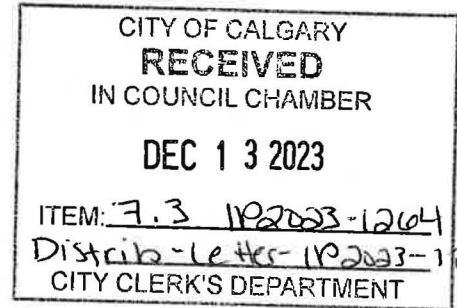


December 11, 2023

Infrastructure and Planning Committee
City of Calgary
P.O. Box 2100, Stn. M, Mail code 8138
Calgary, Alberta,
Canada
T2P 2M5



Dear Members of Committee and Council,

Re: 10 Home and Business Essentials: Improved Off-site Levies Program and Bylaw, IP2023-1264

On behalf of BILD Calgary Region (BILD), we write to you regarding the *10 Home and Business Essentials: Improved Off-site Levies Program and Bylaw* being presented at the Infrastructure Planning Committee on Wednesday, December 13th, 2023.

Notwithstanding the hard work that Administration and industry have collaborated on regarding the update of the levy bylaw, BILD Calgary is unable to support the proposed offsite levy bylaw as presented. There are components we support, specifically the transportation and community services levies as outlined below, and believe that aspects of the methodology are an improvement over the 2018 Offsite Levy Bylaw.

However, we have not received full and complete responses from our requests for information which are required to validate that the costs have been appropriately assigned to the benefiting areas for the various water and transit levies. The delayed and incomplete responses have caused areas of concern where significant increases in costs result in the overall levy exceeding inflation by a large margin. For example, the water distribution levy entirely recovers \$900 million of costs relating to infrastructure which benefits areas beyond the area covered under the proposed levy.

We are amid a historic crisis of eroding home affordability, and we believe all measures should be taken to ensure the increases in the levy rates are as low as possible. Sufficient time will be needed following the receipt of full and complete responses to our requests for information previously provided by Administration and outline in our submission to ensure we have done everything we can to reduce the impact of levy increases on home affordability.

To be a constructive stakeholder, we have provided recommendations below that are consistent with the Principles for a New Off-site levy Bylaw, directions to Administration vis-à-vis the Corporate Housing Strategy as well as the sense of urgency to address housing affordability portended by the Saturday, Sept. 16, 2023, Council meeting. To be clear, our recommendations will not unduly or unfairly result in an increased cost to taxpayers or utility rate payers. **The impact of BILD's recommendations would only be to distribute costs to those who benefit more fairly.**

BILD's Recommendations to Committee and Council

1. Approval of Administrations proposed:
 - a. Transportation levy
 - b. Community Services levies
 - i. Fire Halls
 - ii. Police Stations
 - iii. Recreation Centres
 - iv. Libraries

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2. Water levies and transit bus levies remain at 2023 rates until item 3 below is completed.
3. Council direct Administration to work with industry to:
 - a. Provide all requested data and technical analysis, as soon as reasonably practicable, including all underlying assumptions and supporting technical studies and data, to fully understand and reconcile an appropriate benefitting area for all water infrastructure, as well as come to an understanding with industry stakeholders, and report back to Committee/Council on the above no later than March 31, 2024
 - b. Provide all requested data and technical analysis, as soon as reasonably practicable, including all underlying assumptions and supporting technical studies and data as noted above, come to an understanding and agreement on a reasonable unaccounted for water amount and maximum daily demand (MDD) amount for end users in new communities to be used in updating the water levy methodology, benefit allocation, benefitting area, etc., and report back to Committee/Council on the above no later than March 31, 2024.
 - c. Disclose all relevant ridership data by community and apply similar levels of service to similar areas, not aspirational numbers and review the 2013 Council directive Administration indicates it is relying on for the increase in transit bus service levels and provide recommendations as to appropriate, achievable and affordable levy recommendations which recognize benefits to new communities and existing communities and report back to Committee/Council on the above no later than March 31, 2024.

Background

BILD represents over 550 member companies who are experts in housing affordability. According to 2022 Canadian Home Builders Association estimates, those member companies are part of an industry which employed over 57,000 in Calgary in new home building, renovation, and repair on- and off-site jobs, which paid nearly \$4.4 billion in wages, and resulted in \$9.6 billion in built investment value. That built investment value is one of the largest single wealth-builder for many families.

Stakeholders, including BILD, have been engaged and collaborating with Administration since January of 2020, nearly 4 years, on an Offsite Levy Bylaw Review and Update. Administration notes it has conducted over 100 engagements session. BILD staff and BILD industry-member volunteers have attended all those many hours of engagement sessions. BILD would like to acknowledge and thank those volunteers, City Staff and Administration for the collaborative work on the bylaw review and update thus far.

The length of time to develop the levy proposal before you were influenced by several issues, including the COVID-19 Public Health Emergency but also, as NAIOP notes in their December 6, 2023, letter to Stuart Dalgleish, a lack of continuity in the assignment City Administrative staff to the project. Since the commencement of the Offsite Levy Bylaw Review and Update in 2020 there were multiple changes to the overall project manager as well as changes to the leads for each of the specific level pool engagements.

Provision of required data and analyses

Although Administration has responded to some of BILD's requests, full and complete responses remain outstanding to a number of information requests. Should further provision of data and collaborative work between Administration and industry stakeholders indicate a reduced levy, such reduction will not unduly or unfairly result in an increased cost to taxpayers or utility rate payers. **The impact of BILD's approach would only be to distribute costs to those who benefit more fairly.**

The specific data BILD believes is available or ought to be available includes:

Water Levies:

- **Data for consumption of water in new growth areas**
 - BILD believes the data must be available to Administration and could be segregated amongst vintage of installation to take into account differences in new growth end user consumption (lower flow water appliances, toilets, etc., versus older, less efficient/higher use water appliances in older

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dwellings, smaller yards and xero-scaping in newer communities, requiring less outdoor watering, etc.) with end user consumption in older areas of the city.

- Unaccounted for water and leak data for The City water system included in the design factor or maximum daily demand (MDD) for new growth end users. The [October of 2019, Associated Engineering produced a report to the Calgary Metropolitan Region Board titled, "Water Use and Conservation in the Calgary Metropolitan Region Study](#) raises questions regarding the level of leaks in Calgary water infrastructure as does correspondence received from Administration. Consistent with comments in NAIOP's letter, BILD is unable to accept the MDD used for new growth. Simply put, the on-site pipes installed by developers to serve new growth are installed to the latest standards, are rigorously inspected by the City of Calgary as part of its Construction Acceptance and Certification processes are not leaking. We trust the off-site pipes and related infrastructure installed by the City of Calgary are not leaking either.
- Based on the data provided thus far by Administration, The City of Calgary is not meeting unaccounted for targets established in the [2014 Urban Municipal Water Conservation, Efficiency and Productivity Plan – Targets and Actions for the Urban Municipal Sector](#) report of 10.1%.
- The City has acknowledged in email correspondence to BILD, "*Reducing water loss is one of the possible levers to reduce per capita water consumption.*" And "*... this reduction could postpone planned infrastructure expenditures, **thereby reducing or deferring off-site levies.***" - Water Resources, October 6, 2023.
- Furthermore, the City acknowledged at a meeting on Oct. 26th, 2023, on the North Water Servicing Option that (*paraphrasing*) "*the demand for the NWSO is population growth based on water usage. If water usage is lower than City assumptions, then \$500M project can be deferred.*" - Effectively, the project will serve a larger area and could be staged or deferred to a later date, resulting in a lower levy per hectare.
- **Proportional Benefit Allocation for Water**
 - Benefitting areas and timing/time frame for infrastructure. For water related infrastructure, Administration has chosen to limit the "denominator", to leviable land equal to approved new communities only or 4,612 Ha. This unfairly allocates historical and future capital costs into a smaller benefitting area unduly burdening home purchases and renters in that 4612 Ha.
 - Only recently, Dec. 4, 2023, has Administration provided an updated analysis of infrastructure requirements in the full ASP buildout scenario. The scenario provided indicates a greater than four-fold increase in capital costs for a similar benefitting area. This recent untested scenario requires more time to review and evaluate this information.
 - The current 2018 bylaw assumes infrastructure is financed and amortized over a 25-year time frame to match anticipated buildout. The proposed 2024 bylaw assumes a 15-year amortization to match the 4612 Ha denominator. The proposed methodology recovers all this historical schedule of payments which will be incurred by The City of Calgary over the next 25 years from development and correspondingly new home buyers within the next 15 years (4612 Ha). This unduly burdens home buyers in the 4612 Ha with an excess of a \$100M in costs.
- **Transit Service Levels**
 - Administration confirmed during the engagement the most recent Council direction on transit ridership levels occurred as part of its approval of the Route Ahead Plan in 2013. Since 2013, the OSL Bylaw was updated in 2016 and 2018. In both of those Bylaw approvals, The City's embedded service level was 1 new bus per 3,333 people. Notably in 2015 the transit levy dropped from \$5,806 to \$4,007 per hectare. By 2018 the transit levy had dropped to \$3913/Ha. The methodology in the proposed bylaw assumes equivalent overall average ridership levels across the city which calculates as 1,763 people per bus. This results in double the number of buses required and combined with the inflationary cost increase in compressed natural gas buses amounts to a **327% increase** in the levy from 2023 to 2024. BILD requested data from other similar suburban communities that have been built out, such as Tuscany, Copperfield, Panorama Hills, etc. to align new community transit service with existing suburban community ridership apply similar levels of service to similar areas, not aspirational numbers.

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BILD notes point 5 of NAIOP's letter regarding off-site levies to industrial development. While BILD leaves it to NAIOP to rationalize its position with respect to off-site levies, BILD and NAIOP have many common members and it is BILD's understanding that NAIOP's perspective on the matters noted is driven by a fundamental lack of competitiveness of off-site levies and other development related charges. The lack of competitiveness becomes obvious when reviewing the recent OSL Annual Reports which show nearly zero hectares of development agreements for industrial lands. Accordingly, BILD supports the premise of NAIOP's position which is OSL rate levies must be competitive to attract development and achieve affordability in all sectors.

The above industry requests and recommendations are submitted with the utmost respect for the work Administration has undertaken on the bylaw review and update thus far. BILD recommendations offer a constructive path forward which balances the need for funding certainty (i.e., collection of levy funds) with the need for disclosure of information important and relevant to the determination of certain off-site levies. As noted above, BILD submits adoption of these recommendations is completely congruent with the Principles for a New Off-site levy Bylaw, directions to Administration vis-à-vis the Corporate Housing Strategy as well as the sense of urgency to address housing affordability portended by the Saturday, Sept. 16, 2023, Council meeting.

Yours truly,



Brian R. Hahn
Chief Executive Officer
BILD Calgary Region

Attachment 1 - Q and A

Attachment 2 - Select pages from [October of 2019, Associated Engineering produced a report to the Calgary Metropolitan Region Board titled, "Water Use and Conservation in the Calgary Metropolitan Region Study](#)

Attachment 3 - Select pages from [2014 Urban Municipal Water Conservation, Efficiency and Productivity Plan Targets and Actions for the Urban Municipal Sector](#)

Attachment 4 - Email correspondence from Water Utility

Cc: Stuart Dalglish, Chief Operating Officer
Debra Hamilton, A/GM Planning and Development Services
Josh White, Director, Calgary Approvals Coordination Planning & Development
Marcus Berzins, A/Manager, Growth Funding & Investment
Jennifer Black, A/ Coordinator, Growth Financial Strategies
BILD Calgary Region Board of Directors
BILD Off-site Levy Steering Committee

Water Treatment Plant Levy:

Q 1. Why doesn't BILD support the **water treatment plant levy**?

A 1. City Administration has **not adequately nor fully responded** to BILD questions regarding the **new growth demand requirements** for water treatment plant capacity. Based on information found by BILD, BILD believes new growth does not drive any requirement for water treatment plant expansion in the foreseeable future (i.e., to 2038) or at least the level of expansion included in Administration's forecast. The water treatment plant expansion costs included in the calculation of the levy drive the significant increase in the water treatment plant levy for both established areas in new communities and correspondingly increase the cost of new dwellings in both those areas.

Q 2. What information is BILD relying on to support its belief that new growth does not drive any requirement (or at least a smaller requirement) for **water treatment plant expansion** in the foreseeable future?

A 2. Please refer to: [October of 2019, Associated Engineering produced a report to the Calgary Metropolitan Region Board titled, "Water Use and Conservation in the Calgary Metropolitan Region Study."](#) BILD has made Administration aware of this report in its engagement on the Off-site Levy Bylaw update and in its letter to the Community Development Committee responding to the Drought Mitigation Strategy. Appendix D – Per Capita Water Use shows graphic representations of per capita water use (represented as L/c/d or litres per capita per day). BILD has noted the significant difference between both the "Produced Total" line, which BILD understands to be the average daily amount of potable water produced from all water treatment plants in Calgary and the "Residential" line which BILD understands to be the average daily amount consumed at residential dwellings in Calgary. BILD understands the average daily amount shown in the graphic is converted to a corresponding maximum daily demand using a factor of 1.6 to establish the design factor used, along with population forecasts for Calgary and regional communities receiving potable water supply from Calgary, to establish needed capacity for raw water treatment and potable water supply.

Q 3. Is there anything else in the report which **BILD relies on** for its belief that **new growth does not drive the requirement for water treatment plant expansion** included in Administration's forecast?

A 3. Yes. "Table 4-2: Estimated Water Loss, Causes and Correction" on page 4-6 of the report shows an Estimated Water Loss % of 17 – 28% and that the suspected causes of the losses as reported from interviews are, "60% of water loss is leakage and 40% is roughly estimated and tracked (un-metered water use and running bleeders to prevent freezing)." Based on the strict quality assurance process The City employs as part of its Construction Acceptance Certification program for new assets installed by developers, **BILD and its members believe the significant majority of leaks and un-metered water use for running bleeders to prevent freezing occurs in established areas and aging linear infrastructure.**

Q 4. Does BILD have **further rationale supporting its belief that new growth does not drive the requirement for water treatment plant expansion** included in Administration's forecast?

Attachment 1 - Questions and Answers relative to BILD's Recommendations

- A 4. Yes. On October 6, 2023, the City of Calgary sent via email (copy of email and attachments are attached to this document in Attachment 4) a series of documents which included a document titled, "Water Loss 2023.docx". In that document The City responds to three self-imposed questions:
1. What actions has The City taken to reduce water loss?
 2. What further actions need to be taken?
 3. What's the connection between water loss and offsite levies?

BILD notes the following excerpts of the responses:

- **"Unbilled authorized consumption is tracked closely** through an annual water audit process adhering to industry-standard practices using methodology supported by the American Water Works Association. This includes the Frozen Pipe Prevention Program which is reviewed regularly to ensure compliance, track consumption, and to ensure that the use of water is the most cost-effective solution to prevent frozen services."
- **"Members of the Water Loss Committee have led innovative activities to reduce water loss including improving production flow metering, and piloting advanced acoustic metering sensors to better identify leaks in the distribution system. This increased attention to reducing water loss has reduced the losses in litres per service connection per day from 337 L/conn/day in 2019 to 286 L/conn/day in 2022 with a target of 250 L/conn/day by 2030."**
- **"Reducing water loss is one of the possible levers to reduce per capita water consumption. In the long run this reduction could postpone planned infrastructure expenditures, thereby reducing or deferring off-site levies."**

BILD draws the following conclusions from the foregoing:

- a) Since unbilled authorized consumption is tracked closely, **The City has the ability to determine the impact of such consumption, where it occurs and reasonably allocate it to existing or new infrastructure. This level of detail is one of the pieces of information required** to help BILD and others understand whether the current level of unaccounted for water is being fairly and reasonably allocated to growth.
- b) Given the water loss 2022 performance of 286 L/conn/day (BILD understands "conn" to mean connection), BILD calculates that to mean in a residential dwelling which averages 2.6 persons and consumes approximately 175 L/capita/day or 455 L/conn/day, the total consumption assigned becomes 455 (residential usage) + 286 (loss) which equals 741 L/conn/d. This appears to mean that 39% (286 ÷ 741) of the consumption assigned to a residential dwelling is losses.

Another way of expressing this using 2022 amounts indicated by The City also appears to be an additional 1.6 equivalent persons are being added to the consumption of a residential dwelling to account for losses.

In a December 2003 titled, "[A Comparative Study of Urban Water Use Across the Southwest](#)," by Western Resourced Advocates states, **"The mean 2001 UFW percentage for the sampled water providers is 7.5 percent.** The 2001 UFW percentages range from 1.3 percent in Mesa to 12.3 percent in Albuquerque." These unaccounted for water amounts seem much more in line with the Alberta Munis (formerly the Alberta Urban Municipalities Association) targets noted in A 6, below.

Further, it is not clear, after a significant water loss drop from 2019 to 2022 of 51 L/conn/day or nearly 15% of the 2019 amount, why that pace of reduction won't continue. BILD, and we expect all water rate payers in Calgary, need to

Attachment 1 - Questions and Answers relative to BILD's Recommendations

understand the efforts to reduce unaccounted for water better and, in the case of new growth a detailed rationale why assigning the average rate of loss to new growth and correspondingly, new infrastructure is appropriate. This appears to be effectively assigned an additional demand to "serve" demand from leaks in that new infrastructure which is unlikely to be at or near the level of the system average.

- c) The statement in the document provided by The City, "**Reducing water loss is one of the possible levers to reduce per capita water consumption.** In the long run this reduction could postpone planned infrastructure expenditures, thereby reducing or deferring off-site levies," **effectively acknowledges a lower level of unaccounted for water assigned to new growth is appropriate.**

Q 5. What has Administration's response been to BILD thus far in respect of the leaks and BILD's position?

A 5. BILD's understanding of Administration's position is Administration believes new growth (established areas and new communities) should be paying a levy based on the average MDD which effectively includes the cost of capacity which "serves" the present city-wide level of demand which includes leaks in aging infrastructure.

Q 6. What does BILD propose in the **alternative**?

A 6. Whether Administration or Council directs Administration to address the leaks matter is not BILD's primary focus at this moment, although it does seem obvious that addressing the leaks, or at least understanding the costs to address the leaks in an orderly and timely manner and weighing that against the cost of expanding water treatment capacity to continue to "serve" the demand from leaks, is in the public interest. BILD also acknowledges that some level of unaccounted for water should reasonably be included in the maximum daily demand. Once again, the October of 2019, Associated Engineering Water Use and Conservation in the Calgary Metropolitan Region Study seems instructive. On page 4-7 of the report it says, "[The Urban Municipal Water Conservation, Efficiency and Productivity Plan – Targets and Actions for the Urban Municipal Sector](#)," published by AUMA in 2014 sets a target for Alberta's urban municipal sector to maintain the volume of "unaccounted for" water at **10.1%** of total water use. It is estimated that Chestermere, Foothills County and Bragg Creek are currently meeting this water loss target [emphasis added]."

BILD proposes Administration adopt in its methodology:

1. **Full, transparent public disclosure of monthly unaccounted for water amounts**, monthly unbilled authorized consumption—including reporting of amounts used for flushing, firefighting, parks watering and any other categories used by the Water Loss Committee.
2. **Adopt a maximum daily demand amount for growth which uses a reasonable level for unaccounted for water in line with the 10.1% targeted by the AUMA in 2024.**
3. Adopt a **benefit allocation for new growth** which recognizes the end user make up (i.e., residential, industrial/commercial/institutional, etc.) and **better aligns to Principle 2 of the Principles** for a New Off-site Levy Bylaw, which says growth pays for its share of growth.

Q 7. BILD mentions Council directions in respect of [Principles for a New Off-site Levy Bylaw](#), the Corporate Housing Strategy and recent remarks from the federal Minister of

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Housing in respect of development charges/levies. Which directions and remarks is BILD specifically referring to?

A 7. BILD is referring to:

1. **Principles for a New Off-site Levy Bylaw** (PFC 2021-0035) approved by Council in January 2021. Those Principles are also cited on the City of Calgary's Levy Engagement website. Specifically, BILD believes failing to respond fully to BILD's and industry requests for further and more detailed information regarding conflicts with:
 - a. Principle 4—Collaborative and consultative, which includes, "Collaboration requires clarity and transparency to allow a common understanding and robust outcomes." Clarity on the level of leaks reasonably assignable to new growth has not been achieved. **Transparency on the current level of the leaks and their impact on the maximum daily demand amount assigned to new growth has not been achieved.**
 - b. Principle 5—Transparent and accountable, which includes, "The off-site levy (process, methodology and calculation) shall be clear and transparent." A documented reasonable and fully transparent explanation with supporting data and empirical analyses for the level of leaks assigned to new growth has not been provided. Principle 5 also states, Off-site levy funds, transaction, projections and reporting will be accurate and credible and reviewed regularly, in addition to annual reporting." **For the reasons provided in responses above, BILD does not believe the projections for maximum daily demand are accurate or credible in terms of representing fair and reasonable amounts associated with new growth.**
2. The Corporate Housing Strategy directions to Administration which include:
 - a. "Amending Objective 1C section on Page 23 by inserting the following as Action 1.C.13: ... III. **Seeking opportunities to equitably share the costs and benefits of housing-enabling infrastructure** (basic facilities, services, systems, and installations necessary or appropriate for the functioning of a housing community, including facilities, services, systems, and installations for water, sewage, power, communications, and transportation facilities such as roads, sidewalks, transit, and multi-modal transportation options), services and amenities amongst impacted groups, including the public, the private sector, and the Provincial and Federal governments ...". BILD respectfully submits, as noted above, **equitably sharing the costs and benefits of housing-enabling infrastructure** should not include costs required to "serve" leaks on existing infrastructure.
 - b. "4. Direct Administration to report to Community Development Committee annually, for the time duration of the current strategy that includes: ... b. Recommendations to: ... i. mitigate any additional costs to applicants and ultimately to housing consumers ...". Again, **BILD respectfully submits the additional costs to provide service to the apparent level of leaks in The City of Calgary's water system over and above the 10.1% level targeted in the 2014 AUMA adopted recommendation, should be mitigated by a similar allocation (i.e., 10.1%) of unaccounted for water to the maximum daily demand assigned to new growth and a recalculation of the levy.**
3. In recent remarks quoted in the October 23, 2023, issue of the Globe and Mail, Federal Housing Minister, Sean Fraser noted, "While I also appreciate that some

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hold the perspective that 'growth pays for growth,' we will all pay for stagnation as a result of a lower pace of construction," he wrote, "A 'growth pays for growth' approach ignores the value that new development, new property tax bases, new businesses, and new neighbours bring to our communities. I am concerned that at this particular moment in time, a drastic increase in development charges will inhibit our ability to seize the opportunity to incentivize a rapid increase in construction." A 10.4% increase in the Water Treatment Plant Levy from 2023 to 2024 would meet most household definitions of a drastic increase and certainly erodes affordability. This increase seems counter to the significant effort, spirit and intent of the Corporate Housing Strategy and other comments of the Minister in respect of awards of Housing Accelerator Funds.

- Q 8. Why are these matters coming up at this late stage of the levy engagement.
- A 8. BILD has been raising the matter of water systems/infrastructure design determinants (i.e., maximum daily demand) upon which infrastructure requirements are based since nearly the beginning of the engagement in 2020.

Wastewater Treatment Plant Levy:

- Q 1. Why doesn't build support the wastewater treatment plant levy?
- A 1. As BILD understands from the engagement on all the water levies, the need for wastewater treatment capacity is, in part, driven by water demand. As noted above, **BILD has unanswered requests for information and questions with respect to the maximum daily demand assigned to new growth.** Until those requests for information and questions are responded to fully and transparently, including data and analyses relied upon to determine the infrastructure required as well as a fair and reasonable allocation of benefit, **BILD is unable to support the levy.**
- Q 2. Are there any other reasons or observations BILD has in respect of the Wastewater Treatment Plant Levy?
- A 2. Yes. Like the rationale included above under Water Treatment Plant Levy, further information is required from Administration on how the levy calculation and allocation of benefit complies with Councils directions, particularly the directions in respect of mitigating any additional costs.
- Q 3. Has BILD done a reassessment of the Wastewater Treatment Plant Levy similar to the water treatment plant levy?
- A 3. No. BILD believes a similar rationale to water treatment plants may apply, but further data and dialogue is required with Administration.

Water Distribution (Linear) Levy:

- Q 1. Why doesn't build support the Water Distribution (Linear) Levy?
- A 1. BILD does not support Administration's proposed Water Treatment Plant levy primarily for the same reasons as detailed for the Water Treatment Plant Levy. **BILD does not believe it is reasonable to assign new growth the same burden of "serving" the average water network losses from leaks** and correspondingly growth infrastructure should be designed and installed using a reasonable level of unaccounted for water in

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addition to a reasonable forecast of end-use consumption at the applicable dwelling type.

Q 2. What impact does BILD believe "serving" the leaks has on the Water Distribution (Linear) Levy?

A 2. As with Water Treatment Plant levy and related infrastructure BILD believes the impact and cost of serving the leaks in areas with aging infrastructure is being unreasonably assigned to growth and incorporated into the cost of new infrastructure and the levy. This also results in unnecessary costs being included in the cost of a new home, rented, or owned and erosion of affordability.

So, in alignment with BILD's comments in respect of Water Treatment Plant Levy, BILD respectfully requests Council **direct Administration to revise their recommendations to indicate a freeze at 2023 levels for Water Distribution (Linear) Levy and correspondingly Wastewater Collection (Linear) Levy**, and to report back to IPC by no later than March 31 of 2024 with full, complete and fully transparent responses to all of BILD's and other industry participants' questions and requests for information related to the determination of the Water Distribution (Linear) Levy, including the determination of the maximum daily demand assigned to new growth as well as the level of unaccounted for water included in the maximum daily demand amount assigned to new growth.

Q 3. Does BILD oppose the inclusion of the North Calgary Water Servicing Option?

A 3. BILD **does not oppose** the inclusion of infrastructure costs for the North Water Servicing Option (NWSO) in the Water Distribution levy calculations. However, consistent with our comments regarding benefiting area, BILD believes the water infrastructure project can serve a benefitting area larger than is being attributed to the water infrastructure project. The benefit allocation for this project needs to be based on volumes required for new growth rather than a city wide assumed maximum daily demand number. The project will clearly be connected to lands beyond the approved lands in the ASP (the current assumption of 4612 Ha) and be used to provide water service to those additional lands (greater than the 4612 Ha).

As shown in the map below, both options for the NWSO connect directly to the Bearspaw Water Treatment Plant and Glacier Ridge and Keystone Hills lands on the north edge of Calgary. As noted in this Q and A, the onsite water infrastructure installed by developers will be subject to a rigorous construction acceptance process by The City of Calgary and is utilizing the latest technology for pipe and joining as well as testing. It is our understanding that The City will apply the same rigorous processes and current materials, joining standards and testing to the infrastructure included in the NWSO. Accordingly, that infrastructure should not be expected to leak at the average unaccounted for/leakage rate currently being included in the MDD used in the financial models and benefit allocation calculations.

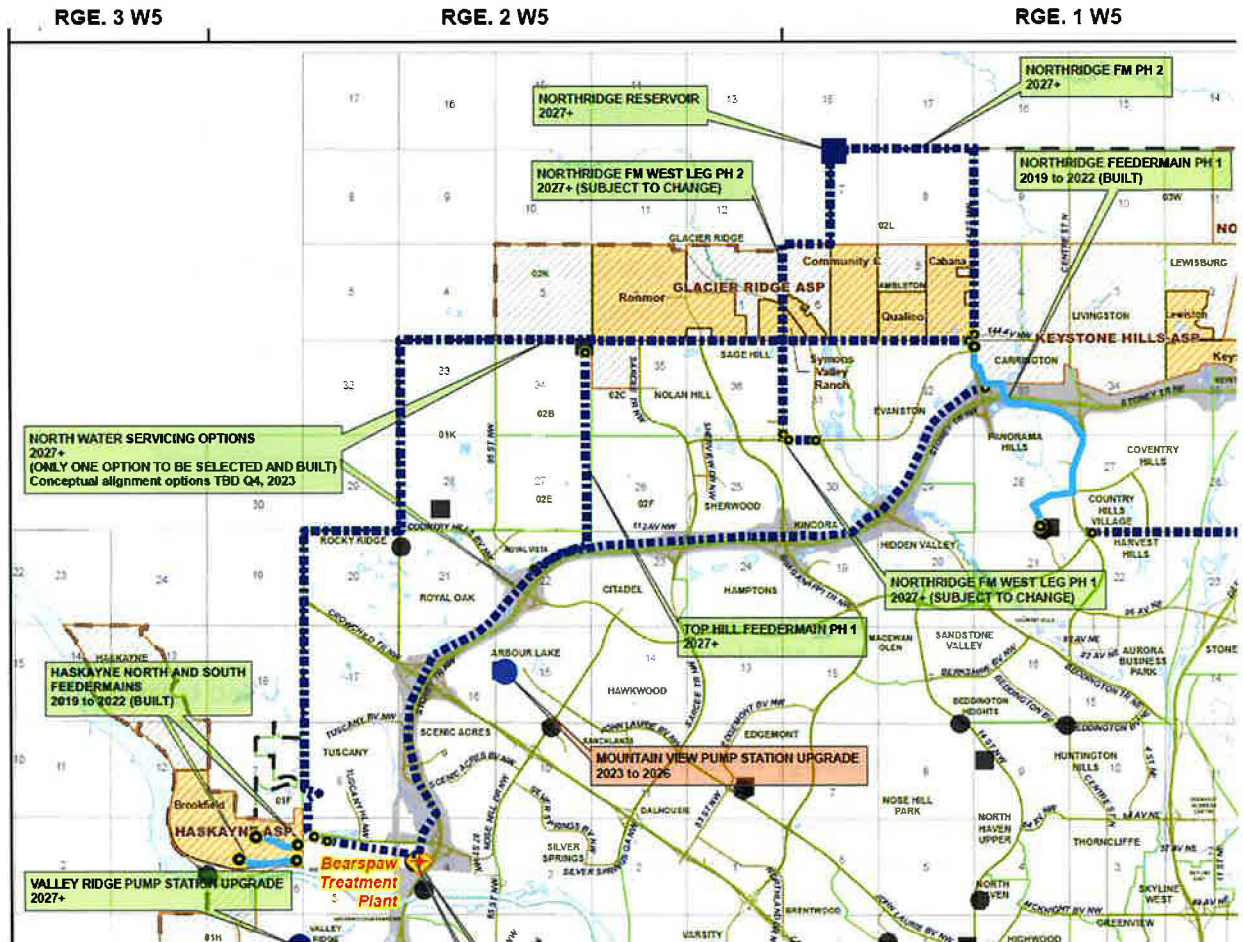
In the engagement with BILD, Administration advised the NWSO project is expected to have a capacity of 300ML/D. Administration further advised, the NWSO will provide redundancy to the Shaganappi Pump Station, which has a capacity of 100ML/D.

Administration further advised Between 2019-2048, based on Master Service Agreements, Calgary will have to deliver an additional maximum of 50ML/D to Airdrie.

After redundancy and regional considerations, 150ML/D will be available to serve Calgary's growth. In the benefit allocation analysis provided to industry, 67 ML per day and 84 ML per day of the remaining 150 ML/day have been allocated to greenfield and

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established areas respectively. Using the MDD applied by Administration of 585 l/c/d serves a population of 115,315. However, the MDD of 585 l/c/d includes unaccounted for water and leaks. Clearly, using an MDD reflecting an end-user MDD amount consistent with new home construction (ie. Low flow water appliances, smaller yards with less irrigation, etc. and minimal leaks/losses) along with minimal leaks/losses in the water distribution system will result in serving a greater population and accordingly a larger area of land.



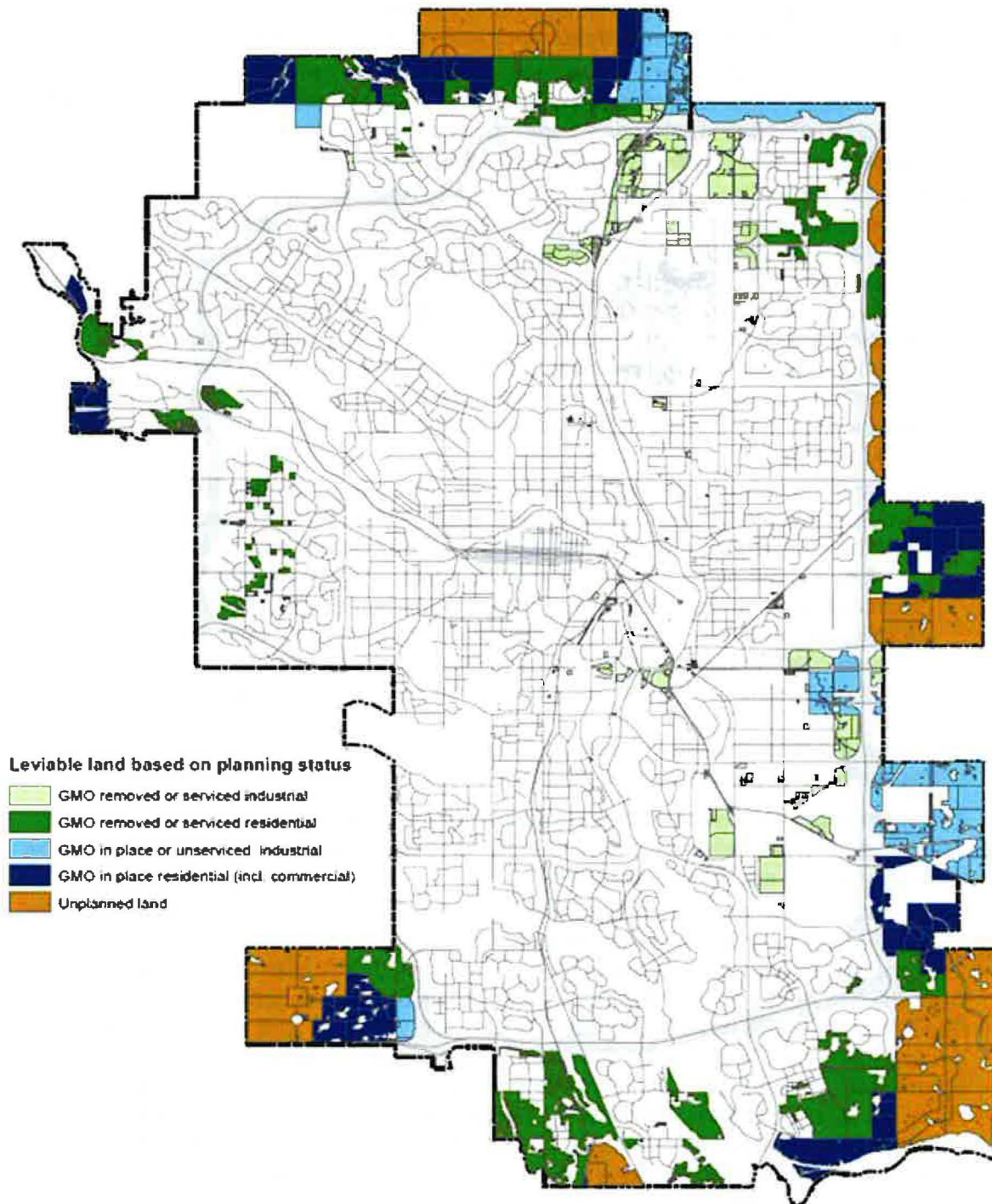
Attachment 1 - Questions and Answers relative to BILD's Recommendations

- Q 4. Why does BILD believe there is an unfair allocation of the infrastructure costs (numerator) over the approved ASP areas (4612 Ha's)?
- A 4. BILD believes the approximately \$900 M in historical and future infrastructure costs is being unfairly burdened onto the 4612 Ha in the approved ASP lands. This is shown in the table below:

Water and Wastewater Linear Infrastructure		
Years	4612 Ha	Future lands
Period debt incurred	Paying all the costs over 4612 Ha GMO Removed = Approved ASP (15 years) Principle and Interest (\$M)	Free Ride
	Water Linear	
2000-2023	\$194	zero
2024-2030	\$299	zero
	Wastewater Linear	
2000-2023	\$276	zero
2024-2030	\$131	zero
Total	\$900	zero

In addition to the imbalanced burden to home purchasers in the green area of the map shown below (approved ASP land), the current bylaw (2018) assumes infrastructure is financed and amortized over a 25-year time frame to match anticipated buildout. The proposed bylaw assumes 15 year amortization to match the 4612 Ha denominator. The proposed methodology recovers all this historical schedule of payments which will be incurred by The City of Calgary over the next 25 years from development and correspondingly new home buyers over the next 15 years (4612 Ha). This unduly burdens home buyers in the 4612 Ha within excess of a \$100M in principle and interest costs.

- Q 5. Why does BILD not accept the forecast costs in the full ASP scenario which adds an additional 4,770 Ha's and \$1.27 billion in infrastructure costs which results in a higher levy rate?
- A 5. BILD was provided with the revised financial model noted above on Dec. 4, 2023. BILD believes the approximately \$1.27 billion in forecast infrastructure costs in the full ASP buildout scenario (an additional 4770 Ha's) needs to be reviewed and the cost inputs and corresponding assumptions needs to be fully analysed. This requires additional time to fully review and understand. We believe such a review can be completed in the next 60-90 days.



Q 6. Are there any other reasons BILD does not support the Water Distribution (Linear) Levy?

A 6. Yes. At an indicated increase of 61.9% the increase in the Water Distribution (Linear) Levy is excessive and will negatively impact housing affordability in Calgary. BILD also notes Council directions in respect of Principles for a New Offsite Levy Bylaw, the Corporate Housing Strategy and recent remarks from the federal Minister of Housing in

Attachment 1 - Questions and Answers relative to BILD's Recommendations

respect of development charges/levies referred to above under Water Treatment Plant Levy. BILD believes its recommended approach is consistent with:

1. Principle 2— Shared cost, shared benefit, shared risk: which states, “The off-site levy should reflect equitable sharing, among stakeholders, of cost, benefit and risk related to off-site infrastructure,” and, “Cost of off-site infrastructure should be allocated to, and shared by, those who benefit.”
2. The Corporate Housing Strategy directions to Administration which include, “Amending Objective 1C section on Page 23 by inserting the following as Action 1.C.13: ... III. Seeking opportunities to equitably share the costs and benefits of housing-enabling infrastructure (basic facilities, services, systems, and installations necessary or appropriate for the functioning of a housing community, including facilities, services, systems, and installations for water, sewage, power, communications, and transportation facilities such as roads, sidewalks, transit, and multi-modal transportation options), services and amenities amongst impacted groups, including the public, the private sector, and the Provincial and Federal governments ...”.
3. In recent remarks quoted in the October 26, 2023, issue of the Globe and Mail, Federal Housing Minister, Sean Fraser noted, “While I also appreciate that some hold the perspective that ‘growth pays for growth,’ we will all pay for stagnation as a result of a lower pace of construction,” he wrote, “A ‘growth pays for growth’ approach ignores the value that new development, new property tax bases, new businesses, and new neighbours bring to our communities. I am concerned that at this particular moment in time, a drastic increase in development charges will inhibit our ability to seize the opportunity to incentivize a rapid increase in construction.”

Q 7. Are there any other matters relevant to the shared cost, shared benefit, shared risk principle which Council should be aware of?

A 7. Yes. Administration has indicated concerns with respect to risks the City takes on by “front ending” water infrastructure, i.e., what happens if the development doesn’t show up to take up the capacity constructed?

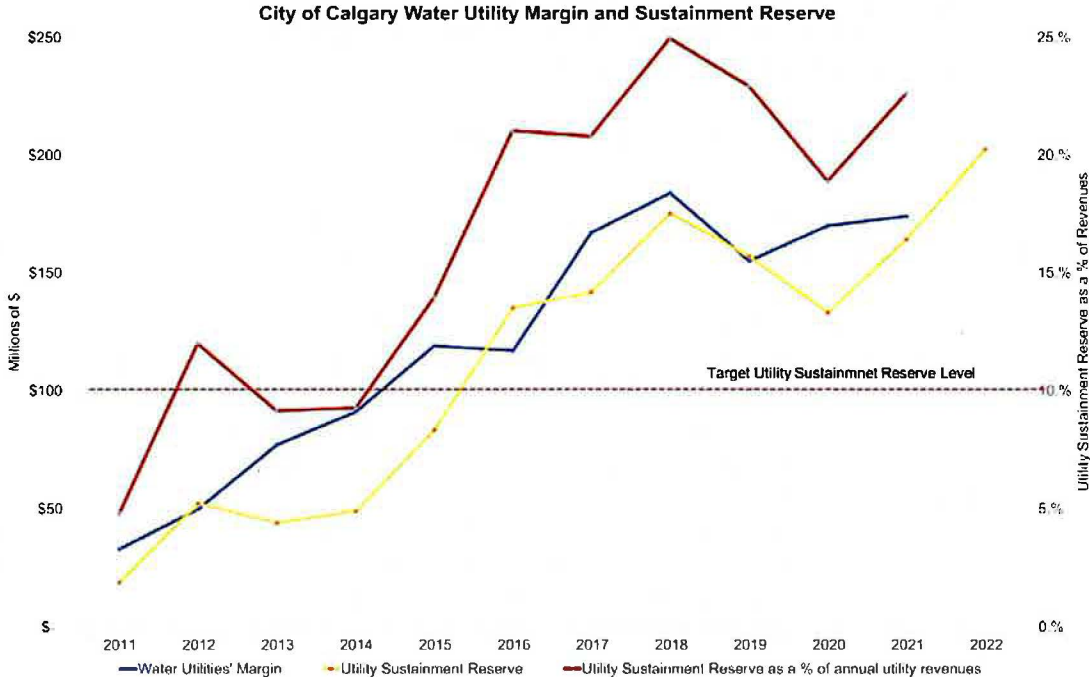
During the engagement with Administration on the various water levies, Administration has noted several times, negative or under-recovered water levy balances, must be “covered” either by water-related utility rates or the Utility Sustainment Reserve. Table 14 of the 2022 Off-site Levy Annual Report shows Closing Negative Balance as of December 31, 2022, of \$44,236,450, \$42,928,866, \$ 32,225,258, and \$13,203,193 for Water Distribution, Wastewater Collection, Wastewater Treatment Plant and Shephard Stormwater, respectively. We understand from current discussion with Administration, those amounts have been significantly reduced due to the current high level of development activity and corresponding increase in Development Agreements generating Off-site Levy revenues. BILD recommends Administration be directed to provide those numbers, or their best estimate of those numbers, on a monthly basis as BILD and Administration work through the issues included in BILD’s submission.

Note 6 to Schedule B – Water Details (also noted as Table 17: Water Projects) states, “A negative balance represents an amount paid from the City’s Utility rate revenue on behalf of the Off-site Levy fund. The amount paid will be recovered by The City from future off-site levy collections.” **Administration has also indicated the burden of the negative balances has caused The City to defer maintenance and life-cycle capital.**

Attachment 1 - Questions and Answers relative to BILD’s Recommendations

Any claim the burden of the negative balances has caused The City to defer maintenance and life-cycle capital seems **incongruent with the increases in Water Utility margin, Utility Sustainment Reserve and the reductions in each of the water utility rates.** To the extent Administration continues with this claim, **BILD recommends a full reconciliation and accounting for each of the maintenance and life-cycle capital project deferrals be provided.**

In the absence of a detailed reconciliation of interconnected water utility matters, which BILD has requested previously, Administration’s claims with respect to deferred maintenance and lifecycle capital seems incongruent with funds and resources and from growing profit margin and growing sustainment reserve (see graph below). Similarly, the increase in both the water utilities margin and sustainment reserve seem to be aligned with strong growth from new communities. This appears to more than balance any risk in city constructing water related infrastructure and recovering the costs of that using the current approach.



Note: Annual Water Utility Revenues and Expense amounts no longer published in City of Calgary Annual Report as of 2022.

Q 8. Are there any other final matters in respect of Water Distribution (Linear) Levy BILD wants to make Council aware of?

A 8. Yes. While it may seem unrelated, Administration has proposed moving from 6 catchments for Stormwater Drainage Levy determination (discussed in more detail below) to a city-wide catchment. There may be a multitude of reasons for moving to a city-wide catchment, including promoting balanced geographical growth. During recent dialogue with BILD, the prospect of moving to “**developer front-ending**” of Water Distribution (Linear) infrastructure was raised. Such a move seems opposite to or Incongruent with the City’s proposed move to a single catchment for storm.

Should Administration wish to continue to pursue developer front-ending of Water Distribution (Linear) Levy, **BILD respectfully requests Administration, in collaboration with BILD and other stakeholders, work to undertake a full economic assessment of the impact on affordability of such a move.**

Transit Levy

Q 1. What feedback does BILD have on the proposed Transit Levy?

A 1. The 2023 year-over-year to 2024 Transit Levy increase is over 327%. **This level of increase seems excessive relative to inflation and contributes to an erosion of affordability.**

Q 2. From the engagement with Administration, what does BILD understand as the reasons for the Transit Levy increase?

A 2. Based on discussion with Administration, BILD understands Administration attributes the causes for the levy increase are due to two primary reasons:

1. A significant **increase in the cost of a diesel bus to a new compressed natural gas-fueled (CNG) bus from \$411K/bus to in \$732K/bus.**
2. Responding to policy direction from Council, the **level of service** for new communities has been **increased from 1 bus per 3333 persons** in prior levy calculations to **1 bus per 1763 persons.**

Q 3. Given the explanations provided by Administration, does BILD still oppose the Transit Levy increase and, if so, why?

A 3. Yes. BILD accepts the cost of CNG buses is beyond the control of the Administration, however the reasons BILD believes the transit levy increase should be reduced are as follows:

1. When asked what specific Council policy direction Administration was responding to and when Council directed the change, Administration indicated the **policy direction was provided in 2013**. In late **2015**, the most immediate OSL Bylaw Update after the new policy direction, the **transit levy dropped** from \$5806/Ha to \$4007/Ha. When the bylaw was once again updated in **2018**, the **transit levy changed** from \$3909/Ha to \$3913/Ha.
2. The sharp increase does not appear to consider or incorporate Council's directives with respect to the Corporate Housing Strategy and Affordability. Specifically, BILD is not aware of any steps Administration incorporated in the levy which serve to mitigate the increase (as directed by Council) or share the costs of this leviable infrastructure, "...equitably share the costs and benefits of housing-enabling infrastructure (basic facilities, services, systems, and installations necessary or appropriate for the functioning of a housing community, including facilities, services, systems, and installations for water, sewage, power, communications, and transportation facilities such as roads, sidewalks, transit, and multi-modal transportation options), services and amenities amongst impacted groups, including the public, the private sector, and the Provincial and Federal governments ...".
3. BILD **has not been provided with any supporting information or analyses** which leads to a reasonable conclusion bus service or correspondingly buses per capita is the same or uniform across the city. If **the buses per capita is not the same across the city**, then the greenfield areas should be subject to the same bus per capita that is comparable to existing areas of the city (i.e., Tuscany, McKenzie Town, Copperfield).
4. During the engagement and dialogue on Transit bus levies, BILD became aware of a City of Calgary intention to acquire a fleet of electric buses (see –link [Calgary Herald article](#)).

Attachment 1 - Questions and Answers relative to BILD's Recommendations

5. In review the City of Calgary webpage on Zero Emission Buses, it states the City is working across divisions to:
- “pick the best routes for BEB service;
 - develop technical specifications for our competitive procurement to purchase BEBs and supporting infrastructure;
 - determine mechanical, HVAC, and fire suppression system upgrades at our Spring Gardens and Anderson garages needed for BEBs and supporting infrastructure;
 - manage garage construction and test and commission infrastructure after its installed”

BILD notes that the “best routes” for zero emission buses appear to not have been determined at this time. BILD also notes that growth has been allocated 100% of the costs for CNG buses and none of the costs nor grant allocation afforded the electric buses (which appears to result in a much lower net cost). **In summary, growth is assigned the full cost of buses with no off set from grants while grants from the federal government are exclusively allocated to The City.** If this does not change, taxpayers in new communities will get no benefit from their tax dollars in this respect and since the City’s own website says decisions have not been made in respect of the best routes for the BEB, BILD questions whether this is a fair and reasonable approach.

Wastewater Collection and Storm drainage

- Q 1. What feedback does BILD have on the proposed wastewater collection and storm drainage levies?
- A 1. BILD’s feedback on the wastewater collection and storm drainage levies is the same as for water distribution. We believe the infrastructure included benefits a larger area and respectfully request Council direct Administration to work with industry over the next 60-90 days to reconcile industry’s concerns and respond fully to industry’s requests for information.

Other Comments and Observations:

Q 1. Administration made public on Friday, December 8, 2023, a comprehensive 2024 Off-site Levies Bylaw - Background Report IP2023-1264 Attachment 7. Does BILD have any other comments or observations with respect to this report?

A 1. Yes.

On Page 14 of the report, under, "Steps for determining the levy rates that are only applied in Greenfield Areas are as follows," item 5 states, "Determine the degree to which the infrastructure serves unlevied lands (allocation of benefit)." **The benefit allocation % for water projects was not provided to BILD until December 4, 2023.**

In addition, for the reasons outlined in detail above:

- In respect of infrastructure which will be directly connected to future lands (beyond the lands included in the proposed levy calculations), we believe the benefit allocation unfairly burdens home buyers and renters in the Approved/GMO removed areas (4,612 Ha) included in the water levies calculation denominator.
- In respect of the Maximum Daily Demand determinate, which is used for benefit allocation, we believe Administration's use of a city-wide average does not reflect consumption realities nor the performance (lower leaks) of both on and off-site growth water related infrastructure. We believe the use of a city-wide average unfairly burdens new home buyers and renters with a higher than necessary levy.

As included in BILD's cover letter, the impact of adopting BILD's approach would only be to distribute costs to those who benefit more fairly and would not unduly or unfairly result in an increased cost to taxpayers or utility rate payers.

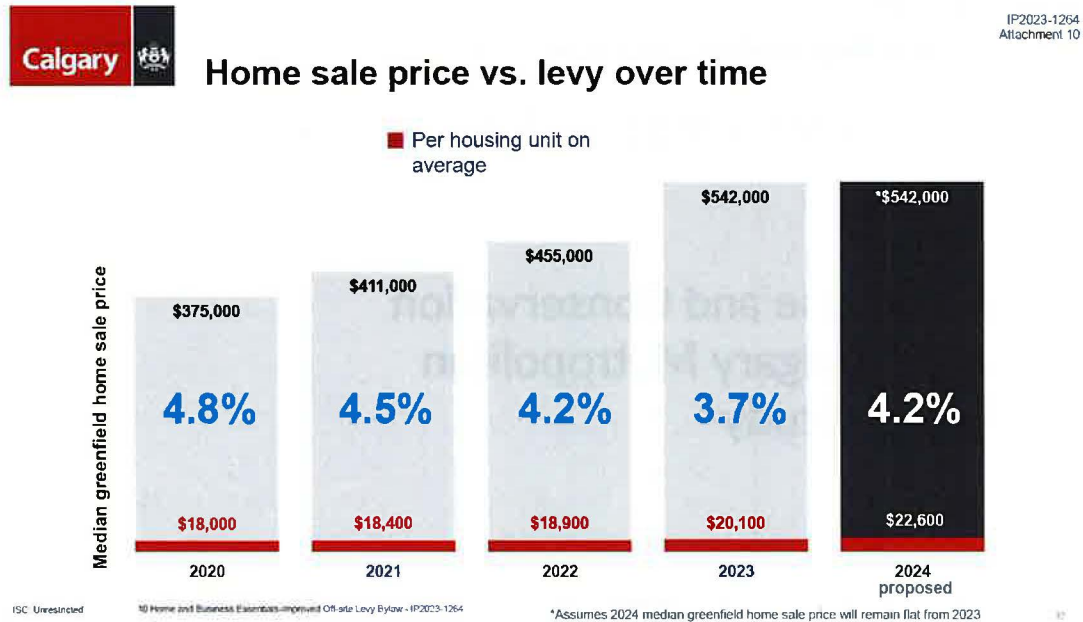
Q 2. In the documents Administration made public on Friday, December 8, 2023, a study titled, "Development Charge Comparison, prepared by the Altus Group compared infrastructure charges across three (4) development scenarios and the result development charges in an assortment of Canadian Municipalities (see: IP2023-1264 Attachment 6). Does BILD have any other comments or observations with respect to this study?

A 2. Yes.

1. The study does not appear to include data or a review for relevant regional municipal competitors such as Saskatoon, Regina or Winnipeg.
2. In the table on page 9, nearly all the Municipalities shown as having higher than Calgary Development Charges also have much higher housing costs and greater affordability housing affordability challenges than Calgary.
3. Focusing to more proximate municipal competitors shown in the table shown on page 9 of the report:
 - a. In the categories of "Single Scenario", "Townhouse Scenario", "Apartment Scenario", and "Industrial Scenario", Calgary's Development Charges shown are 37%, 9%, 37% and 48%, respectively, more costly on a per Ha basis than the charges noted for Edmonton in the study. The [September 2023 RBC Second quarter Housing Trends and Affordability Report](#) indicated the share of income a household would need to cover ownership costs is nearly 10 percentage points less in Edmonton than Calgary.
 - b. Development Charges shown are 47%, more costly on a per Ha basis in all categories than the charges noted for Chestermere in the study.

- c. Development Charges shown are 55%, more costly on a per Ha basis in all categories than the charges noted for Airdrie in the study.
- d. Development Charges shown are 122%, more costly on a per Ha basis in all categories than the charges noted for Okotoks in the study.

Q 3. Page 12 of IP2023-1264, Attachment 10, shows:



This graphic appears to show the proportion of off-site levies as the part of a house remaining relatively constant. Doesn't that support the idea that Administration's approach is appropriate?

A 3. We do not believe it does.

The price of housing is sensitive to many things, including materials costs, land supply, other policy matters such as building codes, interest rates and the cost of off-site levies. For the reasons outlined in our submission, BILD believes we must endeavour to have a positive impact on those items we can. BILD's recommendations fundamentally seek to better share the cost of off-site infrastructure across a larger benefitting area which better aligns with areas which will ultimately be connected to and receive service from the infrastructure and corresponding costs included in the levy. We believe, in the interest of affordability, it is important to undertake the review we request prior to finalizing the water-related and transit levies.

We also point out, since 2011 overall levies per Ha have increased by nearly 130% and levies for water related infrastructure by nearly 385%. The comparable cumulative inflation for shelter, sourced from [City of Calgary Corporate Economics webpage](#), over the same period is 37.1% for all shelter costs and 38.6% for owned accommodation costs. The cumulative impact of the growth in levies costs, which must be recovered in the price of a home, is an input costs which we can collectively collaborate on to reduce the corresponding impact on affordability. Again, we believe this underscores the importance to undertake the review we request to ensure all opportunities to improve affordability have been fully explored.



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REPORT

Calgary Metropolitan Region Board

Water Use and Conservation in the Calgary Metropolitan Region Study



OCTOBER 2019

3.4 Water Use Definition and Scale Normalization

Based on a review of the data provided, a normalized and practical definition for potable water use tracking across the CMR was developed. This definition of water use tracking is summarized in the following table.

Table 3-6 - Normalized “Definition” for Water Use Tracking

Consumer Type	Unit	Normalized Definition
Residential	L/c/d	<ul style="list-style-type: none"> Single Family or Multi-Family Residential Indoor and Outdoor Water Use Residential (Lawn and Garden) Irrigation
Industrial, Commercial and Institutional (ICI)	m ³	<ul style="list-style-type: none"> Industrial: Gas Plant, Fertilizer Manufacturing, Meat Packing, Aggregate Processing Commercial: Car Wash, Grocery Store, Restaurant, Gas Station, Shopping Centre (e.g., CrossIron Mills) Institutional: Recreation Centre, Pool, Arena, School, Long-Term Care Home, Hospital
Bulk Water	m ³	<ul style="list-style-type: none"> Residential: Rural Residential, with no piped service **ICI: Contractor, Developer or ICI Customer Municipal: Public Works, Chemical Mixing for Agricultural Application
Municipal	m ³	<ul style="list-style-type: none"> Fire Fighting and Hydrant Use Construction Water (from hydrants) Flushing Sewers Public Works Vehicle Washing Municipal Office and Operations Buildings Servicing
Irrigation (Potable Water)	m ³	<ul style="list-style-type: none"> Municipal Parks & Sports Field Irrigation* Large Residential Developments Irrigation Golf Course Irrigation
Non-Potable	N/A	<ul style="list-style-type: none"> Agricultural or Crop Land Irrigation Construction, Road Maintenance and Dust Control Watering Cattle and Livestock

* In some CMR municipalities, the source of Municipal Parks & Sports Field Irrigation water is stormwater re-use or raw surface water (e.g. pumping from lakes or sloughs). These non-potable water uses are not measured or tracked.

In reviewing the data provided, some water users/categories may not fit well in this definition of normalization. For example, large Institution, Commercial, Industrial (ICI) water users such as Cross Iron Mills or Cargill Meats and Municipal Parks/Sports Field Irrigation do not have residential populations, which skews the “per capita” water consumption unit comparison. For future considerations, these users might be expressed in terms of volume per area of land use (m³/m² or m³/ha) or in terms of building area for food processing industries. This type of approach would require that municipalities record the area of land that is used for ICI and Irrigation purposes, over time, to be able to accurately compare the historical trend.

4 OBSERVED WATER USE TRENDS

4.1 Historical Population Growth

Several CMR municipalities provided their historical population data for the past 10 years (2008 to 2018). The data shows that populations in the CMR have been steadily increasing over this period of time.

The population growth rates were calculated between 2008 and 2018. In every municipality, the population has increased every year except. Figures 4-1 and 4-2 show the population growth in CMR municipalities. Population growth rates are listed in [Appendix C](#).

Foothills County, Rocky View County and Wheatland County were not able to provide enough historical population data for their service areas in order to plot a meaningful comparison to the historical populations of other CMR municipalities (Figure 4-2).

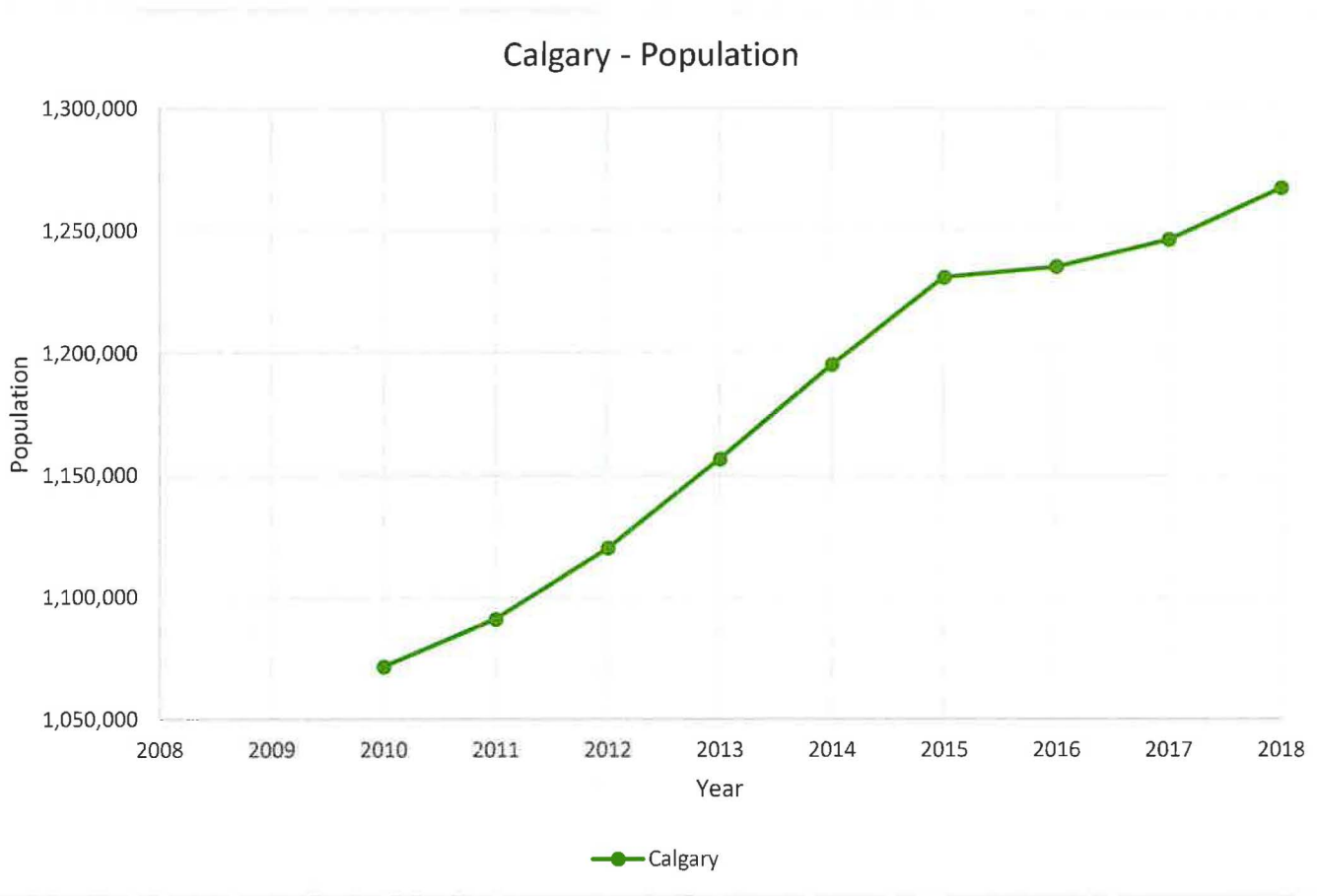


Figure 4-1: Historical Population in the City of Calgary

Table 4-2: Estimated Water Loss, Causes and Correction

Municipality	Estimated Water Loss (%)	Estimated Water Loss (L/c/d)	Suspected Causes (Reported from Interviews)	Correction Initiatives
Airdrie	23%	No Purchased Water Data	Unmetered water including leakage, fire fighting and hydrant use	<ul style="list-style-type: none"> Internal water loss study Leak detection program Data analysis of monthly water use
Calgary	17 – 28%	65 – 100	60% of water loss is leakage and 40% is roughly estimated and tracked (un-metered water use and running bleeders to prevent freezing)	Calgary rolled out universal metering in 2003. By 2014, 97% of properties were metered.
Chestermere	17 – 27%	39 - 71	Meter inaccuracy, water theft, leakage and fire fighting	<ul style="list-style-type: none"> Monitoring night flows and leak detection Meter replacement program replacement of aging copper water services in older neighborhoods
Cochrane	13 – 17%	49	Increased leakage during summer	Reviewing areas with high water losses
Foothills	10%	No Historical Population Data	Line Loss	Meter replacement program completed
High River	40%	138 – 427	20% of Water loss is leakage and 20% is unaccounted for (metering inaccuracies, theft and errors in billing data)	<ul style="list-style-type: none"> Meter replacement program Water main replacements Weekly night flow analysis Monitoring Leak detection
Okotoks	23 – 35%	63 – 123	Leakage, meter inaccuracy and/or programming, fire services use, developer use for new developments and system main flushing	<ul style="list-style-type: none"> Leak detection tool Zone metering and GIS to identify water loss Internal initiative to understand metering inaccuracy
Rocky View (Bragg Creek)	Negligible	No WTP Production Data	Limited leakage (due to new water infrastructure), no hydrant system	Ongoing monitoring
Strathmore	16 – 19%	No Purchased Water Data	Many water users are un-metered (agriculture grounds, public works, hydrant use), metering inaccuracy and aging ductile and cast iron pipes in the downtown core	<ul style="list-style-type: none"> Ongoing pipe replacement program in the downtown core investigation of metering inaccuracy
Wheatland	47 – 52%	264 – 317 m ³ /d*	Aging infrastructure, point specific leaks, unaccounted for water is used for dust control and pump testing	<ul style="list-style-type: none"> Leak detection and repair program Actively replacing aging infrastructure

* The estimated water loss for Wheatland County is expressed in terms of m³/day since the populations for the Carseland WTP, Rosebud WTP and Hamlet of Gleichen service areas are largely unknown, as discussed in Section 4.1.1.



Chestermere – May 30, 2019

Questions	Responses
	<ul style="list-style-type: none"> - There was initial push back from the public on increased utility rates, but this appears to have helped reduce water consumption.

Calgary – June 20, 2019

Questions	Responses
<p>1. Is the population data provided (for Calgary and Regional customers) from census data?</p>	<ul style="list-style-type: none"> - From Stats Canada census results. - Where indicated, data is from Municipal census.
<p>2. We noted a population growth rate ranging from 0.7% to 3.5%. Do you agree with this observation?</p>	<ul style="list-style-type: none"> - Yes. Calgary notes a growth rate of 0.35% – 3.33% within Calgary and 0.69% – 3.66% including Regional users.
<p>3. We noted a decrease in overall per capita water consumption. Do you agree with this observation?</p>	<ul style="list-style-type: none"> - Yes.
<p>4. What contributed to the spike in water consumption in 2017?</p>	<ul style="list-style-type: none"> - A hot, dry summer resulted increased irrigation and cooling consumption. - Cooling towers are present in the downtown and on large campuses (Foothills Hospital, SAIT, U of C). Cooling tower consumption is included within the ICI total. - Water Utility Bylaw does not allow new once-through cooling systems. Older ones may be grandfathered in.
<p>5. What percentage of water users are metered?</p>	<ul style="list-style-type: none"> - 98.06% as of May 2018 (approximately 7,000 unmetered users). - Unmetered users are primarily residential properties where the water intake is built in and structural damage would be required to install a meter (e.g., older home with a renovated, finished basement). This estimated water use is accounted for in the “Residential Flat” total. This may not be accurate and is based on an average. These users pay a high flat rate to encourage installation of meters.

Calgary - June 20, 2019

Questions	Responses
	<ul style="list-style-type: none"> - Some ICI developments may have their own water licenses for non-potable use (e.g., stampede rodeo).
<p>6. What is your rate structure?</p>	<ul style="list-style-type: none"> - Rates are uniform for Residential and ICI users. There is a base rate, plus linear variable rate (\$/m³). No tiered system. Rates were confirmed by Calgary. - Calgary provided separate rates agreements for Regional users.
<p>7. Have the water rates increased in the past 10 years? Do you notice an impact of increased rates on water consumption?</p>	<ul style="list-style-type: none"> - \$1.75/m³ in 2008, increased to \$3.25/m³ in 2018. Linear increase over the past decade. - Yes, Calgary has noticed a decrease in water consumption from 0.6 m³/count/day in 2008 to 0.55 m³/count/day by 2018. - Calgary observed a per capita water use of 356 L/c/d including Regional users in 2018. - The decrease in water use can be attributed to conservation initiatives, not necessarily rate increases.
<p>8. The "ICI Other" total includes Bulk Water, ENMAX, Lakes, and Non-Sewer Categories. Can you elaborate on what is included in these categories?</p>	<ul style="list-style-type: none"> - Bulk water includes water trucks hauling to industrial facilities or rural properties (likely outside of Calgary, or to sites with no piped supply). Calgary to confirm who can purchase a card for bulk water. - ENMAX includes district energy and operational use. - Lakes include developed lakes within the City that require top-up water (e.g., Mahogany Lake). - Non-Sewer Categories include metered services providing water for consumptive purposes (e.g., food storage, cooling, and bottled water). These facilities are not generating wastewater at a typical rate/scale to water use.
<p>9. Is Residential Irrigation metered separately from other Residential water use? Is Parks Irrigation included in "Municipal Irrigation"? What is GS Irrigation?</p>	<ul style="list-style-type: none"> - Single family residential irrigation is included in the Residential total. - Multi-family irrigation is metered separately under the Irrigation total. - Parks irrigation is included in Municipal Irrigation. - GS Irrigation includes metered water used for irrigation at ICI locations. There is a separate meter on site for irrigation. This provides rate benefits as there are less sewer charges.

Calgary - June 20, 2019

Questions	Responses
<p>10. What is included in “Municipal”? Are there other non-metered water uses (i.e., fire fighting)?</p>	<ul style="list-style-type: none"> - City owned facilities including pools, fire halls and Municipal buildings. - Public Works use including hydrant use, flushing, dust control, fire fighting and street cleaning and un-metered. Estimates of non-revenue water use are captured in the water loss.
<p>11. We observed a “Water Loss” ranging from 65 to 100 L/c/d. Do you agree with this observation? What are the main causes of water loss (i.e., metering inaccuracies, leakage theft).</p>	<ul style="list-style-type: none"> - Unbilled and metered water use. - Frozen water pipes – customers are requested to run bleeders (un-billed but accounted for). - Calgary is not aware of users running bleeders without their permission. - Calgary is not aware of theft. Hydrant use is roughly tracked and is minimal. - Landscapers and developers apply for a permit to use water from hydrants. - 60% of water loss is leakage. 40% is roughly tracked or estimated. - Calgary to provide estimates for the breakdown of unaccounted for water.
<p>12. Who are the primary customers at Bulk Water stations?</p>	<ul style="list-style-type: none"> - Calgary to confirm: if there was a watering restriction, what happens with bulk water stations? There is a bylaw for permitted uses (e.g., down well).
<p>13. What water conservation initiatives have been implemented?</p>	<ul style="list-style-type: none"> - In 2003, Calgary rolled out universal metering. 97% of users were metered by 2014. - The Water Utility Bylaw was implemented in 2006. This mandates the use of low flow fixtures (now this is all that is available on the market). This Bylaw also mandated for new construction and renovation to use low flow fixtures (required to obtain a permit). - There was a 12 year-long residential toilet rebate program which funded 70,000 residential toilets being upgraded. - Process changes were implemented in WTPs. Calgary upgraded filtration equipment to reduce process water use. - A hotel/motel and Multi-family Residential toilet replacement program is still ongoing. - There was a program focused on replacing pre-spray rinse valves in restaurant dish pits. This was discontinued because the market has caught up - only high efficiency spray valves are available for purchase.

Calgary - June 20, 2019	
Questions	Responses
	<ul style="list-style-type: none"> - The next water conservation opportunity will focus on outdoor water use (Residential and Parks Irrigation). Calgary plans to update their Water Efficiency Plan, to determine recommendations. - Public education program: 1" of water per week for outdoor irrigation. - Calgary offers rebates to ICI users for installing high efficiency indoor fixtures (1 day buy back program). - There is a rain barrel subsidy program. The first 1,000 rain barrels are sold at \$15 each. - There are homeowner water guides available online related to yard smart landscaping. Public education program: landscaping options, turf grass recommendations, Native and water efficient vegetation. This does not include xeriscaping or lawn replacement.

Foothills - June 4, 2019	
Questions	Responses
<p>1. The Municipal Context Report identifies 7 WTPs (as indicated in the Municipal Context Report) that are operated by Foothills County. Is there any production data available for these WTPs? What regions are currently serviced by water co-ops? Can you provide water use data?</p>	<ul style="list-style-type: none"> - There are 5 WTPs that are owned and operated by Foothills. The remaining 3 provide re-treatment (re-chlorination or testing/pumping facilities). <ul style="list-style-type: none"> • Heritage Heights WTP services 2 schools and 1 arena. There are no residential services (all residences are well fed). • Cottonwood WTP services 14 residents. • Blackie WTP services the Hamlet of Blackie. • Fish Creek Ranch WTP services 1 residence and 1 bulk fill station. • Red Deer Lake WTP services the Red Deer Lake school. - There are 5 WTPs that are privately owned, but operated by Foothills: Square Butte Ranch WTP, Millarville Recreation and Ag Society WTP, Ravenscrest WTP, SRRUC (10% share owner with Black Diamond/Turner Valley) and Longview WTP. - There are other water co-ops that are privately owned and operated: 3 are a substantial size, and several are very small systems. Some private water co-ops

Foothills - June 4, 2019	
Questions	Responses
8. Why is Foothills no longer allowing private water co-ops?	<ul style="list-style-type: none"> - The Aldersyde service is also provided from the High River WTP. - The Municipal Government Act requires Foothills to take over the ownership and operation of a private WTP that fails. - If a developer builds a new WTP, this will be owned and operated by Foothills. - Existing private water co-ops will be eventually taken over by Foothills once they fail (plan to grandfather out private water co-ops).

Rocky View - June 3, 2019	
Questions	Responses
1. For the East Balzac and Bragg Creek water use data provided, what is the population that these WTPs are serving?	<ul style="list-style-type: none"> - The Bragg Creek WTP services predominantly residential users and the East Balzac WTP services predominantly ICI users (including Crossiron Mills, cooling towers and industrial area).
Is there population data available for East Balzac and Bragg Creek?	<ul style="list-style-type: none"> - Rocky View provided population data for East Balzac and Bragg Creek. - The Area Structure Plans for East and West Balzac can provide guidance on general land use. ASPs are available on Rocky View's website.
2. Where is the Bragg Creek WTP located?	<ul style="list-style-type: none"> - At the north end of Burnside Drive. The WTP services the hamlet boundary and Elkana Ranch (just outside of the hamlet boundary).
3. Is there any water use data available for the 70 private and co-operative water systems? What does "typical" rural water use look like for these systems?	<ul style="list-style-type: none"> - No information available. Rocky View does not regulate the private and co-operative water systems. - The following organizations can provide a picture of typical rural water use: <ul style="list-style-type: none"> o Blazer WTP – franchise agreement that service rural residents and acreages. o Rocky View Water Co-op. o Alberta Federation of Rural Water Co-operatives (AFRWC).

Rocky View - June 3, 2019

Questions	Responses
	<ul style="list-style-type: none"> - Rocky View provided contact information for the Blazer WTP and the Rocky View Water Co-op. - Some co-ops are metered. Rocky View was unable to provide consumption data for the co-ops.
4. There are 7 WTPs listed that are private systems in the Municipal Context Report. Do these WTPs service mostly residential or ICI users?	<ul style="list-style-type: none"> - The 7 WTPs listed in the Municipal Context Report are the main WTPs and mostly service residential users. ICI mainly consists of a small local strip mall or gas station.
5. Do you have water use data for Municipal?	<ul style="list-style-type: none"> - Rocky View provided information on Public Works water use (e.g., truck washing, public buildings). - Bragg Creek does not have a hydrant system. They use a quick hook up to fill their fire trucks. - Rocky View uses temporary meters to track construction water use. - There is no bulk water station. - Rocky View provided what is included in the ICI water use total.
6. Are there any issues with water loss? If yes what are they?	<ul style="list-style-type: none"> - Water infrastructure is new, so there is limited leakage. - Bragg Creek is 100% metered. Monitoring is being done.
7. Do you have separate water use data for Crossiron Mills?	<ul style="list-style-type: none"> - Yes, Rocky View to provide. - Rocky View to request the estimated number of visitors to Crossiron.
8. Are there any water conservation initiatives?	<ul style="list-style-type: none"> - See Area Structure Plans. - Rocky View uses captured stormwater for irrigation.

Wheatland - June 6, 2019

Questions	Responses
1. The Municipal Context Report indicates that there is 1,000 acre-ft of water allocated to Wheatland. How much water is used on an annual basis and what is the typical water use (e.g., rural residential, agriculture, construction)?	<ul style="list-style-type: none"> - The 1,000 acre-ft was allocated back in 2011 for 5 anticipated developments (750 residential and 250 commercial). These developments were never completed; therefore the water license was not used.

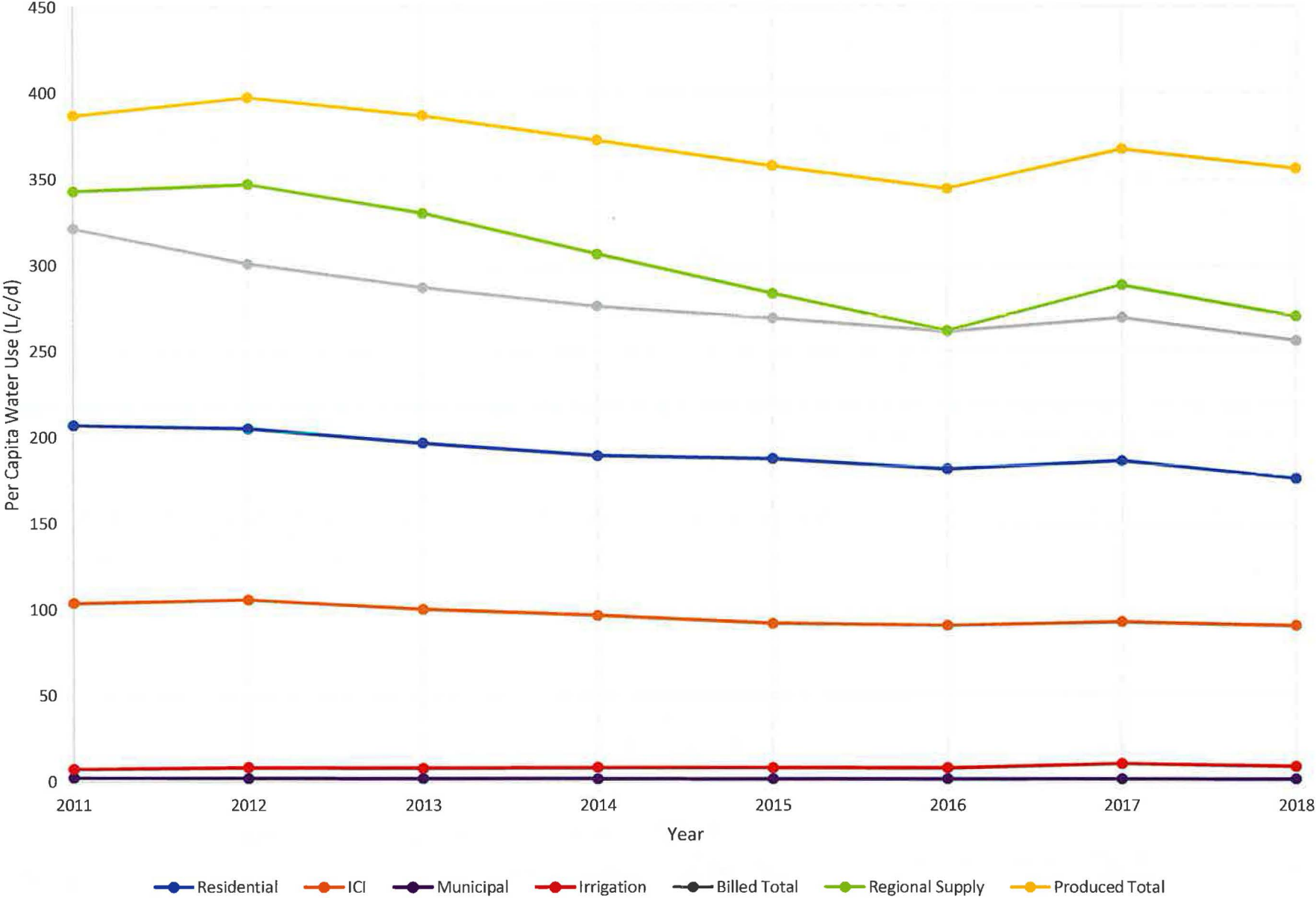
Cochrane – June 3, 2019	
Questions	Responses
	<ul style="list-style-type: none"> - Irrigation is 100% metered except for Parks irrigation. Cochrane is implementing a plan to install meters in larger parks and will have better irrigation data in the future. See “Park Use” in the spreadsheet provided for annual usage. - Other irrigation include condo developments and green spaces. No potable water is provided for agricultural irrigation.
5. Do you agree with population growth rates between 1.77% and 10.7%?	<ul style="list-style-type: none"> - On average, the range is agreeable.
6. What is your water rate structure?	<ul style="list-style-type: none"> - Residential rates are based on a 3 tier rate structure. - Multi-family residential users are billed at the first tier rate only. - Non-residential users are billed at a flat rate per meter size + a consumptive rate of \$1.31 per m³. - Irrigation is billed at a flat rate per meter size (same as non-residential) + a consumptive rate of \$1.56 per m³. - These rates are separate from bulk water use.

High River – June 13, 2019	
Questions	Responses
1. There is one WTP in High River. Can you provide water production data for this WTP?	<ul style="list-style-type: none"> - All treated water is metered. - There are 15 raw water wells (GUDI) that feed the WTP. Each have their own meter and there is a common raw water intake meter in the WTP. There is also a magnetic flow meter for the treated water entering the distribution system. - High River has 3 water licenses.
2. The Municipal Context Report lists Cargill Meats and Foothills County as high water users. Which areas of Foothills County do you service? Are they metered?	<ul style="list-style-type: none"> - High River provides water to Cargill Meats and the MD of Foothills. They hold their own water licenses, and water is treated by High River's WTP. High River oversees these water licenses.

High River - June 13, 2019

Questions	Responses
	<ul style="list-style-type: none"> - High River services the Hamlet of Cayley and Town of Aldersyde in Foothills County. Aldersyde re-distributes the water, but High River does not monitor where it goes. Cayley and Aldersyde each have their own meter. - High River provided consumption (billing data).
3. Can you provide water consumption (billing) data for Residential, ICI, Municipal and Irrigation?	<ul style="list-style-type: none"> - 100% of customers are metered. - Residential is billed separately from ICI. - The largest ICI users are car washes, a brewery, the Lafarge precast plant, the hospital and a recreation centre.
4. How are Municipal water uses (i.e., Parks Irrigation, Flushing, Vehicle Washing, Construction, Fire Fighting, etc.) billed and tracked?	<ul style="list-style-type: none"> - Municipal water is tracked separately under "maintenance water". - Water used from hydrants is recorded. The fire department documents how long the hydrant was used for. This is tracked for water audits but is not billed. - High River irrigates a few parks, and this is metered. - Other irrigation uses are also metered. For example, if the High School wishes to irrigate, High River would issue them their own meter and they would be billed. - High River provided consumption data (annual total). - There are errors in the 2013-2015 billing data due to the flood wiping out meters in downtown core and 80% of the neighborhoods. This was followed by a full meter replacement program. During the flood, the WTP production meter remained online.
5. The Municipal Context Report indicates that water use was 475 L/c/d in 2016. Do you agree with this observation? Has this decreased in the past 2 years?	<ul style="list-style-type: none"> - Yes. Leaks and unaccounted for water contribute to this high water usage. - There has been no notable decrease in water use in the past 2 years. - There were huge water loss issues in 2007. High River formed a partnership with Water for Life and Alberta Water Council CEP. Water conservation initiatives brought the water use down to 275 L/c/d. The infrastructure leakage index (ILI) dropped from 18 to 8.5. - Conservation initiatives included a rebate program for low flow fixtures and rain barrels and public campaigns. High River hired Veritec Consulting to perform Night Flow Analysis and leak detection.

City of Calgary



Inventory of municipal CEP plans

Municipality	Guiding Document	Water Consumption (Baseline)	Water Loss (Baseline)	Targets	Proposed Actions
City of Brooks	<u>Water Conservation, Efficiency & Productivity Plan (2011)</u>	2011 – 648 lcd (total) 2011 – 423 lcd (residential)	N/A	<ul style="list-style-type: none"> • reduce per capita usage to the Canadian average by 2025; • reduce peak day demand from current level (19,977,651 l/day) 	<ul style="list-style-type: none"> • water audit; • conservation-based pricing; • water-efficient fixtures rebate program; • education and outreach; • voluntary restrictions
City of Calgary	<u>Water Efficiency Plan: 30 in 30, by 2033 (2007)</u>	2006 – 451 lcd (total)	2006 – 12%	<ul style="list-style-type: none"> • 100% metering by 2014; • keep daily peak demand below 950 ML; • reduce average daily per capita demand by 30% (from 500 to 350 lcd) by 2033 	<ul style="list-style-type: none"> • system leak detection and main replacement; • treatment process upgrades; • water audits; • metering; • low-flow plumbing fixture bylaw; • rain barrel promotion; • water reuse pilot; • toilet, washing machine, spray valve rebate program; • irrigation audits; • education and outreach
Town of Canmore	<u>Environmental Sustainability Action Plan (2010)</u>	2000 – 511 lcd (total) 2000 – 222 lcd (residential) 2008 – 839,527 m ³ (ICI)	2008 – 17%	<ul style="list-style-type: none"> • by 2015, reduce water losses to 10% or less; • by 2035, reduce annual per-capita water consumption by 50% from 2000 levels; • by 2035, reduce per-capita residential water consumption by 50% from 2000 levels (i.e., to 111 lcd); • by 2035, reduce total annual ICI water consumption by 	<ul style="list-style-type: none"> • expand scope of meter calibration program; • conduct water audit; • continue water fixture retrofit program; • re-assess need for revival of water conservation rebate program; • conduct analysis of water demand of ICI sector to identify opportunities for improving water CEP; • research and promote opportunities for water reuse and recycling

AUMA Policy Paper 2014

AUMA Board of Directors 2014 Urban Municipal Water Conservation, Efficiency and Productivity Plan

WHEREAS in 2009 AUMA members adopted a Water Conservation, Efficiency and Productivity (CEP) Plan with a goal to boost municipal capacity to implement CEP initiatives and contribute to the provincial *Water for Life Strategy*.

WHEREAS municipalities have made progress in improving water CEP so it is timely to build on these achievements and further advance capacity to protect this vital resource.

WHEREAS AUMA developed and communicated targets and actions and sought members' input through an online discussion guide and workbook, webinars, Digest articles, and discussion at Mayors Caucuses, municipal-related events and the Water Network.

WHEREAS at its June meeting, the AUMA Board of Directors considered members' input and adopted the plan for consideration at the 2014 Convention.

NOW THEREFORE BE IT RESOLVED THAT the AUMA 2014 General Assembly approve the 2014 Urban Municipal Water Conservation, Efficiency and Productivity Plan.

2014 Urban Municipal Water Conservation, Efficiency and Productivity Plan – Targets and Actions for the Urban Municipal Sector

July 2014

WE ARE
economies
OF SCALE

WE ARE THE
support
YOU NEED

WE ARE THE
experts
IN MUNICIPALITIES

WE ARE YOUR
advocate



Executive Summary

Building upon the direction set out in the Water Conservation, Efficiency, and Productivity Plan of 2009, the renewed plan reflects an overall goal that Alberta's urban municipal sector¹ is recognized as a significant contributor to safeguarding the reliability of our water supplies, the stewardship of our aquatic ecosystems, and the health and well-being of Albertans, as set out in the provincial Water for Life Strategy.

The renewed plan proposes an outcomes-based approach to achieving water savings. The inclusion of volume-based water use and water loss targets further enables measuring and reporting of the urban municipal sector's contributions toward achieving the goals of the province's *Water for Life Strategy* (i.e., safe secure drinking water; healthy aquatic ecosystems; and reliable, quality water supplies for a sustainable economy).

Targets of the renewed AUMA plan are:

- 1) Alberta's urban municipal sector will achieve an average per capita residential water use of 195 litres/person/day and a total per capita water use of 341 litres/person/day (30% below reported water use 2001-2006) by 2020.
- 2) Alberta's urban municipal sector will maintain the volume of "unaccounted for" water at 10% of total water use (reported to be 10.1% in 2009).

In order to achieve these targets, the following actions are required:

- 1) AUMA member municipalities holding a water license(s) for municipal use will report water use data through the Government of Alberta's (GoA) Water Use Reporting System.
- 2) AUMA member municipalities will share water use information with AUMA so that AUMA may report on the aggregate water use and water savings of the urban municipal sector and work with the GoA to track and report on contributions of urban municipalities as a whole to the goals of the province's *Water for Life Strategy*.
- 3) AUMA will continue to partner with the GoA and other organizations to develop tools and share information to assist municipalities to achieve water conservation, efficiency and productivity, to measure their own water use and water loss, and to set targets for these.
- 4) AUMA member municipalities will continue to take action to increase water conservation by users, the efficiency of water distribution systems, and productivity of water and wastewater treatment systems, so as to contribute to the urban municipal sector collectively achieving its water use and water loss targets.
- 5) AUMA will advocate that the Government of Canada resume the Municipal Water and Wastewater Survey program as it provides a valuable benchmark for assessing the efforts of municipalities across the country and the effectiveness of water and wastewater management policies from other jurisdictions.

AUMA will work with our members to renew the targets and actions of this plan in 2020.

¹ The CEP plan only applies to municipalities with municipal water systems. It does not apply to summer villages whose residents have individual wells, as it is not possible for the municipality to track water use in this case.

Table 1: Status of Municipal Implementation of AUMA Water CEP Plan Targets (2013)

	Target >10,000	Actual >10,000	Target 2,500-10,000	Actual 2,500-10,000	Target <2,500	Actual <2,500
Report water use data through Water Use Reporting (WUR) System by December 31, 2010	100%	17/20 85.0%	100%	27/37 73.0%	100%	51/125 40.8%
Develop Conservation, Efficiency and Productivity Plans by Dec 31, 2011	100%	12/28 42.9% <i>(additional 3 plans in progress)</i>	75%	4/46 8.7% <i>(additional 2 plans in progress)</i>	50%	4/149 2.7% <i>(additional 2 plans in progress)</i>
Complete a water audit and identify ways to reduce leaks by December 31, 2012	100%	11/28 39.3% <i>(additional 6 audits in progress)</i>	75%	14/46 30.4% <i>(additional 4 audits in progress)</i>	50%	5/149 3.4% <i>(additional 5 audits in progress)</i>
Implement initiatives to increase the uptake of water efficient fixtures by Dec 31, 2011	100%	21/28 75.0%	75%	18/46 39.1% <i>(additional 2 municipalities in progress)</i>	50%	7/149 4.7% <i>(additional 3 municipalities in progress)</i>
Completed CEP Update Survey (original target April 2011)	100%	11% - May 2011 57% - Jan 2012 53.6% - Mar 2013	75%	5% - May 2011 9% - Jan 2012 30.4% - Mar 2013	50%	2% - May 2011 10% - Apr 2012 9.6% - Mar 2013

3.0 Measuring Municipal Water Use

Accurate water use information is one of the foundational elements that will help improve the management of Alberta's water resources. The ability to set meaningful water conservation and efficiency targets, and to measure progress toward the achievement of those targets, requires that municipalities have a thorough understanding of current water use.

All of this hinges on water withdrawal, demands, and releases being metered. Universal metering is common practice in most Alberta municipalities, but to effectively plan for and monitor progress toward water conservation and efficiency goals, the information being collected needs to be used for more than just billing purposes.

There are a number of ways that a municipality can measure, monitor, and report its water use; the challenge is achieving some consistency in how this is done.

3.1 Overall Water Use

Water use (in the municipal context) refers to the gross diversion of water withdrawn from all licensed sources and introduced into the municipal system for use. It is important to note that although referred to as 'use', the volume withdrawn may not be entirely consumed and some portion of it may be subsequently returned to the environment after treatment. For this reason, this volume of water is probably more appropriately referred to as 'water demand' but the terms are often used interchangeably.

In Alberta, roughly 90% of the population is served by a municipal water distribution system. Approximately 96% of the water in these distribution systems came from surface water sources such as lakes and rivers, while 4% came from groundwater sources³. The reporting of water use information by those who operate these utilities provides governments and the public with a better understanding of how water is being used in this province.

Recent amendments by the provincial government to Water Act licenses for municipal use now require that license holders report water use on a regular basis as a condition of that license.

Municipal water use data submitted to the provincial government's Water Use Reporting (WUR) System will be used to monitor overall water use volumes and trends and to report the urban municipal sector's contribution to achieving the GoA's target of a 30% improvement in overall water CEP from 2005 levels.

³ Source: [Environment Canada Municipal Water and Wastewater Survey \(2009\)](#)

3.2 Use of Municipal Water

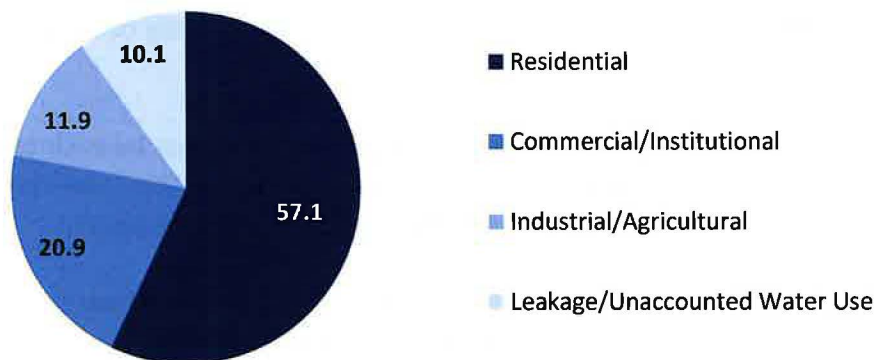
According to the findings of Environment Canada’s most recent Municipal Water and Wastewater Survey, the residential sector accounts for the bulk of municipal water use (57.1%) in Alberta. The commercial/institutional sector (including water used by the municipality) follows with 20.9%, while industrial and agricultural operations that are connected to municipal water supplies account for 11.9% of water used. The remaining 10.1% is that lost as a result of leakage and system flushing/maintenance.

The proportion of water used by the above noted sectors varies considerably from one municipality to the next. Typically smaller communities tend to have less commercial and industrial water use, and so the residential sector accounts for a greater percentage of water use than in larger communities.

Understanding who is using what, and how that water is being used is important in identifying appropriate water conservation and efficiency measures for achieving water savings. This is the type of information that is derived from developing a municipal water use profile (an important early step in water CEP planning) or conducting a municipal water audit. To do so requires that a community be universally metered.

A water audit refers to an assessment of the integrity of the overall water distribution system. A water audit measures and tracks the flow of water from the site of withdrawal or treatment through the water distribution system and into customer properties. In doing so, it calculates the volumes and variety of consumption and losses that exist in the system. This information enables a municipality to determine the most effective and efficient course of action to mitigate losses and improve the overall efficiency of the system. Further information on municipal water audits is available at <http://water.auma.ca>.

Table 2: Alberta's Municipal Water Use by Sector
(as a percentage of total water delivered to the distribution system)



Source – Environment Canada Municipal Water and Wastewater Survey (2009)

Table 3: Total and Residential per Capita Water Use, by Province/Territory and Municipal Population

	Total Water Use			Residential Water Use		
	Number of Responding Municipalities	Responding Population	Total Water Use per Capita (litres per capita per day)	Number of Responding Municipalities	Responding Population	Residential Water Use per Capita (litres per capita per day)
Newfoundland & Labrador	24	278 549	804	22	189 236	395
P.E.I.	4	52 582	505	4	52 582	188
Nova Scotia	19	436 931	512	17	436 120	282
New Brunswick	30	287 352	821	27	263 986	394
Quebec	272	5 465 132	706	225	4 383 874	386
Ontario	165	10 470 937	409	159	10 401 245	225
Manitoba	54	847 025	355	49	842 461	199
Saskatchewan	80	609 177	518	75	607 131	238
Alberta	124	2 837 712	395	115	2 758 461	209
British Columbia	87	2 786 835	606	86	2 764 564	353
Territories	6	39 448	599	6	39 448	391
Municipal Population						
Under 1000	154	74 039	756	136	65 249	426
1001-2000	142	159 338	528	120	135 276	371
2001-5000	172	446 134	712	157	410 304	385
5001-50 000	322	3 586 411	570	302	3 384 172	313
50 001-500 000	64	8 747 123	489	60	7 816 692	280
More than 500 000	10	11 058 636	497	10	10 835 416	251
Total, 2009	864	24 071 731	510	786	22 747 109	274
Total, 2006	1 082	25 193 333	591**	1 043	25 074 414	327**

Source - 2009 Municipal Water and Wastewater Survey. Aggregated to municipal level and imputed for non-response using 2006 MWWS. Sustainable Water Management Division, Environment Canada.

* Includes single-family and multi-family

The above table also shows that across Canada, larger communities continue to have relatively lower per capita water use than do smaller communities. This characteristic is consistent with the AUMA survey finding that most larger communities in Alberta have already taken (and continue to take) deliberate action toward achieving water conservation and efficiency targets, while smaller communities tend to comprise the next wave of implementation. This reality is often a reflection of municipal capacity, and highlights the opportunity that exists in continuing to extend support to Alberta's smaller municipalities.

3.4 Leakage and Other Water Loss

Every water system leaks. The extent of this loss can, however, vary considerably from one municipality to the next.

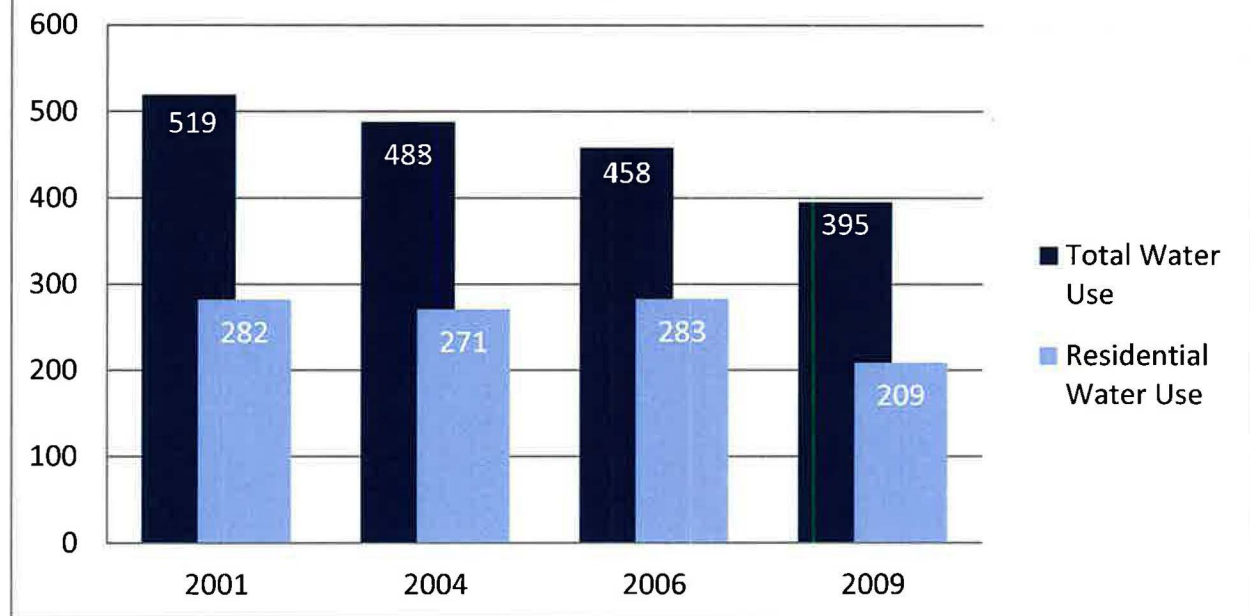
As implied in Section 3.2, the process of accounting for water usage by each sector also allows for calculating leakage and otherwise unaccounted for volumes. This "non-revenue" water is an important indicator of the condition and efficiency of the overall system.

In 2009, Environment Canada estimated that, on average, 13.3% of water from municipal systems across Canada, and 10.1% of water from municipal systems across Alberta, was unaccounted for. To help visualize this loss and opportunity, consider that in the U.S., the losses are higher at 14-18% which translates to 22.3 billion litres of expensive, treated water

lost each day - that's enough water to meet the daily water needs of 61 million Americans (Centre for Neighborhood Technology, 2013).

Identifying and mitigating water loss represents the single greatest supply-side opportunity for water providers to conserve water, recover lost revenues, and improve overall operational efficiency.

**Table 4: Alberta Municipal Water Use
(litres per capita per day)**



Source – Environment Canada Municipal Wastewater Survey (2009, 2006, 2004, 2001)

2) Alberta’s urban municipal sector will maintain the volume of “unaccounted for” water at 10% of total water use.

“Unaccounted for” water, also referred to as “non-revenue water” refers to water that has been produced and is “lost” before it reaches the customer. Losses can be real (as a result leakage) or apparent (through theft, metering inaccuracies, or authorized unmetered consumption). As reported in Section 3.4, unaccounted for water can amount to considerable losses for a municipality.

There are, however, limits to what even the most well-run water loss management program can achieve; zero water loss is not realistic or economical. Once the marginal cost of reducing non-revenue water exceeds the marginal benefits or water savings, there is often little incentive to further reduce water loss. Environment Canada suggests that in most cases a municipal leak detection and repair program is only cost-effective when the volume of unaccounted for water in a municipal system exceeds 10 to 15%. For this reason, the AUMA is proposing an “unaccounted for” water target of 10% for the urban municipal sector. Environment Canada’s 2009 reporting of Alberta municipalities as having 10.1% total unaccounted for water illustrates that this target is achievable (See Table 5).

6.0 Actions

In order to achieve the targets set out in this renewed AUMA Water Conservation, Efficiency, and Productivity Plan, the following actions (directed at both the AUMA and its member municipalities) are required:

- 1) AUMA member municipalities holding a water license(s) for municipal use will report water use data through the Government of Alberta's (GoA) Water Use Reporting System.
- 2) AUMA member municipalities will share water use information with AUMA so that AUMA may report on the aggregate water use and water savings of the urban municipal sector and
- 3) work with the GoA to track and report on contributions of urban municipalities as a whole to the goals of the province's *Water for Life Strategy*
- 4) AUMA will continue to partner with the GoA and other organizations to develop tools and share information to assist municipalities to achieve water conservation, efficiency and productivity, to measure their own water use and water loss, and to set targets for these.
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AUMA will renew the targets and actions of this plan in 2020.

Attachment 4

From: Tse, Chris <Chris.Tse@calgary.ca>
Sent: October 6, 2023 4:37 PM
To: Jackie Stewart
Cc: Berzins, Marcus
Subject: RE: water meeting today
Attachments: StormCapitalProjects_2023.pdf; SanitaryCapitalProjects_2023.pdf; WaterCapitalProjects_2023.pdf; Linear OSL Model - ASP scenario.xlsx; Water Loss 2023.docx

Hi Jackie,

Below is several items that you have asked for.

First is the projected balance for linear infrastructure as of December 31, 2023, based on bylaw.

Water Linear	2000-2010	2011-2015	2016-Present	Future Debt
Principal	16,851,858	38,517,035	88,785,573	191,125,495
Interest	4,803,187	10,117,055	35,266,331	107,609,972
Total	21,655,045	48,634,090	124,051,904	298,735,467
Wastewater Linear	2000-2010	2011-2015	2016-Present	Future Debt
Principal	9,289,143	45,024,744	149,128,594	88,520,127
Interest	2,496,001	12,068,622	57,731,444	42,214,914
Total	11,785,144	57,093,366	206,860,038	130,735,041
Water + Wastewater	33,440,189	105,727,456	330,911,942	429,470,508

Second, the projected shortfall balance for linear, as of December 31, 2023 is \$9,981,788 for water and \$6,842,064 for wastewater. Please note these numbers do not include the deferred 30/40/40 collection.

Other items attached included:

- a. The maps of capital project you requested. They will be posted on the website in the near future.
- b. Linear financial model for the ASP denominator scenario. Please note the timing and cost of the projects is dependent on land approvals and population growth rates, which will also affect benefit allocations. We made some high level assumptions to understand potential rate impacts of this scenario. Included are not the full project list, as there may be projects required that we have not identified yet.
- c. A detailed explanation of some of the initiatives The City has done and is planning to do to further reduce water loss. The City has dedicated staff working on these initiatives the results are promising. For example, water main breaks have reduced 85%+ in the last 40 years. The City continues to invest in new technology, strategies and share knowledge with other water network operators to reduce water loss.

Have a happy thanksgiving!

Chris

From: Jackie Stewart <Jackie.Stewart@bildcr.com>

Sent: Thursday, September 28, 2023 2:50 PM

To: Tse, Chris <Chris.Tse@calgary.ca>
Cc: Berzins, Marcus <Marcus.Berzins@calgary.ca>
Subject: [External] water meeting today
Importance: High

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Hi Chris,

Hope you are well and excited about the last official OSL Water Meeting!

Not sure if we can easily calculate in the meeting today, but can we figure out (for linear) what the dollars are to pay off the remaining debt for the periods 2000-2009, 2010-2015, 2016-2023 and then future debt forecast for time period in the model (can't recall how many years of projects are in each type) for water and wastewater? I think it should be pretty quick to figure out with the financial models. Also note the short fall amount in this breakdown of what is to be paid off. Then we can really understand what we are trying to pay for with the 4612 Ha's of land (or approximately 92,240 homes)

Greg won't be at the meeting today but suggested the idea of doing some type of a "proof of concept" for the linear levy methodology.

Also, is it possible to add some maps in the white papers (were there some provided in past meeting materials) showing the locations of the projects?

Many thanks for all your hard work!

Cheers,

Jackie Stewart, P.Eng.

Director, Technical and Economic Initiatives and Government Relations

Cell: [403-969-6913](tel:403-969-6913)

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1. What actions has the City taken to reduce water loss?

To address high water consumption and reduce apparent losses, universal metering was initiated in 2004. By 2014, 97% of customers were metered. The City is working hard on advancing the metering program through the introduction of Advanced Metering Infrastructure to provide real-time water meter consumption data to allow for more rapid awareness and response for customer-side leaks, among other benefits.

To address system real losses, the City runs a proactive watermain replacement program that schedules timely replacement for aging watermains considering material, geotechnical conditions, and break history, among other factors.

The City also has a robust cathodic protection program that connects almost all of the City's metallic distribution mains to sacrificial anodes to reduce corrosion that can result in pinhole leaks in metallic pipes.

Proactive leak detection is addressed in a number of different manners including pipe survey in targeted areas using acoustic methods to listen on hydrants and valves for nearby leaks. The City utilizes District Metered Areas in targeted neighbourhoods for real-time monitoring of water demand allowing for proactive identification of leaks/breaks in those areas.

Unbilled authorized consumption is tracked closely through an annual water audit process adhering to industry-standard practices using methodology supported by the American Water Works Association. This includes the Frozen Pipe Prevention Program which is reviewed regularly to ensure compliance, track consumption, and to ensure that the use of water is the most cost-effective solution to prevent frozen services.

2. What further actions need to be taken?

Members of the Water Loss Committee have led innovative activities to reduce water loss including improving production flow metering, and piloting advanced acoustic metering sensors to better identify leaks in the distribution system. This increased attention to reducing water loss has reduced the losses in litres per service connection per day from 337 L/conn/day in 2019 to 286 L/conn/day in 2022 with a target of 250 L/conn/day by 2030.

In addition to these actions, more action is still needed. The future actions to be taken include:

- Utilizing advanced technology to increase proactive leak detection
- Annual pipe replacement budget
- Annual anode retrofit installation and replacement costs
- Annual updates to Water Service Team on water loss metrics, and prepare an update to the Water Loss Strategy including a review of a more aggressive target and associated action plan.

- Feedermain inspections
- Meter replacement and testing
- Plant Meter Verification Testing Program

3. What's the connection between water loss and offsite levies?

Off-site levies fund the infrastructure that we use every day in new communities. New communities have impacts on infrastructure outside of the community. In Calgary, an off-site levy is a development charge paid by developers to fund the infrastructure in new communities and help share the costs of the off-site infrastructure that support growth and development. Within the water system levies are used to fund water pipes, pump stations, potable water reservoirs and water treatment plants.

The developer part of the off-site levy benefits new growth. The City pays for the part of the infrastructure that benefits existing residents and the region.

In determining the water infrastructure needed to support a new community the key parameters considered are population growth and per capita water consumption. Reducing water loss is one of the possible levers to reduce per capita water consumption. In the long run this reduction could postpone planned infrastructure expenditures, thereby reducing or deferring off-site levies.