

A large circular frame containing a high-speed photograph of water splashing, with droplets and ripples captured in detail. The water is clear and blue, set against a light background. The frame is surrounded by several overlapping circles in shades of blue and teal.

WATER
CONSERVATION
PLAN &
STRATEGY
2024

TERRITORY ACKNOWLEDGEMENT



For many generations, the place we now call Lethbridge had another name given to it by the Siksikaitstapi, the Blackfoot Peoples. This name, Sikóóhkotok, is a reference to the black rocks found in the area.



The City of Lethbridge acknowledges that we are gathered on the lands of the Blackfoot people of the Canadian Plains and pays respect to the Blackfoot people past, present and future while recognizing and respecting their cultural heritage, beliefs and relationship to the land. The City of Lethbridge is also home to the Metis Nation of Alberta, Region III.

Sikóóhkotok

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INTRODUCTION

Ongoing changes in climate and weather patterns have led to concerns of water scarcity and drought in southern Alberta. The City of Lethbridge is proactively working to address these concerns with the development of this Water Conservation Plan (WCP) and updating the Water Rationing Action Plan (WRAP).

Water conservation — using water efficiently and avoiding waste — is essential to ensure there is adequate water today and into the future. Water is a finite resource. The supply on earth today has not changed and it's up to everyone to use water wisely.

The goal of this WCP is to instigate long-term behavioural changes in water usage. It also includes an overview of the current water availability situation, opportunities for voluntary water conservation initiatives and regulatory changes to influence water usage behaviour. The plan will be applicable to all water users supplied by the City of Lethbridge.

Sustaining our water resources includes understanding and effectively managing issues such as water conservation, water quality protection, watershed well-being, and storm and surface water management. When managed sustainably, our watershed, river, and municipal water system will support the health of citizens, maintain aquatic and terrestrial environments, enable a variety of beneficial ecological services, provide community recreation options and support a robust local economy.

Conserving water saves energy and money, helps protect and preserve the environment, and helps meet future needs. The cost of inaction is significant. Not improving water efficiency in the City of Lethbridge and surrounding area has the potential to cost taxpayers up to \$25 million per year by 2050 and up to \$100 million per year by 2080.

An Official Business Motion was brought forward and approved on January 23, 2024 recognizing the need for Lethbridge to action water conservation.



Southern Alberta's semi-arid climate means drought is common and there is a limited amount of water available. Demand for water is high so it must be managed carefully to ensure there is enough for all users, including cities and towns, irrigators and industry, and enough to keep the river environment healthy.

BACKGROUND

Setting:

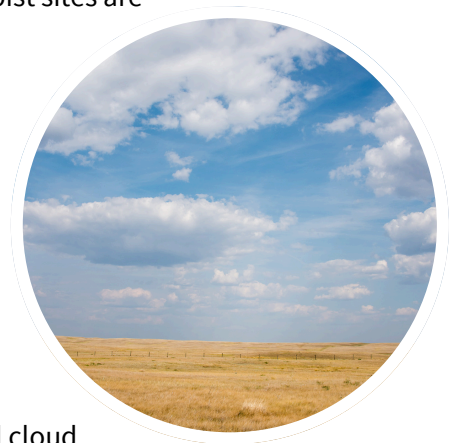
Situated in south-central Alberta, Lethbridge is home to unique landscapes, abundant and diverse wildlife and vegetation, and thriving communities. Lethbridge is located in the Mixedgrass Subregion of the Grasslands Natural Region. The Grasslands Natural Region makes up approximately 14 per cent of the province (95,565 km²), while the Mixedgrass Subregion occupies approximately 21 per cent (20,072 km²) of the Grassland Natural Region.

The Mixedgrass Natural Subregion is a broad, north-south band of fertile, intensively cultivated prairie in south-central Alberta. The area is dominated by loamy Dark Brown Chernozemic soils. On the drier, sandy sites, northern wheat grass, sand grass, and June grass are dominant. The more moist sites are characterized by the addition of blue grama grass to the community. Shrub communities, including buckbrush, silver sagebrush, silverberry and prickly rose, occur in depressions, ravines, coulees and northerly aspects. Adjacent to rivers, tall shrub and forest communities of willows, thorny buffaloberry and narrow-leaf cottonwood or balsam poplar develop (NRC 2006).

The climate of the Grassland region is continental, with long cold winters, short summers and generally low precipitation. Occasional chinook winds provide some relief from the cold winter temperatures, particularly in the southwest part of the region. Summer temperatures become increasingly warmer and precipitation diminishes from west to east within the region. The long summer days and minimal cloud cover maximizes solar radiation. June is typically the highest precipitation month in the Grassland region. The Mixed Grassland eco-region is the southernmost and driest of Canada's prairie ecoregions and has the second lowest median summer precipitation (176 mm) of any region of Alberta. Warm temperatures, coupled with the low precipitation and generally high winds, produce a high potential evapotranspiration deficit.

Lethbridge is located within the Oldman River Basin, a sub-basin to the South Saskatchewan River Basin (SSRB). The largest tributaries to the South Saskatchewan River include the Oldman River (which runs through Lethbridge), Bow River, and the Red Deer River.

The majority of the Oldman River Basin (approximately 23,000 square kilometers) is in southern Alberta, with a small portion (approximately 2,100 square kilometers) that extends into Montana. With the main headwaters of the Oldman River originating in the Rocky Mountains, the Basin extends east and encompasses areas of the Foothills, Plains, and Prairie Grasslands. The major tributaries of the Oldman River include the Livingstone River, Crowsnest and Castle Rivers, St. Mary and Waterton Rivers, as well as Willow and Pincher Creeks.



BACKGROUND

Background:

Water management in the SSRB in Alberta has a history dating back to the late-1800s. The climate and physical attributes of the basin, and various landmark events and circumstances have shaped decision-making of water management in the basin.

Riparian rights were considered to be a major deterrent to large-scale irrigation on the Canadian prairies, since only riparian landowners could divert water, and only in quantities that were generally insufficient for irrigation. At the time, federal government officials felt that large-scale irrigation was the key to rapid settlement of the west. Therefore, the riparian rights deterrent was removed with the passage of the Northwest Irrigation Act.

Prior to 1894, under the Doctrine of Riparian Rights, only the owner of land adjacent to a stream or water body had the right to divert water.

Once the Northwest Irrigation Act was passed by the Dominion Parliament in 1894, the areas of western Canada now known as Alberta and Saskatchewan had in place the statutory tool needed to control the distribution and use of water in a manner that would minimize conflicts and encourage development. In 1930, responsibility for managing natural resources was transferred from the federal government to Alberta, and the early legislation gave way to Alberta's Water Resources Act in 1931. In 1999, the Water Resources Act was replaced by the Water Act, which provides greater flexibility for managing water and introduces new approaches for managing water-short basins. However, all legislation since 1894 had the same four basic principles:

- Suppression of riparian rights and declaring Crown ownership of water;
- Government control of the allocation and use of water;
- An allocation process designed to promote development; and,
- A first in time, first in right priority system designed to protect existing development.

Closure of the Waterton, Belly and St. Mary tributaries of the Oldman River to further water allocations (i.e. new water licenses) in 2002, and subsequent closure of the entire Oldman, Bow and South Saskatchewan Sub-basins in 2006, ranks high among a number of significant historical events affecting water management in the SSRB. In August 2007, the Alberta Government filed a Regulation under the Water Act reserving all unallocated water in the Bow, Oldman, and South Saskatchewan Sub-basins. With that reservation, further water licenses in these three Sub-basins were limited to outstanding applicants, First Nations, water conservation objectives (in-stream needs) and for storage development, for the protection of the aquatic environment or to improve water supply availability to existing license holders and registrants.

BACKGROUND

Provincial Water Allocations:

Figure 1 shows a broad breakdown of the water allocations across Alberta from 2010. Although licensees with senior priorities have the first right to water (first in time, first in right), the Water Act has an assignment provision for sharing available supplies between senior and junior users who have access to the same water. The Water Act requires that a formal written agreement be developed between the two licensees. The agreement may be cancelled by the Director if there are adverse effects on the source stream or aquifer, the aquatic environment or other water users with a higher priority than the party with the lowest priority in the agreement.

Agreements to assign water were used in response to severe water shortages in the southern tributaries of the Oldman River (Waterton, Belly and St. Mary Rivers) in 2001. Based on water supply forecasts and the volumes of water in reservoirs, it was determined that under the priority provisions of the Water Act, there would be only enough natural flow and stored water to meet the needs of users with licenses having priorities of 1950 or earlier.

This meant that about 336 licensees with priorities junior to 1950 (i.e. licenses issued after 1950) would be faced with the prospect of having their diversions suspended. Seven Irrigation Districts with senior priorities jointly offered to use the assignment provisions of the Water Act to share available supplies with junior users provided there was a willingness to ration. Most of the water users in the southern tributaries decided to participate in the water-sharing agreement, which affected about 650 licenses. The agreement called for irrigators to apply not more than 10 inches to their irrigated lands, and non-irrigators to restrict usage to about 60 per cent of their requirements.

Water Allocations in Alberta (2010)

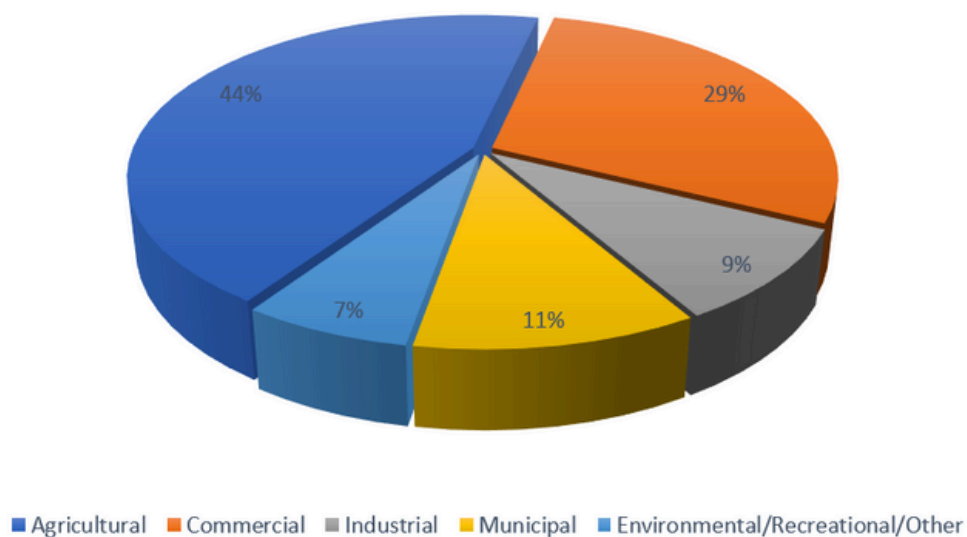


FIGURE 1: 2010 water allocations across Alberta, grouped into sectors.

BACKGROUND

Water Act Emergency Provisions:

The Water Act has provisions for the government to declare an emergency, suspend diversions for all or any part of selected licenses, and designate the purposes for which available water can be used. Affected licensees may be eligible for compensation for losses incurred. These provisions have very rarely, if ever, been used in Alberta. Common practice in water-short situations has been to suspend diversions in order of junior to senior priority until the water supply and use is in balance. In past times of water scarcity, the government has also brokered agreements between license holders to share the available water.

Current Water Usage:

A safe and secure water supply is needed for many reasons. Water sustains life. It's required for drinking, cooking, and cleaning. It is needed to grow and prepare food to be eaten. It provides economic benefits from agricultural activities including growing crops, raising livestock, food processing, and manufacturing. Water is also a part of many recreational opportunities and activities, and is used for relief from extreme heat. Water is also a necessary and important part of the health care system, used in hospitals and clinics every day. Emergency management and planning such as fire suppression, also requires a safe and secure water source to be effective.

In 2023, the City of Lethbridge treated over 24 billion litres of water, which was distributed to residences, businesses, industry, institutions, and regional customers. As seen in Figure 2, water usage starts to increase in May, peaks in July, and averages back out by the end of September. During the peak of summer, water usage doubles from an average of 1.5 billion litres per month to over 3 billion litres per month. The majority of this summer increase can be attributed to watering lawns.

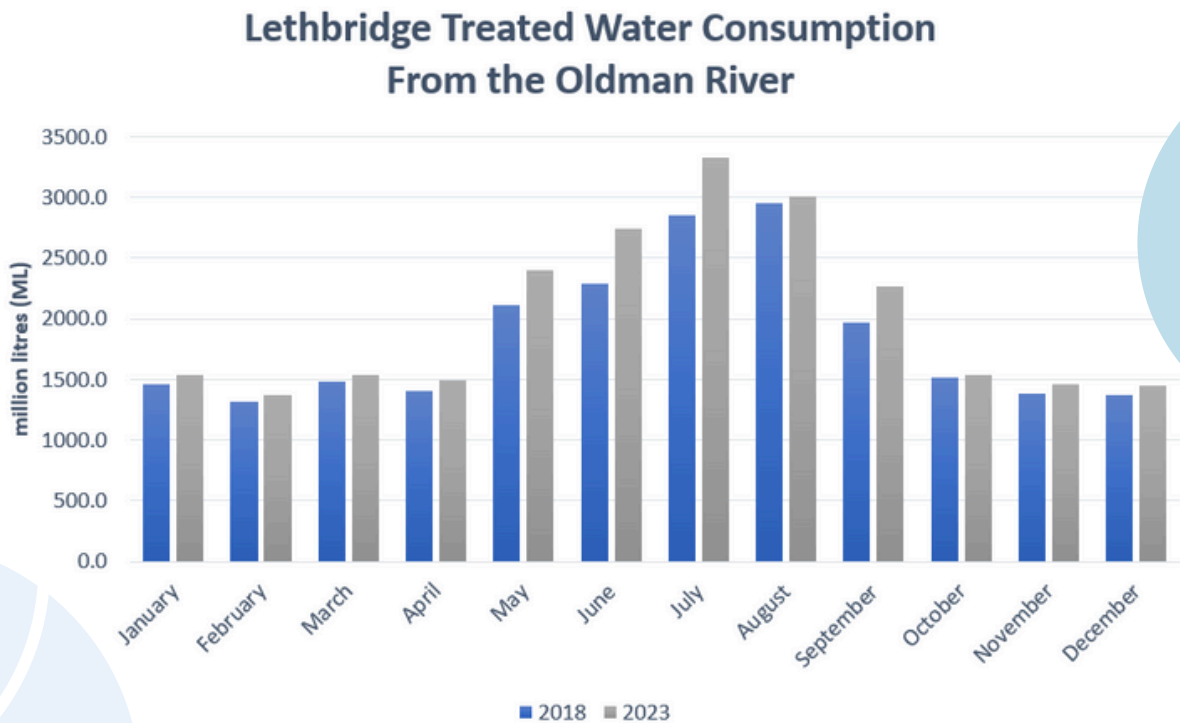


FIGURE 2: Volume of water treated over the year for 2018 and 2023.

BACKGROUND

The first of the following three figures shows the total annual water used per person per day (FIGURE 3) in Lethbridge. Figures 4 and 5 break the total annual water usage into residential (FIGURE 4) and industrial/commercial/institutional (FIGURE 5) consumption.

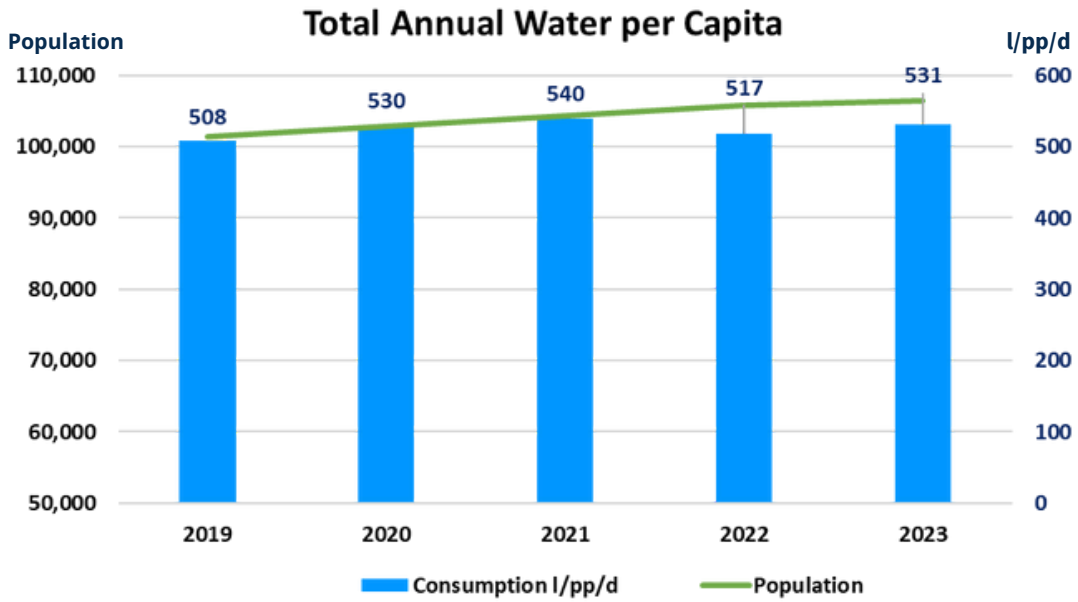


FIGURE 3: Total annual water used per person per day in the City of Lethbridge (includes residential, industrial, commercial, and institutional use).

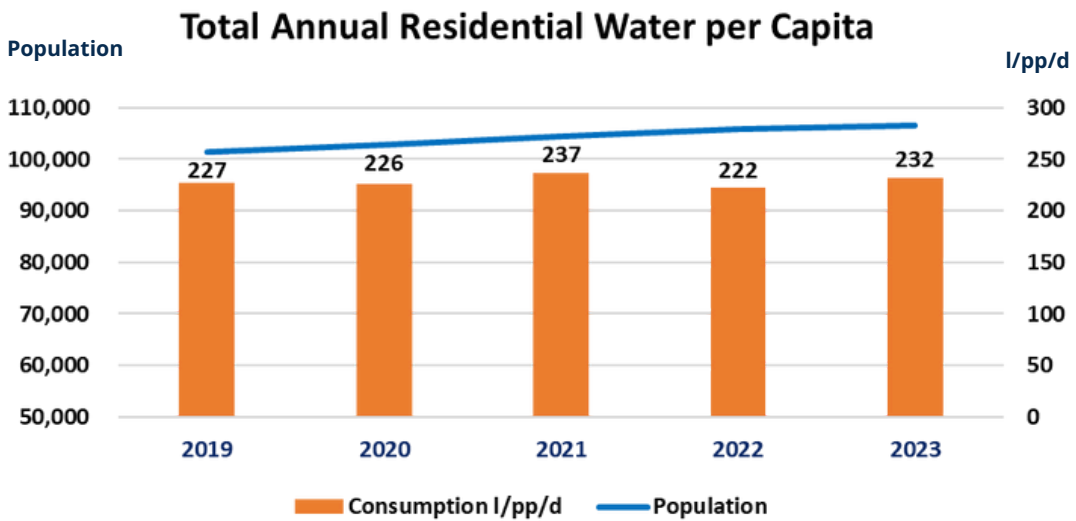


FIGURE 4: Total annual residential water used per person per day in the City of Lethbridge.

BACKGROUND

The Industrial, Commercial and Institution (ICI) per capita water consumption includes all the businesses in Lethbridge. This includes the heavy industrial sites that are in the industrial parks, retail, health care, the City of Lethbridge-owned facilities and more.

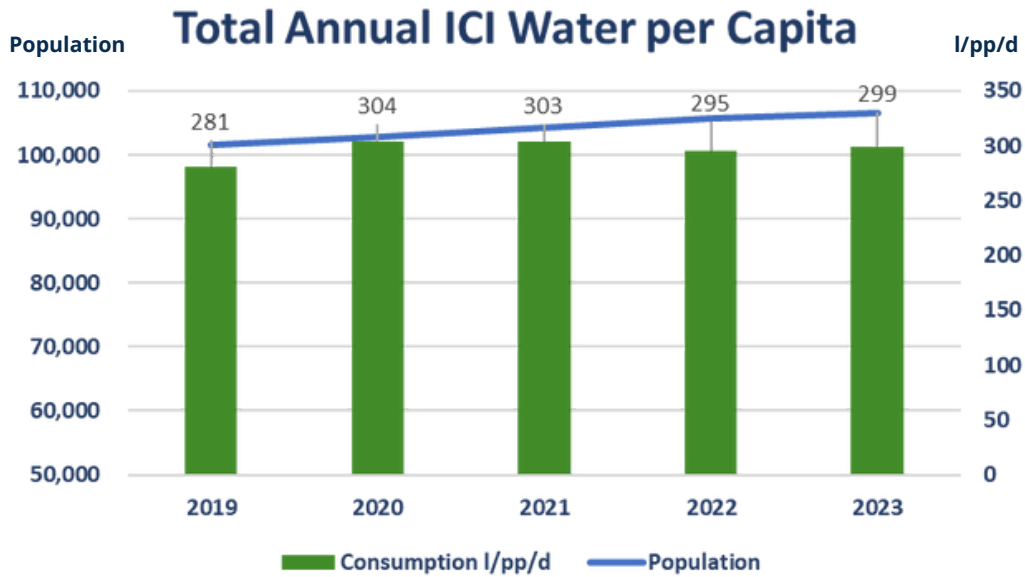
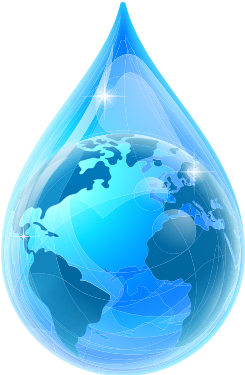


FIGURE 5: Total annual industrial, commercial, and institutional (ICI) water used per person per day in the City of Lethbridge.



GOALS & OBJECTIVES



“Water quality and quantity are critical issues for a city located in an arid environment. In the South Saskatchewan Region, water is a crucial factor for the future sustainability of population and economy. As the region continues to evolve, matching water demand with water supply will continue to be a key issue.

Climate change will alter the water cycle in the region, leading to greater uncertainty as to the timing and extent of precipitation events. With increased water insecurity, greater planning is needed to anticipate likely impacts and to put the needed infrastructure (both green and hard) and resources in place.”

Lethbridge Municipal Development Plan

Goals and Objectives:

A safe, healthy, and abundant water supply is critical to our community. Using this resource wisely and responsibly is necessary to protect watersheds, ecosystems, and human health. Smart water stewardship also helps reduce costs and ensure the long-term sustainability of our water supply.

The objectives of this Water Conservation Plan and Strategy include the following:

- Provide information and awareness of the water supply that Lethbridge and the surrounding area rely on.
- Inform on the water consumed in Lethbridge.
- Ensure treated potable water is provided to all users of the City of Lethbridge water system.
- Ensure sufficient supply of water for fire suppression.
- Encourage long-term habits that lead to a reduction in the amount of water used in homes, businesses, and institutions.
- Continued efficiency in the water distribution system.
- Ensure sufficient water to support our critical green infrastructure and natural assets.

Canada's fresh water is found in the form of rivers, lakes, groundwater, ice, and snow. Considering that on an average annual basis, Canadian rivers discharge almost 7 per cent of the world's renewable water supply, Canada can appear to have an endless supply of water. Measurements such as this can be deceiving.

Some areas in the interior of British Columbia, the southern Prairies of Alberta and Saskatchewan, and the high Arctic experience arid or semi-arid climates (less than 35 centimeters of annual precipitation). While on average, Alberta uses fewer litres of water per person per day (l/pp/d) than the majority of Canada (FIGURE 6), our water resources are scarcer.

GOALS & OBJECTIVES



Looking across Canada and comparing provinces to the national average of 401 l/pp/d, Alberta ranks the third-lowest for consumption with a combined total of 330 l/pp/d; however, Lethbridge’s combined consumption is far above average at 540 l/pp/d. The Alberta average residential ranks fifth and the commercial ranks third.

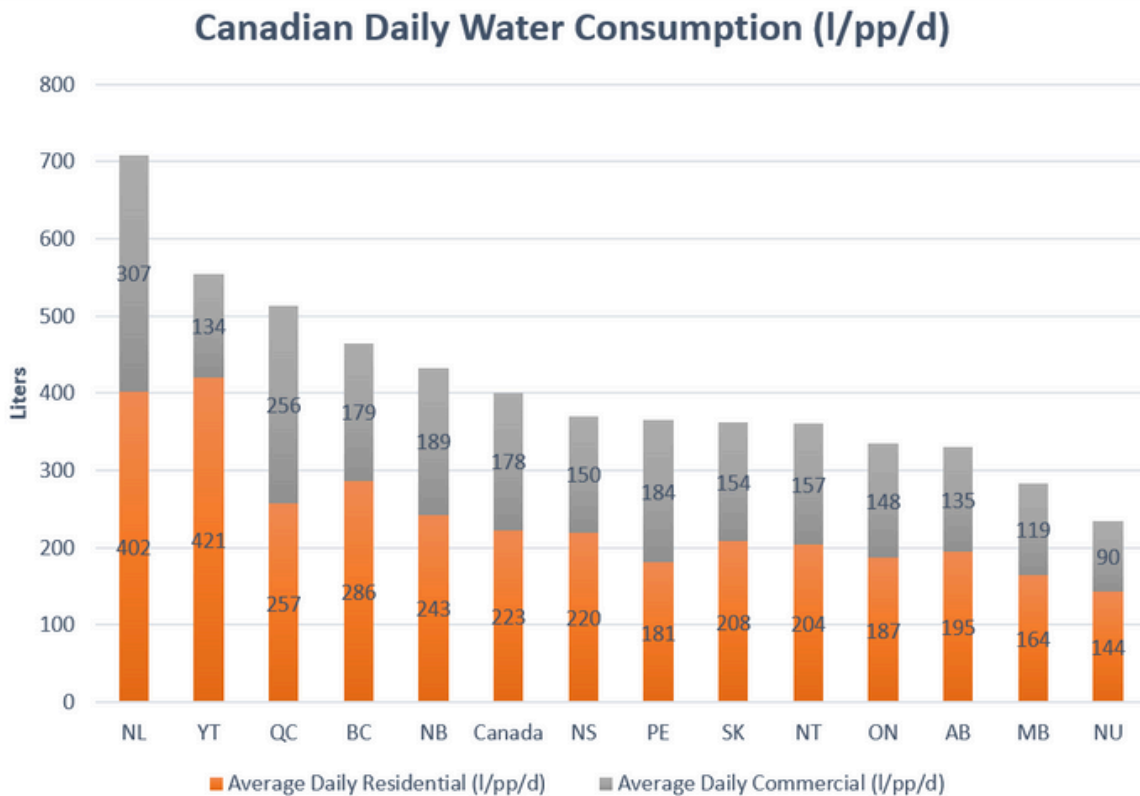


FIGURE 6: Comparison of daily water consumption across Canada in 2021, showing average residential and commercial use in liters per person per day (l/pp/d).

GOALS & OBJECTIVES

What does Water Conservation mean?

Through water conservation efforts and programs, the City of Lethbridge is looking to encourage a long-term change in water usage behaviour. The Alberta Water Council defined water conservation as:

- Any beneficial reduction in water use, loss or waste.
- Water management practices that improve the use of water resources to benefit people or the environment.



Water conservation can best be achieved and maintained through the voluntary efforts made by individuals and organizations. Education and awareness are important to provide information on the need for water conservation, and keep it top of mind, but also to inform of best practices that can help meet individual or societal goals.

What does Water Rationing mean?

In dry regions or regions that face water shortages due to recurring droughts, water rationing ensures that critically limited water supplies are distributed in a way that sufficient water is delivered to preserve public health and safety. Rationing allows local or even regional and national administrations to cope with the water crises by reducing consumption.

Water rationing can be used in several ways:

- Limit certain uses of water (e.g. irrigation of lawns, filling swimming pools, or hosing down pavement areas).
- Limit water availability in terms of volume and/or time when it can be used.
- Temporarily suspend water supply or reduce the pressure below that required for adequate supply under normal conditions that affects all water users.

Whenever low-cost, temporary rationing measures are not complemented by behavioural change towards more conscious water use, water demand and use are expected to rise again. Water usage returns to its previous levels once rationing measures are removed. It is therefore extremely important that long-term water conservation efforts are realized.



GOALS & OBJECTIVES

It is important to be aware of the resources we use, what we use them for, and to ensure that we are using them responsibly. Water is no different. Water is life. Water not only sustains human life but that of animals, plants and the earth itself. Because we use water in so many areas of our lives it is important that we use it responsibly.

While Lethbridge is situated in one of the driest regions of the province, per capita, Lethbridge is one of the higher users in Alberta (FIGURE 7).

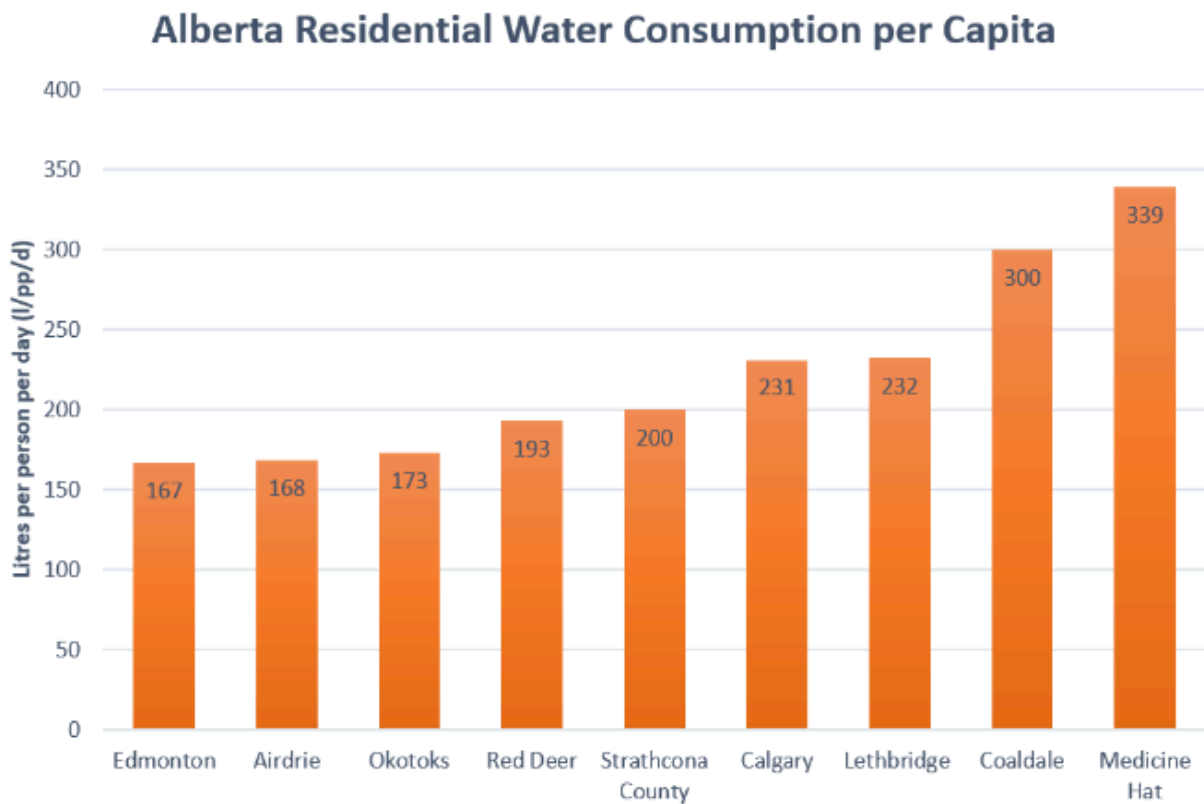


FIGURE 7: Average residential water consumption for various Alberta municipalities.

WHY DO WE NEED A PLAN?

While southern Alberta has experienced drought and water shortages in the past, our changing climate and current weather patterns have emphasized the need for concerted water conservation efforts (FIGURE 8). Water is not just a resource, it's a life source, and we all share the responsibility to ensure a healthy, secure, and sustainable supply for our communities, environment, and economy.

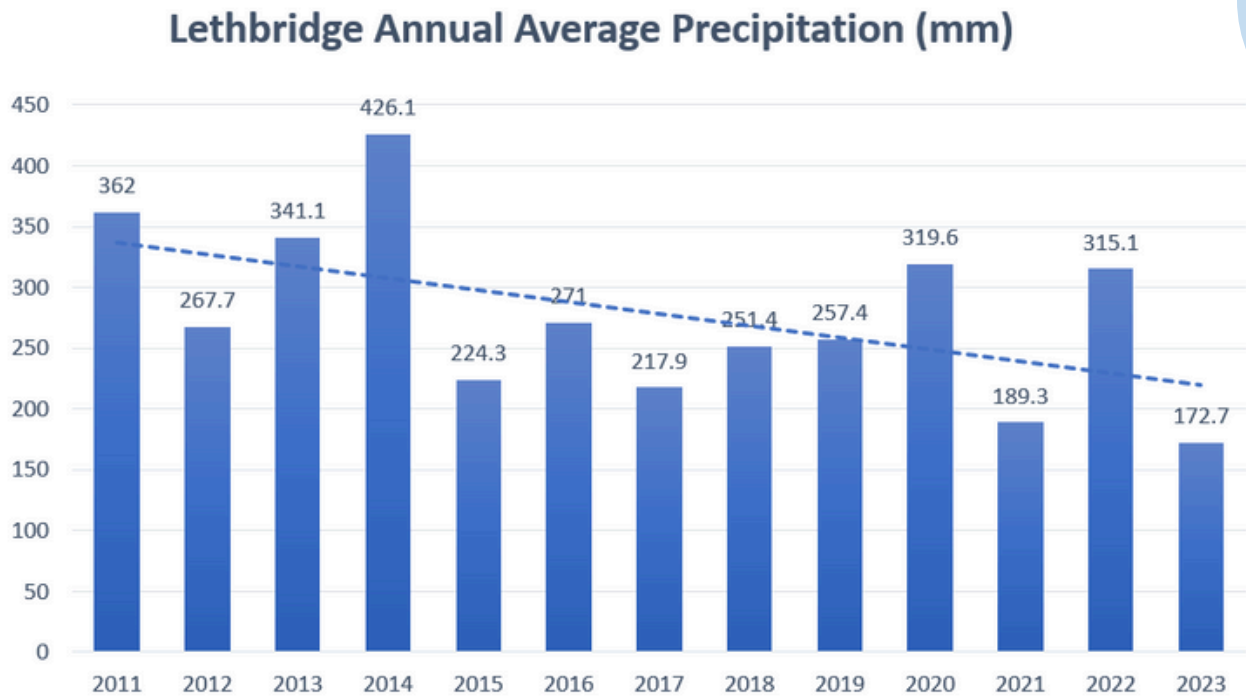


FIGURE 8: Aggregate information from Environment and Climate Change Canada's daily climate data tables for four stations in the City of Lethbridge.

Alberta's Water for Life Strategy was adopted by the Government of Alberta in 2003. The strategy contains the following three goals for the province:

- Safe, secure drinking water supply
- Healthy aquatic ecosystems
- Reliable, quality water supplies for a sustainable economy

In keeping with these goals, the City of Lethbridge, and those supplied water through the City's distribution system, need to take an active role in conserving water. To make significant and lasting forward progress, it's important to create good habits around water conservation; the more it becomes a habit the easier it is to conserve without conscious thought.

WHY DO WE NEED A PLAN?

While individual priorities and motivations may vary, there are many reasons to conserve water in daily activities.

- Value – water can be seen as a commodity and thus it has a value that should be accounted for .
- Decrease environmental impact – aquatic systems (like our river valley) depend on a minimum flow to maintain life processes and ensure a thriving and healthy ecosystem.
- Future generations – secure the future of our city’s water supply
- Financial implications - infrastructure operations and capital upgrades
- Population growth



Using less water can actually save you money on your utility bill!

During the summer months, the use of treated water in Lethbridge increases by over 200 per cent. This is mainly due to the irrigation of lawns and landscaping. Water usage also varies by neighbourhood as seen in the water usage heat map (FIGURE 9).

When voluntary conservation measures fail to produce the required results, or circumstances (i.e. drought) dictate that more concerted efforts are needed, water rationing may be implemented to ensure the City of Lethbridge can continue to provide treated potable water. Water rationing may be required for various reasons including, but not limited to the following:

- Low river and/or reservoir levels that supply the City.
- High water levels in the river with high sediment loads that require extended processing.
- Mechanical issues or failures in the treatment or delivery system.

Working together as a community to conserve water on a daily basis, will help limit times when rationing may be required.

Figure 9 on the next page is a comparison by neighbourhood, within the City of Lethbridge, of water usage. The neighbourhoods that use lower than average are light purple and the neighbourhoods that use higher than average amounts of water in the summer are dark purple. Additionally, the bar chart for each neighbourhood quantifies the volume of water used.



WHY DO WE NEED A PLAN?

Summer Water Usage 3 Year Trend per Residential Neighbourhood Compare your summer water usage over 3 years

Zoom to your neighbourhood and compare your summer water usage

Summer Water Usage

- Lower than Average
- Average = 32.3 m³
- Higher than Average

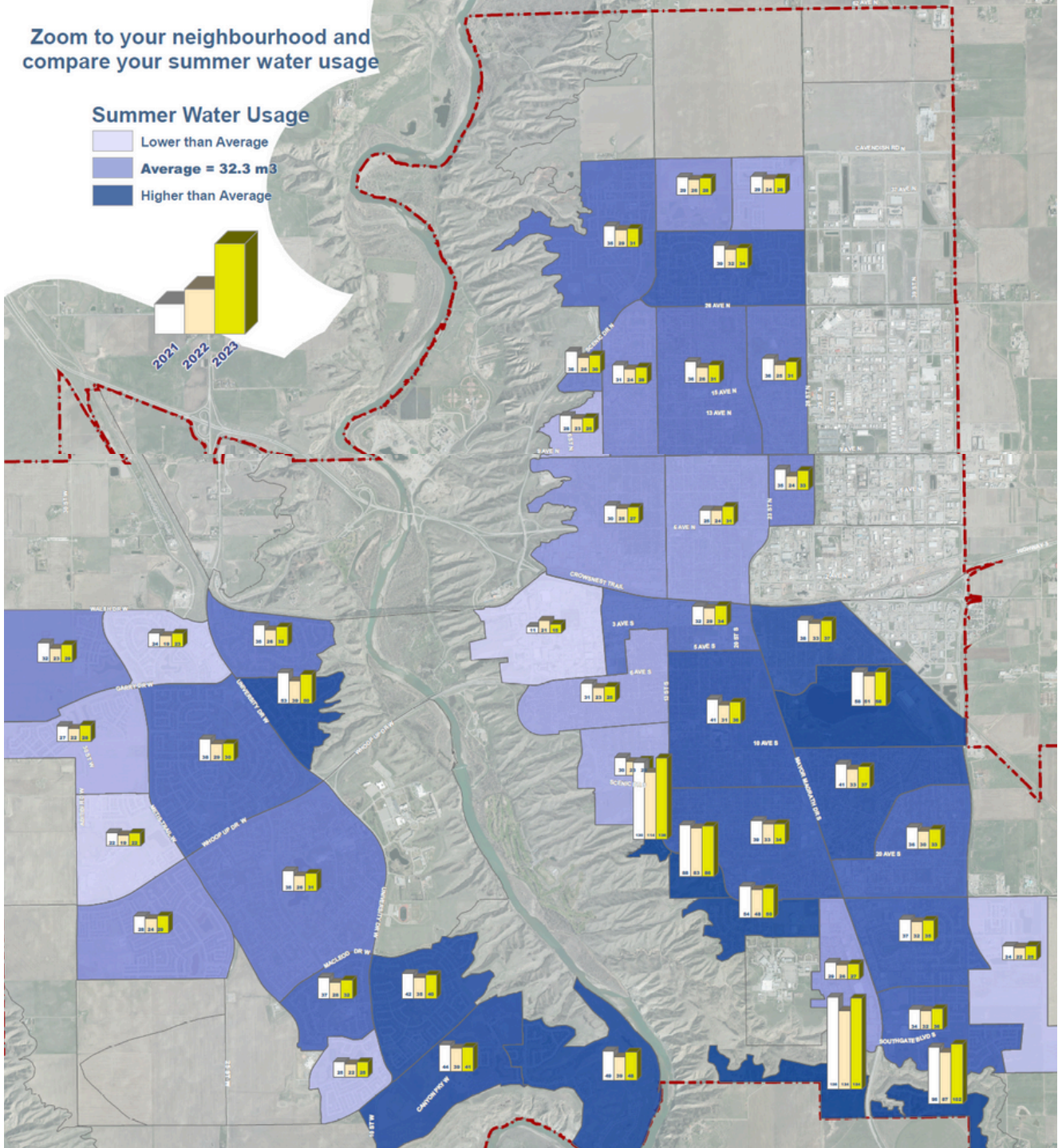


FIGURE 9: Three year summer water use trend per neighbourhood in Lethbridge (2021-2023).

WHO NEEDS THIS?

Water conservation should become habitual for all users, whether resident, industrial, commercial, institutional, or the City of Lethbridge Corporation. For conservation to be effective, everyone needs to do their part. Therefore, this Water Conservation Plan and Strategy is applicable to all.

The public survey completed as part of developing the water conservation plan resulted in just under 4,000 responses from residents, businesses and City of Lethbridge employees and departments. It is significant and telling that this survey garnered more than double that of any previous public survey administered by the City of Lethbridge.

From the results of the survey, it's apparent that many individuals are aware of, and implement, general water conservation practices. Some individuals are also clearly leaders in water conservation efforts and activities. The complete survey results are included in Appendix B as the "What We Heard" report.

Figure 10 shows a broad spectrum of ways the residents and businesses of Lethbridge currently conserve water.

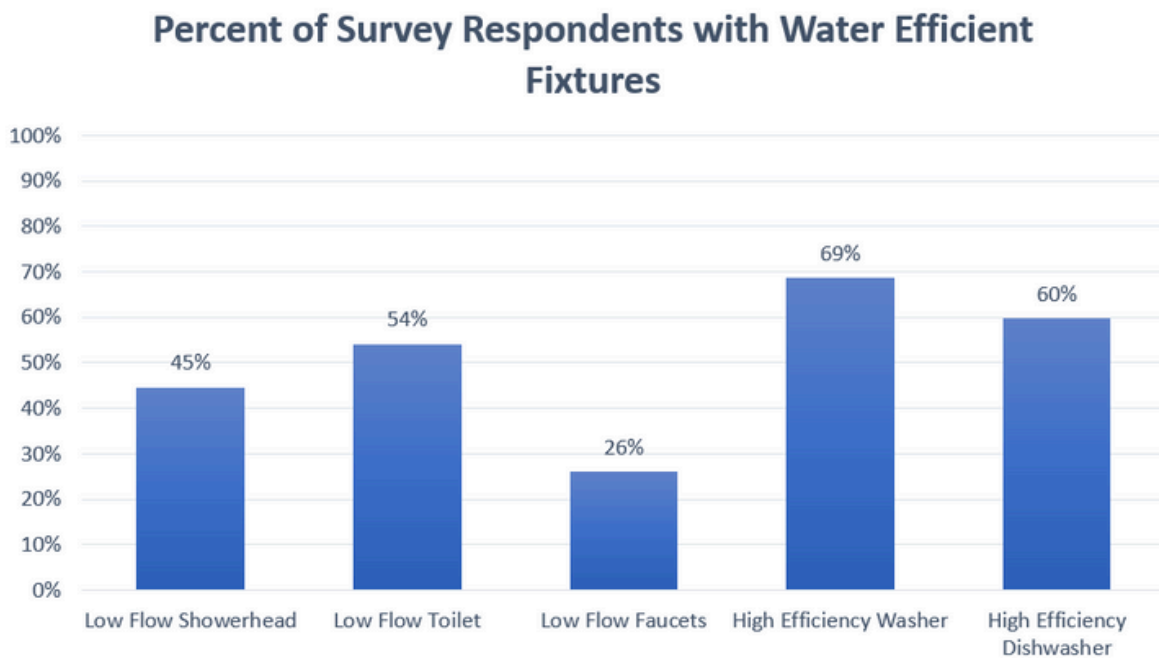


FIGURE 10: Public survey respondents with water efficient fixtures.

DROUGHT, EMERGENCY & CONSERVATION EFFORTS

The City of Lethbridge uses water in many different ways and areas including, but not limited to, fire suppression and training, public pools and spray parks, washroom facilities in public buildings, and maintaining over 400 hectares of irrigated turf (e.g. parks, cemeteries, sports fields) for public use and enjoyment. As a rule, the City of Lethbridge endeavors to lead by example and conserve water when and where possible. Departments regularly review current practices and look for ways to be more efficient with the resources available.

Finding efficiencies in water usage continues to be a priority within the City of Lethbridge. Programs to replace fixtures in public buildings with low flow alternatives and centralizing irrigation controls began prior to this plan and will continue.

During the initial stages of a drought, prior to implementing the Water Rationing Action Plan (APPENDIX A), the City will voluntarily reduce water use while maintaining public safety.

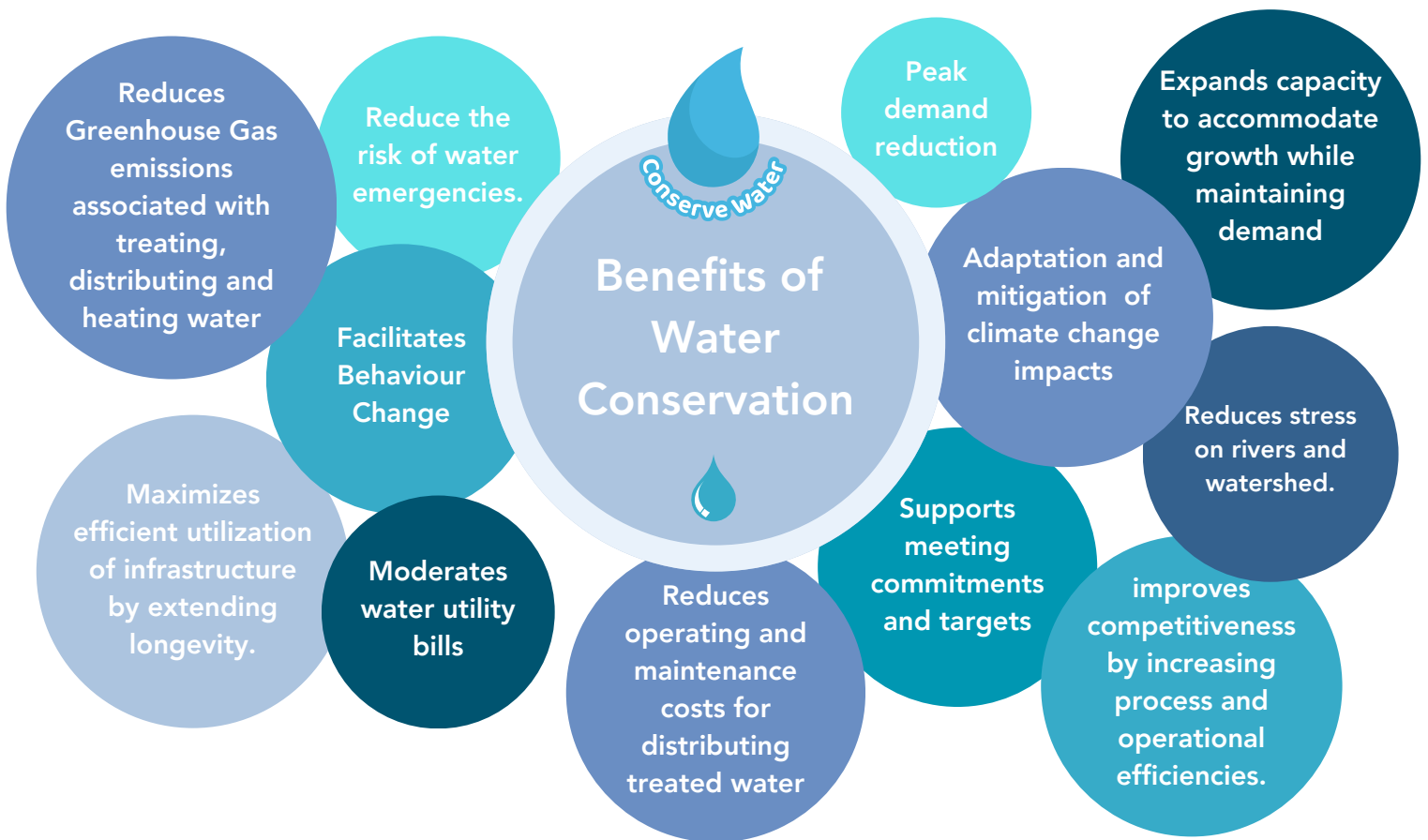
The City of Lethbridge is determined to continue to find ways to conserve water within the various departments while ensuring public facilities and spaces remain available and inviting. Sometimes this means that water may be used in ways or for activities that may be seen as contrary. For example, it may be determined to be in the public's interest to keep an outdoor pool or spray park open during a heat wave, when all have been asked to conserve water, as it may allow spaces for the public to find relief that might not otherwise be available.

General awareness campaigns will also help to increase public awareness and knowledge of general water conservation practices and opportunities. The City of Lethbridge will need a strategy to achieve water conservation.



PURPOSE OF THE STRATEGY

The purpose of the strategy is to realize the many benefits of water conservation and reduce water use in the community and within the City of Lethbridge Corporation including its operations. Conserving water will help reduce the impacts of droughts that are common to our landscape.



The Strategy provides a roadmap of actions and also supports watershed protection, increasing biodiversity and improving green infrastructure as part of the Municipal Development Plan. Additionally, there are grants from time to time for conservation efforts and incentive programs. It would be ideal to be able to access grants for a program(s) that would benefit Lethbridge.

The suggested target for water conservation is 20%. This is discussed in further detail in subsequent sections of the strategy.

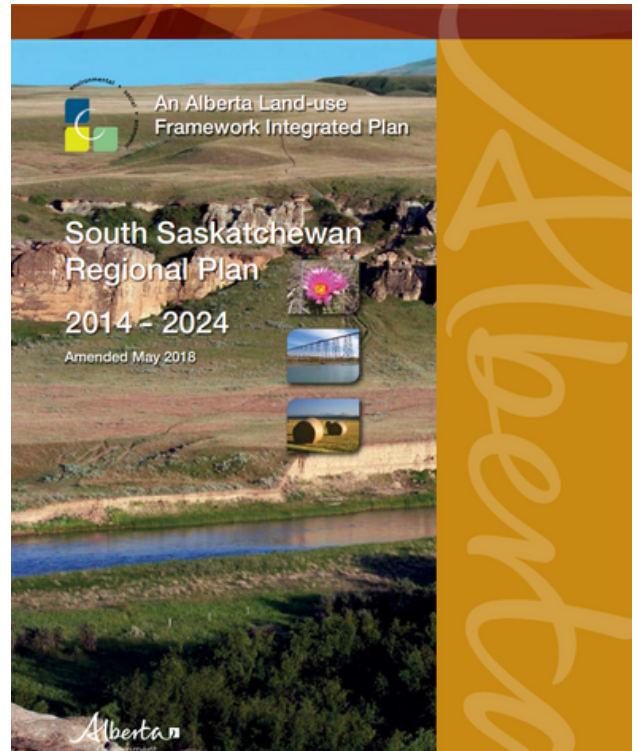
ALIGNMENT

It is important to align the goals and objectives of the Water Conservation Plan and Strategy with other guiding documents that have been approved prior. Beginning with the South Saskatchewan Regional Plan, implementation section; Efficient and Resilient Water Supply. The objectives of this section are: water is used as efficiently as possible to meet the current and future human and ecosystem needs, and there is resiliency in the ability of the water management system to adapt to change over time.

Efficient use of water is an important underlying principle everywhere, but is especially important in the geographic and climatic setting of southern Alberta. This valuable resource cannot be wasted.

Next would be the Municipal Development Plan. This comprehensive plan was approved in 2021. Within the plan, one of the outcomes was to be an environmentally responsible city. There were a number of indicators that were set for this outcome that include water. The policies provided in the plan in Water and Resource Conservation are the most applicable policies, these include: Policy 151, 166, 167 and 172.

The Water Conservation Plan and Strategy and the updated Water Rationing Action Plan were presented to the Economic and Finance Standing Policy Committee in April 2024. The plan sets out the framework for the need to conserve water and acts as the master plan with this strategy.



ALIGNMENT

The Energy Conservation Master Plan includes some components for water conservation. Initiatives for Parks and Water, Waste Water and stormwater were identified, and include the use of non potable water for irrigation, automated irrigation controls, education and outreach to reduce community water use and reduce leakages.



The City of Lethbridge

Energy Conservation
Master Plan and Strategy

April 2021

COUNCIL POLICY



ENVIRONMENT

Policy Number: CC-51
Approved by: City Council
Effective Date: May 11, 2015
Next Revision Date: May 11, 2019
Policy Owner: Waste Utility and Environment

PURPOSE

The Council of the City of Lethbridge has a broad mandate to provide good government, develop and maintain a safe and viable community, and to supply desirable and/or necessary services to the community. The purpose of this policy is to minimize Lethbridge's ecological footprint. The purpose of this policy is to provide flag protocol for the City of Lethbridge.

POLICY STATEMENT

The City is committed to taking a responsible leadership role in the efficient use of natural resources.

DEFINITIONS

Term	Description
Special Purpose Body	A City Council Committee or a Board, Commission or other body established under the legislative powers of the City of Lethbridge and includes any employees or volunteers of the Special Purpose Body.
Natural Resources	Resources including water, renewable and non-renewable energy sources, air quality, land, and natural environment.

RESPONSIBILITIES

City Council shall:

- Approve City Council governance policies regarding environmental stewardship
- Inspire, lead, and support actions to conserve, protect and enhance the environment for the Lethbridge community
- Encourage and promote continuous improvement with respect to environmental goals and targets
- Increase public awareness of environmental issues and the actions the community can take
- Support efforts to minimize Lethbridge's ecological footprint by using natural resources efficiently
- Support efforts to conserve and enhance the unique character of the Oldman River Valley
- Recognize the importance of water to Lethbridge and the broader region, and the need to be involved in all aspects of watershed management and water conservation

Page 1 of 2

City Council shall: Inspire, lead, and support actions to conserve, protect, and enhance the environment for the Lethbridge community; recognize the importance of water to Lethbridge and the broader region, and the need to be involved in all aspects of watershed management and water conservation.

CC-51

The purpose of Environment policy (CC-51) is to minimize Lethbridge's ecological footprint and to provide flag protocol for the City of Lethbridge. The City is committed to taking a responsible leadership role in the efficient use of natural resources.

WHY IS WATER CONSERVATION IMPORTANT

Water conservation is important to the City of Lethbridge and Regional Water users for many reasons. Four notable reasons include:

- 1. Sustainable Resource Management:** Water conservation in Lethbridge ensures the long-term availability of this vital resource, promoting sustainable water management for current and future generations.
- 2. Economic Impact:** Conserving water helps reduce the costs associated with water treatment and distribution, which can lead to lower water utility bills for citizens and contribute to a more economically sustainable community. It is also a better use of assets and reduces investment costs.
- 3. Environmental Preservation:** Water conservation supports the health of local ecosystems, maintaining biodiversity, and preserving habitats. It also reduces the need to extract water from sensitive environments, safeguarding natural landscapes.
- 4. Resilience to Drought and Climate Change:** Lethbridge faces challenges related to periodic droughts and climate change. Water conservation practices enhance the city's resilience by mitigating the impact of water shortages during dry periods, ensuring a more reliable water supply for residents.

It is important to be aware of the resources we use, what we use them for, and to ensure that we are using them responsibly. Water is no different. Water is life. Water not only sustains human life but that of animals, plants and the earth itself. Because we use water in so many areas of our lives it is important that we use it responsibly.

Partnerships

The City cannot tackle water conservation on our own. By partnering with trusted community organizations, we can better engage with and deliver initiatives to the people served by our partners.

Many organizations are involved in various aspects of water conservation, from regulation to data collection and analysis, to education. Coordinating and collaborating with our partners will help deliver water conservation projects and programs throughout the community.

Engagement

The City reached out to the community in January/February 2024 regarding feedback on Water Conservation. 3,997 responses were recorded, which is a record number for "Get Involved". This has indicated that this subject is important to the community. In fact 88% of respondents indicated that water conservation is a priority. Incentive programs were supported by a majority of the respondents with rain barrels a priority followed by landscaping incentives such as turf replacement. Another incentive was the notion of use more, pay more - scaling water rates. The full report is in Appendix B.

WATER DEMAND

The Oldman River, flowing through southern Alberta, serves as a vital water source for various sectors, including drinking water supply, agriculture and irrigation, industrial processing, and environmental sustainability. Understanding the dynamics of water demand on the Oldman River is crucial for managing its resources effectively and ensuring sustainable use for all stakeholders.

Drinking water supply is a primary concern for municipalities and communities along the Oldman River. With growing populations and urbanization in the region, the demand for clean and safe drinking water continues to increase. Municipalities rely on the Oldman River as a source of raw water for treatment plants, which provide potable water to residents and businesses. Ensuring sufficient water quantity and quality is essential to meet the drinking water needs of the growing population while maintaining public health and safety.

Agriculture and irrigation are significant drivers of water demand along the Oldman River basin. Farmers rely on irrigation systems fed by the river to sustain agricultural production, particularly during dry periods or droughts. Water demand for irrigation varies seasonally and depends on factors such as crop type, weather conditions, and soil moisture levels.

The availability of water directly impacts industrial activities and economic development in the region. Balancing industrial water needs with environmental conservation efforts is critical to ensure sustainable water use and minimize negative impacts on aquatic ecosystems.

Preserving the environment and ecosystem health is a fundamental consideration in managing water demand on the Oldman River. The river and its tributaries support diverse aquatic habitats, fish populations, and wildlife species. Maintaining adequate flow levels and water quality is essential to support ecological functions, such as habitat connectivity, nutrient cycling, and biodiversity conservation. Sustainable water management practices, such as flow regulation, riparian zone protection, and habitat restoration, are essential to safeguard the ecological integrity of the Oldman River ecosystem.

Managing water demand on the Oldman River requires a holistic approach that balances the needs of various sectors, including drinking water supply, agriculture, industry, and the environment. Collaboration among stakeholders, sound water management policies, and adaptive strategies are essential to ensure the long-term sustainability of water resources in the region while meeting the diverse needs of society and protecting the health of the ecosystem.

The SSRP water conservation objective can be expressed in relation to a rate of flow needed or a water level needed.

Pressures on water resources in the South Saskatchewan Region are significant. There are currently more than 20,000 water allocation licenses and registrations, serving approximately 1.8 million people and a mix of institutions and industries. Among the major users is the agriculture industry, notably irrigation, which accounts for 75 per cent of total water allocation volumes in the region. This is supported by significant investments in water infrastructure. As actual water use accounts for only a portion of allocation (55 and 66 per cent for municipal and irrigation use, respectively), actual consumption can be expected to increase as existing allocations are more fully utilized to meet the demands of growth. These demands and the resulting pressure on water resources are compounded by periods of natural low flow and drought experienced periodically by the region.

South Saskatchewan Regional Plan



WATER DEMAND

Water Demand for Lethbridge’s system is comprised of four main streams:

Commercial, which represents 36% of the total water demand, the Commercial sector includes all Industrial, Commercial and Institutional (ICI) customers within the City boundaries.

Residential, which represents 40% of the total water demand, the residential sector includes mostly single family dwelling units and a portion of the multifamily sector.

Irrigation, represents 3% of metered consumption, but not all irrigation is metered, so this number is expected to be higher.

Regional, which represents 20% of the water demand for the system, the Regional customers include Lethbridge County, the Town of Coaldale, Town of Picture Butte, Town of Coalhurst and other regional customers. It also includes some ICI customers located outside of the City boundaries.

Figure 11 shows the average water demand for Lethbridge water customers.

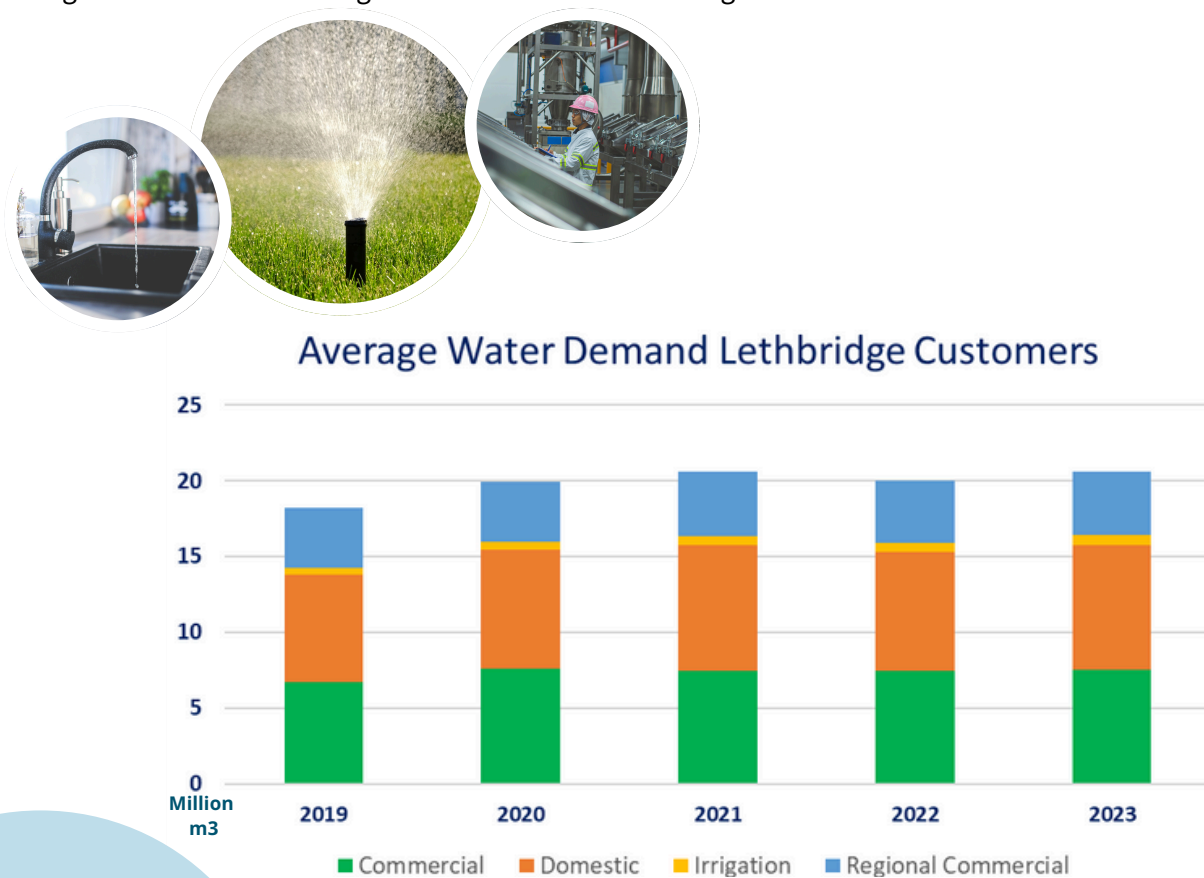


FIGURE 11: Water demand for Lethbridge Customers.

WATER DEMAND

The average daily consumption of water in the City of Lethbridge varies between residential and commercial sectors. On average, a residential household in Lethbridge consumes around 17-20 cubic meters (17,000 to 20,000 liters) of water per month. This consumption can vary based on factors like household size, water usage habits, and seasonal variations. Commercial (ICI) water demand in Lethbridge depends heavily on the type of business and its size. For example: small offices or retail shops might use anywhere from 5 to 15 cubic meters (5,000 to 15,000 liters) per month. Larger commercial establishments like hotels, restaurants, or industrial facilities can consume significantly more, ranging from 20 to several hundred cubic meters per day. Factors influencing water demand in both sectors include the number of occupants or employees, business activities, efficiency of water fixtures and appliances, weather conditions, and conservation practices. It's worth noting that these figures can change over time due to population growth, infrastructure improvements, and water conservation initiatives. The table below shows the average monthly consumption of water for residential and commercial (ICI) sectors.

Year	Residential m3	Commercial m3
2019	17.83	217.53
2020	18.79	245.07
2021	19.78	234.98
2022	18.84	235.79
2023	19.48	233.45

The ranges of water consumption by average residential monthly demand are noted in Figure 12. For the majority of the year, over 80% of the Residential City water users consume between 0 and 20 cubic meters.

Residential Water Demand by Month

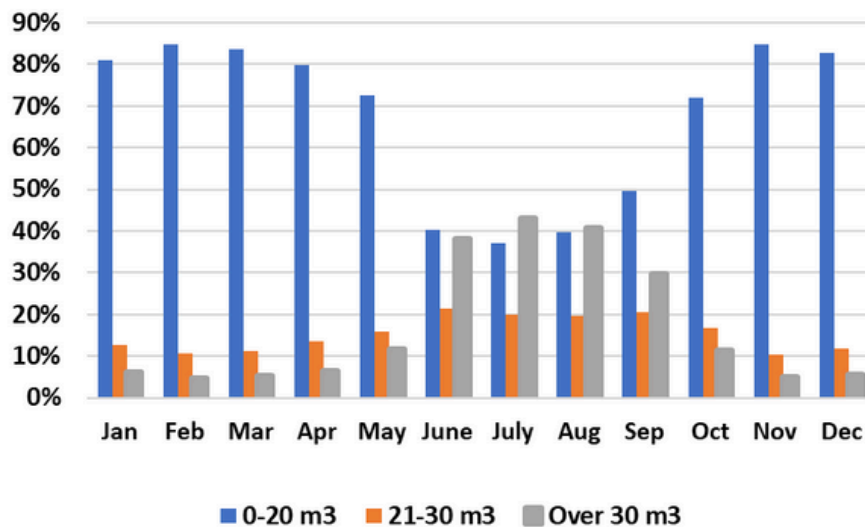


FIGURE 12: Monthly residential water demand for Lethbridge.



WATER CONSERVATION TARGETS

ROLES:

The **City's** Role is to lead by example and set the standard for the City of Lethbridge. The City's leadership will create a culture of environmental sustainability. The City is part of the Industrial, Commercial and Institutional sector and will participate as such. They will also track and monitor progress of achieving the target as well as implement initiatives as required.



The **Residents'** Role is to participate in the voluntary measures and add to the best practices in water conservation as best they can. It is important to implement any water restrictions when they are declared, as the availability of water may be dependent on the outcome. Residents should keep themselves informed regarding the status of conservation efforts or water rationing requirements. Additionally, keeping up with water efficiency technology and best practices will also allow for a savings on the water utility bill based on: if you use less, you pay less.

The **Industrial, Commercial and Institutional (ICI)** sector's role is to acknowledge that they play a role in conserving water, which can help reduce operational costs. They should ensure they remain informed and current with conservation efforts and when the Water Rationing Plan has been actioned. Keep employees up to date and educated on water conservation practices as well as encourage customers. Additionally, they should keep up to date with technologies and opportunities that would support their business and water conservation.



Institution Sector	Commercial Sector	Industrial Sector
Post Secondary Institutions School Districts Health Region Nursing home facilities Government facilities	Restaurants Grocery Stores Accommodation Retail Car wash golf courses	Manufacturing Agricultural Processing Food Processing Distributing

WATER CONSERVATION TARGETS

Performance Monitoring:

Performance monitoring allows for the continuous management and collection of data used for comparing future to baseline data and provides a tracking method for targets and goals. Another aspect of performance monitoring is the ability to identify areas where conservation may not be as successful and if there is a need for further action through the form of economic or regulatory programs.

Baseline:

A baseline is the starting point or reference point for measuring progress towards a target. It is the current state or level of performance that is used as a benchmark for improvement. For the purpose of water conservation, the 2023 per capita water consumption data divided into residential and ICI has been provided as the baseline.

Voluntary Programs:

Voluntary programs are programs for which participation is not mandatory. **Education and Awareness Programs** are typically used to increase general knowledge and encourage participation, these programs usually include best management practices that can be used to achieve a goal. For the purpose of water conservation, Education and awareness would be conducted throughout to ensure program effectiveness and to encourage program participation.

Water Conservation Promotion promotes specific water conservation activities in the community through public acknowledgement of accomplishments and reinforcement of positive behaviours aimed at water conservation. The water conservation program would tie into the Climate Adaptation Strategy and Action Plan, and would be carried out as a resource for educating, communicating and marketing conservation programs .

Economic Programs:

Economic Incentives are financial rewards provided to people who alter their consumption of water. The main purpose of the economic incentive approach is to influence human behaviour to produce the desired results naturally. This is a type of monetary motivation. With respect to water conservation, this could be a scaled water rate structure or a rebate type of program. **Scaling Water Rates** can encourage water conservation by creating a financial incentive, following the initial voluntary education. Scaled water rates introduce the economic tools to influence behaviour by increasing the cost of water consumption - the more you use, the more you pay. **Incentive and Rebate Programs** will be introduced to support water conservation behaviour changes and help to offset some of the costs of implementing best practices.

Regulatory Programs:

Regulatory programs are those tied to a piece of legislation such as a bylaws or policies, and therefore can be enforced (e.g., bylaws, policies). The **Water Rationing Action Plan** has been updated and may be called into action during situations such as a drought, infrastructure issues, population growth, or environmental concerns.

WATER CONSERVATION STRATEGY

Water Conservation Targets			
Baseline (2023) l/pp/day	2024-2025	2026-2027	2028-2030
		10%	15%
232 Residential	209 Residential	197 Residential	186 Residential
299 ICI	269 ICI	254 ICI	239 ICI

*based on annual consumption



Voluntary measures

- water efficient appliances & fixtures
- plant drought tolerant plants
- minimizing leaks
- xeriscaping
- reduced lawn watering
- limit shower durations
- run appliances with full loads
- reduce washing outdoor surfaces

Economic measures

- scaling water rates
- incentive/rebate programs:
 - rain barrels
 - xeriscaping
 - toilet rebate

Regulatory measures

- Water Rationing Action Plan measures
- Water Conservation Policy
- Include Water Conservation in Design Standards

Using a per capita target for water conservation is important because it accounts for population growth and changes in water demand over time. A per capita target sets a goal for the average amount of water used per person within a specified area, such as a city or region.

By focusing on per capita usage, water conservation efforts can be tailored to the needs of the population and adjusted accordingly as the population grows or changes. This approach encourages efficiency and sustainability by aiming to reduce individual water consumption regardless of fluctuations in overall water usage due to factors like economic growth or climate variability.

Per capita targets are commonly used in water management and conservation initiatives to promote efficient use of water resources and to track progress towards sustainability goals.

RECOMMENDED INITIATIVES

Various options are available and have been recommended below for voluntary, economic and regulatory initiatives.

Voluntary:

All users: Residential, Industrial, Commercial, Institutional

“
Implement water conservation best practices
”

“
Replace older fixtures with water efficient ones
”

“
Identify and fix leaks
”

“
Xeriscaping to reduce outdoor water demands
”

“
Work collectively to achieve the 20% reduction target
”

“
Use rain barrels to capture rainfall for outside watering
”

“
Don't run water unnecessarily
”

“
Household or Company awareness and education on water conservation
”

RECOMMENDED INITIATIVES

The economic and regulatory initiatives are organized and implemented by the City of Lethbridge and include the residential and the industrial, commercial and institutional sectors.

Economic:

“
Create and deliver a rain barrel program.”

“
Scaling Water Rates”

“
Create and deliver a xeriscaping program.”

“
Create and deliver a water efficient toilet program.”

Regulatory:

“
Include water conservation into design standards”

“
Water Conservation Policy”

“
Water Rationing Action Plan”

IMPLEMENTATION & PRIORITIZATION

Initiatives to be implemented Now:

Current Water Rates

Residential	Any Volume of Water
	\$1.327 per m3

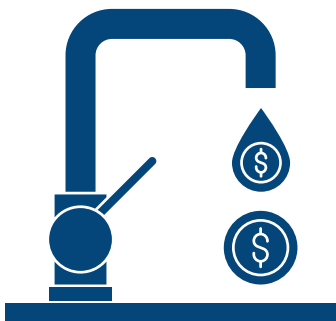
	Tier 1	Tier 2	Tier 3	Tier 4
ICI	0 - 750 m3	751 - 25,000 m3	25,001 - 50,000 m3	over 50,001 m3
	\$1.169 per m3	\$0.815 per m3	\$0.702 per m3	\$0.532 per m3

Scaling water rates can have several impacts on consumers and can be effective in promoting changes in behaviour towards water consumption:

Financial Impact: Scaling water rates means that consumers are charged based on the amount of water they use. Those who use water sparingly and efficiently will pay less, while heavy users will pay more. This can incentivize consumers to be mindful of their water usage to avoid higher bills, thus promoting water conservation.

Awareness: Higher water rates for excessive use can raise awareness among consumers about the importance of conserving water. It highlights the fact that water is a valuable resource that should not be wasted, leading to more conscious consumption patterns.

Behavioural Change: When faced with higher water rates, consumers may actively seek ways to reduce their water usage. This could include fixing leaks, using water-efficient appliances, adopting water-saving practices (like shorter showers or watering lawns less frequently), and overall being more mindful of water consumption habits.



IMPLEMENTATION & PRIORITIZATION

Environmental Impact:

Reduced water consumption due to scaling rates can have positive environmental effects by conserving water resources. This is especially crucial in areas facing water scarcity or drought conditions, where every drop of water saved can make a difference.

Scaling Water Rates
Scaling water rates can play a significant role in shaping consumer behaviour towards more sustainable water consumption practices, leading to positive outcomes for both individuals and the environment.

Long-term Sustainability: By encouraging responsible water usage through pricing mechanisms, scaling water rates support the long-term sustainability of water resources. Conserving water now ensures that future generations will also have access to an adequate and clean water supply.

Proposed Scaled Water Rates

If approved, scaled water rate amendments to the Water Services Bylaw will be brought for consideration as soon as possible

	Tier 1	Tier 2	Tier 3
Residential	0 - 20 m3	20 - 35 m3	36 m3 or more
	\$1.327 per m3	\$1.593 per m3	\$1.753 per m3

	Tier 1	Tier 2	Tier 3	Tier 4
ICI	0 - 500 m3	501 - 5,000 m3	5,001 - 25,000 m3	Over 25,001 m3
	\$1.169 per m3	\$0.90 per m3	\$0.84 per m3	\$0.72 per m3



IMPLEMENTATION & PRIORITIZATION

Initiatives to be implemented Now:

Voluntary Water Conservation

There are many different ways residents and businesses can voluntarily reduce water consumption.

- Implement water conservation best practices.
- Replace older fixtures and appliances with water efficient ones.
- Identify and fix leaks.
- Work collectively to achieve the 20 per cent reduction target.
- Use rain barrels to capture rainfall for outside watering.
- Xeriscaping to reduce outdoor water demands.
- Household or company awareness and education on water conservation.
- Not running water unnecessarily.

One of the most impactful water conservation areas is to properly manage outdoor water use.

A leaky toilet can waste over 1,000 litres per day. That would be like flushing your toilet more than 60 times for no reason!

Water Conservation Policy

The purpose of the policy is to provide guidelines to encourage the efficient use of water. The policy provides instructions to those that have responsibilities, which includes City Council, the Waste & Environment Department and City Administration and Operations.

The consequences of non-compliance with the policy would mean that costs are not being optimized for operations, which could impact the water supply or cause ecological damages, and tarnish the reputation as an environmental steward.

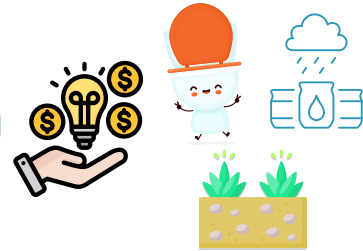


IMPLEMENTATION & PRIORITIZATION

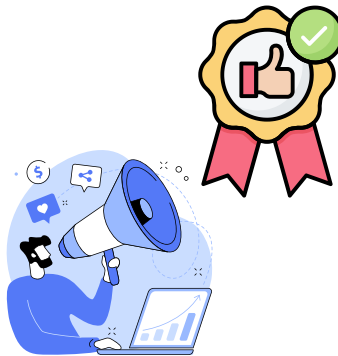
Initiatives to be implemented within the next 12 months



Develop Incentive Programs for water efficient toilets, xeriscaping and rain barrels



Monitor effectiveness of education campaigns



Publish Community Conservation Best Practices



APPENDIX A

WATER RATIONING ACTION PLAN

APPENDIX B

WHAT WE HEARD, ENGAGEMENT REPORT

 CITY OF
Lethbridge

