

Performance Based Regulation 2023 Progress Report

2022-2024 Wastewater Collection and Treatment Services and 2022-2026 Water Services



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1 Executive Summary

This progress report provides the annual update to the City of Edmonton on the operational and financial results for the year ended December 31, 2023 for water and fire protection services (“In-City Water”), wastewater treatment services (“Wastewater Treatment”), and sanitary and stormwater utility services (“Wastewater Collection”, formerly known as “Drainage Services”) provided within Edmonton by EPCOR Water Services Inc. (“EWS”). Throughout this report, reference will be made to “EPCOR Water Services” and “EPCOR Drainage Services” as these were the EPCOR business units that existed in 2023. Effective July 3, 2023, EPCOR Water Services and Drainage Services were amalgamated into a single business unit responsible for the ongoing commitments for the PBR plans referenced in this report. Edmonton City Council regulates In-City Water in accordance with the 2022-2026 Performance Based Regulation (“PBR”) Plans approved in EPCOR Water Services Bylaw No. 19626 (“Bylaw 19626”) and Wastewater Collection and Wastewater Treatment services in accordance with the 2022-2024 PBR Plan approved in EPCOR Drainage Services Bylaw No. 19627 (“Bylaw 19627”). The key features of these plans, which encompass rates, performance measures, and return on equity are described in Appendix A.

1.1 Financial Performance

In-City Water, Wastewater Treatment and Wastewater Collection’s financial performance¹ for 2023 are summarized in Table 1.1-1 below:

Table 1.1-1
Revenue and Return on Equity
(\$ millions)

| | A | B | C | D |
|-------------------------------|----------|--------|-----------|--------|
| | 2023 | | 2022-2023 | |
| | PBR | | PBR | |
| | Forecast | Actual | Forecast | Actual |
| 1 In-City Water | | | | |
| 2 Regulated revenue | 231.3 | 237.9 | 451.4 | 460.9 |
| 3 Return on equity | 47.1 | 48.6 | 89.1 | 91.6 |
| 4 Rate of return on equity | 8.58% | 8.93% | 8.25% | 8.64% |
| 5 Wastewater Treatment | | | | |
| 6 Regulated revenue | 129.2 | 133.9 | 251.3 | 258.1 |
| 7 Return on equity | 21.2 | 22.3 | 42.3 | 47.4 |
| 8 Rate of return on equity | 10.23% | 10.40% | 9.64% | 11.39% |

¹ Consistent with the 2022-2024/2026 PBR Applications, all financial data in this report, including totals and sub-totals, are rounded to the nearest \$0.1 million to ensure continuity of data between tables and between years. However, the sum of the rounded financial data in certain tables may not be equal to the related rounded total or sub-total.

| | A | B | C | D |
|--------------------------------|----------|--------|-----------|--------|
| | 2023 | | 2022-2023 | |
| | PBR | | PBR | |
| | Forecast | Actual | Forecast | Actual |
| 9 Wastewater Collection | | | | |
| 10 Regulated revenue | 251.2 | 251.7 | 487.6 | 490.3 |
| 11 Return on equity | 56.6 | 50.3 | 100.4 | 92.0 |
| 12 Rate of return on equity | 7.33% | 6.62% | 6.85% | 6.41% |

Table 1.1-1 shows that 2023 actual financial performance, as measured by the return on equity for In-City Water and Wastewater Treatment was higher than forecast, while 2023 financial performance for Wastewater Collection was lower than forecast. Actual to forecast differences in the 2023 return on equity for each utility are as follows:

- **In-City Water** achieved an 8.93% rate of return on equity, slightly higher than the forecast rate of return of 8.58%, largely due to higher than forecast revenue resulting from higher customer growth.
- **Wastewater Treatment** achieved a 10.40% rate of return on equity, compared to the forecast rate of return of 10.23%, reflecting higher than forecast revenue and a lower than forecast rate base.
- **Wastewater Collection** achieved a 6.62% rate of return on equity, slightly lower than its PBR forecast rate of return of 7.33%, largely due to higher than forecast operating expenses and interest costs, partially offset by lower than forecast depreciation and rate base.

Detailed analyses of In-City Water, Wastewater and Wastewater Collections' financial performance for 2023 are provided in Sections 2.1, 2.2, and 2.3, respectively, of this report.

1.2 Capital Expenditures

In-City Water, Wastewater Treatment and Wastewater Collections' capital expenditures for 2023 and for the PBR Term (the "2022-2026 Water PBR term" and "2022-2024 Wastewater Treatment and Wastewater Collection PBR term") are summarized in Table 1.2-1 below:

Table 1.2-1
Capital Expenditures
(\$ millions)

| | A | B | C | D |
|-----------------------|----------|--------|----------------|------------|
| | 2023 | | 2022-2024/2026 | |
| | PBR | | PBR | Current |
| Capital Expenditures | Forecast | Actual | Forecast | Projection |
| In-City Water | 113.2 | 122.3 | 464.1 | 639.2 |
| Wastewater Treatment | 76.0 | 52.8 | 171.7 | 179.3 |
| Wastewater Collection | 248.4 | 244.7 | 754.1 | 784.1 |

Over the course of the PBR term, changes to capital programs are required to address unforeseen needs for repairs or rehabilitation, changes in regulatory or operational requirements, customer demands, and other external factors. These changes are coordinated through EWS' Capital Governance and Review group and are authorized by EWS' Capital Project Steering Committee, EPCOR Utility Inc.'s (EUI) Financial Review Council, or EPCOR's Board of Directors, depending on the amount of the expenditure. EWS also presents information on its capital programs, as well as business cases supporting significant new capital projects to the City of Edmonton's Utility Committee.

EWS' capital plan for Water Services, Wastewater Treatment and Wastewater Collection includes a range of capital projects and programs for ensuring the safety and reliability of ongoing operations, optimizing efficiency, managing customer growth, and for ensuring compliance with federal and provincial regulation. A central element in the development of the capital plan is the identification and assessment of risks and of the actions required to mitigate these risks. EWS has provided a summary of its risk management process in Appendix C of this report to provide the Utility Committee with an understanding of key risks and mitigation activities.

- **In-City Water's** 2022-2026 projected capital expenditures of \$639.2 million are \$175.0 million (38%) greater than the PBR forecast. Several factors are contributing to this projected variance. For example, a significant project contributing to this variance is the Water Treatment Plants Flood Protection Project (\$70.7 million), which increased in scope following a detailed study that revealed unforeseen complexities for flood protection at the two water treatment plants. As well, given the location of the plants, extensive consultation with local and Indigenous communities was required. EWS was able to offset some of these costs by securing grant funding of \$19.3 million. Other projects and programs contributing to this variance include the Network Private Development Transmission Mains Program (\$44.4 million greater than forecast), related to three transmission mains that were not anticipated in the PBR forecast. In addition, projects including the kīsikāw pīsīm Solar Farm and Battery Storage System, Phosphoric Injection for Lead Control and the Water/Drainage Real Estate Consolidation Project were not completed until the current PBR term due to delayed regulatory approvals and/or delays and cost increases related to COVID-19, which contributed an additional \$48.2 million to the variance. The remaining \$11.7 million variance is related to efforts undertaken to rebalance Water's capital program in response to changing priorities to provide a high level of service to customers, while managing risks and maintaining performance standards.
- **Wastewater Treatment's** 2022-2024 projected capital expenditures of \$179.3 million are \$7.6 million (4.4%) greater than the PBR forecast. This difference reflects considerable efforts to rebalance Wastewater Treatment's capital program in response to changing

priorities to ensure that Wastewater Treatment continues to provide a high level of service to its customers while mitigating risks and maintaining performance standards.

- **Wastewater Collection's** 2022-2024 projected capital expenditures of \$784.1 million are \$29.8 million (4%) greater than the PBR forecast. This difference reflects considerable efforts to rebalance Wastewater Collection's capital program in response to changing priorities to ensure that Wastewater Collection continues to provide a high level of service to its customers while mitigating risks and maintaining performance standards.

Detailed explanations for differences between capital expenditures in PBR forecast and EWS' current projections are provided in Sections 2.1.5, 2.2.5 and 2.3.5.

1.3 Operational Performance

In-City Water's operational performance is measured by the results of indices prescribed in Schedule 3, Section 3 of Bylaw 19626 with each index consisting of one or more performance measures. Wastewater Treatment's and Wastewater Collection's operational performance is measured by the results of indices prescribed in Schedule 3, Section 3 and Section 4 of Bylaw 19627.

Operational performance under each index is measured independently on a points basis with 100 base points available if the standards for all performance measure indices are achieved. Bonus points are available for performance above standards and financial penalties are applied if EWS does not meet the 100 base point standard.

In 2023, In-City Water's actual performance was better than the PBR performance standards on four out of five of its performance measure indices, while Wastewater Treatment's actual performance was better than the PBR performance standards on three out of four performance measure indices, and Wastewater Collection's actual performance was better than the PBR performance standards on all four of its performance measure indices. Actual operational performance for each of the indices are summarized in Table 1.3-1 and discussed in Section 3 of this report.

Table 1.3-1
2023 Performance Measures and Standards

| | A | B | C | D | E | F |
|---|---------------|---------------|----------------------|---------------|-----------------------|---------------|
| Performance Index | In-City Water | | Wastewater Treatment | | Wastewater Collection | |
| | Standard | Actual Score | Standard | Actual Score | Standard | Actual Score |
| 1 Water Quality Index ² | 30.00 | 29.97 | 45.00 | 49.50 | - | - |
| 2 Customer Service Index | 15.00 | 17.25 | 15.00 | 16.50 | 20.00 | 22.00 |
| 3 System Reliability and Optimization Index | 25.00 | 28.09 | 25.00 | 24.60 | 30.00 | 31.80 |
| 4 Environmental Index ² | 15.00 | 17.25 | - | - | 35.00 | 38.50 |
| 5 Safety Index | 15.00 | 17.25 | 15.00 | 16.50 | 15.00 | 16.50 |
| 6 Aggregate Points Earned | 100.00 | 109.80 | 100.00 | 107.10 | 100.00 | 108.80 |

1.4 Rates and Bill Comparisons

Under EWS' PBR framework, annual adjustments to rates are limited to the PBR inflation factor less an efficiency factor ($I - X$), plus any special rate adjustments approved by City Council as part of the PBR Application. The use of a formulaic approach for calculating and setting utility rates acts as a "price cap", providing ratepayers with stable and predictable rates. In other words, rates are not impacted by annual changes in actual costs incurred by the utility during the PBR term. In 2022 and 2023, inflation (calculated using the Alberta Consumer Price Index and Average Alberta Hourly Earnings) was significantly higher than the PBR forecast, resulting in higher than forecast bill increases.

In 2023, the average residential customer's monthly bill for In-City Water services (including fire protection charges), based on an average monthly consumption of 13.8 m³, was **\$47.63**, an increase of \$3.19 (7.2%) from 2022. This increase was largely due to the higher than forecast inflation adjustment (approximately 5%), which includes a forecast inflation for 2023 and a true-up of the forecast to actual inflation for 2022. The remaining increase was due to the special rate adjustment for rebasing approved for the 2022-2026 PBR term. Rebasing refers to the rate adjustment required to fully recover the forecast revenue requirement for the PBR term. Without the special rate adjustments for rebasing, annual rate increases would be limited to the PBR inflation adjustment, resulting in a revenue shortfall to fund the ongoing operations and planned capital investments for the 2022-2026 PBR term.

The average residential customer's monthly wastewater treatment and sanitary drainage services bill in 2023, also based on an average monthly consumption of 13.8 m³, was **\$53.90**, an increase of \$2.27 (4.4%) from 2022. Similar to In-City Water services, the bill increase

² Water Quality and Environmental are combined into one index for Wastewater Treatment's and Drainage's operational performance

was largely due to the inflation adjustment, which was partially offset by a negative special rate adjustment for rebasing approved in the 2022-2024 PBR term.

The average residential customer's monthly stormwater drainage services bill in 2023, was **\$17.00**, an increase of \$2.06 (13.8%) from 2022. The 2023 bill increase includes a special rate adjustment of \$1.04 for climate-related flood mitigation program costs approved by City Council, as well as the inflation adjustment.

EWS undertakes annual bill comparison surveys with various cities and local municipalities, see Section 4. EWS' residential water bills are competitive with most cities and municipalities included in the comparison. Wastewater Collection and Wastewater Treatment bills are more difficult to compare because of variations in the nature and extent of wastewater treatment, the inclusion of certain services in property taxes, and geographic and climatic factors that influence the level of investment and approach to flood mitigation. EWS has been proactive in addressing the increased risk of flooding related to climate change and is making substantial investments through its Stormwater Integrated Resource Plan program to assess and mitigate these risks. EWS' average wastewater treatment and drainage bills are comparable to cities that have started addressing risks related to climate change.

1.5 Consumption Deferral Account

For the 2022-2024/2026 PBR terms, City Council directed that EWS establish “a *deferral account for water consumption for each of Water Services, Wastewater Treatment and Drainage Services that would be accumulated during the 2022-2026 and 2022-2024 PBR terms and included in customer rates in each of the next PBR terms through a special rate adjustment*”. The effect of the consumption deferral on 2023 Water Services, Wastewater Treatment and Drainages Services is summarized in Table 1.5-1. This table shows that actual consumption for 2023 was higher than forecast due to higher than forecast customer growth, a hot and dry summer resulting in increased consumption per customer, and commercial consumption recovering to pre-pandemic levels more rapidly than anticipated in the PBR forecast. The cumulative effect of these factors results in EWS accumulating \$58.2 million, including carrying charges, during 2022-2023 in the consumption deferral account. This amount, together with any additional amounts accumulated over the remainder of the current PBR term will be refunded to customers over the next PBR term as outlined and approved in the PBR Bylaws.

**Table 1.5-1
Consumption Deferral Account**

| | A | B | C | D | E |
|-------------------------|-----------------------|--------|------------|------------------------|-----------|
| | 2023 Consumption (ML) | | | Deferral Account (\$M) | |
| | Forecast | Actual | Difference | 2023 | 2022-2023 |
| 1 In-City Water | 85,088 | 93,859 | 8,771 | 15.1 | 24.5 |
| 2 Wastewater Treatment | 82,218 | 90,319 | 8,101 | 10.0 | 16.3 |
| 3 Wastewater Collection | 82,218 | 90,318 | 8,100 | 10.4 | 17.4 |

1.6 Non-Routine Adjustments

Non-routine adjustments are defined in Bylaw 19626 for In-City Water Services and in Bylaw 19627 for Stormwater Utility Services, Sanitary Utility Services and Wastewater Treatment Services, as items that are “by their nature unusual, significant in size or nature and beyond the scope of control of EWS.” Bylaws 19626 and 19627 allow EWS to request positive or negative non-routine adjustments to rates from either the City Manager or City Council, depending on the revenue requirement threshold specified in the respective Bylaws.

All non-routine adjustments applied for by EWS during the 2022-2024 / 2022-2026 PBR terms are to be charged to the Adjustment Deferral Accounts. A two-step approach is then followed whereby EWS would receive interim approval and funding for the proposed adjustment with a final true up of funding being completed based on actual costs.

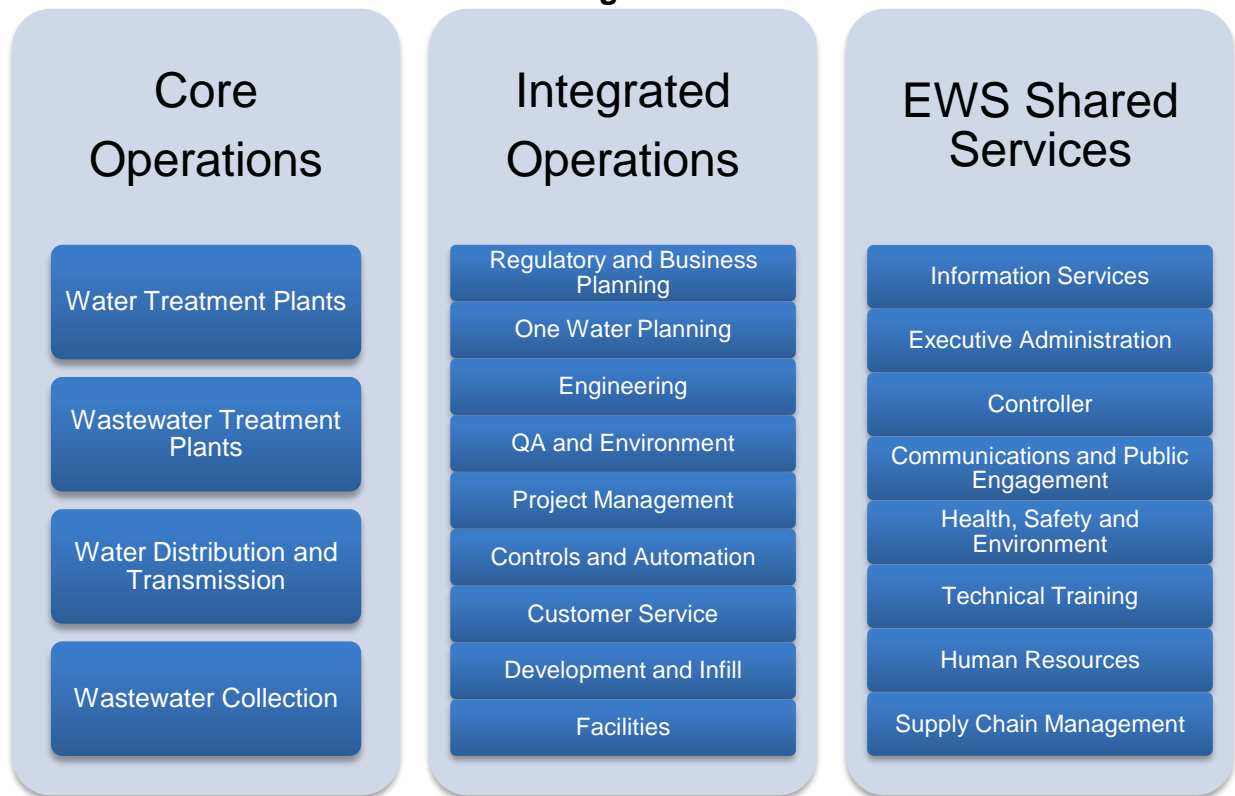
During 2023, EWS requested approval for two projects that qualified as Non-Routine Adjustments as outlined in Bylaw 19626. On February 13, 2024, EWS received approval from the City Manager to increase In-City Water rates effective April 1, 2024. These Non-Routine Adjustments expire on March 31, 2027 at the end of the current 2022-2026 Water PBR term.

- LRT Relocates Program - Relocation of water distribution infrastructure in conflict with the City’s South Capital Line LRT Project; and
- Franchise Agreement Relocates Program - Relocations required for various City projects, in particular the Yellowhead Trail Project, as reflected in EWS’ Franchise Agreement Relocates Program.

2 Financial Performance

In 2023, EPCOR completed a comprehensive restructuring of its organizational framework, merging and integrating the two distinct businesses of Water and Drainage into a unified business unit. The primary goal of this integration is to streamline operations across the entire water cycle by adopting a “One Water” approach, while enhancing customer experiences and optimizing resource utilization across the entire water cycle. The unified strategy involves transitioning from the previous asset-based resource management structure to a more integrated cross-functional structure. To enable this transition, numerous decentralized and embedded functions within the Water and Drainage operations were centralized to establish the new integrated business unit. Figure 2-1 shows EWS’ revised organizational structure.

**Figure 2-1
EWS Functional Organizational Structure**



The integration of Water and Drainage operations resulted in the creation of the following centralized functional areas to facilitate enhanced decision-making, service delivery and resource management across the entire water cycle: Regulatory and Business Planning, One Water Planning, Engineering, Quality Assurance and Environment, Project Management, Controls and Automation, Customer Service, Development and Infill and Facilities, collectively referred to as “Integrated Operations.”

The water treatment plants, water distribution and transmission system, Gold Bar wastewater treatment plant, and sanitary and stormwater collection functions are collectively referred to as “Core Operations.” The integrated functions support the core functions to optimally manage the water and wastewater operations and infrastructure by applying a “One Water” approach, from planning to implementation.

The core and integrated functions also receive support services from shared functional areas such as EWS Executive, Finance, Health, Safety and Environment, Human Resources, Information Services, etc. These shared functional areas are referred to as “EWS Shared Services.”

The 2023 reorganization resulted in the reallocation of both costs and resources. Accordingly, to facilitate comparison, the PBR forecast and actual amounts for 2022 and 2023 in Sections 2.1.3, 2.2.3 and 2.3.3 (Operating Expenses by Function) have been restated to reflect the new functional organizational structure.

2.1 In-City Water & Fire Protection

The City of Edmonton regulates water services and fire protection services provided by EWS within the boundaries of the City of Edmonton (“In-City Water”). In addition to these services, EWS provides water services to regional water customers pursuant to a bulk water supply agreement with each regional water customer. Due to the fully integrated nature of EWS’ water system, operating expenses, capital expenditures, depreciation and amortization and rate base are presented and analyzed on a total system basis in Sections 2.1.3 to 2.1.10. In-City Water’s share of the total system costs are calculated in accordance with a cost of service model developed jointly by EWS, the Regional Water Customers Group (RWCG) and the City of Edmonton, shown as separate line items in each applicable table.

In-City Water’s regulated rate revenue and revenue requirements for 2023 and for 2022-2023 are summarized in Table 2.1-1.

Table 2.1-1
In-City Water
Revenue and Revenue Requirements
(\$ millions)

| | A | B | C | D |
|--|--------------|--------|--------------|--------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Rate revenue | | | | |
| 1 Billed revenue | 231.3 | 253.0 | 451.4 | 484.1 |
| 2 Less: consumption deferral | - | (15.1) | - | (23.2) |
| 3 Regulated rate revenue | 231.3 | 237.9 | 451.4 | 460.9 |
| Revenue requirement | | | | |
| 4 Operations and maintenance expenses | 115.5 | 118.2 | 227.7 | 231.0 |
| 5 Less: revenue offsets | (6.4) | (5.9) | (12.6) | (10.1) |
| 6 Depreciation and amortization | 41.3 | 40.1 | 80.2 | 77.7 |
| 7 Return on rate base financed by debt | 33.7 | 36.8 | 67.0 | 70.6 |
| 8 Return on rate base financed by equity | 47.1 | 48.6 | 89.1 | 91.6 |
| 9 Revenue requirement | 231.3 | 237.9 | 451.4 | 460.9 |
| 10 Return on rate base financed by equity* | 8.58% | 8.93% | 8.25% | 8.64% |

* In the PBR forecast, the special rate adjustment for rebasing is smoothed over the PBR term. Therefore, although EWS' PBR forecast for the 2022-2026 PBR term is based on its awarded rate of return on 9.64%, PBR forecast rates of return for individual years of the PBR will differ from awarded ROE.

In 2023, EWS achieved a rate of return on equity of 8.93% (8.64% for 2022-2023), slightly greater than its forecast rate of return of 8.58% in 2023 (8.25% for 2022-2023). The factors contributing to forecast to actual differences are explained in Sections 2.1.1 to 2.1.9.

2.1.1 Customers and Consumption

In-City Water provides services to three customer classes:

- 1) **Residential**, defined as a service supplied to premises used primarily for domestic purposes, where no more than four separate dwelling units are metered by a single water meter and the service line to the premises is not greater than 50 millimeters in diameter;
- 2) **Multi-Residential**, defined as a service supplied to premises used primarily for domestic purposes; where more than four separate dwelling units are metered by a single water meter; and
- 3) **Commercial**, defined as a commercial, industrial and institutional customers within the City of Edmonton and all water customers not otherwise defined as Residential or Multi-Residential water service customers.

These classes are unchanged from the previous PBR term. Average monthly customer counts, total annual consumption and monthly consumption per customer are shown in Table 2.1.1-1.

**Table 2.1.1-1
In-City Water
Customers, Consumption and Consumption per Customer**

| | A | B |
|--|----------------|----------------|
| Customers and Consumption | 2023 | |
| | PBR Forecast | Actual |
| 1 Customers | | |
| 2 Residential | 283,342 | 287,925 |
| 3 Multi-Residential | 3,800 | 3,832 |
| 4 Commercial | 20,101 | 20,522 |
| 5 Total Customers | 307,243 | 312,280 |
| 6 Annual Consumption (ML) | | |
| 7 Residential | 44,784 | 47,718 |
| 8 Multi-Residential | 17,627 | 18,938 |
| 9 Commercial | 22,677 | 27,203 |
| 10 Total Annual Consumption | 85,088 | 93,859 |
| 11 Consumption per Customer (m ³ per month) | | |
| 12 Residential | 13.2 | 13.8 |
| 13 Multi-Residential | 386.6 | 411.8 |
| 14 Commercial | 94.0 | 110.5 |

The factors contributing to the differences between actual and forecast for 2023 are explained below:

- Although customer counts were 1.6% higher than forecast, customer growth rate in 2023 and for the current PBR term are consistent with historic growth rates. EWS' PBR forecast, which was prepared during mid-2020, anticipated a reduction in migration into Edmonton due to the COVID-19 pandemic, resulting in lower anticipated customer growth. However, actual 2020 and 2021 residential customer growth rates remained at or near pre-pandemic levels, resulting in higher than forecast customer counts since the beginning of the current PBR term starting in 2022.
- **Consumption**
 - **Residential** – 2,934 ML (6.6%) greater than forecast, with 724 ML due to higher customer counts and 2,210 ML due to higher consumption per customer. Higher consumption per customer reflected both weather-related variations due to extended warm and dry conditions, as well as the ongoing effect of more people working from home;
 - **Multi-Residential** – 1,311 ML (7.4%) greater than forecast, with 150 ML due to customer growth and 1,161 ML due to higher per customer consumption. In addition to weather-related variations in 2022 and 2023, EWS added several large multi-residential customers in 2022. Because of the small number of customers in this class and the variation in the number of units per customer, the addition of large customers can have outsized effects on consumption per customer; and

- **Commercial** – 4,526 ML (20.0%) greater than forecast, with 395 ML due to higher than forecast customer growth and 4,131 ML due to higher consumption per customer. Stronger than anticipated economic growth led to higher water consumption for customers in this class. In addition, like the residential customer class, weather-related variations also contributed to the increase in consumption per customer.

Although EWS is experiencing higher than forecast consumption in the current PBR term, EWS continues to see an overall downward long-term trend in consumption per customer. This can be attributed to greater awareness of the importance of water conservation, and increased efficiency of water fixtures, appurtenances and commercial/industrial processes. Following the infrastructure failure event that occurred at the E.L. Smith water treatment plant in January 2024, EWS undertook a review of its existing Demand Management Measures framework. Based on this review and the City of Calgary’s infrastructure failure event that occurred earlier this year, EWS is proposing updates to its demand management framework for Edmonton, see Appendix B – Demand Management Measures Update.

2.1.2 Revenue

In-City Water’s revenue is derived from the provision of water and fire protection services. The rates for these services include fixed monthly service charges that vary with meter size, variable charges per cubic meter of water consumed, and fixed monthly fire protection charges that vary with meter size and fire flow requirements.

Table 2.1.2-2 provides a comparison of 2023 In-City Water’s actual revenues to the PBR forecast. This table also includes public and private fire protection revenues. Historically, the costs for public fire protection, including hydrant maintenance and repairs, oversizing of distribution mains and dedicated reservoir storage for fire protection were recovered through property taxes. For the 2022-2026 PBR term, City Council directed EWS to include the recovery of public fire protection revenue requirement through water rates (line 17 of Table 2.1.2-1). Fire protection revenues also include a small amount of private fire protection charges (line 18 of Table 2.1.2-1) related to the costs for providing standby fire flow capacity to customers who operate and maintain their own hydrants.

**Table 2.1.2-1
In-City Water
Revenue
(\$ millions)**

| Description | A | B | C | D |
|---|-----------------|--------------|-----------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Fixed monthly service charges | | | | |
| 1 Residential | 43.5 | 44.4 | 81.8 | 83.2 |
| 2 Multi-residential | 2.7 | 2.8 | 5.1 | 5.3 |
| 3 Commercial | 7.8 | 8.0 | 14.6 | 15.1 |
| 4 Fixed monthly service charges | 53.9 | 55.2 | 101.5 | 103.5 |
| Consumption charges billed to customers | | | | |
| 5 Residential | 100.0 | 109.6 | 198.4 | 213.2 |
| 6 Multi-residential | 29.9 | 33.1 | 59.4 | 63.9 |
| 7 Commercial | 31.5 | 39.0 | 60.8 | 72.0 |
| 8 Consumption charges billed to customers | 161.4 | 181.7 | 318.6 | 349.1 |
| Less: Consumption deferral | | | | |
| 9 Residential | - | (6.7) | - | (10.5) |
| 10 Multi-residential | - | (2.0) | - | (3.2) |
| 11 Commercial | - | (6.5) | - | (9.5) |
| 12 Consumption deferral | | (15.1) | - | (23.2) |
| Consumption charges, net of deferral | | | | |
| 13 Residential | 100.0 | 103.0 | 198.4 | 202.6 |
| 14 Multi-residential | 29.9 | 31.1 | 59.4 | 60.7 |
| 15 Commercial | 31.5 | 32.5 | 60.8 | 62.6 |
| 16 Consumption charges, net of deferral | 161.4 | 166.6 | 318.6 | 325.8 |
| Fire Protection | | | | |
| 17 Public fire protection | 13.0 | 13.3 | 25.5 | 26.2 |
| 18 Private fire protection | 2.9 | 2.7 | 5.7 | 5.3 |
| 19 Fire Protection Charges | 15.9 | 16.1 | 31.3 | 31.5 |
| 20 Regulated Revenue | 231.3 | 237.9 | 451.4 | 460.9 |
| 21 Other revenue ("revenue offsets") | 6.4 | 5.2 | 12.6 | 9.8 |
| 22 In-City Revenue | 237.9 | 243.1 | 464.0 | 470.7 |

In 2023, regulated revenue (line 20) was \$6.6 million (2.9%) greater than forecast (\$9.5 million or 2.1% for 2022-2023). Higher regulated revenue was entirely due to higher than forecast inflation and customer growth since the consumption deferral (lines 9 – 12) offsets the effects of higher than forecast consumption during the PBR term.

Other revenue for 2023 was \$1.2 million lower than forecast (\$2.8 million lower than forecast for 2022-2023), primarily due to a regulatory adjustment made at the direction of City Council, to refund approximately \$1.0 million per year to customers over the 2022-2026 PBR term related to an over-collection of charges for valve casings and service box replacements during the 2017-2021 PBR term. The remainder of the variance relates to numerous small items, none of which were significant.

The consumption deferral account balance is included in the determination of regulated revenue for the 2022-2026 PBR term at the direction of City Council (see Section 1.5). The

effects of the consumption deferral account on In-City Water for 2022 and 2023 are summarized in Table 2.1.2-2 below, which shows that actual consumption was 5,126 ML greater than forecast in 2022 and 8,771 ML greater than forecast in 2023, resulting in an accumulated consumption deferral account balance, including carrying costs, of \$24.5 million. The consumption deferral account balance, together with any adjustments for 2024, 2025 and 2026, will be reflected in customer rates over the next PBR term.

**Table 2.1.2-2
In-City Water
Consumption Deferral**

| | A | B |
|--|-------------|-------------|
| Description | 2022 | 2023 |
| PBR Forecast Consumption (ML) | | |
| 1 Residential | 34,391 | 44,784 |
| 2 Multi-Residential | 13,351 | 17,627 |
| 3 Commercial | 16,805 | 22,677 |
| 4 PBR Forecast Consumption | 64,547 | 85,088 |
| Actual Consumption (ML) | | |
| 5 Residential | 36,336 | 47,718 |
| 6 Multi-Residential | 14,254 | 18,938 |
| 7 Commercial | 19,083 | 27,203 |
| 8 Actual Consumption | 69,673 | 93,859 |
| Consumption Deferral (ML) | | |
| 9 Residential | 1,945 | 2,934 |
| 10 Multi-Residential | 903 | 1,311 |
| 11 Commercial | 2,278 | 4,526 |
| 12 Consumption Deferral | 5,126 | 8,771 |
| Annual Consumption Deferral (\$ millions) | | |
| 13 Residential | 3.9 | 6.7 |
| 14 Multi-Residential | 1.3 | 2.0 |
| 15 Commercial | 3.0 | 6.5 |
| 16 Annual Consumption Deferral | 8.1 | 15.1 |
| Cumulative Deferral (\$ millions) | | |
| 17 Consumption Deferral, beginning of year | - | 8.4 |
| 18 Annual Consumption Deferral | 8.1 | 15.1 |
| 19 Carrying charges | 0.3 | 1.0 |
| 20 Consumption Deferral, end of year | 8.4 | 24.5 |

2.1.3 Operating Expenses by Function

Table 2.1.3-1 provides a comparison of EWS' total water system operating expenses for 2023 and for 2022-2023. As noted in Section 2, the PBR forecast and actual amounts for 2022 and 2023 have been restated to reflect the new functional organizational structure.

Table 2.1.3-1
Water Services Operating Expenses by Function
(\$ millions)

| Function / Sub-function | A | B | C | D |
|------------------------------------|--------------|--------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | Forecast | Actual | Forecast | Actual |
| Core Operations | | | | |
| Water Treatment Plants | | | | |
| 1 Power and other utilities | 12.3 | 10.6 | 22.8 | 22.7 |
| 2 Chemicals | 12.8 | 8.7 | 25.3 | 17.2 |
| 3 Operations | 8.5 | 8.3 | 16.9 | 16.5 |
| 4 Maintenance | 10.9 | 10.8 | 21.6 | 20.4 |
| 5 Sub-total | 44.6 | 38.4 | 86.7 | 76.8 |
| Water Distribution & Transmission | | | | |
| 6 Operations | 8.0 | 10.5 | 16.2 | 19.3 |
| 7 Maintenance | 12.6 | 10.8 | 25.0 | 22.9 |
| 8 Fleet Services | (1.8) | (1.0) | (3.6) | (2.5) |
| 9 Sub-total | 18.7 | 20.3 | 37.6 | 39.8 |
| 10 Capital Overhead | (9.3) | (7.4) | (18.3) | (14.6) |
| 11 Core Operations | 54.1 | 51.3 | 105.9 | 102.0 |
| 12 Integrated Operations | 18.5 | 18.2 | 37.1 | 35.1 |
| 13 Billing & Meter Services | 11.6 | 10.8 | 23.1 | 21.3 |
| 14 EWS Shared Services | 17.7 | 20.0 | 35.2 | 40.3 |
| 15 Corporate Shared Services | 13.8 | 13.9 | 27.4 | 27.6 |
| 16 Franchise Fees & Property Taxes | 18.8 | 20.4 | 36.4 | 38.8 |
| 17 Total Operating Expenses | 134.5 | 134.6 | 265.2 | 265.1 |
| 18 In-City Water Share - % | 85.9% | 87.8% | 85.9% | 87.1% |
| 19 In-City Water Share - \$ | 115.5 | 118.2 | 227.7 | 231.1 |

Overall, total system operating expenses (line 17) in 2023 were \$0.1 million (0.1%) greater than forecast (\$0.1 million lower than forecast for 2022-2023). Explanations for significant variances at the functional level include the following:

- **Water Treatment Plants** - \$6.2 million lower than forecast in 2023, \$9.9 million lower than forecast for 2022-2023, primarily due to:
 - Higher than forecast power cost savings of \$1.7 million in 2023 associated with higher than forecast exports to the grid from EWS' kīsikāw pīsim solar farm. For 2022-2023, these saving were partially offset by \$1.5 million in additional power purchases resulting from delayed regulatory approval for the kīsikāw pīsim solar farm;
 - Lower chemical costs of \$4.1 million in 2023 due to favourable river water quality and operational efficiency (\$8.1 million for 2022-2023); and
 - Minor differences in other operating expenses, none of which were individually significant amounting to \$0.2 million (\$1.0 million for 2022-2023).
- **Water Distribution & Transmission** – \$1.6 million greater than forecast in 2023 (\$2.2 million greater for 2022-2023), primarily due to:

- Increased hydrovac costs and shop/equipment costs of \$1.1 million due to higher main breaks (\$1.1 million for 2022-2023);
 - Increased utility locate requests resulting in higher costs of \$0.3 million; and
 - Increased hydrovac costs and shop/equipment costs of \$1.1 million due to higher main breaks (\$1.1 million for 2022-2023); and
 - Minor differences in other operating expenses, none of which were individually significant amounting to \$0.3 million (\$0.6 million for 2022-2023).
- **Capital Overhead** – \$1.9 million lower than forecast transfer of overhead charges to capital in 2023 (\$3.7 million lower than forecast for 2022-2023).
- **Integrated Operations** - \$0.3 million lower than forecast in 2023 (\$2.0 million lower than forecast for 2022-2023), primarily due to:
 - Lower staffing related costs of \$1.3 million due to vacancies and reallocation of costs and resources as part of the functional reorganization; partially offset by
 - Higher than forecast costs associated with the Aurum facility of \$0.6 million, including moving costs, facility maintenance, utilities, rent and storage costs; and
 - Minor other operating expenses, none of which were individually significant amounting to \$0.4 million.
- **Billing, Meters, and Customer Service** - \$0.8 million lower than forecast (\$1.8 million lower than forecast for 2022-2023), primarily due to lower than forecast customer billing and collection charges, partially offset by higher provisions for bad debts due to economic conditions.
- **EWS Shared Services** - \$2.3 million greater than forecast (\$5.1 million greater for 2022-2023), primarily due to:
 - Higher incentive and other compensation of \$1.0 million in 2023 (\$2.7 million for 2022-2023);
 - Higher supply chain management costs of \$1.1 million due to higher than forecast costs for supplies/materials and staff costs (\$1.2 million for 2022-2023); and
 - Minor other operating expenses, none of which were individually significant amounting to \$0.2 million (\$1.2 million for 2022-2023).
- **Franchise Fees and Property Taxes** - \$1.6 million greater than forecast (\$2.4 million greater for 2022-2023) due to higher than forecast billed revenues which increased franchise fees by \$1.3 million (\$2.2 million for 2022-2023). The remainder of the 2023 and 2022-2023 variance results from higher than forecast property tax increases.

In 2023, In-City Water's share of operating expenses was \$118.2 million (87.8%), compared to \$115.5 million (85.9%) in the PBR forecast, which is attributable to the allocation of higher than forecast EWS and Corporate shared services costs through the cost of service model.

2.1.4 Operating Expenses by Cost Category

Table 2.1.4-1 provides a breakdown of total Water Services operating expenses by cost category. Explanations for forecast to actual differences are provided in section 2.1.3.

Table 2.1.4-1
Water Services Operating Expenses by Cost Category
(\$ millions)

| | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| Cost Category | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Core Operations | | | | |
| 1 Power and other utilities charges | 12.3 | 10.6 | 22.8 | 22.7 |
| 2 Chemicals | 12.8 | 8.7 | 25.3 | 17.2 |
| 3 Staff costs and employee benefit expense | 18.1 | 20.5 | 36.3 | 40.0 |
| 4 Other raw materials & operating charges | 4.7 | 5.2 | 9.3 | 11.1 |
| 5 Contractors and consultants | 5.7 | 5.7 | 11.3 | 10.0 |
| 6 Other administrative expenses | 0.4 | 0.6 | 0.8 | 1.1 |
| 7 Core Operations | 54.1 | 51.3 | 105.9 | 102.0 |
| 8 Integrated Operations Allocation | 18.5 | 18.2 | 37.1 | 35.1 |
| 9 Customer Billing and Meter Services Charges | 11.6 | 10.8 | 23.1 | 21.3 |
| 10 EWS Shared Services Allocation | 17.7 | 20.0 | 35.2 | 40.3 |
| 11 Corporate Shared Services Allocation | 13.8 | 13.9 | 27.4 | 27.6 |
| 12 Franchise fees and property taxes | 18.8 | 20.4 | 36.4 | 38.8 |
| 13 Total Operating Expenses | 134.5 | 134.6 | 265.2 | 265.1 |

2.1.5 Capital Expenditures by Major Project and Category

Table 2.1.5-1 compares PBR forecast to actual capital expenditures for 2023 by major category and by individual projects/programs for Water Services in excess of \$5.0 million. Table 2.1.5-1 also provides a comparison of the total 2022-2026 PBR forecast capital expenditures to EWS' current forecast for the PBR term. Detailed variance explanations are provided below.

**Table 2.1.5-1
Water Capital Expenditures
(\$ millions)**

| Major Category and Project | A | B | C | D | E | F | Note |
|--|--------------|--------|----------|--------------|------------|----------|------|
| | 2023 | | | 2022-2026 | | | |
| | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | |
| Regulatory | | | | | | | |
| 1 Water Services Replacement and Refurbishment Program | 6.0 | 4.9 | (1.1) | 24.7 | 23.9 | (0.8) | |
| 2 Phosphoric Injection for Lead Control | - | 1.5 | 1.5 | - | 11.3 | 11.3 | 1 |
| 3 Rossdale Ammonia Upgrades - Conversion to LAS | - | 2.2 | 2.2 | - | 8.1 | 8.1 | 2 |
| 4 Projects < \$5 million | - | 0.3 | 0.3 | 0.8 | 1.3 | 0.5 | |
| 5 Subtotal | 6.0 | 8.9 | 2.9 | 25.5 | 44.6 | 19.1 | |
| Growth/Customer Requirements | | | | | | | |
| 6 Water Service Connections Program | 5.5 | 6.8 | 1.3 | 28.4 | 37.1 | 8.7 | 3 |
| 7 Network Private Development Transmission Mains Program | 3.0 | 9.5 | 6.5 | 15.0 | 59.4 | 44.4 | 4 |
| 8 QEII / 41 Avenue Crossing Project | 0.1 | 0.5 | 0.4 | 14.1 | 0.1 | (14.1) | 5 |
| 9 New Meter Purchases and Installations Program | 2.7 | 3.1 | 0.4 | 13.9 | 13.9 | 0.0 | |
| 10 Customer Distribution Main Infrastructure Requests | 2.2 | 3.6 | 1.4 | 11.2 | 13.5 | 2.3 | 6 |
| 11 LRT Relocates Program* | 9.4 | 10.1 | 0.7 | 18.9 | 24.6 | 5.7 | 7 |
| 12 Private Development Construction Coordination Program | 1.9 | 2.8 | 0.9 | 9.7 | 13.7 | 4.0 | 8 |
| 13 Winterburn Booster Station Project | 0.8 | 1.3 | 0.5 | 7.2 | 1.3 | (5.9) | 9 |
| 14 Franchise Agreement Distribution Main Relocations* | 3.4 | 4.3 | 0.9 | 14.5 | 20.0 | 5.5 | 10 |
| 15 Yellowhead Trail Upgrades / Relocations Project* | 6.9 | 8.5 | 1.7 | 22.6 | 27.3 | 4.7 | 11 |
| 16 Projects < \$5 million | 0.6 | 2.8 | 2.2 | 4.2 | 6.9 | 2.7 | 12 |
| 17 Subtotal | 36.5 | 53.3 | 16.8 | 159.9 | 217.8 | 57.9 | |
| Health, Safety and Environment | | | | | | | |
| 18 Kīsikāw pīsim Solar Farm | - | 1.2 | 1.2 | - | 14.3 | 14.3 | 13 |
| 19 Battery Energy Storage System | - | 0.3 | 0.3 | 1.0 | 5.9 | 4.9 | 13 |
| 20 Projects < \$5 million | 2.4 | - | (2.4) | 10.4 | 1.3 | (9.1) | 14 |

EPCOR Water Services

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| | | A | B | C | D | E | F | |
|----------------------------|---|--------------|--------------|------------|--------------|--------------|--------------|------|
| | | 2023 | | | 2022-2026 | | | |
| Major Category and Project | | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | Note |
| 21 | Subtotal | 2.4 | 1.5 | (0.9) | 11.4 | 21.5 | 10.1 | |
| | Reliability and Life Cycle Improvements | | | | | | | |
| 22 | Risk Based Distribution Main Renewals | 5.6 | 10.1 | 4.5 | 29.0 | 29.3 | 0.3 | |
| 23 | Water Treatment Plants Flood Protection Project | 8.8 | 7.4 | (1.4) | 22.9 | 93.6 | 70.7 | 15 |
| 24 | Infill Fire Protection Program | 3.9 | 2.9 | (1.0) | 20.2 | 14.2 | (6.0) | 16 |
| 25 | EL Smith Stage 1 Filter Upgrades Project | 3.6 | 4.9 | 1.3 | 13.5 | 15.7 | 2.2 | 17 |
| 26 | Obsolete Valve Replacements Program | 2.2 | 2.7 | 0.5 | 11.2 | 12.0 | 0.8 | |
| 27 | Transmission Mains and Appurtenances | 2.1 | 4.0 | 1.9 | 10.7 | 12.6 | 1.9 | |
| 28 | Reservoir Structural Rehabilitation and Roof Replacement | 2.2 | - | (2.2) | 9.6 | 10.9 | 1.3 | |
| 29 | Vehicle and Fleet Additions Program | 1.9 | 1.2 | (0.7) | 7.0 | 12.2 | 5.2 | 18 |
| 30 | Critical Pipeline Inspection Program | 1.3 | 1.3 | (0.0) | 6.8 | 5.0 | (1.8) | |
| 31 | Obsolete Hydrant Replacements Program | 1.2 | 0.9 | (0.3) | 6.0 | 7.5 | 1.5 | |
| 32 | Water Meter Change Outs Program | - | 4.1 | 4.1 | 5.8 | 11.4 | 5.6 | 19 |
| 33 | EL Smith 5kV Upgrades & Electrical Room Expansion Project | - | 1.1 | 1.1 | 5.0 | 11.3 | 6.3 | 20 |
| 34 | EL Smith HLPH Expansion Project | - | 0.2 | 0.2 | 5.0 | 0.7 | (4.3) | 21 |
| 35 | Projects < \$5 million | 17.5 | 12.2 | (5.3) | 82.8 | 69.4 | (13.4) | 22 |
| 36 | Subtotal | 50.3 | 53.0 | 2.7 | 235.4 | 305.8 | 70.4 | |
| | Performance Efficiency and Improvement | | | | | | | |
| 37 | Water Main Cathodic Protection Program | 2.9 | 3.1 | 0.2 | 15.1 | 14.4 | (0.7) | |
| 38 | Advanced Metering Infrastructure (AMI) Deployment Project | 24.9 | 13.1 | (11.8) | 62.9 | 75.0 | 12.1 | 23 |
| 39 | Water D&T Facility | - | 2.9 | 2.9 | - | 17.7 | 17.7 | 24 |
| 40 | Projects < \$5 million | 0.8 | 0.8 | 0.0 | 5.1 | 10.0 | 4.9 | 25 |
| 41 | Subtotal | 28.6 | 19.9 | (8.7) | 83.0 | 117.1 | 34.1 | |
| 42 | Capital Expenditures | 123.8 | 136.6 | 12.8 | 515.2 | 706.8 | 191.6 | |
| | Contributions | | | | | | | |
| 43 | Water Service Connections Contributions | (5.5) | (4.2) | 1.3 | (28.4) | (30.5) | (2.1) | 3 |
| 44 | Customer Infrastructure Requests Contributions | (2.2) | (3.2) | (1.0) | (11.2) | (13.1) | (1.9) | 6 |
| 45 | Private Development Construction Coordination Contributions | (0.2) | (0.7) | (0.5) | (1.0) | (1.6) | (0.6) | 8 |
| 46 | Solar Power Systems (including BESS) Contributions | - | - | - | (3.6) | (3.1) | 0.5 | 13 |
| 47 | Water Treatment Plants Flood Protection Contributions | (2.7) | (6.2) | (3.5) | (6.7) | (19.3) | (12.6) | 15 |
| 48 | Contributions | (10.7) | (14.3) | (3.6) | (51.0) | (67.6) | (16.6) | |
| 49 | Capital Expenditures, net of Contributions | 113.2 | 122.3 | 9.1 | 464.1 | 639.2 | 175.0 | |

*The 2022-2026 PBR Forecast includes approved NRA capital of \$8.6 million for the LRT Relocates Program, \$7.2 Million for Franchise Agreement Distribution Main Relocations and \$18.9 million for Yellowhead Trail Upgrades/Relocations.

Explanations for differences between PBR forecast capital expenditures and EWS' current projection in excess of \$2.0 million include:

1. **Phosphoric Injection for Lead Control** – \$11.3 million greater than forecast (carry-over project). Although this project was scheduled for completion during the 2017-2021 PBR term, COVID-19 related delays required deferral of work and carry-over of work into the 2022-2026 PBR term.
2. **Rossdale Ammonia Upgrades** – \$8.1 million greater than forecast (new project). This project provides for the use of liquid ammonium sulphate (“LAS”) in chloramination. This upgrade was advanced to address safety considerations with aqueous ammonia which requires pressurized storage tanks as well as special handling and safety procedures.
3. **Water Services Connections Program** – \$8.7 million greater than forecast. This program provides for the construction of new water services for infill developments and redevelopments and for recovery of these costs from private developers. Cost increases reflect requests from developers for larger and more complex service connections (primarily infills) than anticipated in the PBR forecast. These cost increases are partially offset by a \$2.1 million increase in expected contributions.
4. **Network Private Development Transmission Mains Program** – \$44.4 million greater than forecast. This program provides for the reimbursement of costs of transmission mains constructed by developers. Higher than forecast costs are primarily attributable to three transmission mains that were not anticipated in the PBR forecast, including:
 - a. a transmission main in north-east Edmonton to initiate development in the Horsehills area adjacent to Manning Freeway,
 - b. a transmission main in south Edmonton required due to the shut down of a transmission main on Eilerslie Road to accommodate road and bridge reconstruction and still support growth in the region, and
 - c. a transmission main in southeast Edmonton to support development and coordinated construction with the City of Edmonton and other utilities across the pipeline corridor in the region.

EWS may request approval for the expenditures in this program that meet the non-routine adjustment criteria.

5. **QE II / 41st Avenue Crossing Project** - \$14.1 million lower than forecast. Construction work on this project has been extended until after 2026 to offset the cost increases experienced with the private development transmission main described in note 4 above.
6. **Customer Distribution Mains Infrastructure Requests** - \$2.3 million greater than forecast. This program provides for the reimbursement of costs of distribution mains

constructed by developers. The increase in costs for this program relate to an increased length of distribution mains that were not anticipated in the PBR forecast.

7. **LRT Relocates** – \$5.7 million greater than forecast. The PBR forecast was approved before the final approval and funding for the Metro/Capital Line LRT was secured. The City’s approved track alignments require EWS to complete more infrastructure relocations than anticipated in the PBR forecast. In 2023, EWS requested approval that the incremental costs associated with this project be treated as a non-routine adjustment in accordance with Bylaw 19626, which was subsequently approved in 2024. The approved non-routine adjustment is included in the PBR forecast.
8. **Private Development Construction Coordination** – \$4.0 million greater than forecast. Expenditures on this project are forecast to increase significantly due to requirements for higher than anticipated volumes of development design reviews and inspections for greenfield and infill development, as well as design reviews to support the City of Edmonton’s housing accelerator fund developments.
9. **Winterburn Booster Station Project** – \$5.9 million lower than forecast. The acquisition of the Parkland Booster Station from the Capital Region Parkland Water Service Commission in 2021 allowed EWS to enhance its resilience in the Edmonton West Secondary Zone at a lower overall cost instead of building a new booster station.
10. **Franchise Agreement Distribution Main Relocations** – \$5.5 million greater than forecast. EWS has experienced higher than forecast hydrant relocation work requests from the City. In 2023, EWS requested approval that the incremental costs associated with this project be treated as a non-routine adjustment in accordance with Bylaw 19626, which was subsequently approved in 2024. The approved non-routine adjustment is included in the PBR forecast.
11. **Yellowhead Freeway Conversion** – \$4.7 million greater than forecast. EWS has received a greater volume of utility relocation requests from the City than anticipated in the PBR forecast. In 2023, EWS requested approval of the incremental costs associated with this project to be treated as a non-routine adjustment in accordance with Bylaw 19626, which was subsequently approved in 2024. The approved non-routine adjustment is included in the PBR forecast.
12. **Growth / Customer Requirements Projects < \$5.0 million** - \$2.7 greater than forecast primarily due to the Parkland Booster station costing more than anticipated after receiving more detailed contractor estimates.
13. **kīsikāw pīsīm Solar Farm and Battery Energy Storage System** – \$19.2 million greater than forecast. Longer than anticipated timeframes for regulatory and bylaw approvals resulted in carryover of work from the 2017-2021 PBR term and delayed project

completion. These delays meant that the solar farm was not fully commissioned until the end of 2022.

14. **Health, Safety and Environment Projects < \$5.0 million** - \$9.1 million lower than forecast primarily due to a reduction in the number of lead replacement requests received to date than anticipated, which is largely a customer driven program.
15. **Water Treatment Plants Flood Protection** – \$70.7 million greater than forecast. The scope of this project increased mainly due to the following factors as planning and design work proceeded:
- a. The complexity of flood protection infrastructure needed for the two water treatment plants, following more detailed study and review, resulting in higher than forecast costs; and
 - b. Comprehensive community consultation and close collaboration with Indigenous communities to ensure that the project is conducted with respect for cultural sensitivities, fully recognizing the archaeological, historical and cultural significance of the plant sites resulting in delayed implementation of the project than anticipated.

Cost increases have been partially offset by \$12.5 million advancement of previous 10-year grant funding from the Federal Disaster Mitigation and Adaptation Fund (DMAF) and the Alberta Community Resilience Program (ACRP) in this PBR term.

16. **Infill Fire Protection Program** – \$6.0 million lower than forecast. During the 2017-2021 PBR term, EWS worked closely with infill developers to develop criteria for funding infill fire protection, to develop forecasts of eligible projects, and to forecast the funding required over the 2022-2026 PBR term. In 2022, EWS' design standards modernization initiative in conjunction with Edmonton Fire Rescue Services and the development community resulted in updated design standards for fire protection to reflect modern building practices. The projected cost of this program has been reduced to reflect the results of the Infill Fire Protection Assessment program and the standards modernization efforts. This program determines the actual fire flows and, therefore, the investment required for each infill development based on the proposed building structure, rather than the zoning of the property.
17. **E.L. Smith Stage 1 Filter Upgrades Project** – \$2.2 million greater than forecast. The increase is attributable to advancing the Filter 5 upgrade project to realize efficiencies by aligning this upgrade with similar projects undertaken at E.L. Smith during the 2022-2026 PBR term.
18. **Vehicle and Fleet Additions Program** – \$5.2 million greater than forecast mainly due to the need to replace aging fleet units earlier than anticipated.

19. **Water Meter Change outs program** – \$5.6 million greater than forecast. Scheduled replacements have been coordinated to align with the Advanced Metering Infrastructure (AMI) Deployment Project.
20. **E.L. Smith 5kV Upgrades and Electrical Room Expansion** – \$6.3 million greater than forecast. Cost increases reflect additional complexities identified during the design phase of this project.

Following the electrical equipment failure event at the E.L. Smith Water Treatment Plant (WTP) in January 2024, EWS took further steps to enhance the resiliency of its water system. The following capital upgrades have been completed or are currently in progress to address aging electrical assets and flood protection of assets at the E.L. Smith WTP:

- a. **Highlift Pumphouse Transformers Replacement** - The replacement of two transformers with functional electrical protection that supplies power to the high lift pumphouse has been completed.
 - b. **New 5kV Electrical Building** – Construction of a new 5kV electrical building commenced in May 2024 for replacement of high voltage electrical equipment feeding the highlift pumps. The new building and equipment are planned to be in-service by mid-2025.
 - c. **Second Power Feed to E.L. Smith WTP** - Currently, the E.L. Smith WTP has two utility power feeds that are solely fed from a single substation. A redundant power feed from a second substation to E. L. Smith has been planned with design work starting in Fall 2024 and the new power feed expected to be in service by 2027.
 - d. **Additional E.L. Smith WTP Highlift Pumphouse** – A conceptual design with three options for a new highlift pumphouse at E.L. Smith WTP that would provide redundancy and pumping capacity has been completed. This additional highlift pumphouse project is under review to be included in the next PBR application.
 - e. **E.L. Smith WTP Electrical Master Plan** - An Electrical Master Plan for the E.L. Smith WTP has been completed outlining a path for modernizing existing electrical equipment, considering flood protection for electrical asset resiliency and incorporating future load requirements to increase plant capacity. The plan identifies electrical asset improvements that will be integrated into the long-term plan and strategy to establish two independent treatment trains at the E.L. Smith WTP.
21. **E.L. Smith High Lift Pump House (HLPH) Expansion Project** – \$4.3 million lower than forecast. Implementation of this project has been extended to the next PBR term to enable EWS to coordinate project delivery with other related projects at the E.L. Smith WTP.

22. **Reliability & Life Cycle Improvements < \$5.0 million** – \$13.4 million lower than forecast. Implementation of smaller low-priority projects have been deferred to enable EWS to address high priority projects such as Water Treatment Plants Flood Protection and Rosedale Ammonia Upgrades.
23. **AMI Deployment Project** - \$12.1 million greater than forecast primarily due to higher than anticipated installation costs.
24. **Water D&T Facility** – \$17.7 million greater than forecast (carry-over project). This project was expected to be completed during the 2017-2021 PBR term. The project was delayed due to changes in scope and the need to address higher than expected construction bid costs. This project, now known as the Water/Drainage Shared Facility (Aurum facility) was completed in December 2022.
25. **Performance Efficiency and Improvement Projects < \$5.0 million** - \$4.9 million greater than forecast. The variance is primarily due to the 156 Street Transmission Main Redundancy project that was added in late 2023. Inline inspections were completed along the 1050 mm transmission main from the E.L. Smith WTP to upstream of a meter vault near St. Albert Trail. This inspection identified two small leaks along the 1050 mm transmission main, north of 118 Avenue. Due to the location of the leaks and the critical nature of this transmission main, approximately 1.2km of 600 mm PVC pipe is being installed to provide an alternate flow path along 156 St. that can be used while the section is isolated for repairs to provide customer servicing and to maintain system operation.

2.1.6 Construction Work in Progress

In-City Water's rate base consists of plant in service. If a capital project is not completed during the year, the capital expenditures on that project remains under Construction Work in Progress and are excluded from the rate base. In 2023, as shown in Table 2.1.6-1, the balance in Construction Work in Progress (line 13) was \$11.5 million greater than forecast, compared to \$27.0 million greater than forecast at the beginning of the year, primarily due to completion of carry-over projects.

Table 2.1.6-1
Water Services
Construction Work in Progress
(\$ millions)

| | | A | B |
|----------------------|---|-----------------|---------|
| | | 2023 | |
| CWIP Continuity | | PBR Forecast | Actual |
| 1 | Construction work in progress, beginning of year | 21.1 | 48.1 |
| Capital expenditures | | | |
| 2 | Capital expenditures before contributions | 123.8 | 136.6 |
| 3 | Contributions received | (10.7) | (14.3) |
| 4 | Capital expenditures, net of contributions received | 113.2 | 122.3 |
| Capital additions | | | |
| 5 | EPCOR-constructed assets | (118.8) | (141.8) |
| 6 | Developer-constructed assets | (36.0) | (37.4) |
| 7 | Total Capital Additions | (154.8) | (179.2) |
| Contributions | | | |
| 8 | Contributions recognized | 14.7 | 11.8 |
| 9 | Developer-constructed assets | 36.0 | 37.4 |
| 10 | Total Contributions | 50.7 | 49.2 |
| 11 | Capital additions, net of contributions | (104.1) | (130.0) |
| 12 | Write-offs and Adjustments | - | 1.2 |
| 13 | Construction work in progress, end of year | 30.1 | 41.6 |

The 2022-2026 PBR plan allows EWS to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an Allowance for Funds Utilized During Construction (AFUDC). In 2023, EWS capitalized \$2.5 million of AFUDC, compared to the PBR forecast amount of \$1.0 million. This difference is attributable to additional spending on projects in the growth/customer requirements project category, including the Yellowhead Freeway Conversion, LRT Relocates and Franchise Agreement Distribution Main Relocations.

2.1.7 Depreciation and Amortization

Depreciation expense and amortization of contributed assets for 2023 for Water Services are shown in Table 2.1.7-1 below:

Table 2.1.7-1
Water Services
Depreciation and Amortization
(\$ millions)

| | A | B | C | D |
|---------------------------------|-----------------|--------|-----------------|--------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 Gross depreciation expense | 62.7 | 61.7 | 121.5 | 118.7 |
| 2 Amortization of contributions | (14.2) | (14.3) | (27.3) | (27.0) |
| 3 Depreciation expense | 48.5 | 47.4 | 94.3 | 91.7 |
| 4 Gains, losses and adjustments | - | 0.4 | - | 1.1 |
| 5 Depreciation and Amortization | 48.5 | 47.8 | 94.3 | 92.8 |
| 6 In-City Water share - % | 85.2% | 83.8% | 85.1% | 83.7% |
| 7 In-City Water share - \$ | 41.3 | 40.1 | 80.2 | 77.7 |

Depreciation expense and amortization of contributions in 2023 were \$0.7 million lower than forecast (\$1.5 million lower than forecast for 2022-2023) due to lower than forecast opening asset balances as shown in Table 2.1.8-1.

2.1.8 Rate Base

In 2023, EWS' total water system rate base, shown in Table 2.1.8-1 below, was \$8.4 million lower than forecast primarily due to adjustments to the capital program described in Section 2.1.5.

Table 2.1.8-1
Water Services
Mid-Year Rate Base
(\$ millions)

| | A | B |
|---|-----------------|---------|
| Description | 2023 | |
| | PBR Forecast | Actual |
| 1 Plant in service, beginning of year | 3,052.2 | 2,979.2 |
| Capital additions | | |
| 2 EPCOR-funded | 104.1 | 130.0 |
| 3 Developer-funded | 50.7 | 49.2 |
| 4 Capital additions | 154.8 | 179.2 |
| 5 Retirements and adjustments | - | (3.6) |
| 6 Plant in service, end of year | 3,207.0 | 3,154.8 |
| 7 Accumulated depreciation, beginning of year | 796.9 | 768.5 |
| 8 Gross provision | 62.7 | 61.7 |

| Description | A | B |
|---|----------------|----------------|
| | 2023 | |
| | PBR Forecast | Actual |
| 9 Retirements and adjustments | - | (3.6) |
| 10 Accumulated depreciation, end of year | 859.5 | 826.6 |
| 11 Mid-Year Net Property Other Rate Base Items | 2,301.4 | 2,269.5 |
| 12 Working capital | 8.8 | 0.5 |
| 13 Materials and supplies | 4.1 | 5.3 |
| 14 Gross Mid-Year Rate Base | 2,314.3 | 2,275.3 |
| 15 Contributions, beginning of year | 932.2 | 901.6 |
| Current year contributions | | |
| 16 Developer-constructed assets | 36.0 | 37.4 |
| 17 Contributions in aid of construction | 14.7 | 11.8 |
| 18 Current year contributions | 50.7 | 49.2 |
| 19 Retirements and adjustments | - | (0.0) |
| 20 Contributions, end of year | 982.9 | 950.8 |
| 21 Accumulated amortization, beginning of year | 216.7 | 215.8 |
| 22 Amortization of contributions | 14.2 | 14.3 |
| 23 Retirements and adjustments | - | (0.0) |
| 24 Accumulated amortization, end of year | 230.8 | 230.1 |
| 25 Mid-Year Net Contributions | 733.8 | 703.3 |
| 26 Mid-Year Rate Base | 1,580.5 | 1,572.1 |
| 27 In-City Water share - % | 86.8% | 86.6% |
| 28 In-City Water share - \$ | 1,371.2 | 1,362.1 |

2.1.9 Return on Rate Base

In the 2022-2026 PBR plan, EWS' In-City rate base is deemed to be financed by a ratio of 60% debt and 40% equity. The return on the debt-financed portion of the rate base is calculated at EWS' forecast average cost of debt, while the return on the equity-financed portion of the rate base is calculated at EWS' approved return on equity (ROE) of 9.64%. In the PBR forecast, the special rate adjustment for rebasing was smoothed over the PBR term to mitigate "rate shock" at the beginning of the PBR term. Therefore, although rates are designed to provide EWS with the opportunity to earn its approved ROE of 9.64% over the 2022-2026 BPR term, forecast rates of return for individual years of the PBR term will differ from awarded ROE. Table 2.1.9-1 shows the calculation of debt and equity returns on rate base for 2023 and the cumulative returns for 2022-2023.

**Table 2.1.9-1
In-City Water
Return on Mid-Year Rate Base
(\$ millions)**

| Return on Rate Base | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 In-City Water share of mid-year rate base | 1,371.2 | 1,362.1 | | |
| Deemed capital structure | | | | |
| 2 Debt | 60.00% | 60.00% | | |
| 3 Equity | 40.00% | 40.00% | | |
| Cost Rates | | | | |
| 4 Debt | 4.10% | 4.49% | | |
| 5 Equity | 9.64% | 9.64% | | |
| 6 Return on rate base financed by debt | 33.7 | 36.8 | 67.0 | 70.6 |
| 7 Return on rate base financed by equity | 52.9 | 52.6 | 104.2 | 102.3 |
| 8 Revenue greater (less) than revenue requirement | (5.9) | (3.9) | (15.2) | (10.7) |
| 9 Achieved return on rate base financed by equity | 47.1 | 48.6 | 89.1 | 91.6 |
| 10 Achieved Rate of return on equity | 8.58% | 8.93% | 8.25% | 8.64% |

The return on the debt-financed portion for the rate base (i.e. regulated interest expense) is \$3.1 million greater than forecast in 2023 (\$3.6 million greater for 2022-2023), because the actual average cost of debt (see Table 2.1.9-2) was 0.39% greater than forecast due to the measures introduced by the Bank of Canada during 2022 and 2023 to curb inflation. Under the terms of the PBR Plan, EWS bears interest rate risk and therefore, higher than forecast debt costs are not borne by ratepayers.

**Table 2.1.9-2
Water Services
Interest Expense and Cost of Debt
(\$ millions)**

| Interest Expense and Cost of Debt | A | B |
|-----------------------------------|--------------|--------------|
| | 2023 | |
| | PBR Forecast | Actual |
| Interest expense | | |
| 1 Interest on long-term debt | 37.9 | 40.0 |
| 2 Interest on short-term debt | 0.8 | 2.3 |
| 3 Total interest expense | 38.7 | 42.3 |
| Mid-year debt | | |
| 4 Mid-year long-term debt | 910.8 | 925.8 |
| 5 Mid-year short-term debt | 33.9 | 16.1 |
| 6 Mid-year debt | 944.6 | 941.8 |
| 7 Average cost of debt | 4.10% | 4.49% |

In 2023, EWS achieved a ROE of 8.93% (8.64% for 2022-2023), compared to PBR forecast ROE of 8.58% (8.25% for 2022-2023). Higher than forecast rates of return reflect higher customer growth and inflation, resulting in higher than forecast revenues (Section 2.1.2),

which more than offset higher than forecast operating expenses (Section 2.1.3) and higher than forecast regulated interest expense.

2.1.10 Transactions with Affiliates

In-City Water derives a portion of its revenue and expenses from transactions with affiliates, including EUI and its subsidiaries. Table 2.1.10-1 provides a summary of In-City Water's 2023 actual and forecast transactions with affiliates.

Table 2.1.10-1
Water Services
Transactions with Affiliates
(\$ millions)

| Affiliate and Service | A | B | C | D |
|--|--------------|-------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 EPCOR Utilities Inc. | | | | |
| 2 Corporate Shared Service Costs | 13.8 | 13.9 | 27.4 | 27.6 |
| 3 Interest on Intercompany Loans | 37.9 | 40.0 | 75.3 | 77.2 |
| 4 Interest on Short-term debt | 0.8 | 2.3 | 1.7 | 3.9 |
| 5 Other Services | 0.4 | (0.1) | 0.7 | 0.4 |
| 6 Total | 52.9 | 56.1 | 105.1 | 109.1 |
| 7 Other EPCOR Affiliates | | | | |
| 8 EPCOR Technologies Inc. | 1.7 | 0.9 | 3.4 | 1.8 |
| 9 EPCOR Distribution and Transmission Inc. | 0.0 | (0.1) | 0.0 | (0.1) |
| 10 EPCOR Energy Alberta LP | 8.9 | 5.8 | 17.6 | 15.3 |
| 11 EPCOR Power Development | (0.2) | (0.3) | (0.4) | (0.6) |
| 12 EPCOR Fleet Services | - | 2.3 | - | 3.9 |
| 13 EPCOR Commercial Services | - | (0.2) | - | (0.2) |
| 14 Total | 10.4 | 8.5 | 20.6 | 20.1 |

2.2 Wastewater Treatment

Wastewater Treatment's financial performance for 2023 and for the first two years of the 2022-2024 PBR term are summarized in Table 2.2-1 below.

Table 2.2-1
Wastewater Treatment
Revenue and Revenue Requirements
(\$ millions)

| Description | A | B | C | D |
|---|--------------|---------------|--------------|---------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Rate Revenue | | | | |
| 1 Billed revenue | 129.2 | 143.9 | 251.3 | 273.5 |
| 2 Less: consumption deferral | - | (10.0) | - | (15.4) |
| 3 Regulated rate revenue | 129.2 | 133.9 | 251.3 | 258.1 |
| Revenue requirement | | | | |
| 4 Operations and maintenance expenses | 77.8 | 79.8 | 148.6 | 150.5 |
| 5 Less: revenue offsets | (7.2) | (8.3) | (13.0) | (15.5) |
| 6 Depreciation and amortization | 23.8 | 27.0 | 47.0 | 50.3 |
| 7 Return on rate base financed by debt | 12.3 | 13.0 | 24.6 | 25.4 |
| 8 Return on rate base financed by equity | 21.2 | 22.3 | 42.3 | 47.4 |
| 9 Revenue requirement | 129.2 | 133.9 | 251.3 | 258.1 |
| 10 Return on rate base financed by equity* | 9.64% | 10.51% | 9.64% | 11.45% |

* In the PBR forecast, the special rate adjustment for rebasing is smoothed over the PBR term. Therefore, although EWS' PBR forecast for the 2022-2024 PBR term is based on its awarded rate of return on 9.64%, PBR forecast rates of return for individual years of the PBR will differ from awarded ROE.

In 2023, Wastewater Treatment achieved a greater than forecast rate of return on equity of 10.51%. The factors contributing to forecast to actual differences are explained in Sections 2.2.1 to 2.2.9.

2.2.1 Customers and Consumption

Wastewater Treatment provides services to the same customer classes as In-City Water. Differences in customer counts, consumption and consumption per customer are attributable to "water-only" customers who are not tied into the City's drainage system, such as in industrial parks that are served by septic systems, commercial lawn watering services and golf courses. Table 2.2.1-1 provides a comparison of PBR forecast to actual customer counts and consumption per customer.

**Table 2.2.1-1
Wastewater Treatment
Customers, Consumption and Consumption per Customer**

| | | A | B | C | D |
|---------------------------|----------------------------------|--------------|---------|--------------|---------|
| | | 2023 | | 2022-2023 | |
| Customers and Consumption | | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 | Customers | | | | |
| 2 | Residential | 283,230 | 288,055 | 281,049 | 285,211 |
| 3 | Multi-Residential | 3,800 | 3,807 | 3,794 | 3,804 |
| 4 | Commercial | 17,240 | 17,458 | 17,155 | 17,370 |
| 5 | Total | 304,270 | 309,320 | 301,998 | 306,385 |
| 6 | Annual Consumption - ML | | | | |
| 7 | Residential | 44,766 | 47,699 | 44,809 | 47,277 |
| 8 | Multi-Residential | 17,627 | 19,020 | 17,643 | 18,760 |
| 9 | Commercial | 19,825 | 23,600 | 19,322 | 22,843 |
| 10 | Total | 82,218 | 90,319 | 81,774 | 88,881 |
| 11 | Monthly Consumption per Customer | | | | |
| 12 | Residential | 13.2 | 13.8 | 13.3 | 13.8 |
| 13 | Multi-Residential | 386.6 | 416.3 | 387.5 | 411.0 |
| 14 | Commercial | 95.8 | 112.7 | 93.9 | 109.6 |

Actual to forecast differences in Wastewater Treatment's customer counts and consumption are attributable to the same factors discussed in Section 2.1.

2.2.2 Revenue

Wastewater Treatment's rates include fixed monthly service charges applied on a per connection basis, consumption charges applied to each cubic metre of consumption and overstrength surcharges applicable to commercial customers subject to overstrength monitoring, whose wastewater includes wastewater constituents in excess of prescribed concentrations. Table 2.2.2-1 provides a comparison of Wastewater Treatment's actual revenues to the PBR forecast.

**Table 2.2.2-1
Wastewater Treatment
Revenue
(\$ millions)**

| | | A | B | C | D |
|---|---|--------------|---------------|--------------|---------------|
| Wastewater Treatment Revenue | | 2023 | | 2022-2023 | |
| | | PBR Forecast | Actual | PBR Forecast | Actual |
| Fixed monthly service charges | | | | | |
| 1 | Residential | 21.0 | 21.5 | 40.9 | 41.6 |
| 2 | Multi-residential | 0.3 | 0.3 | 0.6 | 0.6 |
| 3 | Commercial | 1.3 | 1.3 | 2.5 | 2.5 |
| 4 | Fixed monthly service charges | 22.5 | 23.0 | 43.9 | 44.6 |
| Consumption charges billed to customers | | | | | |
| 5 | Residential | 55.8 | 61.4 | 109.0 | 117.1 |
| 6 | Multi-residential | 22.0 | 24.6 | 42.9 | 46.6 |
| 7 | Commercial | 23.4 | 27.9 | 44.6 | 51.9 |
| 8 | Consumption charges billed to customers | 101.2 | 114.0 | 196.6 | 215.6 |
| Less: Consumption deferral | | | | | |
| 9 | Residential | - | (3.8) | | (5.6) |
| 10 | Multi-residential | - | (1.8) | | (2.7) |
| 11 | Commercial | - | (4.3) | | (7.1) |
| 12 | Consumption deferral | - | (10.0) | | (15.5) |
| Consumption charges, net of deferral | | | | | |
| 13 | Residential | 55.8 | 57.6 | 109.0 | 111.4 |
| 14 | Multi-residential | 22.0 | 22.8 | 42.9 | 43.9 |
| 15 | Commercial | 23.4 | 23.6 | 44.6 | 44.9 |
| 16 | Consumption charges, net of deferral | 101.2 | 104.0 | 196.6 | 200.2 |
| 17 | Overstrength surcharges | 5.5 | 6.9 | 10.8 | 13.3 |
| 18 | Regulated Revenue | 129.2 | 133.9 | 251.3 | 258.1 |
| 19 | Other revenue ("revenue offsets") | 7.2 | 8.3 | 13.0 | 15.5 |
| 20 | Revenue | 136.4 | 142.2 | 264.4 | 273.6 |

Wastewater Treatment's regulated revenues (row 18) were \$4.7 million greater than forecast in 2023 (\$6.8 million greater than forecast for 2022-2023). Higher regulated revenue was entirely due to higher than forecast inflation, customer growth and higher volumes of surchargeable matter, since the consumption deferral account balance (lines 9 – 12) offsets the effects of higher than forecast consumption during the PBR term.

Other revenue, which includes biosolids management, wastewater "swaps" with Arrow Utilities (formerly Alberta Capital Region Wastewater Commission) and other suburban customers, phosphorus sales, late payment charges, and other incidental services, was \$1.1 million higher than forecast in 2023 (\$2.5 million higher than forecast for 2022-2023) primarily due to the execution of a new biosolids management agreement with Arrow Utilities, resulting in higher than forecast revenues collected from Arrow Utilities.

The consumption deferral account balance is included in the determination of regulated revenue for the 2022-2024 PBR term at the direction of City Council. Pursuant to this direction, the amounts accumulated during the 2022-2024 PBR term will be refunded or collected from customers through a special rate adjustment in the subsequent PBR term.

The effects of the consumption deferral account on Wastewater Treatment for 2022 and 2023 are summarized in Table 2.2.2-2 below. This table shows that actual consumption was 4,966 ML greater than forecast in 2022 and 8,101 ML greater for 2023, resulting in an accumulated consumption deferral account balance, including carrying costs of \$16.3 million. The consumption deferral account balance, together with any adjustments for 2024 and 2025 (Jan 1, 2025 – March 31, 2025) will be reflected in customer rates over the next PBR term, effective April 1, 2025.

**Table 2.2.2-2
Wastewater Treatment
Consumption Deferral**

| Description | | A 2022 | B 2023 |
|---|--|---------------|---------------|
| PBR Forecast Consumption ML | | | |
| 1 | Residential | 34,378 | 44,766 |
| 2 | Multi-Residential | 3,351 | 17,627 |
| 3 | Commercial | 14,594 | 19,825 |
| 4 | Total Consumption | 62,323 | 82,218 |
| Actual Consumption (ML) | | | |
| 5 | Residential | 35,865 | 47,699 |
| 6 | Multi-Residential | 14,086 | 19,020 |
| 7 | Commercial | 17,338 | 23,600 |
| 8 | Total Consumption | 67,289 | 90,319 |
| Consumption Deferral (ML) | | | |
| 9 | Residential | 1,487 | 2,933 |
| 10 | Multi-Residential | 735 | 1,393 |
| 11 | Commercial | 2,744 | 3,775 |
| 12 | Total Consumption | 4,966 | 8,101 |
| Annual Consumption Deferral (\$ millions) | | | |
| 13 | Residential | 1.8 | 3.8 |
| 14 | Multi-Residential | 0.9 | 1.8 |
| 15 | Commercial | 2.7 | 4.3 |
| 16 | Annual Consumption Deferral | 5.5 | 10.0 |
| Cumulative Deferral (\$ millions) | | | |
| 17 | Consumption Deferral, beginning of year | - | 5.6 |
| 18 | Annual Consumption Deferral | 5.5 | 10.0 |
| 19 | Carrying costs | 0.2 | 0.7 |
| 20 | Consumption Deferral, end of year | 5.6 | 16.3 |

2.2.3 Operating Expenses by Function

Table 2.2.3-1 provides a comparison of Wastewater Treatment operating expenses for 2023 and for 2022-2023. As noted in Section 2, the PBR forecast and actual amounts for 2022 and 2023 have been restated to reflect the new functional organizational structure.

Table 2.2.3-1
Wastewater Treatment
Operating Expenses by Function
(\$ millions)

| | | A | B | C | D |
|-------------------------|---------------------------------------|-------------|-------------|--------------|--------------|
| | | 2023 | | 2022-2023 | |
| Function / Sub-Function | | Forecast | Actual | Forecast | Actual |
| Core Operations | | | | | |
| 1 | Power and Other Utilities | 6.7 | 5.7 | 12.4 | 10.7 |
| 2 | Chemicals | 1.5 | 1.5 | 3.0 | 2.9 |
| 3 | Wastewater Treatment Plant Operations | 6.3 | 6.0 | 12.5 | 12.8 |
| 4 | Biosolids Management | 17.5 | 16.5 | 30.1 | 27.5 |
| 5 | Monitoring and Compliance | 1.7 | 2.0 | 3.4 | 3.6 |
| 6 | Maintenance | 10.3 | 11.3 | 20.5 | 21.8 |
| 7 | Capital Overhead | (3.3) | (2.6) | (6.6) | (4.9) |
| 8 | Core Operations | 40.7 | 40.3 | 75.3 | 74.3 |
| 9 | Integrated Operations | 9.7 | 9.1 | 19.4 | 17.6 |
| 10 | Billing & Meter Services | 6.2 | 7.3 | 12.4 | 13.3 |
| 11 | EWS Shared Services | 5.2 | 6.0 | 10.3 | 12.5 |
| 12 | Corporate Shared Services | 5.3 | 5.6 | 10.6 | 10.9 |
| 13 | Franchise Fees & Property Taxes | 10.7 | 11.5 | 20.7 | 22.1 |
| 14 | Total Operating expense | 77.8 | 79.8 | 148.6 | 150.7 |

Overall, Wastewater Treatment's operating expenses (row 14) for 2023 were \$2.0 million greater than forecast (\$2.1 million greater for 2022-2023). Key factors contributing to this difference include:

- **Core Operations** (row 8) were \$0.4 million lower than forecast in 2023 (\$1.0 million lower than forecast for 2022-2023), primarily due to:
 - Lower than forecast power consumption resulting in power cost savings of \$1.0 million in 2023 (\$1.8 million for 2022-2023);
 - Lower than forecast biosolids management costs of \$1.0 million in 2023 due to lower than forecast volumes (\$2.6 million for 2022-2023); partially offset by
 - Higher than forecast maintenance costs of \$1.0 million in 2023 primarily due to higher materials and contractor costs for planned and unplanned maintenance activities (\$1.3 million higher for 2022-2023); and
 - Lower than forecast transfer of overhead charges to capital of \$0.7 million in 2023 (\$1.7 million lower than forecast for 2022-2023).
- **Integrated Operations** (row 9) - \$0.8 million lower than forecast in 2023 (\$1.8 million lower than forecast for 2022-2023) primarily due to:

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- lower staff and related costs of \$1.1 million due to vacancies and reallocation of costs and resources as part of the functional reorganization (\$1.9 million lower for 2022-2023); and
 - lower contractor and sponsorship spending related to the Watershed Monitoring program of \$0.2 million (\$0.2 million lower for 2022-2023); partially offset by
 - Minor other operating expenses, none of which were individually significant amounting to \$0.5 million (\$0.3 million for 2022-2023).
- **Billing and meter services** - \$1.1 million higher than forecast in 2023 (\$0.9 million higher than forecast for 2022-2023) primarily due to higher than forecast provisions for bad debts due to economic conditions and higher customer billing and collection charges.
 - **EWS Shared Services** – \$0.8 million higher than forecast (\$2.2 million higher than forecast for 2022-2023) primarily due to:
 - Higher incentive and other compensation of \$0.5 million (\$1.2 million for 2022-2023);
 - Higher supply chain management costs of \$0.3 million (\$0.3 million for 2022-2023) due to higher stock and higher than forecast staff costs; and
 - Numerous minor differences in operations and maintenance costs, none of which were individually significant, amounting to \$0.1 million (\$0.8 million for 2022-2023).
 - **Corporate Services** – \$0.3 million higher than forecast primarily due to higher corporate allocations (\$0.3 million higher than forecast for 2022-2023).
 - **Franchise Fees and Property Taxes** – \$0.8 million higher than forecast in 2023 (\$1.4 million higher than forecast for 2022-2023) due to higher than forecast billed revenues.

2.2.4 Operating Expenses by Cost Category

Table 2.2.4-1 provides a breakdown of operating expenses by cost category. Explanations for forecast to actual differences are provided in section 2.1.3 above.

Table 2.2.4-1
Wastewater Treatment
Operating Costs by Cost Category
(\$ millions)

| Cost Category | A | B | C | D |
|---|--------------|-------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 Core Operations | | | | |
| 2 Power and Other Utilities | 6.7 | 5.7 | 12.4 | 10.7 |
| 3 Chemicals | 1.5 | 1.5 | 3.0 | 2.9 |
| 4 Staff costs and employee benefits | 9.8 | 10.6 | 19.5 | 21.1 |
| 5 Contractors and consultants | 18.0 | 19.1 | 31.8 | 35.4 |
| 6 Other Raw Materials and supplies | 4.4 | 3.1 | 6.8 | 3.6 |
| 7 Other Admin Expenses | 0.3 | 0.3 | 1.8 | 0.6 |
| 8 Core Operations | 40.7 | 40.3 | 75.3 | 74.3 |
| 9 Integrated Operations | 9.7 | 9.1 | 19.4 | 17.6 |
| 10 Billing, Meters and Customer Service | 6.2 | 7.3 | 12.4 | 13.3 |
| 11 Corporate Allocations | 5.3 | 5.6 | 10.6 | 10.8 |
| 12 Franchise Fees & Property Taxes | 10.7 | 11.5 | 20.7 | 22.1 |
| 13 Shared Services | 5.2 | 6.0 | 10.3 | 12.5 |
| 14 Total | 77.8 | 79.8 | 148.6 | 150.6 |

2.2.5 Capital Expenditures by Major Project and Category

Table 2.2.5-1 compares approved capital expenditures from the PBR forecast to actual capital expenditures for 2023 for each project with approved or forecast capital expenditures more than \$5.0 million over the 2022-2024 PBR term, as well as for each project category.

**Table 2.2.5-1
Wastewater Treatment
Capital Expenditures
(\$ millions)**

| | | A | B | C | D | E | F | |
|--|---|--------------|--------|----------|--------------|------------|----------|------|
| | | 2023 | | | 2022-2024 | | | |
| Major Category and Project | | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | Note |
| Health, Safety and Environment | | | | | | | | |
| 1 | Maintenance Hygiene Improvements | - | 3.6 | 3.6 | - | 6.2 | 6.2 | 1 |
| 2 | Projects < \$5 million | 0.2 | 0.7 | 0.5 | 0.8 | 1.8 | 1.0 | |
| 3 | Sub-total | 0.2 | 4.3 | 4.1 | 0.8 | 8.0 | 7.2 | |
| Regulatory | | | | | | | | |
| 4 | Odour Control Improvements | 2.4 | 0.5 | (1.9) | 5.6 | 7.7 | 2.1 | 2 |
| 5 | Projects < \$5 million | - | 0.3 | 0.3 | - | 0.7 | 0.7 | |
| 6 | Sub-total | 2.4 | 0.8 | (1.6) | 5.6 | 8.4 | 2.8 | |
| Growth/Customer Requirements | | | | | | | | |
| 7 | Projects < \$5 million | 1.9 | 1.8 | (0.1) | 5.5 | 5.1 | (0.4) | |
| Reliability and Life Cycle Improvements | | | | | | | | |
| 8 | Digester 4 Upgrades Project | 3.2 | 7.7 | 4.5 | 13.4 | 18.3 | 4.9 | 3 |
| 9 | Utility Rack West | - | 0.4 | 0.4 | - | 9.5 | 9.5 | 4 |
| 10 | Square 1 Biogas System Upgrade | - | 4.5 | 4.5 | - | 12.1 | 12.1 | 5 |
| 11 | Primary Effluent Channel Upgrades Project | 7.2 | 0.9 | (6.3) | 17.0 | 7.6 | (9.4) | 6 |
| 12 | Aux Control Room E-House (EB-1) | 6.2 | 0.7 | (5.5) | 11.2 | 4.2 | (7.1) | 7 |
| 13 | 600v Electrical Building (EB-2) | 6.6 | 0.5 | (6.1) | 11.8 | 1.3 | (10.5) | 7 |
| 14 | Clover Bar Dewatering Facility | 19.6 | 0.0 | (19.6) | 38.4 | 0.7 | (37.7) | 8 |
| 15 | EPT Scrubber Upgrades | - | 6.0 | 6.0 | - | 15.7 | 15.7 | 9 |
| 16 | Expand Flare Capacity | 4.0 | 0.5 | (3.5) | 8.0 | 3.2 | (4.8) | 10 |
| 17 | Projects < \$5 million | 14.8 | 19.7 | 4.9 | 41.5 | 64.5 | 23.0 | 11 |
| 18 | Sub-total | 61.6 | 40.9 | (20.7) | 141.4 | 137.2 | (4.2) | |
| Performance Efficiency and Improvement | | | | | | | | |
| 19 | Secondary Aeration Blower Upgrades | 5.7 | 0.6 | (5.1) | 8.0 | 9.6 | 1.6 | |

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| | | A | B | C | D | E | F | |
|----------------------------|-----------------------------------|--------------|--------|----------|--------------|------------|----------|------|
| Major Category and Project | | 2023 | | | 2022-2024 | | | Note |
| | | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | |
| 20 | Laboratory Facility Consolidation | 3.0 | 0.7 | (2.3) | 5.9 | 5.3 | (0.6) | |
| 21 | Projects < \$5 million | 1.1 | 3.7 | 2.6 | 4.5 | 5.7 | 1.2 | |
| 22 | Sub-total | 9.8 | 5.0 | (4.8) | 18.4 | 20.6 | 2.2 | |
| 23 | Capital Expenditures | 76.0 | 52.8 | (23.2) | 171.7 | 179.3 | 7.6 | |

Explanations for differences between PBR forecast capital expenditures and Wastewater Treatment's current projection in excess of \$2.0 million include:

1. **Maintenance Hygiene Improvements** – \$6.2 million greater than forecast (carry-over project). Although this project was originally planned to be completed by the end of 2021, extensive stakeholder consultation related to the Gold Bar Integrated Resource Plan (IRP), resulted in significant scope adjustments to the project, delaying project completion and increasing project costs.
2. **Odour Control Improvements** - \$2.1 million greater than forecast due to increase in scope to address complexities identified during the design phase.
3. **Digester 4 Upgrades Project** – \$4.9 million greater than forecast. The increase is primarily due to higher commodity prices and inflation. Work on the Digester 4 project was delayed due to leak issues experienced during the completion of the Digester 3 Upgrades project, and the shutdown of Digester 5 due to structural concerns. EWS determined that completing Digester 3 before commencing Digester 4 increased operational capacity and reliability.
4. **Utility Rack West** – \$9.5 million greater than forecast. This project was not included in the 2022-2024 PBR forecast, but was advanced to facilitate efficient delivery of the Auxiliary Control Room Electrical Upgrade Project (EB-1) and the 600V Electrical Building Project (EB-2) by utilizing pipe racks to support the re-routing of electrical cables to the new electrical buildings. See note 7 below.
5. **Square 1 Biogas System Upgrade** – \$12.1 million greater than forecast. This project was partially deferred from the 2017-2021 PBR term to the 2022-2024 PBR term due to a revision in the engineering solution to relocate new gas mixing compressors to a separate enclosure. Project costs are also expected to increase due to higher than forecast construction and process equipment supply costs.
6. **Primary Effluent Channel Upgrades Project** – \$9.4 million lower than forecast. Project completion has been delayed into the next PBR term because of the additional design and engineering work needed to address the complexities and risks associated with the project.
7. **Auxiliary Control Room E-House (EB-1) and 600v Electrical Building (EB-2)** – \$17.6 million lower than forecast. During the design development process, EWS identified challenges in commissioning and transferring electrical loads while minimizing operational disruptions, requiring additional planning to address the complexities, resulting in the advancement of the utility rack west construction and completion of these projects in the next PBR term.
8. **Clover Bar Biosolids Dewatering Facility** – \$37.7 million lower than forecast. The Dewatering Facility project design is currently being reassessed due to higher than

anticipated preliminary cost estimates. EWS is reviewing more cost-effective alternatives including the long-term viability of using a third-party mobile dewatering facility, which is currently being used temporarily while the current dewatering facility is shut down.

9. **Enhanced Primary Treatment (EPT) Scrubber Upgrades** – \$15.7 million higher than forecast. The EPT Scrubber Upgrades project was originally part of the Site HVAC Rehabilitation project to be completed in 2021 at a total cost of \$9.5 million. During the design development of the project, the EPT Scrubber Upgrades project was identified and set up as a standalone project. The EPT Scrubber Upgrades project was subsequently delayed and completed in 2023. The increased cost is primarily due to a combination of project scope and design refinements, and a general increase in costs related to market conditions.
10. **Expand Flare Capacity** – \$4.8 million lower than forecast. Implementation of this project has been deferred to the next PBR term to address other critical projects approved in the current PBR.
11. **Projects < \$5 million** – Explanations for the larger projects with variance in excess of \$2 million include:
 - a. Clover Bar Edmonton Waste Management (EWMC) Groundwater Transfer – This \$3.9 million project was not included in the 2022-2024 PBR forecast. The project was initiated to support the City of Edmonton in addressing groundwater release management in response to the regulatory requirements imposed on the City's waste management operations. EWS expects the project to be completed in 2025.
 - b. Gold Bar Operation Center - \$3.3 million higher than 2022-24 PBR forecast primarily due to scope changes and higher costs due to project delays as a result of protracted stakeholder engagement requirements.
 - c. Gold Bar Loop 5 Rehab and Upgrade – This \$3.1 million project was advanced to meet operational heating requirements as the equipment was at the end of its useful life. The project was completed in 2023.

The remainder of the variances are attributed to several smaller projects, none of which were individually significant or exceeding the \$2.0 million variance threshold.

2.2.6 Construction Work in Progress

Wastewater Treatment's rate base consists of plant in service. If a capital project has not been completed (i.e., not placed into service) during the year, the capital expenditures on that project remain under Construction Work in Progress and are excluded from the rate base. As shown in Table 2.2.6-1, Wastewater Treatment's Construction Work in Progress balance at the end of 2023 was \$44.8 million lower than forecast, primarily due to the completion of carry-over projects.

Table 2.2.6-1
Wastewater Treatment Construction Work in Progress
(\$ millions)

| | | A | B |
|-------------------------------|-----------------------------|--------------|-------------|
| | | 2023 | |
| Construction Work in Progress | | PBR Forecast | Actual |
| 1 | Balance, beginning of year | 45.0 | 53.0 |
| 2 | Capital expenditures | 76.0 | 52.8 |
| 3 | Capital additions | (23.8) | (53.4) |
| 4 | Balance, end of year | 97.2 | 52.4 |

The PBR plan allows EWS to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using AFUDC. In 2023, because of the lower average balance of Construction Work in Progress, AFUDC included in capital expenditures on eligible projects amounted to \$2.7 million, compared to the PBR forecast amount of \$4.4 million.

2.2.7 Depreciation and Amortization

Wastewater Treatment's depreciation expense and amortization of contributed assets for 2023 are shown in Table 2.2.7-1 below:

Table 2.2.7-1
Wastewater Treatment Depreciation and Amortization
(\$ millions)

| | | A | B | C | D |
|-------------------------------|---------------------------------------|--------------|-------------|--------------|-------------|
| | | 2023 | | 2022-2023 | |
| Depreciation and Amortization | | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 | Gross depreciation expense | 24.2 | 26.1 | 48.9 | 50.3 |
| 2 | Amortization of contributions | (0.9) | (0.9) | (1.9) | (1.9) |
| 3 | Loss on disposal and other write offs | | 1.9 | | 1.8 |
| 4 | Depreciation, net | 23.2 | 27.0 | 47.0 | 50.3 |

In 2023, depreciation expense was higher than forecast primarily due to:

- the completion of a higher number of capital projects with shorter expected useful life, resulting in higher effective depreciation; and

- Write-off of the work in progress on the Digester 5 project due to the decision to cancel the project.

2.2.8 Rate Base

Wastewater Treatment's 2023 mid-year rate base, shown in Table 2.2.8-1 below, was \$15.4 million lower than forecast resulting from adjustments to the capital program described in Section 2.2.5.

Table 2.2.8-1
Wastewater Treatment Mid-Year Rate Base
(\$ millions)

| | A | B |
|--------------------------------------|-----------------|---------------|
| 2023 | | |
| PBR | | |
| | Forecast | Actual |
| 1 Plant in Service | | |
| 2 Balance, beginning of year | 806.6 | 769.9 |
| 3 Capital additions | 23.8 | 53.4 |
| 4 Retirements and adjustments | - | (10.9) |
| 5 Balance, end of year | 830.4 | 812.4 |
| 6 Mid-Year Plant in service | 818.5 | 791.2 |
| 7 Accumulated Depreciation | | |
| 8 Balance, beginning of year | 242.4 | 233.0 |
| 9 Depreciation expense | 24.7 | 26.1 |
| 10 Retirements and adjustments | - | (12.9) |
| 11 Balance, end of year | 267.2 | 246.2 |
| 12 Mid-Year Accumulated Depreciation | 254.8 | 239.6 |
| 13 Other Rate Base Items | | |
| 14 Working Capital | 1.4 | 2.3 |
| 15 Materials and Supplies | 4.7 | 0.6 |
| 16 Gross Mid-Year Rate Base | 569.8 | 554.4 |
| 17 Contributions | | |
| 18 Balance, beginning of year | 41.0 | 41.0 |
| 19 Current year contributions | - | - |
| 20 Balance, end of year | 41.0 | 41.0 |
| 21 Mid-Year Contributions | 41.0 | 41.0 |
| 22 Accumulated Amortization | | |
| 23 Balance, beginning of year | 21.2 | 21.2 |
| 24 Amortization of contributions | 0.9 | 0.9 |
| 25 Balance, end of year | 22.1 | 22.1 |
| 26 Mid-Year Accumulated Amortization | 21.6 | 21.6 |
| 27 Mid-Year Contributions | 19.3 | 19.3 |
| 28 Mid-Year Rate Base | 550.5 | 535.1 |

Unlike In-City Water, where contributions are primarily related to developer-funded assets, contributions included in Wastewater Treatment's rate base offset the cost of non-utility assets included in Wastewater Treatment's plant in service. This treatment ensures that the capital costs associated with these assets are not borne by ratepayers. The cost of operating these

assets, as well as any related revenues are excluded from Wastewater Treatment's financial results.

2.2.9 Return on Rate Base

In 2023, Wastewater Treatment's return on equity, shown in Table 2.2.9-1, was \$1.1 million greater than forecast (\$5.9 million greater than forecast for 2022-2024) enabling Wastewater Treatment to achieve a return on equity of 10.40% in 2023. The increase in return on equity was primarily attributed to the increase in overstrength charges to industrial customers, and other revenue as noted in Section 2.2.2, as well as a slightly lower than forecast rate base contributed to the higher return on equity.

Table 2.2.9-1
Wastewater Treatment Return on Rate Base
(\$ millions)

| | A | B | C | D |
|---|--------------|-------------|--------------|-------------|
| Return on Rate Base | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 Mid-year Rate Base | 550.5 | 535.1 | | |
| 2 Deemed Capital Structure | | | | |
| 3 Debt (%) | 60.00% | 60.00% | | |
| 4 Equity (%) | 40.00% | 40.00% | | |
| 5 Cost of Capital | | | | |
| 6 Cost of Debt | 3.72% | 4.08% | 3.74% | 4.08% |
| 7 Cost of Equity | 9.64% | 10.40% | 9.64% | 11.39% |
| 8 Weighted Average Cost of Capital (WACC) | 6.09% | 6.61% | 6.10% | 7.01% |
| 9 Return on Mid-Year Rate Base | | | | |
| 10 Return on Rate Base Financed by Debt | 12.3 | 13.1 | 24.6 | 25.5 |
| 11 Return on Rate Base Financed by Equity | 21.2 | 22.3 | 42.3 | 47.3 |
| 12 Return on Mid-year Rate Base | 33.5 | 35.4 | 66.9 | 72.8 |

Wastewater Treatment's weighted average cost of debt is shown in Table 2.2.9-2. The embedded cost of debt was higher in 2023 due to higher than forecast interest rates on new debt issues related to the Bank of Canada's rate hikes during 2022 and 2023. Under the PBR Plan, EWS bears interest rate risk and therefore, higher than forecast debt costs are not borne by ratepayers.

Table 2.2.9-2
Wastewater Treatment Interest Expense and Cost of Debt
(\$ millions)

| | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| Interest Expense and Cost of Debt | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 Interest Expense | | | | |
| 2 Interest on short-term debt | 0.8 | 0.2 | 1.7 | 1.4 |
| 3 Interest on intercompany debentures | 12.9 | 14.0 | 24.8 | 26.0 |
| 4 Total Interest expense | 13.7 | 14.2 | 26.4 | 27.3 |
| 5 Mid-year debt and other long-term liabilities | | | | |
| 6 Mid-Year Short-term debt | 33.2 | 12.9 | | |
| 7 Mid-Year Long-term debt | 334.7 | 335.4 | | |
| 8 Total Mid-year debt and other long-term liabilities | 367.9 | 348.4 | | |
| 9 Embedded cost of Debt | 3.72% | 4.08% | 3.74% | 4.08% |

2.2.10 Transactions with Affiliates

Wastewater Treatment derives a portion of its revenue and expenses from affiliate transactions including EUI, and its subsidiaries. Table 2.2.10-1 summarizes Wastewater Treatment's transactions with affiliates.

Table 2.2.10-1
Wastewater Treatment Transactions with Affiliates
(\$ millions)

| | A | B | C | D |
|---|--------------|-------------|--------------|-------------|
| Affiliate and Service | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 EPCOR Utilities Inc. | | | | |
| 2 Corporate Shared Service Costs | 5.3 | 5.6 | 10.6 | 10.8 |
| 3 Interest on Intercompany Loans | 12.9 | 14.0 | 24.8 | 26.0 |
| 4 Interest on Short-term debt | 0.8 | 0.2 | 1.7 | 1.4 |
| 5 Other Services | 0.1 | 0.1 | 0.2 | 0.4 |
| 6 Total | 19.1 | 20.8 | 37.1 | 39.4 |
| 7 Other EPCOR Affiliates | | | | |
| 8 EPCOR Technologies Inc. | 0.0 | 0.3 | 0.1 | 0.3 |
| 9 EPCOR Commercial Services | - | - | - | (0.0) |
| 10 EPCOR Distribution and Transmission Inc. | - | 0.0 | - | (0.0) |
| 11 EPCOR Water Services | 0.4 | 0.5 | 0.9 | 0.9 |
| 12 EPCOR Energy Alberta LP | 3.0 | 4.4 | 6.0 | 7.4 |
| 13 Total | 3.5 | 5.3 | 6.9 | 8.7 |

2.3 Wastewater Collection

EWS provides wastewater collection services, including both sanitary utility and stormwater utility services within the boundaries of the City of Edmonton. These services are regulated by the City of Edmonton pursuant to the PBR Plan for 2022 to 2024 prescribed in Drainage Services and Wastewater Treatment Bylaw 19627.

Wastewater Collection's regulated rate revenue and revenue requirements for 2023 and for 2022-2023 are summarized in Table 2.3-1 below.

Table 2.3-1
Wastewater Collection
Revenue and Revenue Requirement
(\$ millions)

| | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Rate revenue | | | | |
| 1 Billed revenue | 251.2 | 262.1 | 487.6 | 506.9 |
| 2 Less: consumption deferral | - | (10.4) | - | (16.6) |
| 3 Regulated rate revenue | 251.2 | 251.7 | 487.6 | 490.3 |
| Revenue requirement | | | | |
| 4 Operations and maintenance expenses | 117.5 | 124.8 | 239.9 | 252.5 |
| 5 Less: revenue offsets | (5.2) | (7.3) | (11.5) | (12.6) |
| 6 Depreciation and amortization | 46.0 | 42.0 | 88.0 | 81.6 |
| 7 Return on rate base financed by debt | 30.2 | 35.4 | 70.8 | 76.7 |
| 8 Return on rate base financed by equity | 62.5 | 56.6 | 100.4 | 92.0 |
| 9 Revenue requirement | 251.2 | 251.7 | 487.6 | 490.3 |
| 10 Rate of return on rate base financed by equity* | 7.33% | 6.62% | 6.85% | 6.41% |

* In the PBR forecast, the special rate adjustment for rebasing is smoothed over the PBR term to mitigate "rate shock" at the beginning of the PBR term. Therefore, although EWS' PBR forecast for the 2022-2024 PBR term is based on achieving a fair rate of return of 9.95% by 2026, PBR forecast rates of return for individual years of the PBR will differ from awarded ROE.

In 2023, Wastewater Collection achieved a rate of return on equity of 6.62% (6.41% for 2022-2023), compared to its forecast rate of return of 7.33% (6.85% for 2022-2023). The factors contributing to the forecast to actual differences are explained in Sections 2.3.1 to 2.3.9.

2.3.1 Customers and Consumption

Wastewater Collection provides sanitary and stormwater utility services to the same customers and customer classes as Wastewater Treatment. Therefore, actual to forecast differences in customer counts and consumption are attributed to the factors discussed in section 2.2.1. Customers and consumption for Wastewater Collection are summarized in Table 2.3.1-1.

Table 2.3.1-1
Wastewater Collection
Customers and Consumption

| | | A | B |
|---|--------------------------|--------------|---------|
| Customers and Consumption | | 2023 | |
| | | PBR Forecast | Actual |
| Sanitary Utility | | | |
| Customers | | | |
| 1 | Residential | 283,230 | 288,055 |
| 2 | Multi-Residential | 3,800 | 3,807 |
| 3 | Commercial | 17,241 | 17,458 |
| 4 | Total Customers | 304,271 | 309,320 |
| Consumption per Customer (m ³ per month) | | | |
| 5 | Residential | 13.2 | 13.8 |
| 6 | Multi-Residential | 386.6 | 416.3 |
| 7 | Commercial | 95.8 | 112.7 |
| Annual Consumption (ML) | | | |
| 8 | Residential | 44,766 | 47,699 |
| 9 | Multi-Residential | 17,627 | 19,021 |
| 10 | Commercial | 19,825 | 23,600 |
| 11 | Total Annual Consumption | 82,218 | 90,319 |
| Stormwater Utility | | | |
| Customers | | | |
| 12 | Residential | 284,049 | 288,187 |
| 13 | Multi-Residential | 3,768 | 3,807 |
| 14 | Commercial | 17,078 | 17,875 |
| 15 | Total Customers | 304,895 | 309,869 |

The minor difference (549 customers or 0.2%) between the total number of sanitary utility and stormwater utility customers is due to stormwater-only customers, such as acreages in annexed areas and commercial customers that are not connected to the sanitary sewer system.

2.3.2 Revenue

Wastewater Collection's regulated revenues are derived from the provision of sanitary utility and stormwater utility services. Sanitary utility rates include flat monthly charges that vary with meter size and variable monthly charges per cubic metre of monthly metered water consumption. Monthly stormwater charges for each customer are calculated as the product of the stormwater utility rate, the area of the premises measured in square metres, its development intensity factor, and its run-off coefficient based on zoning. Wastewater Collection's forecast and actual revenues for 2023 and 2022-2023 are summarized in Table 2.3.2-1.

Table 2.3.2-1
Wastewater Collection
Revenue
(\$ millions)

| | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| Description | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Sanitary Utility | | | | |
| Flat monthly charges | | | | |
| 1 Residential | 37.3 | 37.7 | 73.7 | 74.6 |
| 2 Multi-residential: | 2.4 | 2.4 | 4.8 | 4.9 |
| 3 Commercial | 6.1 | 6.2 | 12.2 | 12.3 |
| 4 Flat monthly charges | 45.8 | 46.4 | 90.7 | 91.8 |
| Variable monthly charges billed | | | | |
| 5 Residential | 56.3 | 62.2 | 111.3 | 119.7 |
| 6 Multi-residential | 22.2 | 24.7 | 43.8 | 47.5 |
| 7 Commercial | 23.8 | 28.5 | 45.9 | 53.8 |
| 8 Variable monthly charges billed | 102.3 | 115.5 | 201.0 | 220.9 |
| Consumption deferral | | | | |
| 9 Residential | - | (3.8) | - | (5.7) |
| 10 Multi-residential | - | (1.8) | - | (2.7) |
| 11 Commercial | - | (4.8) | - | (8.2) |
| 12 Consumption deferral | - | (10.4) | - | (16.6) |
| Variable monthly charge revenue | | | | |
| 13 Residential | 56.3 | 58.4 | 111.3 | 114.0 |
| 14 Multi-residential: | 22.2 | 22.9 | 43.8 | 44.7 |
| 15 Commercial | 23.8 | 23.8 | 45.9 | 45.6 |
| 16 Variable monthly charge revenue | 102.3 | 105.1 | 201.0 | 204.3 |
| Total | | | | |
| 17 Residential | 93.6 | 96.1 | 185.0 | 188.6 |
| 18 Multi-Residential | 24.6 | 25.4 | 48.6 | 49.6 |
| 19 Commercial | 30.0 | 31.0 | 58.1 | 57.9 |
| 20 Sanitary Utility regulated revenue | 148.1 | 151.4 | 291.7 | 296.1 |
| Stormwater Utility | | | | |
| 21 Residential | 54.6 | 53.7 | 103.8 | 103.2 |
| 22 Multi-residential | 5.7 | 5.9 | 10.8 | 11.6 |
| 23 Commercial | 42.8 | 40.6 | 81.3 | 82.7 |
| 24 Stormwater Utility regulated revenue | 103.1 | 100.3 | 195.9 | 199.1 |
| 25 Wastewater Collection Regulated Revenue | 251.2 | 251.7 | 487.6 | 490.3 |
| 26 Other revenue ("revenue offsets") | 5.2 | 7.3 | 11.5 | 12.6 |
| 27 Wastewater Collection revenue | 256.5 | 259.1 | 499.1 | 502.9 |

In 2023, Wastewater Collection's regulated revenue (line 25) was \$0.5 million greater than forecast (\$2.7 million greater than forecast for 2022-2023). Since the consumption deferral account balance (lines 9-12) offsets the effects of higher than forecast consumption during the PBR term, higher regulated revenue was entirely due to higher than forecast inflation and higher customer counts.

In 2023, other revenue was \$2.1 million greater than forecast (\$1.1 million greater than forecast for 2022-2023), primarily due to higher than forecast monitoring and compliance revenues.

The consumption deferral account balance is included in the determination of regulated revenue for the 2022-2024 PBR term at the direction of City Council. Pursuant to this direction, the amounts accumulated during the 2022-2024 PBR term will be refunded or collected from customers through a special rate adjustment during the next PBR term. The effects of the consumption deferral on Wastewater Collection for 2022 and 2023 are summarized in Table 2.3.2-2 below. This table shows that actual consumption was 4,958 ML greater than forecast in 2022 and 8,100 ML greater than forecast in 2023, resulting in an accumulated deferral account balance, including carrying costs of \$17.4 million. The consumption deferral account balance, together with any adjustments for 2024 and 2025 (Jan 1, 2025 – March 31, 2025) will be reflected in customer rates over the next PBR term, effective April 1, 2025.

**Table 2.3.2-2
Wastewater Collection
Consumption Deferral**

| | A | B |
|---|--------|--------|
| | 2022 | 2023 |
| PBR Forecast Consumption (ML) | | |
| 1 Residential | 34,378 | 44,766 |
| 2 Multi-Residential | 13,351 | 17,627 |
| 3 Commercial | 14,590 | 19,825 |
| 4 PBR Forecast Consumption | 62,319 | 82,218 |
| Actual Consumption (ML) | | |
| 5 Residential | 35,865 | 47,699 |
| 6 Multi-Residential | 14,085 | 19,020 |
| 7 Commercial | 17,327 | 23,599 |
| 8 Actual Consumption | 67,277 | 90,318 |
| Actual Consumption greater than forecast (ML) | | |
| 9 Residential | 1,487 | 2,933 |
| 10 Multi-Residential | 734 | 1,393 |
| 11 Commercial | 2,736 | 3,774 |
| 12 Consumption Deferral | 4,958 | 8,100 |
| Annual Consumption Deferral (\$ millions) | | |
| 13 Residential | 1.9 | 3.8 |
| 14 Multi-Residential | 0.9 | 1.8 |
| 15 Commercial | 3.3 | 4.8 |
| 16 Annual Consumption Deferral | 6.1 | 10.4 |
| Cumulative Deferral (\$ millions) | | |
| 17 Consumption Deferral, beginning of year | - | 6.3 |
| 18 Annual Consumption Deferral | 6.1 | 10.4 |
| 19 Carrying charges | 0.2 | 0.7 |
| 20 Consumption Deferral, end of year | 6.3 | 17.4 |

2.3.3 Operating Expenses by Function

Table 2.3.3-1 provides a comparison of Wastewater Collection's operating expenses for 2023 and for 2022-2023. As noted in Section 2, the PBR forecast and actual amounts for 2022 and 2023 have been restated to reflect the new functional organizational structure.

Table 2.3.3-1
Wastewater Collection
Operating Expenses by Function
(\$ millions)

| Function / Sub-function | A | B | C | D |
|--------------------------------------|------------------|----------------|-----------------------|---------------------|
| | 2023 Forecast | 2023 Actual | 2022-2023 Forecast | 2022-2023 Actual |
| Core Operations | | | | |
| 1 Operations | 4.8 | 7.1 | 15.1 | 19.2 |
| 2 Operations Support | 3.8 | 4.9 | 7.5 | 10.4 |
| 3 Flow Control | 16.4 | 12.3 | 32.4 | 26.0 |
| 4 Maintenance | 20.3 | 22.0 | 41.0 | 40.3 |
| 5 Construction | 0.7 | 1.5 | 1.5 | 3.9 |
| 6 Capital Overhead | (4.0) | (6.3) | (7.9) | (12.2) |
| 7 Core Operations | 42.0 | 41.6 | 89.5 | 87.6 |
| 8 Integrated Operations | 16.3 | 19.3 | 32.8 | 36.5 |
| 9 Billing & Meter Services | 7.7 | 8.6 | 15.4 | 17.3 |
| 10 EWS Shared Services | 22.8 | 23.7 | 45.4 | 48.1 |
| 11 Corporate Shared Services | 16.6 | 18.6 | 32.9 | 37.6 |
| 12 Franchise Fees and Property Taxes | 12.1 | 13.0 | 23.9 | 25.4 |
| 13 Operating Expenses | 117.5 | 124.8 | 239.9 | 252.5 |

Total operating expenses in 2023 were \$7.3 million greater than forecast (\$12.6 million greater than forecast for 2022-2023). Key factors contributing to this variance include:

- **Operations** - \$2.3 million greater than forecast in 2023 (\$4.1 million greater than forecast for 2022-2023), primarily due to:
 - Higher staff costs of \$2.2 million (\$2.6 million for 2022-2023) due to staff transfers from Flow Control and Maintenance following the functional reorganization; and
 - Higher contractor costs of \$0.6 million (\$3.7 million for 2022-2023) for trunk cleaning and inspections needed to address the high volumes of solids found while assessing the trunk network using new maintenance holes completed as part of the Corrosion and Odour Remediation program; partially offset by
 - Lower chemicals and materials cost of \$0.9 million (\$2.0 million for 2022-2023) following an assessment of pump station chemical treatment requirements.
- **Operations Support** - \$1.1 million greater than forecast (\$2.9 million greater for 2022-2023), primarily due to higher staff costs of \$1.5 million (\$3.4 million for 2022-2023) related to staff transfers following the functional reorganization. These costs were partially offset by higher capitalization of staff costs of \$0.3 million (\$0.6 million for 2022-2023).
- **Flow Control** - \$4.1 million lower than forecast (\$6.4 million lower than forecast for 2022-2023), primarily due to:
 - Lower staff costs of \$3.1 million (\$4.4 million for 2022-2023) related to staff transfers following the functional reorganization; and

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- Lower backwater valve subsidy program costs of \$1.9 million (\$3.5 million for 2022-2023) due to lower than anticipated participation in this program as many homes inspected in the targeted high-risk areas already had backwater valves installed; partially offset by
- Higher materials and supplies costs for pumpstation rebuilds of \$0.5 million (\$0.6 million for 2022-2023) following a reassessment of capital projects.
- **Maintenance** - \$1.7 million greater than forecast (\$0.7 million lower than forecast for 2022-2023), primarily due to higher contractor costs of \$1.8 million (\$0.6 million for 2022-2023) for trunk cleaning inspections and ditch and swale maintenance.
- **Construction** - \$0.8 million greater than forecast for 2023 (\$2.4 million greater for 2022-2023), primarily due to:
 - Higher staff costs primarily due to lower than forecast time charged to capital of \$3.7 million (\$5.2 million for 2022-2023);
 - Higher contractor costs primarily due to line locates and damage costs of \$2.0 million (\$3.4 million for 2022-2023); and
 - Higher net fleet and equipment charges of \$0.2 million (\$1.0 million for 2022-2023); partially offset by
 - Lower than forecast staff costs of \$5.0 million (\$6.6 million for 2022-2023), due to the reallocation of resources and costs to other areas, as well as general attrition and retirements.
- **Capital Overhead** - \$2.3 million higher than forecast transfer of overhead charges to capital for 2023 (\$4.3 million greater for 2022-2023).
- **Integrated Operations** - \$3.0 million greater than forecast for 2023 (\$3.7 million greater for 2022-2023), primarily due to:
 - Higher than forecast costs associated with the Aurum facility of \$3.7 million, including moving costs, facility maintenance, utilities, rent and storage; partially offset by
 - Lower than forecast costs of \$1.9 million associated with the One Water Planning function, which are now allocated to Water Services and Wastewater Treatment as part of the functional reorganization.
 - The remainder of the forecast to actual variance results from the transfers of functions, costs and resources from Core Operations as part of the functional reorganization.
- **Billing and meter services** - \$0.9 million greater than forecast for 2023 (\$1.9 million greater for 2022-2023), primarily due to higher than forecast provisions for bad debts due to economic condition and higher customer billing and collection charges.
- **EWS Shared Services** - \$0.9 million greater than forecast for 2023 (\$2.7 million greater for 2022-2023), primarily due to:
 - Higher incentive compensation of \$2.0 million in 2023 (\$2.6 million for 2022-2023); partially offset by

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- Lower staff costs net of the vacancy factor of \$1.1 million in 2023 (\$0.3 million for 2022-2023)
- **Corporate Shared Services** – \$2.0 million greater than forecast for 2023 (\$4.7 million greater for 2022-2023) primarily resulting from higher salary costs incurred by the corporate groups due to higher than forecast inflation.
- **Franchise Fees and Property Taxes** - \$0.9 million greater than forecast for 2023 (\$1.5 million greater for 2022-2023) due to higher franchise fees resulting from higher billed revenue.

2.3.4 Operating Expenses by Cost Category

Table 2.3.4-1 below provides a breakdown of operating expenses by cost category. Explanations for forecast to actual differences are provided in section 2.3.3.

Table 2.3.4-1
Wastewater Collection
Operating Expenses by Cost Category
(\$ millions)

| Cost Category | A | B | C | D |
|---|--------------|--------------|--------------|--------------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| Core Operations | | | | |
| 1 Staff Costs and Employee Benefits Expense | 35.1 | 29.1 | 70.4 | 62.0 |
| 2 Contractor and Consultant Charges | 5.2 | 11.3 | 15.8 | 21.3 |
| 3 Other Raw Materials and Operating Charges | (0.7) | 0.3 | (1.5) | 2.7 |
| 4 Other Administrative Expenses | 2.4 | 0.9 | 4.8 | 1.7 |
| 5 Core Operations | 42.0 | 41.6 | 89.5 | 87.6 |
| 6 Integrated Operations Allocation | 16.5 | 19.3 | 33.1 | 36.5 |
| 7 Customer Billing and Meter Services Charges | 7.7 | 8.6 | 15.4 | 17.3 |
| 8 EWS Shared Services Allocation | 22.8 | 23.7 | 45.4 | 48.1 |
| 9 Corporate Shared Services Allocation | 16.6 | 18.6 | 32.9 | 37.6 |
| 10 Franchise fees and property taxes | 12.1 | 13.0 | 23.9 | 25.4 |
| 11 Operating Expenses | 117.8 | 124.8 | 240.2 | 252.5 |

2.3.5 Capital Expenditures by Major Project and Category

Table 2.3.5-1 provides a comparison of forecast to actual capital expenditures for 2023 and PBR forecast to EWS' current projection for each project or program with capital expenditures in excess of \$10.0 million over the 2022-2024 term.

**Table 2.3.5-1
Wastewater Collection
Capital Expenditures and Contributions
(\$ millions)**

| | | A | B | C | D | E | F | |
|----------------------------|---|--------------|--------|----------|--------------|------------|----------|------|
| Major Category and Project | | 2023 | | | 2022-2024 | | | Note |
| | | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | |
| 1 | Drainage Neighbourhood Renewal Program | 21.3 | 12.5 | (8.8) | 76.5 | 52.8 | (23.7) | 1 |
| | Drainage System Expansion | | | | | | | |
| 2 | Private Development Construction Coordination | 3.8 | 4.5 | 0.8 | 11.6 | 13.6 | 2.0 | |
| 3 | Service Connections Program | 5.9 | 6.5 | 0.6 | 18.5 | 25.6 | 7.1 | |
| 4 | Projects < \$10 million | 10.1 | 9.7 | (0.5) | 27.5 | 21.8 | (5.7) | |
| 5 | Sub-total | 19.8 | 20.7 | 0.9 | 57.6 | 61.0 | 3.4 | |
| | Drainage System Rehabilitation | | | | | | | |
| 6 | Proactive Service Renewal | 5.0 | 2.6 | (2.4) | 10.3 | 8.1 | (2.2) | |
| 7 | Drill Drop Manholes Program | 4.3 | 6.6 | 2.3 | 13.1 | 22.0 | 8.9 | |
| 8 | Pump Station Rehabilitation Program | 3.9 | 3.4 | (0.4) | 15.5 | 22.8 | 7.3 | |
| 9 | Fleet & Vehicles Program | 4.5 | 4.3 | (0.2) | 13.2 | 14.2 | 1.0 | |
| 10 | Small Trunk Rehabilitation Program | 5.3 | 2.5 | (2.8) | 18.8 | 16.1 | (2.7) | |
| 11 | High Priority Replacement Program | 17.4 | 24.6 | 7.2 | 52.1 | 57.8 | 5.7 | |
| 12 | Outfall Rehabilitation | 2.8 | 7.5 | 4.7 | 8.2 | 18.2 | 10.0 | 2 |
| 13 | Local Sewer Rehabilitation | 1.6 | 1.8 | 0.3 | 5.4 | 10.7 | 5.3 | |
| 14 | Arterial Roadway | 2.3 | 3.6 | 1.3 | 8.6 | 10.7 | 2.1 | |
| 15 | Projects < \$10 million | 4.4 | 12.0 | 7.6 | 20.8 | 26.5 | 5.7 | |
| 16 | Sub-total | 51.4 | 68.9 | 17.5 | 166.0 | 207.1 | 41.1 | 3 |
| | Flood Mitigation | | | | | | | |
| 17 | Dry Pond Program | 22.7 | 8.9 | (13.8) | 46.3 | 25.4 | (20.9) | 4 |
| 18 | Projects < \$10 million | - | 0.0 | 0.0 | 1.4 | 0.5 | (0.9) | |
| 19 | Sub-total | 22.7 | 8.9 | (13.8) | 47.7 | 25.9 | (21.8) | |
| 20 | Real Estate | - | 4.6 | 4.6 | - | 25.2 | 25.2 | 5 |
| | SIRP | | | | | | | |
| 21 | Dry Pond Program | 23.9 | 3.4 | (20.5) | 81.5 | 60.8 | (20.7) | 6 |

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| | | A | B | C | D | E | F | |
|----------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|------|
| Major Category and Project | | 2023 | | | 2022-2024 | | | Note |
| | | PBR Forecast | Actual | Variance | PBR Forecast | Projection | Variance | |
| 22 | Low Impact Development (LID) Program | 15.7 | 19.4 | 3.7 | 53.1 | 55.0 | 1.9 | |
| 23 | Proactive Manhole Relining Program | 6.2 | 6.1 | (0.1) | 18.7 | 15.6 | (3.1) | |
| 24 | Proactive Pipe Relining Program | 7.6 | 4.7 | (2.9) | 22.9 | 19.8 | (3.1) | |
| 25 | Projects < \$10 million | 18.3 | 10.6 | (7.7) | 57.2 | 45.9 | (11.3) | 7 |
| 26 | Sub-total | 71.8 | 44.3 | (27.5) | 233.3 | 197.1 | (36.2) | |
| SSSF | | | | | | | | |
| 27 | SW5 | 9.1 | (0.4) | (9.5) | 32.8 | - | (32.8) | 8 |
| 28 | Projects < \$10 million | 0.2 | 3.4 | 3.2 | 5.8 | 11.7 | 5.9 | |
| 29 | Sub-total | 9.3 | 3.0 | (6.3) | 38.6 | 11.7 | (26.9) | |
| CORE | | | | | | | | |
| 30 | Large Trunk Renewal Program | 32.7 | 27.7 | (5.0) | 79.0 | 81.7 | 2.7 | |
| 31 | CORe Duggan Tunnel Project | 19.2 | 30.2 | 11.0 | 56.3 | 68.1 | 11.8 | 9 |
| 32 | CORe Drop Structure Modification Program | 8.9 | 9.5 | 0.5 | 22.0 | 21.4 | (0.6) | |
| 33 | CORe Access Manhole Program | 5.0 | 9.0 | 4.0 | 17.9 | 22.4 | 4.5 | |
| 34 | Projects < \$10 million | 2.7 | 0.0 | (2.6) | 5.3 | 4.5 | (0.8) | |
| 35 | Sub-total | 68.4 | 76.3 | 7.9 | 180.4 | 198.1 | 17.7 | 9 |
| 36 | LRT Relocates Program | 12.9 | 16.5 | 3.6 | 48.5 | 58.6 | 10.1 | 10 |
| 37 | Capital Expenditures | 277.6 | 255.8 | (21.8) | 848.7 | 837.5 | (11.2) | |
| Contributions | | | | | | | | |
| Drainage System Expansion | | | | | | | | |
| 38 | Service Connections Program | (5.9) | (2.5) | 3.5 | (18.5) | (18.7) | (0.2) | |
| 39 | Private Development Construction Coordination | - | (0.9) | (0.9) | (0.3) | (1.0) | (0.7) | |
| 40 | Projects < \$10 million | - | - | - | - | - | - | |
| 41 | Sub-total | (5.9) | (3.4) | 2.5 | (18.8) | (19.7) | (0.9) | |
| Flood Mitigation | | | | | | | | |
| 42 | Dry Pond Program | (6.5) | (4.4) | 2.1 | (13.6) | (6.9) | 6.7 | 4 |
| SIRP | | | | | | | | |
| 43 | Dry Pond Program | (5.8) | (1.3) | 4.5 | (21.0) | (17.0) | 4.0 | 6 |
| 44 | Projects < \$10 million | (3.2) | (0.7) | 2.5 | (6.7) | (1.5) | 5.2 | 7 |
| 45 | Sub-total | (9.0) | (2.0) | 7.0 | (27.8) | (18.5) | 9.3 | |
| SSSF | | | | | | | | |
| 46 | SW5 | (9.1) | 0.4 | 9.5 | (32.8) | - | 32.8 | 8 |
| 47 | Projects < \$10 million | 1.3 | (1.8) | (3.1) | (1.3) | (8.3) | (7.0) | |
| 48 | Sub-total | (7.8) | (1.4) | 6.4 | (34.1) | (8.3) | 25.8 | |
| 49 | Contributions | (29.2) | (11.1) | 18.1 | (94.3) | (53.4) | 40.9 | |
| 50 | Capital Expenditures, net of Contributions | 248.4 | 244.7 | (3.7) | 754.3 | 784.1 | 29.8 | |

In 2023, capital expenditures, net of contributions were \$3.7 million lower than forecast. Since weather-related delays, scope and design changes, supply chain disruptions and other factors can affect capital expenditures in any single year of the PBR term, capital expenditures are more appropriately assessed over the entire 2022-2024 PBR term. Over the 2022-2024 PBR term, capital expenditures are projected to be \$29.8 million greater than the PBR forecast. Explanations for projects and programs with projected costs that are \$10.0 million greater or lower than the PBR forecast are provided below:

1. **Drainage neighbourhood renewal** - \$23.7 million lower than PBR forecast due to neighbourhood inspections showing fewer replacements required than anticipated. A risk-based approach is used to plan and complete neighbourhood renewal and local sewer rehabilitation work. The Drainage neighbourhood renewal program was also expanded to include renewal of higher risk local sewer mains in locations without planned neighbourhood renewal. This program is being combined with the Local Sewer Rehabilitation Program and consists of several annual programs focusing on the renewal and replacement of aging local sanitary, storm and combined sewers around the city of Edmonton, see note 3 below.
2. **Outfall rehabilitation** - \$10.0 million greater than PBR forecast, following implementation of an updated risk ranking approach prioritizing outfall remediation work and revised design requirements.
3. **Drainage System Rehabilitation** - \$41.1 million greater than PBR forecast primarily due to following programs:
 - **Drill Drop Manholes Program** - \$8.9 million greater than forecast due to supply chain delays and utility conflicts requiring scope adjustments during construction.
 - **Pump Station Rehabilitation Program** - \$7.3 million greater than forecast due to supply chain delays and utility conflicts requiring scope adjustments during construction.
 - **High Priority Replacement Program** - \$5.7 million greater than PBR forecast due to the need to rehabilitate certain locations earlier than anticipated based on ongoing condition assessment.
 - **Lower Sewer Rehabilitation** - \$5.3 million greater than PBR forecast. The condition assessment of an aging combined sewer through Mill Creek Ravine indicated deterioration of the sewer pipe and no structural capacity remaining within the pipe. It was determined that there could be imminent release of raw sewage into Mill Creek Ravine if the pipe failed, requiring urgent attention.

4. **Dry pond program** - \$20.9 million lower than forecast due to both lower than expected bids from contractors and efficiencies in project delivery for the Malcolm Tweddle dry pond. These savings are partially offset by a \$6.7 million decrease in grant funding due to the reallocation of grants to other projects.
5. **Real estate (Water/Drainage Shared Facility)** - \$25.2 million greater than forecast. This project was expected to be completed during the 2017-2021 PBR term but was delayed due to changes in scope and the need to address higher than expected construction bid costs. This project, now known as the Water/Drainage Shared Facility (Aurum facility), was completed in December 2022.
6. **SIRP dry pond program** - \$20.7 million lower than forecast. Longer-than-anticipated timeframes for land assembly involving the City of Edmonton, school boards, and public consultation are expected to push expenditures to future PBR terms. Lower capital spending in the 2022-2024 PBR term is partially offset by a \$4.0 million decrease in timing for grant contributions.
7. **SIRP projects < \$10 million** - \$11.3 million lower than forecast, due to design delays for the Outfall and Automatic Gates Program that shifts construction expenditures into future PBR terms, and lower-than-anticipated requirement to reconfigure EPCOR infrastructure to match with private side reconfigurations identified through the flood inspection programs. Lower capital spending in the 2022-2024 PBR term is partially offset by a \$5.2 million decrease in the timing of contributions from grants for the outfall work that align with the construction expenditure.
8. **Sanitary Servicing Strategy Fund (SSSF) - SW5** - \$32.8 million lower than forecast. This fully contributed project has been cancelled in response to updated capacity and demand forecasts and design standard modernization showing that the existing infrastructure is sufficient to meet anticipated customer demand in southwest Edmonton.
9. **Corrosion and Odour Reduction (CORe) program** - \$17.7 million greater than forecast primarily due to accelerated timing for construction activities on the Duggan Tunnel project and a new project to rehabilitate deteriorated trunk sections related to the North Edmonton Sanitary Trunk (NEST) Large Trunk in north Edmonton in the current PBR term, and unexpected poor ground conditions at Access Manhole Program locations adjacent to Mill Creek requiring scope and construction methodology changes, resulting in cost increases.
10. **LRT Relocates Program** - \$10.1 million greater than forecast. The PBR forecast was approved before the final approval and funding for the Metro/Capital Line LRT was secured. The City's approved track alignments require EWS to complete more infrastructure relocations than anticipated in the PBR forecast.

2.3.6 Construction Work in Progress

Wastewater Collection's rate base consists of plant in service. If a capital project is not completed during the year, the capital expenditures on that project remain under Construction Work in Progress and are excluded from the rate base. In 2023, as shown in Table 2.3.6-1, the balance in Construction Work in Progress (line 12) was \$14.9 million lower than forecast.

Table 2.3.6-1
Wastewater Collection
Construction Work in Progress
(\$ millions)

| | A | B |
|---|-------------------------|---------------|
| | 2023 | |
| | PBR Forecast | Actual |
| 1 Construction work in progress, beginning of year | 53.6 | 85.5 |
| Capital expenditures | | |
| 2 Capital expenditures before contributions | 277.6 | 255.8 |
| 3 Contributions received | (29.2) | (11.1) |
| 4 Capital expenditures, net of contributions received | 248.4 | 244.7 |
| Capital additions | | |
| 5 EPCOR-constructed assets | (210.3) | (252.1) |
| 6 Developer-constructed assets | (127.6) | (126.1) |
| 7 Total capital additions | (337.9) | (378.1) |
| Contributions | | |
| 8 Contributions recognized | 14.8 | 13.5 |
| 9 Developer-constructed assets | 127.6 | 126.1 |
| 10 Total contributions | 142.3 | 139.6 |
| 11 Capital additions, net of contributions | (195.6) | (238.5) |
| 12 Construction work in progress, end of year | 106.5 | 91.6 |

The 2022-2024 PBR plan allows EWS to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an Allowance for Funds Utilized During Construction (AFUDC). In 2023, EWS capitalized \$8.2 million of AFUDC, compared to the PBR forecast amount of \$7.1 million.

2.3.7 Depreciation and Amortization

Depreciation expense and amortization of contributions are shown in Table 2.3.7-1 below:

Table 2.3.7-1
Wastewater Collection
Depreciation and Amortization
(\$ millions)

| | A | B | C | D |
|---------------------------------|--------------|--------|--------------|--------|
| | 2023 | | 2022-2023 | |
| | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 Gross depreciation provision | 94.6 | 90.9 | 182.8 | 177.2 |
| 2 Amortization of contributions | (48.5) | (49.0) | (94.8) | (95.6) |
| 3 Depreciation, expense | 46.1 | 41.9 | 88.1 | 81.6 |
| 4 Gains, losses and adjustments | | 0.1 | - | 0.1 |
| 5 Depreciation and Amortization | 46.1 | 42.0 | 88.1 | 81.7 |

Depreciation expense and amortization of contributions in 2023 were \$4.1 million lower than forecast (\$6.4 million lower than forecast for 2022-2023) due to lower than forecast opening asset balances as shown in Table 2.3.8-1.

2.3.8 Rate Base

In 2023, Wastewater Collection's rate base, shown in Table 2.3.8-1 below, was \$29.6 million lower than forecast due to lower than forecast opening asset values and lower than forecast working capital. The differences in the rate base are expected to reduce over the remainder of the PBR term as projects currently in progress are completed. Lower than forecast working capital is almost entirely due to the inclusion of the mid-year balance of the consumption deferral account in the calculation of required working capital.

Table 2.3.8-1
Wastewater Collection
Mid-Year Rate Base
(\$ millions)

| | A | B |
|---|--------------|---------|
| | 2023 | |
| Description | PBR Forecast | Actual |
| 1 Plant in Service, beginning of year | 6,168.8 | 6,093.4 |
| Capital additions | | |
| 2 EPCOR-funded | 210.3 | 252.1 |
| 3 Developer-funded | 127.6 | 126.1 |
| 4 Capital additions | 337.9 | 378.1 |
| 5 Retirements and adjustments | (11.0) | (18.4) |
| 6 Plant in Service, end of year | 6,495.7 | 6,453.1 |
| 7 Accumulated depreciation, beginning of year | 1,182.8 | 1,175.2 |

| | A | B |
|--|------------------|------------------|
| | 2023 | |
| Description | PBR Forecast | Actual |
| 8 Gross Provision | 94.6 | 90.9 |
| 9 Retirements and adjustments | (11.0) | (17.5) |
| 10 Accumulated depreciation, end of year | 1,266.4 | 1,248.7 |
| 11 Mid-Year Net Property | 5,107.6 | 5,061.3 |
| Other Rate Base Items | | |
| 12 Materials and Supplies | 1.3 | 1.5 |
| 13 Working Capital | 16.1 | 1.3 |
| 14 Gross Mid-Year Rate Base | 5,125.0 | 5,064.2 |
| 15 Contributions, beginning of year | (3,816.6) | (3,788.3) |
| Current year contributions | | |
| 16 Developer-constructed assets | (14.8) | (13.5) |
| 17 Contributions in aid of construction | (127.6) | (126.1) |
| 18 Current year contributions | (142.3) | (139.6) |
| 19 Retirements and adjustments | - | (2.2) |
| 20 Contributions, end of year | (3,958.9) | (3,930.1) |
| 21 Accumulated amortization, beginning of year | 668.3 | 670.7 |
| 22 Amortization of contributions | 48.5 | 49.0 |
| 23 Retirements and adjustments | - | (0.1) |
| 24 Accumulated amortization, end of year | 716.8 | 719.6 |
| 25 Mid-Year Net Contributions | (3,195.2) | (3,164.0) |
| 26 Mid-Year Rate Base | 1,929.8 | 1,900.2 |
| Allocated to: | | |
| 27 Sanitary Utility, excluding CORE | 840.9 | 851.3 |
| 28 Stormwater Utility, excluding SIRP | 813.1 | 842.7 |
| 29 SIRP | 141.1 | 103.1 |
| 30 CORE | 134.8 | 103.1 |
| 31 Mid-Year Rate Base | 1,929.8 | 1,900.2 |

2.3.9 Return on Rate Base

In the 2022-2024 PBR plan, Wastewater Collection's rate base is deemed to be financed by a ratio of 60% debt and 40% equity. In the PBR plan, return on the debt-financed portion of the rate base is calculated at EWS' forecast average cost of debt, with return on the equity-financed portion calculated at EWS' approved rate of return on equity of 9.95% on the rate base allocated to SIRP and CORE and a "ramped up" return on equity on the remaining portion of the rate base. To provide for stable, predictable rate increases, as part of Wastewater Collection's rate design, the special rate adjustment has been "smoothed" over the PBR term. Therefore, although rates are designed to provide EWS with the opportunity to earn its approved ROE over the 2022-2024 PBR term, forecast rates of return for individual years of the PBR term will differ from the awarded ROE.

Table 2.3.9-1 provides a comparison of Wastewater Collection's PBR forecast and actual return on rate base for 2023.

**Table 2.3.9-1
Wastewater Collection
Return on Mid-Year Rate Base**

| | A | B | C | D |
|--|-----------------|--------------|-----------------|--------------|
| | 2023 | | 2022-2023 | |
| Description | PBR Forecast | Actual | PBR Forecast | Actual |
| Mid-year Rate Base | | | | |
| 1 Sanitary utility, excluding CORE | 840.9 | 851.3 | | |
| 2 Sanitary utility, CORE | 134.8 | 103.1 | | |
| 3 Stormwater utility, excluding SIRP | 813.1 | 842.7 | | |
| 4 Stormwater utility, SIRP | 141.1 | 103.1 | | |
| 5 Mid-year Rate Base | 1,929.8 | 1,900.2 | | |
| Deemed Capital Structure | | | | |
| 6 Debt | 60.00% | 60.00% | | |
| 7 Equity | 40.00% | 40.00% | | |
| Cost of Capital | | | | |
| 8 Debt | 3.14% | 3.69% | | |
| 9 Equity - excluding SIRP & CORE | 6.61% | 6.61% | | |
| 10 Equity - SIRP & CORE | 9.95% | 9.95% | | |
| Return on rate base financed by debt | | | | |
| 11 Sanitary | 18.4 | 21.1 | 36.3 | 38.3 |
| 12 Stormwater | 18.0 | 20.9 | 34.5 | 38.4 |
| 13 Return on rate base financed by debt | 36.3 | 42.1 | 70.8 | 76.7 |
| Return on rate base financed by equity | | | | |
| 14 Sanitary | 27.6 | 26.6 | 49.2 | 46.1 |
| 15 Stormwater | 27.1 | 26.4 | 46.5 | 45.6 |
| 16 Combined return on equity | 54.7 | 53.0 | 95.8 | 91.8 |
| 17 Revenue greater (less) than revenue requirement | 1.9 | (2.7) | 4.6 | 0.2 |
| 18 Achieved return on rate base financed by equity | 56.6 | 50.3 | 100.4 | 92.0 |
| 19 Achieved rate of return on equity | 7.33% | 6.62% | 6.85% | 6.41% |

In 2023, EWS achieved an ROE of 6.62% (6.41% for 2022-2023), compared to PBR forecast ROE of 7.33% (6.85% for 2022-2023). Lower than forecast rates of return reflect operating cost increases that exceeded increases in revenue, and reflect higher interest expense discussed below.

The return on the debt-financed portion of the rate base (i.e. regulated interest expense) was \$5.8 million greater than forecast in 2023 (\$5.9 million greater for 2022-2023), as the actual average cost of debt (see Table 2.3.9-2) was 0.55% greater than forecast due to higher borrowing costs and new debt issues. The cost of debt was higher in 2023 due to higher than forecast interest rates on new debt issues related to the Bank of Canada's rate hikes during 2022 and 2023. Under the PBR Plan, EWS bears interest rate risk and therefore, higher than forecast debt costs are not borne by ratepayers.

Table 2.3.9-2
Wastewater Collection
Interest Expense and Cost of Debt
(\$ millions)

| | | A | B |
|-----------------------------------|-----------------------------|--------------|---------|
| | | 2023 | |
| Interest Expense and Cost of Debt | | PBR Forecast | Actual |
| Interest expense | | | |
| 1 | Interest on long-term debt | 36.4 | 37.9 |
| 2 | Interest on short-term debt | 0.9 | 4.0 |
| 3 | Total interest expense | 37.3 | 41.9 |
| Mid-year debt | | | |
| 4 | Mid-year long-term debt | 1,151.2 | 1,131.2 |
| 5 | Mid-year short-term debt | 37.3 | 3.6 |
| 6 | Mid-year debt | 1,188.5 | 1,134.7 |
| 7 | Average cost of debt | 3.14% | 3.69% |

2.3.10 Transactions with Affiliates

Wastewater Collection derives a portion of its revenue and expenses from transactions with EUI and its subsidiaries. Table 2.3.10-1 provides a summary of Wastewater Collection's 2023 forecast and actual transactions with its affiliates.

Table 2.3.10-1
Wastewater Collection
Transactions with Affiliates
(\$ millions)

| | | A | B | C | D |
|-----------------------|--|--------------|-------------|--------------|--------------|
| | | 2023 | | 2022-2023 | |
| Affiliate and Service | | PBR Forecast | Actual | PBR Forecast | Actual |
| 1 | EPCOR Utilities Inc. | | | | |
| 2 | Corporate Shared Service Costs | 16.6 | 18.6 | 32.9 | 37.6 |
| 3 | Interest on Intercompany Loans | 36.4 | 37.9 | 71.8 | 73.0 |
| 4 | Interest on Short-term debt | 0.9 | 4.0 | 1.8 | 5.0 |
| 5 | Total | 53.9 | 60.5 | 106.4 | 115.6 |
| 6 | Other EPCOR Affiliates | | | | |
| 7 | EPCOR Technologies Inc. | (0.2) | 0.3 | (0.4) | 0.5 |
| 8 | EPCOR Commercial Services Inc. | 0.3 | (0.0) | 0.6 | (0.1) |
| 9 | EPCOR Distribution and Transmission Inc. | 0.1 | (0.2) | 0.2 | (0.3) |
| 10 | EPCOR Energy Alberta LP | 4.3 | 5.8 | 8.5 | 10.7 |
| 11 | EPCOR Corporate Services - Other Charges | - | 2.9 | - | 6.5 |
| 12 | EPCOR Fleet Services | - | 4.7 | - | 7.6 |
| 13 | Total | 4.5 | 13.4 | 8.9 | 24.8 |

3 Operational Performance

3.1 Water Services

Table 3.1-1 summarizes the 2023 operational performance for Water Services:

**Table 3.1-1
Water Services 2023 Operational Performance**

| Index and Performance Measure | Benchmark | Performance | | Base Points | Points Earned | Maximum Bonus Points | Total Points Earned |
|---|---------------------------------|-------------|--------|--------------|---------------|----------------------|---------------------|
| | | Target | Actual | | | | |
| 1.0 Water Quality Index | Non-suspect test results | 99.7% | 99.6% | 30.0 | 29.97 | - | 29.97 |
| 2.0 Customer Service Index | | | | | | | |
| 2.1 Post Service Audit Measure | % satisfied | 75.0% | 91.4% | | 4.57 | | |
| 2.2 Home Sniffing Measure | % satisfaction | 94.4% | 95.3% | | 3.79 | | |
| 2.3 Response Time Measure | min to confirm breaks | 25.0 | 15.9 | | 5.11 | | |
| 2.4 Planned Construction Impact Measure | % compliance | 95.8% | 99.1% | | 3.88 | | |
| 2.0 Customer Service Index | | | | 15.0 | 17.35 | 2.25 | 17.25 |
| 3.0 System Reliability & Optimization Index | | | | | | | |
| 3.1 Water Main Break Measure | # of breaks | 365 | 265 | | 7.96 | | |
| 3.2 Repair Duration Measure | % fixed within 24 hrs | 95.4% | 96.8% | | 6.34 | | |
| 3.3 Water Loss Measure | leakage index (ILI) | 1.23 | 1.20 | | 6.40 | | |
| 3.4 System Energy Efficiency Measure | kWh / ML treated | 281 | 238 | | 7.39 | | |
| 3.0 System Reliability & Optimization Index | | | | 25.0 | 28.09 | 3.25 | 28.09 |
| 4.0 Environmental Index | | | | | | | |
| 4.1 Water Conservation (Residential) Measure | m ³ /month/household | 16.8 | 14.7 | | 5.73 | | |
| 4.2 Environmental Incident Management Measure | # of incidents | 5 | 2 | | 12.50 | | |
| 4.3 Solids Residual Management Measure | # days | 120 | 149 | | 6.19 | | |
| 4.0 Environmental Index | | | | 15.0 | 24.41 | 2.25 | 17.25 |
| 5.0 Safety Index | | | | | | | |
| 5.1 Near Miss Reporting Measure | # completed | 550 | 659 | | 4.49 | | |
| 5.2 Work Site Inspections/Observations Measure | # conducted | 1,032 | 3,650 | | 13.26 | | |
| 5.3 Lost Time Frequency Rate | frequency rate | 0.40 | 0.00 | | 7.50 | | |
| 5.4 All Injury Frequency Rate | frequency rate | 1.00 | 0.42 | | 8.87 | | |
| 5.0 Safety Index | | | | 15.0 | 34.13 | 2.25 | 17.25 |
| Aggregate Points Earned (sum of all the above indices) | | | | 100.0 | 133.95 | 10.00 | 109.8 |
| Points Required at Performance Standard | | | | | | | 100.0 |
| Points Above / (Below) Performance Standard | | | | | | | 9.8 |

Water Services quality is measured by the results of five indices shown in Table 3.1-1 above. Performance under each index is measured independently on a point basis with 100 base points available if the standards in all five areas are achieved. In total, up to 10 additional bonus points for performance above the standard are available. In 2023, Water Services exceeded performance standards on four out of five indices and earned a total of 9.8 bonus points. Highlights and improvement opportunities for each index are provided below.

3.1.1 Water Quality Index

The water quality index measures the overall quality of water that is delivered to the customer and provides reassurance that water quality consistently meets or exceeds the federal and provincial water quality standards. This index consists of a single performance measure:

- **Water Quality Measure** (actual 99.6% vs standard 99.7%), is calculated as the percentage of water quality test results that meet or exceed all regulatory requirements and EWS' stricter water standards. Both Health Canada guidelines and provincial water quality standards set by Alberta Environment and Protected Areas (AEPA) are incorporated into EWS' Approval to Operate. EWS' water standards have stricter limits for critical parameters to provide early warnings of potential water quality problems.
- In 2023 EWS collected and tested 54,987 samples of treated drinking water from various locations. All but 4 water quality test results met the regulatory requirements. The four tests that did not meet the requirements related to a single location which was found to have no water quality issues. There were 217 samples (0.39%) that did not meet EWS' internal water quality standards. Approximately 30% of these were related to EWS raising the chlorine dosing at the water treatment plants temporarily to support some water quality challenges experienced by a Regional customer.
- In 2024, EWS plans to review its bacteriological water quality sampling practices and methodologies to better harmonize practices across the business unit as well as continuing to develop knowledge and expertise of staff who are collecting water quality samples.

3.1.2 Customer Service Index

The customer service index is a measure of customers' perception and satisfaction with EWS' service, the aesthetic quality of water, and speed of response to customer issues. This index includes the following performance measures:

- **Post Service Audit Measure** (actual 91.4% vs standard 75.0%), is calculated as the percentage of customers who respond by survey indicating they are satisfied with the

level of service received from the EWS Emergency group. Results remained strong throughout 2023. In particular, EWS received very favourable results related to knowledgeability and courteousness.

- **Home Sniffing Measure** (actual 95.3% vs standard 94.4%), is calculated as the percentage of participants in the home sniffing survey responding “completely” or “very satisfied.” A very mild spring runoff season in 2023 resulted in few concerns related to taste and odour. In 2023, the Home Sniffing program was rebranded as the Spring Home Analysis Runoff Program (SHARP). Guidelines were updated to improve representation from all areas of the city.
- **Response Time Measure** (actual 15.9 minutes vs standard 25 minutes), is calculated as the average number of minutes needed to confirm a water main break from the time a call is received at EWS’ dispatch office. Although EWS exceeded the standard in 2023, relocation of resources to the Aurum service centre on the east side of the city resulted in some response times increasing between 25-30 minutes. In response, a centrally located response centre was added at the Rosssdale Water Treatment plant for events happening at night or on weekends.
- **Planned Construction Impact Measure** (actual 99.1% vs standard 95.8%), is calculated as the percentage of the total planned construction events where EWS provides a minimum of five days’ advanced notice of large-scale planned construction projects and ensures construction is completed within the timeframe noted in the notification letter. In 2023, performance exceeded the PBR standard as a result of refining routine process, ongoing training and focusing on communication.

3.1.3 System Reliability and Optimization Index

The System Reliability Index is a measure of customer confidence in the reliability of the waterworks system. This index includes the following performance measures:

- **Water Main Break Measure** (actual 265 main breaks vs standard 365) is calculated as the frequency of unplanned interruptions caused by water main breaks that occurred in the year. Overall, the number of main breaks continued to trend downwards in 2023 with seasonal fluctuations related to weather and demand patterns.
- **Water Main Break Repair Duration Measure** (actual 96.8% vs standard 95.4%) is calculated as the percentage of time that water main breaks were repaired within 24 hours from the time that the flow of water is shut off (i.e. the time of customer interruption). Main breaks on arterial or collector roads were excluded. EWS was able to continue responding efficiently following the relocation of its field operations to the Aurum facility, ensuring customers did not see impacts to overall repair durations.

- **Water Loss Measure** (actual 1.20 vs standard 1.23) is calculated using the Infrastructure Leakage Index (ILI), an industry-standard performance indicator quantifying how well a water distribution system is managed for the control of water losses. Edmonton has low water losses relative to other municipalities as indicated in a 2022 American Water Works Association Utility Benchmarking survey which reported a median ILI of 2.0 for municipalities that completed the survey.
- **System Energy Efficiency Measure** (actual 238 kWh/ML vs standard 281 kWh/ML) is calculated as the energy used at all water facilities in kWh per 100,000 customer accounts. In 2023, EWS exceeded the energy efficiency target by implementing several energy efficiency improvements, including completion of Water Treatment Plants climate action plan and mitigation strategies. Recommendations were developed that will be integrated into future capital project plans.

3.1.4 Environment Index

The environmental index measures the success of programs and policies designed to mitigate and report adverse environmental impacts. This index includes the following performance measures:

- **Water Conservation Measure** (actual 14.7 m³/customer vs standard 16.8 m³/customer) is calculated as the average monthly consumption per residential customer over the past 10 years. In 2023, increased work-from-home arrangements and warmer weather continued to impact residential consumption. In addition, ongoing improvements in water usage habits and technology, including the use of more efficient appliances and toilets, also contributed to the favourable result.
- **Environmental Incident Management Measure** (actual 2 vs standard 5) is calculated as the number of incidents reportable to municipal, provincial or federal regulators that were considered preventable. In 2023, there were two reportable events. The first was an administrative issue involving a main break when a follow-up seven-day letter to Alberta Environment and Protected Areas was missed. The second event was related to a failed bacteriological result (total coliform positive) that was reported to Alberta Environment and Protected Areas a week after the lab test result was known, which was not within the required notification timeline. In both cases, there were no water quality or environmental issues. EWS will review existing processes for notifying the Alberta Environment and Protected Areas to ensure timelines are adhered to.
- **Solids Residual Management Measure** (actual 149 vs standard 120) is calculated as the number of days that the water treatment plants operate in direct filtration mode. Direct filtration reduces the solids load of water returned to the North Saskatchewan River during water treatment. In 2023, by operating in direct filtration mode, solids discharged during

winter months were reduced by 53% relative to baseline conventional treatment. In addition, EWS implemented a new Wastestream Monitoring Program for quantifying residuals discharged to the river and their impacts, which is expected to help inform future residual management strategies.

3.1.5 Safety Index

The safety index is a measure of the success of programs and policies that maximize the safety of EWS employees and the public. The performance measures comprising this index include:

- **Near Miss Reporting Measure** (actual 659 vs standard 550) is calculated as the number of near miss and hazard identification reports completed each year. In 2023, EWS continued to promote a proactive safety approach with the Mind on Task initiative that started in 2022 to encourage personnel to focus on identifying hazards before an event occurs.
- **Work Site Inspections and Observations Measure** (actual 3,650 vs standard 1,032) is calculated as the number of Work Site Inspections and Observations completed each year. In 2023, the higher number of inspections and observations reflects a continued focus on proactive strategies to manage safety in the field and office.
- **Lost Time Injury Frequency Measure** (actual 0.00 vs standard 0.40) is calculated as the frequency of disability injuries and illnesses. The **All Injury Frequency Measure** (actual 0.42 vs standard 1.00) is calculated as the frequency of disability injuries and medical aid injuries. These factors were key measures for assessing the effectiveness of EPCOR's safety programs. In 2023, strategies based on causal methodologies were identified to reinforce a reduction and/or elimination of workplace injuries.

3.2 Wastewater Treatment Services

Table 3.2-1 summarizes Wastewater Treatment Services 2023 operational performance:

**Table 3.2-1
Wastewater Treatment Services 2023 Operational Performance**

| A | B | C | D | E | F | G | H | |
|---|--------------------|-------------|--------|-------------|---------------|----------------------|----------------------------------|--------------|
| Description | Benchmark | Performance | | Base Points | Points Earned | Maximum Bonus Points | Points with Maximum Bonus Points | |
| | | Standard | Actual | | | | | |
| 1.0 Water Quality & Environment Index | | | | | | | | |
| 1.1 Wastewater Quality Measure | WELP | 26.0 | 19.1 | | 30.6 | | | |
| 1.2 Environmental Incident Measure | # of incidents | 5 | 1 | | 112.5 | | | |
| 1.0 Water Quality & Environment Index | | | | 45.0 | 143.1 | 4.5 | 49.5 | |
| 2.0 Customer Service Index | | | | | | | | |
| 2.1 H ₂ S - 1-hour Exceedance Measure | exceedance std | 4 | 3.0 | | 6.7 | | | |
| 2.2 H ₂ S - 24-hour Exceedance Measure | exceedance std | 1 | 0.0 | | 10.0 | | | |
| 2.3 Scrubber Uptime Measure | % on-line | 96.0% | 98.8% | | 5.1 | | | |
| 2.0 Customer Service Index | | | | 15.0 | 21.8 | 1.5 | 16.5 | |
| 3.0 System Reliability and Optimization Index | | | | | | | | |
| 3.1 Enhanced Primary Treatment Measure | % in use | 94.0% | 100.0% | | 8.9 | | | |
| 3.2 Biosolids Inventory Reduction Measure | relative reduction | 1.05 | 0.91 | | 7.2 | | | |
| 3.3 Energy Efficiency Measure | kWh / ML treated | 508 | 495 | | 8.6 | | | |
| 3.0 System Reliability and Optimization Index | | | | 25.0 | 24.6 | 2.5 | 24.6 | |
| 4.0 Safety Index | | | | | | | | |
| 4.1 Near Miss Reporting Measure | # completed | 220 | 385 | | 6.6 | | | |
| 4.2 Work Site Inspection/Observation Measure | # conducted | 919 | 1,974 | | 8.1 | | | |
| 4.3 Lost Time Frequency Rate | frequency rate | 0.75 | 0.45 | | 6.2 | | | |
| 4.4 All Injury Frequency Rate | frequency rate | 1.00 | 1.81 | | 2.1 | | | |
| 4.0 Safety Index | | | | 15.0 | 22.9 | 1.5 | 16.5 | |
| Aggregate Points Earned (sum of all the above indices) | | | | | 100.0 | 212.4 | 10.0 | 107.1 |
| Points Required at Performance Standard | | | | | | | 100.0 | |
| Points Above / (Below) Performance Standard | | | | | | | 7.1 | |

Wastewater Treatment Services quality is measured by the results of four indices. Similar to Water Services, performance under each index is measured independently on a point basis with 100 base points available if the standards in all four areas are achieved. In total, up to 10 additional bonus points for performance above the standard are available. In 2023, Wastewater Treatment exceeded performance standards for on three out of the four indices, earning 7.1 bonus points. Highlights and opportunities for improvement for each index are provided below.

3.2.1 Wastewater Quality and Environmental Index

The Wastewater Quality and Environmental index measures the success of operational processes and procedures designed to manage the quality of effluent and adverse environmental impacts of effluent returned back to the North Saskatchewan River. The performance measures comprising this index include:

- **Wastewater Quality Measure** (actual 19.1 vs standard 26.0) is determined by the Wastewater Effluent Limit Performance (WELP), which is an aggregate measure of the percentage of discharge limits for five parameters in the Gold Bar Wastewater Treatment Plant's final effluent. In 2023, Wastewater achieved a record low WELP. Contributing factors included the continued use of "winter mode" during colder periods to control ammonia by increasing aeration in the bioreactors and through planning outages of secondary tanks for maintenance and capital upgrades, where possible, to limit down time.
- **Environmental Incident Measure** (actual 1 vs standard 5) is calculated as the actual number of environmental incidents that were both reportable to the municipal, provincial or federal regulator and that were considered preventable. In 2023 there was one reportable environmental incident. Scrubber 3, which controls H₂S releases from the fermenters operational area, failed to meet the required daily average Oxidation Reduction Potential (ORP) Approval requirement due to issues with bleach pumping. There were no odour complaints or air quality exceedances during the incident.

3.2.2 Customer Service Index

Wastewater Treatment's customer service index includes three equally weighted odour related measures, which recognize that Wastewater Treatment's customer interactions are primarily related to odour concerns from customers who live near to the Gold Bar Wastewater Treatment Plant. The performance measures comprising this index include:

- **H₂S – 1 Hour Exceedance Measure** (3.0 actual vs 4.0 standard), which is calculated as the number of exceedances of the 1-hour limit averaged between Strathcona Industrial

Association (SIA) air quality monitoring stations located at Gold Bar and Beverly and **H₂S – 24 Hour Exceedance Measure** (0.0 actual vs 1.0 standard) is calculated as the number of exceedances of the 24-hour limit averaged between Gold Bar and Beverly air quality monitoring stations. In 2023, there were six (average of three) 1-hour H₂S exceedances at the air quality monitoring stations that were attributed to the Gold Bar Wastewater Treatment Plant based on wind direction at the time of each event. There were no exceedances of the 24-hour objective. These exceedances occurred during normal plant operations. In 2024, the design work which started in 2023 for the odour control projects (Diversion Structure and Primary Clarifier 5-8 covers) will continue. These areas have been identified as likely sources of air quality exceedances from the plant, as other sources have gradually been reduced in the last few years. In addition, two additional scrubbers will be commissioned in 2024 that are expected to improve H₂S removal from other identified sources.

- **Scrubber Uptime Measure** (actual 98.8% vs standard 96.0%), is calculated as the percentage of the time that the odour control systems at the Gold Bar Wastewater Treatment Plant were operating. In 2023, the on-going preventative and corrective maintenance activities limited scrubber downtime. In 2024, two additional odour scrubbers will be brought online which will provide additional redundancy for existing scrubbers. In addition, an asset management plan for the odour control system and chemical storage tanks will be initiated.

3.2.3 System Reliability and Optimization Index

The system reliability and optimization index is a measure of the performance of the Gold Bar Wastewater Treatment Plant. The performance measures comprising this index include:

- **Enhanced Primary Treatment (EPT) Measure** (actual 100.0% vs standard 94.0%), is calculated as the percentage of time that the EPT facility ran during wet weather events when the influent flow rate exceeded the EPT event threshold. Preventative maintenance which started in 2022 continued in 2023 and the remaining two of the four EPT clarifiers were inspected and cleaned.
- **Biosolids Inventory Reduction Measure** (actual 0.91 vs standard 1.05), is a measure of the reduction in the biosolids inventory at the Clover Bar Biosolids Resource Recovery Facility. It is calculated as the three-year average of the total dry tonnes of biosolids removed from the basins relative to the total dry tonnes of biosolids deposited in the basins. Performance in 2023 was lower than target due to low solids content of the biosolids in the cells used for hauling. The existing dredge was inspected and deemed inoperable resulting in the lower inventory reduction. Efforts will continue in 2024 to explore improvements in settling of biosolids in the basins. In addition, EWS will be

procuring a new dredge to access the bottom of the deepest basin (Cell 5). This will improve the ability to transfer higher Total Suspended Solids (TSS) to the basins used for hauling and thereby improve biosolids reduction efforts.

- **Energy Efficiency Measure** (actual 495 kWh/ML vs standard 508 kWh/ML), is a measure of the energy consumed in the treatment of wastewater at the Gold Bar Wastewater Treatment Plant. It is calculated as the kWh of energy used divided by the volume of wastewater effluent that either receives ultraviolet (UV) treatment or is membrane plant effluent. Energy usage in 2023 was slightly lower than in 2022, but higher than in previous years due to higher plant flows which were due to increased wet weather.

3.2.4 Safety Index

The safety index is a measure of the success of programs and the application of policies that maximize the safety of employees and the public. The performance measures comprising this index include:

- **Near Miss Reporting Measure** (actual 385 vs standard 220), is calculated as the number of near miss and hazard identification reports completed each year. During 2023, internal promotion of near miss and hazard identification reporting was continued to demonstrate to employees the impact of site-specific reporting.
- **Work Site Inspections / Observations Measure** (actual 1,974 vs standard 919), is calculated as the number of Work Site Inspections and Observations completed each year. Higher than target results reflect EWS' continued emphasis to monitor and measure inspections and observations to ensure employee engagement related to health and safety.
- **Lost Time Injury Frequency Rate Measure** (actual 0.45 vs standard 0.75) is calculated as the frequency of disability injuries and illnesses and the **All Injury Frequency Measure** (actual 1.81 vs standard 1.00), is calculated as the frequency of disability injuries and medical aid injuries. These factors were key measures for assessing the effectiveness of safety programs. In 2023, following lost time events, EWS applied causal methodologies to perform root cause analysis in order to provide a basis for developing strategies to reduce future workplace injuries.

3.3 Wastewater Collection

Table 3.3-1 summarizes Wastewater Collection 2023 operational performance:

**Table 3.3-1
Wastewater Collection 2023 Operational Performance**

| A | B | C | D | E | F | G | H |
|---|-------------------|-------------|--------|--------------|---------------|----------------------|----------------------------------|
| Description | Benchmark | Performance | | Base Points | Points Earned | Maximum Bonus Points | Points with Maximum Bonus Points |
| | | Standard | Actual | | | | |
| 1.0 Environmental Index | | | | | | | |
| 1.1 Stormwater Flow and Flow Monitoring Measure | % area monitored | 63.0 | 70.0 | | 13.0 | | |
| 1.2 Environmental Incident Management Measure | % reportable | 50 | 15 | | 38.9 | | |
| 1.3 Green Hectares Measure | managed area | 90.0 | 94.7 | | 12.3 | | |
| 1.0 Environmental Index | | | | 35.0 | 64.1 | 3.5 | 38.5 |
| 2.0 Customer Service Index | | | | | | | |
| 2.1 Service Maintenance Calls Measure | % resolved in 24h | 80.0 | 94.4 | | 5.9 | | |
| 2.2 Emergency Dig-Ups – Service Restored Measure | % restored in 48h | 98.0 | 100.0 | | 5.1 | | |
| 2.3 Service Connections Measure | % within 6 weeks | 85.0 | 89.1 | | 5.2 | | |
| 2.4 Sewer Odour Hotspots Measure | % city area | 14.5 | 4.7 | | 15.4 | | |
| 2.0 Customer Service Index | | | | 20.0 | 31.7 | 2.0 | 22.0 |
| 3.0 System Reliability and Optimization Index | | | | | | | |
| 3.1 Blocked Sewers Measure | # per 100 km | 2.10 | 3.37 | | 4.7 | | |
| 3.2 Sewer Renewal Measure | km renewed | 60.0 | 22.7 | | 2.8 | | |
| 3.3 Infrastructure Condition Rating Level Measure | % > minimum | 90.0 | 90.5 | | 7.5 | | |
| 3.4 Full Property Flood Proofing Inspections | # inspections | 750 | 1,677 | | 16.8 | | |
| 3.0 System Reliability and Optimization Index | | | | 30.0 | 31.8 | 3.0 | 31.8 |
| 4.0 Safety Index | | | | | | | |
| 4.1 Near Miss Reporting Measure | # completed | 750 | 1,913 | | 9.6 | | |
| 4.2 Work Site Inspection/Observation Measure | # conducted | 1,300 | 3,452 | | 10.0 | | |
| 4.3 Lost Time Frequency Rate | frequency rate | 0.75 | 0.40 | | 6.9 | | |
| 4.4 All Injury Frequency Rate | frequency rate | 4.00 | 2.23 | | 6.7 | | |
| 4.0 Safety Index | | | | 15.0 | 33.2 | 1.5 | 16.5 |
| Aggregate Points Earned (sum of all the above indices) | | | | 100.0 | 160.8 | 10.0 | 108.8 |
| Points Required at Performance Standard | | | | | | | 100.0 |
| Points Above / (Below) Performance Standard | | | | | | | 8.8 |

Wastewater Collection's service quality is measured by the results of four indices. Performance under each index is measured independently on a point basis with 100 base points available if the standards in all four areas are achieved. In total, up to 10 additional bonus points for performance above standard are available. In 2023, Wastewater Collection exceeded performance standards for each index, earning 8.8 bonus points. Highlights and opportunities for improvement are provided below:

3.3.1 Environmental Index

The environmental index measures the success of Wastewater Collection programs and policies designed to mitigate and report adverse environmental impacts. The performance measures comprising this index include:

1. **Stormwater Flow Monitoring Measure** (actual 70.0% vs standard 63.0%), is calculated as the percentage of storm drainage area being monitored relative to all qualified hydrologically-effective drainage areas serviced by outfalls. In 2023, drainage area was increased slightly due to new developments, resulting in the increase of existing outfall's basin size. Detailed design was also completed for the nine monitoring locations which will added in the future. In 2024, design and construction of three planned permanent outfall monitoring stations is expected to be completed.
2. **Environment Incident Management Measure** (actual 15 vs standard 50), is calculated as the number of incidents reportable to the municipal, provincial or federal regulator. The low number of reportable environment incidents in 2023 reflects sustained efforts to implement processes and to develop a more mature and proactive risk management framework which includes implementation of environmental planning, information checklists and environmentally targeted audits and inspections. In 2024, a new process to ensure appropriate environmental planning and protection measures for major projects will be introduced. An environmental screening tool will also be rolled out to support field-level screening for other projects within the organization.
3. **Green Hectares Measure** (actual 94.7 hectares vs standard 90.0 hectares), is calculated as the area where the volume of green infrastructure managed runoff is spread evenly to a 15mm depth. In 2023, a significant number of large low impact development (LID) projects such as LRT, E.L. Smith flood mitigation and Pleasantview neighbourhood renewal were completed. A process for tracking and recording green hectares associated with onsite storage at multi-family and industrial, commercial and institutional (ICI) sites for new developments was also implemented in the latter part of the year. Finally, EWS initiated a compliance inspection campaign in the latter part of 2023 to reactivate storage on existing multi-family and ICI properties. A shift in design focus will begin in 2024, with more emphasis placed on the concept phase of projects in conjunction with the City of Edmonton, which is expected to help in identifying sizing and LID locations earlier in order

to incorporate and create integrated designs leading to more storage. In addition, the compliance inspection campaign initiated in the latter part of 2023 will continue through to 2024 which will allow for a full year of investigation. This is expected to provide more time to reach and collaborate with property owners to reactivate storage on their sites.

3.3.2 Customer Service Index

The Customer Service Index measures the success of Wastewater Collection programs and policies pertaining to customer service. This index is comprised of the following performance measures:

- **Service Maintenance Calls Measure** (actual 94.4% vs standard 80.0%), is calculated as the percentage of service maintenance sewer trouble calls resolved within 24 hours. In 2023, the service maintenance group was able to maintain a high availability of crews to respond to calls.
- **Emergency Dig-Ups with Service Restored Measure** (actual 100.0% vs standard 98.0%), is calculated as the percentage of emergency dig-ups restored within 48 hours from the time the call is referred from Operations to Construction as an emergency dig-up. In 2023, 56 emergencies were experienced. The implementation of directional drilling along with the increased capabilities of new re-lining technologies resulted in increased efficiencies, reduced customer impacts and reduced time required to complete the work where these technologies could be implemented.
- **Service Connections Measure** (actual 89.1% vs standard 85.0%), is calculated as the percentage of new installations of sanitary, storm, and common trench water service connection completed within a six-week timeframe. In 2023, several alternate work methods were implemented which included hydraulic shoring on-site which increased both efficiency and safety, roll out of a customer portal which increased transparency between EWS and the developer community and utilizing trenchless technologies such as directional drilling to reduce the costs and impacts to the community as well as increasing safety for EWS crews and the public.
- **Sewer Odour Hotspots Measure** (actual 4.7% vs standard 14.5%), is calculated as the percentage of the city area with odour hotspots relative to the city wide coverage area. In 2023, three lift station optimizations were completed and 73 one-way flaps were installed city-wide with targeted work occurring in the downtown and Lauderdale areas. Five new access maintenance holes were constructed on trunks in odour hotspot areas which supported over 4 km of trunk line inspection and 4 km of trunk line cleaning. In 2024, Wastewater Collection will aim to construct 5 new access maintenance holes to support inspection and cleaning activities. One way flap installation will continue to decrease as work in the Lauderdale and downtown areas reaches completion. Pump station

optimization activities are expected to be completed for an additional 3 stations by the end of the year.

3.3.3 Reliability and Optimization Index

The System Reliability Index measures the reliability of the sanitary and stormwater drainage systems. The performance measures comprising this index include:

- **Blocked Sewers Measure** (actual 3.37 vs standard 2.10), is calculated as the number of blocked sewers per 100 km of sanitary and combined sewer pipe. In 2023, Wastewater Collection experienced an increase in the number of blockages due to grease and construction debris. Each blockage was assessed to determine if a change to an existing flushing program or a new flushing program was warranted. Approximately, 77% of the plugged mains were first time incidents with no previous history of backups at that location. In 2024, a new process will be put in place to track the root cause of each blockage and identify patterns in root causes.
- **Sewer Renewal Measure** (actual 22.7 km vs standard 60.0 km), is calculated as the km of sewers renewed / relined as part of the Neighbourhood Renewal Program, Local Sewer Rehabilitation Program, Arterial and Collector Roadway Renewal Coordination Program, SIRP Proactive Pipe Relining Program, Proactive Service Renewal Program and CORE Large Trunk Rehabilitation Program. Sewer renewal and relining are proactive maintenance activities. In 2023, the PBR standard was not met due to an increased focus on renewing higher risk trunk lines, resulting in reduced length of sewer renewed. EWS will continue to focus on higher risk sewer infrastructure renewals to proactively reduce future emergency repair and rehabilitation.
- **Infrastructure Condition Rating Level Measure** (actual 90.5% vs standard 90.0%), is calculated as the percentage of infrastructure at or above the minimum level of condition rating. In 2023, Wastewater Collection expanded infrastructure condition assessments to consider additional asset categories, including maintenance holes, catch-basins and catch-basin leads.
- **Full Property Flood Proofing Inspections Measure** (actual 1,677 vs standard 750), is calculated as the number of full flood proofing inspections completed that include an inspection report provided to the property owner. Both single family and multi-family residences were included. For 2024, an inspection methodology for industrial, commercial and institutional (ICI) properties will be developed for launch in 2025.

3.3.4 Safety Index

The safety index is a measure of the success of programs and the application of policies that maximize the safety of employees and the public. The performance measures comprising this index include:

- **Near Miss Reporting Measure** (actual 1,913 vs standard 750), is calculated as the number of near miss and hazard identification reports completed each year. During 2023, two actions contributed to higher than target performance. First, Wastewater Collection stressed the importance of near miss reporting to its workforce, encouraging prompt reporting. Second, Wastewater Collection analyzed trends of reported near misses to reinforce the contribution of near miss reporting in reducing workplace injuries.
- **Work Site Inspections / Observations Measure** (actual 3,452 vs standard 1,300), is calculated as the number of Work Site Inspections and Observations completed each year. In 2023, Wastewater Collection analyzed trends from near miss reporting to focus on inspections and observations to further drive injury elimination and reduction.
- **Lost Time Frequency Rate Measure** (actual 0.40 vs standard 0.75), is calculated as the frequency of disability injuries and illnesses and the **All Injury Frequency Measure** (actual 2.23 vs target 4.00) is calculated as the frequency of disability injuries and medical aid injuries. These factors were key measures for assessing the effectiveness of safety programs. In 2023, Wastewater Collection introduced a field-based ergonomics assessment process, which directly reduced the number of musculoskeletal injuries related to tasks involving manual handling.

4 Rates and Bill Comparisons

Residential water and wastewater bill comparisons for 2023 are based on the published water, wastewater treatment, sanitary and stormwater rates for Calgary, Vancouver, Saskatoon, Winnipeg and Regina, as well as three surrounding municipalities (St. Albert, Sherwood Park and Leduc). These bill comparisons represent the total cost to the customer paid through the utility bill, and include fixed charges, consumption charges and any other applicable surcharges based on readily available data from cities and municipalities. The comparison does not comprehensively account for additional costs in other municipalities that may be funded through the tax base, although it does account for differences in funding of fire protection costs.

Figure 4-1 provides a comparison of residential water bills with consumption of 13.8 m³ per month, the average monthly water consumption for a residential customer in Edmonton in 2023. Edmonton is the only city in this comparison where fire protection charges are included in water rates. Therefore, Edmonton’s average monthly residential bill of \$47.63 which includes fire protection charge of \$2.76 has been normalized to \$44.87 for this comparison. Figure 4-1 shows that Edmonton’s water bills are competitive with most of the cities and local communities surveyed. Vancouver and Calgary continue to have the lowest rates due to their excellent raw water sources and, therefore, lower needs for water treatment than Edmonton, which has a naturally high variable water source in the North Saskatchewan River.

Figure 4-1
2023 Average Residential Water Bills
(13.8 m³/month)

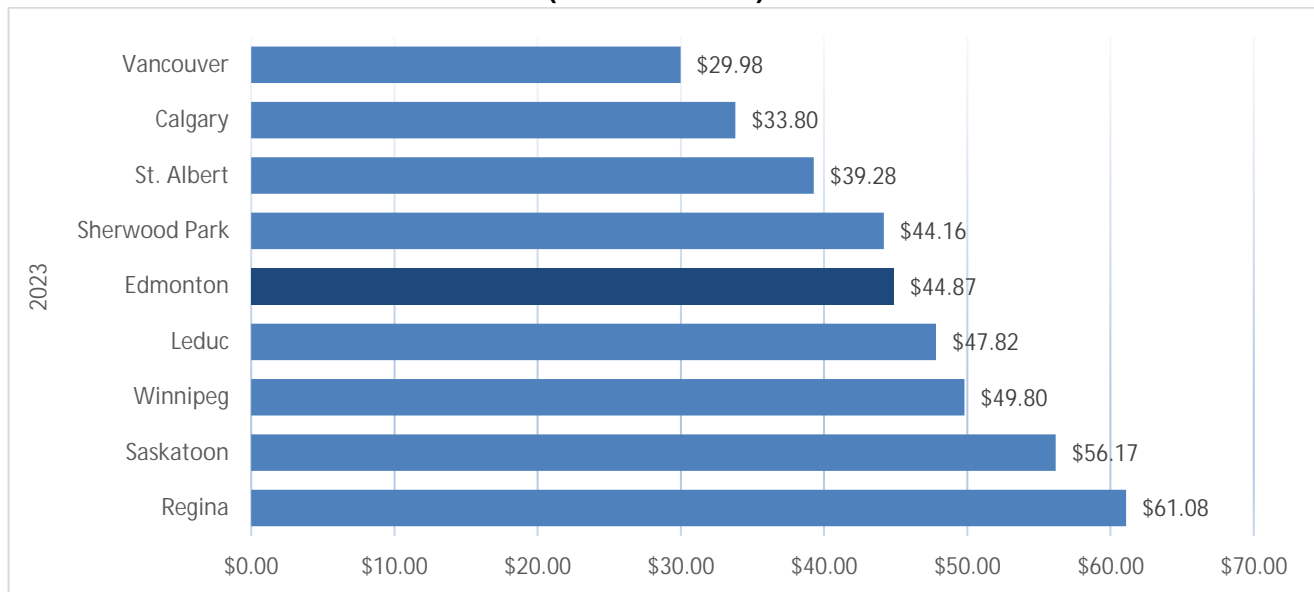


Figure 4-2 provides a comparison of average residential sanitary drainage and wastewater treatment bills with consumption of 13.8 m³ per month, the average monthly water consumption for a residential customer in Edmonton in 2023. These bill comparisons represent the total cost to the customer and include fixed charges, consumption charges and any other applicable surcharges for wastewater treatment.

Although Edmonton’s sanitary drainage and wastewater treatment bills appear higher relative to the comparison communities, the comparison does not reflect the impact of historical spending decisions by each community. For example, EWS is expending significant resources on the CORE program to address corrosion issues and to remediate long-running odour issues in its sanitary sewers.

Figure 4.2
2023 Residential Sanitary Drainage and Wastewater Treatment Bills
(13.8 m³/month)

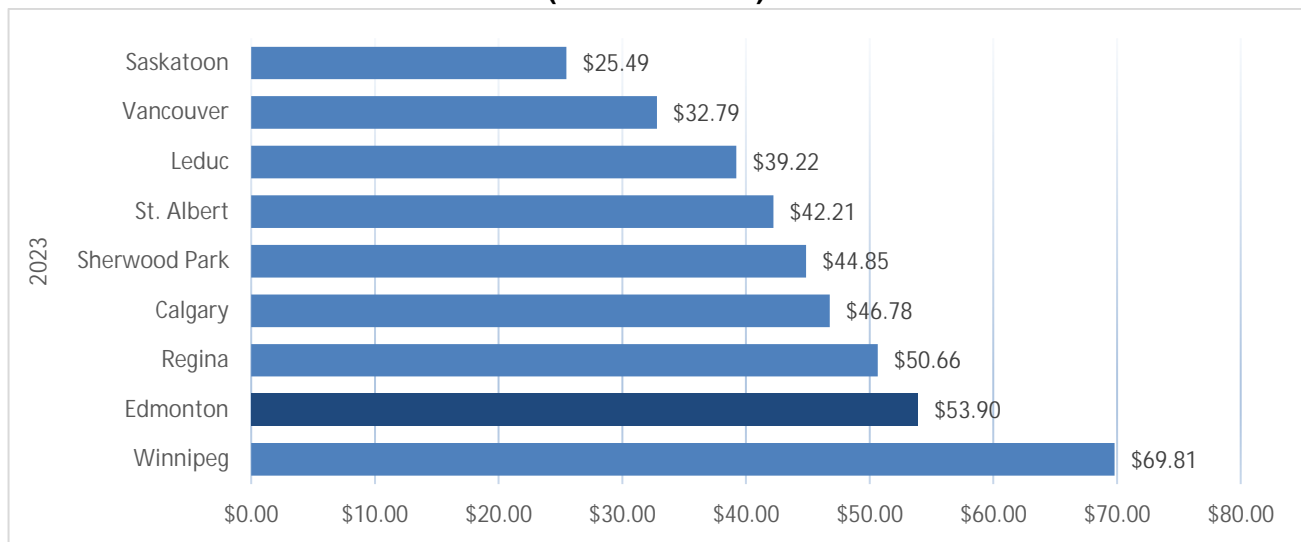
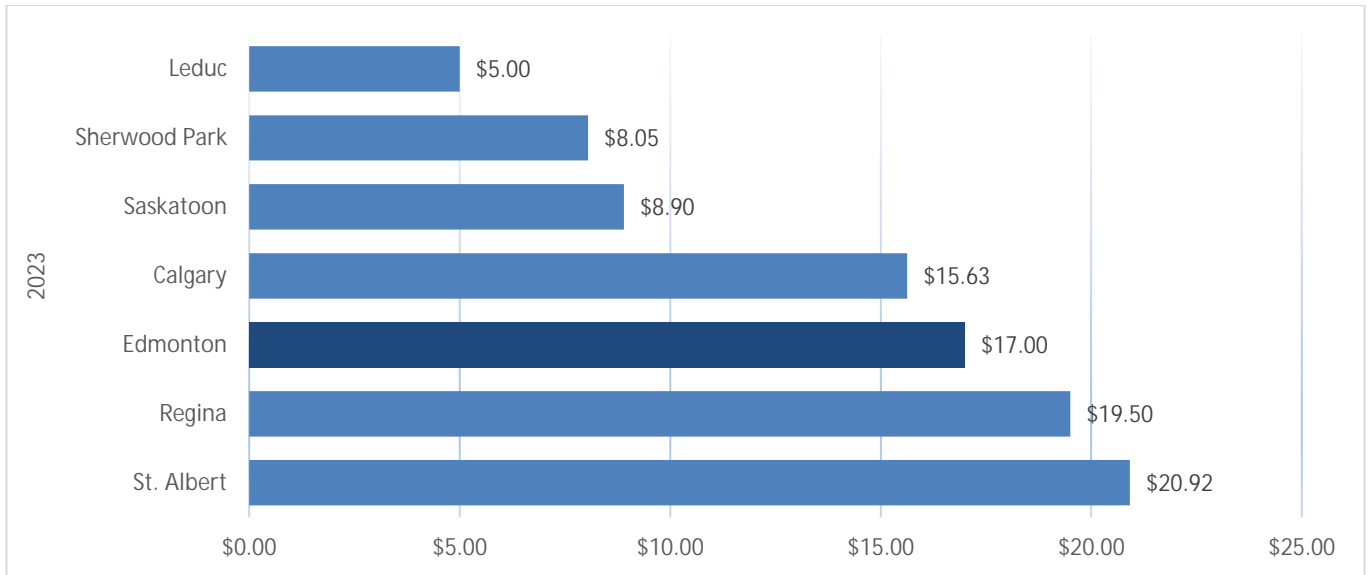


Figure 4-3 provides a comparison of average monthly residential stormwater bills for 2023. The nature and extent of stormwater drainage services varies among municipalities, due to geography and climatic conditions, with different cities facing different risks from storms, overland flooding and sea level. In addition, in some municipalities, flood mitigation and stormwater drainage charges are included in property taxes which makes this bill comparison challenging. Stormwater charges embedded in property taxes for Vancouver and Winnipeg were not readily accessible and therefore not reflected in the figure below. EWS has been proactive in addressing the increased risk of flooding related to climate change and is making substantial investments through its SIRP program to assess and mitigate these risks. EWS’ 2023 average stormwater bills are comparable to cities that have started addressing risks related to climate change such as Calgary, St. Albert and Regina.

Figure 4-3
2023 Average Monthly Residential Stormwater Bills



Appendix A: PBR Framework

In 2021, Edmonton City Council approved EPCOR Water Services Bylaw 19626 and EPCOR Drainage Services and Wastewater Treatment Bylaw 19627. Bylaw 19626 provides for continuation of performance-based regulation (“PBR”) for In-City Water Services for a five-year term from April 1, 2022 to March 31, 2027, while Bylaw 19627 provides for continuation of PBR for Wastewater Treatment and Drainage Services’ Sanitary and Stormwater Utilities for a three-year term from April 1, 2022 to March 31, 2025.

A. Overview

The PBR framework encompasses rates, performance measures, and return on equity. The relationships between these components are designed to ensure that capital and operating cost decisions provide a balance between operational performance, rates, and return on equity, while safeguarding system reliability and service quality, providing fair, stable, predictable rates to rate payers, and providing a basis for the future development of the water, wastewater treatment, and drainage systems. Several key changes were introduced for the 2022-2024/2026 PBR term, including:

- 1. Introduction of a Consumption Deferral Account:** EWS was directed to introduce a water consumption deferral account for each of Water, Wastewater Treatment and Drainage Services with the intent of capturing and accumulating variances related to consumption over the 2022-2024/2026 PBR terms and subsequently collecting or refunding the accumulated consumption variances through customer rates in future PBR terms. In the past, revenue risk related to consumption was borne by EWS. The introduction of deferral account reduces EWS’ exposure to revenue risk resulting from volatile consumption patterns however, this risk and volatility is now borne by customers.
- 2. Temporary Reduction in Return on Equity (ROE):** Return on equity for Water and Wastewater Treatment was reduced from 10.175% to 9.89%, with a further 0.25% reduction to 9.64% to offset the reduction in risk associated with the introduction of a consumption deferral account. The ROE approved for Drainage services during the 2022-2024 PBR term is lower than the fair rate of return of 9.95%. In order to moderate rate increases for all customers, the ROE for Drainage Services was set at 5.50% in 2022 and was approved to be “ramped up” by 1.1% per year beginning in 2023 in order to achieve a fair rate of return of 9.95% by 2026.
- 3. Drainage Efficiency Factor:** Efficiency factor for Drainage Services was increased from 0.25% to 0.50% for the 2022-2024 PBR term.
- 4. Introduction of Fire Protection Charge:** EWS was directed to include recovery of the public fire protection revenue requirement through water rates over the 2022-2026 PBR

term instead of the past practice of recovering fire protection revenue requirement through City's property taxes.

B. PBR Rates

Annual changes to In-City water, wastewater treatment and sanitary and stormwater utility rates consist of routine rate adjustments and, occasionally, non-routine adjustments.

I) Routine Rate Adjustments

Routine rate adjustments are limited to inflation, defined as a weighted inflation metric consisting of both CPI and labour components, less an efficiency factor, plus special rate adjustments approved by City Council as part of the 2022-2024/2026 PBR Applications. The use of a formulaic approach for calculating and setting utility rates act as a "price cap" providing ratepayers with stable and predictable rates. The efficiency factor for In-City water and wastewater treatment is set at 0.25%, while for sanitary and stormwater, the efficiency factor is at 0.50%. The efficiency factor incents EWS to increase productivity and achieve efficiencies in excess of inflation in order to meet its targeted return on equity. The Special Rates Adjustments (SRA) approved for the 2022-2024/2026 PBR term, include:

1. **SRA for Re-basing** (In-City Water, Wastewater and Drainage Services): The SRA for re-basing accounts for the difference between EWS' revenue requirement forecast for the 2022-2026 PBR term and the revenue that would be realized by limiting annual rate increases to PBR inflation. The resulting revenue requirement difference (shortfall or surplus) gets collected from or refunded to ratepayers over the current PBR term through a SRA for re-basing.
2. **SRA to Increase Monthly Service Connection Fees** (In-City Water): The SRA to increase monthly service connection fee adjusts EWS' rate structure to generate higher portions of revenue from fixed service charges, with a corresponding decrease in variable rates in order to help minimize the impact of declining rate revenue due to declining consumption over the 2022-2026 PBR term.
3. **SRA for 90 Day Deferral Program basing** (In-City Water, Wastewater and Drainage Services): Alberta's Utility Payment Deferral Program Act was introduced in 2020 by the provincial government for electricity and gas utility customers in order to provide temporary financial relief to Albertans who were experiencing financial hardship due to COVID-19. City Council directed EWS to implement a similar program to allow its customers to defer their water, wastewater treatment and drainage utility bill payments, without interest or penalty, for a 90-day period from March 18, 2020, to June 18, 2020. The program ended on June 18, 2020, and customers had one-year (June 18, 2021) to repay the entirety of their deferred payments. For the 2022-2024/2026 PBR Applications,

EWS received approval for a SRA to recover the forecasted bad debt expense, administration and carrying costs associated with the 90-day deferral program. The SRA was approved as a one-time increase to 2022 rates, which is removed from 2023 rates to ensure that the SRA does not generate any incremental revenue over the PBR term. Furthermore, the approval included 2023 incremental bill adjustments to true up actual incurred costs.

4. **SRA for Public Fire Protection (In-City Water):** Prior to April 1, 2022, EWS recovered the public fire protection revenue requirement through the Fire Hydrant Service Agreement with the City of Edmonton Fire Rescue Services Department, which was funded through the City's property tax levy. Edmonton City Council directed EWS to include the recovery of the public fire protection revenue requirement through water rates over the 2022-2026 PBR term by way of a special rate adjustment that is added to fixed monthly service charges.
5. **SRA for SIRP and CORE (Drainage Services):** These special rates adjustments provide funding for two critical Drainage Services strategic initiatives:
 - a) The SIRP strategy is a \$1.6 billion system wide integrated approach, which is expected to be completed over the next 20 to 30 years to mitigate flood risk. The SIRP strategy includes investments to mitigate flood risks across the City of Edmonton by using a mix of grey (SIRP – MOVE trunks and tunnels) and green (SIRP – SLOW dry ponds and low impact developments (LID)) infrastructure installed in public right-of-way, City-owned land or EPCOR owned land. Implementation of the SIRP program began in 2019 and recovery of the SIRP program costs during the 2022-2024 PBR term is funded through a SRA to stormwater rates.
 - b) The CORE strategy focuses on preventing the formation of hydrogen sulphide (H₂S) gas, which will help reduce community odour impacts and lengthen the life of sewer network assets. Implementation of the CORE program began in 2019 has been incorporated into the Wastewater IRP going forward. Recovery of the CORE program costs during the 2022-2024 PBR term is funded through a SRA to sanitary rates.

II) Non-Routine Rate Adjustments (NRA)

The PBR framework facilitates rate adjustments for events or activities that are unusual, significant in size or nature and beyond the scope of control of EWS. Non-routine adjustment criteria defined per Schedule 3 of Bylaw 19626 and Bylaw 19627 must be met in order for the NRA to be approved.

C. Performance Measures

Performance measures are an integral part of EWS' PBR framework, which includes measures and targets for water service quality as described in Schedule 3, Section 3 of Bylaw 19626, and wastewater treatment and drainage service quality as described in Schedule 3, Sections 3 and 4 of Bylaw 19627. Annually, an independent auditor audits EWS' performance against established measures and targets. These measures ensure the maintenance of a standard level of operational performance and ensures that EWS does not compromise system reliability and service quality as it seeks to identify cost saving opportunities during the PBR term. EWS faces financial penalties ranging from \$400,000 up to \$2,400,000 if it does not meet or exceed the performance standards established within the PBR, providing assurance to customers that water, wastewater treatment and drainage services system reliability and service quality is not sacrificed to keep rates low or to increase returns to EWS.

D. Return on Equity

The PBR plan incorporates a forecast rate of return on equity commensurate with consumption, cost and other risks that allows EWS to finance its operational and capital programs, to provide its customers with high levels of service quality and reliability, and to provide "just and reasonable" returns to its shareholder. Achieving this return is dependent on EWS achieving operating cost efficiencies, meeting, or exceeding performance standards, and developing the utility infrastructure needed to provide service to its customers. For the current PBR term, return on equity is based on a deemed capital structure of 60% debt and 40% equity with awarded rates of return as follows:

- **Return on Equity for Water and Wastewater Treatment Services:** A return on equity of 9.64% was approved for Water and Wastewater Treatment services for the current PBR term.
- **Return on Equity for Drainage Services:** The return on equity approved for Drainage services during the 2022-2024 PBR term is lower than the fair rate of return of 9.95%. In order to moderate rate increases for all customers, the ROE for Drainage Services was set at 5.50% in 2022 and was approved to be "ramped up" by 1.1% per year beginning in 2023 in order to achieve a fair rate of return of 9.95% by 2026.

E. PBR Rate Structures

I) In-City Water

In-City Water customers are grouped into three customer classes: residential; multi-residential; and commercial. In-City customers pay a variable consumption charge as well as a fixed monthly service charge. The fixed charge recovers costs that are directly attributable to a customer such as costs of the water meter, customer service and billing whereas variable consumption charge captures all the costs of operations, maintenance, administration and capital investment associated with operating the water treatment, wastewater treatment, sanitary and stormwater drainage utilities.

- 1. Residential Customer Class:** Residential customers are charged a monthly service connection fee that varies with the size of the service, plus a variable charge for water consumption. Residential water rates are based on an inclining block structure with three consumption blocks (0 to 10 m³, 10.1 to 35 m³ and >35 m³). A higher consumption charge is applicable to residential customers who use larger volumes of water while consumption charge is lower for residential customers who use less water. The inclining block structure promotes water conservation and incents customers to be efficient with their water usage, either by using water-efficient appliances or behavioral change such as more efficient lawn watering practices.
- 2. Multi-Residential Customer Class:** Multi-residential customers are charged a monthly service connection fee that varies with the size of the service, plus a variable charge for water consumption. Multi-residential water rates are based on a declining block structure with three consumption blocks (0 to 100 m³, 100.1 to 1,000.0 m³ and >1,000 m³). Multi-residential customers have less seasonal variability in water consumption and make lower peak demands on the waterworks system than residential customers. At the same time, multi-residential customers do not use the same volume of water or have the same infrastructure requirements as commercial customers. As a result, they have a declining block rate structure.
- 3. Commercial Customer Class:** Commercial water rates are based on a declining block structure with five consumption blocks (0 to 25 m³, 25.1 to 100 m³, 100.1 to 1,000.0 m³, 1,000.1 to 5,000 m³ and >5,000 m³) resulting in a lower per cubic meter rate as the customer uses more water. Commercial and institutional customers tend to have stable consumption patterns, which remain stable throughout the day, and each day of the year. EWS has set the size of the declining blocks for the commercial rate class based on the results of a statistical study of water usage by the type of customer within the commercial class. This allows EWS to ensure that similar customers within the commercial class pay a similar water rate and helps promote equity within the commercial rate class.

II) Wastewater Treatment Rate Structure

Wastewater treatment customers are classified into the same category as water service customers (i.e., residential, multi-residential and commercial) and each class of water service customers also qualify as a wastewater treatment customer for that class.

1. **Residential and Multi-Residential Customer Class:** Wastewater treatment charges are based on a flat rate structure with a single wastewater treatment rate applied to each cubic meter of water consumed. Residential and multi-residential customers are charged a monthly service connection fee, plus a variable charge for wastewater treatment based on their water consumption.
2. **Commercial Customer Class:** Commercial customers are charged the same monthly connection fee as residential and multi-residential customers, but unlike consumption charges for residential and multi-residential customers, the commercial customer class uses a declining rate structure with three consumption blocks. The first block is for customers consuming less than 10,000 m³ of water per year (over 95% of commercial customers), the second is for customers consuming 10,000.1 to 100,000 m³ of water consumption per year and the third block is for customers consuming over 100,000 m³ per year.
3. **Overstrength Surcharges:** Wastewater treatment services provided to commercial customers include additional monitoring, sampling, and testing of wastewater potentially containing one or more constituents, such as oil and grease, phosphorus, and other compounds considered to be harmful to the environment. Customers who release wastewater into the sewer system that contains these compounds are billed overstrength surcharges for each kilogram of surchargeable matter per cubic metre of wastewater in excess of prescribed concentrations.

III) Drainage Services Rate Structure

Consistent with In-City Water and Wastewater, Drainage Service's sanitary and stormwater utility customers are assigned to residential, multi-residential and commercial customer classes. The customer definitions and other classification criteria are generally consistent among In-City Water, Wastewater and Drainage Services. Therefore, each class of water or wastewater treatment customer also qualifies as a sanitary or stormwater utility customer for that class.

1. **Sanitary Utility Rates:** Sanitary rates are designed to collect the costs associated with wastewater collection services. Sanitary rates consist of a flat monthly charge levied on each customer's premises that varies with the size of the premises' water meter and a variable monthly charge based on a rate per cubic metre of either metered water consumption for the premises, or, if a sewer meter has been installed, the sewer

discharge for the premises. The sanitary utility rate design also includes a provision for EWS, under the conditions of the Utility Credit Programs, to provide a utility credit to discount metered water volumes. In the 2022-2024 PBR plan, there is only one customer, the University of Alberta that receives a utility credit. This credit provides a 44% reduction to the sanitary utility variable rate to recognize that the University of Alberta is a large wholesale customer that owns and operates its own on-campus collection system.

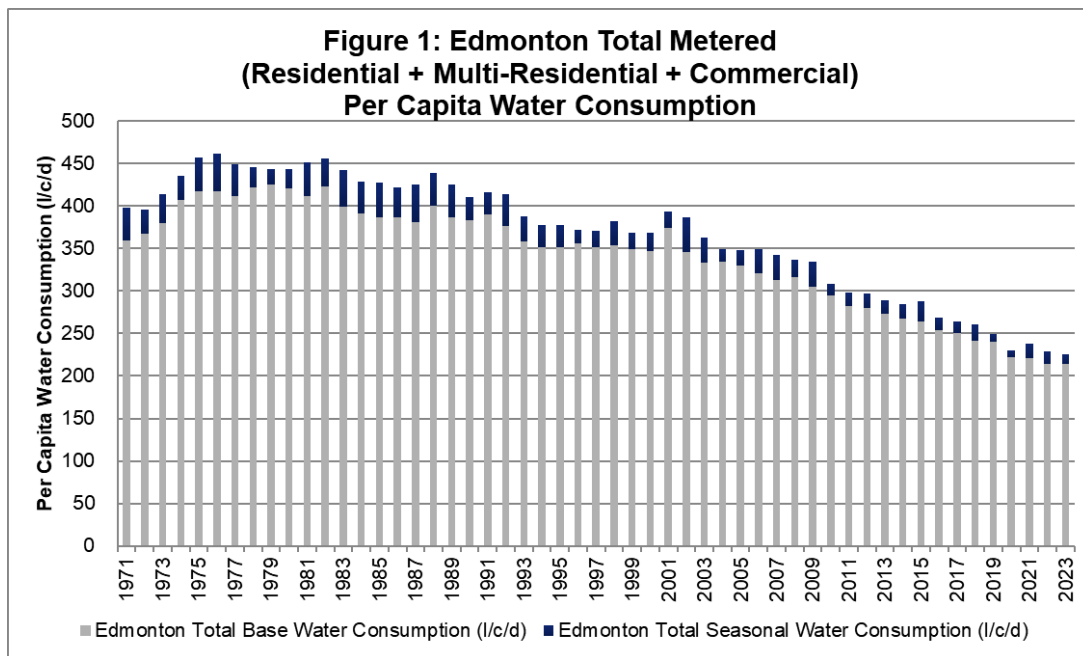
2. **Stormwater Utility Rates:** Stormwater rates are designed to collect the costs associated with the management of stormwater runoff. The current stormwater rate design consists of a single rate applied to the product of:
 - a. The area of the property in square metres and, for multiple units sharing a single building, the proportion of the building lot area attributable to each unit;
 - b. The development intensity factor, which measures the portion of lot being used for its intended development. The development intensity factor is set at 1.0, except for those properties where owners demonstrate that they contribute significantly less stormwater runoff per property area to EWS' land drainage system during rainfalls than other similarly-zone properties through the use of retention/detention ponds or other stormwater best practices. Applications for changes to the development intensity factor are made in accordance with the terms and conditions of the Utility Credit Programs; and
 - c. The runoff coefficient, which measures the permeability of the lot's surface (i.e., grass versus concrete), based on land zoning. The runoff coefficient ranges from 0.10 (e.g., agricultural zone AG) to 0.95 (e.g., commercial business zone CB2). As point of reference, a single-detached residential home (Zone RF1) has a runoff coefficient of 0.50. The runoff coefficients are included in Schedule 1 of the Drainage Services and Wastewater Treatment Bylaw.

Appendix B: Demand Management Measures Update

A. Background

Edmonton has had Demand Management Measures (DMM) protocols in place since the early 1990s. These were first introduced as part of the original Water Integrated Resource plan with a primary focus on the curtailment of peak summer water consumption during extended hot weather scenarios. The DMM, coupled with an increased focus on water conservation in the community, shifted the primary driver of treatment capacity constraints from meeting high customer demands to being able to support interruptions in the ability to treat or deliver water to customers.

Figure 1 below shows the evolution of total water consumption within Edmonton on a per capita basis and the reduction of seasonal water use (blue bars in Figure 1) through the introduction of demand management and water conservation approaches.



The current DMM protocols consist of three targeted action levels – A, B and C spanning from EWS’ internal operations curtailment of water use (Measure A), voluntary public reduction (Measure B) and mandatory public reduction of non-essential water use (Measure C). Depending on whether the curtailment was a summer event or winter event, different customer groups would be approached to reduce their water usage in Measures B and C. Measure A would involve coordinated reductions between EWS, the City of Edmonton and

the Regional customers to curtail water use without requiring broader community action. The implementation of these measures over time has contributed to lower water demand which has enabled EWS to delay significant expansions to its water treatment capacity from 1992 to 2007. By delaying these major capacity expansions, customers have benefited from lower water rates.

As seen in Table 1, prior to the expansion of the water treatment plant, implementation of DMM was only required one to two times per year.

During 2008 to 2015, immediately following the water treatment plant capacity expansion, there were no requirements to implement DMM. Since 2016, there were a few occasions requiring DMM, which in most cases were managed through Measure A or Measure B.

The January 2024 event at E.L. Smith was the first time in over 20 years when Measure C was implemented by EWS.

The conditions that have required DMM have also varied between raw water river quality impacting production capacities, infrastructure

constraints impacting ability to deliver treated water to customers, and high demands greater than treatment plant capacity.

Although high demand conditions can lead to a requirement to consider implementing DMM, the primary condition in recent years to require the protocol has been either poor river water quality or infrastructure constraints.

The recent infrastructure failure event at the E.L. Smith water treatment plant in January 2024, occurred at the same time as when one of the Rosssdale treatment trains was not in service due to construction rehabilitation. This winter scenario, with two impacting events occurring at the same time, was an unusual situation (High Impact, Low Probability) and hence the requirement to move to DMM C Mandatory restriction protocols.

| Year | Count of DMM | Demand | River Quality | Infrastructure Constraints |
|-------------|--------------|--------|---------------|----------------------------|
| 2001 | 2 | A | A | |
| 2002 | 1 | | A | |
| 2003 | 0 | | | |
| 2004 | 1 | | | A |
| 2005 | 2 | | B | |
| 2006 | 2 | | | B |
| 2007 | 1 | | | B |
| 2008 - 2015 | 0 | | | |
| 2016 | 1 | | B | |
| 2017 | 1 | | | A |
| 2018 | 1 | | A | |
| 2019 | 1 | | A | |
| 2020 | 2 | | A | A |
| 2021 | 1 | B | | |
| 2022 | 0 | | | |
| 2023 | 0 | | | |
| 2024 | 1 | | | C |

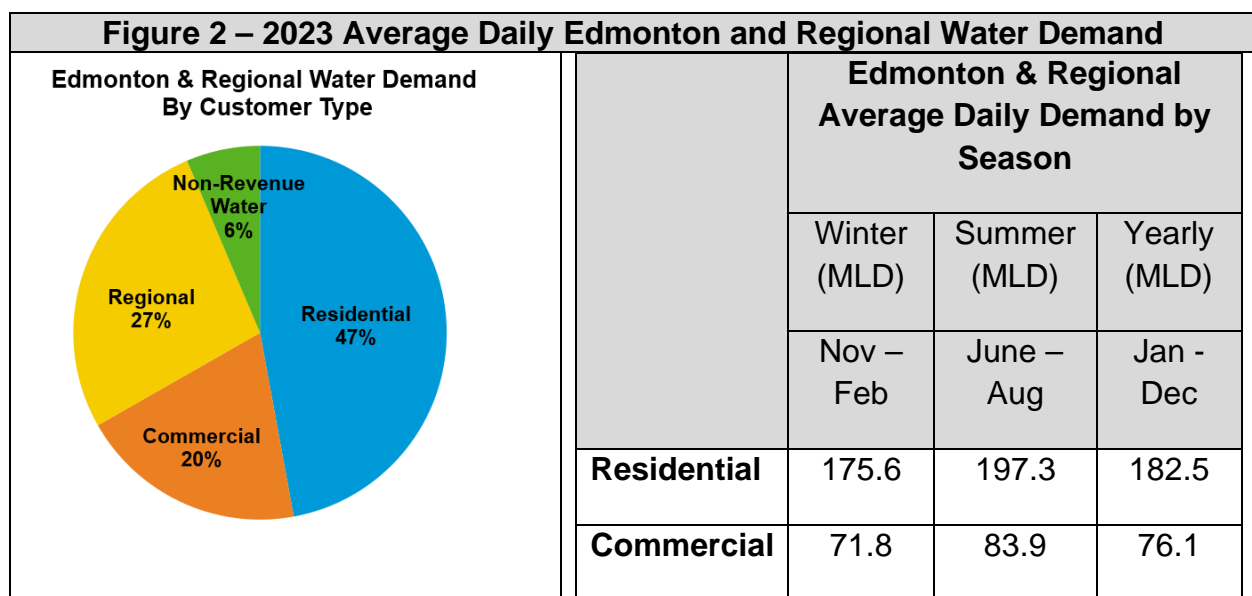
EWS' January 2024 infrastructure failure event and the City of Calgary's infrastructure failure event in June/July 2024 have highlighted the importance of DMM protocols to reduce water use not only in times of drought/high demand, but also in response to unanticipated infrastructure failures.

Based on Utility Committee and public feedback from the January 2024 event at E.L. Smith, EWS has initiated a review of its DMM protocols given lessons learned from these two significant incidents requiring mandatory restrictions. EWS will be implementing an updated DMM protocol framework for Edmonton.

B. Edmonton and Regional Customer Demand Summary

To support the development of a revised DMM protocol, EWS reviewed typical customer flows in winter and summer conditions, plant capacities, and reservoir volumes in Edmonton and the region. Figure 2 below summarizes 2023 average water demand in Million Liters per Day (MLD) for the Edmonton and regional water systems.

Water demand increases in the summer months, primarily as businesses and residents use water for discretionary outdoor purposes such as lawn watering. In summer months, average daily demands can increase as high as 600 MLD during an extended warm spell. During the most recent heat wave in Edmonton, daily demand peaked at 567 MLD on July 18th, 2024. Differences in plant capacities and customer demand are managed through the utilization of reservoir storage volumes during this period. Non-Revenue water use increases in the summer due to annual flushing of the water distribution system to maintain water quality.



| | | | | |
|--|--------------------------|--------------|--------------|--------------|
| | Regional | 90.5 | 111.9 | 102.0 |
| | Non-Revenue Water | 19.4 | 27.7 | 24.8 |
| | Total | 357.0 | 420.8 | 385.3 |

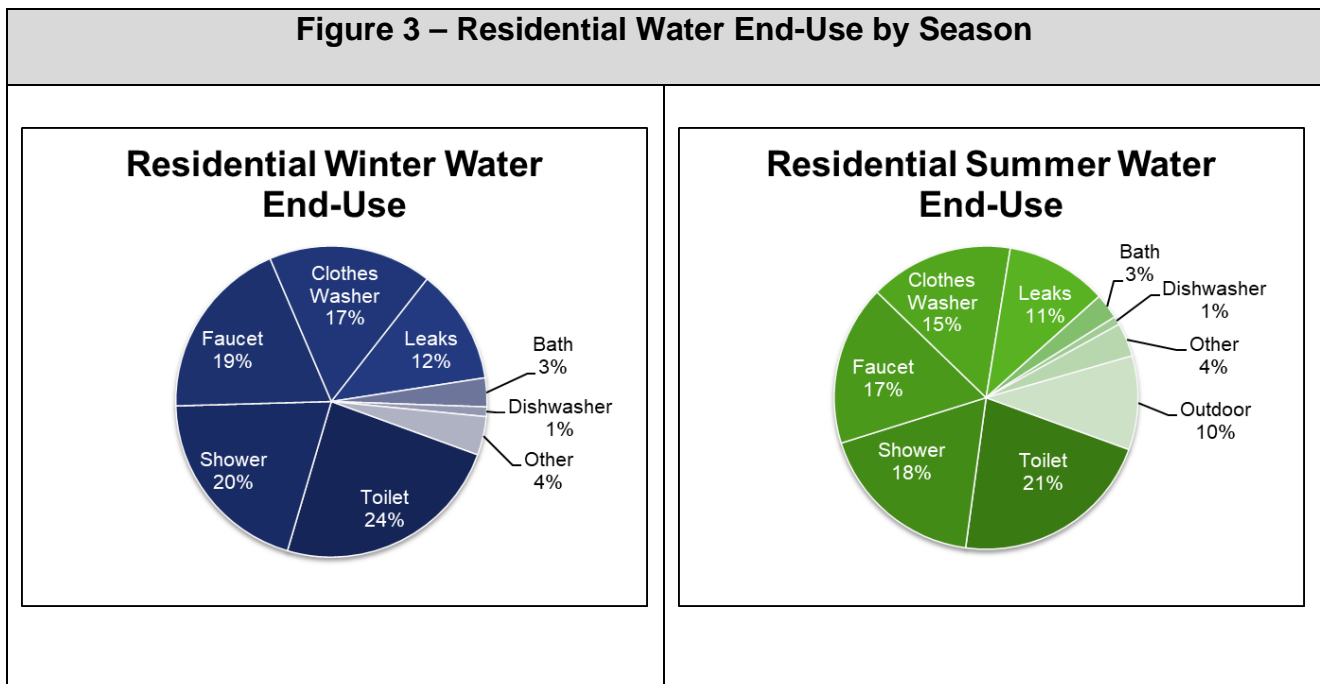
Table 2 summarizes the water treatment capacities by raw water quality, treatment mode and season. Historically, raw water quality DMM events have occurred when the river quality is impacted by spring weather conditions, while customer demands are closer to summer levels due to outdoor irrigation needs.

| Table 2 – Average Treatment Plant Production Capacities (MLD) | | | | | |
|--|----------------------------|-----------------|------------------------|-------------------------|-----------------------|
| Raw Water Type | Treatment mode | Duration | Rosssdale (MLD) | E.L. Smith (MLD) | Combined (MLD) |
| Winter | Direct Filtration | Nov-Mar | 166 | 276 | 442 |
| Spring | Conventional | Mar-Apr | 179 | 296 | 475 |
| Summer | Conventional | May-Aug | 219 | 340 | 559 |
| Mountain Runoff/ Summer Rains | Conventional | May-Aug | 173 | 294 | 467 |
| Fall Transition | Extended Direct Filtration | Sep-Oct | 166 | 276 | 442 |

The production capacities at the Edmonton water treatment plants vary based on raw water quality and temperature. This requires EWS to have a flexible approach to DMM as the combination of customer demand requirements and water treatment capacity can have multiple combinations of conditions.

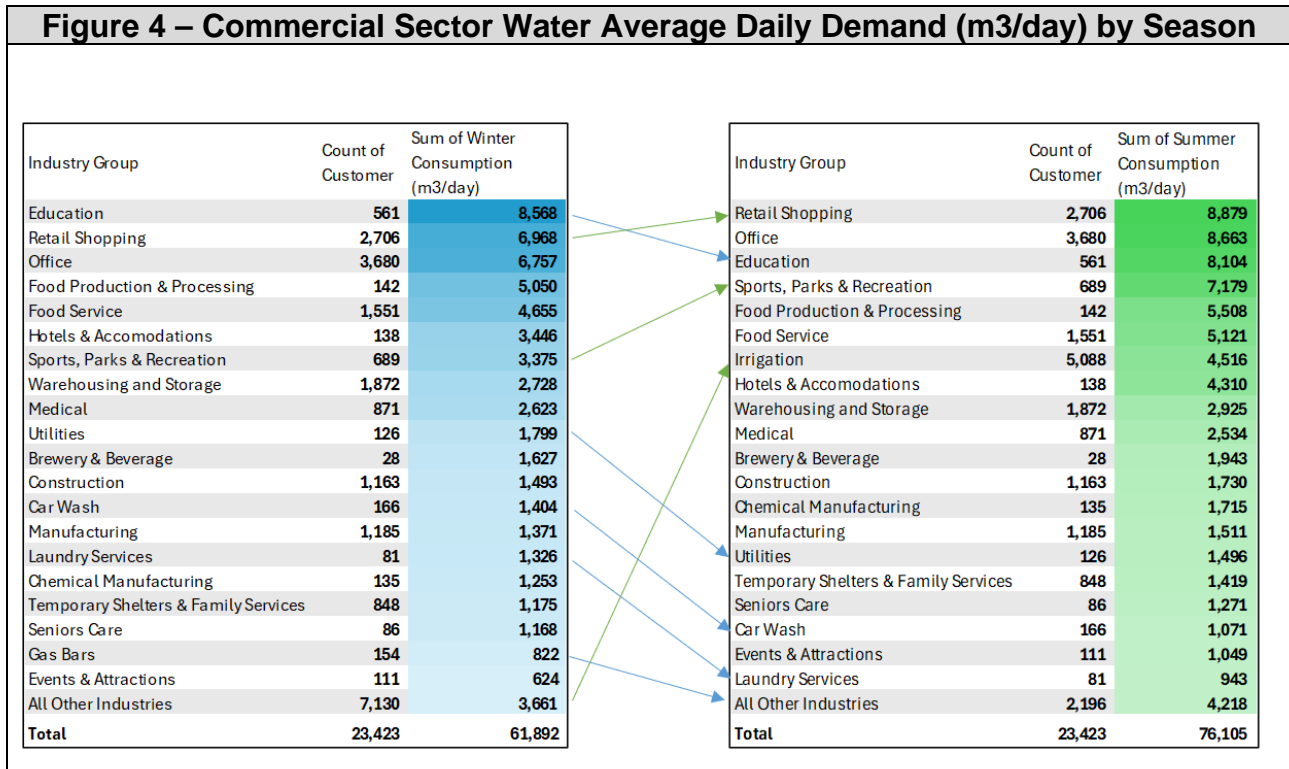
Given the differences in winter and summer water use, annual water quality events and infrastructure events that may impact supply, EWS is implementing a revised approach to DMM that is customized to the winter and summer seasons. To support this revised approach, a more in-depth review of winter vs. summer consumption levels of major customer groups was also completed.

Edmonton’s residential customers (including multi-residential customers) represent approximately 47% of the total demands on the system and are the largest sector by volume and number of customers. Their consumption pattern is homogeneous and have similar end uses of water within each property. Figure 3 below shows winter vs. summer uses of water within the residential category. Outdoor water use in the summer is approximately 10% for this category and is the reason for variation between the winter and summer average demands shown above in Figure 2.



Regional customers, the second largest sector supplied by the EWS system, are approximately 27% of the overall demand on the system. This group has grown since the 1990s when it was approximately 15% of the total demand on the water system. Each Regional customer has a wholesale water supply agreement with EWS and has additional water storage reservoirs in their community. EWS and the regional community work collaboratively during any DMM event, but the individual measures within each regional community vary based on the characteristics of their customer base and specific storage volumes available in their community.

Commercial customers represent 20% of the total demand on the water system. This group consists of multiple business types each with varying consumption patterns during the winter and summer months. Figure 4 provides a breakdown of the top 20 commercial sectors from an overall water consumption perspective in winter and summer conditions and the number of customers within each category. A variety of communication techniques are required to communicate with commercial customers whenever DMM is required and the customer groups targeted for DMM will vary by season. For example, irrigation customers do not have any demand in the winter but are in the top 7 of water use in the summer.



C. EWS Industry Consultation

A review of EWS’ DMM communication approaches was undertaken following the January 2024 E.L. Smith WTP event. Customer feedback was obtained through a customer survey immediately after the event and direct consultation with the car wash sector and regional customers over the past few months. EWS has also been meeting with the City of Calgary to review their approaches and sharing its learnings from a winter DMM event vs. Calgary’s summer DMM event.

Some of the key items identified in the customer survey, discussions with the regional customers and the City of Calgary include:

- Multiple communication channels are necessary that align with differing demographics of the residential sector and the different types of commercial customers.
- Increased transparency and clarity of what customers are being asked to do based on the levels of water restrictions and EWS' overall demand reduction targets would improve customer understanding.
- Current restrictions and communications are heavily focused on summer watering. This is consistent with other communities across North America.
- Targeting indoor reductions is necessary for mandatory scenarios, especially during events in the winter months, but is more difficult due to the absence of discretionary outdoor water use.
- Inconsistent water restrictions in Edmonton versus the regional communities caused confusion for residents and businesses.

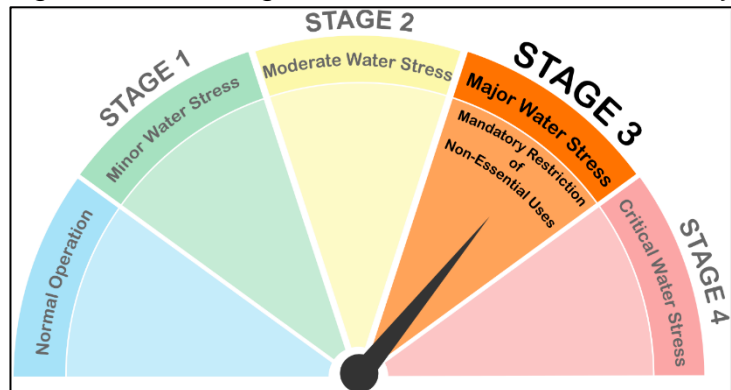
In April 2024, EWS conducted a second survey of the 150 Edmonton car washes affected by the E.L. Smith WTP event DMM and offered in-person follow up meetings. EWS received 9 responses to the survey, held two meetings with three car wash owners who own multiple car wash locations and received one customer letter. The meetings included discussion of the DMM event in Calgary and the learnings that their companies experienced in Calgary that could be applied in Edmonton. Following these meetings, participants expressed their appreciation for the open dialogue and the opportunity to discuss their perspectives with EWS. Overall, the key themes from those who participated in the car wash owner survey and meetings were:

- There is a need to improve the initial notification process to businesses, including phone call scripting, the identification of the outreach as being legitimately from EWS, and consideration for providing email or text notification to businesses who have provided that contact information.
- No single business type should be targeted as this puts a public spotlight on their operations and activities. EWS should set a reduction target for all businesses to achieve, rather than targets that differ by type of business.
- If possible, EWS should first seek a cooperative approach, with options for businesses to manage their operations to achieve a particular goal, in alignment with public announcements and goals.
- EWS should seek regional cooperation and alignment as much as possible.
- Whenever possible, EWS should talk to businesses before any public notifications to implement or remove restrictions.

- EWS should consider how to improve DMM in the future, and what can be learned from Calgary and other jurisdictions.

D. Updated Water Restriction Approach

Implementing water restrictions through DMM are a necessary approach to ensure a sustainable water supply versus balancing demand during times of water stress. In many municipalities, water restriction protocols focus on summer watering, especially during times of drought and lower raw water availability that align with high summer demands. The focus of municipal water restrictions on reducing discretionary summer water use is consistent across jurisdictions in North America. EWS has determined that development of summer and winter DMM protocols would better serve the needs of customers and clarify some of the confusion experienced in the most recent January event. For improved clarity to customers, EWS, is planning to move to a four stage DMM protocol defined for each season with targeted percent reductions in each stage. Conservation and water efficiency best management practices are also included as a pre-stage normal operations stage. This is an update from the previous 3 stage (A, B, C) protocol that was communicated to the public only during a Measure B or C scenario. The four-stage DMM approach will improve transparency and provide more granularity to customers on expected demand reduction targets during each stage based on the season and anticipated duration of the DMM event.



EWS' four-stage DMM will begin with a pre-stage general water conservation campaign. In Stage 1, EWS, City of Edmonton and Regional conservation and water efficiency best management practices will be implemented along with a voluntary appeal to the public to reduce indoor usage in winter and outdoor usage in summer. Under Stage 2, the DMM will move to voluntary indoor and outdoor usage restrictions in summer and mandatory restrictions for winter. Stages 3 and 4 will include mandatory restrictions for both seasons. The restrictions will support water demand reduction to meet identified targets for each stage to ensure demand will not exceed treatment and system water storage capacity. Stages 2-4 (winter) and Stages 3-4 (summer) will require specific industry outreach to achieve the targets and the messaging will vary based on the season.

EWS' four-stage DMM will begin with a pre-stage general water conservation campaign. In Stage 1, EWS, City of Edmonton and Regional conservation and water efficiency best management practices will be implemented along with a voluntary appeal to the public to reduce indoor usage in winter and outdoor usage in summer. Under Stage 2, the DMM will move to voluntary indoor and outdoor usage restrictions in summer and mandatory restrictions for winter. Stages 3 and 4 will include mandatory restrictions for both seasons. The restrictions will support water demand reduction to meet identified targets for each stage to ensure demand will not exceed treatment and system water storage capacity. Stages 2-4 (winter) and Stages 3-4 (summer) will require specific industry outreach to achieve the targets and the messaging will vary based on the season.

EWS will further develop the specific customer actions in each season for Stages 3 and 4 in the coming months in consultation with the public, commercial sector and industry. Once

finalized this updated DMM will be clearly communicated on the www.epcor.com website for future reference by customers.

Table 3 below outlines an initial screen of winter and summer approaches to achieve the demand reduction targets. EWS is proceeding with a data driven approach to develop the voluntary and mandatory winter and summer water restrictions (residential, regional, commercial and non-revenue water) to meet the staged targets. As EWS continues to implement Advanced Metering Infrastructure (AMI) across the City, there will be opportunity to further refine these protocols based on analysis of real time water use by sector during future DMM events.

| Table 3: Preliminary Winter and Summer DMM stage | | | |
|---|----------------|--|--|
| | Target* | Winter Approaches | Summer Approaches |
| Conserve | Efficient Use | <ul style="list-style-type: none"> Reduce internal leakage campaigns. Encourage water conservation for all customers. | <ul style="list-style-type: none"> Responsible outdoor use campaigns. Encourage water conservation for all customers. |
| Stage 1 | 5% | <ul style="list-style-type: none"> EWS/City of Edmonton/Region Operational Response. Voluntary appeal to reduce indoor usage. | <ul style="list-style-type: none"> EWS/City of Edmonton/Region Operational Response. Voluntary appeal to reduce outdoor usage. |
| Stage 2 | 10% | <ul style="list-style-type: none"> Mandatory appeal to reduce indoor usage by 10% to all customers. Initiate discussions for targeted sector reductions for top 20 commercial sectors. | <ul style="list-style-type: none"> Voluntary appeal to reduce outdoor usage to all customers. Voluntary appeal to all customers to reduce indoor usage. |
| Stage 3 | 15% | <ul style="list-style-type: none"> Mandatory appeal to reduce indoor usage by 15% to all customers. Mandatory restrictions for certain commercial water use activities. | <ul style="list-style-type: none"> Mandatory appeal to all customers to reduce indoor usage by 15%. Mandatory restrictions on outdoor water usage. Targeted reduction indoor and outdoor for commercial sector. |
| Stage 4 | 25% | <ul style="list-style-type: none"> Mandatory appeal to reduce indoor usage by 25%. Further targeted commercial sector reductions across the Region. | <ul style="list-style-type: none"> Mandatory appeal to reduce indoor usage by 25% to all customers. Mandatory outdoor water restrictions for all customers. |

*Regional customers to match target reductions.

E. Next Steps

Over the next few months EWS will continue to formalize this updated DMM protocol with the City of Edmonton, Regional Customers and the residential, multi-residential and

commercial customer sectors, with a goal to finalize and post on the epcor.com website in 2025.

In parallel to this work on the external customer facing aspect of DMM, EWS is also updating the various raw water and plant capacities and infrastructure risks to assess the risk potential of entering any of the mandatory restriction phases in summer or winter. This cyclic analysis completed as part of each Water IRP update will inform future capital and operational programs that EWS will recommend in future PBR Applications.

Figure 5 shows the 2021 assessment and the probabilities of requiring DMM during different outage and raw water conditions. In the 2021 IRP, the recommendation was for improvements to E.L. High Lift pumping and these projects are in progress with the electrical upgrades to be completed in the current 2022-2026 PBR and the concept design for an additional High Lift pumphouse underway for construction in the next PBR.

Figure 5 – Potential for DMM measures from 2021 Water Integrated Resource Plan

| Shutdown Scenario | Raw Water Category | | | |
|---|--------------------|--------|--------|-----------------------|
| | Winter | Spring | Summer | Fall Transition - EDF |
| Rosssdale Plant 1 Shutdown | Low | Low | Low | Medium |
| Rosssdale Plant 2 Shutdown | Medium | Low | Low | Medium |
| Full Rosssdale Shutdown (with and without HLP) | Medium | Medium | Medium | Medium |
| Partial E.L. Smith Shutdown (raw issue) | Low | Low | Low | Low |
| Partial E.L. Smith Shutdown (treated issue) | Low | Low | Low | Low |
| Full E.L. Smith Shutdown (with and without HLP) | High | High | High | High |

Appendix C: EWS Risk Management Process

A. Risk Management – Process Overview

EPCOR Water Services (EWS) utilizes EPCOR's Enterprise Risk Management (ERM) framework to ensure EWS has a consistent and robust process to identify, analyze, and monitor risks inherent to EPCOR's integrated water and wastewater operations. The process addresses various areas of risk, including strategic and operational. The purpose of the ERM framework, and resulting process, is to proactively facilitate the identification, understanding, assessment and mitigation of key risks that may impact the achievement of EWS' business objectives and enables informed decision-making on appropriate actions.

EPCOR's ERM methodology ensures that potential events are considered by subject matter experts for the event's consequence and likelihood across various categories including health & safety, environment, government & regulatory, reputation, customer service & reliability, and financial impact. For events where mitigations are required, an assessment is completed to identify potential mitigations and assess the mitigations for feasibility. Risks are reviewed and updated annually, with quarterly leadership reviews to identify emerging risks and monitor mitigation progress.

On an ongoing basis, EWS assesses and manages system risk through various internal processes including Integrated Resource Planning, Asset Management and Management of Change. Risk assessments completed as part of these processes lead to mitigation strategies which are often implemented through capital investment programs and projects and through various changes to operational practices and procedures. The capital and operational plans set out within EWS' PBR plan are informed by these risk assessments as well as by stakeholder input and internal and external expertise to determine a consolidated and balanced plan. EWS reports on actual financial and operational results annually through the PBR Progress Reports.

Examples of risks assessed through the ERM process which focusing on EWS' ability to provide water or treat wastewater and safety & environmental aspects are summarized below to facilitate an understanding on how this process supports EPCOR, stakeholder, and customer needs.

B. ERM Risks and Mitigations

I) Extreme Weather

a. Edmonton Water Treatment Plant and Wastewater Treatment Plant River Flooding

Risk Summary:

Changes in climate are anticipated to have a number of impacts on the North Saskatchewan River in Edmonton. Of all known risks associated with climate change, river flooding has been determined to pose the greatest risk to EWS operations, since both water treatment plants and the Gold Bar wastewater treatment plant are located in the North Saskatchewan River floodplain. Climate change is expected to increase the frequency and severity of floods. A flood disaster impacting EWS' water treatment plant (WTP) sites has the potential to impact Edmonton and the surrounding region greatly on a socioeconomic scale as damage to critical assets would be expected to extend plant outage lengths lasting months. A flood disaster at the Gold Bar wastewater treatment plant (WWTP) has the potential to have far reaching environmental impacts as damage to critical assets at the plant could cause a release untreated wastewater directly to the North Saskatchewan River for a duration of several weeks to months.

Water Treatment Plant Mitigation Summary:

The Flood Protection Project was approved as part of the 2022-2026 PBR application. The intent of this project is to manage the risk associated with up to 1:500 year return level riverine flooding and ensure that customers receive drinking water service within days or weeks after a flood event rather than months. Design is underway and elements of construction are expected to begin in late 2024 at both water treatment plants. EWS was successful in receiving federal Disaster Mitigation and Adaptation (DMAF) grant funding to support this initiative.

Gold Bar Wastewater Treatment Plant Mitigation Summary:

EWS is assessing alternatives to confirm the best path forward for its Riverflood Protection Project for the Gold Bar Wastewater Treatment Plant. The Gold Bar Riverflood Protection Project is included in EWS' 2025-2027 Wastewater PBR application. EWS was successful in receiving DMAF grant funding to support this initiative. Other supporting investments in electrical buildings and utility racking have been applied for under EWS' 2025-2027

Wastewater PBR application that mitigate a portion of this risk by relocating critical equipment away from high-risk flood locations.

b. Urban Flooding

Risk Summary:

Large rainfall storms can cause flooding, sometimes isolated, sometimes widespread. As recently as 2016, significant flooding has impacted Edmonton. The costs of flooding to citizens, the environment, society and property are substantial.

Mitigation Summary:

The Stormwater Integrated Resource Plan (SIRP) was approved for implementation through City Council in late 2019 with the intent to improve storm water management through the strategic themes of SLOW, MOVE, SECURE, PREDICT, and RESPOND. EWS was successful in receiving DMAF grant funding to support this initiative.

SLOW and MOVE have been progressing with the investment and completion of construction of dry ponds and Low Impact Development (LID) facilities throughout the City of Edmonton. Both dry pond installation and LID installation programs were applied for under EWS' 2025-2027 Wastewater PBR application and are expected to continue in future PBRs to address areas of highest risk.

SECURE has been progressing with home flood prevention inspections which have been prompting customer back water valve installations. This effort is proposed to continue under EWS' 2025-2027 Wastewater PBR application and a method to provide similar inspection opportunities for industrial, commercial, and institutional properties is in development.

PREDICT is progressing with the smart pond strategy and is proposed to continue under EWS' 2025-2027 Wastewater PBR with the Smart Ponds project.

RESPOND is progressing with investment into emergency flood response tool purchases and procedures development in collaboration with the City of Edmonton Office of Emergency Management and key customers in targeted locations.

II) Source Water Contamination (Upstream Spills into NSR)

Edmonton WTP Capacity Reduced

Risk Summary:

Contaminants are transported through the NSR watershed through pipelines, road hauling, and train routes and via overland flow through the watershed. Should there be a major uncontrolled release of a high contaminant load, NSR water quality would be impacted. The highest risk transport routes are those that pass across the NSR or its tributaries. The level of hazard to the source water would depend on the contaminant released. The likelihood of source water contamination would depend on volume spilled or flushed (snowmelt/rainfall), initial spill response actions, and proximity of the spill to source waters.

Mitigation Summary:

Both WTP sites have the capability to shut off the water intake on notification of a contamination event. An online analyzer to test raw water has been installed at the Rossdale WTP facility to provide warning of an event so that contamination of the process streams can be minimized, and similar options are being evaluated at the E.L. Smith WTP. Additionally, samples for Volatile Organic Compound (VOC) testing are collected daily at Rossdale and E.L. Smith from raw water, reservoirs and treated water, and VOC testing is performed on demand for WTP Operations. The water system has storage throughout the system that would provide drinking water for the anticipated shorter duration of these events. Depending on the nature of the release upstream, the water treatment process can be effective at safely removing contaminants from the water. Spill response procedures have been developed, including decision making tools so that the WTP operations can manage an event. EWS also led regional emergency management planning exercises to develop and test communication protocols.

III) Operational Reliability

a. E.L. Smith WTP Lack of Full Redundancy

Risk Summary:

The E.L. Smith water treatment plant does not have two fully separate treatment trains. There is redundancy in many process units, however, the Water IRP (2020) identified two major processes that lack redundancy to support current and future system needs. Lack of redundancy requires plant outages to complete normal work, and longer than anticipated plant outages can impact customer supply.

Mitigation Summary:

The Water IRP, updated in 2020, identified a series of projects to improve redundancy at E.L. Smith WTP. Several individual projects were approved in the 2022-2026 PBR, such as the 5kV Upgrades project and the High Lift Pump House Project. The E.L. Smith WTP

continues to be evaluated for alternatives and opportunities to mitigate single point processes and will continue to require funding into future PBRs. The January 2024 E.L. Smith event confirmed the need to focus on this effort. The Water IRP is being updated and will be presented to Utility Committee prior to the 2028 PBR Application.

b. E.L. Smith and Rossdale Single Point Utility Power Feeds

Risk Summary:

Each water treatment plant is connected to the electrical grid with a lack of redundancy for power supply. There is a standing risk that long term electrical transmission loss (either substation or feeder cables) could occur and would cause a similar treatment capacity impact as a major North Saskatchewan River flood event.

Mitigation Summary:

The Rossdale WTP has developed emergency power supply options that involves alternatives to temporarily refeed the plant from an alternate substation. Additionally, a third-party contractor has drafted a contingency plan to provide temporary emergency power and services to the site during a transmission failure. The business continuity plan for the Rossdale site is being developed to include the two alternatives.

The E.L. Smith New Power Feed project was approved in the 2022-2026 PBR. This project is expected to carry into the future PBR application as construction is intended to be completed by end of 2027.

IV) Aging Infrastructure

a. Water Treatment Plants and Gold Bar Wastewater Treatment Plant

Risk Summary:

Failure of any of the structural /elements or major mechanical, electrical, or control systems within the water treatment plants or at the Gold Bar wastewater treatment plant would cause production loss. The capacity loss varies widely depending on the specific process impacted.

Mitigation Summary:

The Rossdale water treatment plant and Gold Bar wastewater treatment plant both have largely redundant treatment trains that allow for ongoing inspection, maintenance, and

upgrade opportunities. As identified above, certain components at the E.L. Smith water treatment plant do not have full redundancy. All plants are continuing to improve their asset management programs, which includes operating, maintenance, inspection programs, and SCADA monitoring to give advance warning on process failures. These asset management programs are continuously improved by work alongside the Management of Change and Integrated Resource Planning efforts to ensure a longer-term view of plant requirements are considered and planned for, including periodic inspection of critical assets. Reliability/Life Cycle Replacement projects approved in the 2022-2026 PBR application are to support ongoing investment into aging infrastructure.

b. Wastewater Collection (WWC) System

Risk Summary:

The risk of failure is manageable for most of the assets within the wastewater collection system. This is because most assets, such as smaller diameter shallow pipes, would only have a localized impact if they fail or because there is sufficient redundancy in the system. However, there are other critical assets, such as large sewer trunks that service large areas located at major crossings with no redundancy, which would have broader impacts if these assets fail. These critical assets could disrupt large service areas, cause subsidences on high traffic roadways with a safety risk to public, may lead to sewage releases to the environment or, sewer backup into customer homes and are high cost for emergency repair if they fail.

Mitigation Summary:

The WWC system is continuing to improve its asset management program, which includes operating, maintenance, inspection programs and a SCADA monitoring program to give advance warning of system performance issues. The WWC system has an inspection program using a variety of visual and multi-sensor instrument inspection tools to provide condition information on the system. The WWC system has shifted to a risk-based asset management method. Reliability/Life Cycle Replacement projects proposed in the 2025-2027 PBR application are to support ongoing investment into aging infrastructure.

The CORe strategy approved by the City Council in 2019 supported an increased inspection program including addition of access points to support inspection of Large Trunk assets. Inspection activity has found that many of these large trunks are degrading faster than anticipated due to corrosion in the system. Drill Drop Maintenance Hole Renewal Program and Large Trunk Rehabilitation Program funding is proposed in the 2025-2027 PBR application to continue to address these risks. Major Crossing location failure risks are being mitigated with development of emergency response bypass plans and acquisition of field

equipment (expanding quantity of tools or increasing capacity of tools) to support those plans under the Large Trunk Rehabilitation Program.

c. Water Distribution and Transmission System

Risk Summary:

The risk of failure is manageable for most of the assets within the water distribution and transmission system. This is because most assets, such as hydrants, valves and smaller or well inter-connected water mains, would have only a localized impact if they fail or would have minimal impact because there is sufficient looping or redundancy in the system. However, there are other critical assets, such as transmission mains that service large areas located at major crossings for which there is no looping or redundancy, which would broaden impacts. These critical assets could disrupt large service areas and may lead to chlorinated water released to the environment and flood local roadways if they fail.

Mitigation Summary:

The Water Distribution and Transmission system is continuing to improve its asset management program, which includes operating, maintenance, inspection programs, and a SCADA monitoring program to give advance warning of system performance issues. A shift to risk-based asset management in 2019 identified a need to proactively inspect high risk transmission lines. A pilot inspection was completed in 2019 and proved the value of the inspection program by identifying three locations nearing failure that were proactively repaired. Funding was approved in the 2022-2026 PBR application for the Critical Pipeline Inspection Program to allow for investment in access points and completion of inspection for a set of critical lines. Additionally, there has been ongoing investment into transmission main construction with intent to complete looping in the system to improve redundancy.

V) EWS – Safety & Environmental Risks

Risk Summary:

There are risks associated with day-to-day operation of the water utility. Health and safety risks exist for workers and the public during construction and maintenance activities such as:

- Plant chemical exposure
- H₂S exposure
- Deep shaft and tunneling construction
- Safety in-and-around Storm Water Management Facilities.

Environmental risks exist for operational and maintenance activities such as:

- Potential release of sewage, storm water, or chlorinated water into the environment

- Gold Bar Wastewater Treatment Plant air quality
- Clover Bar Edmonton Waste Management Centre ground water contamination

Mitigation Summary:

These risks are managed through hazard identification and control methods under our integrated management systems, certified to ISO14001 and ISO45001. Controls are often based on engineered designs and methods, standard operating procedures and practices and emergency management plans, which involve a robust training program for staff and ensuring adequate supplies are available for worker day to day needs. Continuous input from field workers, customer feedback, and management review supports ongoing improvement of these mitigations over time.