



**2017 – 2021 Performance Based Regulation
Water Services,
Wastewater Treatment Services,
and Drainage Services**

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1 Executive Summary

This report provides an annual update to the City of Edmonton on the operational and financial results for the year ended December 31, 2019 for water services ("In-City Water"), wastewater treatment services ("Wastewater"), and, sanitary and storm water sewer services ("Drainage") provided within Edmonton by EPCOR Water Services Inc. ("EWSI"). The City of Edmonton City Council regulates In-City Water and Wastewater in accordance with the Performance Based Regulation ("PBR") Plan approved in the EPCOR Water Services and Wastewater Treatment Bylaw No. 17698 ("Bylaw 17698") and Drainage in accordance with the PBR Plan approved in EPCOR Drainage Services Bylaw No. 18100 ("Bylaw 18100").

1.1 Financial Performance

In-City Water, Wastewater and Drainage's financial performance for 2019 are summarized in Table 1.1 below¹:

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

		A	B	C	D
		2019		2017-2019	
	Revenue and Return on Equity	PBR Forecast	Actual	PBR Forecast	Actual
1	In-City Water				
2	Revenue	205.8	191.3	593.9	571.2
3	Return on Equity	40.8	34.4	117.1	110.2
4	Rate of Return on Equity	10.18%	8.56%	10.18%	9.61%
5	Wastewater				
6	Revenue	105.6	99.1	297.4	286.0
7	Return on Equity	19.2	19.3	53.0	58.5
8	Rate of Return on Equity	10.18%	10.93%	10.18%	11.84%
9	Drainage				
10	Revenue	202.4	199.0	399.0	393.6
11	Return on Equity	22.8	28.5	58.9	61.4
12	Rate of Return on Equity	3.98%	4.76%	5.21%	5.21%

In 2019, In-City Water achieved an 8.56% rate of return on equity (9.61% for 2017-2019), compared to its forecast rate of return of 10.175%. In-City Water returns were challenged by lower than forecast revenue driven by lower than forecast inflation adjustments to rates, and lower than forecast consumption, partially attributable to higher than average precipitation over the summer months. Operating expense reductions achieved by In-City Water (\$8.9 million) were unable to fully offset reductions to revenue.

¹ Consistent with the 2017-2021 PBR Application, all financial data in this report, including totals and sub-totals, are rounded to the nearest \$0.1 million. This practice ensures continuity of data between tables and between years. However, the sum of the rounded detailed data in certain tables may not be equal to the related rounded total or sub-total.

Wastewater's revenues have been affected by the same factors as In-City Water, with lower than forecast operating expenses, combined with a lower than forecast rate base, enabled Wastewater to achieve a 10.93% rate of return in 2019 (11.84% for 2017-2019), compared to its forecast rate of return of 10.175%.

In 2019, Drainage realized a 4.76% rate of return on equity, 0.78% greater than its forecast rate of return. Lower revenues resulting from lower than forecast consumption was offset by lower than forecast operating expenses and lower than forecast rate base. Since Drainage does not have a City of Edmonton-approved PBR forecast, Drainage's actual financial performance for 2018 has been compared to its EPCOR budget, adjusted (1) to remove one-time costs related to the transition of Drainage to EPCOR, and (2) from IFRS to a regulatory accounting basis. The adjusted budget, escalated at an appropriate inflation rate, will serve as the basis for comparison of actual to forecast financial results for the remainder of the 2017-2021 PBR term.

Detailed analyses of In-City Water, Wastewater and Drainage's financial performance for 2019 and for the 2017-2019 period are provided in sections 2.3, 3.3, and 4.3, respectively.

1.2 Capital Expenditures

In-City Water, Wastewater and Drainage's capital expenditures for 2019 and for the five-year term of the PBR Plan (the "2017-2021 PBR term") are summarized in Table 1.2 below:

Table 1.2
Capital Expenditures
(\$ millions)

		A	B	C	D	E	F
Capital Expenditures		2019		2017-2019*		2017-2021	
		PBR Forecast	Actual	PBR Forecast	Actual	PBR Forecast	Current Projection
1	In-City Water	87.0	113.0	276.4	307.6	475.8	574.1
2	Wastewater	53.3	49.3	165.6	148.5	235.4	238.6
3	Drainage	169.1	141.9	291.7	250.9	667.4	711.6

* Drainage Forecast and Actual results only include 2018-2019, 2018 is the first full year of Drainage operation following the transfer to EPCOR in September 2017.

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 EWSI's Project Management Office and are authorized by EWSI's Capital Project Steering Committee, EUI's Financial Review Council, or EPCOR's Board of Directors, depending on the amount of the expenditure. EWSI also presents information on its capital programs, as well as business cases supporting significant new capital projects to the Utility Committee throughout the year.

1. **In-City Water's** 2017-2021 projected capital expenditures of \$574.1 million are \$98.4 million (20.7%) greater than the PBR forecast. Significant projects contributing to this variance includes the E.L. Smith Solar Farm (\$35.3 million), which is funded through the special rate adjustment for Environmental Initiatives; changes to the scope of the Water D&T Facility Expansion, which adds an additional \$8.8 million to its cost. Besides these projects, there are three projects that the City has approved as non-

routine adjustments, including: (i) an enhanced Lead Mitigation Program (\$25.3 million) needed to conform to new Health Canada Guidelines; (ii) additional costs of LRT Relocations (\$12.2 million) needed to realign distribution network infrastructure; and (iii) the acquisition of the Discovery Park Reservoir and Capital Region Southwest Water Services Commission (CRSWSC) Water Pipeline (\$9.5 million), following the City of Edmonton's annexation of land in Leduc County. Compared to the prior year forecast, the 2017-2021 projected capital expenditures have decreased by \$40.7 million. This reduction reflects the preliminary impacts of the ongoing COVID-19 pandemic on In-City Water's capital program.

- **Wastewater's** 2017-2021 projected capital expenditures of \$238.6 million are \$3.2 million (1.4%) greater than the PBR forecast. The Gold Bar Wastewater Treatment Plant's aging infrastructure poses challenges to capital planning. Since the plant cannot be shutdown for maintenance, it is often difficult to accurately assess asset condition and the scope of rehabilitation needed before commencing work on a project. During preliminary engineering in 2017 and 2018, EWSI identified significant needs for repairs to critical infrastructure that had not been anticipated in the PBR forecast. EWSI reviewed design options and employed value engineering to reprioritize reliability and life cycle replacements. These efforts have ensured that changes to projections of the total cost of the 2017-2021 capital expenditures program have resulted in only a slight increase from the PBR forecast.
- **Drainage's** 2018-2021 projected capital expenditures of \$667.4 million are \$44.2 million (7%) greater than its long-term plan. This increase includes a \$37.3 real estate initiative (a combined water and drainage facility – also referenced in water's capital expenditure section above), as well as substantial shifts of projected costs between programs as drainage continues to refine and reprioritize its overall capital expenditures program to address asset condition, mitigate the risk of failure, and maintain required service levels.

Detailed explanations for differences between capital expenditures in PBR forecast and EWSI's current projections are provided in Sections 2.4, 3.4 and 4.4.

1.3 Operational Performance

In-City Water's and Wastewater's operational performance is measured by the results of indices prescribed in Schedule 3 of Bylaw 17698 with each index consisting of one or more performance measures. Performance under each index is measured independently on a point 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 EWSI does not meet the 100 base point standard.

In 2019, In-City Water exceeded the performance standards for all five of its performance measure indices and Wastewater exceeded the performance standards for all four of its performance measure indices. Detailed discussions of the performance measures making up each of the indices and operational performance highlights are provided in Section 2.5 for In-City Water and Section 3.5 for Wastewater.

**Table 1.3-1
2019 Performance Measures**

		A	B	C	D
Performance Index		In-City Water		Wastewater	
		Standard	Actual Score	Standard	Actual Score
1	Water Quality Index ⁽¹⁾	25.0	25.0	55.0	60.5
2	Customer Service Index	20.0	21.0	15.0	16.5
3	System Reliability and Optimization Index	25.0	28.5	15.0	16.5
4	Environmental Index ⁽¹⁾	15.0	16.5	n/a	n/a
5	Safety Index	15.0	16.5	15.0	16.5
6	Aggregate Points Earned	100.0	107.5	100.0	110.0

¹ Water Quality and Environmental are combined into one index for Wastewater's operational performance

Drainage's operational performance is measured by the results of four indices prescribed in Schedule 3 of Bylaw 18100 with each index consisting of one or more performance measures. These performance measures are patterned after previous Drainage Utility service quality metrics and do not include a scoring system similar to those of In-City Water and Wastewater.

In 2019, Drainage met or exceeded performance standards for ten of thirteen performance measures included in the four performance measure indices. Detailed discussions of the performance measures making up each of index and highlights of Drainage's operational performance are provided in Section 4.5.

2019 is the last year Drainage Services will be reporting on these performance measures. Pursuant to City Council's approval of amendments to Bylaw 18100 on February 19, 2020, EWSI introduced new PBR performance metrics, scoring and penalties beginning in 2020. The new proposed PBR metrics program is effective for the remainder of the PBR term (2020 and 2021), and is patterned after the water and wastewater PBR metrics and meets the requirements of the Letter of Intent developed for the transition of Drainage Services from the City to EPCOR.

1.4 Rates and Bill Comparisons

In 2019, the average monthly bill for In-City Water customers, based on 2019 average monthly consumption per residential customer of 13.8 m³, was **\$36.15**, an increase of 2.8% from 2018. This increase consists of the 1.2% inflation adjustment discussed in Section 2.3.1, and special rate adjustments approved in Bylaw 17698 for Environmental Initiatives (0.3%), Accelerated Programs (0.5%) and Rebasing (0.8%).

The average residential customer's wastewater treatment bill in 2019, also based on monthly consumption of 13.8 m³, was **\$17.33**, an increase of 5.5% from 2018. This increase includes the 1.2% inflation adjustment, and the special rate adjustment for rebasing of 4.3% needed to support Wastewater's 2017-2021 capital programs.

The average residential customer's drainage bill in 2019, again based on monthly consumption of 13.8 m³, was **\$34.55**, an increase of 3.0% from 2018. Drainage rates from January 1, 2018 to March 31, 2022

have been set in Bylaw 18100, which, except for Non-Routine Adjustments (Section 1.5), limits average annual bill increases to 3.0%.

EWSI undertakes annual bill comparison surveys with various cities and local communities. Section 2.6 shows that EWSI's residential water rates are lower than most of the cities and communities included in the comparison, with only Vancouver having lower water rates. Drainage and Wastewater 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 which influence the level of investment in and approach to flood mitigation. Section 3.6 shows that Edmonton's combined Drainage and Wastewater treatment rates are competitive with those of other cities and communities with similar geographic and climatic conditions. Commercial bill comparisons for both water and wastewater show similar results to residential water and wastewater bills.

1.5 Non-Routine Adjustments

Non-routine adjustments for In-City Water and Wastewater are defined in Bylaw 17698, and for Drainage in Bylaw 18100, as "items which are unusual, significant in size or nature, and beyond the scope of control of EWSI". Bylaws 17698 and 18100 allow EWSI to request adjustments to In-City Water, Wastewater and Drainage rates for non-routine adjustments from the City Manager or City Council, depending on the impact of the non-routine adjustment on In-City Water, Wastewater or Drainage's revenue requirements.

In 2019, EWSI received approval to increase In-City Water and Drainage rates for the following projects that qualified as non-routine adjustments outlined in Bylaw 17698, Schedule 3, Section 5.0 for Water and Wastewater, or in Bylaw 18100, Schedule 3 Section 4.1 for Drainage. These non-routine adjustments will be included in Drainage rates commencing January 1, 2020, January 1, 2021, and January 1, 2022, and will be included in In-City Water rates commencing April 1, 2020 and escalating by inflation less the productivity factor in April 1, 2021.

- **Lead Mitigation Strategy (In-City Water)** – On March 22, 2019, EWSI presented a new lead mitigation strategy to the Utility Committee. This strategy is designed to meet new Health Canada Guidelines that reduce the maximum concentration of lead in drinking water at the tap from 10 parts per billion to 5 parts per billion. On July 16, 2019, EWSI received approval to apply the non-routine adjustments to In-City water rates commencing April 1, 2020 to recover the costs of implementing this strategy. The additional cost to an average Residential In-City Water customer will be \$0.40 per month commencing April 1, 2020 (or a total of \$10.91 over the remainder of the 2017-2021 PBR term).
- **Leduc County Annexation (In-City Water)** – On November 27 2018, the Government of Alberta approved the City of Edmonton's annexation of 8,260 hectares from Leduc County. As part of the annexation, EWSI will acquire the existing water infrastructure within or required to service the annexed area, including a reservoir, pump house and booster station, as well as transmission mains and a small distribution system, at a cost of \$9.5 million which is comprised of \$7.8 million for the Discovery Park reservoir and the remainder for a pipeline and booster station. On November 7, 2019, EWSI received approval to apply the non-routine adjustments to In-City water rates commencing April 1, 2020 to recover the costs related to the annexation. The additional cost to the average Residential

In-City Water customer will be \$0.26 per month commencing April 1, 2020 (\$7.09 over the remainder of the PBR term).

- LRT Relocations (In-City Water and Drainage)** – EWSI has identified work needed to accommodate water main, hydrant and sewer relocations for the West Valley Line and Metro Line Northwest Phase I LRT projects. On November 7, 2019, (Drainage) and December 23, 2019 (In-City Water) EWSI received approvals to apply the non-routine adjustments to water rates for In-City Water customers commencing April 1, 2020 and to sanitary utility and storm water utility rates for Drainage customers commencing January 1, 2020. The additional cost to the average Residential In-City Water customer is \$0.17 per month commencing April 1, 2020 (\$4.64 over the remainder of the PBR term). The average monthly bill increase for Residential Drainage customers is \$0.14 per month commencing January 1, 2020, an additional \$0.37 per month commencing in January 1, 2021, and an additional \$0.31 per month commencing on January 1, 2022 (or a total of \$10.26 over the remainder of the 2018-2021 PBR term).
- Stormwater Integrated Resource Plan (Drainage)** – On May 10, 2019, EWSI presented its Stormwater Integrated Resource Plan (SIRP) alternatives to the Utility Committee. The plan includes a mix of capital and operational program investments to mitigate flood risks across the City using a mix of grey and green infrastructure components installed within the public right-of-way or within City or EPCOR owned parcels. The SIRP approach allows for a lower overall capital investment than seen with traditional engineering approaches through the inclusion of operational programs that support the overall community in responding to flooding events. On December 2, 2019, EWSI received approval to apply the non-routine adjustments to storm water utility rates commencing January 1, 2020. The additional cost to the average Residential Drainage customer is \$0.51 per month commencing January 1, 2020, an additional \$0.15 per month commencing January 1, 2021, and an additional \$0.03 commencing January 1, 2022 (or a total of \$16.11 over the remainder of the 2018-2021 PBR term).
- Corrosion and Odour Reduction Strategy (Drainage)** – On June 28 2019, EWSI presented its Corrosion and Odour Reduction Strategy to the Utility Committee. The Corrosion and Odour Reduction Strategy was developed using similar principles and approaches to EWSI's SIRP to determine an optimized mix of operational and capital solutions to reduce corrosion and odour. The strategy expands the previous plan by focusing on preventing the formation of hydrogen sulphide gas, which will reduce community odour impacts and lengthen the life of sewer network assets. Areas of focus within the strategy include: prevent the formation of hydrogen sulphide gas in the sewer system, control the release of air from the sewer system, and adapt the system using real-time monitoring technologies and improved inspection data. On December 2, 2019, EWSI received approval to apply the non-routine adjustments to sanitary utility rates commencing January 1, 2020. The additional cost to the average Residential Drainage customer is \$0.53 per month commencing January 1, 2020, an additional \$0.42 per month commencing January 1, 2021, and an additional \$0.06 per month commencing January 1, 2022 (or a total of \$20.79 over the remainder of the PBR term).

Table 1.5 summarizes the average Residential customer monthly bill impact for all non-routine adjustment that have been approved over the 2017-2021 PBR term. These non-routine adjustments include the five non-routine adjustments detailed above, plus the negative non-routine adjustment approved in 2018, passing on

reductions in corporate shared service cost allocations resulting from the transfer of Drainage Services assets to EPCOR to In-City Water and Wastewater customers.

Table 1.5
Non-Routine Adjustments
Monthly Residential Bill Impacts
(\$)

		A	B	C
Non-Routine Adjustment		2020	2021	2022* (Jan to Mar)
1	Corporate Cost Reduction (Drainage Transfer)	(1.04)	(1.05)	(1.05)
2	Lead Mitigation Strategy	0.40	0.41	0.41
3	Leduc County Annexation	0.26	0.26	0.26
4	LRT Relocations	0.31	0.68	0.99
5	Corrosion and Odour Reduction Strategy	0.53	0.95	1.01
6	Stormwater Integrated Resource Plan	0.51	0.66	0.69
7	Total Monthly Bill Impact	0.97	1.91	2.31

* EWSI's current bylaws expire on March 31, 2022. New bylaws with updated rates would be in effect for the remainder of 2022.

2 In-City Water Services

2.1 Accomplishments and Challenges

In 2019, In-City water had significant accomplishments, including:

- In June, at the American Water Works Association's (AWWA) Annual Conference and Exposition Edmonton's tap water was named the People's Choice Winner of AWWA Tap Water Taste Test, as voted by thousands of water experts who attended the AWWA conference;
- In partnership with Alberta Environment and Parks, the City of Edmonton and the North Saskatchewan Watershed Alliance, The WaterSHED (Water: Saskatchewan Headwaters, Edmonton and Downstream) Monitoring Program was launched. In 2019 installation and upgrades were completed on a network of 19 monitoring stations along the North Saskatchewan River, from its headwaters in the Columbia Icefields to the Saskatchewan border. As Alberta's most extensive water quality monitoring and sampling program, it will improve understanding of how the river functions, how it is being impacted by land-use decisions and actions, and how it may change in the future;
- In February, Edmonton experienced one of the coldest months in nearly 40 years. This colder than average temperate resulted in a significant increase in the number of frozen services in 2019. EWSI's D&T crews identified innovative methods to quickly and cost effectively thaw frozen service lines, and restore service to affected customers;
- In early 2019, EWSI received approval, from the City of Edmonton Utility Committee, to proceed with its comprehensive Lead Mitigation Strategy to meet new Health Canada Guidelines for Canadian Drinking Water Quality. This strategy is intended to reduce lead levels in over 4,400 homes with lead service lines and over 23,000 homes with high lead levels related to lead plumbing and plumbing fixtures ensuring that EWSI provides safe drinking water to the citizens of Edmonton;
- Additional accomplishments are included in the 2019 Operating Plan below.

2.2 Customers and Consumption

In-City Water provides services to three customer classes: Residential; Multi-Residential; and Commercial (see Appendix A). These classes are unchanged from the previous PBR term and are described in detail in Appendix A. Customer counts, total annual consumption and monthly consumption per customer are shown in Table 2.2 below:

Table 2.2
Customers, Consumption and Consumption per Customer

		A	B	C	D
Customers and Consumption		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Customers				
1	Residential	266,138	269,842	261,207	264,554
2	Multi-Residential	3,837	3,779	3,792	3,765
3	Commercial	19,761	19,918	19,509	19,679
4	Total	289,736	293,539	284,507	287,998
	Consumption per Customer (m³ per month)				
5	Residential	14.2	13.8	14.4	14.3
6	Multi-Residential	408.6	391.8	408.6	392.7
7	Commercial	120.3	109.3	121.9	114.2
	Annual Consumption (ML)				
8	Residential	45,215.1	44,603.1	135,406.1	135,913.0
9	Multi-Residential	18,813.6	17,766.6	55,774.0	53,234.2
10	Commercial	28,529.4	26,133.3	85,602.5	80,897.8
11	Total	92,558.0	88,502.9	276,782.7	270,045.0

The factors contributing to actual to forecast differences for 2019 and for 2017-2019 differ by customer class, as explained below:

- Residential.** Customer counts in 2019 are 1.4% greater than forecast, primarily because of higher than expected actual customer counts at the beginning of the 2017-2021 PBR term. In 2019, consumption per customer was 2.7% lower than forecast, primarily attributable to higher than average precipitation over the summer months. Over the 2017-2019 period actual consumption per customer is slightly lower than the PBR forecast, confirming the robust residential forecasting methodology developed for the 2017-2021 PBR forecast. The combined effect of these factors is that total residential consumption for 2019 is 1.4% lower than forecast (0.4% greater for 2017-2019).
- Multi-Residential.** Growth in the multi-residential customer counts continue to be lower than forecast, in 2019 customer counts decreased to 1.5% lower than forecast (from 0.7%). Lower than forecast consumption per customer, combined with lower customer counts, meant that total consumption was 5.6% less than forecast. Lower than forecast consumption per customer is not attributable to a specific cause, but reflects a variety of factors, including: vacancy rates, renovations of older buildings; and the number of units in new multi-residential buildings.
- Commercial.** Consumption in the commercial customer class was 8.4% less than forecast, despite a 0.8% increase in customer counts. This class includes a large number of customers that use very little water (offices, convenience stores, etc.) and a small number of customers with very high levels of consumption (food and beverage producers, malls, etc.). In 2019, EWSI's billing system data showed that 217 (1.1%) of commercial customers accounted for 50% of commercial consumption. Therefore, the loss of a large customer can cause significant shifts in consumption per customer for the entire class. As well, since new customers tend to be low water consumers, increases in customer counts may not have significant effects on overall consumption for the commercial customer class. Accordingly, EWSI is exploring opportunities to expand the application of the forecasting methodology developed for the residential class to the commercial and multi-residential customer classes for future PBR periods.

2.3 Financial Performance

In-City Water's net income is derived from the provision of water services within Edmonton's boundaries. Besides these services, EWSI provides water services to surrounding communities under bulk water supply agreements with regional water service commissions ("RWCG" or "Regional Customers"), and fire protection services to the City of Edmonton under a service agreement ("Fire Protection").

EWSI's water system is fully integrated, with services jointly provided to In-City Water, Regional Customers and Fire Protection. Therefore, in sections 2.3.1 to 2.3.7, operating costs, depreciation, rate base and capital expenditures are presented and analyzed on a total system basis. In-City Water's share of these expenses, as well as its returns on rate base, are calculated in accordance with a cost of service model developed jointly by EWSI, the regional water service commissions and the City of Edmonton, and are shown as separate line items on each applicable table. In-City Water's total revenue and revenue requirements are summarized in Table 2.3 below:

Table 2.3
In-City Water Revenue Requirements
(\$ millions)

		A	B	C	D
Summary of Revenue Requirements		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	In-City Water Rate Revenue ⁽¹⁾	200.8	185.8	579.0	554.5
2	In-City Water Revenue Requirement				
3	Operating expenses	108.1	99.5	314.8	295.5
4	Other revenue	(5.0)	(5.5)	(14.9)	(16.8)
5	Depreciation and amortization	28.4	28.4	81.1	81.3
6	Return on rate base financed by debt	29.4	29.0	84.3	84.2
7	Return on rate base financed by equity	40.8	34.4	117.1	110.2
8	In-City Water Revenue Requirement*	201.6	185.8	582.4	554.5
9	Return on Rate Base Financed by Equity	10.18%	8.56%	10.18%	9.61%

¹ In the PBR forecast, rebasing and other special rate adjustments have been smoothed over the PBR term. Therefore, although forecast revenue is equal to the revenue requirement over the 2017-2021 PBR term, in any year within the PBR term, forecast revenue may be greater or less than the revenue requirement.

2.3.1 Revenue

In-City Water's rate revenues include fixed monthly services charges which vary by meter size and consumption charges applied to each cubic meter of water consumed. Besides rate revenue, In-City Water revenues also include other revenue derived from temporary services, connection fees, water permits, late payment charges and other incidental services. Table 2.3.1-1 below provides a comparison of 2019 In-City Water revenues to the PBR forecast:

**Table 2.3.1-1
In-City Water Revenue
(\$ millions)**

		A	B	C	D
In-City Water Revenue		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Fixed Monthly Service Charges				
2	Residential	24.2	21.4	69.6	64.5
3	Multi-Residential	1.5	1.4	4.3	4.0
4	Commercial	4.5	3.9	12.8	11.9
5	Fixed Monthly Service Charges	30.3	26.6	86.7	80.3
6	Consumption Charges				
7	Residential	100.6	95.2	291.1	283.7
8	Multi-Residential	31.5	29.1	90.4	85.3
9	Commercial	38.4	34.8	110.9	105.2
10	Consumption Charges	170.5	159.2	492.3	474.2
11	In-City Water Rate Revenue	200.8	185.8	579.0	554.5
12	Other Revenue	5.0	5.5	14.9	16.8
13	Total In-City Water Revenue	205.8	191.3	593.9	571.2

In-City rate revenues were \$15.0 million less than forecast in 2019, and \$24.5 million less than forecast over the 2017-2019 PBR period. This difference is attributable to the following factors:

- Lower than forecast inflation resulted in a \$6.1 million decrease in 2019 (\$11.0 million for 2017-2019). The PBR plan limits Water and Wastewater's annual routine rate adjustments to inflation less an efficiency factor (see Appendix A.1). As shown in Table 2.3.1-2, actual PBR inflation adjustments for 2019 and 2017-2019 are significantly less than forecast. The effect of lower than forecast inflation from 2016 to 2019 will continue to impact revenues throughout the remainder of the 2017-2021 PBR term.

**Table 2.3.1-2
2018 PBR Inflation Adjustment**

		A	B	C	D
PBR Inflation Adjustment to In-City Water and Wastewater Rates		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Forecast Inflation				
2	CPI	2.20%	2.10%	6.75%	6.33%
3	Labour	2.40%	1.20%	7.37%	4.67%
4	Weighted Inflation (65% CPI, 35% Labour)	2.27%	1.79%	6.97%	5.75%
5	Less: Efficiency Factor	-0.25%	-0.25%	-0.75%	-0.75%
6	Forecast Inflation	2.02%	1.54%	4.08%	3.39%
7	Actual to Forecast Inflation Adjustment	-	-0.35%	-	-1.72%
8	PBR Inflation Adjustment	2.02%	1.18%	4.08%	1.96%

- Lower than forecast consumption (see section 2.2) resulted in a \$6.3 million decrease in 2019 revenues (\$9.3 million for 2017-2019). These decreases were partially offset by slight increases in customer counts which resulted in a \$0.4 million increase in revenue in 2019 (\$1.0 million for 2017-2019; and
- A negative non-routine adjustment to 2018 water rates decreased revenues by \$3.0 million in 2019 (\$5.1 million for 2017-2019). This non-routine adjustment fulfills EPCOR's commitment to the City to

flow the benefits of any reductions in corporate shared service cost allocations resulting from the transfer of Drainage Services assets to EPCOR to In-City Water and Wastewater customers through a negative non-routine adjustment.

Besides rate revenues, In-City Water earned \$5.5 million in other revenue in 2019, \$0.5 million greater than forecast (\$1.8 million greater for 2017-2019). This increase includes \$0.2 million in fees charged to private developers for water main flushing for new developments (\$0.8 million for 2017-2019), and \$0.3 million in additional customer service revenue (\$1.0 million for 2017-2019).

2.3.2 Operating Expenses by Function

Table 2.3.2 below provides a comparison of EWSI's total water system operating expenses for 2019 to the PBR forecast.

Table 2.3.2
Operating Expenses by Function
(\$ millions)

		A	B	C	D
		2019		2017-2019	
Function and Sub-function		PBR Forecast	Actual	PBR Forecast	Actual
1	Power, Other Utilities and Chemicals				
2	Power and Other Utilities	14.4	10.3	40.4	31.8
3	Chemicals	7.4	11.7	21.9	28.0
4	Power, Other Utilities and Chemicals	21.8	22.0	62.3	59.9
5	Water Operations				
6	Water Treatment Plants	19.6	18.9	57.6	55.4
7	Water Distribution and Transmission	25.6	26.5	75.3	78.9
8	Operational Support Services	7.6	6.9	22.2	20.8
9	Quality Assurance and Environment	6.6	6.8	18.5	18.9
10	Capitalized Overhead Costs	(7.4)	(8.3)	(21.8)	(22.9)
11	Water Operations	52.0	50.9	151.9	151.2
12	Billing, Meters and Customer Service				
13	Billing and Collections	8.4	7.8	24.3	23.6
14	Meter Reading, Repairs and Maintenance	2.8	2.2	9.0	6.2
15	Customer Service	0.9	0.4	2.3	1.7
16	Billing, Meters and Customer Service	12.1	10.4	35.7	31.4
17	EWSI Shared Services				
18	EWSI Shared Services	10.2	9.1	29.9	27.9
19	Incentive and Other Compensation	3.3	2.9	9.6	9.0
20	EWSI Shared Services	13.4	12.0	39.6	36.9
21	Corporate Shared Services	15.6	12.1	45.9	37.0
22	Franchise Fees and Property Taxes				
23	Franchise Fees	15.8	14.7	45.7	43.8
24	Property Taxes	0.4	0.2	1.3	0.7
25	Franchise Fees and Property Taxes	16.3	14.9	47.1	44.5
26	Total Operating Expenses by Function	131.2	122.3	382.4	361.0
27	In-City Water Share - %	82.4%	81.4%	82.3%	81.9%
28	In-City Water Share - \$	108.1	99.5	314.8	295.5

Overall, total operating expenses for 2019 were \$8.9 million lower than the PBR forecast, and \$21.4 million lower over the 2017-2019 PRB period. Key factors contributing to this difference include:

- **Power and Other Utilities** – \$4.1 million less than forecast in 2019 (\$8.6 million less for 2017-2019) due to lower than forecast power prices (\$2.2 million in 2019 and \$4.8 million for 2017-2019) and \$1.9 million in savings associated with the green energy premium (\$3.8 million for 2017-2019) that was included in the PBR forecast. The PBR forecast included annual renewable (green energy) power purchases of \$1.9 million annually, starting in 2018. Rather than purchasing locally produced renewable energy, EWSI plans to construct a solar farm on land adjacent to the E.L. Smith water treatment plant.
- **Chemicals** – \$4.3 million greater than forecast in 2019 (\$6.1 million greater than forecast for 2017-2019). In 2019, higher than average precipitation (surface run off) resulted in unusually high colour in the river over the summer months requiring the use of more chemicals (alum and caustic soda) in the water treatment process. The unusually high colour continued into the fall causing a significant delay in the conversion to direct filtration and extending the use of chemicals in the water treatment process. Higher than forecast costs for the 2017-2019 PBR period are also attributable to unexpected changes in river water quality, including early spring run offs and high colour in the fall.
- **Water Treatment Plants** – \$0.7 million less than forecast in 2019 (\$2.2 million less than forecast for 2017-2019). Lower than forecast costs for 2017-2019 are attributable to several factors, including: a higher than forecast proportion of internal labour working on capital projects, which increased capital recoveries by \$2.0 million, reductions in fringe benefit costs, primarily due to lower pension contribution rates, which provided savings of \$0.6 million; capitalization of filter media costs, which had previously been considered an operating expense of \$0.2 million; which is partially offset by higher salary costs of \$1.0 million attributable to an increase in head count. The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.
- **Water Distribution and Transmission** – \$0.9 million greater than forecast in 2019 (\$3.6 million greater for 2017-2019). Seasonal freeze-thaw cycles in 2017 and 2018 combined with a colder than average winter in 2019 resulted in higher than normal volumes of emergency repairs (main breaks and frozen services) over the 2017 to 2019 period, resulting in increased overtime costs of \$0.7 million (\$2.1 million for 2017-2019), higher contractor costs of \$1.8 million (\$3.5 million for 2017-2019), and additional material costs of \$0.6 million (\$1.7 million for 2017-2019). These increases were partially offset by reductions in fringe benefit costs of \$1.0 million in 2019 (\$2.5 million for 2017-2019), and an increase in the recovery of fleet costs attributable to an increase in capital work of \$0.6 million in 2019 (\$0.7 million for 2017-2019). The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.
- **Operational Support Services** – \$0.7 million less than forecast in 2019 (\$1.4 million less for 2017-2019). The 2017-2019 variance in this function is primarily attributable to lower staff costs of \$0.9 million related to vacant positions within the Project and Asset Management functions and a transfer of the Knowledge Management function to Corporate Shared Service in 2019, combined with lower than forecast legal costs of \$0.4 million, as less external legal support was required.
- **Billing, Meters, and Customer Service** – \$1.7 million less than forecast in 2019 (\$4.3 million less for 2017-2019). Meter reading process improvements provided cost savings in staff costs of \$1.0 million (\$2.6 million for 2017-2019), \$0.3 million in vehicle expenses (\$0.7 million for 2017-2019), and \$0.6 million in lower billing and customer service charges from EPCOR Energy Alberta LP (\$0.7

million for 2017-2019). The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.

- **EWSI Shared Services** – \$1.4 million less than forecast in 2019 (\$2.7 million less than forecast for 2017-2019). The 2019 favorable variance in this category reflects EWSI's continuing efforts to manage shared services costs, with savings of \$0.3 million arising from delays in filling vacant positions in Regulatory Services, a \$0.5 million decrease in technical training charges from EPCOR Distribution and Transmission Inc. (training functions consolidated to Corporate Shared Service in 2019), and \$0.4 million of recoveries from Drainage, as the organization is gradually consolidating functions from each of EWSI's business units into a single EWSI's shared services area.
- **Corporate Shared Services** – \$3.5 million less than forecast in 2019 (\$8.9 million less than forecast for 2017-2019). These differences reflect both the reduction in corporate shared services cost allocations resulting from the transfer of Drainage from the City of Edmonton to EPCOR, which are fully offset by the non-routine adjustment to rates described in Section 2.1.1, as well as cost savings in EPCOR Utilities Inc.'s corporate functions.
- **Franchise Fees and Property Taxes** – \$1.4 million less than forecast in 2019 (\$2.6 million less than forecast for 2017-2019). Lower than forecast revenue resulted in a \$1.2 million reduction in franchise fees in 2019 (\$2.0 million for 2017-2019). Lower than forecast property taxes relate to the deferral of the Distribution and Transmission facility which had been expected to increase Water Services property taxes by \$0.2 million annually commencing in 2017.

Variances in other operating expense functions and sub-functions are not significant, either individually or in aggregate.

In 2019, In-City Water's share of operating expenses was \$99.5 million (81.4%), compared to \$108.1 million (82.4%) in the PBR forecast. This result reflects both lower total operating expenses for EWSI's total water system and a 1.0% decrease in In-City Water's share of operating expenses determined through the cost of service model.

2.3.3 Operating Expenses by Cost Category

Table 2.3.3 below shows operating expenses by cost category for Water Operations, Billing Meters and Customer Service, and EWSI Shared Services, where cost categories differ from the sub-functions in Section 2.3.2.

Table 2.3.3
Operating Expenses by Cost Category
(\$ millions)

		A	B	C	D
Cost Category		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Water Operations				
2	Staff Costs and Employee Benefits	42.2	40.6	124.2	120.3
3	Contractors and Consultants	8.0	9.3	22.5	25.8
4	Vehicles	1.5	1.1	4.5	3.6
5	Materials and Supplies	3.2	3.9	9.3	11.1
6	Other	4.5	4.3	13.1	13.2
6	Capitalized Overhead Costs	(7.4)	(8.3)	(21.8)	(22.9)
7	Water Operations	52.0	50.9	151.9	151.2
8	Billing, Meters and Customer Service				
9	CUS Charges	8.4	7.8	24.3	23.6
10	Staff Costs and Employee Benefits	7.0	6.0	20.4	17.9
11	Contractors and Consultants	0.5	0.4	1.6	1.2
12	Vehicles	0.3	0.1	0.9	0.6
13	Other	0.6	0.7	1.6	1.4
14	Meter Reading Services (Recoveries)	(4.8)	(4.6)	(13.1)	(13.1)
15	Billing, Meters and Customer Service	12.1	10.4	35.7	31.4
16	EWSI Shared Services				
17	EWSI Shared Services Allocation	10.2	9.4	30.1	28.1
18	Staff Costs and Employee Benefits	3.3	2.8	9.6	9.2
19	Contractors and Consultants	0.2	0.1	0.6	0.4
20	Other	(0.3)	(0.3)	(0.8)	(0.8)
21	EWSI Shared Services	13.4	12.0	39.6	36.9

The information presented in this table supports the explanations of differences between 2019 actual and forecast expenses provided in Section 2.3.2. Accordingly, no additional explanations are considered necessary.

2.3.4 Depreciation and Amortization

EWSI total system depreciation expense and amortization of contributed assets for 2019 are shown in Table 2.3.4 below:

Table 2.3.4
Depreciation and Amortization
(\$ millions)

		A	B	C	D
Depreciation and Amortization		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Gross depreciation expense	45.8	47.2	132.2	134.2
2	Amortization of contributions	(9.9)	(11.0)	(29.4)	(31.2)
3	Depreciation, net	35.9	36.2	102.8	103.0
4	In-City Water Share - %	78.9%	78.4%	78.9%	78.9%
5	In-City Water Share - \$	28.4	28.4	81.1	81.3

Depreciation expense and amortization of contributions are both slightly higher than forecast reflecting higher than forecast levels of developer-funded assets, explained in section 2.3.5 below. These impacts are offsetting, so actual depreciation expense, net of amortization, is within \$0.2 million of forecast.

In-City Water's share of 2019 depreciation expense is 0.5% lower than forecast, 0.7% of this difference is attributable to higher than forecast assets additions for fire protection related assets (hydrants). The remaining 0.2% difference is consistent with actual to forecast differences in the base and max day peaking factors used to allocate depreciation expense between In-City customer classes versus that charged to the RWCG.

2.3.5 Rate Base

In 2019, EWSI's total water system rate base, shown in Table 2.3.5 below, was \$12.8 million more than forecast, with the higher than forecast gross rate base offset by higher than forecast contributions.

Table 2.3.5
Mid-Year Rate Base
(\$ millions)

		A	B
		2019	
Components of Mid-Year Rate Base		PBR Forecast	Actual
1	Plant in Service		
2	Balance, beginning of year	2,346.9	2,413.1
3	Additions - EPCOR-funded	85.5	105.4
4	Additions - Developer-funded	6.9	35.8
5	Retirements and adjustments	-	(9.0)
6	Balance, end of year	2,439.3	2,545.4
7	Mid-Year Plant in service	2,393.1	2,479.3
8	Accumulated Depreciation		
9	Balance, beginning of year	605.1	595.5
10	Depreciation expense	45.8	47.2
11	Retirements and adjustments	-	(8.9)
12	Balance, end of year	650.9	633.8
13	Mid-Year Accumulated Depreciation	628.0	614.7
14	Other Rate Base Items		
15	Working Capital	22.3	21.0
16	Materials and Supplies	2.9	3.6
17	Gross Mid-Year Rate Base	1,790.3	1,889.1
19	Contributions		
20	Balance, beginning of year	687.1	760.2
21	Contributions in aid of construction	6.9	35.8
23	Balance, end of year	693.9	795.9
24	Mid-Year Contributions	690.5	778.0
25	Accumulated Amortization		
26	Balance, beginning of year	168.1	169.1
27	Amortization of contributions	9.9	11.0
28	Balance, end of year	178.0	180.1
29	Mid-Year Accumulated Amortization	173.1	174.6
30	Mid-Year Contributions	517.4	603.5
31	Net Mid-Year Rate Base	1,272.9	1,285.7

The gross rate base reflects significantly higher than forecast levels of developer-funded assets over the 2016 to 2019 period. Developers are responsible for construction of distribution infrastructure in new subdivisions. When these assets are placed into service, ownership of the assets is transferred to EWSI, where the assets, together with offsetting contributions in aid of construction, are added to the rate base.

In 2019, the net mid-year rate base is \$12.8 million or 1.0% more than forecast. This increase in rate base is driven by higher than forecast capital expenditures as discussed in section 2.4.1.

2.3.6 Return on Rate Base

In 2019, In-City Water's return on equity was \$5.6 million (1.6%) less than forecast and \$6.9 million (0.6%) less for 2017-2019. In 2019, this decrease was attributable to lower than forecast net income, reflecting a significant decline in revenue which is partially offset by EWSI's actions to control operating costs.

Table 2.3.6-1
Return on In-City Water Share of Mid-Year Rate Base
(\$ millions)

		A	B	C	D
Return on Rate Base		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Net Mid-Year Rate Base	1,272.9	1,285.7		
2	In-City Water Share - %	78.8%	78.0%		
3	In-City Water Share - \$	1,003.0	1,002.8		
4	Deemed Capital Structure				
5	Debt	60.00%	60.00%		
6	Equity	40.00%	40.00%		
7	Total	100.00%	100.00%		
8	Cost Rates				
9	Debt	4.88%	4.83%	4.88%	4.89%
10	Equity	10.18%	8.56%	10.18%	9.61%
11	Weighted Average Cost of Capital (WACC)	7.00%	6.32%	7.00%	6.77%
12	Return on Rate Base				
13	Debt	29.4	29.0	84.3	84.2
14	Equity	40.8	34.3	117.1	110.2
15	Total Return on In-City Water Rate Base	70.2	63.3	201.4	194.4

In-City Water's share of the total system net mid-year rate base is 0.8% less than forecast, of this difference 1.1% is attributable to higher than forecast asset additions for fire protection related assets (hydrants). The remaining 0.3% difference is consistent with the change in In-City Water's demands on water system relative to that of Regional Customers. When combined with a total system rate base the In-City Water net mid-year rate base is within 0.02% of the forecast amount.

Returns on rate base are calculated separately for the debt-financed and equity-financed portions of In-City Water's net rate base. The rate of return on debt is equal to the embedded cost of debt for EWSI's total water system, as calculated in Table 2.3.6-2 below:

Table 2.3.6-2
Interest Expense and Cost of Debt
(\$ millions)

		A	B	C	D
Interest Expense and Cost of Debt		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Interest expense				
2	Interest on short-term debt	0.9	1.2	3.0	3.7
3	Interest on City of Edmonton debentures	0.6	0.6	2.1	2.1
4	Interest on intercompany debentures	35.0	34.1	100.2	98.1
5	Total interest expense	36.5	35.9	105.3	103.9
6	Mid-year debt and other long-term liabilities				
7	Mid-Year Short-term debt	33.9	2.9		
8	Mid-Year Long-term debt	713.5	738.5		
9	Mid-Year Other Long-term liabilities	1.8	2.0		
10	Total mid-year debt and other long-term liabilities	749.1	743.4		
11	Embedded Cost of Debt	4.88%	4.83%	4.88%	4.89%

The embedded cost of debt is slightly lower than forecast in 2019. Although, EWSI issued more long term debt than forecast, which is more expensive than short term debt, due to favorable economic conditions EWSI was able to issue the long term debt at lower than forecast rates over the 2017 to 2019 period.

2.3.7 Transactions with Affiliates

In-City Water derives a significant proportion of its revenue and expenses from transactions with affiliates, including the City of Edmonton, EPCOR Utilities Inc. and its subsidiaries, and other EWSI business units. Table 2.3.7 provides a summary of In-City Water's 2019 actual and forecast transactions with affiliates.

Table 2.3.7
Transactions with Affiliates
(\$ millions)

		A	B	C	D
Affiliate and Service		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Revenues from the provision of services to the City of Edmonton				
2	Public Fire Protection	11.8	11.5	34.0	33.8
3	Water sales	3.3	3.3	9.7	10.2
4	Other	0.2	-	0.7	0.1
5	Total	15.3	14.9	44.3	44.2
6	Services provided by (recovered from):				
7	City of Edmonton				
8	Franchise Fees	15.8	14.7	45.7	43.8
9	Property Taxes	0.4	0.2	1.3	0.7
10	Interest on City of Edmonton Debentures	0.6	0.6	2.1	2.1
11	Mobile equipment services	1.9	2.3	5.7	6.8
12	Other services	1.4	0.6	4.0	2.0
13	Meter Reading Recoveries	-	-	-	(1.4)
14	Total	20.2	18.4	58.9	54.1
15	EPCOR Utilities Inc.				

		A	B	C	D
Affiliate and Service		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
16	Corporate Shared Service Costs	15.6	12.1	45.9	37.0
17	Interest on Intercompany Debentures	35.0	34.1	100.2	98.1
18	Interest on Short-term debt	0.9	1.2	3.0	3.7
19	Other Services	-	0.3	-	0.3
20	Total	51.5	47.7	149.0	139.1
21	EPCOR Distribution and Transmission Inc.				
22	Meter Reading Service Revenue	-	-	-	(0.5)
23	Other services	0.1	-	0.4	-
24	Total	0.1	-	0.4	(0.5)
25	EPCOR Technologies Inc.				
26	Hydrovac Charges and Space Rentals	0.9	1.8	2.7	4.8
27	Other Services (Recoveries)	-	(0.1)	-	(0.1)
28	Total	0.9	1.7	2.7	4.6
29	EPCOR Energy Alberta LP				
30	Customer Billing and Collection Services	8.4	7.8	24.3	23.6
31	Meter Data Management	-	0.3	-	0.5
32	Trouble Call Support Services	-	0.3	-	0.3
33	Total	8.4	8.4	24.3	24.4
34	EPCOR Power Development				
35	Other Services (Recoveries)	-	(0.3)	-	(0.4)
36	EPCOR Commercial Services				
37	Commercial Services Rent Recoveries	-	(0.3)	-	(0.6)
38	Other EWSI Business Units				
39	EWSI Shared Services Allocation	10.2	9.4	30.1	28.1
40	Water Sales to Wastewater	(0.4)	(0.4)	(1.1)	(1.3)
41	Meter Reading Recoveries from Wastewater	(2.4)	(2.4)	(6.6)	(6.9)
42	Meter Reading Recoveries from Drainage Services	(2.4)	(2.4)	(6.6)	(5.2)
43	Customer Service Fees from Drainage Services	-	0.4	-	0.9
44	Other Services provided to Drainage Services	-	(0.2)	-	(0.2)
45	Meter Reading Recoveries from Other EWSI Business Units	-	-	-	(0.1)
46	Quality Assurance Lab Testing and Other Services from Other EWSI Business Units	-	-	-	0.2
47	Total	5.1	4.1	15.9	15.5
48	Expenditures on capital projects arising from services provided by:				
49	City of Edmonton	3.2	0.6	9.3	2.4
50	EPCOR Technologies Inc.	4.0	4.2	11.7	12.8
51	EPCOR Utilities Inc.	-	1.2	-	2.8
52	EPCOR Drainage Services	-	2.3	-	6.5
53	EPCOR Distribution and Transmission Inc.	0.1	0.3	0.4	1.0
54	Other EPCOR Business Units	-	0.1	-	0.2
55	Total	7.1	8.6	21.3	25.8

2.4 Capital Programs

2.4.1 Capital Expenditures

Table 2.4.1 compares approved capital expenditures from the PBR forecast to actual capital expenditures for 2019 for each project with approved or forecast capital expenditures in excess of \$5.0 million over the

2017-2021 PBR term, as well as for each project category. Table 2.4.1 also provides a comparison of total 2017-2021 approved capital expenditures to EWSI's current capital forecast.

Table 2.4.1
Capital Expenditures
(\$ millions)

	A	B	C	D	E	F	G	H	I	
	2019			2017-2019			2017-2021			
	PBR Forecast	Actual	Difference	PBR Forecast	Actual	Difference	PBR Forecast	Current Projection	Difference	
1 Regulatory										
2 Water Services Replace/Refurbish	0.3	0.5	0.2	0.9	1.5	0.7	1.5	2.2	0.7	
3 Projects < \$5 Million	2.0	2.4	0.4	6.0	6.0	0.1	10.2	9.4	(0.8)	
4 Subtotal	2.3	2.9	0.6	6.8	7.6	0.7	11.6	11.6	(0.1)	
5 Growth/Customer Requirements										
6 LRT Relocates (NRA)	0.2	6.4	6.2	6.1	13.4	7.4	10.4	22.6	12.2	1
7 Network PD Transmission Mains	2.2	8.5	6.3	8.1	17.6	9.5	14.4	24.2	9.8	2
8 Discovery Park Reservoir & CRSWSC Pipe Line (NRA)	-	0.3	0.3	-	0.3	0.3	-	9.5	9.5	3
9 Water Services Connections	4.8	5.1	0.4	13.1	17.3	4.2	23.6	27.8	4.3	4
10 Water Main Cost Sharing Program	0.5	1.6	1.2	1.7	4.2	2.5	3.0	6.2	3.2	5
11 New Water Distribution Mains	1.8	2.6	0.8	5.2	6.9	1.7	8.8	10.6	1.7	
12 Distribution System Modifications	1.1	1.6	0.5	4.0	3.6	(0.4)	6.0	7.0	1.0	
13 New Meter Purchase/Installation	2.9	2.5	(0.4)	7.1	6.8	(0.2)	13.2	12.1	(1.1)	
14 PD Construction Coordination	2.8	2.7	(0.2)	8.3	7.9	(0.4)	15.4	13.5	(2.0)	
15 Projects < \$5 Million	0.2	0.3	0.0	2.1	6.5	4.4	2.6	8.6	6.1	6
16 Subtotal	16.4	31.6	15.1	55.6	84.5	28.9	97.5	142.1	44.6	
17 Health, Safety & Environment										
18 Phosphoric Injection for Lead Control (NRA)	-	1.2	1.2	-	1.3	1.3	-	16.3	16.3	7
19 Accelerated Lead Services Replacement (NRA)	-	-	-	-	-	-	-	9.0	9.0	7
20 Deep Bed Filtration Conversion – E.L. Smith	1.3	0.0	(1.3)	1.3	0.3	(0.9)	22.3	0.3	(22.0)	8
21 Projects < \$5 Million	0.8	1.0	0.2	2.3	2.3	(0.0)	4.3	3.3	(1.0)	
22 Subtotal	2.1	2.2	0.1	3.6	3.9	0.3	26.6	29.0	2.3	
23 Reliability & Life Cycle Improvements										
24 Structural Rehab Program – E.L. Smith	0.4	0.8	0.3	1.1	1.5	0.4	2.0	10.0	8.0	8
25 Chemfeed Upgrades – Rosssdale	1.0	3.3	2.3	2.9	6.0	3.1	4.0	9.1	5.1	9
26 Bypass (Ring) Main – E.L. Smith	1.5	0.4	(1.1)	1.8	0.6	(1.2)	7.0	11.9	4.8	10
27 Obsolete Hydrants Replacement Program	0.9	2.1	1.2	2.6	5.2	2.6	4.4	8.9	4.6	11
28 Obsolete Valve Replacement Program	0.8	1.9	1.1	2.4	4.7	2.3	4.1	8.3	4.2	12
29 Chemfeed Upgrades – E.L. Smith	1.3	2.0	0.7	3.1	4.3	1.1	4.0	7.5	3.5	13
30 Filter Underdrain Upgrades – Rosssdale	1.2	2.4	1.2	3.5	8.0	4.5	4.7	8.2	3.5	14
31 Structural Upgrades – Reservoirs	0.5	0.5	0.0	1.1	2.3	1.3	1.7	4.2	2.5	15
32 HVAC Upgrades – E.L. Smith	0.6	3.8	3.2	2.2	4.8	2.6	3.4	5.0	1.7	
33 Mechanical Upgrades – E.L. Smith	0.9	1.7	0.8	3.4	4.7	1.4	4.9	6.0	1.2	
34 Clarifier C1-2 Upgrade – Rosssdale	-	-	-	4.3	5.5	1.1	4.3	5.5	1.1	
35 Network Valve Chamber Refurbishment	1.1	1.1	0.0	3.3	3.6	0.3	5.6	5.4	(0.2)	
36 Water Main Proactive Renewal	3.6	3.8	0.2	10.5	11.3	0.7	18.0	17.4	(0.6)	
37 Vehicle & Fleet Additions	2.8	1.7	(1.0)	7.9	5.8	(2.1)	11.8	11.0	(0.8)	

		A	B	C	D	E	F	G	H	I	
		2019			2017-2019			2017-2021			
		PBR Forecast	Actual	Difference	PBR Forecast	Actual	Difference	PBR Forecast	Current Projection	Difference	
38	Transmission Mains Replacement/Refurbish	2.7	2.6	(0.0)	7.7	8.6	1.0	13.3	12.4	(0.9)	
39	Electrical Upgrades – Rossdale	1.0	1.7	0.7	2.6	3.2	0.6	5.2	4.3	(0.9)	
40	SCADA System Upgrade Program	0.9	0.8	(0.1)	4.3	2.8	(1.4)	5.7	4.5	(1.2)	
41	Electrical Upgrades – Reservoirs	1.0	0.6	(0.4)	3.3	2.2	(1.0)	5.3	2.7	(2.6)	16
42	Cell/Pumphouse Roof Replacement	2.2	-	(2.2)	4.9	1.5	(3.4)	6.3	3.2	(3.1)	15
43	Water Main Reactive Renewal	10.9	12.8	2.0	28.9	34.5	5.6	54.7	50.3	(4.4)	17
44	Water Meter Change Out Program	6.4	2.9	(3.5)	12.1	8.8	(3.3)	25.6	13.8	(11.9)	18
45	Projects < \$5 Million	12.9	16.1	3.2	41.6	44.1	2.5	66.3	69.9	3.5	19
46	Subtotal	54.5	63.1	8.7	155.4	174.1	18.7	262.4	279.4	17.0	
47	Performance Efficiency & Improvement										
48	Water D&T Facility Expansion	-	0.0	0.0	16.0	0.0	(16.0)	16.0	24.8	8.8	20
49	Water Main Cathodic Protection	4.2	3.0	(1.2)	12.3	10.0	(2.4)	21.0	15.9	(5.1)	21
50	Projects < \$5 Million	1.4	1.2	(0.2)	6.1	3.0	(3.1)	7.1	6.2	(0.9)	
51	Subtotal	5.6	4.2	(1.4)	34.4	13.0	(21.4)	44.1	46.9	2.7	
52	Accelerated										
53	Accelerated Water Main Renewal	10.4	11.0	0.6	30.4	30.5	0.1	51.9	48.1	(3.8)	22
54	Accelerated Fire Protection	2.5	2.1	(0.4)	9.5	7.5	(2.0)	15.9	9.9	(6.0)	23
55	Subtotal	12.9	13.1	0.2	39.9	38.0	(1.9)	67.8	58.0	(9.8)	
56											
57	E.L. Smith Solar Farm and Battery Storage (net)	-	0.7	0.7	-	4.4	4.4	-	35.3	35.3	24
58	Capital Expenditures before contributions	93.9	117.9	24.0	295.7	325.4	29.7	510.1	602.2	92.2	
59	Contributions										
60	Water Services Connections	(4.8)	(2.7)	2.0	(13.1)	(10.9)	2.3	(23.6)	(17.4)	6.1	4
61	Private Development Contributions	(0.3)	(0.1)	0.2	(1.0)	(0.8)	0.2	(1.9)	(1.4)	0.5	
62	New Water Distribution Mains	(1.8)	(2.0)	(0.3)	(5.2)	(6.2)	(1.0)	(8.8)	(9.3)	(0.5)	
63	Subtotal	(6.9)	(4.9)	1.9	(19.3)	(17.8)	1.5	(34.3)	(28.1)	6.2	
64	Capital Expenditures	87.0	113.0	26.0	276.4	307.6	31.2	475.8	574.1	98.4	

Explanations for differences between PBR forecast capital expenditures for 2017 to 2021 and EWSI's current projection in excess of \$2.0 million on individual projects with total costs in excess of \$5.0 million, as well as for project categories in aggregate include:

1. **LRT Relocates (NRA)** – \$12.2 million (117%) greater than forecast. Changes to track alignments, as well as the accelerated construction schedule for the West Valley Line LRT project have resulted in increases to the projected costs of utility relocations. In 2019, the City of Edmonton approved a non-routine adjustment to increase rates to offset the revenue requirement impacts of a \$14.5 million increase in capital expenditures for this project.
2. **Network PD Transmission Mains** – \$9.8 million (68%) greater than forecast. Since developers determine both the timing of projects and the areas to be developed, expenditures on this program have proven difficult to forecast. Significant additions to this program include transmission main projects for Ellerslie Road Arterial Twinning Project, 28th Avenue SW/Whitemud Creek Crossing, the Horse Hills Creek/Meridian Street Crossing, 199th Street from 23rd Avenue to 35th Avenue, and Aurum Road 9th Street to 17th Street.
3. **Discovery Park Reservoir and CRSWSC Water Pipeline Acquisition (NRA)** – \$9.5 million (new project). This project includes the cost of infrastructure (reservoir, pump house, transmission mains and booster station) located in, or required to service, land annexed by the City of Edmonton. In 2019, the City of Edmonton approved a non-routine adjustment to increase rates to offset the revenue requirement impacts of a \$9.2 million increase in capital expenditures for these projects.
4. **Water Services Connections (net of contributions)** – \$10.4 million (100%) greater than forecast. Contributions from private developers were forecast to recover 100% of the construction costs for new water service connections. EWSI found that after accounting for all program costs, its service application rates provide for recovery of less than 75% of the total program costs. EWSI is currently reviewing the program to determine if modifications to the program and rates are required.
5. **Water Main Cost Sharing Program** – \$3.2 million (105%) greater than forecast. Similar to Network PD Transmission Mains, the costs of this program are driven by developer activity. The increase in the costs of this program result from higher than forecast developer activity during the PBR period.
6. **Growth and Customer Requirements < \$5.0 million** – \$6.1 million (236%) greater than forecast. The projected increase in this category results primarily from a new booster station project needed to address development in a high elevation area (Laurel neighborhood, southeast Edmonton) (\$1.7 million); additional costs to acquire water mains from the Capital Region Northeast Water Service Commission following city expansion (\$2.7 million); and changes to projected costs for other growth projects amounting to \$1.7 million.
7. **Phosphoric Injection for Lead Control and Accelerated Lead Services Replacement (NRA)** – \$25.3 million (new projects). These projects are required to implement EWSI's lead mitigation strategy, including introducing orthophosphate into drinking water to inhibit corrosion, and accelerating the replacement of lead service lines in high priority homes. In 2019, the City of Edmonton approved a non-routine adjustment to increase rates to offset the revenue requirement impacts of a \$15.6 million increase in capital expenditures for these projects.
8. **Deep Bed Filtration Conversion – E.L Smith** – \$22.0 million (99%) less than forecast and **Structural Rehabilitation Program – E.L Smith** – \$8.0 million (398%) greater than forecast. During engineering inspections in 2018, EWSI identified immediate needs for structural rehabilitation of the

E.L. Smith Stage 1 and Stage 2 filter plenums (12 filters in total). Accordingly, the conversion to deep bed filters has been postponed until after the end of the current PBR term, so that the required structural rehabilitation repairs and upgrades can be completed to both Stage 1 and Stage 2 Filters.

9. **Chemfeed Upgrades – Rosssdale** – \$5.1 million (128%) greater than forecast. EWSI identified significant health, safety and environmental needs, requiring extensive upgrades to the sodium bisulphite room.
10. **Bypass Main (Ring Main) – E.L. Smith** – \$4.8 million (69%) greater than forecast. In 2019, a historical resource impact assessment confirmed the presence of cultural materials within the proposed construction area, requiring archaeological mitigation and increasing total project costs. Further design also identified the requirement for additional manual isolation valves to improve operational flexibility and redundancy.
11. **Obsolete Hydrant Replacement Program** – \$4.6 million (104%) greater than forecast. Higher than expected rates of deterioration have led to increased backlog, requiring adjustments to hydrant replacement schedules. EWSI has adjusted its hydrant replacement schedule to clear backlogs and ensure fire protection service levels are maintained.
12. **Obsolete Valve Replacement Program** – \$4.2 million (102%) greater than forecast. Similar to the obsolete hydrant replacement program, higher than expected rates of deterioration have led to increased backlog, requiring adjustments to valve replacement schedules. Although the projected cost of this program has increased substantially, improving overall valve operability in the system reduces isolation time, lessens the potential for property damage and mitigates customer impacts during emergency main break response.
13. **Chemfeed Upgrades – E.L. Smith** – \$3.5 million (87%) greater than forecast. Higher than estimated costs for a significant fluoride room upgrade to replace end-of-life equipment, and unanticipated upgrades to the sodium hypochlorite room, including new generation cells, are the primary factors contributing to the increase in the costs of this program.
14. **Filter Underdrain Upgrades – Rosssdale** – \$3.5 million (73%) greater than forecast. Both the scope and cost of this project have increased following an inspection of the filter underdrain system that identified unforeseen needs for upgrades to air scour systems, combined with an unexpected increase in the price of steel.
15. **Structural Upgrades – Reservoirs** – \$ \$2.5 million (145%) greater than forecast and Reservoir Cell and Pumphouse Roof Replacement – \$3.1 million (50%) less than forecast. Due to shutdown requirements, roof replacement work and interior structural work needed to happen at the same time. As a result, the scope from the roof replacement program was added to the structural upgrades program. This change allows for more efficient project delivery and improvements to project management and coordination.
16. **Electrical Upgrades Program – Reservoirs** – \$2.6 million (49%) less than forecast due to the deferral of lower priority electrical upgrades to a future PBR period.
17. **Water Main Reactive Renewal Program** – \$4.4 million (8%) less than forecast. The decrease is primarily attributable to the ongoing COVID-19 pandemic, which is expected to result in the deferral of lower priority renewals to the next PBR period.

18. **Water Meter Change out Program** – \$11.9 million (46%) less than forecast. The decrease in the projected cost of this program results from an improvement in the expected lives of the batteries used in the meters. As a result, fewer meters are expected to require replacement during the current PBR period.
19. **Reliability and Life Cycle Improvements < \$5.0 million** – \$3.5 million (5%) greater than forecast. The projected increase in this category results primarily from the combination of the increased scope of the Rosedale stilling basin upgrade project (\$3.0 million); unanticipated Rosedale ring main rehabilitation requirements (\$1.8 million); net flood protection capital expenditures not covered by provincial and federal funding (\$1.6 million); and the new Transmission Main Inspection program (\$1.2 million). These increases were offset by the deferral of lower priority Rosedale roof replacements (\$2.0 million) and a significant portion of the E.L. Smith High Level Pump #5 upgrades to the next PBR period (\$2.5 million)
20. **Water D&T Facility Expansion** – \$8.8 million (55%) greater than forecast. Completion of the D&T Facility was originally planned for 2017. This project has been re-scoped following the transfer of Drainage to EPCOR and the completion of an EPCOR-wide real estate review. The review concluded that a consolidated solution for Water and Drainage would provide long-term synergies and operational efficiencies that would outweigh the additional capital costs.
21. **Water Main Cathodic Protection** – \$5.1 million (24%) less than forecast. The reduction in the costs of the program result from adoption of more efficient anode installation processes combined with delays attributable to the ongoing COVID-19 pandemic.
22. **Accelerated Water Main Renewal** – \$3.8 million (7%) less than forecast. The reduction is primarily attributable to the ongoing COVID-19 pandemic, which is expected to result in the deferral of lower priority accelerated renewals to the next PBR period.
23. **Accelerated Fire Protection** – \$6.0 million (38%) less than forecast. EWSI expects that expenditures over the remainder of the 2017-2021 PBR term will be less than approved amounts, due to a smaller number of potential sub-projects meeting the Accelerated Fire Protection Program criteria. EWSI has allocated a portion of the additional funding towards the Infill funding program that was introduced in the past year. This is a trail program that offsets the costs of infrastructure upgrades in infill areas and was developed in conjunction with IDEA and the City of Edmonton. Additionally, funding has also been directed to critical work which has been identified in areas such as Distribution System Modifications (for City-driven relocates) and Transmission Main inspection work where capital expenditures are expected to exceed levels in the PBR forecast.
24. **E.L. Smith Solar Farm and Battery Storage (net of contributions)** – \$35.3 million (new projects). As noted in section 2.3.2, instead of purchasing locally produced renewable power at an annual cost of \$1.9 million, EWSI plans to construct a solar farm at E.L. Smith. Current plans for the solar farm include a battery storage system that would be almost entirely grant-funded.

2.4.2 Construction Work in Progress

In-City Water's rate base consists of plant in service. If a capital project is not completed (i.e. not placed into service) in the year, the capital expenditures on that project remain in Construction Work in Progress and are excluded from the rate base. In 2019, as shown on Table 2.4.2, the balance in Construction Work in Progress was \$16.0 million greater than forecast, of which \$4.9 million was attributable to the E.L.

Smith solar project, with the remainder primarily attributable to carry-over projects at the Water Treatment Plants including the Rosedale sodium bisulfate room upgrade (de-chlorination), the E.L. Smith fluoride room upgrade, E.L. Smith high lift pump house surge protection, and the orthophosphate system (Lead Mitigation Strategy).

Table 2.4.2
Construction Work in Progress
(\$ millions)

		A	B	C	D
Construction Work in Progress		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Balance, beginning of period	3.3	13.2	0.3	3.8
2	Capital Expenditures	87.0	113.0	276.4	307.5
3	Capital Additions	(85.5)	(105.4)	(271.9)	(290.6)
4	Balance, end of period	4.7	20.7	4.7	20.7

The PBR plan allows EWSI to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an allowance for funds utilized during construction ("AFUDC"). In 2019, AFUDC included in capital expenditures on eligible projects amounted to \$0.9 million, compared to the PBR forecast amount of \$0.3 million.

2.5 Operational Performance

2.5.1 Water Quality Index

The Water Quality index is calculated as the percentage of water quality test results that meet EWSI's internal water standards. Water quality standards are established by both the federal and provincial governments and are incorporated into EWSI's Approval to Operate from Alberta Environment and Parks (AEP). In some cases, EWSI sets even stricter limits for critical parameters that are identified in EWSI Quality Standards, to provide early warnings of potential water quality problems; so that corrective actions can be taken before external standards are not met.

Table 2.5.1
Water Quality Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Quality Index	The percentage of the total number of water quality tests taken in the period that do not yield suspect results	> 99.7%	99.8%	1.001
Average Index				1.001
Index Standard Points				25.0
Total Actual Points				25.0
Maximum Available Points Including Bonus Points				25.5
Total Points Earned				25.0

2019 Highlights

- **Water Quality Index.** EWSI met all Health Canada Drinking Water Quality Guidelines and AEP water quality testing requirements in 2019. During the year, EWSI collected 62,329 samples of treated drinking water. Of those samples only 114 (0.2%) did not meet internal water quality standards.

The majority (57%) of variances from internal water quality standards in 2019 were related to temporary increases in turbidity and / or decreases in chlorine concentrations in samples collected from the distribution system. Customer water quality inquiries (representing 23% of the overall variances in 2019) were also related to increased turbidity and / or decreased chlorine.

2020 Areas for Improvement

Water Quality Index: EWSI is planning to use a rapid-field test (ATP) for ensuring the microbial quality of water levels related to distribution main flushing activities in 2020. This will continue to support required Total Coliforms (TC) and E. coli (EC) testing while ensuring more effective flushing and a resultant reduction of variances related to low chlorine and high turbidity samples (both observed in customer inquiries and the distribution system).

It should be noted that with the Covid-19 pandemic, challenges can be expected in the collection of samples from customers and public locations.

2.5.2 Customer Service Index

The customer service index is a composite measure of the customers' perception of satisfaction with EWSI service, the aesthetic quality of water and speed of response to customer issues.

Table 2.5.2
Customer Service Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Post Service Audit Factor	The percentage of the customers responding as "completely" or "very satisfied" in the level of service received from the EWSI Emergency group.	> 74.9%	74.5%	0.995
Home Sniffing Factor	The percentage result of customer satisfaction for the home sniffing survey.	> 94.4%	95.5%	1.011
Response Time Factor	The average number of minutes needed to confirm a water main break from the time a call is received at EWSI's dispatch office.	< 25	20.4	1.184
Planned Construction Impact Factor	The percentage of the total planned construction events where EWSI complies with required construction notification procedures.	> 95.8%	97.1%	1.013
Average Index				1.051
Index Standard Points				20.0
Total Actual Points				21.0
Maximum Available Points Including Bonus Points				23.0
Total Points Earned				21.0

2019 Highlights

- **Post Service Audit (PSA) Factor.** In 2019, EWSI focused on enhancing the customer service culture by focusing on customer contact quality reviews and coaching. As a result, EWSI saw improvement to the PSA compared to 2018 and 2017. EWSI also implemented a new telephony system and processes for call handling. Working with EPCOR Drainage and Power, EWSI implemented a joint phone number and new call menu options for customers to call with any water, drainage, or power related emergencies.
- **Home Sniffing Factor.** The Home Sniffing program is designed to measure the impact of spring run-off in the river and the effectiveness of water treatment during this period, particularly in terms of mitigating run-off related odours at the tap. Spring runoff and associated treatment challenges started during the third week of March, and the water treatment plants were well prepared to manage taste and odour concerns effectively.

EWSI increased recruitment of the number of home sniffers compared to 2018 numbers. This resulted in smoother data trends and increased statistical robustness of the calculated performance measure compared to previous years.

A major improvement in 2019 was having Home Sniffers' results available online as feedback to water plant operators.

Following the 3-month customer monitoring period, the calculated 2019 customer satisfaction factor was 95.5%, which exceeded the established target of 94.4%.

2020 Areas for Improvement

- **Post Service Audit (PSA) Factor.** In 2020, EWSI will be focused on continuing to grow the customer service culture by focusing on first call resolution and continuing to build customer service skills.
- **Home Sniffing Factor.** In 2020, EWSI is looking to further improve results by encouraging home sniffers to enter results daily. This will allow more closely represent real-time conditions feedback for water treatment practices to be adjusted accordingly. Weekend updating of online results will also allow for major off-hours changes in treatment.

EWSI reviews spring run-off performance data and outcomes every year and includes this new information to update water treatment strategy. This provides opportunities to better respond to future run-offs.

- **Response Time Factor.** EWSI continues to focus on maintaining the response time factor.

2.5.3 System Reliability and Optimization Index

The System Reliability Index is a measure of the confidence that customers can place in the reliability of the waterworks system.

Table 2.5.3
System Reliability and Optimization Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Main Break Factor	The number of water main breaks that occurred in the reporting period.	< 419	298	1.289
Water Main Break Repair Duration Factor	The percentage of water main breaks repaired and confirmed by EWSI within 24 hours from the time that the flow of water is shut off, excluding main breaks on arterial or collector roads.	> 93.7%	95.2%	1.016
Water Loss Factor	The Infrastructure Leakage Index, a performance indicator quantifying how well a water distribution system is managed for the control of “real” water losses (i.e. leakage).	< 2.0	1.19	1.405
System Energy Efficiency Factor	The energy used at all water facilities in kWh divided by the average annual water production per residential customer account (ML/kWh/customer).	< 309	250	1.234
Average index				1.236
Index Standard Points				25.0
Total Actual Points				30.9
Maximum Available Points Including Bonus Points				28.5
Total Points Earned				28.5

2019 Highlights

- **Water Main Break Factor.** EWSI experienced 298 water main breaks in 2019, 121 less than the PBR standard of 419. This result is attributed to the effectiveness of on-going water main replacement programs.
- **Water Main Break Repair Duration Factor.** In 2019, 95.24% of main breaks were repaired within 24-hours, exceeding the PBR standard of 93.7%. When water main break repairs approached 20 hours in duration, EWSI provided additional communication to affected customers and when required, temporary water supply support via water tanks, hose hook ups and / or delivery of water jugs to affected customers.
- **Water Loss Factor (ILI).** In 2019, EWSI's Infrastructure Leak Index (ILI) exceeded the PBR standard. A “real-loss” component analysis was also conducted. This increased understanding of the system's real losses and identification of potential opportunities for further system improvements.
- **System Energy Efficiency Factor.** EWSI continued to focus on energy efficiency improvement and GHG reduction. Projects identified included:
 - Optimization of high-lift pump performance at both Rosedale and EL Smith water treatment plants which included maintaining pumping above 75 MLD at the Rosedale plant
 - Shifting production to the EL Smith WTP to take advantage of energy efficiencies
 - Implementing a 15°C temperature target at reservoirs when not occupied

2020 Areas for Improvement

- **Water Main Break Factor.** EWSI will be continuing with cast iron replacement programs in 2020.
- **Water Main Break Repair Duration Factor.** EWSI will investigate using 24-hour rolling shifts on specific water outages to facilitate quicker repairs and thereby reduce water service outage times for affected customers.
- **Water Loss Factor (ILI).** EWSI will continue to look for additional areas of water loss that may be monitored and mitigated.
- **System Energy Efficiency Factor.** EWSI will investigate options to improve operational efficiency through automation, data analysis of existing systems and asset management processes.

2.5.4 Environment Index

The environmental index measures the success of programs and policies designed to mitigate and report adverse environmental impacts.

Table 2.5.4
Environmental Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Conservation Factor	The actual 10 year rolling average monthly Edmonton residential consumption per household.	<17.2	15.3	1.124
Environment Incident Factor	The number of reportable and preventable environmental incidents.	<6	3	2.000
Solids Residual Management Factor	The average number of days that the Rosedale and E.L. Smith water treatment plants are operating in direct filtration mode.	> 120	79	0.659
Average index				1.261
Index Standard Points				15.0
Total Actual Points				18.9
Maximum Available Points Including Bonus Points				16.5
Total Points Earned				16.5

2019 Highlights

- **Water Conservation Factor.** Residential water consumption per customer continues to decline due to changes in habits and technology. In the past, habits such as turning the tap off while brushing teeth lowered consumption. Currently, technology continues to contribute to declining consumption through increasing use of higher efficiency appliances and low flush toilets. 2019 was also one of the coldest and wettest summers in history. This resulted in very low summer water consumption.
- **Environment Incident Management Factor.** Focus on reducing reportable incidents across EWSI continued through 2019. Three environmental incidents that were both preventable and reportable occurred. All three incidents were investigated to determine root causes. Corrective actions were subsequently assigned and completed. One incident involved a leak of chlorinated water to the North Saskatchewan River during maintenance activities, one involved a late report of a water quality

incident, and one involved a release of water from a transmission repair that resulted in erosion in a ditch.

- **Solids Residual Management Factor.** In 2019, unusually high raw water color in late fall and early winter created challenges for EWSI operations. As a result of these conditions, the treatment plants only achieved 79 days in Direct Filtration. However, total solids discharged to the North Saskatchewan River were still reduced by 15.4% as a result of operating in direct filtration relative to baseline conventional treatment.

2020 Areas for Improvement

- **Water Conservation Factor.** In 2020, COVID-19 is expected to result in higher than usual yearly residential consumption per customer due to people staying home. Based on results to date, the high residential consumption is being partially offset by lower commercial consumption.
- **Environment Incident Management Factor.** Environmental incident investigations will be targeting root cause identification. Enhanced erosion control processes will also be put in place for maintenance activities.
- **Solids Residual Management Factor.** EWSI will continue to investigate polymer and dosing strategies for effective transitioning between conventional treatment and direct filtration. The goal will be to further reduce solids discharged to the North Saskatchewan River.

2.5.5 Safety Index

The safety index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public.

**Table 2.5.5
Safety Index**

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Near Miss Reporting Factor	The number of near miss reports entered in the ESS system.	>550	894	1.625
Work Site Inspections and Observations Factor	Number of Work Site Inspections and observations completed per year.	>1,032	3,217	3.117
Lost Time Frequency Factor	The actual lost time frequency rate.	<0.57	0.00	2.000
All Injury Frequency Factor	The actual all injury frequency rate	< 1.54	0.97	1.585
Average index				2.082
Index Standard Points				15.0
Total Actual Points				31.2
Maximum Available Points Including Bonus Points				16.5
Total Points Earned				16.5

2019 Highlights

- **Near Miss Reporting Factor.** Near miss and hazard identification reporting continued to be an effective means to proactively identify hazards and implement corrective actions to mitigate potential harm to employees, contractors and members of the public.
- **Work Site Inspections / Observations Factor.** Work site inspections and observations continued to be a successful leading indicator that provided leaders the opportunity to engage in field activities, to proactively identify areas of improvement and to verify conformance to EPCOR requirements.
- **Lost Time Frequency Rate Factor.** In 2019, EWSI exceeded the lost time frequency rate factor by having no lost time events.
- **All Injury Frequency Rate Factor.** EWSI had 5 recordable incidents (Medical Treatment). Two involved employees being rear-ended while driving for work, one involved a back strain, one involved dust in an eye and one involved a dog bite.

2020 Areas for Improvement

- **Near Miss Reporting Factor.** With consideration of the impact of COVID-19 pandemic, there will be a heightened focus on the reporting of near miss and hazard identification throughout 2020 to ensure employees keep their mind on task and continue with proactive reporting.
- **Work Site Inspections / Observations Factor.** With consideration of the impact of COVID-19 pandemic, the opportunity to conduct work site inspections might be reduced. EWSI will monitor inspection activities and look for opportunities to conduct proactive field engagements.
- **All Injury Frequency Rate Factor.** EPCOR will be broadening the internal Safety program to capture Significant Incidents or Fatality Potential (SIFP) events. Monitoring for SIFP events is intended to assist in the identification of situations that could have life altering or fatality potential. The objective will be to ensure that root causes are identified and effective actions are established to prevent recurrence.

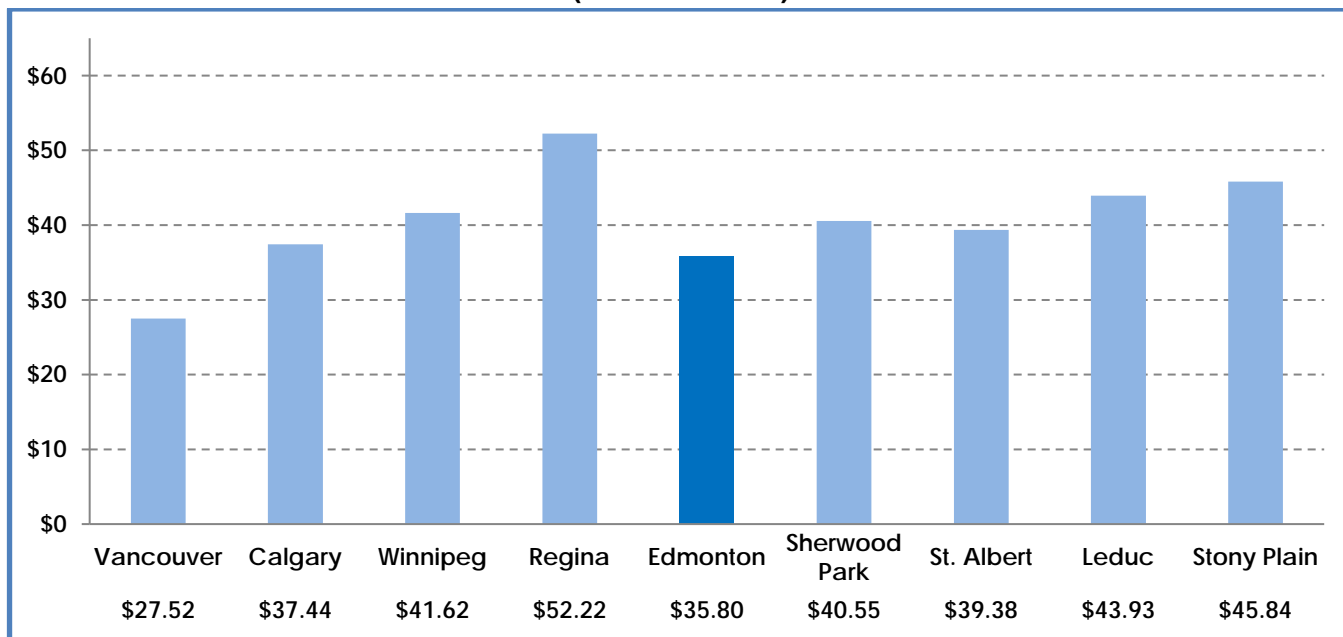
2.6 Rates and Bill Comparisons

Water bill comparisons for 2019 are based on the published water rates for Calgary, Vancouver, Winnipeg and Regina, as well as four local communities. These bill comparisons represent the total cost to the customer and include fixed charges, consumption charges and any other applicable surcharges.

2.6.1 Residential Water Bills

Figure 2.6.1 provides a comparison of residential household water bills for residential household consumption of 13.8 m³ per month, the average residential customer consumption per month in Edmonton in 2019. Comparison of residential water bills shows that Edmonton's water bills are lower than all of the cities and local communities surveyed, except for Vancouver. This result is not unexpected; Vancouver has an excellent raw water source and, therefore, has lower needs for water treatment than Edmonton which has a naturally highly variable water source in the North Saskatchewan River.

Figure 2.6.1
2019 Monthly Residential Water Bill Comparison
(13.8 m³/month)



2.6.2 Commercial Water Bills

Table 2.6.2 provides a comparison of the water bills for commercial customer of various sizes. This table shows that water bills for EWSI's commercial customers are lower than all of the other surrounding communities and other major cities in western Canada, except for Vancouver and mid sized customers in Calgary.

Table 2.6.2
Commercial Monthly Water Bill Comparison
(\$ per month)

		A	B	C	D
Monthly Bill - \$ per month		Small	Medium	Large	Extra Large
1	Monthly Consumption - m ³	10	250	1,000	5,000
2	Vancouver	22.97	310.20	1,270	6,164
3	Calgary	44.04	382.19	1,577	8,117
4	Regina	44.70	529.80	2,254	10,622
5	Winnipeg	34.70	473.60	1,892	9,271
6	Edmonton	26.09	401.89	1,603	6,753
7	St. Albert	33.03	433.83	1,686	8,366
8	Sherwood Park	30.86	642.86	2,555	12,755
9	Stony Plain	33.22	830.40	3,322	16,608
10	Leduc	34.54	639.70	2,654	12,676

3 Wastewater Treatment Services

3.1 Accomplishments and Challenges

In 2019, Wastewater's key accomplishments included:

- Completion of Wastewater's long term Integrated Resource Plan (IRP). Wastewater's IRP encompasses: customer growth; changes to provincial regulatory frameworks; technology; asset management; and health, safety and environmental considerations. The IRP provides a roadmap for enabling Wastewater to meet Edmonton's future growth demands and potential future effluent quality standards, within the existing footprint of the plant;
- EWSI entered an agreement with SYLVIS Environmental Service Inc. in which EWSI's biosolids will be used as part of a coal mine reclamation project at the Paintearth Mine near Forestburg, AB;
- The Gold Bar Stakeholder consultation plan was developed and executed through 2019 and provides the public with balanced and objective information to assist them in understanding the problems, alternatives, opportunities and/or solutions at the wastewater treatment plant. Several meetings with stakeholders were held. Shared outcomes and design principles were developed in collaboration with stakeholders that will drive and inform activities at the site. Going forward, the stakeholder engagement program will build upon the success of the work done in 2019
- Additional accomplishments are included in the 2019 Operating Plan below.

3.2 Customers and Consumption

Wastewater's customer counts, consumption and consumption per customer are similar to those of In-City Water. Differences in customer counts, almost entirely within the commercial customer class, are attributable to "water-only" customers who are not tied into the City's drainage system, such as businesses in industrial parks that are served by septic systems, as well as seasonal water customers, such as commercial lawn watering services and golf courses. Table 3.2 below provides a comparison of 2019 and 2017-2019 forecast to actual customer counts and consumption per customer.

Table 3.2
Customers, Consumption and Consumption per Customer

		A	B	C	D
Customers and Consumption		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Customers				
2	Residential	266,018	269,736	261,089	264,451
3	Multi-Residential	3,837	3,779	3,791	3,765
4	Commercial	16,970	17,063	16,753	16,846
5	Total	286,825	290,578	281,633	285,063
6	Monthly Consumption per Customer				
7	Residential	14.2	13.8	14.4	14.3
8	Multi-Residential	408.8	391.8	408.8	392.8

		A	B	C	D
Customers and Consumption		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
7	Commercial	120.9	112.4	122.8	116.2
8	Annual Consumption - ML				
9	Residential	45,193.7	44,579.8	135,342.1	135,849.4
10	Multi-Residential	18,821.8	17,766.8	55,798.5	53,240.9
11	Commercial	24,616.3	23,010.6	74,086.7	70,484.0
11	Total	88,631.8	85,357.2	265,227.3	259,574.3

Actual to forecast differences in Wastewater's customer counts and consumption are attributable to the same factors discussed in Section 2.2.

3.3 Financial Performance

Wastewater's revenue requirements are summarized on Table 3.3 below.

Table 3.3
Wastewater Revenue Requirements
(\$ millions)

		A	B	C	D
Summary of Revenue Requirements		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Wastewater Rate Revenue*	98.8	92.3	278.0	266.7
2	Wastewater Revenue Requirement				
3	Operating expenses	57.1	50.3	166.7	146.6
4	Other revenue	(6.8)	(6.9)	(19.5)	(19.3)
5	Depreciation and amortization	17.4	18.0	47.0	48.4
6	Return on rate base financed by debt	12.6	11.5	34.1	32.5
7	Return on rate base financed by equity	19.2	19.3	53.0	58.5
7	Wastewater Revenue Requirement*	99.5	92.3	281.4	266.7
8	Return on Rate Base Financed by Equity	10.18%	10.93%	10.18%	11.84%

* In the PBR forecast, rebasing and other special rate adjustments have been smoothed over the PBR term. Therefore, although forecast revenue is equal to the revenue requirement over the 2017-2021 PBR term, in any year within the PBR term, forecast revenue may be greater or less than the revenue requirement

Detailed explanations for forecast to actual variances for each of the elements of the revenue requirement are provided in sections 3.3.1 to 3.3.6.

3.3.1 Revenue

Wastewater's rate revenues include fixed monthly services charges applied on a per connection basis, and consumption charges applied to each cubic metre of consumption. Besides rate revenues, Wastewater also has a relatively small amount of other revenue, about 60% of which relates to overstrength surcharges that are subject to the same rate adjustment mechanism as Wastewater's rate revenue. Table 3.3.1 below provides a comparison of Wastewater's 2019 actual and forecast revenue.

Table 3.3.1
Wastewater Revenue
(\$ millions)

		A	B	C	D
Wastewater Revenue		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Fixed Monthly Service Charges				
2	Residential	15.7	14.3	43.5	41.1
3	Multi-Residential	0.2	0.2	0.6	0.6
4	Commercial	1.0	0.9	2.8	2.6
5	Fixed Monthly Service Charges	16.9	15.5	46.9	44.4
6	Consumption Charges				
7	Residential	42.4	40.7	119.7	118.0
8	Multi-Residential	17.7	16.2	49.4	46.2
9	Commercial	21.9	19.9	62.0	58.1
10	Consumption Charges	81.9	76.8	231.1	222.3
11	Wastewater Rate Revenue	98.8	92.3	278.0	266.7
12	Other Revenue	6.8	6.9	19.5	19.3
13	Total Wastewater Revenue	105.6	99.1	297.4	286.0

Wastewater's revenues were \$6.5 million less than forecast in 2019, and \$11.3 million less than forecast over the 2017-2019 PBR period. This difference is attributable to three factors:

- Lower than forecast inflation resulted in a \$2.7 million decrease in 2019 (\$5.0 million for 2017-2019). Since rate increases are capped at inflation less the efficiency factor ("i-x"), lower than forecast inflation from 2016 to 2019 will continue to impact revenues throughout the remainder of the 2017-2021 PBR term;
- Lower than forecast consumption resulted in a \$3.0 million decrease in 2019 (\$4.9 million for 2017-2019). As with Water, residential consumption per customer was 2.7% lower than the PBR forecast primarily attributable to higher than average precipitation over the summer months. Unexpected decreases in per customer consumption in the commercial and multi-residential customer classes continue to be a source of concern. Accordingly, EWSI is working to enhance consumption forecasting processes for the commercial and multi-residential customer classes; and
- The non-routine adjustment related to the transfer of Drainage Services to EPCOR (see Section 1.5) has reduced revenues by \$1.1 million in 2019 (\$1.9 million for 2017-2019).

3.3.2 Operating Expenses by Function

Wastewater's operating expenses are presented and analyzed on both functional and cost category bases. Actual and forecast operating expenses by function are shown in Table 3.3.2 below:

Table 3.3.2
Operating Expenses by Function
(\$ millions)

		A	B	C	D
Function and Sub-function		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Power, Other Utilities and Chemicals				
2	Power and Other Utilities	5.4	5.3	16.0	14.7
3	Chemicals	1.6	1.2	4.8	3.5
4	Power, Other Utilities and Chemicals	7.1	6.6	20.8	18.2
5	Wastewater Treatment				
6	Wastewater Treatment Plant	19.2	17.3	56.3	52.2
7	Operations Support Services	8.3	6.3	24.4	19.1
8	Capitalized Overhead	(2.4)	(3.1)	(7.1)	(9.1)
9	Wastewater Treatment	25.0	20.5	73.6	62.2
10	Billing, Meters and Customer Service				
11	Billing and collections	3.4	3.3	9.9	9.7
12	Meter reading	2.4	2.4	7.2	6.9
13	Regulatory Services	1.0	1.4	3.0	3.9
14	Billing, Meters and Customer Service	6.9	7.1	20.1	20.5
15	EWSI Shared Services				
16	EWSI Shared Services	3.5	3.3	10.1	9.6
17	Incentive and Other Compensation	1.2	1.0	3.4	1.8
18	EWSI Shared Services	4.6	4.3	13.6	11.4
19	Corporate Shared Services	5.1	4.0	14.9	11.9
20	Franchise Fees and Property Taxes				
21	Franchise Fees	7.5	7.2	21.5	20.8
22	Property Taxes	1.0	0.6	2.4	1.8
23	Franchise Fees and Property Taxes	8.5	7.8	23.9	22.6
24	Total Operating Expenses by Function	57.2	50.4	166.9	146.7

Overall, Wastewater's operating expenses for 2019 were \$6.8 million less than forecast (\$20.2 million less for 2017-2019). Key factors contributing to this difference include:

- **Power and Other Utilities** - \$0.1 million less than forecast in 2019, (\$1.3 million less for 2017-2019), due to lower than forecast power prices.
- **Chemicals** - \$0.4 million less than forecast in 2019 (\$1.3 million less for 2017-2019), primarily attributable to two factors. First, the Ostara nutrient removal facility was offline more than expected, resulting in lower chemical usage over the 2017 to 2019 period. Second, process and dosing optimization enabled Wastewater to achieve significant reductions in alum usage over the 2017 to 2019 period.
- **Wastewater Treatment** - \$4.5 million less than forecast in 2019 (\$11.4 million less for 2017-2019). The favourable variance is primarily attributable to adjustments to the capital program, where projects with a high component of contractor costs have been replaced by capital maintenance and repair projects completed by Wastewater personnel. These changes have led to capitalization of an additional \$1.7 million of internal labour costs that would otherwise have been expensed (\$4.8 million for 2017-2019) and additional capitalized overheads of \$0.7 million in 2019 (\$2.0 million for 2017-2019). Besides these changes, the favourable variance also reflects lower than forecast fringe benefits costs of \$0.8 million in 2019 (\$1.8 million for 2017-2019) related to lower pension

contributions, and \$1.1 million in savings in contractor costs (\$1.4 million for 2017-2019) resulting from dissolution of the Centre for Excellence, lower maintenance costs, and the completion of fewer engineering studies in 2019. The remainder of the variance results from numerous small items, none of which are individually significant.

- **EWSI Shared Services** - \$0.3 million less than forecast in 2019 (\$2.2 million less for 2017-2019). Lower than forecast costs in this category reflect a \$0.3 million reduction in business unit allocations related to the transfer of Drainage Services to EPCOR (\$1.0 for 2017-2019). The 2017-2019 variance includes \$0.8 million of savings in long term disability premiums, the remainder of the variance results from numerous small items, none of which are individually significant.
- **Corporate Shared Services** - \$1.1 million less than forecast in 2019 (\$3.0 million less for 2017-2019). These differences reflect both the reduction in corporate cost allocations resulting from the transfer of Drainage from the City of Edmonton to EPCOR Utilities Inc., as well as cost savings in corporate functions. As with In-City Water, the cost reductions arising from the transfer of Drainage Services have been returned to Wastewater customers through a non-routine adjustment to 2018 water rates.
- **Franchise Fees and Property Taxes** - \$0.7 million less than forecast in 2019 (\$1.3 million less for 2017-2019). Lower than forecast revenue resulted in a \$0.3 million reduction in franchise fees in 2019 (\$0.7 million for 2017-2019). Lower than forecast property taxes relate to the deferral of capital projects, including the Operations Center at Mid-point Entrance project, which had been forecast to increase property taxes.

3.3.3 Operating Expenses by Cost Category

Table 3.3.3 shows operating expenses by cost category for Wastewater Treatment Plant Operations, Billing Meters and Customer Service, and EWSI Shared Services, where cost categories differ from the sub-functions in Section 3.3.2.

Table 3.3.3
Operating Costs by Cost Category
(\$ millions)

Cost Category		A	B	C	D
		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Wastewater Treatment				
2	Staff Costs and Employee Benefits	17.8	14.3	52.5	43.5
3	Contractors and Consultants	4.1	2.8	12.1	10.3
4	Materials and Supplies	2.1	2.2	6.0	6.6
5	Other	1.0	1.3	3.0	1.8
5	Wastewater Treatment Expenses	25.0	20.5	73.6	62.2
6	Billing, Meters and Customer Service				
7	CUS Charges	3.4	3.3	9.9	9.7
8	Contractors and Consultants	3.5	3.8	10.2	10.8
8	Billings, Meters and Customer Services Expenses	6.9	7.1	20.1	20.5
9	EWSI Shared Services				
9	EWSI Shared Services Allocation	3.2	2.9	9.4	8.4

		A	B	C	D
Cost Category		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
10	Staff Costs and Employee Benefits	1.3	1.3	3.8	2.7
11	Other	0.1	0.1	0.4	0.2
12	EWSI Shared Services Expenses	4.6	4.3	13.6	11.4

The information presented in this table supports the explanations of differences between 2019 actual and forecast expenses provided in Section 3.3.3. Accordingly, no additional explanations are considered necessary.

3.3.4 Depreciation and Amortization

Wastewater's depreciation expense and amortization of contributed assets for 2019 are shown in Tables 3.3.4 below:

Table 3.3.4
Depreciation and Amortization
(\$ millions)

		A	B	C	D
Depreciation and Amortization		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Gross depreciation expense	18.3	19.0	49.8	51.2
2	Amortization of contributions	(0.9)	(0.9)	(2.8)	(2.8)
3	Depreciation, net	17.4	18.0	47.0	48.4

Wastewater's 2019 depreciation expense was \$0.7 million greater than forecast (\$1.4 million greater for 2017-2019), even though plant in service was \$54.9 million (8%) less than forecast at December 31, 2019 (Table 3.3.5, line 4). This difference results from adjustments to Wastewater's capital program where asset replacement projects were replaced with capital maintenance and repair projects, which have higher effective depreciation rates than asset replacements. In the PBR forecast depreciation expense was calculated as if all asset additions related to new assets, rather than repair or to overhauls of existing assets. EWSI expects that the effect of higher than forecast depreciation rates will continue through the remainder of the 2017-2021 PBR term.

3.3.5 Rate Base

Wastewater's 2019 mid-year rate base, shown in Table 3.3.5 below, was \$28.3 million less than forecast, reflecting lower than forecast capital additions in 2017 and 2019 resulting from project deferrals and other adjustments to the capital program described in Section 3.4.1.

Table 3.3.5
Mid-Year Rate Base
(\$ millions)

		A	B
		2019	
	Components of Mid-Year Rate Base, net of Contributions	PBR Forecast	Actual
	Plant in Service		
1	Balance, beginning of year	639.4	592.0
2	Capital additions	47.2	40.8
3	Retirements and adjustments	-	(1.1)
4	Balance, end of year	686.6	631.7
5	Mid-Year Plant in service	663.0	611.8
	Accumulated Depreciation		
6	Balance, beginning of year	167.8	145.1
7	Depreciation expense	18.3	19.0
8	Retirements and adjustments	-	(1.1)
9	Balance, end of year	186.1	163.0
10	Mid-Year Accumulated Depreciation	176.9	154.1
	Other Rate Base Items		
11	Working Capital	6.2	6.0
12	Materials and Supplies	1.6	1.7
13	Gross Mid-Year Rate Base	493.8	465.5
	Contributions		
14	Balance, beginning of year	41.0	41.0
15	Contributions in aid of construction	-	-
16	Balance, end of year	41.0	41.0
17	Mid-Year Contributions	41.0	41.0
	Accumulated Amortization		
18	Balance, beginning of year	17.5	17.5
19	Amortization of contributions	0.9	0.9
20	Balance, end of year	18.4	18.4
21	Mid-Year Accumulated Amortization	17.9	17.9
22	Mid-Year Contributions	23.0	23.0
23	Mid-Year Rate Base	470.8	442.5

Unlike In-City Water, where contributions relate primarily to developer-funded assets, contributions included in Wastewater's rate base offset the cost of non-utility assets included in Wastewater's plant in service. This treatment ensures that the capital costs associated with these assets are not borne by utility rate payers. The cost of operating these assets, as well as any related revenues are also excluded from Wastewater's financial results.

3.3.6 Return on Rate Base

In 2019, Wastewater's return on equity was \$0.1 million (0.75%) greater than forecast and \$5.5 million (1.66%) greater for 2017-2019. In 2019, higher than forecast net income accounted for 0.10% of this increase (1.10% for 2017-2019), with a lower than forecast rate base accounting for the remainder. EWSI expects that operating cost savings (see section 3.3.2) will continue to offset any reductions in revenue and drive higher than forecast returns on equity for the remainder of the 2017-2021 PBR term.

Table 3.3.6-1
Return on Rate Base
(\$ millions)

Return on Rate Base		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Mid-year Rate Base	470.8	442.5		
2	Capital Structure				
3	Debt (%)	60.00%	60.00%		
3	Equity (%)	40.00%	40.00%		
4	Cost of Capital				
5	Cost of Debt	4.45%	4.32%	4.36%	4.38%
5	Cost of Equity	10.18%	10.93%	10.18%	11.84%
6	Weighted Average Cost of Capital	6.74%	6.96%	6.68%	7.36%
7	Return on Mid-Year Rate Base				
8	Return on Rate Base Financed by Debt	12.6	11.5	34.1	32.5
8	Return on Rate Base Financed by Equity	19.2	19.3	53.0	58.5
9	Return on Mid-year Rate Base	31.7	30.8	87.1	90.9

Wastewater's weighted average cost of debt calculation, shown in Table 3.3.6-2 below, yields average debt costs that are very close to forecast, as Wastewater has reduced issuances of new long-term debt in response to lower than forecast capital expenditures. Accordingly, lower than forecast interest expense over the 2017 to 2019 period is primarily attributable to lower than forecast debt issuances.

Table 3.3.6-2
Interest Expense and Cost of Debt
(\$ millions)

Interest Expense and Cost of Debt		A	B	C	D
		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Interest Expense				
2	Interest on short-term debt	0.9	1.1	2.7	3.2
3	Interest on City of Edmonton debentures	2.8	-	9.2	6.2
3	Interest on intercompany debentures	9.2	10.7	23.1	23.6
4	Total Interest expense	12.9	11.8	35.1	33.0
5	Mid-year debt and other long-term liabilities				
6	Mid-Year Short-term debt	32.8	20.6		
6	Mid-Year Long-term debt	257.6	252.6		
7	Mid-Year Other Long-term liabilities	0.5	0.2		
8	Total Mid-year debt and other long-term liabilities	290.8	273.3		
9	Embedded cost of Debt	4.45%	4.32%	4.36%	4.38%

3.3.7 Transactions with Affiliates

Wastewater derives a significant proportion of its revenue and expenses from transactions with affiliates, including the City of Edmonton, EPCOR Utilities Inc. and its subsidiaries, and other EPCOR Water Services Inc. business units. Table 3.3.7 summarizes Wastewater's transactions with affiliates.

Table 3.3.7
Transactions with Affiliates
(\$ millions)

		A	B	C	D
Affiliate and Service		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Revenues from the provision of services to the City of Edmonton				
2	Wastewater Treatment Services	1.0	1.3	3.1	3.6
3	Other Services	0.2	-	0.7	0.3
4	Total	1.3	1.3	3.7	3.9
5	Services provided by (recovered from):				
6	City of Edmonton				
7	Franchise Fees	7.5	7.2	21.5	20.8
8	Property Taxes	1.0	0.6	2.4	1.8
9	Interest on Long Term Debt	2.8	-	9.2	6.2
10	Regulatory Services	1.0	-	3.0	0.7
11	Biosolids Contractor Service	-	4.6	-	4.6
12	Other Services	0.2	0.2	0.5	0.6
13	Total	12.6	12.6	36.7	34.6
14	EPCOR Utilities Inc.				
15	Corporate Shared Service Costs	5.1	4.0	14.9	11.9
16	Interest on Intercompany Loans	9.2	10.7	23.1	23.6
17	Interest on Short-term debt	0.9	1.1	2.7	3.2
18	Other Services	-	0.1	-	0.1
19	Total	15.2	15.9	40.7	38.8
20	EPCOR Distribution and Transmission Inc.				
21	Maintenance and other services	0.1	-	0.2	0.2
22	EPCOR Technologies Inc.				
23	Hydrovac Charges	-	-	-	0.2
24	EPCOR Energy Alberta LP				
25	Billing and Collection Services	3.1	2.9	8.9	8.6
26	Other EWSI Business Units				
27	EWSI Shared Services Allocation	3.2	2.9	9.4	8.4
28	Meter reading services from In-City Water	2.4	2.4	7.2	6.9
29	Water purchases from In-City Water	0.4	0.5	1.1	1.3
30	Regulatory services from Drainage Services	3.1	1.4	8.9	3.2
31	Project engineering recoveries from Drainage	-	-	-	(1.2)
32	Laboratory services recoveries from Drainage	-	(0.4)	-	(0.8)
33	Total	9.1	6.8	26.6	17.8
34	Expenditures on capital projects arising from services provided by:				
35	EPCOR Technologies Inc.	-	-	-	0.3
36	EPCOR Utilities Inc.	-	0.1	-	0.3
37	Total	-	0.1	-	0.6

3.4 Capital Programs

3.4.1 Capital Expenditures

Table 3.4.1 compares approved capital expenditures from the PBR forecast to actual capital expenditures for 2019 for each project with approved capital expenditures in excess of \$5.0 million over the 2017-2021

PBR term, as well as for each project category. Table 3.4.1 also provides a comparison of total 2017-2021 approved capital expenditures to EWSI's current capital forecast.

Table 3.4.1
Capital Expenditures
(\$ millions)

	A	B	C	A	B	C	D	E	F
	2019			2017 to 2019			2017 to 2021		
	PBR Forecast	Actual	Difference	PBR Forecast	Actual	Difference	PBR Forecast	Current Projection	Differen ce
1 Reliability and Life Cycle Improvements									
2 Build Pipe Racks	-	2.1	2.1	-	2.1	2.1	-	9.7	9.7
3 Replace 2.5km of Sludge Line	-	5.9	5.9	-	7.1	7.1	-	7.5	7.5
4 Clarifier Chain Replacement	1.2	2.2	1.0	2.8	7.1	4.4	4.1	9.9	5.8
5 Sludge Line Upgrades	1.1	0.2	(0.9)	3.4	7.9	4.6	3.4	8.0	4.7
6 Mechanical Rehab Program	3.7	4.2	0.5	11.3	15.2	4.0	15.6	19.6	4.0
7 Structural Rehab Program	1.5	3.2	1.7	4.5	5.6	1.1	7.7	11.4	3.7
8 Distribution Chamber Reconstruction	0.5	2.5	2.0	3.8	6.8	3.0	3.8	6.8	3.0
9 Digester 3 Upgrades	-	1.6	1.6	11.3	11.4	0.0	11.3	13.6	2.3
10 Electrical Rehab Program	0.5	2.0	1.5	3.7	5.1	1.3	7.2	8.6	1.4
11 Structural Rehab Secondaries 1-8	3.7	5.1	1.5	10.4	13.4	3.1	17.6	18.8	1.3
12 Operations Center at Mid-Point Entrance	8.8	0.1	(8.7)	17.4	1.1	(16.3)	19.4	6.9	(12.5)
13 Digester 4 Upgrades	5.4	0.1	(5.3)	5.4	1.3	(4.0)	12.0	1.3	(10.7)
14 Headworks and Primary Aeration System Upgrades	0.6	1.1	0.5	6.7	1.3	(5.4)	6.7	1.4	(5.3)
15 Buildings and Site Rehab	4.7	1.9	(2.8)	10.4	4.0	(6.3)	12.8	8.5	(4.3)
16 Square 1 Gas Room Replacement	1.0	0.4	(0.6)	1.0	0.4	(0.6)	15.6	11.3	(4.3)
17 Utility Hot Water System Rehabilitation	4.7	2.3	(2.4)	11.9	6.7	(5.2)	13.9	10.1	(3.8)
18 Site Ventilation Rehabilitation	8.8	4.7	(4.0)	20.7	14.2	(6.6)	31.5	28.2	(3.3)
19 Projects < \$5 million	2.9	3.3	0.4	16.2	16.8	0.7	21.2	24.7	3.6
20 Subtotal	49.0	43.0	(6.0)	140.7	127.7	(13.0)	203.4	206.3	2.9
21 Hydrovac Sanitary Grit									
22 Hydrovac Sanitary Grit Treatment Facility	-	(0.0)	(0.0)	8.4	7.3	(1.1)	8.4	7.3	(1.1)
23 Performance Efficiency and Improvement									
24 Plant Improvements*	2.6	2.6	0.0	6.9	7.6	0.7	10.6	12.3	1.7
25 Projects < \$5 million	0.8	2.2	1.5	4.7	3.3	(1.4)	7.0	4.7	(2.3)
26 Subtotal	3.4	4.9	1.5	11.6	10.9	(0.8)	17.6	17.0	(0.6)
27 Growth/Customer Requirements									
28 Projects < \$5 million	-	1.0	1.0	1.5	1.0	(0.5)	1.5	1.6	0.0
29 Health, Safety and Environment									
30 Projects < \$5 million	0.9	0.5	(0.4)	3.4	1.7	(1.7)	4.5	5.0	0.5
31 Regulatory									
32 Projects < \$5 million	-	-	-	-	-	-	-	1.5	1.5
33 Capital Expenditures, net of Contributions	53.3	49.3	(4.0)	165.6	148.5	(17.1)	235.4	238.6	3.2

* Plant Improvements project is a consolidation of the individual plant improvements (\$2.9M), control system upgrades (\$1.0M), control system operational improvements program (\$2.6M), and instrumentation upgrades (\$4.1M) projects approved in the 2017 to 2021 PBR.

Explanations for differences between PBR forecast capital expenditures for 2017 to 2021 and EWSI's current projection in excess of \$2.0 million include:

1. **Build Pipe Racks** – \$9.7 million (new project). This project provides for construction of an above-ground pipe rack network to allow the relocation of biogas piping, glycol heating lines and electrical circuits out of underground tunnels at the Gold Bar Plant. Moving these utilities above ground will reduce tunnel ventilation upgrade costs, enable future expansion of process piping, facilitate compliance with building and fire codes, and provide a safer working environment.
2. **Replace 2.5 km of Sludge lines** – \$7.5 million (new project). This project provides for replacement of a 2.5 km section of the sludge line between the Clover Bar lagoons and the North Saskatchewan River. Upon inspection this section of the sludge line was found to be in such poor condition that repairs and/or rehabilitation was not financially viable and full replacement was required.
3. **Clarifier Chain Replacement** – \$5.8 million (144%) greater than forecast. The costs of this project have increased significantly following the premature failure of stainless steel clarifier chains due to unexpected localized corrosion. These chains are being replaced with plastic loop chains which have a better performance record at Gold Bar.
4. **Sludge Line Upgrades** – \$4.7 million (139%) greater than forecast. The PBR forecast only included the costs of cleaning and inspecting the sludge lines between Gold Bar WWTP and the Clover Bar Lagoons. Inspections on older sections showed that the sludge lines were in poor condition and required significant additional capital expenditure under this project for rehabilitation/replacement to ensure that these pipelines can continue to operate with minimal risk of leakage.
5. **Mechanical Rehabilitation Program** – \$4.0 million (26%) greater than forecast, reflecting expenditures on emergency repairs. The most significant repairs included repair of a leaking glycol heating line (\$1.9 million), and replacement of six aluminum gates on Screens 4 – 6 (\$1.0 million) to allow tank isolation and maintenance.
6. **Structural Rehabilitation Program** – \$3.7 million (49%) greater than forecast, primarily attributable to the costs of addressing greater than expected concrete deterioration at the Gold Bar Diversion Structure caused by long-term H₂S gas exposure (\$9.0 million). This increase has been partially offset by deferral of lower priority structural rehabilitation sub-projects.
7. **Distribution Chamber Reconstruction** – \$3.0 million (79%) greater than forecast. The increase in the forecast cost of this project results from higher than expected competitive bids from contractors, as well as higher than expected costs to demolish the distribution chamber and to construct the lift station tie-ins.
8. **Digester 3 Upgrades** – \$2.3 million (20%) greater than forecast, which are primarily due to the costs associated with addressing unanticipated leakage from the structure identified during commissioning tests.
9. **Operations Centre at Mid-Point Entrance** – \$12.5 million (64%) less than forecast. Changes to the costs and timing of this project reflect design reviews and scope adjustments incorporating the results of significant public consultation.
10. **Digester 4 Upgrades** – \$10.7 million (89%) less than forecast. Revised solids loading forecasts suggest sufficient digestion capacity at the current time, which allows for the deferral of upgrades to Digester 4 to future PBR periods.

11. **Headworks and Primary Aeration System Upgrades** – \$5.3 million (80%) less than forecast, reflecting a reduction in the scope of this project following EWSI's determination that restoring aeration in the main influent channels was not required.
12. **Buildings and Site Rehabilitation Program** – \$4.3 million (34%) less than forecast. The scope of this project was reduced following an internal review which concluded that certain sub-projects could be safely deferred, allowing resources to be focused on unanticipated, higher-priority projects.
13. **Square 1 Gas Room Replacement** – \$4.3 million (27%) less than forecast, reflecting scope and design changes that are expected to more efficiently resolve the identified process safety risks, at a lower total cost.
14. **Utility Hot Water System Rehabilitation** – \$ 3.8 million (27%) less than forecast. The decrease is primarily due to the ongoing COVID-19 pandemic, which is expected to result in the deferral of additional significant portions of the Loop 5 and 7 upgrades (\$2.1 million) to the next PBR period. The remaining decrease relates to the deferral of other utility hot water system rehabilitation and upgrade work to a future PBR period, allowing resources to be focused on unanticipated, higher-priority projects.
15. **Site Ventilation Rehabilitation Program** – \$3.3 million (11%) less than forecast, primarily due to changes to the design of the ventilation of the EPT Building, along with the deferral of lower priority projects to future years as a result of the COVID-19 pandemic.
16. **Reliability and Life Cycle Improvements < \$5.0 million** – \$3.6 million (24%) greater than forecast. The projected increase in this category results primarily from the purchase and installation of new onsite emergency back up power generation (\$2.0 million); unanticipated preliminary scope and design costs associated with a new Dewatering Facility (\$2.9 million); and changes to projected costs for other growth projects amounting to a \$1.3 million reduction in costs.
17. **Performance Efficiency and Improvement < \$5.0 million** - \$2.3 million (33%) less than forecast. The projected decrease in this category results primarily from the cancellation of the channel access improvements program (\$2.1 million).

3.4.2 Construction Work in Progress

Wastewater'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 in Construction Work in Progress and are excluded from the rate base. The 2019 year-end balance of Wastewater's Construction Work in Progress is \$9.5 million greater than forecast, reflecting changes in the timing of project completion.

Table 3.4.2
Construction Work in Progress
(\$ millions)

		A	B	C	D
Construction Work in Progress		2019		2017-2019	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Balance, beginning of period	18.2	25.4	19.2	22.6
2	Capital Expenditures	53.3	49.3	165.6	148.6
3	Capital Additions	(47.2)	(40.8)	(160.5)	(137.3)
4	Balance, end of period	24.3	33.8	24.3	33.8

The PBR plan allows EWSI to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an allowance for funds utilized during construction ("AFUDC"). In 2019, because of the higher average balance of Construction Work in Progress, AFUDC included in capital expenditures on eligible projects amounted to \$1.9 million, compared to the PBR forecast amount of \$1.1 million.

3.5 Operational Performance

3.5.1 Water Quality and Environmental Index

The Water Quality and Environmental index is a composite measure intended to assess EWSI's impact on the environment through the quality of the wastewater effluent returned back to the North Saskatchewan River and the effectiveness of environmental management programs.

Table 3.5.1
Water Quality and Environmental Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Quality Factor	The value of the Wastewater Effluent Limit Performance, which aggregates measures of the percentage of the discharge limit for five parameters in the Gold Bar wastewater treatment plant's final effluent.	< 28.0%	25.3%	1.108
Environmental Incident Factor	The actual number of environmental incidents that are both reportable and preventable	< 10	3	3.333
Average Index				2.220
Index Standard Points				55.0
Total Actual Points				122.1
Maximum Available Points Including Bonus Points				60.5
Total Points Earned				60.5

2019 Highlights

- **Wastewater Effluent Limit Performance Index.** Ongoing maintenance of secondary clarifier chains and drive mechanisms continued through 2019. Although there was a short setback due to elevated

solids loading in May when two clarifiers were undergoing maintenance, the plant recovered within a few days and maintained improved performance for the remainder of 2019.

- **Environment Incident Management.** There were three reportable and preventable incidents attributed to Gold Bar operations in 2019. However, none of these incidents were the result of poor effluent quality and none had any effect on the North Saskatchewan River.

One incident involved a missed fence line odour sample, one involved a bio-solids application spill from a contractor's truck and the third resulted from a mechanical failure that resulted in some overflow to soil at a park next to the Gold Bar plant.

2020 Areas for Improvement

- **Wastewater Effluent Limit Performance Index.** There will be a continued focus on preventative maintenance programs to limit unplanned downtime through 2020.
- **Environment Incident Management.** Quality assurance and quality control procedures for daily manual air quality samples will be reviewed to improve data analysis for incident reviews.

3.5.2 Customer Service Index

Wastewater's customer service index for the 2017-2021 PBR term includes three equally weighted odour metrics. These metrics recognize that Wastewater's customer interactions typically relate to odour concerns from customers located close to the Gold Bar Wastewater Treatment Plant.

Table 3.5.2
Customer Service Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
H ₂ S - 1 Hour Exceedance Factor	The average of the number of exceedances of the 1 hour limit registered at the Gold Bar and Beverly air quality monitoring stations.	< 6	0	2.000
H ₂ S - 24 Hour Exceedance Factor	The average of the number of exceedances of the 24 hour limit registered at the Gold Bar and Beverly air quality monitoring stations.	< 2	0	2.000
Scrubber Uptime Factor	The percentage of time that the scrubbers are on line.	> 90%	98.8%	1.098
Average Index				1.699
Index Standard Points				15.0
Total Actual Points				25.5
Maximum Available Points Including Bonus Points				16.5
Total Points Earned				16.5

2019 Highlights

- **H₂S - 1 and 24 Hour Exceedance Factor.** Fence line H₂S monitoring continued through 2019. This enhanced monitoring ability for Gold Bar operations to intervene prior to elevated levels of H₂S and thereby avoid exceedances.

- **Scrubber Uptime Factor.** Redundant chemical feed pumps and instrumentation were added in 2018. This improved scrubber uptime for 2019 which, in turn, minimized H₂S exceedances.

2020 Areas for Improvement

- **H₂S - 1 and 24 Hour Exceedance Factor.** Recently installed odour modelling software will be configured in 2020 to provide alerts for odour plumes that could result in H₂S exceedances. These alerts are expected to permit early intervention to avoid potential exceedances.

Two new localized scrubbers at the grit and screening buildings will be commissioned during 2020.

Design of an air quality monitoring station at Gold Bar will continue through 2020 with expected installation in 2021.

- **Scrubber Uptime Factor.** The preventative maintenance program will be continued and can be expected to further limit unplanned scrubber downtime.

3.5.3 System Reliability and Optimization Index

The system reliability and optimization index is a measure of the performance of the Gold Bar Wastewater Treatment Plant and the degree to which the wastewater treatment system is optimized to minimize its impact on the environment.

Table 3.5.3
System Reliability and Optimization Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Enhanced Primary Treatment Factor	The percentage of time that the enhanced primary treatment facility ran during wet weather events where the influent flow rate exceeded the EPT event threshold.	> 80.0%	100.0%	1.250
Biogas Utilization Factor	The percentage of biogas utilized, calculated as the volume of biogas produced less the volume flared divided by the volume produced.	> 60.0%	84.2%	1.403
Energy Efficiency Factor	The energy used in all wastewater facilities in kWh divided by the volume of wastewater effluent that either receives ultraviolet (UV) treatment or is membrane plant effluent.	< 514	500	1.028
Average Index				1.227
Index Standard Points				15.0
Total Actual Points				18.4
Maximum Available Points Including Bonus Points				16.5
Total Points Earned				16.5

2019 Highlights

- **Enhanced Primary Treatment (EPT) Factor.** EPT clarifiers were proactively cleaned and inspected in 2019. This minimized clarifier downtime and maximized availability for primary treatment.

- **Biogas Utilization Factor.** Improvements to the glycol heat recirculation system resulted in more consistent boiler supply and return temperature control.
- **Energy Efficiency Factor.** Even though energy consumption was at a peak in 2019, higher effluent flow rates during wet weather resulted in an improved efficiency factor.

2020 Areas for Improvement

- **Enhanced Primary Treatment (EPT) Factor.** The EPT asset management plan will be reviewed to identify assets nearing end of life. This will result in reduced unplanned downtime.
- **Biogas Utilization Factor.** Boiler operations will be reviewed to further optimize boiler utilization.
- **Energy Efficiency Factor.** Blower upgrades and process air systems are to be reviewed for optimization opportunities.

3.5.4 Safety Index

EPCOR and EWSI are committed to a safe, healthy lifestyle and demonstrate this through care and concern for people. The safety index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public

Table 3.5.4
Safety Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Near Miss Reporting Factor	The number of near miss reports entered in the ESS system.	>220	241	1.095
Work Site Inspection Factor	Number of Work Site Inspections and observations completed per year.	>919	1061	1.155
Lost Time Frequency Factor	The actual lost time frequency rate.	<0.75	0.00	2.000
All Injury Frequency Factor	The actual all injury frequency rate	<1.50	0.63	2.388
Average Index				1.659
Index Standard Points				15.0
Total Actual Points				24.9
Maximum Available Points Including Bonus Points				16.5
Total Points Earned				16.5

2019 Highlights

- **Near Miss Reporting Factor.** Near miss and hazard identification reporting continued to be an effective means to proactively identify hazards and implement corrective actions to mitigate potential harm to employees, contractors and members of the public.
- **Work Site Inspections / Observations Factor.** Work site inspections and observations continued to be a successful leading indicator that provided leaders the opportunity to engage in field activities, to proactively identify areas of improvement and to verify conformance to EPCOR requirements.

- **Lost Time Frequency Rate Factor.** In 2019, Gold Bar exceeded the lost time frequency expectation by having no lost time events.
- **All Injury Frequency Rate Factor.** Gold Bar had 1 recordable incident (Medical Treatment) when a worker caught their finger in a belt on a fan.

2020 Areas for Improvement

- **Near Miss Reporting Factor.** With consideration of the impact of COVID-19 pandemic, there will be a heightened focus on the reporting of near miss and hazard identification throughout 2020 to ensure employees keep their mind on task and continue with proactive reporting.
- **Work Site Inspections / Observations Factor.** With consideration of the impact of COVID-19 pandemic, the opportunity to conduct work site inspections might be reduced. EWSI will monitor inspection activities and look for opportunities to conduct proactive field engagements.
- **All Injury Frequency Rate Factor.** EPCOR will be broadening the internal Safety program to capture Significant Incidents or Fatality Potential (SIFP) events. Monitoring for SIFP events is intended to assist in the identification of situations that could have life altering or fatality potential. The objective will be to ensure that root causes are identified and effective actions are established to prevent recurrence.

3.6 Rates and Bill Comparisons

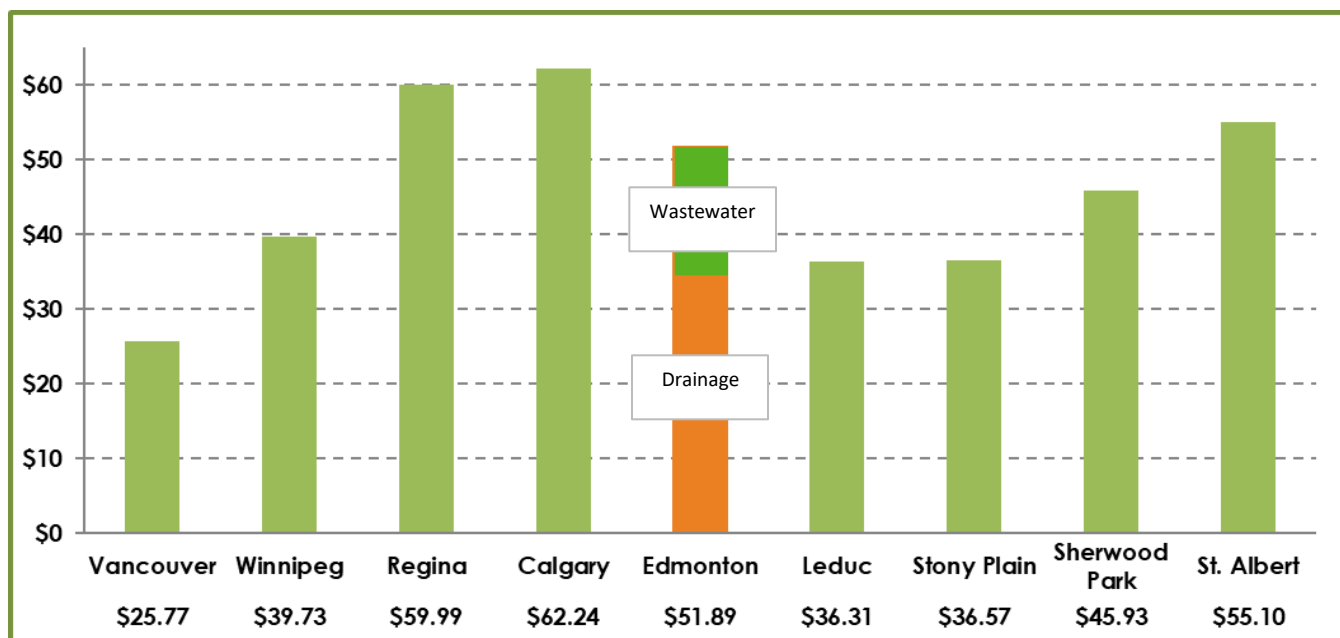
Wastewater and Drainage bill comparisons for 2019 are based on the published drainage and wastewater treatment rates for Calgary, Vancouver, Winnipeg and Regina, as well as four local communities. These bill comparisons represent the total cost to the customer and include fixed charges, consumption charges and any other applicable surcharges.

Unlike most cities, where wastewater treatment services and drainage services are combined, Wastewater is only responsible for wastewater treatment; the operations and maintenance of sanitary, storm and combined sewer systems are provided through EPCOR Drainage Services. Accordingly, wastewater bill comparisons are based on blended EWSI wastewater treatment and drainage rates.

3.6.1 Residential Wastewater and Drainage Bills

Figure 3.6.1 provides a comparison of residential household wastewater and drainage bills for residential household consumption of 13.8 m³ per month, the average residential customer consumption per month in Edmonton in 2019.

Figure 3.6.1
2019 Monthly Residential Wastewater and Drainage Bill Comparison
(13.8 m³/month)



Unlike water services which are relatively consistent among cities and communities, the nature and extent of wastewater treatment and drainage services vary significantly between cities and communities, because of differences in wastewater treatment processes, the inclusion of certain services in property taxes, and geographic and climatic factors which affect the level of investment in and approach to flood mitigation and storm water services. In particular, stormwater charges are often included as a component of taxes.

Edmonton's \$51.89 average monthly bill from Figure 3.6.1 includes Wastewater charges of \$17.34 and Drainage Services charges of \$34.55 (inclusive of both sanitary and storm charges). While the total bill is higher than Vancouver and Winnipeg, it is lower than Calgary and Regina, the two cities where drainage and wastewater treatments are most comparable to Edmonton. EWSI notes that cities across Canada are experiencing increased risk of flooding related to climate change and that substantial investments are needed to assess and address climate change-related flood mitigation.

3.6.2 Commercial Wastewater and Drainage Bills

Table 3.6.2 provides a comparison of the wastewater bills for commercial customers of various sizes. This table shows that combined wastewater and drainage bills for commercial customers are competitive with surrounding communities and with major cities in western Canada, although Edmonton's relative ranking varies with the size of the customers with larger customers receiving relatively high monthly bills. These results reflect differences in rate structures between cities and municipalities, as well as differences in the extent of wastewater treatment and drainage services provided.

Table 3.6.2
2019 Monthly Commercial Wastewater and Drainage Bill Comparison
(\$ per month)

		A	B	C	D
Monthly Bill - \$ per month		Small	Medium	Large	Extra Large
1	Monthly Consumption - m³	10	250	1,000	5,000
2	Vancouver	21.70	278.51	1,143	5,530
3	Calgary	58.28	448.59	1,668	8,173
4	Regina	53.30	483.50	2,004	9,522
5	Winnipeg	28.79	719.67	2,879	14,393
6	Edmonton	44.69	525.77	2,148	10,718
7	St. Albert	75.32	502.52	1,838	8,958
8	Sherwood Park	39.28	459.28	1,772	8,772
9	Stony Plain	26.50	662.50	2,650	13,250
10	Leduc	30.00	428.40	1,673	8,313

4 Drainage Services

4.1 Accomplishments and Challenges

In 2019, Drainage Services a number of had significant accomplishments, including:

- Developing a Corrosion and Odour Reduction Strategy and a Stormwater Integrated Resource Plan to address key challenges facing EPCOR's rate payers. The business case for the Stormwater Integrated Resource Plan was presented to the Utility Committee on May 10, 2019, and Corrosion and Odour Reduction Strategy presentation on June 28, 2019. Both these programs entailed considerable technical planning and stakeholder engagement. Both programs received non-routine adjustments which were approved by in 2019.
- Project Management Methodology Review (known as OPM – Organizational Project Management) – a comprehensive, EPCOR wide, review and realignment of project management processes is currently underway. The intent is to streamline project execution while ensuring consistency of approaches and toolsets while maintaining appropriate governance. This initiative will encompass water services in order to drive additional efficiencies across all capital projects. This initiative is a key component in facilitating the integration of Drainage with other EPCOR business units.
- Metrics Program - Drainage services introduced a PBR style metrics program in 2019. This program is aligned with similar programs in water and wastewater treatment and features the same metrics framework, points system to assess performance and financial penalties for performance below the defined standards. The need for such a program was defined with the transfer letter of intent and was approved by City Council through a bylaw amendment.
- Continued identification of Operational and Capital Cost Savings - As part of the commitments made by EPCOR leading to the transfer of Drainage from the City of Edmonton, Operating Cost Efficiencies and Capital Cost Efficiencies were identified for realization after transfer. A significant amount of work continues to be directed toward the realization of cost efficiency opportunities as follows (note - a number of other accomplishments are detailed in the 2019 Operating Plan review is a subsequent section):
 - **Operating Cost Efficiencies:**
 Smaller operational efficiency “quick wins” continue to be identified and are generally implemented in a relatively short time period upon identification. More substantial opportunities that require a realignment of work responsibilities and methods have been identified, but generally take considerably longer to implement. These opportunities, and in particular the ones that will yield the greatest cost savings, are in the alignment of work planning and execution with water services. Several additional operational opportunities specific to drainage services have also been identified and are currently being explored including capital execution processes, engineering, etc. The two foundational requirements to exploit many of these opportunities are a real estate strategy that would see co-location of water and drainage functions/personnel and a common information systems platform for the identification and management of work

assignments. Both of these requirements are currently in process and are anticipated to be completed over the next two years.

A more complete review of these cost savings will be included in the upcoming PBR application including a financial reconciliation to the targets noted in the Grant Thornton Report “City of Edmonton 2016 EPCOR Proposal for the Drainage Transfer Analysis.” In that report, operating cost efficiencies estimated at approximately \$5 million by 2022 were identified based on an annual 1% reduction from the 2017 City of Edmonton Drainage budget (i.e. pre-transfer budget). While the total quantum of cost efficiencies is still seen as reasonable, it must be noted that the reconciliation will include adjustments to the identified total operating cost target, which was similarly based on the City of Edmonton budget. Specifically, the conversion of the financials from the City of Edmonton's format to that of EPCOR revealed accounting treatment differences that must be adjusted for, particularly in relation to differences in approaches to capitalization. These changes, in addition to inconsistencies in the treatment of vacant positions, adjustment for revenue leakage and other factors will be fully reconciled in the PBR application.

- ***Capital Cost Efficiencies:***

The Grant Thornton report also identified that EPCOR will be able to generate at least 10% cost efficiency on new, utility financed capital beginning immediately in 2017. These savings were predicated on delivering the 10-year forecast Capital Program at a 10% lower cost which equated to \$193.4 million over the 10-year forecast period. To date, a number of capital cost efficiencies have been enacted including: Master Agreements in conjunction with Water Services, Project Management Methodology Review as noted above, and various smaller capital execution synergies.

While the more significant capital efficiency opportunities will evolve overtime, capital efficiency savings have been achieved to date, particularly with the Stormwater Integration Resource Plan. Drainage Services has developed an approach to address stormwater flooding not previously considered and as result, is projected to complete the underlying projects for \$1.6 billion. In comparison to previous approaches, which ranged for \$2.2 to \$4.5 billion, the Drainage Services approach represents a direct cost saving of between \$0.6 billion to \$2.9 billion.

A number of other accomplishments are detailed in the 2019 Operating Plan review below.

4.2 Customers and Consumption

Drainage provides sanitary services to the same customers served by Wastewater (Drainage storm customer' charges are based on land size and other factors). Therefore, actual customer counts, consumption per customer and total consumption are the same as those of Wastewater and actual to forecast differences in Drainage's customer counts and consumption are attributable to the same factors.

4.3 Financial Performance

Although a PBR forecast will be developed as part of Drainage's upcoming 2022-2026 PBR application, currently Drainage does not have a City of Edmonton-approved PBR forecast to serve as the basis of

comparison for financial performance. Therefore, Drainage's 2018 EPCOR drainage budget (adjusted) is used as a proxy for a PBR forecast and is the basis upon which 2018 actual financial performance has been assessed. The 2019 budget has been adjusted to a regulated basis (from IFRS) and to remove one time costs related to the transition of drainage to EPCOR.

Drainage's revenue requirements are summarized on Table 4.3 below. Explanations of forecast to actual variances are provided in sections 4.3.1 to 4.3.6.

Table 4.3
Drainage Revenue Requirements
(\$ millions)

		A	B	C	D
Summary of Revenue Requirements		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Drainage Rate Revenue				
2	Sanitary Utility Revenue	129.3	123.5	254.8	245.5
3	Stormwater Utility Revenue	64.6	66.8	127.4	129.4
4	Drainage Rate Revenue	193.9	190.4	382.2	374.9
5	Drainage Revenue Requirement				
6	Operating expenses	118.7	116.5	229.1	227.5
7	Other Revenue	(8.5)	(8.6)	(16.8)	(18.7)
8	Depreciation and amortization	34.6	32.7	63.7	64.7
9	Return on rate base financed by debt	26.4	21.3	47.3	40.0
10	Return on rate base financed by equity	22.8	28.5	58.9	61.4
11	Drainage Revenue Requirement	193.9	190.4	382.2	374.9
12	Return on Rate Base Financed by Equity	3.98%	4.76%	5.21%	5.21%

4.3.1 Revenue

Drainage's rate revenues are derived from both sanitary utility and stormwater utility services. Sanitary utility revenues are comprised of variable monthly charges based on monthly metered water consumption and flat monthly service charges based on the meter size. Stormwater utility revenues are based on area, development intensity, and run-off coefficients based on the zoning of individual land parcels. Rates for both sanitary and stormwater utility services from January 1, 2018 to March 31, 2022 are prescribed in Bylaw 18100 and incorporate an average annual rate increases of 3%.

Table 4.3.1 below provides a comparison of 2019 and 2018-2019 Drainage revenues to the budget:

Table 4.3.1
Drainage Revenue
(\$ millions)

		A	B	C	D
Drainage Revenue		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Sanitary Utility				
2	Flat Monthly Service Charges				
3	Residential	36.5	32.3	72.0	63.4
4	Multi-Residential	0.5	2.2	1.0	4.3
5	Commercial	2.7	5.5	5.4	10.9
6	Flat Monthly Service Charges	39.8	40.0	78.5	78.5
7	Variable Monthly Charges				
8	Residential	46.6	44.1	91.9	88.6
9	Multi-Residential	18.3	17.6	38.4	34.6
10	Commercial	24.6	21.8	46.1	43.8
11	Variable Monthly Charges	89.5	83.5	176.4	167.0
12	Sanitary Utility Revenue	129.3	123.5	254.8	245.5
13	Stormwater Utility				
14	Residential	34.1	36.0	67.2	70.0
15	Multi-Residential	3.3	3.8	6.5	7.4
16	Commercial	27.3	27.0	53.6	52.0
17	Stormwater Utility Revenue	64.6	66.8	127.4	129.4
18	Drainage Rate Revenue	193.9	190.4	382.2	374.9
19	Other Revenue	8.5	8.6	16.8	18.7
20	Total Drainage Revenue	202.4	198.9	399.0	393.6

In 2019, Drainage's rate revenues were \$3.5 million less than budget (\$7.3 million less for 2018-2019). This difference is attributable to lower than budget consumption as discussed in section 2.3.1., partially offset by an increase in stormwater utility revenues. Besides rate revenues, Drainage has Other Revenue derived from biosolids management services provided to the Alberta Capital Region Wastewater Treatment Commission, application and connection fees, wastewater transfer station services, late payment fees, miscellaneous fees pursuant to third party agreements, and other incidental services.

4.3.2 Operating Expenses by Function

Table 4.3.2 below compares Drainage's 2019 actual operating expenses to its budget:

Table 4.3.2
Operating Expenses by Function
(\$ millions)

		A	B	C	D
Function and Sub-Function		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Drainage Operations				
2	Maintenance	30.6	30.1	58.1	57.7
3	Biosolids	16.7	14.0	32.6	27.4
4	Monitoring and Compliance	4.2	3.7	9.0	8.6
5	Other	0.5	0.5	2.7	3.2
6	Drainage Operations	52.0	48.4	102.4	97.0
7	Planning and Project Support				

		A	B	C	D
Function and Sub-Function		2019		2018-2019	
		Budget	Actual	Budget	Actual
8	Planning	10.2	8.1	22.5	17.2
9	Project Support	4.6	8.6	5.3	12.1
10	Planning and Project Support	14.9	16.6	27.7	29.2
11	Billing and Meter Reading				
12	Meter Reading	6.5	6.4	12.5	12.7
13	CUS Charges	0.6	0.7	1.0	2.0
14	Billing and Meter Reading	7.1	7.1	13.5	14.7
15	Drainage Services Administration				
16	Drainage Shared Services	15.9	15.1	28.6	30.1
17	Incentive and Other Compensation	2.1	2.3	4.3	3.6
18	Drainage Services Administration	18.0	17.4	32.9	33.7
19	Corporate Shared Services	16.3	16.9	32.0	33.0
20	Franchise Fees and Property Taxes				
21	Franchise Fees	9.3	9.2	19.5	18.2
22	Property Taxes	1.0	0.8	1.0	1.7
23	Franchise Fees and Property Taxes	10.4	10.0	20.6	19.8
24	Total Operating Expenses by Function	118.7	116.5	229.1	227.5

Total operating expenses for 2019 were \$2.2 million less than budget (\$1.6 million less for 2018-2019). Key factors contributing to this difference include:

- Biosolids** - \$2.7 million less than budget (\$5.2 million less for 2018-2019). This function includes the storage and management of biosolids generated by the Gold Bar and Alberta Capital Regional wastewater treatment plants. As in 2018, lower than budgeted expenses are primarily attributable to lower than planned activity and lower processed volumes resulting from the composter outage. In addition, in 2019, EWSI capitalized \$1.0 million of costs related to storage cell relining.
- Planning** - \$2.1 million less than budget (\$5.3 million less for 2018-2019). This function includes infrastructure, system and administration planning. Lower than budget expenses reflect lower than anticipated contractor costs of \$1.5 million (\$3.2 million for 2018-2019) and capitalization of a higher than anticipated portion of staff costs of \$0.6 million (\$1.1 million for 2018-2019) in association with capital projects. The 2018-2019 variance also includes savings of \$0.9 million related to the transfer of lot grading inspection services back to the City of Edmonton in 2018. The lot grading inspection cost savings were offset with a proportionate decrease in associated revenues.
- Project Support** - \$4.0 million greater than budget (\$6.8 million greater for 2018-2019). This function includes surveying and engineering (conceptual, preliminary design or detailed design), project management, in-house construction, and emergency repairs. Higher than budgeted expenses include: \$3.4 million of additional salary costs (\$7.1 million for 2018-2019) related to design and construction work that had originally been budgeted as capital expenditures; and \$0.5 million of higher than anticipated contractor costs (\$1.2 million for 2018-2019), primarily related to project management. The 2018-2019 variance also includes \$1.5 million of cost recoveries resulting from higher equipment utilization in operations in 2018. This category of costs illustrates the impact of the differences in accounting treatment between the City of Edmonton and EPCOR. Specifically, the PBR budget was prepared using Drainage's capitalization policies which included capitalizing preliminary design costs (i.e. the costs incurred before there was a specific project). The actual results reflect EWSI capitalization policies, where most preliminary design costs are expensed, but also where

additional costs – capital overhead, higher salary burden, major inspections, abandonments, etc., are capitalized.

- **Billing and Meter Reading** - \$1.2 million greater than budget for 2018-2019. Although these costs were on budget for 2019, the 2018-2019 variance includes higher than budgeted metering and customer service support costs from EPCOR Energy Services and unbudgeted call centre support costs from the City of Edmonton.
- 1) **Franchise Fees and Property Taxes** - \$0.4 million less than budget (\$0.8 million less for 2018-2019). As with Water and Wastewater, lower than forecast franchise fees reflect lower than forecast revenues. This is partially offset by higher property taxes, which were not included in the budget as no accurate cost estimate was available at the time of budget preparation.

Variances in other operating expense functions and sub-functions are not significant, either individually or in aggregate.

4.3.3 Operating Expenses by Cost Category

Table 4.3.3 below shows operating expenses by cost category for Drainage Operations, Planning, Project Support Costs and Drainage Services Administration, where cost categories differ from the sub-functions in Section 4.3.2.

Table 4.3.3
Operating Expenses by Cost Category
(\$ millions)

		A	B	C	D
Cost Category		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Drainage Operations				
2	Staff Costs and Employee Benefits	26.3	25.1	50.0	49.4
3	Contractors and Consultants	21.2	18.6	40.4	36.3
4	Materials and Supplies	0.2	0.2	0.4	0.3
5	Other	4.3	4.5	11.6	11.0
6	Drainage Operations	52.0	48.4	102.4	97.0
7	Planning and Project Support				
8	Contractors and Consultants	9.2	12.3	13.5	19.3
9	Staff Costs and Employee Benefits	6.4	6.2	15.6	13.2
10	Other	(0.7)	(1.8)	(1.3)	(3.2)
11	Planning and Project Support	14.9	16.6	27.7	29.2
12	Drainage Shared Services				
13	Staff Costs and Employee Benefits	11.5	11.9	22.0	21.7
14	Contractors and Consultants	4.7	4.8	9.6	8.5
15	Other	1.8	0.7	1.3	3.5
16	Drainage Shared Services	18.0	17.4	32.9	33.7

The information presented in this table supports the explanations of differences between 2019 actual and budget expenses provided in Section 4.3.2. Accordingly, no additional explanations are considered necessary.

4.3.4 Depreciation and Amortization

Drainage's depreciation expense and amortization of contributed assets for 2019 are shown in Table 4.3.4 below:

Table 4.3.4
Depreciation and Amortization
(\$ millions)

		A	B	C	D
Depreciation and Amortization		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Provision for depreciation	73.4	73.0	137.8	142.5
2	Amortization of contributions	(38.8)	(40.3)	(74.1)	(77.8)
3	Depreciation, net	34.6	32.7	63.7	64.7

Drainage's net depreciation expense is \$1.9 million less than budget (\$1.0 million greater for 2018-2019). The difference in 2019 is almost entirely applicable to higher than budgeted contributed assets. The 2018-2019 difference also includes a \$1.5 million variance related to changes in depreciation rates in 2018. At the time the 2018 budget was prepared, Drainage had not completely finalized asset componentization and other adjustments needed for its regulated accounting. As a result, during 2018, Drainage found that actual depreciation rates, averaging 1.5%, were slightly higher than the average budget rate of 1.4%, resulting in higher-than-budgeted depreciation expense in 2018. The revised rates are reflected in the budget amounts for 2019 and future years.

4.3.5 Rate Base

Drainage's mid-year rate base, shown in Table 4.3.5 below, is \$41.6 million less than forecast, reflecting lower than forecast capital additions in 2019 as discussed in in Section 4.3.1.

Table 4.3.5
Mid-Year Rate Base
(\$ millions)

		A	B
Mid-Year Rate Base		2019	
		Budget	Actual
1	Plant in Service		
2	Balance, beginning of year	4,628.6	4,673.1
3	Additions - EPCOR-funded	145.8	145.5
4	Additions - Contributed	138.2	199.6
5	Retirements and adjustments	-	(8.2)
6	Balance, end of year	4,912.7	5,010.1
7	Mid-Year Plant in service	4,770.6	4,841.6
8	Accumulated Depreciation		
9	Balance, beginning of year	(918.1)	(922.9)
10	Depreciation expense	(73.4)	(73.0)
11	Retirements and adjustments	-	8.0
12	Balance, end of year	(991.5)	(987.9)
13	Mid-Year Accumulated Depreciation	(954.8)	(955.4)
14	Other Rate Base Items		
15	Working Capital	14.1	14.8

		A	B
Mid-Year Rate Base		2019	
		Budget	Actual
16	Materials and Supplies	1.5	1.6
17	Other Rate Base Items	15.6	16.4
18	Gross Mid-Year Rate Base	3,831.4	3,902.6
29	Contributions		
20	Balance, beginning of year	(3,004.7)	(3,089.7)
21	Contributions in aid of construction	(138.2)	(199.6)
22	Balance, end of year	(3,142.8)	(3,289.3)
23	Mid-Year Contributions	(3,073.8)	(3,189.5)
24	Accumulated Amortization		
25	Balance, beginning of year	494.6	496.8
26	Amortization of contributions	38.8	40.3
27	Balance, end of year	533.5	537.0
28	Mid-Year Accumulated Amortization	514.0	516.9
39	Mid-Year Contributions	(2,559.8)	(2,672.6)
30	Net Mid-Year Rate Base	1,271.6	1,230.0

Although the gross rate base is higher than budget, higher than budget contributed (developer-funded) capital additions result in a lower than budget net rate base. The value of contributed assets is difficult to forecast since developers are responsible for construction of distribution infrastructure in new subdivisions and the pace of construction can vary significantly. As well, EWSI receives contribution funding from the Sanitary Servicing Strategy Fund ("SSSF") to support drainage development throughout the City of Edmonton. The amount of SSSF funding also varies significantly in response to the level of developer activity on SSSF-eligible projects.

4.3.6 Return on Rate Base

In 2019, Drainage's total return on rate base is \$0.6 million greater than budget (\$4.8 million less for 2018-2019). These returns reflect lower returns on the portion of the rate base financed by debt, resulting from both the lower than forecast debt portion of Drainage's capital structure and historically low debt issue costs, and higher than forecast equity returns with operational costs savings, lower depreciation and lower finance costs in 2019 offsetting lower than forecast revenue.

Table 4.3.6-1
Return on Mid-Year Rate Base
(\$ millions)

		A	B	C	D
Return on Rate Base		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Net Mid-Year Rate Base	1,271.6	1,230.0		
2	Capital Structure				
3	Debt	55.00%	51.36%		
4	Equity	45.00%	48.64%		
5	Total	100.00%	100.00%		
6	Cost Rates				
7	Debt	3.78%	3.38%	3.76%	3.48%
8	Equity	3.98%	4.76%	5.03%	5.07%
9	Weighted Average Cost of Capital (WACC)	3.87%	4.05%	4.35%	4.27%
10	Return on Rate Base				

		A	B	C	D
Return on Rate Base		2019		2018-2019	
		Budget	Actual	Budget	Actual
11	Debt	26.4	21.3	49.3	41.7
12	Equity	22.8	28.5	56.9	59.7
13	Total Return on Drainage Rate Base	49.2	49.8	106.2	101.4

Returns on rate base are calculated separately for the debt-financed and equity-financed portions of Drainage's net rate base. The rate of return on debt is equal to the average (embedded) cost of debt for Drainage, as calculated in Table 4.3.6-2 below:

Table 4.3.6-2
Interest Expense and Cost of Debt
(\$ millions)

		A	B	C	D
Interest Expense and Cost of Debt		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Interest expense				
2	Interest on short-term debt	2.8	1.5	3.9	2.2
3	Interest on City of Edmonton debentures	-	-	21.1	18.1
4	Interest on intercompany debentures	18.9	20.2	18.9	21.8
5	Total interest expense	21.7	21.7	43.9	42.2
6	Mid-year debt and other long-term liabilities				
7	Mid-Year Short-term debt	25.2	25.7		
8	Mid-Year Long-term debt	546.8	616.6		
9	Total mid-year debt	572.0	642.3		
10	Embedded Cost of Debt	3.78%	3.38%		

In 2019, Drainage's average cost of debt is 0.4% less than budget, reflecting historically low debt issuance costs in 2018 and 2019. In Q4 2018, Drainage's City of Edmonton debentures were replaced with long-term intercompany notes issued by EPCOR Utilities Inc. Interest rates and terms of the loans are substantially the same as the City of Edmonton debentures that they replaced.

4.3.7 Transactions with Affiliates

Drainage derives a portion of its revenues and expenses from transactions with affiliates, including the City of Edmonton, EPCOR Utilities Inc. and its subsidiaries. Table 4.3.7 provides a summary of Drainage's 2019 and 2018-2019 transactions with affiliates.

Table 4.3.7
Transactions with Affiliates
(\$ millions)

		A	B	C	D
Affiliate and Service		2019		2018-2019	
		Budget	Actual	Budget	Actual
1	Revenues from the provision of services to the City of Edmonton				
2	Utility Services	3.0	3.4	5.9	6.3
3	Other Revenue	0.9	0.1	1.8	1.6
4	Total	3.9	3.5	7.7	7.9

	A	B	C	D
Affiliate and Service	2019		2018-2019	
	Budget	Actual	Budget	Actual
5 Services provided by (recovered from):				
6 City of Edmonton				
7 Franchise Fees	9.3	9.2	19.5	18.2
8 Property Taxes	1.0	0.8	1.0	1.7
9 Interest on City of Edmonton debentures	-	-	21.1	18.1
10 Other services	8.0	7.0	15.8	20.1
11 Total	18.4	17.0	57.5	58.1
12 EPCOR Utilities Inc.				
13 Corporate Shared Service Costs	16.3	16.9	32.0	33.0
14 Interest on short-term debt	18.9	20.2	18.9	21.8
15 Interest on intercompany debentures	2.8	1.5	3.9	2.2
16 Total	37.9	38.6	54.8	57.1
17 Other Affiliates				
18 EPCOR Energy Alberta LP	4.0	4.1	7.9	8.3
19 EPCOR Distribution and Transmission Inc.	0.9	0.1	1.8	0.9
20 EPCOR Technologies Inc.	-	(0.2)	-	(0.2)
21 EPCOR Commercial Services Inc.	-	0.2	-	0.6
22 Other EWSI Business Units	2.0	1.6	4.0	4.9
23 Total	6.9	5.9	13.7	14.5
24 Expenditures (Contributions) on capital projects arising from services provided by:				
25 City of Edmonton	(43.1)	(14.6)	(76.1)	(36.9)
26 EPCOR Technologies Inc.	-	4.5	-	7.3
27 EPCOR Utilities Inc.	2.3	2.3	2.9	2.9
28 EPCOR Energy Services	(2.2)	(2.2)	(5.4)	(5.4)
29 EPCOR Distribution and Transmission Inc.	-	0.3	-	0.4
30 EPCOR Water Services Inc.	0.2	0.2	0.5	0.5
31 Total	(42.9)	(9.5)	(78.2)	(31.2)

4.4 Capital Programs

4.4.1 Capital Expenditures

Drainage's capital program is based on the long term plan for 2018 to 2021 that was used in the independent third party report assessing the transition of the Utility to EPCOR (Grant Thornton report CR_8300). Table 4.4.1 compares forecast to actual capital expenditures for 2019 for each project with approved capital expenditures in excess of \$10.0 million over the 2018-2021 term, as well as for each project category. Table 4.4.1 also provides a comparison of total forecast capital expenditures for 2018 to 2021 from the long term plan to EWSI's current capital projection.

Table 4.5.1
Capital Expenditures
(\$ millions)

		A	B	C	D	E	F	G	H	I	
Capital Project or Program		2019			2018-2019			2018 - 2021			
		Annual Budget	Actual	Difference	Annual Budget	Actual	Difference	LTP	Current Projection	Difference	
1	Drainage Neighbourhood Renewal	29.8	24.6	(5.1)	44.8	50.6	5.8	175.8	115.9	(59.9)	1
2	Drainage System Expansion	12.7	24.2	11.5	27.0	43.3	21.5	84.2	90.6	6.4	2
3	Drainage System Rehabilitation										
4	151S/99A SanTrunk OP-001940-01	0.3	0.7	0.4	0.3	1.1	0.8	-	25.4	25.4	
5	Groat Rd Trunk S OP-001639-01	14.4	15.8	1.4	29.3	21.3	(8.0)	-	33.6	33.6	
6	NewBuenaVista PS OP-002062-01	3.9	0.5	3.5	4.2	0.9	(3.3)		10.0	10.0	
7	Projects under \$15 million	68.3	53.8	(14.4)	104.2	91.0	(13.2)	119.2	201.3	82.1	
8	Drainage System Rehabilitation	86.8	70.7	(16.1)	138.0	114.2	(23.8)	119.2	270.4	151.2	3
9	Environmental Quality Enhance										
10	Clover Bar Cell 1-4	6.0	1.5	(4.5)	6.3	1.5	(4.8)	-	18.1	18.1	
11	Kinnard OSS	0.0	0.2	0.2	0.0	0.2	0.2		10.9	10.9	
11	Projects under \$15 million	4.9	3.4	(1.6)	21.0	9.9	(11.1)	100.8	30.0	(70.8)	
12	Environmental Quality Enhance	10.9	5.1	(5.9)	27.3	11.7	(15.6)	100.8	48.1	(52.7)	4
13	Flood Mitigation										
13	Tweddle Place OP-001334-01	6.5	4.1	(2.4)	13.7	9.1	(4.6)	-	17.1	17.1	
14	Malcolm Twed & Ed OP-001695-01	5.6	1.8	(3.8)	12.0	1.8	(10.3)	-	10.5	10.4	
15	Projects under \$15 million	19.5	8.2	(11.3)	31.6	16.4	(15.2)	247.5	59.9	(187.6)	
16	Flood Mitigation	31.6	14.0	(17.5)	57.4	27.2	(30.1)	247.5	87.4	(160.1)	5
17	SSSF Projects										
18	SESS SW4 OP-001336-01	7.0	3.5	(3.6)	17.6	12.2	(5.5)	-	22.3	22.3	
19	NEST NC2 & NC3 OP-001795-01	13.0	9.0	(4.0)	21.4	17.8	(3.6)	-	35.6	35.6	
20	SESS SA10A CP-002993-01	12.6	8.8	(3.9)	20.3	13.2	(7.1)	-	35.7	35.7	
21	Projects under \$15 million	1.6	0.8	(0.8)	3.1	2.3	(0.8)	137.8	10.7	(127.1)	
22	SSSF Projects	34.3	22.1	(12.3)	62.4	45.4	(17.0)	137.8	104.3	(33.5)	6
23	Real Estate	-	-	-	-	-	-	-	37.3	37.3	7
24	NRA-LRT										
25	West Valley LRT	0.7	5.3	4.6	0.7	5.8	4.6	-	42.5	42.5	
23	Metro LRT	-	0.1	0.1	-	0.1	0.1	-	8.7	8.7	
27	NRA-LRT Projects	0.7	5.4	4.7	0.7	5.9	4.7	-	51.2	51.2	8
28	NRA-CORE	-	1.2	1.2	-	1.2	1.2	-	31.8	31.8	8
29	Total Capital Expenditures	206.8	167.3	(39.4)	357.5	299.6	(52.7)	865.3	836.8	(28.5)	
30	Contributions										
31	Drainage System Expansion	(4.8)	(4.8)	0.0	(4.8)	(12.4)	(7.5)	(60.1)	(23.1)	37.0	2
32	Flood Mitigation	-	-	-	-	-	-	-	(4.7)	(4.7)	5

		A	B	C	D	E	F	G	H	I
Capital Project or Program		2019			2018-2019			2018 - 2021		
		Annual Budget	Actual	Difference	Annual Budget	Actual	Difference	LTP	Current Projection	Difference
33	SSSF Projects									
34	SESS SW4 OP-001336-01	(7.0)	(3.5)	3.6	(17.6)	(12.2)	5.5	-	(22.3)	(22.3)
35	NEST NC2 & NC3 OP-001795-01	(13.0)	(9.1)	3.9	(21.4)	(17.9)	3.5	-	(35.6)	(35.6)
36	SESS SA10A CP-002993-01	(12.6)	(8.8)	3.8	(20.3)	(13.2)	7.1	-	(35.7)	(35.7)
37	Projects under \$15 million	(0.1)	0.7	0.9	(1.6)	1.8	3.4	(137.8)	(3.9)	133.9
38	SSSF Projects	(32.8)	(20.6)	12.2	(60.9)	(41.4)	19.5	(137.8)	(97.5)	40.3
39	Total Contributions	(37.7)	(25.4)	12.2	(65.8)	(53.8)	12.0	(197.9)	(125.2)	72.7
40	Capital Expenditures, net	169.1	141.9	(27.2)	291.7	245.8	(46.0)	667.4	711.6	44.2

6

The impact of the unusually wet weather in 2019 led to significant delays to capital project execution which led to the deferral of certain projects from 2019 to 2020. In addition to the weather impact, during 2019, Drainage continued to refine and reprioritize its overall 2018 – 2021 capital expenditures program, which now encompass the approved NRA capital spending for LRT and CORE. The current projections for 2020 also include an initial estimate for potential delays and reduction in scope on annual programs following the global outbreak of COVID-19. As changes to processes and project management have become established Drainage has increased its overall capital expenditures year over year by 36% from \$103.8 million in 2018 to \$141.9 million at the end of 2019 (net of contributions).

Explanations for significant differences between forecast and actual in capital spending in 2019, as well as differences between Drainage's long term plan ("LTP") and its current projections for 2018 to 2021 are as follows:

- 1) **Drainage Neighbourhood Renewal** – 2019 – \$5.1 million less than budget, 2018-2021 - \$59.9 million less than LTP. This category includes the costs of neighbourhood drainage asset renewals and is aligned with the timing of the City of Edmonton's Building Great Neighbourhoods program. Therefore, project timing is largely driven by the City of Edmonton's neighbourhood renewal schedules. Accordingly, lower than budget spending in 2019 results from advancement of projects from 2019 to 2018 to align with City of Edmonton neighbourhood renewal schedules and lower than LTP projections are primarily attributable to the timing of capital expenditures, as a few neighborhood project schedules have been adjusted to later years, partly due to re-prioritization of neighbourhoods and coordination with other utility companies. Favourable pricing on open cut and relining contracts also contributes to lower than LTP projected expenditures.
- 2) **Drainage System Expansion** – 2019 - \$11.5 million greater than budget, 2018-2021- \$43.4 million greater than long-term plan (net of contributions). Increases in 2019 actual and 2018-2021 projected expenditures in this partially-contributed program are attributable to higher levels of service connections and developer driven inspections. The level of developer contributions to service connection projects has also fallen as fees to developers have not kept pace with cost increases. Additional scope increases on Imagine Jasper and 105 Avenue Streetscape projects to reduce the SIRP rankings have also contributed to the variance compared to the original LTP target. Drainage's current projection for 2018-2021, while greater than the LTP, will continue to be refined and revised in response to COVID-19 impacts on new developments and system expansion.
- 3) **Drainage System Rehabilitation.** This category includes system replacements, rehabilitation and renewal projects required to mitigate the risk of failure and maintain service levels.
 - a) **151S/99A Sanitary Trunk** – projected cost \$25.4 million, \$0.4 million greater than budget in 2019 as contractor delays in 2018 were caught up in 2019.
 - b) **Groat Road Storm Trunk Rehabilitation** – projected cost \$33.6 million. \$1.4 million greater than budget in 2019. Contractor delays in 2018 were caught up in 2019, combined with earlier than anticipated receipt of pipe and completion of two shafts ahead of schedule.
 - c) **New Buena Vista Pump Station** – projected cost \$10.0 million, \$3.5 million lower than budget in 2019 due to delays in land acquisition.
 - d) **Projects < \$15 Million** – 2019 - \$14.4 million less than budget, 2018-2021 - \$82.1M greater than LTP. Major project delays include Clareview Sanitary Trunk (\$1.0 million) due to access

restrictions and deferral of relining pending completion of emergency work, Gold Bar Utilidor (\$3.0 million) delays due to weather impacting ability to divert flows to ACRWC and needs completion of Clareview project to progress, and Trunk Sewer Rehab (\$3.0 million) due to procurement delays have contributed to underspending in 2019. Even so, Drainage's projected expenditures over the 2018-2021 period will exceed the LTP by \$92.0 million in order to address significant rehabilitation needs identified by asset condition assessments.

- 4) **Environmental Quality Enhancement.** This category includes capital expenditures that mitigate the impacts of the drainage system on the environment, including sewer overflows, river loading, and reuse of biosolids.
 - a) **Clover Bar Cell 1-4** – 2019 - \$4.5 million less than budget, 2018-2021 projected cost \$18.1 million. Lower than budget expenditures in 2019 reflect a reduction in the scope of this project to focus on Cell 3E with 2019 activities focussed on site preparation and main relining activities now scheduled for 2020. The remaining cells will be completed by Wastewater within their next PBR application.
 - b) **Kinnaird Sewer Separation** – 2019 - \$0.2 million greater than budget, 2018 – 2021 projected cost \$10.9 million. The increased cost in 2018 – 2021 which now estimate this project over \$10 million in the 2018-2021 period reflects a change in scope to microtunnelling along with an increase in costs following bid tendering. This project also supports flood mitigation.
 - c) **Project < \$15 million** – 2019 - \$1.6 million less than budget, 2018-2021 - \$70.8 million less than LTP. Projected expenditures in this category have been reduced significantly due to the cancellation of the Mill Creek End of Pipe Facility project and the Steinauer-Duggan Odour projects.
- 5) **Flood Mitigation.** This category includes development of drainage infrastructure and program improvements to decrease flood risks, including capital expenditures on projects related to the Stormwater Integrated Resource Plan describe in Section 1.5. Major projects in this category include:
 - a) **Tweddle Place Sewer Separations** - 2019 – \$2.4 million less than budget as weather delays have resulted in deferral of construction until 2020. 2018-2021 projected costs of this multi-year project remain at \$17.1 million.
 - b) **Malcolm Tweddle Dry Pond** – 2019 - \$3.9 million less than budget as delays in finalizing land agreement combined with heavy rainfall have led to deferral of construction. 2018-2021 projected cost of this multi year project remain \$10.4 million before contributions.
 - c) **Projects < \$15 million** – 2019 - \$11.3 million less than budget, 2018-2021 - \$187.6 million less than original LTP. The updated 2018 – 2021 forecast includes grant recoveries of \$8 million received to date from the ACRP and NBCF grants and a projected further \$19 million from the new Disaster Mitigation and Adaptation Fund. Lower than budgeted expenditures result from different causes, including: cancelled projects (\$6 million); Steinhauer-Ermineksin construction delays (\$3 million); delays in receiving designs from consultants for Aldergrove (\$2 million); re-evaluation of Hurstwood under SIRP criteria as a wet pond (\$2m); and delays in obtaining land agreement for Parkallen (\$1 million). Drainage has consolidated management of flood mitigation projects under SIRP and, while the continuing projected underspend is consistent with 2018 reporting, the post-2021 expenditures have been aligned to meet the commitments given in the SIRP projections in the non-routine adjustment approved in 2019.

- d) **Contributions** in this category, projected to be \$5.2 million over the 2018-2021 period, represent provincial and federal grant funding in respect of flood mitigation projects, primarily (\$4.8 million) in respect of the Malcolm Tweddle project.
- 6) **Sanitary Servicing Strategy Fund (SSSF) Projects.** The SSSF finances major sanitary trunk construction to service new development areas. Drainage works with the SSSF Management Committee to coordinate design, construction, schedules and budgets for various projects. While significantly less than the LTP, Drainage's current projected expenditures align with the SSSF Management Committee's five year construction plan (2018-2022) to support orderly, cost effective development based on population and employment projections, as well input from the development industry. Major projects in this category include:
- a) **SESS SW4 OP-001336-01** – 2019 - \$3.6 million less than budget due to delays pending approval of the fiberglass liner by the Board and SSSF oversight committee. Total projected costs of \$22.3 million over the 2018-2021 period will be fully funded through the SSSF.
 - b) **NEST NC2 & NC3 OP-001795-01** – 2019 - \$4.0 less than budget because of flooding caused by the wet weather which prevented tunnelling over the summer combined with lost time due to surveys needed to confirm the tunnel alignment. Total projected costs of \$35.6 million over the 2018-2021 period will be fully funded through the SSSF.
 - c) **SESS SA10A CP-002993-01** - 2019 - \$3.9 million less than budget due to weather delays and a review of safety procedures and switch to contractors due to the switch in use to an earth pressure tunnel boring machine due to the site conditions. Total projected costs of \$35.7 million will be fully funded through the SSSF.
 - d) **Projects < \$15 Million** – 2019 - \$0.8 million less than budget. Total projected expenditures of \$10.7 million over the 2018-2021 period will be funded through SSSF contributions of \$3.9 million, with the \$6.8 million difference attributable to SSSF Management fees not originally included in 2018 budget
- 7) **Real Estate** – \$37.3 million (new project). Following the transfer of Drainage to EPCOR, an EPCOR-wide real estate review was undertaken to identify and evaluate alternatives for consolidating the many physical locations occupied by Water and Drainage and to identify the alternative which would maximize the contribution to the cost reduction and efficiency commitments made as part for the Drainage transfer. The projected expenditures for this project are supported by a comprehensive business case prepared prior to the COVID 19. Accordingly, the business case and costs of this project will be refined and adjusted as further information becomes available and key decisions are made.
- 8) **NRAs.** As discussed in section 1.5, Drainage has received approval for three non-routine adjustments to rates: SIRP, which is considered part of the Flood Mitigation category explained above; LRT relocations; and Corrosion and Odour Reduction (COrE). Projected capital expenditures for these programs represent EWSI's current estimates of capital required in the 2018-2021 PBR term. Additional spending requirements will be included in the future PBR applications.
- a) **LRT** – 2019 - \$4.6 million greater than budget due to advancement of work required by the City of Edmonton on Priority Areas 1 and 2, originally planned for 2020. Total projected capital expenditures on LRT projects over the 2018-2021 period amount to \$51.2 million, compared to

\$53.8 million in the NRA application, primarily because of the deferral of construction on the West Valley Line LRT into 2022 and future years.

- b) **CORe** – \$1.2 million greater than budget due to advancement of work on the Accelerated Access Manhole project. Total projected capital expenditures over the 2018-2021 period are \$31.8 million.

4.4.2 Construction Work in Progress

Drainage's rate base consists of plant in service. If a capital project is not completed (i.e. not placed into service) in the year, the capital expenditures on that project remain in Construction Work in Progress and are excluded from the rate base.

Table 4.4.2
Construction Work in Progress
(\$ millions)

		A	B
		2019	
Construction Work in Progress		Budget	Actual
1	Balance, beginning of period	30.9	52.2
2	Capital Expenditures	169.1	141.9
3	Cancelled costs/Write-offs	-	(1.3)
4	Capital Additions	(145.8)	(145.9)
5	Balance, end of period	54.2	46.9

The PBR allows Drainage to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an allowance for funds utilized during construction ("AFUDC"). In 2019, AFUDC included in capital expenditures on eligible projects amounted to \$3.9 million.

4.5 Operational Performance

4.5.1 Water Quality and Environmental Index

One of EPCOR's core commitments is to prevent pollution and reduce its environmental impacts. Drainage Services' collection system approvals from Alberta Environment and Parks include regulatory requirements to develop and implement strategies to reduce the impact of the drainage systems on the North Saskatchewan River. The Edmonton Watershed Contaminant Reduction Index and the Total Suspended Solids Total Loading are two metrics used to quantify discharges to the North Saskatchewan River and assess the environmental performance of Drainage strategies.

Index Metric		Measure	Target	Actual
1	Edmonton Watershed Contaminant Reduction Index Score	Index score that measures contaminants released to the North Saskatchewan River from the City of Edmonton.	> 6.9	7.6
2	Total Loading – Total Suspended Solids	Total suspended solids loading (kg/d) contributed to the North Saskatchewan River from the storm sewer system, combined sewer system, and Gold Bar Wastewater Treatment Plant.	< 50,000	46,900

2019 Highlights:

- Although Edmonton experienced above average rainfall in 2019, implementation of Combined Sewer Overflow controls helped to ensure that total loadings remained relatively constant, enabling Drainage to exceed performance standards for both Water Quality and Environmental Index metrics.

4.5.2 Customer Service Index

The Customer Service Index is a composite measure of the customers' perception of satisfaction with EWSI service, the speed of response and quality service level to customer issues.

Index Metric		Measure	Target	Actual
1	Emergencies Responded to Within Two hours	The efficiency in responding to customer reports or complaints that require an emergency response. The emergency repair crew is given 2 hours to respond and be on site from the time the report is received.	> 87.0%	94.81%
2	Number of Blocked Mainline Sewers	The number of blockages in the mainline per 100km of pipe.	< 2.2	2.37
3	Mature Neighbourhoods at 1:100 Service Level	The percentage of neighbourhoods that are protected against a 100 year storm flood out of the 157 identified at-risk mature neighbourhoods.	> 16.0%	17.7%
4	Odour Complaints	The number of odour complaint received from customers.	Reduction from Previous Year	519

2019 Highlights:

- The percent of mature neighbourhoods at 1:100 service level metric is 1.7% above target. This is an improvement from 2018 where the results were 1.0% below target.
- The number of odour complaints received from customer has decreased by 204 compared to last year. 723 complaints were received in 2018 compared to 519 in 2019.

4.5.3 Reliability and Optimization Index

The System Reliability Index is a measure of the confidence that customer can place in the reliability of the drainage sanitary and stormwater systems.

Index Metric		Measure	Target	Actual
1	Pipe Capacity Rating - Sanitary	The percentage of linear infrastructure assessed as having a hydraulic condition rating of 2 (or B) or better. Measured	96.0%	96.0%
2	Pipe Capacity Rating -		50.0%	50.0%

	Storm	separately for sanitary, storm, and combined sewer infrastructure.		
3	Pipe Capacity Rating – Combined Sewer Overflow	Measures the number of blockages in the mainline per 100km of pipe.	80.0%	80.0%
4	Infrastructure at or Above the Minimum Level of Condition Rating	The percentage of all infrastructure (including non-linear) assessed at or above the minimum level of condition rating.	90.0%	90.6%
5	Capital (as rehabilitation) Re-invested Compared to Total System Replacement	The percentage of investment dollars spent on renewal/rehabilitation work on aging drainage infrastructure compared to the total system replacement value.	0.81%	0.53%

2019 Highlights:

- Although the percentage of capital reinvested compared to the total system replacement value is 0.28% below target, 2019 results only account for the rehabilitation of existing infrastructure and do not include system upgrades. A more representative performance measure for network reliability has been identified for 2020.

4.5.4 Safety Index

The Safety Index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public.

Index Metric		Measure	Target	Actual
1	Employee Engagement (survey every 2 years)	The level of employee engagement within Drainage Services as a percentage.	N/A	N/A
	Employee Turnover (excluding retirements)	The percentage of employees leaving Drainage Services compared to the overall headcount. This excludes retirements. This includes voluntary, involuntary departures, and transfers to other business areas.	6.0%	6.7%
3	Lost Time Frequency Factor	The number of lost time hours resulting from a workplace injury related to the total number of hours worked (200,000 hr) in a specific time period.	0.50	0.33

2019 Highlights:

- There are no results for the Employee Engagement survey because it is conducted every 2 years. It was last conducted in 2018.
- The Lost Time Frequency Factor is better than target at 0.33. Improvements in hazard assessments, reporting of near misses and hazardous condition, worksite inspections, improved implementation of corrective actions and training all contributed to continued improvements in this metric.

4.6 Rates and Bill Comparisons

Unlike most cities, where wastewater treatment services and drainage services are combined, EWSI currently has separate bills for wastewater treatment services and for drainage services. Accordingly, in order to provide a better basis for comparison with other cities and communities, bill comparisons in Section 3.6 utilize EWSI's blended wastewater and drainage bills.

5 2019 Annual Operating Plans

5.1 Water Services and Wastewater Treatment Services

Water Services presented the 2019 Annual Operational plan to Utility Committee on February 1, 2019. The purpose of that document was to provide Edmonton City Council, Utility Committee and stakeholders a high level perspective of the major activities and initiatives that Water Services was undertaking to meet its overarching goal of providing customers with safe and reliable water and wastewater treatment services while meeting or exceeding all environmental requirements, delivering value and achieving a fair return. The initiatives planned for 2019 are organized within seven strategic focus areas:

- Customer Service
- Public Health and the Environment
- Employee and Public Safety
- Employee Development
- Operational Performance
- Growth
- Financial Performance

This PBR Progress Report provides an update on the 2019 Operational Plan. All initiatives have been described as either: 1) Completed, indicating that the activities are finished and the initiative is closed, 2) In-progress, indicating that work continues and the initiatives has been continued in the 2020 Operational Plan (as many initiatives are multi-year), or 3) On-going, indicating that the initiatives will never be formally completed as business requirements continue to change (e.g. operational improvement).

INITIATIVE	Year End Status
Customer Service	
Improve Customer Service in Edmonton Water – This initiative will create a customer service culture with focus on quality reviews and coaching and improve customer interactions handled by phone, in person and online.	Ongoing - In 2019, Water Services worked with the Drainage and Power to streamline processes through implementation of an improved call answering process where simpler calls are handled by a centralized team trained to handle power, water and drainage calls; a new phone system with an updated menu allowing for improved up front customer messaging and functionality and moving emergency calls to a single point of contact.
Improve Development Processes and Coordination with City of Edmonton and UDI/IDEA – Water Services will focus on better coordination with City Roadways, LRT, Development and Planning group for greenfield	On-Going - Initiatives to improve coordination with CoE have commenced and will continue to be optimized. Examples include Roadways, LRT planning and infill development. New requirements will evolve as both organization

INITIATIVE	Year End Status
and infill development work as well as local industry associations (UDI, IDEA).	introduce new processes. EWSI worked with the City and IDEA to develop the Infill Cost Sharing Program which is currently being piloted for 2020/2021 to support targeted infill development in Edmonton. Water Services is working with UDI to develop a principles based approach to sharing of utility infrastructure costs to mitigate rate increases, support growth and align to City growth objectives.
Improve Operational Coordination with the Regional Water Customer Group (RWCG) - This initiative will improve communication, planning and coordination of operational activities and unplanned events to ensure an effective and coordinated response to planned or unplanned events.	Ongoing - A secure FTP site has been set up where information such as reservoir levels, pressure data and other important operational information can be easily shared between parties, which will improve Water Services' ability to service the regional customers while providing more up to date information of the status of both systems. Continued coordination with the RWCG provides opportunities to plan work, manage emergent work, and realize cost efficiencies for both parties.
Develop and Implement a Gold Bar Stakeholder Consultation Plan – Water Services will provide the public with balanced and objective information to assist with understanding the problem, alternatives, opportunities and/or solutions and to solicit feedback on Gold Bar's long-term requirements at its site in the river valley.	Complete - The Gold Bar Stakeholder consultation plan was developed and executed through 2019 and provides the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions. Shared outcomes and design principles were developed in collaboration with stakeholders that will drive and inform activities at the site. Going forward, the stakeholder engagement program will build upon the success of the work done in 2019.
Public Health and the Environment	
Develop Climate Change Adaptation – River Flooding Resiliency Plan – Climate Change Strategy identified flooding as the highest risk. Conduct flood hazard analysis and develop a flood mitigation plan for Gold Bar and implement flood mitigation measures at the water treatment plants.	In progress – A comprehensive climate change strategy has been completed. The strategy is now being operationalized through a number of initiatives and capital plans for the facilities. Plans are currently being developed to mitigate flood risks at the plants. Grant funding has been awarded to offset a portion of the associated costs.
Develop Drinking Water Emergency Plan (Troubled Waters) - Water Services will finalize	Ongoing – EWSI finalized the BCP in 2019. In 2020, focus on sharing results with regional

INITIATIVE	Year End Status
plans for addressing drinking water emergencies and have in place a clear framework and a documented Business Continuity Plan (BCP) that addresses water supply or water quality emergencies.	customers. Completing Five year-plan of annual table top exercises to test the BCP.
Develop Enhanced Lead Management Program – Water Services will develop a proactive means of reducing public health risks to customers from lead and to ensure compliance with the new guidelines for lead in drinking water.	In-progress – Lead Mitigation Strategy developed and presented to Utility Committee March 22, 2019 and non-routine adjustment for this program approved by Council. Completing design of orthophosphate dosing systems at the WTPs followed by construction in 2020. Implementing targeted lead service line replacement program.
Move to Adopt ISO 14001 Across All Water Services Sites - Environmental Management Systems (EMS) are required at facilities and treatment systems across Water Services. Those facilities/systems with an Environmental Management Systems built to meet the old standard are required to transition and conform to the new ISO 14001:2015.	Complete – all Water Service facilities operate under a common Environmental Management system.
Complete E.L. Smith Solar Project and Smart Grid System - The E.L. Smith Solar Project is planned as a 12 MW solar farm that will provide renewable energy for water treatment plant operations. In conjunction, EWSI has received federal grant funding to build a Smart Grid System including a 4 MW battery energy storage system and micro-grid controls.	Ongoing - This project is in the final stages of approval after considerable public and stakeholder consultations. AUC approval was received in 2019 and the project is expected to receive final City approval for rezoning in fall 2020. Construction will commence in 2021 with an expected 2022 in-service date.
Execute Green Energy Purchase Agreement – In addition to the E.L. Smith Solar Project, another key component of Water Services' strategy to reduce its environmental footprint is to explore a competitive procurement for new renewable power from other Alberta sources for the remainder of the grid sourced electricity currently used by water operations.	Ongoing - A Request for Proposals (RFP) was issued in 2019 to solicit interest from renewable generation suppliers. Renewable Energy Systems Canada was selected as the successful proponent and will develop, design and construct the Hilda wind farm in south-eastern Alberta, which is expected to be operational by December 31, 2022. Water Services will acquire Renewable Energy Certificates for 20 years at a fixed price under the agreement.

INITIATIVE	Year End Status
<p>Develop a Renewable Natural Gas Project at Gold Bar - The Gold Bar wastewater plant produces biogas as a by-product of the treatment process, which is currently used to heat the facility and any excess is flared. To lessen the environmental impact of this process, Water Services is investigating development of a cogeneration facility that would burn the biogas and produce electricity as well as heating.</p>	<p>Ongoing - The project has progressed to the conceptual design phase and would require public consultation as part of the development process if it were to proceed.</p>
<p>Develop a Proactive Residuals Strategy – Develop a strategy for the continued reduction of residuals loading to the North Saskatchewan River and elimination of chlorinated discharges to the river. This strategy will revisit options for the potential diversion of water treatment plants residuals to sanitary sewer, landfill or other solids disposal and will explore opportunities to further reduce solids loading to the river and expanding water plants residual solids management to other seasons. EWSI will study the net environmental benefit of various options.</p>	<p>In-progress – A consultant has prepared first draft of a triple bottom line (social, environmental and financial) study. This study will be completed in 2020 and used to develop EWSI's residuals strategy.</p>
<p>Employee and Public Safety</p>	
<p>Develop and Implement Company-wide Standard Operating Procedures for all High Hazard Activities –develop and implement company wide operating procedures for all high Hazard activities to effectively increase layers of protection for people and assets. This includes procedures for fall protection, hazardous energy isolation, confined space and lifting devices.</p>	<p>On-going – the initial development has focused on fall protection, hazardous energy isolation, confined space and lifting devices. This initiative is being developed in conjunction with the competency program as described below. Additional modules will be develop over time.</p>
<p>Move to Adopt ISO 45000 Across all Water Services Sites - Water Services has implemented and obtained registration to the OHSAS 18001 safety management system and is progressing to convert to the updated ISO 45001 safety management system to support continued safety performance improvement.</p>	<p>On-going – For its core Edmonton operations, Water Services has implemented and obtained registration to the OHSAS 18001 safety management system and is progressing to convert to the updated ISO 45001 safety management system to support continued safety performance improvement.</p>
<p>Review Effectiveness of Safe Work Planning Across All Water Services Sites – Safe work planning includes implementing a field level hazard assessment that effectively identifies</p>	<p>On-going - EWSI continues to develop and implement company wide assessments for six of the lifesaving rules and chemicals to effectively review existing procedures to ensure</p>

INITIATIVE	Year End Status
hazards and implements controls to prevent potential injury to employees, contractors and the public. Water Services will review safe work planning for all locations to strengthen hazard assessment and reinforce safety integration into routine and non-routine tasks.	conformance to the EPCOR Standards and provincial legislative requirements
Employee Development	
Develop and Implement Company-Wide Competency Based Training for All High Hazard Activities – Competency training will include fall protection, hazardous energy isolation, confined space and lifting devices.	On-going – initial work has commenced on the identified modules. This approach will establish early learnings that will inform the subsequent development of additional modules over time.
Develop and Implement a Company-Wide Employee Rotation Program – To ensure a strong pool of talent now and into the future, this program will identify suitable candidates for job-to-job or project-to-project opportunities and support all aspects of the transition.	On-going - In 2019, all managers have completed the Professional Growth Initiative assessment and have development plans in place.
Improve Employee Engagement and Build a Respectful, Inclusive, Collaborative, Safe and Healthy Work Culture – Water Services will deliver a bi-annual engagement survey and interpret the results and implement action plans to address top drivers and opportunities for engagement. We will pursue a variety of activities through the Diversity Council including increasing awareness of diversity and inclusion at EPCOR, incorporating diversity into hiring practices, supporting employee resource groups and working with <i>Careers: The Next Generation</i> to provide work opportunities for indigenous youth.	On-going - In 2018 a Diversity Council was formed and in 2019, the Council, in concert with leaders across our Business Units, pursued a variety of activities and initiatives to drive this focus such as increasing awareness of diversity and inclusion at EPCOR and supporting employee resource groups.
Operational Performance	
Develop a Process Improvement Program to Support Productivity Increases - This initiative will develop standardized processes or continuous improvement programs to support productivity increases and service quality improvements. The program will encompass methods, techniques and tools and be used to design, control and analyze both business and	On-going – a team with six sigma credentials has been formed with the intent of that group both conducting process improvement projects themselves as well as developing educational materials to foster a process improvement orientation across the organization. Several process improvement projects have been identified and are under development. An

INITIATIVE	Year End Status
operational processes. It is critical that any approach chosen involves the people aspect of the process and integrates processes and systems.	educational program is in the final stages of development.
Develop a Standardized Approach to Asset Management Across Water Services by Confirming to ISO 55000 – The Asset Management Framework will be expanded and adapted to allow greater consistency in how it is applied across business units of Water Services by aligning with the international standard for asset management ISO 55000.	On-going - The Asset Management Methods Office has expanded and adapted the current Asset Management Framework to allow greater consistency in how it is applied across various Business Units of Water Services by aligning with the international standard for asset management, ISO 55000 including creation of a Strategic Asset Management Plan that outlines how Asset Management is to be approached across the business.
Develop Standardized Project Management Office/Capital Project Management Tools – This initiative will standardized the way project managers plan, execute and monitor their projects and programs. It involves creation of a project management methodology along with several processes, tools and templates.	On-going – a cross organizational team has been formed to review project management processes across all business units of EPCOR. The group has identified common process and re-developed many of the supporting documents. More detailed process modelling is currently underway as part of the introduction of the process into the respective business units.
Develop and Implement Strategies for Realizing Synergies between Water and Drainage – EPCOR has committed to a minimum of 1% annual operational efficiency savings for 2018-2022 and capital cost efficiencies of 10% by 2022 for Drainage Services. The initial focus of this initiative has been on integrating Drainage into EPCOR processes. Recent activities have focused on cross functional teams meeting to identify and prioritize efficiency opportunities in the areas of planning, capital and operations.	On-going - several short term opportunities for synergies have been identified and implemented. Detailed analysis has been completed to address larger opportunities to move towards a more consolidated approach across water and drainage. The central drivers to maximizing these opportunities may include real estate strategies and development common information systems platforms. These initiatives are in development and will be rolled-out over the next 2-3 years
Optimize Meter Reading Function – Water Services will seek to optimize the meter reading function through an analysis of current routing as well as the implementation of meter reading technologies to determine if they are viable from a cost benefit perspective. Analysis of the costs	On-going – Water Services is in the process of completing an analysis of the costs and benefits of introducing AMR and AMI technology and will incorporate the results of this analysis into its upcoming PBR plan.

INITIATIVE	Year End Status
and benefits of introducing Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) technology will be completed.	
Growth	
Develop and Maintain Master Plans / IRP's for All Sites – Each operational area of Water Services will develop/re-develop long-term plans of utility infrastructure to identify growth and operational service requirements along with review of technology and treatment processes: <ul style="list-style-type: none"> - Rossdale and E.L. Smith WTPs - Water Distribution and Transmission - Gold Bar 	On-going –The Gold Bar IRP was presented to Utility Committee in 2019. The Water IRP will be presented to Utility Committee in 2020.
Develop Transfer Plan for Annexation Areas in South Edmonton – The proposed annexation areas south of the City will result in a substantial increase of the geographic area served by Water Services. The transfer of these areas include acquisition of a water pipeline and booster station from the southwest water Service commission and reservoir and related infrastructure in the county of Leduc and Discovery Park.	Complete – The acquisitions have been completed and transfer of the infrastructure is in progress. The City approved EWSI's non-routine adjustment for Annexation in late 2019.
Financial Performance	
Prepare for the 2022-2026 Edmonton PBR – The strategy will be developed to align Drainage under the same PBR Framework as Water and Gold Bar. EPCOR is proposing to renew the Water PBR rates for another five year term for the period 2022-2026. To stagger the future renewal periods, EPCOR will file the Gold Bar and Drainage PBR applications for a three-year term 2022-2024.	On-going – work is currently underway to determine the capital and operational plans underlying the PBR Applications, conduct stakeholder consultations and cost of service and rate design analysis. EPCOR aims to file the Applications with the City in early 2021 in order to complete the PBR hearing in advance of the 2021 municipal elections.

5.2 Drainage Services

Drainage Services also presented a 2019 Annual Operational plan to Utility Committee on February 1, 2019. The purpose of that document was the same as Water Services. The drainage initiatives planned for 2019 were organized within six strategic focus areas:

1. Safety
2. Environment
3. People
4. Operational Excellence
5. Customer and Stakeholder
6. Shareholder Value

This PBR Progress Report provides an update on the 2019 Operational Plan. All initiatives have been described as either: 1) Completed, indicating that the activities are finished and the initiative is closed, 2) In-progress, indicating that work continues and the initiatives has been continued in the 2020 Operational Plan (as many initiatives are multi-year), or 3) On-going, indicating that the initiatives will never be formally completed as business requirements continue to change (e.g. operational improvement).

Initiatives and Objectives	Year End Status
Safety	
<i>Create a supportive culture where safety is our first priority and everyone has a voice.</i>	
Reduce Tolerance towards safety related risks - Develop customized safe work plans for each unique work area. These will be in place for all groups by the end of 2019 Implement a new Contractor Management Program, including a framework and guidelines for managing prime contractor accountabilities	<ul style="list-style-type: none"> • On-going • Paper based customized safe work plans have been developed for each unique work area. Work is underway to integrate these into a Safe Work Plan App for use in the field. • The Contractor Management Program, including guidelines for managing prime contractor accountabilities and serious incident response plans, was reviewed and updated and rolled out to project managers.
Cultivate a culture of Safety Leadership – Ensure that incidents are reported accurately within our Event Reporting System (ERS), investigations are completed in a timely manner, and learnings are shared with all employees	<ul style="list-style-type: none"> • On-going • Several initiatives were completed to develop a strong safety culture including training, revision of process, near miss and other reporting metrics as well as programs to increase general awareness among staff. These programs will continue to ensure the safety culture continues to build. • For the year, 93% of recordable injuries and significant near misses were reported within 24 hours versus the target of 90%.
Encourage ownership of safety at all levels – This initiative includes: focus on hazard recognition and near miss reporting; training of all people leaders to lead an incident	<ul style="list-style-type: none"> • On-going

Initiatives and Objectives	Year End Status
investigation; developing an observation program to identify workplace hazards and recommend controls; rolling out driver report cards based on telematics; implementing workplace inspections across Drainage Services.	<ul style="list-style-type: none"> • Training of people leaders to lead incident investigations is underway and will continue into 2020. • The installation of fleet telematics was completed in December 2019. Monthly driver report cards are being produced and reviewed with staff. • Targets for workplace observations and inspections by managers and foremen were developed and are included in the 2020 work plan.
Train Staff for Competency and Confidence – This initiative includes creating and implementing Hazard Registries for all high risk work; establishing competency based assessments for high risk tasks; and implementing “EPCOR Athletes” – a program to learn about body mechanics and how to incorporate healthy movement into everyday tasks for both field works and office workers.	<ul style="list-style-type: none"> • On-going • Training for the EPCOR Athletes program was completed and both field and office staff continue to use the exercises on a daily basis. • The EPCOR Learning and Development team began the development of the formal Competency Assessment Project in 2019. Completion and roll out of the program will occur in 2020. • Hazard registries for all high risk work have been developed as part of the work to prepare ISO 45001 registration.
Roll out a Fully Functional Safety Management System to all Employees – This system will include hazard awareness, incident investigation and safety leadership. We will also focus on redefining critical procedures to ensure consistency, readability and accessibility.	<ul style="list-style-type: none"> • Complete – EPCOR Health Safety and Environment completed the system rollout which provides a consistent approach to management safety incidents across all EPCOR business units.
Environment	
Continuous improvement to meet or exceed societal and stakeholder expectations.	
Know what is important to Stakeholders and understand how we contribute – Drainage services will develop and implement the Odour Mitigation Strategy; expand on tools for environmental controls specific for Operations, Construction and Project Management to ensure proper data collection, and decrease our reliance on assumptions when discussing environmental	<ul style="list-style-type: none"> • On-going • A Water/Drainage Public Engagement strategy was developed and presented to Utility Committee June 8, 2018. This strategy was aligned with the City of Edmonton engagement strategy now forms the basis for all on-going customer and stakeholder engagements.

Initiatives and Objectives	Year End Status
performance; and update the Total Loading Strategy and obtain Alberta Environment and Parks approval through an amended Approval to Operate.	<ul style="list-style-type: none"> The Total loading strategy update is on-going and work is underway with EPCOR Water to align this initiative with the residuals management strategies for the water and wastewater treatment plants and water distribution system. Coordinated discussions with Alberta Environment and Parks will occur in the later part of 2020 and any required amendments to the Approval to Operate will be determined in 2021. To support the Total loadings strategy, additional flow monitors have been installed at outfall locations and the SIRP strategy has incorporated high risk outfalls and environmental impacts into the SIRP risk ranking for the subbasins contributing loading to the environment.
Minimize Environmental Impact of Our Operations – This initiative includes updating the Combined Sewer Strategy and setting a CSO reduction target; ensuring that environmental work is aligned with projects in Planning and Engineering; and ensuring that all projects reflect considerations arising from the Stormwater Integrated Resource Plan (SIRP), our Odour Mitigation Strategy, and our goals to reduce flow to the river.	<ul style="list-style-type: none"> In-progress - The combined sewer strategy goals have been incorporated into the overall SIRP program and are captured as individual flood mitigation projects are proposed. The introduction of low impact development alternatives to capture low flows at the source will reduce volumes reaching the river during low flow events thereby improving overall river water quality.
Adapt to Impact of Climate Change – Drainage Services will identify work that needs to be accomplished to reduce the impact of stormwater flow on Edmonton residents and businesses. We are also participating in the Flood Hazard Identification Program with Alberta Environment and Parks.	<ul style="list-style-type: none"> In progress Drainage Services completed the development of the SIRP strategy and is currently working through its implementation along the 5 themes of SLOW, MOVE, SECURE, PREDICT and RESPOND. This is a multi- year program with prioritization based on flooding risks and includes both capital and operational interventions with a particular focus on methods to support the property owner flood proofing their property to limit overall damage during an extreme storm event.

Initiatives and Objectives	Year End Status
	<ul style="list-style-type: none"> In addition, the SIRP initiatives are being developed in conjunction with the CoE Climate Change Adaption plan. The focus for 2020 will be to expand the climate risk assessment to include risks due to urban wildfires and ice storm events.
People	
Engaged employees who are capable, confident and work as a team.	
<p>Establish an environment that enables accountability, teamwork and sound business decisions – Drainage Services will facilitate an understanding of accountabilities and authorities at all levels of ensuring that 100% of people leaders have a position description that outlines their role and accountabilities. Drainage Services will create business plans for each unit outlining two year objectives that align with the goals and strategies of the Operational Plan.</p>	<ul style="list-style-type: none"> On-going – accountabilities, authorities and position descriptions clarified and reviewed with staff starting at senior levels. This review will continue as the business requirements and underlying processes evolve and are further integrated with EPCOR operations.
<p>Create an environment where employees are engaged and their participation is valued – In 2019, this initiative includes communicating the results of the 2018 engagement survey; establishing cross-functional teams to develop and implement action plans on the top engagement drivers determined from the survey; identifying and implementing two diversity initiatives; ensuring that 100% of people leaders complete Mental Health training through the Mental Health Commission of Canada; and deploying necessary technology to ensure system connectivity for all field staff</p>	<ul style="list-style-type: none"> On-going Drainage achieved an employee engagement score of 82%, with an overall positive rating across all functional areas. Results were communicated to all employees and cross-functional teams have been created to create action plans on key engagement drivers to further improve the level of engagement. These initiatives are on-going, leading to the next engagement survey in the fall of 2020. Additionally, mental health training was conducted for all employees and drainage remains an active participant in EPCOR's diversity and inclusion initiatives.
<p>Develop great leaders who embody EPCOR values – In 2019, critical objectives include providing regular feedback and coaching to employees informally and formally through the formal APfR process; rolling out the EPCOR mentorship program.</p>	<ul style="list-style-type: none"> On-going – Drainage services is now fully integrated into all EPCOR staff management programs including APfR's, mentorship programs and staff development plans. This initiative is on-going as staff and business change necessitate continued focus on developing the leadership pipeline.

Initiatives and Objectives	Year End Status
<p>Facilitate cross-functional collaboration, remove silos, and focus on team outcomes – In 2019, this initiative includes defining clear behavioural expectations for cross functional collaboration by stratum based on EPCOR Values and developing processes and a responsibility matrix for key integration or hand-off points in end-to-end management.</p>	<ul style="list-style-type: none"> • On-going • EPCOR Drainage and Water adopted the concept of One Water Planning late in 2019 and restructured to better align the strategic and active planning functions across both business units. Additional process mapping will occur in 2020 to further improve the overall development processes and prioritization for growth infrastructure aligned with City Plan. • The Organizational Project Management project (OPM) was launched to develop a new project delivery process for Drainage and EPCOR through a multi-disciplinary team. The EPCOR Capital Delivery Model (CDM) was developed through 2019 and a phase roll out will commence in early 2020. • Phase 1 of the Drainage Services Construction Strategy review was completed in 2019 with a decision to exit new tunnel construction following the completion of two remaining in-house projects in 2022. Future work of this nature will be contracted out. Phase 2 of the Construction Strategy will be completed in 2020. This will identify what work is critical and will be completed in-house, what work will be contracted out and also identify opportunities to develop in-house expertise in work that has fewer contractor/marketplace options and low barriers of entry. There will be no lay offs of Drainage Services staff as a result of this strategy review.
<p>Promote development and career growth for every employee – In 2019, initiatives include leveraging relief postings for succession planning, cross functional skill development and knowledge development for in-scope positions and implementing successions planning through a professional growth initiative for out of scope positions.</p>	<ul style="list-style-type: none"> • On-going – The Professional Growth Initiative (PGI) is being roll-out to allow individuals to assess their current leadership skills and form development plans. PGI will continue to be implemented at successive levels of management over the next 2 years and will become a continuing cycle.
<p>Operational Excellence</p>	

Initiatives and Objectives	Year End Status
<i>Perform the right work the right way at the right time with the right resources.</i>	
<p>Develop and optimize end-to-end processes within Drainage – Key objectives include identifying projects that either define or optimize cross-functional processes; deploying telematics to assess vehicle utilization and optimize our fleet; develop a program management model building on the team delivery approach piloted in the control structure program; complete the field technology recommendation that ensures field staff have the platform and connectivity; build an information systems strategy that defines the systems of record and system integration strategy.</p>	<ul style="list-style-type: none"> • In progress – A comprehensive process review program has commenced to identify process improvement opportunities from an “end to end” perspective. The program supports the identification, facilitation and realization of benefits of/from improvement opportunities across the Plan-Design-Build-Operate business cycle in Drainage. There is a particular focus on hand-offs between and within areas as this is when there is the greatest risk of miscommunication, poor transfer of responsibilities, or a breakdown in work continuity.
<p>Build knowledge of industry best practices to support our decision making and program development - ensure employee attendance, participation or committee involvement in industry conferences, seminars, committees and research initiatives.</p>	<ul style="list-style-type: none"> • On-going - EPCOR continues to actively participate in initiatives with the Water Research Foundation and the Canadian Water Network to further enhance the overall community and ensure that the strategies proposed are aligned with industry best practice. In 2019, Drainage in particular participated in a number of research projects in both Canada and the US related to Urban flooding and the SIRP strategy developed by EPCOR has been cited as one of the top strategies in North America in the resulting research papers published.
<p>Identify and manage emerging risks – This initiative includes implementing a knowledge transfer program to mitigate the risk of losing technical expertise as well as addressing findings from internal audits to mitigate operational risks.</p>	<ul style="list-style-type: none"> • On-going – Drainage continues to review and update operating procedures to ensure system knowledge is captured. All findings from the Construction Services Tunneling Construction and TBM Shop Operations internal audit have been addressed. The Operations and Maintenance internal audit was completed in November 2019 and the findings will be address through 2020.
CUSTOMERS AND STAKEHOLDERS	
<i>Customers and Stakeholders trust us and value our services.</i>	
<p>Meet transfer commitments to City Council – Drainage Services committed to implement an Odour Mitigation Plan and a flood mitigation</p>	<ul style="list-style-type: none"> • Complete – Final Stormwater Integrated Resource Plan presented to Utility Committee May 10, 2019.

Initiatives and Objectives	Year End Status
<p>strategy. In 2019, Drainage Services will obtain approval of a Stormwater Integrated Resource Plan (SIRP) that will meet the needs of Edmontonians and reduce the risks associated with climate change and an Odour Mitigation Strategy that will reduce odours, particularly in “hotspot” areas where there are ongoing concentrated odour reports.</p>	<ul style="list-style-type: none"> • Complete • Final Corrosion and Odour Reduction plan presented to Utility Committee June 28, 2019. • Non-routine adjustments to rates approved for these initiatives in late 2019. • Updated PBR Performance Measures for Drainage were approved by City Council in early 2020.
<p>Build relationships with stakeholders to create trust and understanding – In 2019, Drainage Services will implement an approach to measure customer satisfaction build a stakeholder engagement plan that is aligned with the capital plan and review and prioritize public campaigns in order to meet all of strategic goals.</p>	<ul style="list-style-type: none"> • On-going - Drainage Services has developed a stakeholder matrix tool for use with capital projects and other stakeholder oriented initiatives.
<p>Build systems, processes and training to provide consistently good service that feels seamless to the customer - In 2019 we will evaluate sources of customer escalations and implement remedial actions; reduce the number of escalations and reduce customer service connection time.</p>	<ul style="list-style-type: none"> • On-going • Customer escalations were reduced by 19% in 2019 compared to 2018. • Customer service connection completion time for 2019 averaged 4.9 weeks versus the target of 5 weeks.
SHAREHOLDER VALUE	
Improve financial performance to earn allowed return.	
<p>Produce compelling rate applications for approval by the regulator – In 2019 this includes preparing for the 2022 rebase by evaluating rate structures to determine the appropriate balance between consumption and fixed rates; and developing a capital forecast that prioritizes spending to maintain service levels and ensure that any rate increases are affordable and reflect the priorities of Edmontonians.</p>	<ul style="list-style-type: none"> • Ongoing – Drainage Services is in the process of developing its capital and operational plans underlying the 2022-2024 PBR application. Included in the PBR application will be an updated cost of service study and rate design analysis. Drainage Services aims to file the application in early 2021.
<p>Pursue cost efficiencies as committed to during the Drainage transfer discussions with City Council As part of the transfer agreement with the City of Edmonton, EPCOR committed to no layoffs of existing staff,</p>	<ul style="list-style-type: none"> • Ongoing – To the end of 2019, Drainage Services had identified and implemented over \$1 M in operational savings. Additional overall operational savings of \$18 M have been identified and incorporated into

Initiatives and Objectives	Year End Status
achieving operational savings of \$11.9 M and reducing capital costs by 10% or 183 M over a ten year period.	operational budgets out to 2022. On the capital side, work on developing the SIRP program has already exceeded the committed \$193.4 M reduction in capital costs, however management will continue to optimize both our capital and operating budgets to ensure the safe and reliable operation of the drainage system. This will all be accomplished with no staff layoffs.
Meet Operational and Capital Budget Targets – develop and execute realistic capital and operational budgets.	<ul style="list-style-type: none"> • For 2019, Drainage Services achieved a net income of \$23.41 M versus a target of \$24.61 M and a capital spend of \$141.9 M versus the target of \$169 M.

Appendix A: PBR Plan 2017-2021

A.1 In-City Water and Wastewater

A.1.1 PBR Framework

EWSI's In-City Water and Wastewater rates for the 2017-2021 PBR term are regulated by Edmonton City Council in accordance with the PBR Plan approved in Bylaw 17698. This plan 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 and wastewater treatments system.

- **PBR Rates.** Annual changes to In-City Water and Wastewater rates are limited to inflation, less an efficiency factor, plus special rate adjustments and, in rare cases, non-routine adjustments. The use of a formulaic approach for calculating and setting utility rates acts as a “price cap” providing ratepayers with stable and predictable rates. The efficiency factor, set at 0.25% for the 2017-2021 PBR term, requires EWSI to increase productivity and achieve efficiencies in excess of inflation if it is to meet its targeted return on equity.
- **Performance Measures.** EWSI's PBR framework includes performance measures for water and wastewater treatment system service quality as described in Schedule 3, Sections 3 and 4 of the bylaw. EWSI faces financial penalties if it does not meet or exceed performance measure standards, providing assurance to customers that water and wastewater treatment system service quality will not be sacrificed to keep rates low or increase returns to EWSI. EWSI's performance measures are audited annually by an independent accounting firm.
- **Return on Equity.** The PBR plan incorporates a forecast rate of return on equity commensurate with consumption, cost and other risks that allows EWSI 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 EWSI achieving operating cost efficiencies, meeting or exceeding performance standards, and developing the utility infrastructure needed to provide service to its customers. For the 2017-2021 PBR term, returns on equity are based on a deemed capital structure of 60% debt and 40% equity and a 10.175% rate of return on equity.

A.1.2 Risks and Incentives

The PBR framework provides incentives for EWSI to improve operational performance while achieving cost savings through process improvements and other means. Under this framework, EWSI also assumes the risks associated with water consumption, operating costs, financing costs and capital costs, ensuring that customers are provided with stable and predictable rate increases. These risks and EWSI's strategies to mitigate them include:

- **Water Consumption Risk.** Under PBR, EWSI bears all of the risks associated with weather-related fluctuations in water consumption and water quality, as well as the longer-term risks associated with declining consumption per customer. EWSI seeks to mitigate consumption risk through the use of robust forecasting methodologies incorporating long term trends in water consumption.
- **Operating Cost Risk.** EWSI actively works to minimize fluctuations in input prices through long-term power contracts, chemical optimization processes, and continuous efforts to implement cost reduction strategies in all areas of its operations.
- **Interest Risk.** Fluctuations in short-term interest rates, long-term debt issue costs and in the level of capitalized interest have significant impacts on EWSI's net income and return on equity. EWSI mitigates interest risk through timing of long-term debt issuances and optimizing working capital.
- **Capital Cost Risk.** In-City Water and Wastewater's operations are capital intensive and it is often difficult to forecast required levels of capital replacements, both at the plants and in the water distribution and transmission network. EWSI seeks to minimize these risks through comprehensive capital project and asset management programs, ensuring that new projects or changes to existing projects are justified and that there is an appropriate level of management, senior management and executive oversight over capital spending.

A.1.3 Customer Classes and Rate Structure

A.1.3.1 In-City Water

In-City Water rates consist of fixed monthly service charges that vary with meter size and variable charges applied to each cubic metre of water consumed. Consumption charges differ for each of In-City Water's customer classes. These classes and their rate structures include:

- **Residential Customer Class.** Residential customers are charged based on an inclining rate structure with three consumption blocks. The inclining rate structure is intended to promote water conservation and provide incentives for residential customers to use water efficiently.
- **Multi-Residential Customer Class.** Multi-residential customers are charged based on a declining rate structure with three consumption blocks. EWSI has found that the cost of providing water to individual multi-residential customers declines as the size of the multi-residential building increases. As well, there is a wide range of consumption volumes for multi-residential customers. Accordingly, a declining rate structure best reflects the cost characteristics of this customer class.
- **Commercial Customer Class.** Similar to multi-residential customers, commercial customers are charged based on a declining rate structure, but with five consumption blocks to recognize the wide range of average consumption volumes within this customer class.

The 2017-2021 PBR Plan includes three special rate adjustments for In-City Water:

- **Special Rate Adjustment for Rebasing.** The In-City Water revenue requirement was rebased at the beginning of the 2017-2021 PBR term. The resulting rebasing adjustment to rates includes the on-

going benefits to rate-payers of efficiency gains realized in the 2012-2016 PBR term, the impacts of higher than forecast capital expenditures during the 2012-2016 PBR term; and increases in the capital expenditure programs for the 2017-2021 PBR term. Also included in the rebasing adjustments is the impact of EWSI's cost of service study which has resulted in redistribution of revenue requirements from the Residential and Multi-Residential customer classes to the Commercial customer class.

- **Special Rate Adjustment for Accelerated Programs.** These special rate adjustments support the acceleration of the replacement of water mains as part of the City of Edmonton's neighbourhood renewal program and the upgrade of water mains to increase fire protection capacity in neighbourhoods experiencing increased densities as a result of infill development.
- **Special Rate Adjustments for Environmental Programs.** EWSI is undertaking two significant environmental initiatives during the 2017-2021 PBR term. The first initiative is an extensive River Monitoring Project to regularly monitor, evaluate and report on a number of water quality variables from several sampling sites in the river for 2018-2021. This program is forecast to have annual costs of \$1.0 million starting in 2018. The second initiative, which aligns with the City's "*The Way We Green*" strategy, is a Green Power Initiative to replace approximately 10% of EWSI's total power volumes with energy from locally produced renewable sources starting in 2018. This initiative is forecast to cost \$1.9 million annually commencing in 2018.

A.1.3.2 Wastewater Treatment

Wastewater treatment rates consist of fixed monthly service charges that are applied equally to each customer and variable charges applied to each cubic meter of water consumed. Wastewater has two customer classes:

- **Residential Customer Class.** Unlike In-City Water, there are no separate rates for multi-residential customers. Instead, customers who would be multi-residential water customers are subject to the same rates as residential wastewater customers. The common rate structure for residential and multi-residential customers recognizes that the costs of wastewater treatment are very similar for residential and multi-residential customers. Accordingly, charges to Residential customers are based on a flat rate structure with a single consumption block.
- **Commercial Customer Class.** Consumption charges for commercial customers are based on a declining rate structure with three consumption blocks to recognize that there are economies of scale in wastewater treatment for larger commercial customers. In addition, commercial customers are charged overstrength fees for prescribed materials that exceed the concentrations shown in Section 4 of Schedule 1 to Bylaw 17698.

The 2017-2021 PBR Plan includes a single special rate adjustment for rebasing. Similar to In-City Water, Wastewater's revenue requirement was rebased at the beginning of the 2017-2021 PBR term to reflect efficiency gains realized in the 2012-2016 PBR term, as well as the substantial increases in capital spending needed to deal with the challenges of the aging infrastructure at the Gold Bar Wastewater Treatment Plant.

A.2 Drainage

A.2.1 PBR Framework

EWSI's Drainage rates for the 2018-2022 PBR term are regulated by Edmonton City Council in accordance with the PBR Plan approved in the EPCOR Drainage Services Bylaw 18100. Similar to In-City Water and Wastewater, Drainage's 2018-2022 PBR plan encompasses rates and performance measures, but the mechanisms used to achieve a balance between rates and operational performance differ in important respects, as follows:

- **PBR Rates.** Bylaw 18100 prescribes drainage fees and charges for the period from January 1, 2018 to March 31, 2022. These fees and charges reflect EWSI's commitment to limit average annual rate increases to 3%. Besides these scheduled rate increases, Bylaw 18100 also includes a mechanism for non-routine adjustments to rates related to emergent City-directed needs.
- **Performance Measures.** Bylaw 18100 requires Drainage to measure operational performance for the period from January 1, 2018 to December 31, 2019 using performance measures for drainage system service quality modeled after previous City Drainage Services quality metrics. After that time, for the remainder of the 2018-2021 PBR term, Drainage's operational performance will be measured against new performance measures that will be developed Drainage and approved by the Utility Committee. Similar to Water and Wastewater, the new performance measures have a scoring system with financial penalties applied if Drainage does not meet or exceed performance standards. As with Water and Wastewater, the performance measures scorecard will be audited annually by an independent accounting firm.

A.2.2 Customer Classes and Rate Structure

Drainage has Residential, Multi-Residential and Commercial Customer classes, using the same customer definitions as Water. Drainage's rate revenues are derived from both Sanitary Utility and Stormwater Utility services.

- Drainage has a simple rate structure, with flat monthly service charges varying only by meter size regardless of customer class and the same monthly variable rate per cubic meter applicable to all customers, regardless of customer class, except for the U of A which has a unique rate, intended to recognize its lower servicing cost.
- Stormwater Utility revenues are based on the area of the customer's property, development intensity, and zoning, also with common rates regardless of customer class.