reducing overall water use – work together to manage water demand. Key terms are defined in the Glossary.

Water efficiency and conservation help Calgary serve more people and businesses with less water, reduce pressure on shared rivers, and maintain reliable service delivery to Calgarians. Water efficiency optimizes infrastructure and operations, supports Calgary's economic success, advances community resilience and wellbeing, and protects the environment.

By working to make every drop count, we also do our part to ensure there is enough water in the region for growing food, to support other communities, and to drive economic opportunities. Together, we can secure a water-resilient future for generations to come.

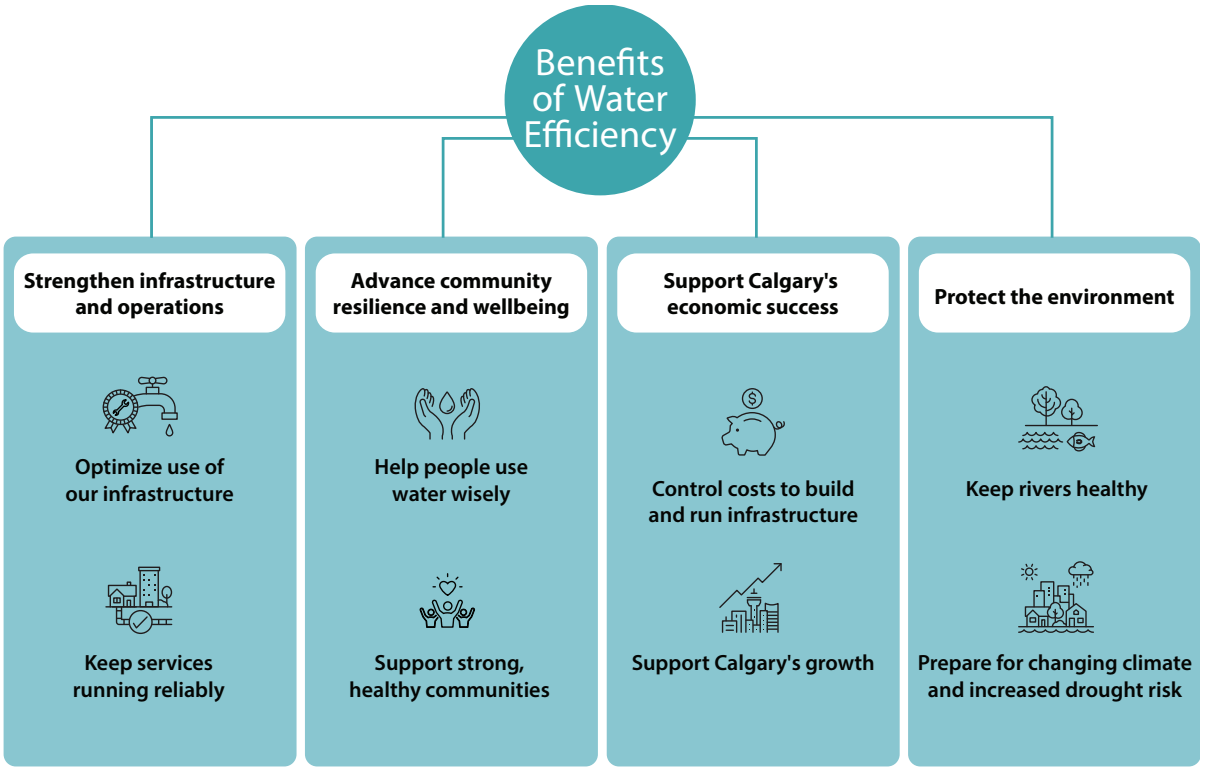


Figure 2: Benefits of water efficiency

1.4 PLAN ALIGNMENT

The *Water Efficiency Plan* has been developed in alignment with a range of municipal and provincial strategies, ensuring a coordinated and integrated approach to water management, climate resilience, and sustainable growth.

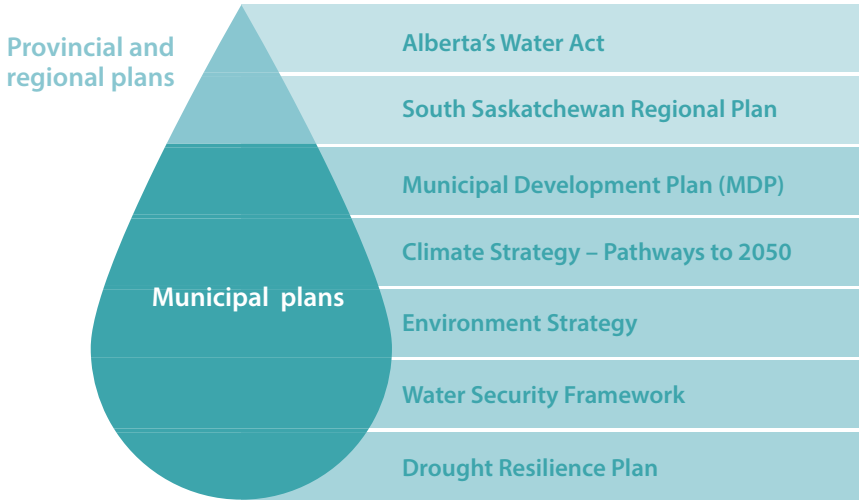


Figure 3: Provincial, regional and municipal water plan alignment

Provincial and regional alignment

- *Alberta's Water Act* governs the allocation of water from natural watercourses, and promotes responsible water use and long-term planning.
- *Alberta's Water for Life Strategy* focuses on three goals: safe and secure drinking water, healthy aquatic ecosystems, and reliable water supplies for a sustainable economy. It recognizes that safeguarding and stewarding Alberta's water resources is a shared responsibility – everyone has a role to play in making every drop count.
- *The South Saskatchewan Regional Plan* emphasizes sustainable water use and watershed protection across southern Alberta.

Municipal alignment

The *Water Efficiency Plan* aligns with key City strategies, including:

- *The Municipal Development Plan* by promoting water-efficient urban design and development practices that reduce demand on municipal water systems and support long-term infrastructure sustainability.
- *The Climate Strategy – Pathways to 2050* by helping mitigate risks associated with extreme weather – such as drought and heat waves – and strengthening long-term climate adaptation through improved water conservation.
- *The Environment Strategy* by advancing water stewardship through reduced consumption, water-wise landscaping, and protection of natural systems.

The City is committed to careful management of Calgary's water supply and demand, investing in water efficiencies, and managing infrastructure to ensure a secure water supply for Calgarians. Calgary's *Water Security Framework (2020)* shares a framework for Calgary's water secure future, identifying key water security risks and calling for a long-term view of water security.

The City's *Drought Resilience Plan* identifies water efficiency as a key strategy for reducing long-term drought risk and maintaining a reliable water supply. That plan called for a renewed water efficiency plan to strengthen Calgary's resilience to hotter, drier summers and increasing water demand.

The *Water Efficiency Plan* also supports Calgary's broader goals related to infrastructure resilience, environmental protection, and healthy communities. It is a key component of Calgary's *OneWater* approach for integrated and sustainable water management.

1.5 CALGARY'S PLACE IN THE WATERSHED: FROM MOUNTAINS TO CITY AND BEYOND

Calgary's water journey begins high in the Rocky Mountains. The Bow River starts at Bow Glacier, flowing through Bow Lake, across the foothills, and into the prairies – serving as Calgary's primary source of water for drinking, irrigation, industry, and recreation. The Elbow River, Calgary's secondary drinking water source, begins in the Kananaskis region and joins the Bow River within city limits. Together, these rivers continue to flow eastward to form the South Saskatchewan River downstream of Calgary.

Calgary is located at the confluence of the Bow and Elbow Rivers. The traditional names for the place we know as Calgary – Moh-kins-tsis, Wîchispa Oyade, Otos-kwunee and Guts-ists'i – all speak to a place of deep significance, the confluence where two rivers meet. This connection to water has shaped our past and will continue to define our future.

Approximately 90 per cent of the Bow River's streamflow originates from precipitation in the Rocky Mountain headwaters, primarily as rain and snow[8]. The Elbow River, by contrast, is sustained largely by groundwater, which contributes more than half of the annual flow of the river[8]. While glacial melt accounts for only 1 to 3 per cent of annual streamflow, it becomes a more significant source in late summer, particularly in August[8].

These rivers provide more than just Calgary's drinking water – they sustain ecosystems, wildlife, recreation, agriculture, and the livelihoods of many people across towns, cities, and First Nations. The Bow River also supports 45 per cent of Alberta's irrigated land and is one of the most heavily managed and utilized river systems in the province[8].

As the largest urban centre in the Bow River watershed, Calgary has a significant responsibility as a water steward. When Calgarians turn on their taps, they expect safe and reliable water. This reliability depends on treatment plants and an extensive network of pipes, pumps, and reservoirs throughout the distribution system – critical infrastructure that is often unseen and less understood. In turn, this system relies on shared water sources: the Bow and Elbow rivers and their connected watersheds.

Water from the Bow River is treated at the Bearspaw Water Treatment Plant and typically supplies up to 60 per cent of Calgary's drinking water, with dependence on this source expected to grow in the future. The remaining 40 per cent currently comes from the Elbow River, withdrawn at the Glenmore Reservoir and treated at the Glenmore Water Treatment Plant. Together, these systems provide drinking water to homes, businesses, and several regional customers including the City of Airdrie, City of Chestermere, Town of Strathmore, and Tsuut'ina Nation.

Over the course of a year, approximately 80 per cent of the water withdrawn in Calgary from the Bow and Elbow Rivers is returned to the Bow River after being treated at one of Calgary's three wastewater treatment plants. While Calgary is primarily a non-consumptive water user – meaning most of the water withdrawn is returned as treated effluent to rivers – growing demand places increasing pressure on river withdrawals and return flows. In addition to water quantity, the impacts of wastewater and stormwater discharges on water quality must also be considered, as they affect downstream communities and ecosystems.

Calgary's Place in the Watershed: An Illustrative Overview

Calgary's water story is about much more than built infrastructure. It is also about ecological stewardship, climate resilience, and the relationships that connect communities to water. Long before Calgary's founding and continuing today, Indigenous Peoples have cultivated deep cultural, spiritual, and ecological relationships with water – relationships rooted in respect, reciprocity, and interconnectedness.

skícza7 te Sáťatqwa7 by Morgan Black, 2024. The City of Calgary Public Art Collection.

Guided by Calgary's White Goose Flying Report (The City of Calgary, 2016), which directs The City of Calgary's commitments and actions for advancing truth and reconciliation, The City co-hosted Indigenous Summits on the topics of water, land, and climate throughout 2023 and 2024. These gatherings helped establish a strong foundation for ongoing relationship building and dialogue about water. A key takeaway was the importance of improving water efficiency as part of protecting the health of the Bow and Elbow rivers. Expanding programs that support year-round water conservation is part of this ongoing commitment to stewardship.

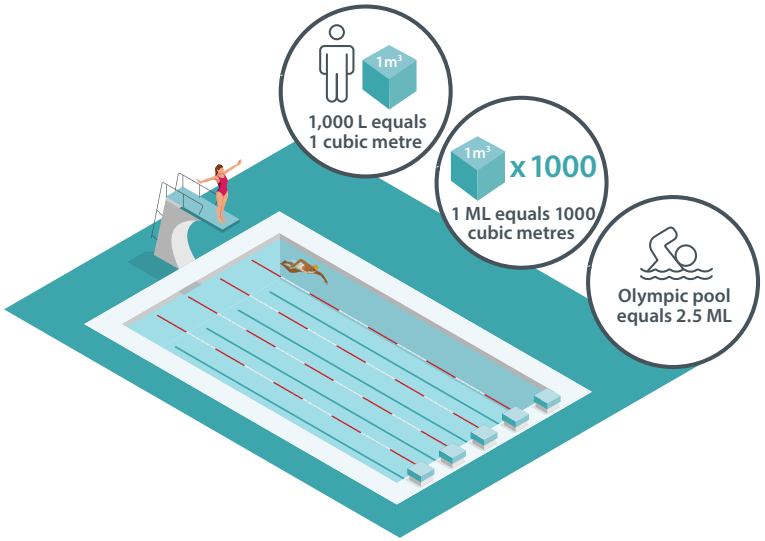
Calgary's efforts to manage and steward water must be grounded in respect for the rights, knowledge, and priorities of Indigenous Peoples. Calgary's Drought Resilience Plan, under which the *Water Efficiency Plan* is a priority action, also commits to fostering meaningful partnerships and collaboration with the Blackfoot, Îethka Nakoda Wîcastabi, Tsuut'ina and Métis Nations and urban Indigenous communities

1.6 CALGARY'S WATER USE TRENDS

The City uses several key metrics to monitor and report on water use trends over time. This section provides an overview of the most significant metrics and trends observed over the last two decades. **A more detailed breakdown of water use data with additional metrics is available in Appendix 1.**

As part of its commitment to responsible water management and transparent reporting, The City shares water use information publicly through the Climate & Environment Dashboard. This online platform provides clear, timely, and accessible data on water use, conservation progress, system performance, and long term sustainability indicators. It ensures Calgarians have a reliable, up to date view of how water is being used across the city and how the system is performing.

Understanding water volume: What is a megalitre?



1.6.1 Calgary's water use at a glance

River withdrawals

- Annual withdrawals have remained below the 2003 benchmark of 212,500 ML/year, despite accommodating half a million new residents.

Total water demand:

- Annual water demand (Calgary and serviced region) has increased by only 4 per cent since 2003, even as the service population grew by nearly 40 per cent.

Per capita water demand

- In 2023, total per capita water demand was 356 LPCD, down from 518 LPCD in 2003.
- Residential-only per capita demand is 171 LPCD (2023), below the national average of 223 LPCD (2021).

Water use by sector

- In 2023, residential customers accounted for 60 per cent of total billed water, while Industrial, Commercial, and Institutional customers accounted for 31 per cent.
- Regional customers accounted for 8 per cent of total billed water use in 2023.
- Municipal operations represented 1 per cent of total billed water use in 2023.

Peak day demand

- Peak day summer water demand is up to 40 per cent higher than average winter water demand.

Water loss

- System water loss due to leaks has risen from approximately 17 per cent in 2015 to 22 per cent in 2024.

1.6.2 River withdrawals

Total annual river withdrawals refer to the volume of water drawn from the Bow and Elbow rivers to meet Calgary's water needs, including water supplied to regional customers such as the City of Airdrie, City of Chestermere, Town of Strathmore, and Tsuut'ina Nation. This volume, measured in megalitres (ML), is a critical metric, because provincial water licences held by Calgary and its regional customers limit both instantaneous and annual withdrawal volumes.

River withdrawals have remained relatively stable and below the 2003 benchmark target of 212,500 ML per year, even as Calgary's population grew by nearly half a million people. However, a gradual increase has been observed since 2016, reflecting rising demand and reinforcing the importance of continued investment in demand management.

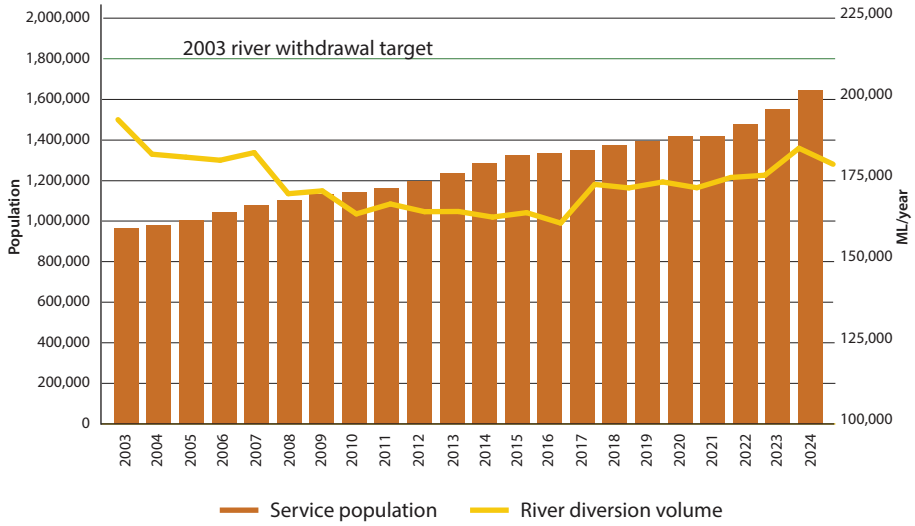


Figure 4: River diversion volumes (ML/year) 2003-2024

1.6.3 Total water demand

Total annual water demand refers to the total volume of water used by all customers over the course of a calendar year, measured in ML. It includes water consumed by residential, commercial, industrial, and institutional users both within Calgary and in regional customer communities. It also accounts for water used in the delivery of municipal services – such as firefighting, street cleaning, pipe flushing, and irrigation of parks and public spaces – as well as water lost through system leakage and other non-revenue uses.

Although the population served by Calgary's water system has grown by approximately 40 per cent since 2003, total water demand has increased by just 4 per cent over the same period, averaging 174,000 ML per year (2003-2024). This modest increase reflects the sustained efforts in water efficiency and conservation, including infrastructure upgrades, universal metering, low flow fixture requirements, targeted rebate programs, and public education initiatives.

While Calgary has demonstrated strong performance in accommodating growth with minimal additional demand, total water demand has begun trending upward in recent years driven primarily by rapid development within both Calgary and surrounding communities.

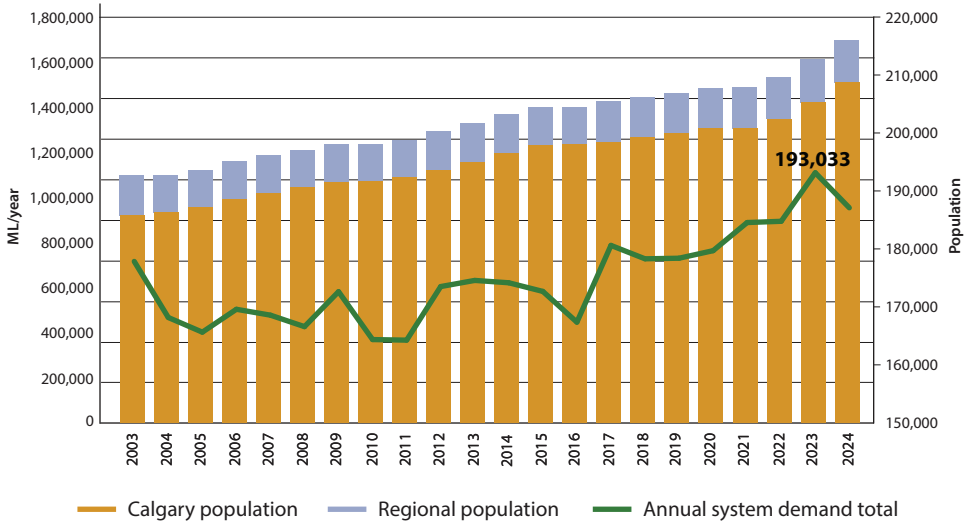


Figure 5: Annual total demand (ML/year) vs Calgary and Region population 2003-2024

SAVING WATER, SAVES ENERGY

The water-energy nexus highlights the vital connection between water and energy systems, both of which are essential for our everyday lives. Energy is required at every stage of the water supply process – from purification and pumping to distribution and heating. As a result, water use contributes to overall energy demand.

The water-energy nexus means **saving water saves energy**.

For example, The City's residential toilet rebate program (2006 – 2016) resulted in annual water savings of approximately 194 ML/year. Between 2006 and today, total savings of 3,686 ML of water are estimated to have avoided roughly 3,500 tonnes of carbon dioxide equivalent emissions.* That's equivalent to the annual electricity use of 730 homes or the carbon sequestration of nearly 60,000 tree seedlings grown over 10 years[14].

*Carbon equivalency calculations are based on emissions savings per ML assuming grid electricity for water and wastewater treatment processes in Calgary. The City of Calgary has a corporate electricity contract which procures renewable electricity, which was not factored into this calculation.

1.6.4 Per capita water demand and residential per capita demand

Per capita water demand, measured in LPCD, represents the average daily water use per person. It is calculated by dividing the total volume of water used across the city by the population served. This metric provides insight into water use patterns and is a key indicator of water efficiency performance over time. Because total per capita demand includes all water uses, it can vary widely between municipalities depending on their customer mix, particularly the proportion of industrial, commercial, and institutional customers.

Calgary's total per capita demand includes all water uses across all sectors – residential, industrial, commercial, and institutional – as well as water required for municipal services and system losses (described above). It excludes water for regional customers, whose customer composition varies greatly. In 2023, Calgary's total per capita demand was 356 LPCD, down significantly from 518 LPCD in 2003, and below the 2021 national average of 401 LPCD[10].

Residential per capita demand is reported separately and focuses solely on household water use, including both indoor and outdoor use across single-family and multi-family dwellings. Calgary's residential LPCD is 171 (2023) – in 2021 it was 182 LPCD, below the 2021 national average of 223 LPCD[10].

WATER MANAGEMENT IN CALGARY'S PARKS

The City uses efficient watering and irrigation alongside technology to support healthy parks, recreational sites, and green spaces while conserving water. Since 2000, Calgary's Parks Water Management Strategy has helped reduce irrigation water use by nearly 1,000 ML even as the number of parks and open spaces has increased.

Today, Calgary stewards approximately 3,000 parks and irrigates over 1,200 hectares of open space. Many parks are also designated as Water Managed Sites, and many use non-potable water sources, including untreated river water (Bowness Park, Prince's Island, Baker Park), well water (Valley View), and stormwater runoff (Inland Athletic Park, Legacy Storm Pond, Nose Creek Recreation Centre). Strategically placed weather stations reduce water use through a central irrigation control system to ensure responsible and efficient use.

1.6.5 Use by customer sector

Calgary's residential customers – including both single-family and multi-family households – account for the largest share of water use in Calgary, representing approximately 60 per cent of billed consumption in 2023. Industrial, commercial, and institutional customers account for 31 per cent, regional customers account for 8 per cent, and municipal operations for 1 per cent.

This sectoral distribution has remained relatively consistent since 2008. Understanding these patterns supports the development of targeted conservation strategies that address the unique needs and opportunities within each customer group.

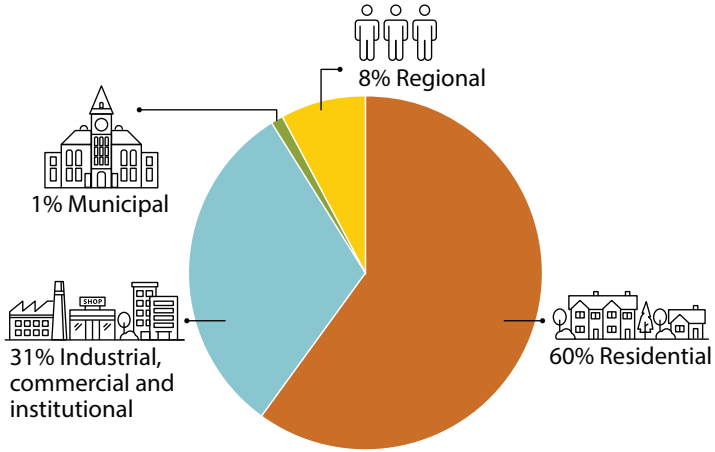


Figure 6: Percentage of water use by customer sector in 2023

1.6.6 Seasonal differences in water use and peak day demand

Water demand varies seasonally, with summer average daily demand up to 20 per cent higher than in winter largely due to outdoor activities such as irrigation, landscaping, building cooling, and construction. This seasonal increase reflects how warmer weather can drive additional water use beyond typical indoor and outdoor needs.

Peak day demand – the highest single day of water use each year – typically occurs in July or August after several hot, dry days. Although population growth contributes to higher peak demand over time, peak day volumes are primarily driven by weather and can fluctuate by more than 100 ML/day from year to year.

Peak day demand has remained below the 950 ML/day limit established in the 2005 *Water Efficiency Plan*. In 2023, for example, peak day demand was 784 ML/day, including Calgary and regional customers.

WHY PEAK DAY DEMAND MATTERS

Peak day demand occurs on the single day each year when Calgary uses the most water - typically in July or August after consecutive hot, dry days. On this day, water use can jump up to 40 per cent over average winter demand, placing pressure on the capacity of our infrastructure that treats, stores, and delivers water.

Managing for peak day demand is increasingly a key operational and planning consideration for water utilities, important for making system load more predictable. Most peak day events have a lead up and drop off period of water use associated with them. As a result, 'peak day events' require several days of higher than usual river withdrawal and production rates. By curbing peak day usage, municipalities can optimize infrastructure and operations, keep rates more stable for residents, protect river flows, and support reliable service delivery during periods of extreme heat or drought.

1.6.7 Water loss

Water loss within Calgary's distribution system is a key metric tracked under the broader category of non-revenue water – water that is treated and distributed but not billed to customers.

Environment Canada estimates that 13 per cent of municipal water is unaccounted for across Canada[11]. While some municipalities report lower loss rates – often below 10 per cent – others, particularly those with older or more complex infrastructure, may experience losses exceeding 50 per cent[11]. Calgary's water loss has risen from approximately 17 per cent in 2015 to 22 per cent in 2024. An independent assessment prepared by AECOM (2025) evaluated Calgary's water loss compared to peer utilities across North America, finding Calgary's water loss was higher than the median of 12 per cent[12].

A complementary key metric, the Infrastructure Leakage Index (ILI), compares actual leakage to levels considered technically achievable[13]. An ILI of 1 means leakage is at the best possible level for the system – fully optimized. Calgary's ILI in 2024 was 4.4, near the upper end of the ILI target range (3.0 – 5.0) developed by a consortium of major Alberta municipalities . This leakage is influenced by a range of system factors (e.g., infrastructure complexity, age, condition) and geotechnical conditions. While fully watertight systems are unrealistic, current water loss rates underscore the critical importance of investment in proactive leak detection and asset management practices. The City is committed to reducing water loss as a major opportunity to improve overall operational efficiency and support Calgary's long-term water security.

2

Part 2: Framework for action – structure and approach

Part 2 of this plan outlines key elements for a renewed *Water Efficiency Plan*, providing a clear roadmap to continue to reduce water demand and strengthening resilience through 2030 and toward 2050.

2.1 HOW THE *WATER EFFICIENCY PLAN* WAS DEVELOPED

The *Water Efficiency Plan* is built on a foundation of research and analysis, engagement, and prioritization to ensure it reflects Calgary's unique context – both today and into the future.

The following outlines key steps taken to shape the plan:

1. **Research and analysis**: The City analyzed historical and current water use data across residential, commercial, and institutional sectors, both indoors and outdoors. This included a review of trends following the implementation of the 2005 *"30-in-30" Water Efficiency Plan* to identify areas of success and opportunities for improvement. The City worked with internal and external subject matter experts to support research and evaluation. Academic literature, technical studies, and industry standards and guidance were reviewed to ensure the plan reflects leading practices in water efficiency and conservation. Key references included:
   - Alliance for Water Efficiency water conservation resources and best practice documents.
   - American Water Works Association (AWWA). (2021). *G480-20 Water Conservation and Efficiency Program Operation and Management Standard*.
   - Southern Alberta Institute of Technology (SAIT). (2021). *City of Calgary Water Efficiency Plan Research and Development Study*.
   - Mooreview Consulting. (2024). *Drought Financial Options Study for The City of Calgary*.

   A comparative review of municipalities across Canada and internationally was conducted to benchmark Calgary's performance and identify effective strategies in use elsewhere. Progress was also assessed against the updated urban sector targets outlined in the latest guidance from Alberta Municipalities[14].

2. **Engagement:** Engagement was central throughout the development of this plan to understand perspectives and priorities, and to shape programs and actions. This plan builds on the public engagement conducted for the 2023 *Drought Resilience Plan* which gathered input from subject matter experts, industry and business representatives, the development sector, Indigenous communities, and Calgarians with a broad range of social and demographic characteristics[15]. These contributions helped elevate water conservation as a shared priority across Calgary.

   Additional insights were drawn from Water Services' customer research program on values and priorities, as well as learnings through recent water shortage events which brought water conservation to the forefront for Calgarians.

   Throughout 2024 and 2025, an extensive engagement program was carried out with a diverse range of industry stakeholders and key partners to better understand operational needs, barriers, and opportunities for collaboration. These discussions ensured that proposed actions are practical and impactful.

   In November of 2025, public engagement was conducted to confirm that the implementation actions in this plan align with community values and are positioned for success[16]. This engagement provided critical context on community expectations, concerns, and readiness to act, which directly informed the development of the *Water Efficiency Plan*.

3. **Prioritizing actions:** A broad suite of potential actions for implementation were reviewed, informed by criteria including water savings, customer impact, cost and resource requirements, probability of impact, urgency, equity, implementation readiness, and corporate alignment. This process helped prioritize high-impact, cost effective, and equitable strategies.

   To support prioritization and long-term planning, future water demand was forecasted under a range of growth scenarios to 2050, considering factors such as population growth, climate, and water utility infrastructure upgrade and expansion plans. Each major action was modeled to estimate potential water savings and its contribution to reducing overall water demand, while acknowledging the uncertainty inherent in long-range estimates – particularly in predicting human behavior and adoption of conservation measures.

The analysis also evaluated the feasibility of achieving targeted reductions, alignment with benchmarking data, and whether projected savings would align with Calgary's long-term water needs. Based on these findings, a long-term water efficiency goal was established, supported by interim targets to guide progress over time.

The **2050 Vision** paints the big picture, describing what success will look like mid-century. It functions as a guiding compass, ensuring every action aligns with Calgary's plans.

Our 2050 Vision

Water efficiency has been embedded as a key part of Calgary's integrated water management approach. It supports protecting the rivers we share, strengthening community resilience, and ensuring water is available for all — now and into the future.

BY 2050, WE ENVISION A CALGARY THAT:

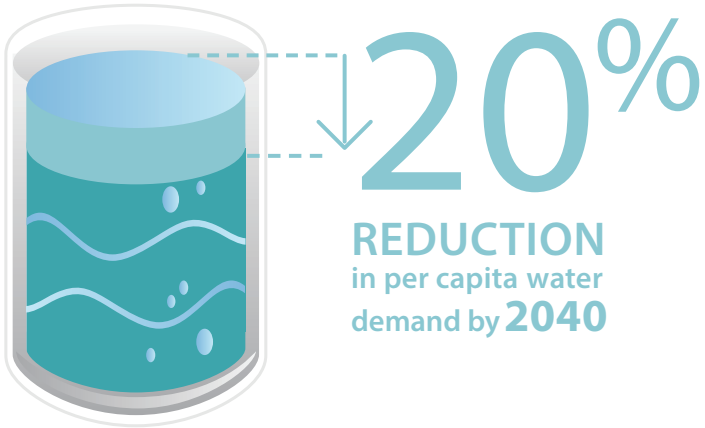
- Practices water-wise habits as part of everyday life
- Uses the right water for the right purpose
- Designs landscapes that don't rely on treated drinking water
- Plans community growth and economic development with water in mind
- Leverages real-time data to guide education and action
- Manages a resilient and reliable water infrastructure system

2.3 2040 GOAL

The **2040 Goal** translates the vision into a commitment with a measurable outcome:

The 2040 Goal: To protect the rivers we share and support a growing city, Calgary is committed to a 20 per cent reduction in per capita water demand by 2040.

This reduction is measured against a 2023 baseline, setting a clear starting point for renewed progress. This goal helps Calgary grow and thrive without putting extra strain on the rivers or our water system. It serves as the cornerstone for planning efforts focused on water efficiency and conservation – guiding programs, investments, and policies that manage water demand and support long-term water resiliency. Meeting this goal will require The City, residents, and the industrial, commercial, and institutional sector to work together to reduce water demand.



2.4 INDICATORS AND TARGETS

Indicators are the tools for accountability. They track progress toward the **2040 Goal** showing whether water demand trends align with forecasts. **Targets** provide measurable benchmarks, and if trends differ – such as higher-than-expected water demand or slower reductions – The City can adjust actions, accelerate programs, or introduce new initiatives. Because forecasting involves inherent uncertainty from factors like population growth, climate variability, and community water-use habits, adaptive management ensures the plan remains effective even when assumptions change. This approach relies on a continuous feedback loop of monitoring, evaluation, adjustment, and implementation, keeping the approach resilient and responsive over time.

Targets for total per capita demand, residential per capita demand, peak day demand, and river withdrawals are derived from demand forecast modeling and achieved through actions outlined in the plan. Water loss and water metering technology replacement targets are operational objectives that will be updated in alignment with regular City business cycles.

Each indicator includes a baseline and a target, making progress measurable and transparent. These serve to:

- Monitor progress towards the **2040 Goal**,
- Guide program design and implementation,
- Signal when adjustments may be needed to keep the plan on track as conditions evolve, and
- Ensure transparency and accountability throughout implementation.

Together, these indicators provide a comprehensive view of how effectively Calgary is managing its water resources and demonstrate how the city is building resilience for the future.

Progress will be shared openly through The City's Climate & Environment Dashboard, promoting transparency, visibility, and collective ownership towards progress.

Indicator	Description	Baseline (2023)	Target*	Rationale and Assumptions
Total Per Capita Demand (LPCD)	Total water use by the community, per person, per day. It is calculated by adding up all the water used by homes, businesses, institutions, and water lost through leaks and other unaccounted-for uses, then dividing by the city's population.	356 LPCD	Achieve a 20 per cent reduction in per capita demand by 2040 315 LPCD by 2030 285 LPCD by 2040	The target of 315 LPCD by 2030 and 285 LPCD by 2040: • Includes water used in Calgary only. • Is based on water demand forecast modelling. • Assumes all actions in the *Water Efficiency Plan* are successful in managing water demand as the City grows.
Residential Per Capita Demand (LPCD)	The average volume of water used by a Calgary residential customer, per person, per day. This includes both single family and multi-family dwellings.	171 LPCD	160 LPCD by 2030 150 LPCD by 2040	The target of 160 LPCD by 2030 and 150 LPCD by 2040: • Includes only water used by residential households (both single family and multi-family) in the City of Calgary. • This target is the result of anticipated reductions in current residential demand related to the Outdoor Watering Schedule, advanced metering technology, and potential conservation oriented water rates. • Gradual adoption of low water use fixtures in new builds and renovations will likely add to the impact on these values.
Peak Day Demand (ML)	The single day within a year when total water use (demand) in Calgary and by regional customers is the highest.	784 ML	Remain below 908 ML/day through 2040	The target of 908 ML per day by 2040: • Keeps Calgary's future water use within the limits of water treatment and distribution capacity. Water treatment plant capacity is approximately 950 ML/day per day in 2025. • Is based on water demand forecast modelling. • Assumes all actions in the Water Efficiency Plan are successful in managing demand as the City grows, and the corresponding impact to peak day demand is applied.
River Withdrawals (ML)	The total volume of water drawn from the rivers in a year for the water treatment plants to meet the water demand of Calgary and regional customers.	201,904 ML/year	Remain below 233,000 ML/year through 2040	The target of remaining below 233,000 ML/year through 2040: • Includes river withdrawals to support Calgary and regional customers. • Is based on water demand forecast modelling. • Target is based on average day demand over 365 days per year.
Industrial Commercial and Institutional Demand	ICI indicator(s) will be developed alongside sector specific target(s), as part of the 2026-2030 Action Plan.	N/A	Establish ICI sector target(s) by 2030	Water efficiency target(s) for the ICI sector will be informed by early actions in the Water Efficiency Plan such as water audits and a water efficient business program. Given the sector's diversity, additional data is needed to develop meaningful targets and support engagement with the ICI sector.
Water Loss (ILI)	The Infrastructure Leakage Index (ILI) is a performance indicator used for water utilities, to assess real water losses in a distribution system, calculated as the ratio of current leakage to the lowest technically achievable leakage.	4.41 ILI (2024)	Initial Target: ILI of 3.0 by 2030	The target of an Infrastructure Leakage Index of 3.0 by 2030: • Aligns with current City of Calgary commitments under the Accelerated Water Loss Reduction Program. • Reflects a feasible improvement in water loss from approximately 22 per cent in 2024 to 18 per cent by 2030. • Note that the target may be refined over time as implementation progresses, new information becomes available, and best practices evolve.
Water Meter Technology Replacement (per cent)	Replacement of aging water meter technology with modern, automated devices through a multi-year city-wide program.	0 per cent metering technology replacement	100 per cent transition to advanced metering technology by 2031	The target of 100 per cent transition to advanced metering technology replacement by 2031: • Aligns with City of Calgary commitments through the Water Meter Replacement Program and implementation timelines.

2.5 ACTION PLAN

The **Action Plan** is the engine of the strategy, translating the **2040 Goal** into practical, actionable steps. It outlines actions and supporting tasks across municipal operations, residential customers, and the industrial, commercial, and institutional sector.

The **Action Plan** sets the direction for implementation by integrating policy and regulation, incentives, infrastructure investment, education and outreach, partnerships, and research and innovation. Together, these approaches are designed to deliver measurable water savings that contribute to achieving the **2040 Goal.**

The actions identified represent the highest impact opportunities to reduce water demand and strengthen water resilience in the near term, while also laying the groundwork for sustained, longterm progress.

2.6 WATER DEMAND FORECASTING

To update the Water Efficiency Plan, seven scenarios were modelled to estimate water demand and potential water savings to 2050. Each scenario tests a different type of action compared with Calgary's current approach.

While the Water Efficiency Plan identifies 11 actions, seven scenarios were modelled as some actions cannot be reliably represented in the demand forecasting model at this time.

The modelling shows that while each action helps reduce water demand, no single action is enough on its own. All actions are needed to reach Calgary's 2040 water efficiency goal. A balanced mix of proven approaches, used successfully in other jurisdictions, will manage uncertainty, while providing practical support to Calgarians to improve indoor and outdoor water efficiency.

Some actions also deliver benefits beyond total water savings. For example, an Outdoor Water Schedule reduces strain on infrastructure during peak demand periods, while water efficiency programs help Calgarians build lasting water-saving habits. This plan is not just about meeting targets – it's about people, habits, and managing risk. Together, these actions move Calgary toward our 2040 goal.

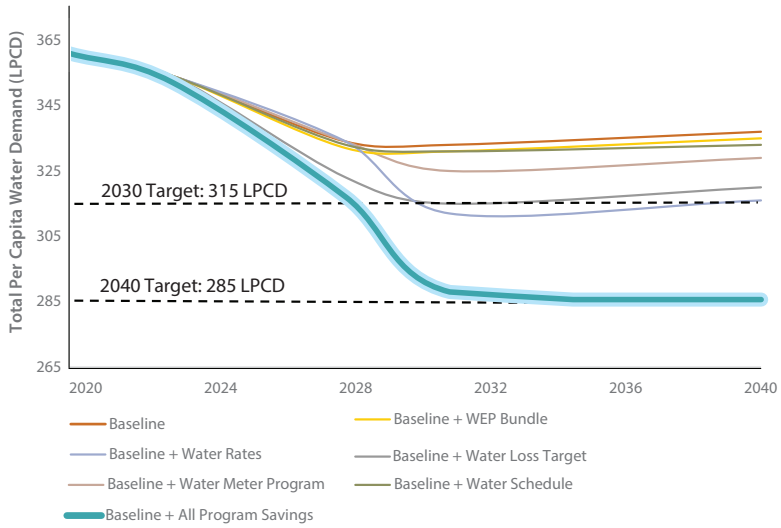


Figure 7: Forecasted water savings for each scenario individually and for the combined package of measures. Water savings realized through these tactics may be achieved earlier through accelerated implementation and demand management measures.*

*The WEP bundle scenario includes savings from a suite of water conservation and efficiency programs in the residential and ICI sectors.

2.7 REPORTING AND PLAN RENEWAL

Calgary's water efficiency and conservation needs will continue to evolve as the city grows, faces new challenges, and capitalizes on new opportunities and technologies. Forecasting future water-use also carries inherent uncertainty.

Ongoing reporting

The City will continue to provide regular updates on indicators and trends through the Climate & Environment Dashboard, which serves as the primary platform for tracking progress and sharing results with the public. This continuous reporting promotes transparency, strengthens accountability, and keeps Calgarians informed about progress toward the *Water Efficiency Plan*'s goal. It also supports continuous feedback and enables timely program adjustments based on data and emerging trends.

Review and renewal

In addition to ongoing reporting, The City will conduct regular reviews of the **Action Plan** aligned with business planning and budgeting cycles to ensure coordination across departments and responsible resource allocation. This structured process will ensure the *Water Efficiency Plan* remains relevant, actionable, and aligned with Calgary's **2050 Vision** for water resilience. It is designed to support adaptive management and continuous improvement, enabling the Plan to respond to emerging trends, technological advancements, and community priorities.

The review will include:

- **Assessing implementation actions**
  Evaluate whether actions reflect current best practices, technological advancements, expected water savings, and partner feedback – and adjust as needed.
- **Integrating with City programs and processes**
  Coordinate with business planning and budgeting cycles to ensure resource allocation supports program delivery and financial sustainability.
- **Reviewing indicators and targets**
  Confirm alignment with the latest data, water demand trends, and progress toward the **2040 Goal** and **2050 Vision**. Adjustments may be considered where necessary to maintain relevance and feasibility, recognizing that targets remain a core element of the *Water Efficiency Plan* and should not be changed simply due to short-term implementation challenges.
- **Responding to emerging challenges**
  Address new risks and opportunities – including unexpected trends in water demand, climate variability, industry composition, population growth, infrastructure risks, and regulatory changes – to maintain resilience and adaptability. If water demand reductions do not align with forecasts, accelerated or additional actions will be considered to close the gap and keep progress on track.

Together, these mechanisms create an agile approach to long-term implementation.

3

Part 3: Calgary's Water Efficiency Action Plan

Part 3 sets out how Calgary will deliver on its longterm commitment to water efficiency. It translates the 2050 Vision, 2040 Goal, and Indicators and Targets established in Part 2: Framework for Action into a focused and implementable program of work.

The 2026-2030 Action Plan represents the first phase of implementation. It is designed to deliver measurable results within the next business planning and budgeting cycle, while laying the foundation for sustained progress toward the goal of reducing per capita water demand and advancing Calgary's longterm water efficiency vision through 2050 and beyond.

3.1 2026-2030 ACTION PLAN OVERVIEW

The **2026-2030 Action Plan** operationalizes the *Water Efficiency Plan*'s **2040 Goal** over the next business planning and budgeting cycle. It aims to:

- **Address Calgary's most pressing water efficiency challenges**, including peak day demand, system leakage, and supporting Calgarians.
- **Leverage opportunities** created by major utility projects and emerging technologies.
- **Build momentum** through actions that are practical, impactful, and accessible.

It connects strategy to implementation through four key elements:

Focus areas, Customer sectors, Implementation type, and Actions.

- **Focus areas** identify Calgary's highest-impact priorities. These areas provide a strategic lens for selecting and sequencing actions.
- **Customer sectors** identify who the actions are designed for. Actions are tailored for municipal operations, residential households, and industrial, commercial, and institutional customers recognizing the need to work together to make every drop count.
- **Implementation type** outline how actions are delivered. Each action draws on a mix of tactics, ensuring a comprehensive approach that addresses multiple dimensions of water use, to achieve scalable and sustainable results.
- **Actions** specify what will be implemented over the next business planning and budgeting cycle. Eleven actions, supported by detailed tasks, provide clear, actionable steps to advance Calgary's water efficiency priorities.

3.2 FOCUSING ACTIONS

Achieving Calgary's water efficiency goal requires clarity on where to act first. The following Focus areas were identified through analysis of water demand trends, water supply and system challenges, and engagement insights. They build on work The City is already doing and signal our commitment to go further. They represent the highest-impact opportunities to reduce water demand and strengthen water resilience in the short term while laying the groundwork for long-term action.

Focus areas

Fixing leaks and optimizing system performance
Proactively detect and repair leaks and improve infrastructure efficiency to reduce water loss and maintain reliable service.

- Indicator: Water Loss

Using data and technology to make timely and informed decisions
Leverage water use data and digital tools to support transparent, evidence-based planning and timely customer use and performance tracking.

- Indicator: Water Meter Technology Replacement

Protecting water availability during high-demand times
Reduce peak water use during hot, dry periods to ease strain on infrastructure and ensure stable availability of water.

- Indicator: Peak Day Demand

Protecting the Bow and Elbow Rivers
Manage water use to minimize environmental impacts and support the health and resilience of Calgary's river systems.

- Indicator: River Withdrawals

Empowering Calgarians and businesses to use water wisely
Expand access to education and programs that help residents and businesses make informed choices and adopt water-efficient practices.

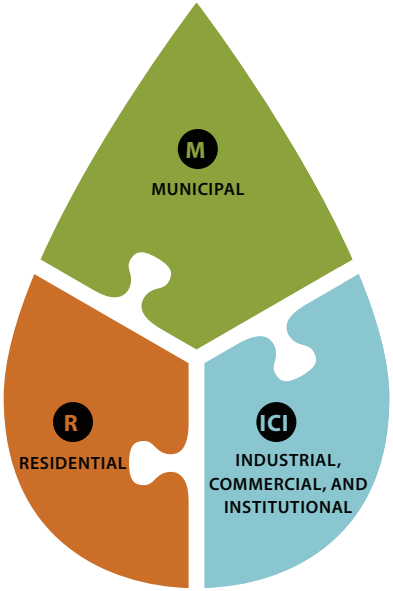
- Indicators: Per Capita Demand, Residential Demand, and Industrial, commercial, and institutional Demand

Planning for a financially sustainable water future
Align conservation efforts with sound financial planning to maintain affordable water services while supporting necessary investments for the future.

- Indicator: Per Capita Demand

3.3 ALIGNING ACTIONS TO CUSTOMER SECTORS

Water efficiency and conservation is not one-size-fits-all. Calgary's water demand patterns vary significantly across residential, municipal, and Industrial, commercial, and institutional sectors, each with distinct opportunities and constraints. Aligning actions to these sectors ensures programs are practical, equitable, and effective.



Municipal operations represent a small share of total water demand, however The City plays a leadership role in advancing efficiency and conservation across the community through utility operations, standards, modeling best practices, and implementing public programs.

Residential customers account for nearly two-thirds of Calgary's water demand. Actions in this sector focus on promoting water-wise landscaping and outdoor water management practices, along with targeted education and incentives to reduce water use both outdoors and indoors.

Industrial, Commercial, and Institutional customers account for nearly one-third of Calgary's water demand and require tailored approaches to reflect diverse operational needs across industries and institutions.

By focusing on what works best for each customer sector, The City can make water efficiency and conservation more accessible and impactful. Residents, businesses, and municipal operations all play a role – and benefit – in creating a resilient water system and sustainable water future for Calgary.

3.4 HOW ACTIONS ARE DELIVERED

Each action applies one or more Implementation type to achieve results. Advancing water efficiency and conservation requires a diverse and coordinated set of tools to deliver meaningful and lasting outcomes. Drawing on lessons from leading municipalities across North America demonstrates that no single initiative can, on its own, achieve and sustain Calgary's water efficiency goal.

Success depends on the combined and reinforcing impact of policies and regulations, incentives, infrastructure investments, education and outreach, partnerships, and research and innovation working together. This integrated, multifaceted approach ensures the Plan delivers both nearterm results and longterm water resilience.

Tools like infrastructure investments and policy frameworks form the backbone of long-term water resilience. However, these measures achieve their greatest impact when complemented by education and outreach initiatives. While such outreach programs may not yield immediate, quantifiable savings, they foster the water-use changes essential for sustained efficiency over time. This integrated approach – combining infrastructure investments, regulatory tools, and community outreach – delivers lasting water savings and strengthens Calgary's ability to adapt to future challenges.

Implementation types

These **Implementation types** represent the "how" behind the **Action Plan**:

POLICY AND REGULATION

Policy and regulation

Actions that establish or strengthen bylaws, standards, and design guidelines to embed water efficiency and conservation into Calgary's built environment and operational practices.

INCENTIVES

Incentives

Programs and initiatives that motivate adoption of water-efficient technologies and conservation practices through tools such as rebates, added flexibility during outdoor water restrictions, or other supportive mechanisms.

INFRASTRUCTURE INVESTMENT

Infrastructure investment

Initiatives that modernize Calgary's water system, including completion of the transition to advanced water meter technology, enhanced leak detection, targeted asset renewal, and improvements to internal processes and systems to improve operational efficiency, system reliability, and data-driven decision making.

EDUCATION AND OUTREACH

Education and outreach

Campaigns and resources that empower residents, businesses, and institutions to make informed choices about water use and sustainable behaviours.

PARTNERSHIPS

Partnerships

Collaborative efforts with industry, community organizations, and local partners to co-create solutions, share best practices, and expand program reach.

RESEARCH AND INNOVATION

Research and innovation

Studies, pilots, and data-driven analyses that inform program design, measure outcomes, and identify emerging opportunities for improvement.

3.5 2026-2030 ACTION PLAN

The 2026-2030 Action Plan represents the first phase of implementation, focusing on practical steps that deliver measurable progress while building the foundation for long-term savings. The Action Plan also acknowledges future steps towards achieving the long-term vision, and 2040 goal.

The actions are organized by **customer sector** and outline what supporting tasks will be taken. They detail the projected scale of water savings, the anticipated timelines for progress, and how each action aligns with advancing Calgary's highest-impact opportunities and associated **indicators**.

ACTION NUMBER AND NAME

THE SECTORS INVOLVED IN DELIVERING AND SUPPORTING WATER SAVINGS.

AN ESTIMATED PERCENTAGE OF ANNUAL WATER SAVINGS

Relative to Calgary's total demand, contributing toward the 20 per cent reduction in per capita water demand by 2040.

<1% savings 1-5% savings >5% savings

THE FOCUS AREAS GUIDE EACH CUSTOMER SECTOR'S ACTIONS, WHICH TOGETHER DRIVE MEASURABLE WATER SAVINGS TOWARD CALGARY'S LONG-TERM GOALS.

EACH TASK INCLUDES THE FOLLOWING:

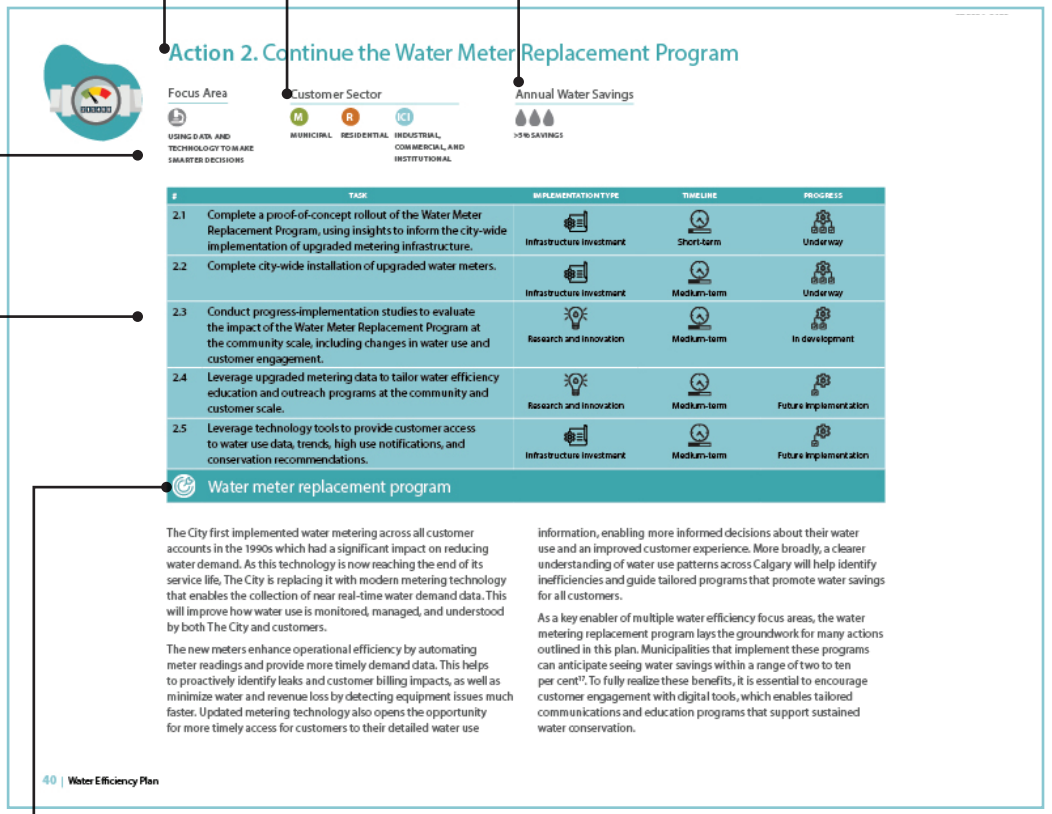
IMPLEMENTATION TYPE
The method used to deliver the task.

TIMELINE
When the task is expected to be implemented and begin delivering water savings or other forms of support.

- Short: within 1 year
- Medium: within 4 years
- Long: beyond 4 years

PROGRESS
the current stage of work

- Future implementation: the action is identified in this cycle of the plan but has not yet begun.
- In development: planning, design, or preparatory work is occurring, but implementation has not yet begun.
- Underway: work has started and is actively progressing, with initial milestones being achieved.



Action 2. Continue the Water Meter Replacement Program

Focus Area: USING DATA AND TECHNOLOGY TO MAKE SMARTER DECISIONS

Customer Sector: M MUNICIPAL, R RESIDENTIAL, ICI INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings: >5% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
2.1	Complete a proof-of-concept rollout of the Water Meter Replacement Program, using insights to inform the city-wide implementation of upgraded metering infrastructure.	Infrastructure Investment	Short-term	Underway
2.2	Complete city-wide installation of upgraded water meters.	Infrastructure Investment	Medium-term	Underway
2.3	Conduct progress-implementation studies to evaluate the impact of the Water Meter Replacement Program at the community scale, including changes in water use and customer engagement.	Research and Innovation	Medium-term	In development
2.4	Leverage upgraded metering data to tailor water efficiency education and outreach programs at the community and customer scale.	Research and Innovation	Medium-term	Future implementation
2.5	Leverage technology tools to provide customer access to water use data, trends, high use notifications, and conservation recommendations.	Infrastructure Investment	Medium-term	Future implementation

Water meter replacement program

The City first implemented water metering across all customer accounts in the 1990s which had a significant impact on reducing water demand. As this technology is now reaching the end of its service life, The City is replacing it with modern metering technology that enables the collection of near real-time water demand data. This will improve how water use is monitored, managed, and understood by both The City and customers.

The new meters enhance operational efficiency by automating meter readings and provide more timely demand data. This helps to proactively identify leaks and customer billing impacts, as well as minimize water and revenue loss by detecting equipment issues much faster. Updated metering technology also opens the opportunity for more timely access for customers to their detailed water use information, enabling more informed decisions about their water use and an improved customer experience. More broadly, a clearer understanding of water use patterns across Calgary will help identify inefficiencies and guide tailored programs that promote water savings for all customers.

As a key enabler of multiple water efficiency focus areas, the water metering replacement program lays the groundwork for many actions outlined in this plan. Municipalities that implement these programs can anticipate seeing water savings within a range of two to ten per cent[17]. To fully realize these benefits, it is essential to encourage customer engagement with digital tools, which enables tailored communications and education programs that support sustained water conservation.

40 | Water Efficiency Plan

TARGET/INDICATOR

Municipal water efficiency and conservation actions

As Calgary's water service provider, The City has a responsibility to lead by example on water efficiency. The City's role in advancing water efficiency and conservation is cross-cutting and community-wide, including:

- Managing The City's water utility and water infrastructure for reliable water service delivery.
- Policy and regulatory leadership to guide water efficiency across sectors.
- Public education, outreach, and partnerships to promote water-saving practices in homes, businesses, and organizations.

The City-led actions outlined in this section reflect both strategic efforts that influence water use across Calgary, and initiatives that improve water efficiency within City operations.

DID YOU KNOW?

About **1.4 per cent of Calgary's total metered water demand is used to support activities directly managed by The City.** This includes water used within City-owned assets, facilities, and infrastructure, as well as for irrigation in parks and recreation areas, street cleaning, firefighting, and pipe flushing and maintenance.

Action 1. Advance the Accelerated Water Loss Program

Focus Area

FIXING LEAKS AND OPTIMIZING SYSTEM PERFORMANCE

Customer Sector

M

MUNICIPAL

Annual Water Savings

>5% SAVINGS

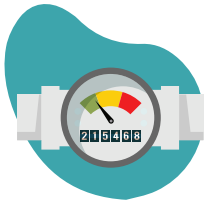
#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
1.1	Continue to implement initiatives under The City's Accelerated Water Loss Program to deliver measurable reductions in water loss.	Infrastructure investment	Short-term	Underway
1.2	Update the Water Loss Strategy, including establishing a longer-term (post-2030) water loss target and supporting Action Plan.	Policy and regulation	Medium-term	In development
1.3	Utilize newly available metering data to enhance water loss monitoring and leak response, with a focus on faster detection and resolution of customer-side leaks.	Research and innovation	Medium-term	Future implementation

Reduce water loss

As Calgary continues to grow, investing in water loss reduction is critical to continue to meet service demands while minimizing required infrastructure costs and the impacts of increased raw water withdrawal on the natural environment.

In 2024, The City initiated the Accelerated Water Loss Program, a major effort to increase leak detection, expand repair and maintenance activities, improve water meter and data management, and accelerate pipe replacement. This program is an essential component of reaching the ILI target of 3.0 by 2030 and other targets in the *Water Efficiency Plan*. Achieving this target by 2030 would mean reducing system water loss from approximately 22 per cent (ILI 4.4) in 2024 to 18 per cent (ILI 3.0) in 2030. The City is also prioritizing capital investments to improve infrastructure resilience and redundancy, which may accelerate further reductions in system water loss.

Looking ahead, The City will update a water loss strategy to set targets for water loss beyond 2030 that build on best practices, drive innovation, and integrate new technologies.



Action 2. Continue the Water Meter Replacement Program

Focus Area

USING DATA AND TECHNOLOGY TO MAKE SMARTER DECISIONS

Customer Sector

M MUNICIPAL

R RESIDENTIAL

ICI INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

>5% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
2.1	Complete a proof-of-concept rollout of the Water Meter Replacement Program, using insights to inform the city-wide implementation of upgraded metering infrastructure.	Infrastructure investment	Short-term	Underway
2.2	Complete city-wide installation of upgraded water meters.	Infrastructure investment	Medium-term	Underway
2.3	Conduct progress-implementation studies to evaluate the impact of the Water Meter Replacement Program at the community scale, including changes in water use and customer engagement.	Research and innovation	Medium-term	In development
2.4	Leverage upgraded metering data to tailor water efficiency education and outreach programs at the community and customer scale.	Research and innovation	Medium-term	Future implementation
2.5	Leverage technology tools to provide customer access to water use data, trends, high use notifications, and conservation recommendations.	Infrastructure investment	Medium-term	Future implementation

Water meter replacement program

The City first implemented water metering across all customer accounts in the 1990s which had a significant impact on reducing water demand. As this technology is now reaching the end of its service life, The City is replacing it with modern metering technology that enables the collection of near real-time water demand data. This will improve how water use is monitored, managed, and understood by both The City and customers.

The new meters enhance operational efficiency by automating meter readings and provide more timely demand data. This helps to proactively identify leaks and customer billing impacts, as well as minimize water and revenue loss by detecting equipment issues much faster. Updated metering technology also opens the opportunity for more timely access for customers to their detailed water use information, enabling more informed decisions about their water use and an improved customer experience. More broadly, a clearer understanding of water use patterns across Calgary will help identify inefficiencies and guide tailored programs that promote water savings for all customers.

As a key enabler of multiple water efficiency focus areas, the water metering replacement program lays the groundwork for many actions outlined in this plan. Municipalities that implement these programs can anticipate seeing water savings within a range of two to ten per cent[17]. To fully realize these benefits, it is essential to encourage customer engagement with digital tools, which enables tailored communications and education programs that support sustained water conservation.

Action 3. Introduce an Outdoor Watering Schedule

Focus Area

PROTECTING WATER AVAILABILITY DURING HIGH-DEMAND TIMES

Customer Sector

M MUNICIPAL

R RESIDENTIAL

ICI INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

1-5% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
3.1	Update Calgary's Water Utility Bylaw to establish a permanent Outdoor Watering Schedule.	Policy and regulation	Short-term	Underway
3.2	Launch a city-wide communications and awareness campaign to support the introduction of the new Outdoor Watering Schedule.	Education and Outreach	Short-term	Underway
3.3	Develop internal training materials for Community Peace Officers to support education and enforcement of the Outdoor Watering Schedule.	Infrastructure investment	Short-term	In development
3.4	Provide ongoing education to residents and businesses on best practices for outdoor irrigation in alignment with the Outdoor Watering Schedule.	Education and Outreach	Short-term	In development

Peak day demand

To help manage Calgary's water resources more sustainably and prepare for future challenges related to climate uncertainty and increasing demand, The City is introducing a year-round Outdoor Watering Schedule.

This schedule offers a practical, city-wide approach to managing peak day water demand. Outdoor watering schedules are already common in southern Alberta – including in Airdrie, Okotoks, Cochrane, Chestermere, and Strathmore. Meeting peak day water demand is a key challenge facing Calgary's water system. By encouraging Calgarians to water outdoors during cooler times of day and distributing irrigation more evenly throughout the week, the schedule reduces water lost to evaporation and eases strain on the capacity of our water system.

This schedule is designed to be reasonable and meaningful. Watering is allowed during cooler times of day, with clear exceptions for newly planted trees, shrubs, and food gardens. It reflects what Calgarians shared during engagement – balancing household and commercial water needs with efficient water management. These measures reflect best practices for efficient outdoor water use in Calgary's dry climate and align with approaches already adopted by other communities within the Bow River watershed.

The initiative aims to raise public awareness about responsible water use, encourage efficient outdoor watering habits, and build familiarity with scheduled outdoor watering. While the Outdoor Watering Schedule is meant to be the smart way to water, year-round, it also helps prepare the community for any potential outdoor water use restrictions during drought or water shortage events.

Ultimately, the Outdoor Watering Schedule is more than a conservation measure – it is a proactive and high-benefit tactic that promotes sustainable water use, reduces strain on our water infrastructure during peak periods, and aligns Calgary with responsible regional water management practices.

Action 4. Expand the Water Managed Sites Program

Focus Area

PROTECTING WATER AVAILABILITY DURING HIGH-DEMAND TIMES

Customer Sector

M MUNICIPAL

R RESIDENTIAL

ICI INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
4.1	Review and streamline the application and intake process for new and existing Water Managed Sites Program participants.	Infrastructure investment	Short-term	Underway
4.2	Work with existing and potential participants to identify barriers to program participation and explore opportunities to adjust program design to improve uptake.	Partnerships	Short-term	In development
4.3	Explore alternative delivery mechanisms through partnerships with industry, including potential training and certification opportunities for professional associations to perform irrigation system audits.	Partnerships	Medium-term	Future implementation

Peak day demand

The Water Managed Sites program offers an incentive-based framework designed to support property owners – both public and private – in upgrading their irrigation systems for more efficient water use. Sites that achieve certification by implementing smart irrigation technologies such as weather-based controllers, soil moisture sensors, leak detection systems, proper cross-connection controls, and annual performance reporting are granted greater flexibility during periods of water shortage, including when staged Outdoor Water Use Restrictions are in effect.

This flexibility will also apply under the year-round Outdoor Watering Schedule, recognizing the proactive efforts of certified sites to manage water responsibly.

By promoting the adoption of advanced irrigation technologies, regular performance monitoring, and audit-based certification, the program supports more efficient management of green infrastructure, reduces pressure on the water system during peak demand, and helps maintain Calgary's tree canopy and recreation opportunities in public spaces. The program also enables property managers to play a meaningful role in achieving Calgary's water conservation goals.

Action 5. Strengthen water efficiency regulations, standards, and design guidelines

Focus Area

PROTECTING THE BOW AND ELBOW RIVERS

Customer Sector

M MUNICIPAL

R RESIDENTIAL

ICI INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
5.1	Update the Low Water Use Fixtures requirements in Calgary's Water Utility Bylaw to align with current best practices for water-efficient building design.	Policy and regulation	Short-term	Underway
5.2	Update The City's Sustainable Building Guide to include guidance for water-efficient building design.	Policy and regulation	Short-term	Underway
5.3	Incorporate water efficiency measures within landscape design and irrigation standards in the Zoning Bylaw, including but not limited to: Improved soil volume requirements, Efficient irrigation system design standards, Water intensive turfgrass maximums	Policy and regulation	Short-term	Underway
5.4	Establish guidelines and standards for water-wise turfgrass types.	Policy and regulation	Short-term	Future implementation
5.5	Advance policies that reduce the use of potable water for activities such as irrigation, non-drinking water uses in buildings, and other areas	Policy and regulation	Long-term	Future implementation

River withdrawals

Municipalities play a key role in shaping sustainable urban development through regulatory tools that promote infrastructure efficiency and resource resilience. In Calgary, bylaws, design guidelines, and development standards provide a consistent framework for advancing water-efficient practices across both public and private sectors.

These tools influence early-stage decisions – such as site layout, irrigation design, fixture selection, and landscaping – that have lasting impacts on water demand. Clear and well-communicated requirements offer predictability for developers, designers, and property owners, while supporting broader city-building objectives.

When paired with targeted incentives and education, regulation becomes more accessible and effective, helping stakeholders meet requirements and adopt best practices. This integrated approach of aligning policy, guidance, and support ensures water efficiency is embedded throughout Calgary's buildings and landscapes in practical, equitable, and enduring ways.

Action 6. Pursue Conservation-Oriented Rate Structures

Focus Area

PLANNING FOR A FINANCIALLY SUSTAINABLE WATER FUTURE

Customer Sector

MUNICIPAL RESIDENTIAL

Annual Water Savings

>5% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
6.1	Evaluate the suitability of various conservation-oriented rate structures through The City's Cost of Service Study.	Research and innovation	Medium-term	Underway
6.2	Identify transition steps from the current rate structure to any recommended conservation-oriented model for the upcoming rate cycle, including assessment of billing system needs.	Research and innovation	Medium-term	Future implementation
6.3	If a conservation-oriented rate structure is recommended, prepare a proposal for Council that includes the rate design, implementation plan, transition strategy, and associated budget requirements.	Research and innovation	Medium-term	Future implementation

Residential demand

Calgarians and businesses pay two types of charges for water services: a basic service charge that helps cover the fixed costs of maintaining and delivering water, and a usage charge based on how much water they actually used each month. These rates are designed to cover the cost of water services – no funding comes from property taxes.

As Calgary plans for a more water-efficient future, The City is exploring whether conservation-oriented rate structures could help manage water demand. Conservation-oriented rates are among the most effective tools to influence customer water use behaviour and are common practice among many water utilities (e.g., Okotoks, Cochrane, Denver)[18]. The City is evaluating rate options that encourage water efficient use, such as block rates or shortage surcharges. Any official adjustments would follow The City's rate-setting process, which includes a financial cost of service study every business planning and budgeting cycle to ensure rates remain fair and continue to fully fund water services. Affordability and equity questions, such as impacts on larger households, low-income households, or residents who grow food, will be carefully considered.

Public feedback from the *2022 Drought Resilience Plan* engagement and 2024 public opinion research shows general support for rate-based strategies to promote conservation[15, 6]. Through engagement for the *Water Efficiency Plan*, Calgarians shared the importance of fair and affordable water rates, especially for larger and lower-income households[16]. They also emphasized that any rate changes must be transparent and supported with clear information and tools to help Calgarians understand and manage their water use[16].

As work continues, The City will consider key questions raised through engagement, while ensuring the financial sustainability of Calgary's water utility. Questions include:

- What amount of water is considered efficient for households of different sizes?
- How might revised rate structures affect affordability, particularly for low-income and multi-generational households?
- How can rate structures balance the system's need for stable, cost-recovery revenue with the need to keep water rates affordable?
- What considerations are needed for residents who grow food or support Calgary's urban canopy and depend on water for these purposes?

Action 7. Expand access to water efficiency programs

Focus Area

EMPOWERING CALGARIANS AND BUSINESSES TO USE WATER WISELY

Customer Sector

M MUNICIPAL R RESIDENTIAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
7.1	Pilot and evaluate an integrated water and energy home upgrade program for income-qualified Calgarians, and use the results to determine whether to advance ongoing program iterations.	Education and Outreach	Medium-term	Underway
7.2	Expand access to water efficiency programs, which includes a focus on empowering Calgarians who may face barriers to participation, to reduce household water use.	Education and Outreach	Short-term	In development
7.3	Incorporate community feedback from Calgarians with a broad range of social and demographic characteristics to improve existing programs and explore opportunities for expanded equitable education and outreach.	Education and Outreach	Medium-term	Underway

Residential demand

Water efficiency isn't just about saving water, it is about helping people reduce costs and maintain safe, reliable homes. The City is committed to ensuring that water-saving programs are accessible and benefit a diverse range of residential customers, including those who may face barriers to participation. Through engagement for the *Water Efficiency Plan*, Calgarians emphasized the importance of affordability and fair access to water-efficiency programs, and the need for practical supports that meet the needs of diverse Calgarians, for example low-income households, renters, seniors, people with disabilities, and multigenerational families[16].

Many older homes in Calgary have outdated plumbing and fixtures that limit water efficiency and increase costs. Data from The City's Calgary Equity Index shows that communities with higher equity needs are more likely to live in older homes. In response, The City is piloting an integrated water and energy home upgrade program to offer fixture replacement assistance and teach basic repair and maintenance skills. These initiatives help residents make meaningful improvements even when full upgrades are not feasible, supporting both water efficiency and affordability. Learnings from this pilot will be used to develop further fixture-replacement offerings designed to help income-qualified households catch up on upgrades they may have missed due to barriers in earlier programs under the original *Water Efficiency Plan*.

For renters, advocating for water efficiency improvements can be more complex because they often lack control over plumbing systems and fixture decisions. The City offers education, tools to identify leaks or inefficiencies, and guidance on communicating with property owners. These resources foster constructive dialogue between tenants and landlords about shared responsibilities for water use and repairs and are especially valuable for residents who may face additional barriers, such as newcomers, single-parent households, or seniors living alone.

Improving water efficiency delivers real benefits: lower water bills, increased resilience to water and energy cost increases, and reduced health and safety risks from aging household infrastructure. In alignment with The City's broader equity goals, the *Water Efficiency Plan* is advancing actions to expand program reach and ensure that equity-deserving and Indigenous communities in Calgary share in these benefits – helping make water efficiency accessible to all.

RESIDENTIAL WATER EFFICIENCY AND CONSERVATION ACTIONS

Residential customers – including single-family and multi-family households – account for the largest share of Calgary's water demand, presenting significant opportunities for efficiency and conservation. Actions in this sector focus on reducing outdoor water use during peak summer months and improving indoor water efficiency year-round.

Seasonal water use remains a key challenge, with summer demand significantly higher than winter averages largely due to outdoor irrigation. To address this, The City will advance measures that encourage water-wise landscaping and efficient irrigation practices, supported by education, incentives, and regulatory tools. Multi-family properties will also be supported through programs that promote smart irrigation and early identification of inefficiencies.

Indoor water efficiency will be strengthened through initiatives that raise awareness and leverage enhanced metering technology to support timely identification of leaks. These efforts will help residents adopt sustainable water practices that reduce unnecessary demand and improve system resilience.

Together, these actions will reduce outdoor irrigation during peak summer months, deliver long-term water savings, and support Calgary's broader sustainability goals.

Action 8. Introduce residential landscape transformation education and incentives

Focus Area

EMPOWERING CALGARIANS AND BUSINESSES TO USE WATER WISELY

Customer Sector

R

RESIDENTIAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
8.1	Establish community demonstration gardens showcasing low-water landscaping options for single-family and multi-family homes.	Education and Outreach	Short-term	Underway
8.2	Create YardSmart starter kits to provide residents with practical guidance for water-efficient landscaping.	Education and Outreach	Short-term	In development
8.3	Expand Calgary's Rain Barrel Incentive Program and include a broader range of water-wise landscaping and irrigation tools.	Incentives	Short-term	In development
8.4	Collaborate with property management companies to promote participation in the Water Managed Sites Program, including irrigation site assessments.	Partnerships	Medium-term	In development
8.5	Collaborate with local nurseries and landscaping professionals to enhance public education and increase availability of native and water-efficient plants, sod, and seed mixes.	Partnerships	Medium-term	In development
8.6	Develop an incentive program that encourages transitioning from water-intensive turfgrass to low-water landscaping alternatives.	Incentives	Long-term	Future implementation

Residential demand

Landscape transformation refers to city-wide initiatives that transition landscapes heavily dependent on potable water into sustainable, water-wise landscapes. This can still include grass – just drought-tolerant varieties – along with healthier soils, climate-appropriate plants, native species, efficient irrigation systems, and rain gardens. These approaches are grounded in best practices, help save water, support healthier ecosystems, and make communities more resilient during hot, dry summers.

This action focuses on helping residents transform existing yards and landscapes, through practical tools, education, and incentives. It works alongside Action 5 (Task 5.3), which targets landscaping and irrigation improvements in new communities and in redevelopment.

Research from the Alliance for Water Efficiency shows that community-led landscape transformation initiatives in other cities have reduced water use by seven to thirty-nine per cent for single-family households – demonstrating strong potential for outdoor water-use reductions and cost-savings[19].

Typical components of landscape transformation programs include[19]:

- Rebates for efficient irrigation technologies, mulch, and soil amendments
- Incentives for water-intensive turfgrass removal and replacement
- On-site customer audits to identify opportunities for improvement

Engagement with key community partners has shown that advancing landscape transformation aligns with industry best practices and creates opportunities for training, certification, business development, and ongoing collaboration. Existing industry guidelines and standards for growing media and turfgrass may inform program development fit for Calgary's context.

This action builds on the success of existing City initiatives such as YardSmart and Rain Barrel rebates. It relies on an integrated approach – combining partnerships, incentives, and education – to shift community water-use over time and embed water-wise landscaping practices across Calgary's urban environment. In addition to City-led initiatives, there is an opportunity to engage Calgarians in showcasing examples of successful water-wise landscapes that have been developed and nurtured in yards across the city.

YARDSMART

YardSmart is a sustainable landscaping program that engages and educates Calgarians on designing, planting and maintaining beautiful gardens that are water-wise, low-maintenance, and resilient.

Action 9. Promote indoor water use education and initiatives

Focus Area

EMPOWERING CALGARIANS AND BUSINESSES TO USE WATER WISELY

Customer Sector

R

RESIDENTIAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
9.1	Expand indoor public education and awareness efforts related to indoor water conservation, including campaigns such as 'fix-a-leak'.	Education and Outreach	Short-term	Underway
9.2	Leverage data to inform targeted water conservation initiatives.	Research and innovation	Short-term	In development
9.3	Deliver renter-focused educational workshops to promote practical home water conservation actions.	Education and Outreach	Medium-term	In development
9.4	Develop and distribute tailored water conservation educational materials for multi-family residential properties.	Education and Outreach	Short-term	Future implementation
9.5	Align indoor water conservation campaigns with the roll out of the water meter replacement program, identifying pilot opportunities for monitoring, and evaluating program effectiveness.	Research and innovation	Medium-term	Future implementation
9.6	Partner with property management companies to implement indoor water-saving measures in high-consumption buildings.	Partnerships	Medium-term	Future implementation

Residential demand

Indoor water conservation remains a key component of Calgary's long-term strategy to improve water efficiency across both single-family and multi-family homes. The City will continue to promote the adoption of water-efficient fixtures, provide education for homeowners, property managers, and tenants, and encourage simple, everyday practices that help reduce indoor water use.

Building on the Water Utility Bylaw, future initiatives will leverage insights from the Water Meter Replacement Program to better understand community-level water use patterns. These insights will inform more targeted outreach, tailored educational campaigns, and tools that empower Calgarians to monitor and manage their indoor water use more effectively.

These efforts could also support the transition to conservation-oriented water rates, help identify opportunities to reduce excessive indoor water use and address potential leaks – contributing to both household savings and broader system efficiency.

INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL WATER EFFICIENCY AND CONSERVATION ACTIONS

Working together with the industrial, commercial, and institutional sector is key to advancing water efficiency and ensuring reliable water for industry, communities, and Calgary's future growth. The industrial, commercial, and institutional sector accounts for 31 per cent of total water demand in Calgary.

Like many North American cities, Calgary's industrial, commercial, and institutional industrial, commercial, and institutional sector is highly diverse. Industrial, commercial, and institutional customers vary widely in size and function – from manufacturing and food processing to office buildings, hospitality, and healthcare – with different water use patterns and operational needs. Because of the diversity in the industrial, commercial, and institutional sector, a one-size fits all approach to water efficiency and conservation is not practical. Instead, more tailored approaches developed with industrial, commercial, and institutional customers can help to identify opportunities.

Many businesses and institutions are already pursuing goals such as cost savings, environmental performance, and operational resilience – objectives that align closely with water efficiency and conservation. By offering technical support, sharing best practices, and expanding education and training, The City can strengthen partnerships that advance both customer priorities and water-saving outcomes.

While The City understands the overall water volumes used in the industrial, commercial, and institutional sector, current systems don't provide detailed insights into how water is used within different industries or processes – such as cooling, cleaning, or production. This limits the ability to benchmark performance, identify high-impact opportunities, and design water efficiency programs that reflect real operational needs. Improving data and sector-specific insights will enable more tailored water efficiency programming, as well as a sector-specific industrial, commercial, and institutional target for the next iteration of the Action Plan.

As emerging industries present evolving water needs, The City is well-positioned to collaborate proactively to explore innovative water solutions that support economic development and long-term water stewardship.

Action 10. Implement a water efficient business program

Focus Area

EMPOWERING CALGARIANS AND BUSINESSES TO USE WATER WISELY

Customer Sector

INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
10.1	Work with a third-party consultant to complete an Industrial, Commercial, and Institutional End Use Study and water efficient business program assessment.	Research and innovation	Short-term	Underway
10.2	Collaborate with Industrial, Commercial, and Institutional customers to develop, pilot and implement a water efficient business program, informed by 3-5 Industrial, Commercial, and Institutional audits per year.	Partnerships	Medium-term	Future implementation
10.3	Utilize new metering data to improve industrial, commercial, and institutional water use insights and inform future program development.	Research and innovation	Medium-term	Future implementation
10.4	Establish industrial, commercial, and institutional sector-appropriate water efficiency target(s).	Policy and regulation	Medium-term	Future implementation

ICI demand

Developing a water efficiency program to support Calgary's industrial, commercial, and institutional sector is a key recommendation of the *Water Efficiency Plan*. A water efficient business program would focus on helping existing industrial, commercial, and institutional customers reduce water use through education and outreach, water use audits and assessments, as well as efficiency retrofits and innovation. Core program elements may include education, technical support, financial support and incentives, regulation and enforcement, and engineering and process recommendations.

Developing this program will require in-depth research, analysis, and engagement with industrial, commercial, and institutional stakeholders to ensure it reflects the sector's diverse needs and operational realities. Insights from the Water Meter Replacement Program and industrial, commercial, and institutional Water End Use Study will be instrumental in shaping this action, providing a clearer understanding of industrial, commercial, and institutional water use profiles, water saving opportunities and enabling data-driven approaches to monitor progress and evaluate outcomes.

Action 11. Support water efficient industrial, commercial, and institutional growth

Focus Area

EMPOWERING CALGARIANS AND BUSINESSES TO USE WATER WISELY

Customer Sector

ICI

INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Annual Water Savings

<1% SAVINGS

#	TASK	IMPLEMENTATION TYPE	TIMELINE	PROGRESS
11.1	Develop policy direction for industrial growth that establishes criteria for large water volume servicing requests and outlines requirements for water efficiency measures.	Policy and regulation	Medium-term	Future implementation
11.2	Develop incentives for water efficiency measures in the industrial, commercial, and institutional sector.	Incentives	Medium-term	Future implementation
11.3	Enable clear pathways for non-potable water use in new industrial facilities, reducing barriers, and streamlining approvals.	Policy and regulation	Medium-term	Future implementation

ICI demand

Calgary's industrial, commercial, and institutional growth depends on reliable water availability, and thoughtful planning is key to supporting the industrial, commercial, and institutional sector. Established industries like food and beverage manufacturing, energy production, construction, and animal processing rely on water to deliver products and services. As emerging industries look to expand in Calgary, including those with high-water use requirements, water becomes an increasingly critical factor in planning and investment decisions. This is a timely opportunity to integrate water efficiency into the design, development, and operation of new and expanding industrial, commercial, and institutional facilities.

This action is an opportunity to provide clarity and support for industry through policy direction, incentives, and pathways for alternative water sources. The City can make it easier for businesses to adopt water-efficient practices and use non-potable water where appropriate – helping businesses and developers plan confidently while safeguarding Calgary's long-term water supply.

This approach is about enabling everyone's shared success by ensuring industrial business have reliable access to water. Collaboration between The City and industry representatives will support practical and co-developed solutions that link water stewardship with economic development, keeping Calgary competitive, resilient, and well-positioned for sustainable growth.

Glossary and Abbreviations

Term	Definition	Source
30-in-30	A water efficiency goal adopted by City Council in 2005, aiming for a 30 per cent reduction in daily per capita water use over 30 years.	The City of Calgary
Average day demand (ADD)	The average volume of treated water used per day over a calendar year, calculated by dividing total annual water use by 365 days. Based on the total annual volume of treated water pumped into the distribution system from The City's storage reservoir, divided by 365 days.	Adapted from the American Water Works Association (AWWA)
Apparent losses	Water that is consumed but not accurately measured or billed due to meter inaccuracies, data handling errors, or unauthorized use.	Adapted from the International Water Association (IWA)
Billed consumption	The volume of water measured by a customer's meter and charged on their utility bill. It reflects actual water use for residential, commercial, or municipal purposes, excluding system losses or unmetered uses.	Adapted from the American Water Works Association (AWWA)
Climate adaptation	Actions, policies, programs, tools, and strategies intended to reduce the negative impacts of climate change on our city's infrastructure, natural assets, economy, and people.	The City of Calgary, Intergovernmental Panel on Climate Change (IPCC)
Climate change	A long-term change in the average weather patterns that have come to define earth's local, regional, and global climates due to the increase in atmospheric greenhouse gases caused by human activities.	The City of Calgary, Intergovernmental Panel on Climate Change (IPCC)
Climate resilience	The ability of social, economic and environmental systems to cope with a climate-driven hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation and transformation.	The City of Calgary, Intergovernmental Panel on Climate Change (IPCC)
Conservation-oriented rate structure	A water pricing system designed to encourage efficient use by charging variable rates based on volume of water use.	Adapted from the Alliance for Water Efficiency (AWE)
Consumptive water use	The portion of water withdrawn that is not returned to the water system, often through evaporation, incorporation into products, or landscape watering.	Adapted from the American Water Works Association (AWWA)
Demand Management	Monitor, plan for and influence how much water is used (how much/when/by whom) to keep the system reliable within the constraints of our water supply and the amount of water we are legally allowed to remove from our rivers. We do this by using programs, operations, leak detection and (if required) restrictions.	
Drought	The condition when the water required for municipal supply, irrigation, and minimum environmental flows diminishes below City of Calgary drought triggers and supporting indicators. A prolonged period of below-average precipitation that results in reduced water availability for people, ecosystems, and economic activities.	The City of Calgary Drought Resilience Plan
Equity-deserving	Communities that identify barriers to equal access, opportunities, and resources due to disadvantage and discrimination, and actively seek social justice and reparation. This marginalization could be created by attitudinal, historic, social, and environmental barriers based on characteristics that are not limited to sex, age, ethnicity, disability, low economic status, gender, gender expression, nationality, race, sexual orientation and creed.	The City of Calgary
Green infrastructure	Preserved and restored natural areas in our city built to use natural processes to manage water and provide ecosystem functions in an urban environment, such as constructed wetlands, rain gardens, and green roofs.	The City of Calgary, U.S. Environmental Protection Agency (US EPA)
Megalitre (ML)	A unit of volume equal to one million litres.	Government of Canada
Infrastructure Leakage index (ILI)	A performance indicator used for water utilities, to assess real water losses (leaks) in a distribution system, calculated as the ratio of current leakage to the lowest technically achievable leakage.	International Water Association (IWA)
Industrial, commercial, and institutional (ICI) sector	A customer category that includes businesses, industries, and institutions such as hospitals, educational institutions, and government buildings.	Statistics Canada
Landscape transformation	The act of transitioning from traditional high water-use landscape to water-efficient and climate resilient alternatives – such as drought-tolerant plants, efficient irrigation, and naturalized designs – to reduce outdoor water use.	Adapted from the Alliance for Water Efficiency (AWE)

Term	Definition	Source
Litres per capita per day (LPCD)	A measure of water use per person, per day. It is calculated based on average day demand (i.e. the average volume of water used per day), divided by the population served. Municipalities typically express per capita demand as either gross per capita demand or residential per capita demand, depending on the population they're describing.	The City of Calgary
Non-revenue water	Water that is produced and distributed but not billed to customers. It includes physical losses (leaks), unbilled authorized consumption (firefighting, pipe flushing), and commercial losses (meter inaccuracies, unauthorized consumption).	Adapted from the International Water Association (IWA)
Outdoor Watering Schedule (OWS)	Municipal rules or bylaws that regulate when and how outdoor watering can occur.	Adapted from the Alliance for Water Efficiency (AWE)
Peak day demand (PDD)	The day with the largest total water use experienced by a water supply system within a single calendar year. This is determined based on the total volume of water produced on a single day.	City of Calgary Drought Resilience Plan
Residential demand	Water used by single-family and multi-family households, including both indoor and outdoor uses.	Adapted from the American Water Works Association (AWWA)
River withdrawals	The total volume of water extracted from natural sources (e.g., Bow and Elbow Rivers) for municipal treatment and distribution.	Government of Alberta
Turfgrass	A perennial stand of living groundcover that can withstand traffic, grazing, and mowing. It includes the entire system including plant material, soil and thatch.	Adapted from the Guelph Turfgrass Institute
Water availability	The amount, quality, and timing of water that can be reliably accessed to meet human and ecosystem needs, as influenced by natural conditions, human activities, and water management systems.	Adapted from the Environment and Climate Change Canada (ECCC)
Water conservation	The practice of using water more efficiently to reduce unnecessary water use, loss, or waste while maintaining acceptable service levels.	Adapted from the Alliance for Water Efficiency (AWE)
Water demand	The total volume of water used by all sectors – residential, commercial, industrial, and municipal – over a given period. It includes both billed consumption and system losses.	Adapted from the American Water Works Association (AWWA)
Water efficiency	Using the minimum amount of water required to perform a task, function, or process without compromising performance.	The City of Calgary
Water licence	To divert and use surface or groundwater in Alberta requires a licence under the province's Water Act. The licence identifies the water source, location of diversion, volume, rate, and timing of water to be diverted, priority of the "water right" established by the licence, and any conditions the diversion must adhere to.	City of Calgary Drought Resilience Plan
Water loss	Treated water that does not reach customers as a result of real losses (leaks) and apparent losses (meter inaccuracies, data errors, unauthorized consumption).	Adapted from the American Water Works Association (AWWA)
Water managed sites (WMS)	Properties with certified in-ground irrigation systems that meet The City of Calgary's efficiency standards and are permitted to operate under specific conditions during outdoor water restrictions.	The City of Calgary
Water meter	A device installed on a property's water connection that measures and records the volume of water used. It only registers flow when water is actively being consumed.	The City of Calgary
Water security	The long term ability to provide reliable, safe water for people, ecosystems, and economic activities, now and into the future.	The City of Calgary Water Security Framework
Water supply	The quantity and timing of raw water available in natural sources for withdrawal, treatment, and distribution.	The City of Calgary
Water system	A water system refers, broadly, to the combined set of built infrastructure assets (e.g., treatment plants, pipes, pumps) and natural assets (e.g., rivers, wetlands) that together support water service delivery. In the *Water Efficiency Plan*, the term is used flexibly: sometimes to mean the built infrastructure specifically, and other times more broadly to include watershed features, recognizing the interdependence of built and natural systems across the water cycle.	Adapted from the American Water Works Association (AWWA)
Water use	The volume of water withdrawn, consumed, or returned across all sectors as part of the complete water cycle.	Adapted from the International Water Association (IWA)
Watershed	A defined area of land in which all precipitation, surface runoff, and groundwater drain to a common outlet, such as a river. Calgary is located within the Bow and Elbow River watersheds, which supply its drinking water.	Adapted from the Government of Canada

A

Appendix 1: Calgary's water use metrics

This Appendix provides supplementary information and data about Calgary's water-use metrics, reporting historical trends over time.

Trends are reported for:

- River withdrawals
- Drinking water production
- Annual total water demand vs. population
- Average day demand
- Peak day demand
- Water use by customer sector
- Calgary per capita water demand
- Residential per capita water demand – single and multi-family
- Industrial, Commercial, and Institutional water demand
- Municipal demand – City of Calgary operations
- Non-revenue water (including water loss)

MAKING SENSE OF CALGARY'S 2024 WATER DEMAND NUMBERS: THE BEARSPAW SOUTH FEEDERMAIN BREAK

In 2024, several of Calgary's key water use metrics experienced notable decreases. For example, per capita water demand dropped from 356 LPCD in 2023 to 322 LPCD in 2024. This reduction is largely attributed to the water restrictions implemented in response to the Bearspaw South Feedermain break and the urgent repairs that followed.

The Bearspaw South Feedermain is the largest pipe in Calgary's water distribution network, transporting a significant portion of the city's treated water supply. To manage demand during the repair period, The City introduced varying levels of outdoor water restrictions, particularly in late spring and summer 2024. As a result, average daily water demand across the city fell to 486 million litres per day in 2024, down from 507 million litres per day in 2023.

Several key water use trends shown in this Appendix experienced declines in 2024. 2024 values are not representative due to water demand management measures in-place during the Bearspaw South Feedermain break and related repairs.

A1.1 CALGARY AND REGION ANNUAL TOTAL DEMAND

A1.1.1 River withdrawals

Total annual river withdrawals refer to the volume of water drawn from the Bow and Elbow Rivers to meet Calgary's water needs. This metric applies to both Calgary and the surrounding municipalities of the City of Airdrie, City of Chestermere, Town of Strathmore, and Tsuut'ina Nation, who receive treated water from The City of Calgary. This volume is measured in megalitres (ML) and is a critical metric because The City's and regional customers' provincial water licences set limits on both instantaneous and annual withdrawal volumes. Calgary is located in a basin closed to new surface water licences, and river withdrawals are tracked and reported to the provincial government under the Water Act. Furthermore, as a primarily non-consumptive user, there is an expectation to return approximately 80 per cent of withdrawn water back to the river for downstream users. Remaining within our existing water licence capacity, while maintaining a conservative buffer to accommodate both growth and challenges in water supply faced by all users across the basin due to climate change, is a major driver of sustainable water management.

As of 2024, our river withdrawals remain below the target set by the 2005 *Water Efficiency Plan* of 212,500ML/year and currently sit at approximately 43 per cent of the total annual allocation permitted under The City's water licences. Figure 1 shows that river withdrawal volumes have been trending upward since 2016, as population grows rapidly and increases aggregate water demand. Continued investment in water efficiency optimizes existing licence limits and prepares Calgary for future challenges.

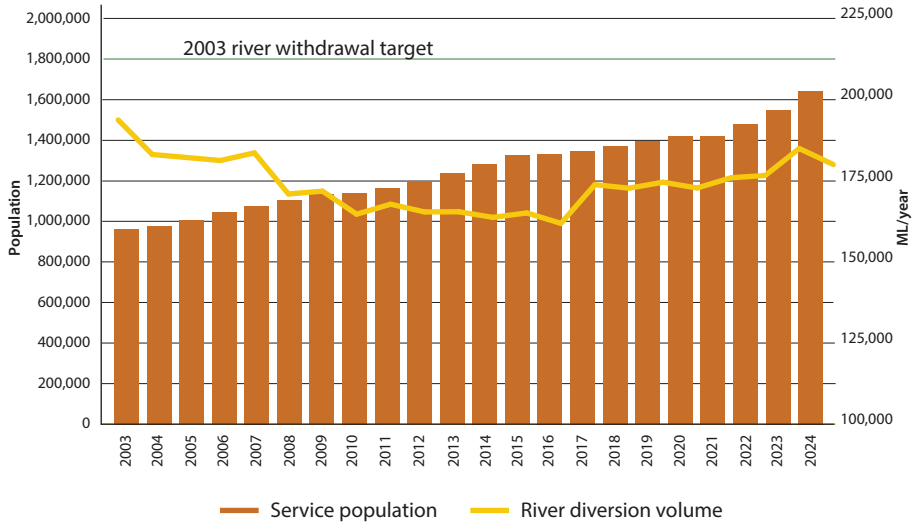


Figure 1: River diversion volumes (ML/year) 2003-2024

A1.1.2 Drinking water production

The City treats water at two water treatment plants – the Bearspaw Water Treatment Plant on the Bow River and the Glenmore Water Treatment Plant on the Elbow River. Calgary's growth has increased pressure on The City's drinking water plants to treat more water. Calgary is limited both by our water license requirements (i.e. river withdrawals) as well as by the design and operational capacities of our water treatment plants. Figure 2 shows the total combined production of our two drinking water treatment plants, as well as the production of each plant over time.

Past efforts to improve water efficiency, alongside process upgrades within the two treatment plants, has allowed The City to service growth over time. However, drinking water production, particularly during the summer months when average daily demand increases by up to 40 per cent compared to in winter, can be strained. Investments in water treatment infrastructure for both growth, and redundancy of drinking water supply, have been initiated both for treatment capacity and the distribution system. Efforts are currently underway to increase drinking water production capacity, with updated water efficiency targets playing a role in managing demand while infrastructure investments are realized.

Average daily production and peak day production are shown in Figure 3. The average day production shows a slight increasing trend. Peak production varies with peak use, for which weather, primarily temperature and precipitation, can cause significant variation. For instance, Calgary experienced a wet, unseasonably cool summer in 2019 whereas in 2021 Calgary experienced an unprecedented heat dome event, which is reflected in the peak day production for those years.

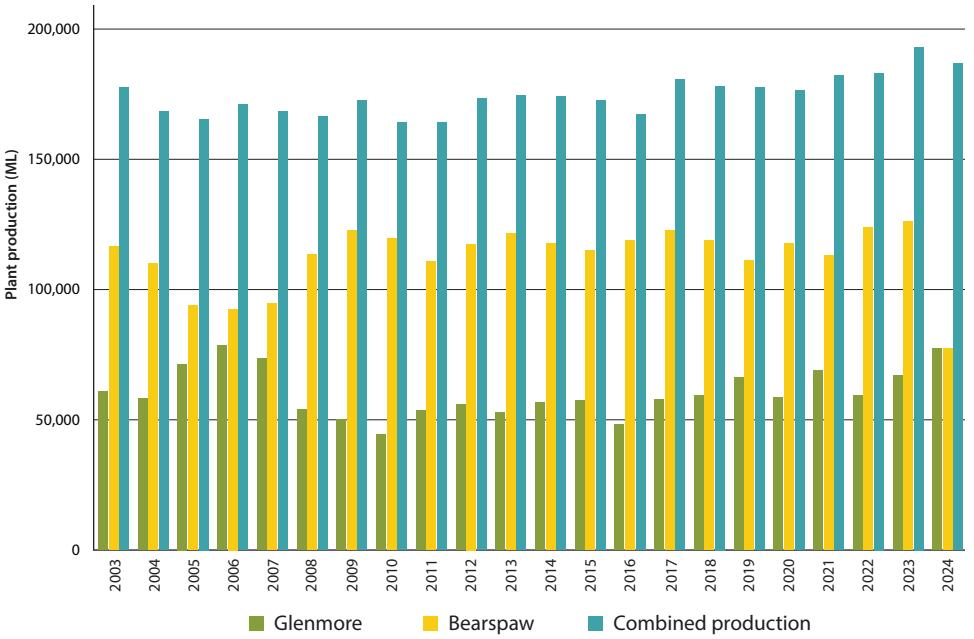


Figure 2: Combined annual production at Calgary's water treatment plants (ML) 2003-2024

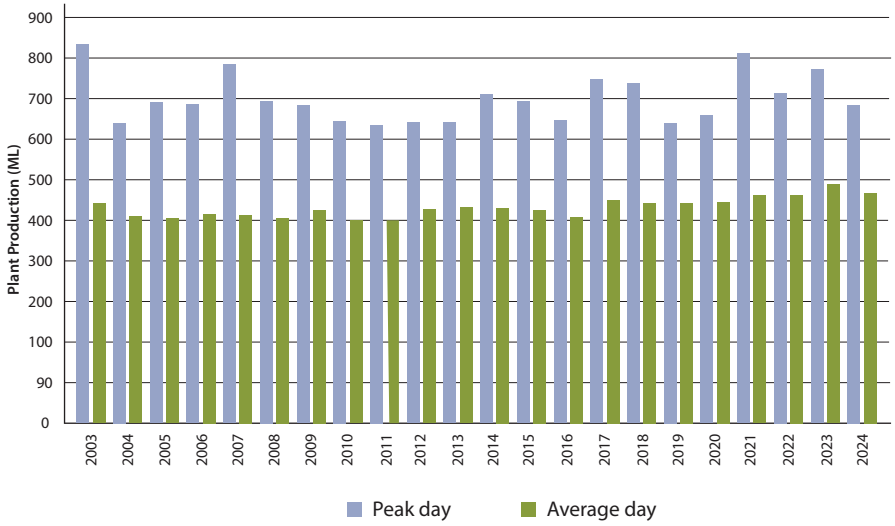


Figure 3: Average day demand versus peak demand daily production (ML) 2003-2024

A1.1.3 Annual total demand vs. population

The City supplies drinking water to Calgary and regional customers, including Airdrie, Strathmore, Chestermere and Tsuut'ina Nation, servicing over 1.6 million customers in 2024. Despite accommodating nearly 500,000 new people in Calgary and the region since 2003, a 40 per cent increase, our annual system demand has only increased by 4 per cent in that same time. However, system demand has been increasing over the past few years, driven largely by the rapid city and regional growth seen in that time frame. Figure 4 shows our total annual system demand, which represents the total volume of water used by all customers in a calendar year, measured in ML. In Calgary, total annual system demand includes:

- Customers inside and outside city limits, including residential, industrial, commercial, and institutional accounts
- Water used in the delivery of City services (e.g., firefighting, street cleaning, parks irrigation, etc.)
- Water lost through system leakage

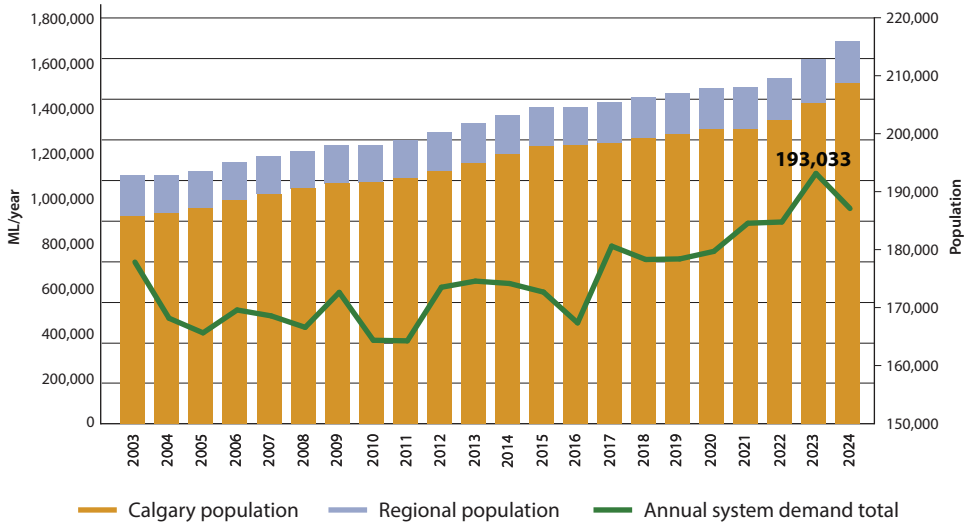


Figure 4: Annual total demand (ML/year) vs Calgary and Region population 2003-2024

A1.2 CALGARY AND REGION DAILY DEMAND

A1.2.1 Average day demand

Average day demand (ADD) represents a water system's average daily use over a one-year period. It shows water use trends and the impact of seasonal and yearly changes on water use. It is calculated based on the total volume of treated water pumped into the distribution system from The City's storage reservoirs. The total volume supplied in a year is divided by 365 days. In recent years, ADD has seen a notable increase, driven primarily by rapid growth in Calgary and region (Figure 5).

Average day demand can also be looked at through a seasonal lens by splitting yearly water use into summer months (May - October) and winter months (November – April). Figure 6 shows that summer demand is higher than winter demand. The addition of outdoor water use, building cooling, and construction activities results in an average day demand increase of 20 per cent in the summer months over average daily demand in the winter.

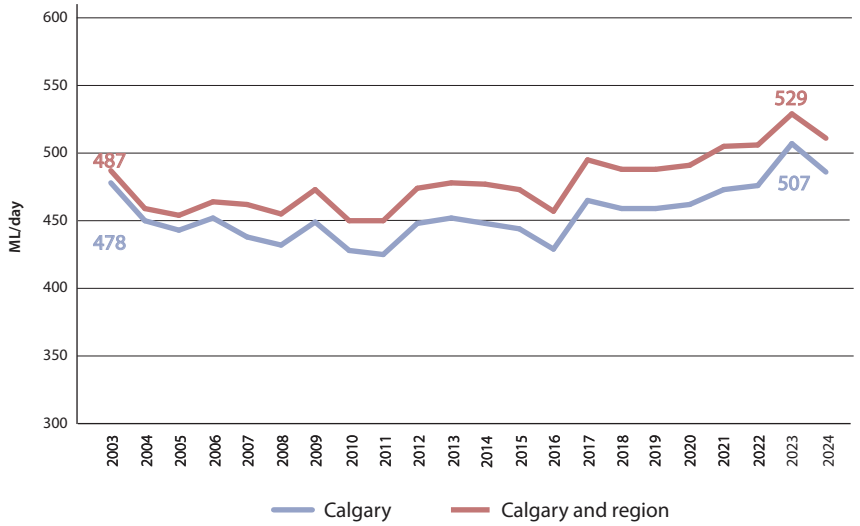


Figure 5: Average day demand for Calgary and Region (ML/day) 2003-2024

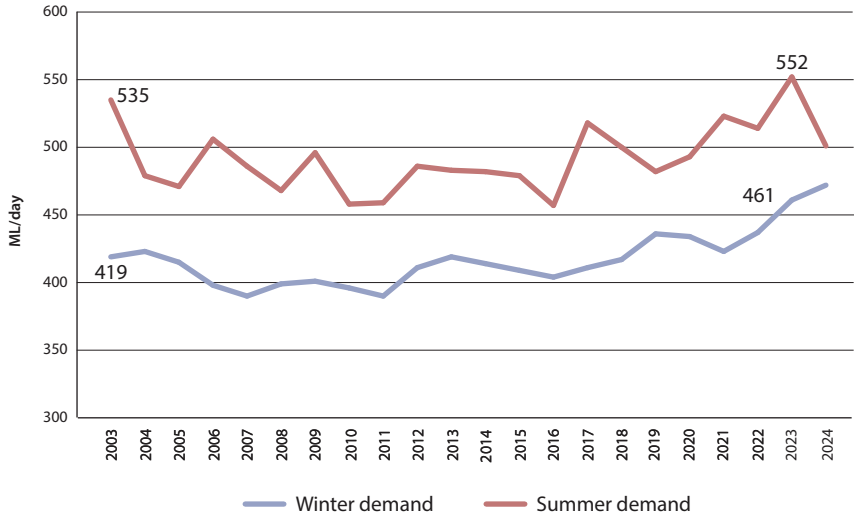


Figure 6: Average day demand (ML/year) in winter and summer, 2003-2024

A1.2.2 Peak day demand

Peak day demand (PDD) is the single highest day of water demand experienced by a water supply system in a single calendar year. It is calculated based on the total volume of water produced on a single day. It includes water for both Calgary and regional customers. Peak day demand each year is largely driven by temperature and precipitation, with peak day typically falling in July and August, when it is generally hotter and drier in the Calgary region. In 2023, peak day demand was 784 ML/day, however peak day demand can vary by up to 100 ML year over year.

Peak day demand has remained below the target established in the 2005 *Water Efficiency Plan* of 950 ML/day (Figure 7). Tactics in this *Water Efficiency Plan* are expected to enable a lower peak day demand target.

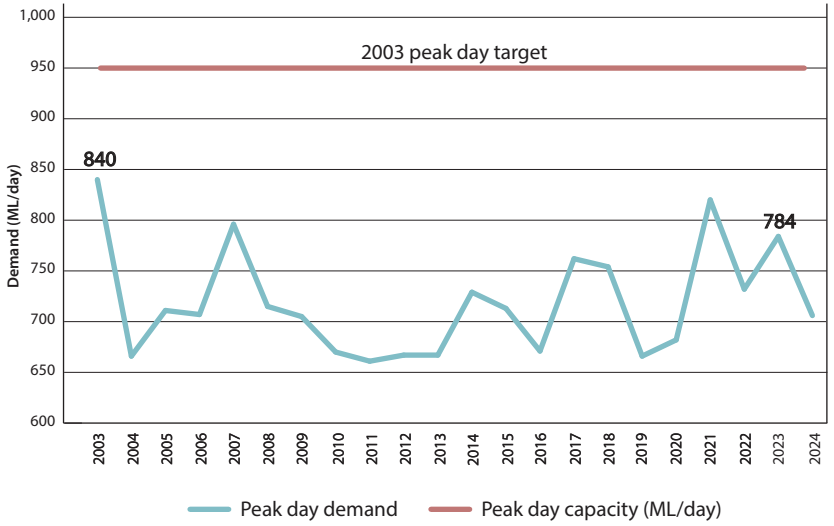


Figure 7: Peak day demand, Calgary and Region (ML/day) 2003-2024

A1.3 CUSTOMER DEMAND

A1.3.1 Use by customer sector

Calgary's residential customers – including both single-family and multi-family households – continue to be the largest users of water, accounting for approximately 60 per cent of total billed consumption in 2023. Industrial, Commercial, and Institutional customers represent approximately 31 per cent of usage, while regional customers account for approximately 8 per cent. Municipal operations, such as firefighting, street cleaning, and park irrigation, make up the remaining approximately 1 per cent.

Notably, the relative breakdown of water use among customer sectors has not changed significantly between 2008 and 2023 (Figure 8). Understanding this sectoral breakdown is essential for designing targeted conservation strategies that address the unique needs and opportunities within each customer group.

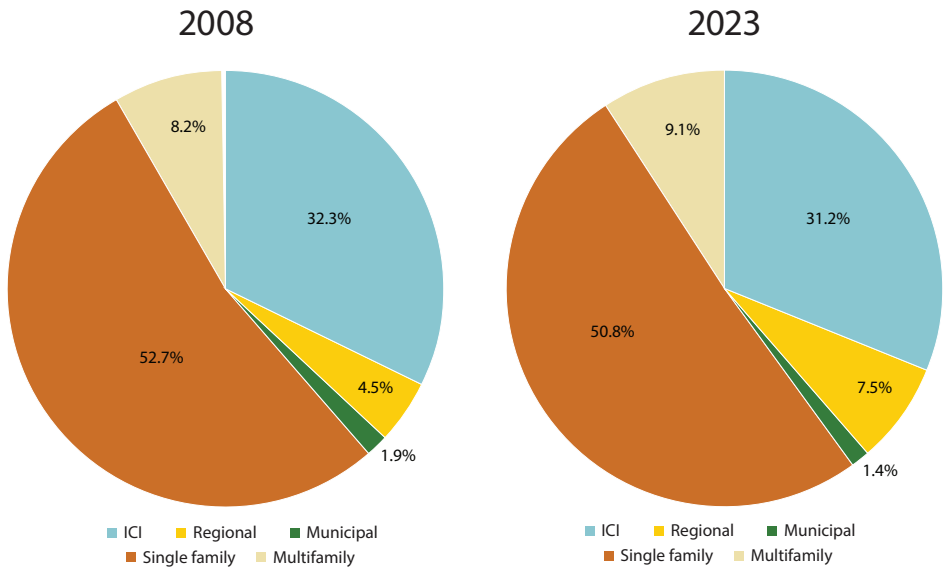


Figure 8: Percentage of water used by customer sector 2008 vs 2023

A1.3.2 Calgary per capita demand

Per capita water demand, measured in LPCD, reflects the average amount of water used by each person daily. It is calculated by dividing the total volume of water used across the city by the population served.

Calgary's total per capita demand includes water used across all sectors – residential, industrial, commercial, and institutional – as well as water required for municipal services such as firefighting, street cleaning, and system flushing, along with other system losses. It excludes water for regional customers. Calgary's total per capita demand has declined significantly over time, from 518 LPCD in 2003 to 356 LPCD in 2023 (Figure 9). This is below the 2021 national average for municipalities of 401 LPCD[10]. 2016 was the first year that Calgary officially met the target of reducing per capita water demand by 30 per cent as established in the 2005 *Water Efficiency Plan*, a milestone that was reached ahead of schedule. However, since 2016, total per capita water demand has plateaued around 350 LPCD.

In 2023, water demand was 356 LPCD, higher than 2022, due to above average temperatures in the early spring and late summer. Summer precipitation levels were also below average in 2023. These conditions caused overall water demand to increase compared to the previous year.

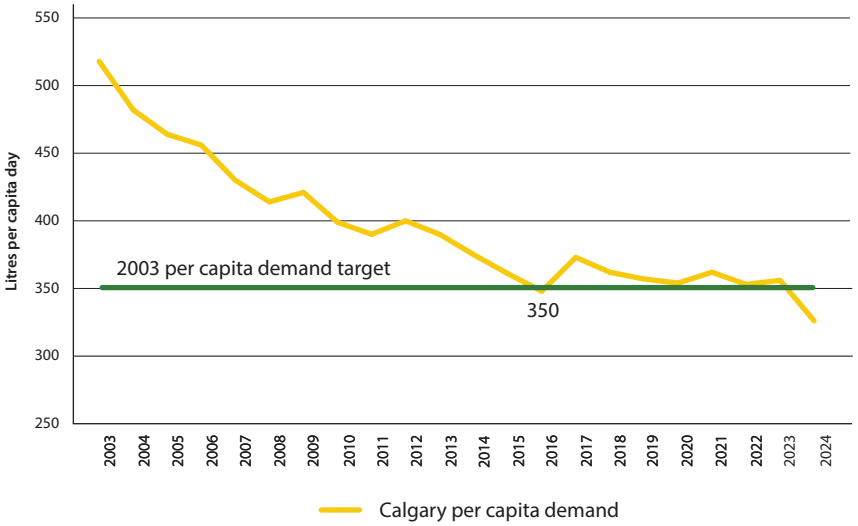


Figure 9: Calgary's total per capita water demand 2003-2024

COMPARING CALGARY'S PER CAPITA WATER DEMAND

Benchmarking Calgary's water use with other jurisdictions provides valuable insights into our progress on water efficiency. While direct comparisons can be challenging due to different local factors – such as customer mix, water sources, water availability, climate, outdoor water use season, and infrastructure – these comparisons help to understand trends in Canada.

This analysis draws on multiple data sources, including Statistics Canada's 2021 Survey of Drinking Water Plants and other municipal datasets. While more recent water use data is available for Calgary, the 2021 datasets represent the most recent year for which comparable data is available consistently across jurisdictions. Using this common reference year allows for standardized provincial and national comparisons. Based on the 2021 data, Calgary's total per capita water use is slightly above the Alberta average, while its residential per capita water use is slightly below. For both metrics, Calgary remains below the national average, and Calgary's 2023 residential per capita use shows improvement since 2021

Jurisdiction	Year	Total per capita water use (LPCD)	Residential per capita water use (LPCD)
British Columbia*	2021	465	286
Canada*	2021	401	223
Saskatchewan*	2021	362	208
Calgary	2021	362	184
Ontario*	2021	335	187
Alberta*	2021	330	195
Manitoba*	2021	283	164
Okotoks***	2021	277	168
Edmonton**	2021	260	180

*** (Statistics Canada, 2021 Drinking Water Survey of Canada)**
**** (City of Edmonton, Open Data Portal, Edmonton Per Capita Water Consumption)**
****** (Town of Okotoks, 2021 Data, Personal Communication)**

A1.4 Residential demand – single-family and multi-family

Calgary's residential demand includes both single family and multi-family properties, which range from single detached homes to row houses to large condominium buildings and is calculated by taking the average day demand of residential customers and dividing it by total population. Residential demand also includes both indoor and outdoor water uses. Data reporting for this sector began in 2014, coinciding with the adoption of water meters city-wide which improved data accuracy for end user demand.

Residential demand has declined from 189 LPCD in 2014 to approximately 171 LPCD in 2023 (Figure 10). This reduction can be attributed to ongoing benefits of the Water Utility Bylaw's low water use fixture requirements, widespread availability of water efficient fixtures on the market, and the efforts of Calgarians to support water efficiency indoors and outdoors.

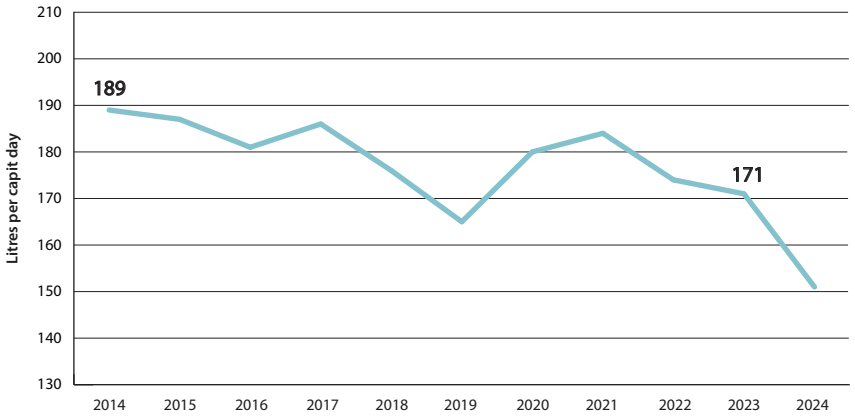
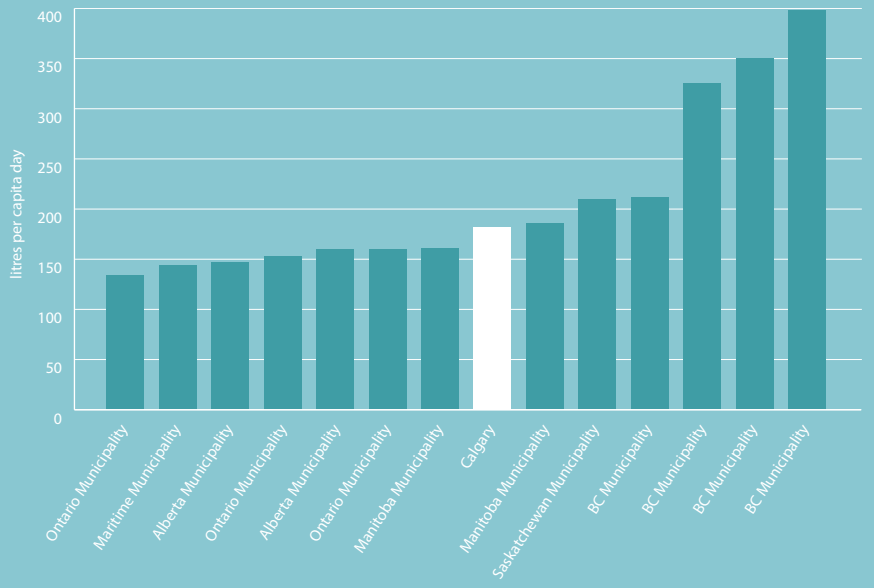


Figure 10: Calgary's residential per capita demand (single and multi-family) (LPCD) 2014-2024.

COMPARING WATER DEMAND ACROSS CANADA

Comparison of 2021 residential per capita water use across anonymized Canadian municipalities. Data is sourced from the National Water and Wastewater Benchmarking Initiative (NWWBI) online database. Values have been anonymized at the request of the NWWBI.



A1.4.1 Single-family residential demand

Single family residential demand, in LPCD, includes water use from all homes with five units or less. Since 2014, water use has declined slightly to 202 LPCD in 2023 (Figure 11). Figure 12 shows the typical breakdown of indoor household water end uses. The addition of outdoor water use can shift this water use pattern substantially, where average summer residential demand is approximately 20 per cent higher than average winter demand, due to irrigation (Figure 13).

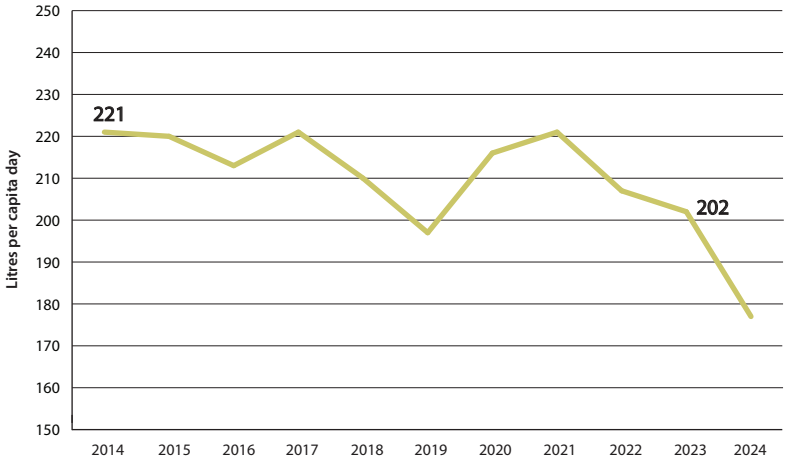


Figure 11: Calgary's single family metered residential demand (LPCD), 2014-2024

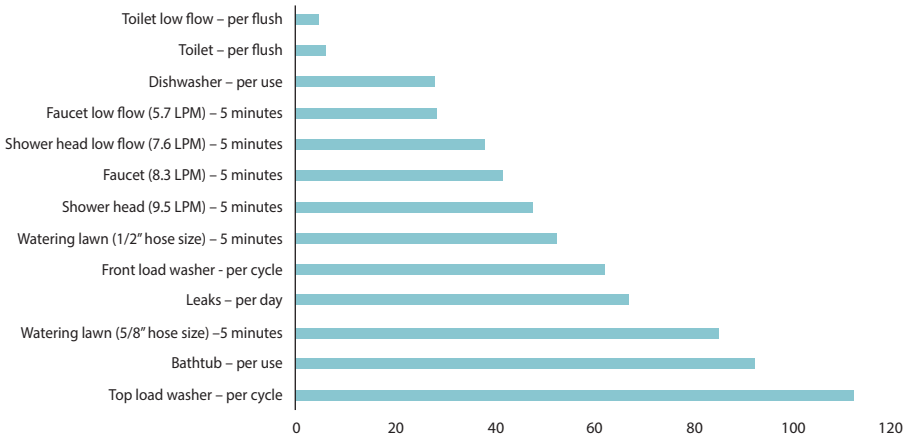


Figure 12: Typical home water uses in Calgary (Sources: City of Calgary Water Utility Bylaw 40M2006, Water Research Foundation (2016) Residential End Uses of Water, Version 2.)

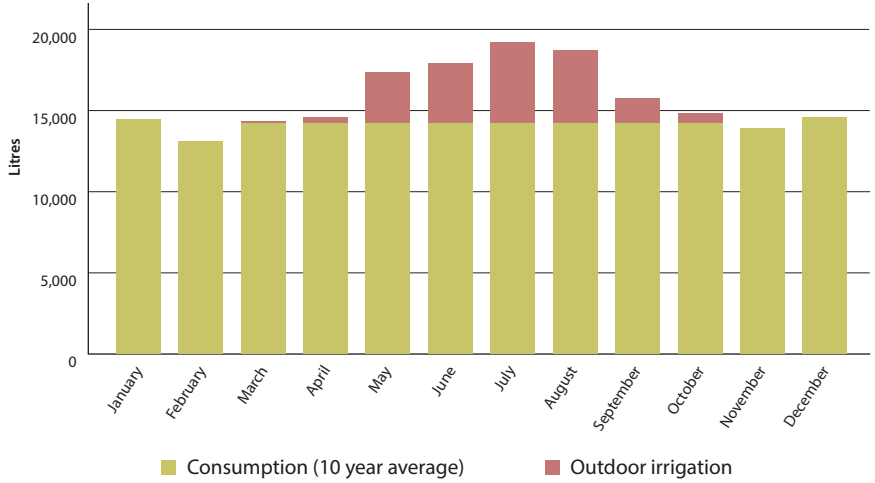


Figure 13: Impact of outdoor irrigation on total demand for single family residential in Calgary (litres)

A1.4.2 Multi-family residential demand

Multi-family residential customers range from row houses to large condominium towers (greater than five units). Although the water use per person in multi-family residential settings declined consistently between 2014 and 2019, that trend has reversed, and it has been on a steady incline since 2019 (Figure 14).

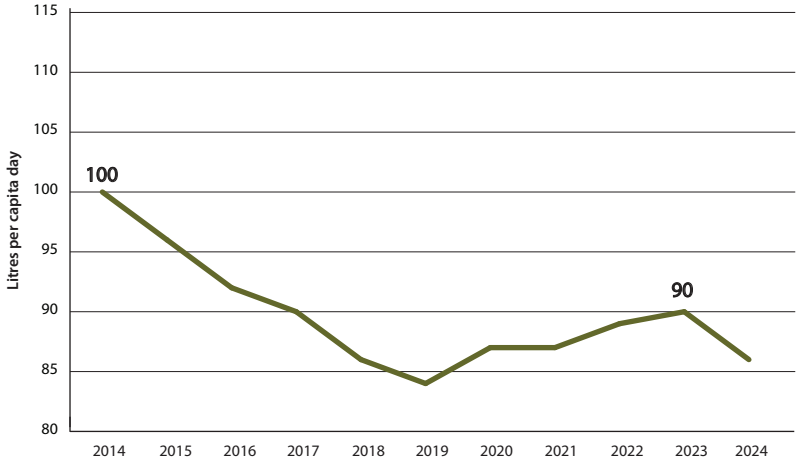


Figure 14: Calgary's metered multi-family residential demand (LPCD) 2014-2024

A1.5 INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL DEMAND

Calgary's industrial, commercial, and institutionaldemand has remained relatively consistent over time, with a decline during the COVID-19 pandemic years when industrial, commercial, and institutional operations and corresponding water uses declined and a greater number of people were working from home (Figure 15). This metric is reported in megalitres (ML) or total demand from this sector. Water use within Calgary's industrial, commercial, and institutional sectors varies widely, encompassing diverse activities such as manufacturing, office operations, hospitality, and healthcare. Summer industrial, commercial, and institutional demand is on average 30 per cent higher than winter demand, likely due to a combination of building cooling and outdoor irrigation.

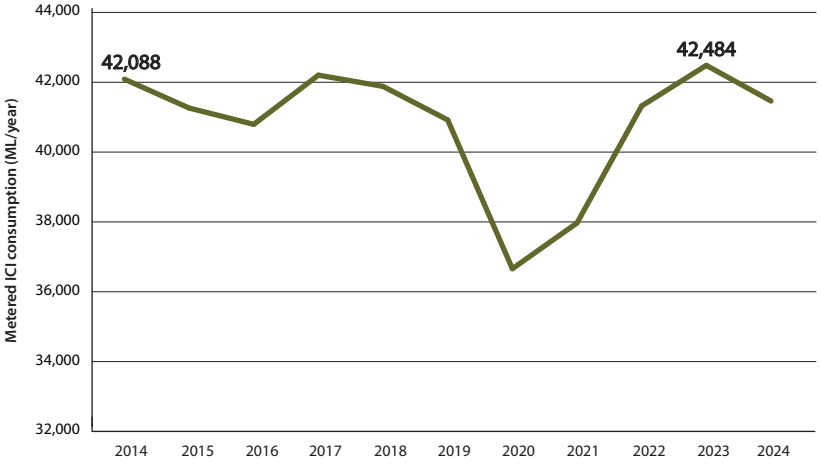


Figure 15: Calgary's annual metered ICI demand, excluding metered irrigation (ML/year) 2014-2024

A1.6 MUNICIPAL DEMAND

Municipal demand includes metered water used for:

- Calgary Municipal: City-owned facilities (e.g. municipal building) and City operations (e.g. bus washing, bridge washing)
- Calgary Municipal Irrigation: Irrigation of City parks and some City facility outdoor spaces

In 2023, municipal demand made up 1.4 per cent of total water use in the city, a slight decrease from 2008 where it was 1.9 per cent. Figure 16 shows the breakdown of this total use as an average from 2020 to 2024.

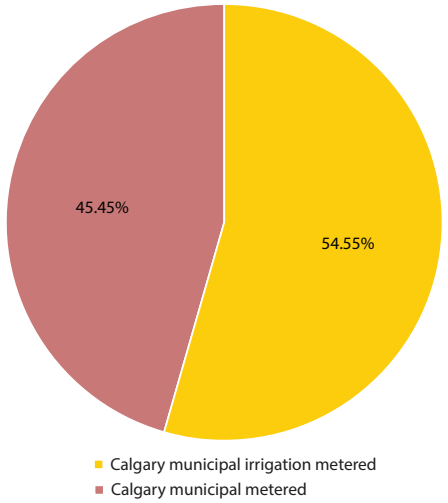


Figure 16: City of Calgary municipal water use, metered and metered irrigation (5-year rolling average) 2020-2024.

A1.7 NON-REVENUE WATER

Non-revenue water is a term used to describe water that is treated and distributed but not billed to a customer. This includes water lost because of system leakage, water main breaks, billing/metering inaccuracies, and non-metered uses such as firefighting or operational flushing. It is calculated by taking the difference between the volume of water that is treated by the water treatment plants and the volume of water billed for at customer meters under the same time frame.

Current industry-standard terminology separates non-revenue water into three categories:

- **Unbilled authorized consumption:** water used for firefighting and other municipal operations such as pipe flushing
- **Real losses:** losses in the transmission and distribution system due to watermain breaks such as pinhole leaks or leaks at fittings or joints in pipes
- **Apparent losses:** water that is being consumed but not being paid for – examples include meter installations lagging customer water use and inaccurate meter readings

In 2024, Calgary's total non-revenue water was 26 per cent of our total system water demand, with water loss (both real and apparent) within the distribution system comprising 22 per cent of this total. Calgary's water loss has risen from approximately 17 per cent in 2015 to 22 per cent in 2024. Figure 17 shows Calgary's total water demand in 2024 when non-revenue water is considered.

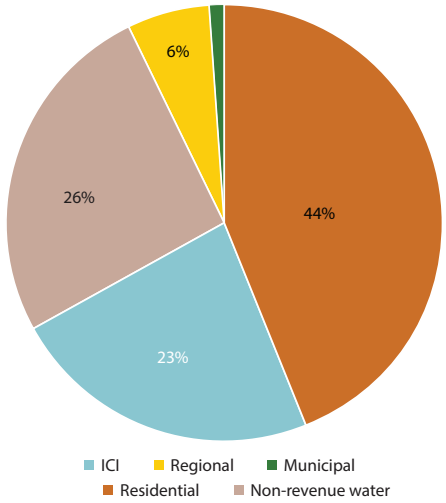


Figure 17: Percentage of water used by customer sector in 2024, including non-revenue water, of which water loss is a component.

Another metric for leakage-related losses is the Infrastructure Leakage Index (ILI), which helps to track and manage physical losses (Figure 18). The Infrastructure Leakage Index is influenced by a range of factors like the complexity of the infrastructure system, the age and condition of the system as well as geotechnical conditions of the area, amongst other factors. An ILI of 1 means leakage is at the best possible level for the system. With an ILI of 4.4 in 2024, Calgary is on the upper end of the ILI target range (3.0 – 5.0) as endorsed by a consortium of major Alberta municipalities[14]. In late 2024, The City hired a consultant to complete a review on water use trends and water loss locally and in comparable cities. This report noted that Calgary has one of the highest ILI values of the municipalities surveyed, emphasizing the need for ongoing prioritization of water loss reduction programs[12]. The City is working towards a water loss target of 3.0 by 2030, with the potential for an updated target as progress is made. An ILI of 4.4 roughly corresponds to 22 per cent water loss, and an ILI of 3.0 roughly corresponds to 18 per cent water loss.

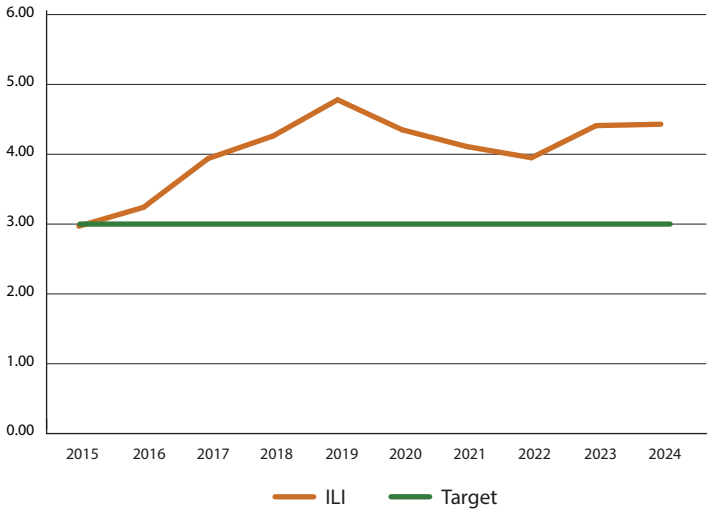


Figure 18: City of Calgary Infrastructure Leakage Index (ILI) 2015-2024

References

1. Statistics Canada. (2025). Annual demographic growth of census metropolitan areas, 2024. Web: https://www150.statcan.gc.ca/n1/daily-quotidien/250116/cg-b001-eng.htm
2. Corporate Economics, The City of Calgary. (Fall 2025). Calgary and Region Economic Outlook 2025-2030.
3. Office of Statistics and Information, Alberta Treasury Board and Finance, Government of Alberta. (2026). Population estimates for Calgary. Web: https://regionaldashboard.alberta.ca/region/calgary/population/#/?from=2021&to=2025
4. Kiefer et al. (2026). Bearspaw South Feedermain Independent Review Panel: Final Report.
5. The City of Calgary. (2023). Drought Resilience Plan.
6. Advanis. (2024). 2024 Perspectives on Calgary Survey Omnibus: Final Report.
7. Alberta Urban Municipalities Association. (2009). AUMA Water Conservation, Efficiency and Productivity Plan
8. Bow River Basin Council. (2024). State of the Watershed Report.
9. US EPA. (2025). Greenhouse Gas Equivalencies Calculator. Web: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results
10. Statistics Canada. (2021). Water in Canada: Potable water production, usage, and infrastructure investments. Web: https://www150.statcan.gc.ca/n1/en/type/daily
11. Alberta Municipalities. (2024). Water Conservation – Loss Control Programs.
12. AECOM Canada. (2025). Water Use and Water Loss Third-Party Review: Final Report.
13. Lambert and McKenzie (1999). Practical Experience in Using the Infrastructure Leakage Index, presented at the 2002 International Water Association Conference.
14. Alberta Municipalities. (2024). 2024 Urban Municipal Water Conservation, Efficiency, and Productivity Plan.
15. The City of Calgary. (2022). Drought Resilience Plan: What We Heard Report.
16. The City of Calgary. (2026). Water Efficiency Engagement: Report Back: What We Heard.
17. American Water Works Association. (2022). Increasing consumer benefits & engagement in AMI-based conservation programs: Guidebook for practitioners.
18. Pacific Institute in partnership with Alliance for Water Efficiency. (2019). Water Rates: Conservation and Revenue Stability.
19. Alliance for Water Efficiency. (2019). Landscape Transformation: Assessment of Water Utility Programs and Market Readiness Evaluation.
20. Statistics Canada. (2021). Drinking Water Survey of Canada.
21. City of Edmonton. (2023). Open Data Portal, Edmonton Per Capita Water Consumption. Web: https://data.edmonton.ca/Externally-Sourced-Datasets/Edmonton-Per-Capita-Water-Consumption/ixuc-gf7k/about_data
22. Corporate Economics, The City of Calgary. (Fall 2025). Calgary and Region Economic Outlook 2025-2030.
23. Mooreview Consulting. (2024). Drought Financial Options Study for The City of Calgary.
24. Southern Alberta Institute of Technology (SAIT). (2020). City of Calgary *Water Efficiency Plan*. 2020 Research and Development Study. Phase 1: Program Research Final Report.

24-0038126 CRV-33332