

June 17, 2024

Delivered by Email

The City of Calgary  
P.O. Box 2100, Station "M"  
Calgary, AB T2P 2M5

Attention: The Mayor and Council Members

Dear Mayor and Councillors,

**Subject:** City of Calgary proposed Water Utility Bylaw amendments  
**CPCIA Subject Matter Expert Concerns and Questions**

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On behalf of The Canadian Prairie Chapter of the Irrigation Association (CPCIA) members, we write to you to provide comments, feedback, and recommendations on the proposed changes to the Water Utility Bylaw. We also want to extend our appreciation for the proposed amendments to the Water Utility Bylaw and recognize and commend the efforts of City staff in developing said amendments and welcoming our association's participation in updating the Water Managed Sites Program. In particular, we appreciate the efforts of Aaron Boulton-Chaykowski, Public Program Coordinator with Climate and Environment, Planning and Development Services at the City of Calgary for his support, understanding, and facilitation during this process.

Notwithstanding the noted efforts of Mr. Boulton-Chaykowski, the CPCIA is deeply concerned with portions of the proposed amendments along with other aspects of City of Calgary water infrastructure and service.

The proposed Bylaw amendments, which impose a blanket outdoor watering schedule of two 3-hour cycles per week under "Normal Water Supply Conditions", disregards our concerns below. The CPCIA urges a reconsideration of this portion of the proposed Bylaw, as it contradicts best irrigation and horticulture practices and has proven ineffective in other jurisdictions.<sup>1</sup> The body of science indicates otherwise, and we encourage The City to follow that science.

**Key Concerns with the Restrictions included in the Proposed Bylaw Amendments:**

**1. Inefficient Watering:** Calgary's heavy clay-based soils require low water application rates applied multiple times over a watering event to ensure effective deep root percolation. The proposed restrictions encourage applications rates that will exceed Calgary's soil intake rates and lead to excessive run-off and increase water waste.

**2. Poor Watering Behaviour:** The restrictions will lead to citizens utilizing the full 6 hours each week, regardless of landscape necessity, wasting water, compromising plant health, and encouraging overuse of herbicides and fertilizers.

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<sup>1</sup> 26 January 2022, Shurtz, K.M.; Dicalado, E.; Sowby, R.B.; Williams, G.P. Insights into Efficient Irrigation of Urban Landscapes: Analysis Using Remote Sensing, Parcel Data, Water Use, and Tiered Rates. *Sustainability* 2022, 14, 1427. <https://doi.org/10.3390/su14031427>

**3. Environmental Impact:** Excessive run-off, combined with excess herbicide and fertilizer use, will degrade downstream water quality.

**4. Lack of Differentiation:** The Bylaw amendments do not account for property size, type, or the month of the season, leading to water waste and loss of tree canopy and green infrastructure assets.

Below are some comments on the proposed Bylaw amendments “**Wastewater, Stormwater, Water Utility Bylaw Update Report EC2024-0674**” dated June 11, 2024:

**1. Item 7.7 page 1 of 5, paragraph 2:**

*Who determines non-essential vs essential outdoor water use? Is ensuring green infrastructure survives drought an essential use?*

**2. Item 7.7 page 2 of 5, Item 1.: “...to declare a Water Schedule to proactively respond to drought and/or manage seasonal water demand and reduce outdoor water use...”**

*The proposed day of the week conservation method has proven to be ineffective and results in additional water use. The CPCIA recommends sensor-based scheduling rather than calendar-based and aggressively tiered water rates as effective conservation programs.<sup>2</sup>*

**3. Item 7.7 page 2 of 5, paragraph 2: “...equity of outdoor water use for customers.”**

*Please specify which customers. Is this specific to single family residences without an automatic irrigation system (i.e. manual hose watering residences)? If it includes commercial, industrial, HOAs, and larger properties, then our association has major concerns with the watering schedule and the time allocations. Some of these properties currently require time allocations of 30 hours per week in peak months for effective and efficient watering.*

**4. Item 7.7 page 2 of 5, Item 1.: “...This schedule incorporates best practices for efficient outdoor watering in a dry climate...”**

*On the contrary, the proposed watering schedule is not accepted best practice and will unintentionally result in additional water use as customers will feel obliged to apply water for the duration of their allotted watering window regardless of their landscape water needs.*

**5. Item 7.7 page 4 of 5, paragraph 1 re “External Engagement and Communication”:**

*Calgarians and residential customers are not subject matter experts and should not be relied upon to inform best management practices or policy. Please consider engaging the CPCIA task force and landscape professionals (such as Landscape Alberta Nursery Trades Association - LANTA).*

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<sup>2</sup> Finley, S. L., & Basu, N. B. (2020). Curbing the summer surge: Permanent outdoor water use restrictions in humid and semiarid cities. *Water Resources Research*, 55, e2019WR026466. <https://doi.org/10.1029/2019WR026466>

**6. Item 7.7 page 4 of 5, paragraph 3 re “Environmental”:**

*How will this support tree canopy and green infrastructure health?*

*Most trees are planted in lawns with their feeder roots in the grass areas rather than at their trunks therefore root watering devices are not effective methods, sprinklers are recommended. Are those considered essential outdoor water uses? How are existing urban forests valued and when does that value warrant protection with irrigation?*

**7. Item 7.7 page 4 of 5, paragraph 4 re “Economic”:**

*Major understatement, irrigation and landscape contractors, designers, nurseries, and distributors will be severely impacted financially by the proposed watering schedule and devastated by extended stage 4 restrictions as is the current situation.*

*How will the City mitigate impact of restrictions? Businesses affected by Stage 1 restrictions in August of 2023 lost 80% of their seasonal revenues for that season. The extent of revenue loss for businesses and employees due to the current Stage 4 restrictions is yet to be determined; however, many of the landscape irrigation workers and professionals have lost close to a full week’s pay due to lost hours of work. Many employees of the green industry are already in low-income categories and any reduction in their ability and frequency to work results in them leveraging social programs such as the food bank.*

**8. Item 7.7 page 4 of 5, paragraph 5 re “No anticipated financial impact”:**

*Water conservation will help defer future capital expenditures to upgrade and expand water services.*

**9. Item 7.7 page 4 of 5, last paragraph re Risk:**

**“...Implementing a watering schedule can proactively mitigate these risks by limiting outdoor water use...to minimize water loss.”**

*The watering schedule proposed will not have the impact council anticipates and will result in increased water use and waste<sup>3</sup>, see above response to #4.*

**10. EC2024-0665 Document, Attachment 2, 20.1 (1) “...to establish a water managed sites program...”:**

*The WMS program is existing as of approval of Bylaw 40M2006 in July 2006 and requires an update. Consider rephrasing sentence to read “... to update the water managed sites program...”*

**11. EC2024-0665 Document, Attachment 2, 20.5 Section # 18(1)(c) “...Allow spray or stream of Potable Water to run into street or sidewalk or parcel.”:**

*Define “parcel”, isn’t the point of watering to apply water to the parcel?*

*It is impossible to eliminate some minor overwatering onto a street or sidewalk due to the shape of the landscape, wind, and other non-controllable environmental factors. 3-hour*

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<sup>3</sup> Finley, S. L., & Basu, N. B. (2020). Curbing the summer surge: Permanent outdoor water use restrictions in humid and semiarid cities. *Water Resources Research*, 55, e2019WR026466. <https://doi.org/10.1029/2019WR026466>

*water windows encourage poor “use it or lose it” watering behaviour (Refer to attached sheets on local sites data – SmartET Cumulative sustainability Reports).*

**12. EC2024-0665 Document, Attachment 2, Schedule D.1 Item 4. & Schedule E. Item 4. “Watering of new trees and shrubs during establishment period (5 years)”:**

*Trees are often in lawns and are not zoned separately in automated irrigation systems, which method of watering is acceptable in this item?*

**13. EC2024-0665 Document, Attachment 2, Schedule D.1 Item 6. “Testing and auditing of irrigation systems”:**

*This should only apply to automatic irrigation systems.*

**14. EC2024-0665 Document, Attachment 2, Schedule E. Items 3 & 4. “Watering of New Grass (sod or seed)...” & “Watering of new trees and shrubs...” under Stage 3 column:**

*Can new sites enter the WMS program this quickly?*

*If not, why exclude them from Stage 3 watering?*

**15. EC2024-0665 Document, Attachment 3, Item 5) “Drip Irrigation”:**

*What is the rationale for this item being highlighted in this item and how is it defined?*

**16. EC2024-0665 Document, Attachment 3, Item 7) “Watering new grass and new trees...”:**

*Why not allow automatic irrigation systems for this item in Stage 3?*

**17. EC2024-0665 Document, Attachment 4, Page 6, “Newly planted grass, trees... (any method)”:**

*This does not match text in Schedule 4, Item 4 or Item 7 of Bylaw changes.*

**Recommendations for Effective Irrigation Management:**

The CPCIA advocates for Smart Controllers that automate best irrigation management practices, such as aligning the water application rate with the soil's intake rate, ceasing watering when soil moisture has been adequately replenished, and incorporating the cycle and soak method. During times where peak day demand is excessive, CPCIA members through Smart Control, can quickly modify irrigation schedules to help balance the demand curve. In times of crisis, like the current watering ban, CPCIA members turned off thousands of irrigation systems within hours.

**More Effective Solutions:**

Immediate Solutions: The CPCIA proposes a focus on education over legislation, establishing minimum standards for soil depth (min. 300 mm), quality control in new construction with oversight by certified professionals, mandating the proper design and installation of irrigation systems by Certified Designers and Contractors (DP and BP stages), and advocating for web-enabled, remote access, automated smart irrigation controllers and technologies (sensors, master valves, flow sensor/meters, soil moisture sensors, etc.).

Short Term Solutions: The City may work on a tiered water rate structure with tiers defined by customer water budget allocations as well as education programs to encourage citizens to adopt said technologies and required upgrades.

Long term solutions: The City may consider planning and incorporation of alternate non-potable water sources for irrigation especially on public parks and athletic fields, grey water use for residential irrigation, etc.

### **Addressing the Real Problem – Water Infrastructure Losses and Leakage:**

In addition to the economic losses facing our members, the proposed Bylaw amendments put at risk the health of needed, valuable trees and plants and threatens jobs within the irrigation and landscape industries with no proposed offsetting mitigation strategy. While not the initial focus of our review of the proposed Bylaw amendments, the June 6<sup>th</sup>, 2024, failure of a major water feeder main along 16<sup>th</sup> Avenue NW near Home Rd. NW, and associated media reports have raised reasonable questions and concerns regarding the sufficiency and prudence of the City's water utility operations and asset management. We underscore to the City that the Stage 4 water restrictions inflict a significant economic burden on CPCIA members, landscape contractors, garden centres, many other businesses, and Calgarians.

The City must transparently address the significant issue of water infrastructure loss and leakage, which in 2022 resulted in an estimated loss of approximately 33.4 billion litres of potable water due to leaks from the City's water network. In contrast, a 12-week Stage 1 Outdoor Water Use Restrictions in 2023 only saved 1.5 billion litres. Perhaps a more startling contrast is, the City estimated rate of daily per capita water usage of 173 liters per capita per day, the amount of water lost in 2022 due to leaks is approximately equivalent to the amount of water 528,000 Calgarians would use in a year and a cost of approximately \$98,000,000 (Using residential water rate for 2022 of \$2.9363 per cubic meter) to the utility and Calgary tax payers.

The CPCIA finds it concerning that City of Calgary officials appear to want to compare Calgary's water loss performance to other municipalities with similar problems and rationalize current performance as acceptable. Calgary and Edmonton are excellent comparisons. Calgary and Edmonton have nearly identical metro populations, the same soil type (Black Chernozemic<sup>4</sup>), are in very similar climate zone with Edmonton enjoying a slightly longer growing season (Growing Degree Days only 15%) than Calgary, slightly higher rainfall (9.5" vs 8.5" April – October), similar low humidity, warmer summers and, of course, colder winters (see: Compare the Climate and Weather in Edmonton and Calgary - Weather Spark). Interestingly average wind speed in Edmonton is consistently higher than in Calgary (10.4 vs 7.9 km/hr on average). So, the drivers of outdoor water use are not significantly different between the two cities, including that of evapotranspiration (the combined water losses of a landscape due to plant transpiration and evaporation) which is only ~ 23% higher in Calgary which is within the margin of error when calculating irrigation runtimes.<sup>55</sup> The City of Edmonton's water network management, water conservation efforts, and superior water loss performance are the model for the City of Calgary to commence striving for immediately.

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<sup>4</sup> <https://www1.agric.gov.ab.ca/soils/soils.nsf/soilgroupmap?readform>

<sup>5</sup> ADMINENV0002 (alberta.ca) refer to page 183 of 283 for ET data from Golder column in the table.

In attempting to understand the City of Calgary's financial capacity to deal with the water loss and water infrastructure issues, CPCIA members reviewed the City of Calgary's 2023 Annual Financial Report. The CPCIA suggests using the substantial amounts held in City reserve accounts (see: City of Calgary 2023 Annual Financial Report, pg. 123, Consolidated Reserves<sup>6</sup>) to fund accelerated repair and replacement of aging infrastructure where the losses and leaks are indicated and occurring at the highest rates (See: [Water Main Breaks Map | Open Calgary](#)).

While we all celebrate that The City has achieved the 30% reduction in total water use by 2030 goal 10-years earlier than planned, the focus should be on tackling the larger contributor to water losses rather than unfairly targeting the Green Industries that have been playing a major role in water conservation through automation, professional oversight, and education. As much as citizens are complying with the current restrictions, The City water utility system is still leaking at 22%.

The CPCIA and the irrigation industry support, educate, and advocate for water resource conservation and the use of Smart Irrigation Technology but oppose being unfairly burdened by ineffective legislation and undue severe restrictions. The City has been both encouraging and imposing water conservation measures on the customers' side of the water meter. The proposed Bylaw amendments create additional unwelcome and unnecessary impacts on the customers' side of the water meter. Accelerated reciprocal action must be taken on the City of Calgary's upstream side of the water meter. The City must address infrastructure and water network integrity matters before imposing undue burdens on taxpayers and prudent water users.

Refer to the attached supporting documents and research studies.

To learn more about the CPCIA, please refer to [Home - Canadian Prairie Chapter of the Irrigation Association \(cpcia.ca\)](#).

We look forward to continued dialogue and collaboration on these important matters.

Respectfully,  
CPCIA



Kyle Brost, BSc, Certified Irrigation Contractor (CIC), Certified Irrigation Technician (CIT), Certified Landscape Irrigation Auditor (CLIA)  
President, Canadian Prairie Chapter of the Irrigation Association (CPCIA)

On Behalf of the Irrigation Industry and the CPCIA Water Managed Sites Task Force Members

**Aline Kahawaty**, Landscape Irrigation Solutions Ltd., CPCIA Vice-President, MSc. Irrigation, Certified Irrigation Designer (CID), CLIA

**Darren Kovacs**, CEO and Founder ExactET Systems Inc., CPCIA Partnership Director

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<sup>6</sup> <https://www.calgary.ca/our-finances/2023-2026-service-plans-budgets.html?service-line-budget-bar-chart-serviceplanbudget-xview=2023&service-line-budget-bar-chart-serviceplanbudget-view-open>

**Tige Procyshyn**, Landscape Irrigation Solutions Ltd., Certified Landscape Water Manager (CLWM), CID, CLIA, Landscape Architectural Technologist (LAT)

**Kyle Brost**, Prestige Outdoor Services, CPCIA President, BSc, CIC, CIT, CLIA

**Myles Sidorak**, CEO Naiad Irrigation Systems, CPCIA Treasurer, CIC, CID, CLIA, CLWM, CIT

**Shane Williams**, Grounds Manager Mount Royal University, CPCIA Past President, KCAT, NPD, CIC, CLIA

**Ken Vowels**, SiteOne Landscape Supply, CPCIA Director at Large, CID, CIC, CLIA, CIT

**Daniel Sanchez**, Service Manager, Naiad Irrigation Systems, CIC, CIT, CLIA

**Clancy Mahan**, Ion Irrigation, CPCIA Director at Large, LAT, CID, CLIA, CIT (through IIABC)

**David Barbeau**, Ion Irrigation, CID, CLIA

**Ryan Osaka**, H<sub>2</sub>O Integrated Inc., CPCIA Director at Large, BMgt

cc:

The Honourable Danielle Smith, Premier of the Province of Alberta, MLA

The Honourable Rebecca Schulz, Minister of Environment and Protected Areas, MLA

Rachel Notley

David Duckworth, CAO – City of Calgary

Stuart Dalgleish, COO – City of Calgary

Nicole Newton – City of Calgary

Rehana Rajabali – City of Calgary

George Roman – City of Calgary

Aaron Boulton-Chaykowski – City of Calgary