



PBR Reader's Guide:

An executive summary of the 2022-2026
Water Cycle Utilities PBR Applications

February 2021

EPCOR’s goal is to provide safe, clean drinking water and reliable drainage and wastewater treatment services, while ensuring that new rates are fair and affordable for Edmontonians.

PURPOSE

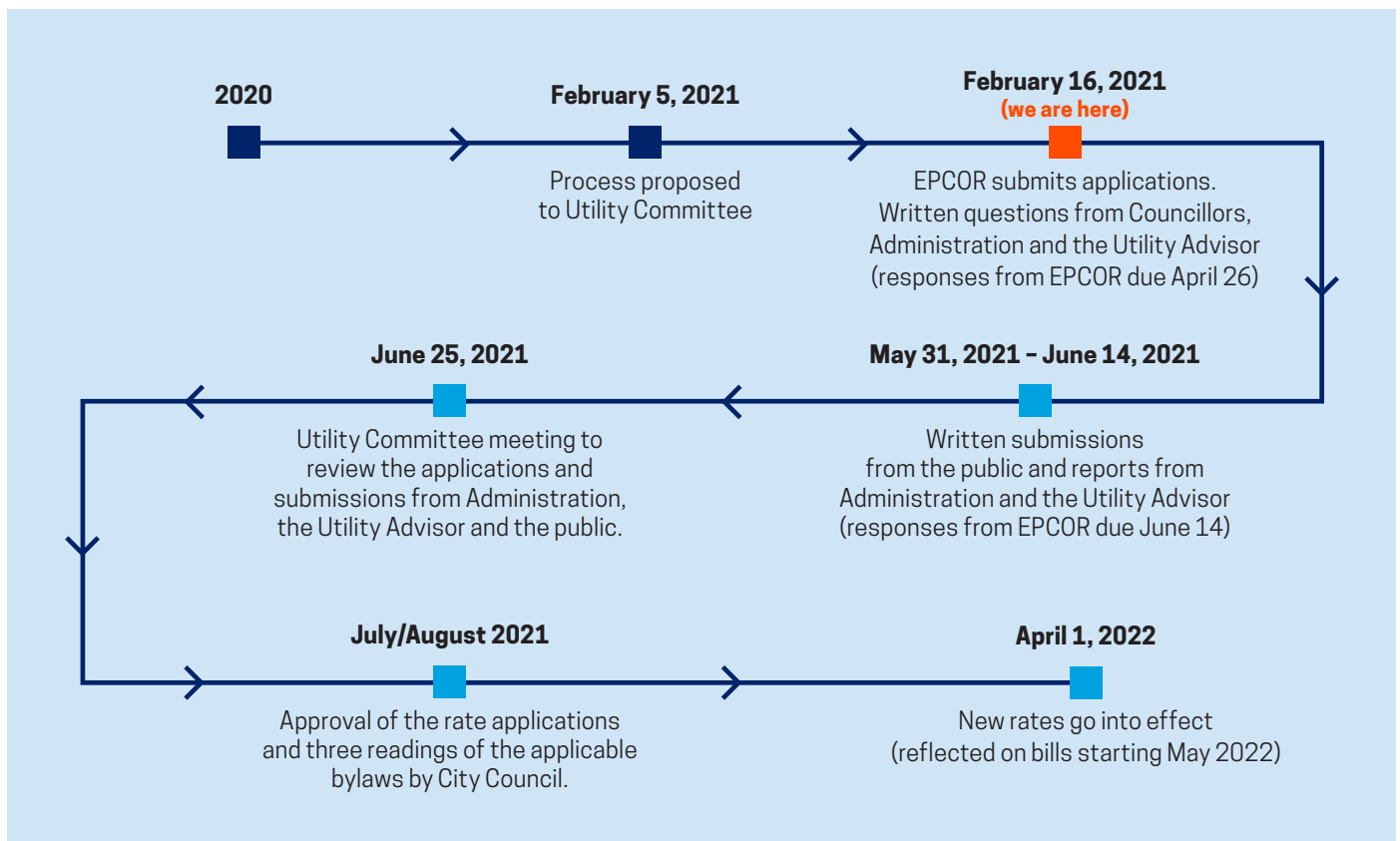
In February 2021, EPCOR Water Services (EWSI or EPCOR) submitted applications for Water, Wastewater Treatment (Wastewater), and Sanitary and Stormwater rates to the City of Edmonton, which regulates those utilities. If approved, the new rates would go into effect on April 1, 2022.

The applications are large and complex, reflecting more than a year of planning and analysis across our Water, Wastewater and Drainage teams. We have produced this reader’s guide to support Councillors and the public in understanding the applications, including where to find information; and the process for reviews and public involvement.

This guide also highlights key changes to plans, programs, rates, performance measurement, terms and conditions and other items. It does not list every detail, but rather, it provides an overview of major items of interest and points to additional information that can be found in the applications.

REGULATORY PROCESS & PUBLIC INVOLVEMENT

The process for reviewing the PBR applications includes several opportunities for Councillors, City administration, and Edmontonians to provide input, ask questions, and propose changes.



NAVIGATING THE PBR APPLICATIONS

EPCOR's PBR applications comprise the following documents:

- Proposed changes to the bylaws governing Water, Wastewater and Drainage Services
- Individual applications for Water, Wastewater and Drainage Services
- Appendices containing reports and other documents that inform or add more detail on various aspects of our applications, including business cases for major investments and evidence supporting the cost of capital

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HOW EDMONTON'S WATER CYCLE UTILITIES ARE REGULATED: AN INTRODUCTION TO THE PBR

EPCOR's rates reflect the cost to provide water, drainage and wastewater treatment services to Edmontonians. Our goal is to ensure that new rates are fair and affordable while still addressing operational requirements and supporting investment that will allow us to continue to provide clean, safe water and reliable service. We engage Edmontonians to get their feedback on acceptable rates and investment priorities.

These rates are set out in applications we make to the City of Edmonton (our rate regulator) under Performance Based Regulation (PBR). Under the PBR, we must monitor and report against some key metrics on an annual basis. Water Services has been under PBR since 2002. The Gold Bar Wastewater Treatment Plant was transferred to EPCOR in 2009 and also operates under PBR. When Drainage Services was transferred to EPCOR in 2017, EPCOR committed to establishing a PBR structure similar to Water.

Our applications are based on the same PBR structure that is currently in place (for 2017 – 2021). Working with City Administration, we are proposing to continue the five-year PBR period for Water (2022-2026), while proposing three-year periods (2022-2024) to align both Drainage and Wastewater Treatment (Gold Bar and the Clover Bar Bio-solids Recycling Facility) to disperse the effort to develop and review these documents across different time spans in the future.

BENEFIT OF PERFORMANCE-BASED REGULATION RATES

Performance Based Regulation provides incentive to a utility to find efficiencies and reduce costs while maintaining established performance levels. The utility is obligated to provide services and maintain customer service in order to earn a fair return. This model is also used by the Alberta Utilities Commission which regulates some natural gas and distribution utilities under a PBR model.

This approach has a number of benefits:

- ✓ Customers receive stable and predictable rates.
- ✓ EPCOR — not its customers — bears the risk for potential cost increases.
- ✓ EPCOR has an incentive to continuously seek efficiencies and cost savings, which are then passed on to our customers in the next PBR period.
- ✓ The utilities are expected to meet high performance standards in customer service, system reliability, water quality, environment and safety.
- ✓ The administrative burden is reduced by having less frequent proceedings by filing a three- to five-year PBR.
- ✓ The process to develop the PBR applications provides an opportunity to engage Edmontonians to determine what they value most out of their water utilities, and adjust our plans to align with their priorities.

GUIDING OBJECTIVES

Above all, the PBR process is about supporting Edmonton's growth, keeping fair and affordable rates while ensuring that the reliable operation and maintenance of critical infrastructure is well in hand. That's why our proposed rates are assessed based on the following objectives:

- Safe and reliable utility services provided to Edmontonians
- Customer charges based on cost of service
- Rates are sufficient to develop utility infrastructure
- Reasonable margin of profit
- Environmental management practices align with City objectives
- Service levels are based on industry benchmarks and EPCOR's performance
- Timing of the decision and effective date for rates are appropriate

EDMONTON'S WATER CYCLE UTILITIES

Beginning in the heart of the Canadian Rockies, your water flows down the North Saskatchewan River before reaching the Rosedale and E.L. Smith Water Treatment Plants. EPCOR's treatment facilities take up to 12 hours to clarify, disinfect and fully treat the water. During this process our water quality testing lab tests and adjusts for more than 300 parameters so we can provide you with high-quality drinking water for safety, colour, smell and taste.

Your water then travels thousands of kilometers of underground pipe to make sure it's always there when you turn on your tap, take a shower or flush your toilet. The drainage system then captures and takes away sewer water for processing at Gold Bar Wastewater Treatment Plant. In addition, hundreds of stormwater management facilities across Edmonton capture and filter rainwater for delivery to the North Saskatchewan River and other waterways thereby protecting the environment.

Edmonton's water cycle utilities includes:

- Two water treatment plants and one wastewater treatment plant
- 13 water reservoirs that can hold 811 million litres of water
- 7,053 km of water mains and sewer pipes
- 262,363 customer connections to the sanitary system
- 21,708 hydrants and 73,940 water valves
- 295 stormwater facilities.
- 200 sanitary lift stations

1. We've invested in programs like our WaterSHED partnership, that includes 19 monitoring stations that test for turbidity, colour, and metals to determine long-term changes in water quality.

2. EPCOR's Water Treatment process allowed Edmonton to be named North America's best tasting tap water in 2019 by the American Water Works Association.

3. We improve the distribution system every year with our renewal and cathodic protection programs to minimize the number of water interruptions. On average, there were 38% fewer water main breaks per year during 2017-19 compared to 2012-16.

4. The continued expansion of our Lead Management Program helps maintain water quality by replacing lead service lines, and adding orthophosphate to provide lead reduction for all Edmontonians.

5. EPCOR's Stormwater Integrated Resource Plan includes significant improvements to Edmonton's drainage system, designed to slow and move stormwater away from high-risk flood areas.

6. Edmonton treats approximately 265 million litres of wastewater every single day. Planning and upgrades will allow us to safely handle incoming flows without expanding beyond our fenceline through to 2060.

7. It's critical to invest in protecting our plants against floods. We are currently working through a flood mitigation strategy to ensure our plants are prepared for 1 in 500 year floods.



PLANNING & PUBLIC ENGAGEMENT

EPCOR believes in listening to and engaging stakeholders. We demonstrate social responsibility by building and sustaining relationships through effective consultation on our business, operations and new ventures. Our consultation process ensures that stakeholders have opportunities to provide meaningful input into projects and operations that affect them. Our resulting decisions and actions are guided by our understanding of our stakeholders' interests and priorities and the values we share. See Appendix K in the application.

OBJECTIVES FOR PUBLIC ENGAGEMENT

Consistent with the City of Edmonton's public engagement policy, EPCOR's public engagement for the Water, Wastewater Treatment and Drainage PBR applications was conducted at the Refine level on the public participation spectrum. At this level, we committed to working with stakeholders to:

- Have public and stakeholder input inform policy choices, priority-setting for operations and capital programs, performance measurement and rate strategy;
- Provide stakeholders with opportunities to ask questions, express concerns and raise issues with respect to the PBR renewal and their utility services;
- Maintain positive and productive relationships with stakeholders throughout the PBR development and implementation; and
- Report back to stakeholders as the PBR renewal process progresses on how their feedback was used by EPCOR.

ENGAGEMENT PROCESS

Public engagement for the PBR renewal was an iterative process, completed over three phases: visioning and framing research, detailed consultation, and validation. At each step, EPCOR structured public engagement to allow a broad variety of stakeholders to gain understanding of complex, technical topics by framing them in terms of real-world impacts and benefits. Engagement was structured to allow stakeholders to provide meaningful input while ensuring compliance with COVID-19 safety protocols using a combination of virtual techniques, including online focus groups, opinion surveys, live polling and in-depth interviews.

Stakeholders engaged throughout this process included customers from each customer class (residential, commercial, multi-residential, large water and high volume users); Métis Nation & Confederacy of Treaty Six Nations; EPCOR-engaged community groups (Gold Bar Community Liaison Committee, Water Community Advisory Panel, Water Quality Technical Advisory Committee and the Edmonton Federation of Community Leagues) and other groups (Homeward Trust, Infill Development in Edmonton Association, Canadian Homebuilders Association).

WHAT WE LEARNED: OPERATING PRIORITIES

The 2017 - 2021 Water PBR has five sets of performance measures, under the headings of Water Quality, Customer Service, System Reliability and Optimization, Environment and Safety, and it weights the relative contribution of those five areas of performance in calculating overall performance. Wastewater and Drainage have similar categories for performance measures.

Through engagement, EPCOR sought to:

- a) Learn whether there are other aspects of performance that are important to stakeholders and should be considered in the performance metrics; and
- b) Understand what the relative importance of these categories is to stakeholders, which would influence EPCOR's recommendation on the future categories and their weightings.

In terms of PBR performance areas, customers confirmed that EPCOR has identified the main issues of importance. Customer priorities are about maintaining safety, quality, and infrastructure in the future. When customers were prompted and asked to rank priorities by line of business, the areas of greatest importance were isolated as follows:

- **Water:** top priorities are maintaining water safety, quality and speed of repair of water main breaks. Secondary priorities include maintaining public and employee safety, and a continued focus on infrastructure integrity and customer support.
- **Wastewater treatment:** the top priority should be reducing contaminants entering the river. Residential customers are then concerned with public and employee safety, where commercial customers are highly concerned with managing treatment volumes and reducing odour which could impact their business (and, ultimately, impact the public through the impact to their business).
- **Drainage:** the most important performance areas for customers are response times, maintaining performance, and reducing contaminants to the river.

WHAT WE LEARNED: PERFORMANCE PRIORITIES

This input informed our capital and operating plans. EPCOR is recommending slight weighting adjustments in our PBR performance metrics to increase quality (water) and increase system reliability (wastewater and drainage utilities). See the Performance Measures section of this guide for further detail.

EPCOR is generally seen as a trusted operator that is doing a good job. However, stakeholder groups believe Drainage Services needs a more aggressive plan with greater investment now to reduce the likelihood of failures. Consistently Drainage Services rated lower in terms of performance, but with the acknowledgement that EPCOR is trying to move Drainage Services to a more acceptable level (i.e. rehabilitation of aging infrastructure). The Drainage capital plan includes new proactive programs to reduce the risk of failures that impact customers and require emergency replacement, as well as substantial investments to implement the Stormwater Integrated Resource Plan (SIRP) and Corrosion and Odour Reduction Strategy (CORe) programs.

Stakeholders also indicated a desire to see an overarching strategic plan for all utilities that supports the new City of Edmonton urban growth strategy. A more forward-looking strategic plan, particularly in regards to drainage, is desired to modernize the network. Initiatives such as the SIRP and CORe are examples of how EPCOR has modernized long-term planning for Drainage system upgrades to align with public priorities and Edmonton urban development plans. The Sanitary Integrated Resource Plan (SanIRP), which is currently in development, will provide a similarly holistic approach to the planning of the sanitary system overall and includes stakeholder input.

WHAT WE LEARNED: RATE LEVELS

Through engagement, EPCOR sought to understand current perceptions of value-for-money, and stakeholder views on future rates and the tradeoffs between rate increases and obtaining the benefits of future capital and operating programs. As well, research was conducted to understand cost sensitivities; and preferences for future rates. This input has helped to guide the 2022 Rate Applications.

For context: many respondents had difficulties recalling their bill amounts, and tended to overestimate what they pay for utilities today. Nonetheless, nearly half of customers indicated they were unsure about their rate or they didn't feel they could judge if what they pay is appropriate. Our consultation process also showed that one-quarter of respondents have been negatively affected economically by the COVID-19 pandemic (wage cuts or layoffs), with nearly half somewhat affected.

Based on price modelling, the acceptable average monthly price increase for utility services is between \$6.63 and \$10.51, with \$7.82 being optimal. This analysis is intended to provide guidance on the range of rate increases customers would accept, and was not used in the planning of the proposed investment.

The proposed plans EPCOR has put forward will result in the average residential customer bill increasing about \$7 per month between 2021 and 2022, which includes \$2.59 for fire protection costs transferred from the City. As detailed in the Funding Utility Costs section, about \$3.42 of that change will fund new investments in city-wide flood protection (SIRP), and the corrosion and odour reduction program (CRe).

To fund these new programs while keeping rate changes within reasonable levels, EPCOR constrained operating cost increases to less than 1% a year on average, and targeted capital programs using risk-based assessments. EPCOR is also proposing an Edmonton Economic Recovery Rebate, a discount that will save rate payers approximately \$66 million from 2022 to 2024. For more information, see page 24.

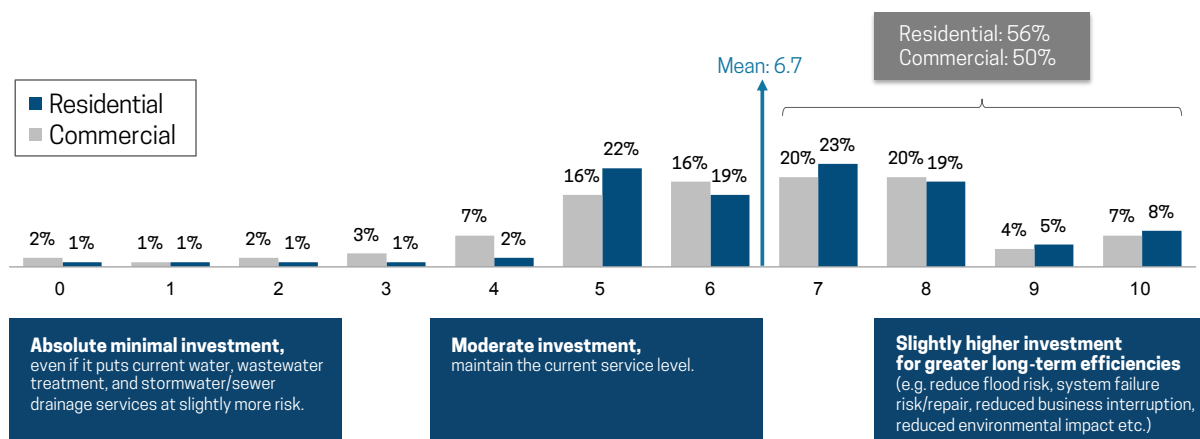
These prioritization initiatives reduced the revenue required to operate the utility, and moderated rate increases.

WHAT WE LEARNED: INVESTMENT LEVELS

Stakeholders view the infrastructure risks that EPCOR is managing to be increasing. Although the nature and source of risk varied by group, the consensus among stakeholders is that it would be better to invest now to avoid social and economic consequences later.

To avoid risk, stakeholders support EPCOR investing in these services for longer-term benefits and efficiencies. At minimum, they want to maintain status quo; however, many stakeholder groups lean toward smart investment with protecting water, protecting the river, and elevating drainage renewal as top priorities for investment.

Figure 1: Personal Position on Investment Scale (results from Phase 1 and 3 research)



Base: All respondents: Residential (n=1,238), Commercial (n=134)
PS3. Looking ahead to the next several years, in principal, where would you position yourself on the following investment scale?

PREVIOUS RELEVANT PUBLIC ENGAGEMENT

Over the last three years, EPCOR has conducted public engagement on several larger initiatives. EPCOR's PBR applications incorporate previous engagement from the Drainage Corrosion and Odour Reduction Strategy, which was conducted at the Refine level of engagement; and the Stormwater Integrated Resource Plan (SIRP) and Gold Bar Integrated Resource Plan (IRP), which were conducted at the Create level.

Gold Bar Integrated Resource Plan (IRP)

Presented to Utility Committee in September 2019, the plan documents the long-term planning process for the wastewater treatment utility over a 40-year planning horizon. For each five-year PBR period, the IRP is converted into a specific capital and operating plan. This iteration of the IRP was informed by public engagement activities from 2017 to 2019, including a series of workshops with a Citizen Planning Committee in 2019.

This process resulted in the development of five Shared Outcome Statements which define goals for the Gold Bar wastewater treatment plant that are shared by EPCOR and community stakeholders. To support these five shared outcomes, stakeholders worked with EPCOR to develop 20 design principles against which individual projects and design decisions can be tested. This public engagement ultimately led EPCOR to modify the approach on a series of previously planned projects.

Stormwater Integrated Resource Plan (SIRP)

At the May 2019 Utility Committee meeting, EPCOR presented the capital plan for the SIRP strategy. This was preceded in October 2018 by a risk framework that formed the basis for this capital plan. The risk framework integrated public and stakeholder input to provide a foundation for the prioritization of projects and public involvement in the concept design and detailed design for specific infrastructure projects.

Public opinion research tested and validated public preferences for flood mitigation (what infrastructure they want to see protected from the impacts of a flood). A choice-based approach was employed, in which respondents ranked a variety of impacts as most and least important to protect against.

Through this research, EPCOR identified relative preferences among Edmonton residents for infrastructure protection based on four broad categories: public safety, environment, financial and social impacts. The weightings of these categories were then integrated into the SIRP risk model to inform the areas of Edmonton that are at the highest risk for flood impacts, and thus defined the priority of work detailed in the capital plan.

Corrosion and Odour Reduction Strategy

Presented to Utility Committee in June 2019, the Drainage Services strategy was initiated to address the impacts of corrosion and odour related to the sanitary and combined sewer network.

To develop a robust strategy, EPCOR conducted public consultation and engaged with community members across the City, as well as administered advanced sewer air monitoring campaigns, and expanded sewer asset inspections. A public opinion survey was conducted from January to February 2019 using a sample drawn from Drainage Services customers representing communities with preexisting sewer odour concerns.

A public preference for odour mitigation was identified, including priority over other sources of odour and general quality of life impacts. The results helped to confirm known odour hotspots, and suggested areas for further study. Finally, public preferences for pace and rate impact were tested.

ALIGNMENT WITH THE CITY PLAN

The City Plan, adopted by City Council on December 7, 2020, will serve as a new comprehensive municipal development plan, transportation master plan, and strategic policy document to guide the city as it grows towards a population of two million, and accommodation of 1.1 million jobs. In developing our PBR applications, we have worked to align our plans for water, drainage and wastewater services with the City's vision and values (to belong, live, thrive, and preserve).

CITY VALUE: BELONG

Through this value, the City is empowering Edmontonians to demonstrate shared leadership as stewards of the environment. As the operator responsible for Edmonton's total water cycle, we take our role seriously in protecting the North Saskatchewan River, and doing our part to reduce the risk of climate change.

In the current 2017 - 2021 period, we committed to replacing 10% of conventional energy usage with green energy. In the new PBR Application, we are expanding on this through our commitment to reduce or offset to 100% of the greenhouse gas emissions from our Edmonton water cycle utility operations, and by building our capacity to use local, renewable energy: for example, through the solar project and battery energy storage system at E.L. Smith, and proposed project to harness biogas for heating at Gold Bar.

CITY VALUE: LIVE

The City is working to enable Edmontonians to live locally, while ensuring that the city is a leader in efficient, sustainable and resilient community design and development. EPCOR will support these outcomes by:

- Supporting residential infill development, for example through the Infill Fire Protection Program;
- Supporting LRT expansion by relocating utilities along mass transit corridors and nodes;
- Expanding infrastructure to enable future development and intensification in priority areas;
- Aligning our capital and operating budget to support City growth priorities; and
- Providing solutions to odour issues in hotspot areas around the city through our Corrosion and Odour Reduction (CORe) strategy.

CITY VALUE: THRIVE

An outcome of this value is that Edmontonians acknowledge and celebrate Indigenous heritage while honouring the diverse cultures, perspectives and experience residents bring from around the world. We are supporting the ability of First Nations, Métis and Inuit peoples to celebrate, grow and flourish by integrating their perspectives through meaningful, accessible community engagement.

In September 2020, we signed a Memorandum of Understanding with Enoch Cree Nation that formalizes our commitment to working together in the spirit of reconciliation and collaboration. The agreement sets a strong foundation for both parties, creating a path forward on all projects that cause ground disturbance at the E.L. Smith and Rosedale Water Treatment Plants.

CITY VALUE: PRESERVE

The City Plan acknowledges the important role that Edmonton's natural and physical systems play in providing security and resilience during extreme weather events, among other environmental hazards. This is also vital to ensuring safety and security of our water supply, food systems and infrastructure.

Since the Drainage Services team transferred to EPCOR, we have completed the first iteration of the Stormwater Integrated Resource Plan. The goal of this plan is to improve flood resilience through ongoing risk management, infrastructure planning and operation, financial analysis and stakeholder engagement. As detailed in our PBR applications, we have already begun putting this plan into action. SIRP will also help improve river quality by reducing the impact of residuals discharged to the river via stormwater.

As well, we align with this value through programs to monitor and protect the watershed and water supply, improve flood protection at our water treatment plans and adapt to climate change.

PERFORMANCE MEASURES: ENSURING YOUR UTILITIES WORK FOR YOU

HOW THEY WORK

EPCOR is accountable to the community and our regulator for the performance of the water, wastewater treatment and drainage utility through performance standards.

EPCOR is regulated under Performance Based Regulation (PBR). This means that we have a set of standards in place to guide our performance which we measure and report on annually. These performance measures are based on industry benchmarks (where available and comparable), historic trending, external stakeholder feedback and targeted future performance goals.

Performance is reported annually and externally verified. If performance falls below standards EPCOR can pay financial penalties up to a maximum of \$2.4M per year (\$1M for Water, \$400K for Wastewater and \$1M for Drainage). If a penalty is assessed it is returned to customers in the form of a rate rebate.

The overall performance is determined on a point basis with 100 base points available if the standards for all categories are achieved. Water, Wastewater and Drainage are assessed individually and have a 100 point benchmark.

The weightings and financial penalties are different between Drainage, Water and Wastewater treatment operations in order to reflect the different nature of the operations and stakeholder expectations.

PUBLIC ENGAGEMENT & RECOMMENDED CHANGES TO OUR PERFORMANCE MEASURES

As outlined in the Planning and Engagement section (page 5), leading up to the PBR Applications, EPCOR engaged stakeholders to understand their values and priorities as it relates to utility performance. We asked Edmontonians to comment on the priority of the various performance categories to ensure relative weightings in the rate applications across utilities aligned with their expectations. This feedback has resulted in a slight update to category weightings.

EPCOR is recommending weighting adjustments in our PBR performance metrics to increase the relative importance of quality (water utility), and system reliability (wastewater and drainage utilities).

Table 1 below shows the revised category weightings, to reflect stakeholders' areas of greater (↑) and lesser (↓) importance.

For details on recommended changes within the individual performance measures, see the Performance Measures section of each application.

Table 1: Revised Performance Weightings (Public Input).

	Quality	Customer Service	System Reliability	Environment	Safety
Water	30% (↑)	15% (↓)	25%	15%	15%
Wastewater treatment	*45% (↓)	15% (↓)	25% (↑)	N/A (captured under Quality)	15%
Drainage*	*35% (↓)	20%	30% (↑)	35% (↓)	10%

*Note: For Wastewater Treatment and Drainage, "Quality" incorporates environmental indicators.

CAPITAL PLAN OVERVIEW

The capital plans presented in the PBR applications will invest \$1.35 billion in Edmonton’s water cycle utilities.

EPCOR will invest \$754.3 million in Drainage from 2022-2024, \$171.7 in Wastewater from 2022-2024, and \$429.3 million in the Water utility from 2022-2026. Additional investments in utility infrastructure are made by others, mainly developers, and referred to as contributed assets.

The primary benefits from this investment are:

- Sustaining and improving the reliability of utility services, including replacing assets that have reached or are nearing end of life, reducing the risk of asset failures;
- Implementing citywide plans to protect Edmonton neighbourhoods from flooding (SIRP), and reduce odours from the drainage system (CORe);
- Serving a growing customer base and development footprint;
- Improving the performance and efficiency of the utilities, including the installation of technologies that improve environmental performance and reduce costs; and
- Responding to evolving regulatory requirements, and protecting worker health and safety.

THE CAPITAL PLANS PRESENTED IN THE PBR APPLICATIONS WILL INVEST \$1.35 BILLION IN EDMONTON’S WATER CYCLE UTILITIES.

About 50% of the capital investment described in the applications is for reliability initiatives, many driven by asset life cycles across all three utilities. Another 35% of capital investment is driven by customer growth and EPCOR’s investments in flood mitigation and odour reduction. The remaining 16% of the capital program is equally divided between investments in performance improvement, and investments to meet regulatory requirements and protect workers.

The revenue required to fund the capital plan has been reduced in this and future PBR periods thanks to grants from the governments of Alberta and Canada. Customers will benefit from \$82 million in provincial and federal funding to help reduce the risk of flooding in Edmonton neighbourhoods, and protect the water treatment plants from river flooding. EPCOR continues to pursue additional grant funding to benefit customers.

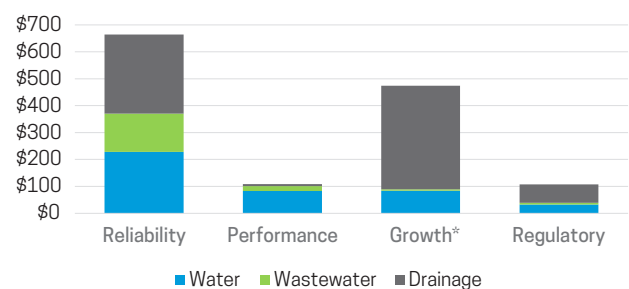
Investments in reliability and efficiency include:

- ✓ Replacing infrastructure that has reached end of life
- ✓ Installing smart water meters
- ✓ Targeting replacement of cast iron water mains based on risk
- ✓ Protecting water treatment plants from river flooding

Investments in environmental initiatives, growth and regulatory compliance include:

- ✓ Targeted citywide investments in flood mitigation
- ✓ Replacing lead service lines
- ✓ Increasing odour control at the wastewater treatment plant and reducing sewer odours in the community
- ✓ Cost sharing fire protection infrastructure improvements improvements with infill developers

Figure 2: Proposed Capital Investments By Type (\$ millions)



*This category includes customer requirements in all three applications and the investments in SIRP and CORe in the Drainage applications.

WATER SERVICES

Capital investment in Edmonton’s regulated water system supports ongoing reliability, safety and efficiency, and responds to changes in regulatory requirements and customer growth.

More than half the investments in the upcoming term are reliability driven and 40% are related to efficiency and growth. There is substantial work proposed across the full range of water assets – including treatment plants, transmission mains, the distribution system, and metering.

The capital plan for the regulated water system proposes investing \$429.3 million from 2022 – 2026, a decrease of \$147.8 million over the expected investments from 2017 – 2021. The decrease reflects the generally strong current performance of the utility, and a focus on using risk-based planning processes to prioritize investments and minimize rate increases.

EPCOR has included business cases for every project or program with a forecast capital expenditure of \$5 million or more. These can be found in Appendix F of the application.

Investments to Ensure Regulatory Compliance

In 2019, EPCOR launched an expanded version of the Lead Service Line Replacement program. The program now removes priority lead service lines at no additional cost to the recipient.

These replacements, along with the addition of orthophosphate to treated water, will help Edmonton proactively meet the new Health Canada Guideline and ensure compliance testing at the customer’s tap. About \$25.5 million is proposed for replacements and refurbishments in Water, including \$5 million for lead service line replacements during the 2022 – 2026 PBR term.

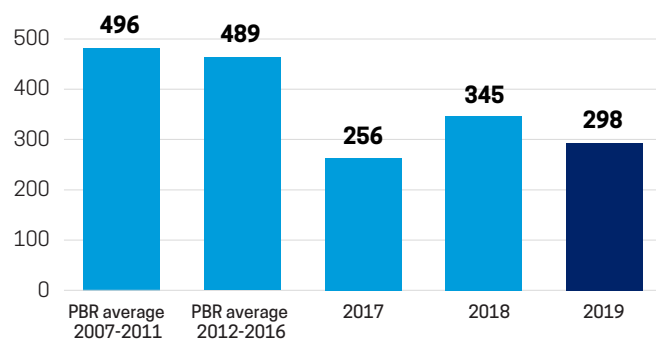
Investments to Support Growth

Investments of \$84.1 million are proposed to support continuing growth in Edmonton, and specific customer requirements. The build-out of water services to support both infill and greenfield development is the second largest component of Water’s capital plan, and about 20% of total investment during 2022 – 2026.

Major investments include:

- Construction of a transmission main to provide redundancy for customers in the newly annexed lands and improved fire flows for customers in the tertiary service zone;
- The completion of water main relocations along the West Valley LRT route;
- Construction of the Winterburn booster station to improve system reliability and support growth;
- Purchase and installation of water meters for new customers;
- The relocation of water assets on City lands and rights-of-way at the City’s direction, including utility relocation to support the Yellowhead Trail project; and
- Support for the orderly and efficient development of water network infrastructure when constructed by private developers, and the design and acquisition of water transmission mains built by developers.

Figure 3: Average annual number of water main breaks



Reliability and Life Cycle Projects

Investments of \$229.0 million are proposed to support water system reliability in Edmonton, including the replacement and rehabilitation of assets at end of life. This is the largest component of Water's capital plan, and about 53% of total investment during 2022 – 2026. About half of the capital invested is for projects of more than \$5 million.

Major investments and program changes include:

- *Water Main Renewal.* Water main breaks reached an all-time low in 2020. The application concludes that investment can be temporarily reduced during the upcoming term in order to reduce pressure on customer rates, without negatively affecting reliability. A new risk-based process is proposed for ranking water main renewals, targeting investment based on a matrix that ranks pipes based on the consequence of failure and probability of failure. Under this risk-based approach, an average of 2.75 km of water lines will be replaced per year (compared to 11 km currently), and accelerated replacements will no longer occur in communities in advance of neighbourhood renewal construction by the City.
- *Infill Fire Protection.* EPCOR is proposing to increase investment in this program to \$20.0 million during the PBR term, which supports the costs of upgrading water service to meet fire protection standards. The program recognizes that there are neighbourhood benefits from these investments, and cost-shares the upgrades with developers of qualifying infill projects.
- *Flood Protection for Water Treatment Plants.* Located next to the North Saskatchewan River, Edmonton's two water treatment plants are at risk from river flooding during a 1-in-500 year flood event. EPCOR's protection plan for the facilities includes \$36.9 million in investment over three PBR terms, which is partly offset by \$11.4 million in federal and provincial grant funding.
- *E.L. Smith Water Treatment Plant.* Major projects at the plant include restoration and upgrades to the water filter system, including structural upgrades to reduce the risk of asset failure and prepare the plant for the installation of a deep bed filtration system (currently forecast for 2032 – 2037). Other work includes the addition of a second power feed to provide redundancy, and the replacement of electrical switch gear that has reached end of life.
- *Replacement of Obsolete Equipment.* In each PBR cycle, the application includes a forecast of the investment required to replace obsolete assets, including valves, valve casings and water hydrants. About 75 hydrants are replaced each year.
- *Pipeline Inspection and Transmission Mains.* The application includes funding for a new critical pipeline inspection program, which will support the replacement of targeted sections of water transmission mains. These benefits are captured in a nearly 50% reduction in funding for transmission main replacements.
- *Meter Change-Outs.* The long-term costs for meter change-outs have been reduced based on the plan to deploy smart meters, which is described in the Performance and Efficiency section.
- *Other Investments.* Ongoing investments are proposed for structural rehabilitation and roof replacements in water buildings, and a temporary reduction in investment in vehicles and fleet is proposed.

Investments in Performance Improvement and Efficiency

Investments of \$83.0 million are proposed to support operational efficiency and performance improvement. This is about 19% of total investment during 2022 – 2026.

Major investments and program changes include:

- Smart Water Meters (AMI)*. EPCOR has successfully installed smart meters for its electricity customers in Edmonton, and is proposing to convert Edmonton water customers to smart meters. The AMI meters encrypt usage data and transmit the information directly to the utility. This increases the accuracy of bills, lowers costs for customers, replaces current obsolete systems, and nearly eliminates the use of estimated meter reads. The application proposes an investment of \$62.9 million to install smart meters citywide, and is forecast to reduce costs paid by customers by more than \$16 million over the next 20 years.
- Water Main Cathodic Protection*. Since 1997, cathodic protection has been used to extend the life of cast iron water mains by protecting them from corrosion. Water main breaks are 50% lower on protected sections of pipe. The proposed investment level will support adding or replacing protection for 15 km of cast iron pipe per year. While lower than the current 30 km average, the application concludes that investment can be temporarily reduced during the upcoming term in order to reduce pressure on customer rates, without negatively affecting reliability.



WASTEWATER TREATMENT

EPCOR plans for the long-term by preparing Integrated Resource Plans (IRP). The IRP is regularly updated and takes into consideration input from the community, outlines the factors evaluated in the planning process and describes the budget allocated for specific areas of future investment in Wastewater Treatment, including the Gold Bar Wastewater treatment Plant (WWTP) and the Clover Bar Bio-solids Recycling Facility. Through the PBR process, EPCOR plans the work and the investments required to implement the IRP during the upcoming term.

Most investment at the Gold Bar WWTP is reliability driven: maintaining and replacing assets to keep the plant running safely and reliably. As assets are repaired or replaced, there are often positive impacts on the plant's ability to treat wastewater. The Gold Bar WWTP continues to be able to safely handle incoming wastewater flows without expanding beyond the current footprint and fence line through to 2060 and beyond.

The capital plan for wastewater treatment proposes investing \$171.7 million from 2022 – 2024, an increase of \$25.9 million over the expected investments from 2019 – 2021. More than 80% of the investment (\$141.4 million) in the upcoming term is to sustain reliability and replace assets that are reaching end of life.

EPCOR has included business cases for every project valued at \$5 million or more. These can be found in Appendix G of the application.

Notable capital investments include:

- A \$41.8 million (of which \$38.4 million is for 2022-2024) investment in building and sites, primarily for the construction of a Dewatering Facility at the Clover Bar site to process bio-solids. The facility will replace the current building which is being demolished by the City of Edmonton.
- A \$28.1 million investment in mechanical rehabilitation projects including \$13.4 million to rehabilitate Digester #4, replacing all systems that have reached end of life and restoring the unit's capacity.
- A \$25.6 million investment in electrical reliability, including the relocation of the electrical building and the replacement of electrical distribution systems and controls that have reached end of life.
- A \$21.5 million investment in structural rehabilitation projects including rehabilitation of the Primary Effluent Channel and Bypass Chamber and restoration of the concrete in the Diversion Structure.
- An \$18.4 million investment in efficiency and performance improvement, including the installation of a more efficient electrical motor and the addition of a blower.
- A \$10.7 million investment in process control upgrades, including an \$8.0 million investment to add redundant capacity for the current biogas flares, reducing the risk that excess biogas is released to the environment when one of the flares is offline for maintenance.
- A \$9.1 million investment in HVAC system rehabilitation and a \$4.6 million investment to update instruments and equipment.
- The consolidation of wastewater and water lab facilities at Rosedale. The \$6.5 million investment will result in efficiencies from bringing all lab teams together, relocating wastewater lab personnel to a more modern facility, and to avoid the need to make substantial investments to remediate conditions in their current 30-year old facility.
- A \$5.6 million investment to improve odour control at the Gold Bar Wastewater Treatment Plant by adding a new air scrubbing system.
- Improving the capacity for nutrient removal from wastewater by adding an inDENSE™ system to one of the secondary treatment tanks. This \$4.5 million investment will allow the deferral of a more costly Membrane Biological Reactor system, and demonstrates how nutrient removal capacity can be improved without changing the physical footprint of the wastewater treatment plant.
- A \$0.8 million investment in worker safety changes to comply with Code upgrades.

DRAINAGE SERVICES

EPCOR began operating Edmonton's drainage system in the fall of 2017, and since then has developed a citywide flood mitigation program (SIRP) that has won national recognition, and a strategy to address sewer corrosion and odour reduction (COrE). Implementation of both programs has already begun, and will be scaled-up to full operation in the 2022 - 2024 PBR term.

The capital plan proposes investing \$754.3 million from 2022 – 2024, net of contributions made by developers and others. More than half the investment will be used to implement the SIRP and COrE programs. These strategies include not only significant capital investment, but also operating expenses and changes to operating practices.

These programs will require a substantial increase in investment in the system. On an annual average basis, EPCOR's investment in the drainage system will increase from about \$181 million a year to \$251 million a year. EPCOR will continue to make investments in ongoing system rehabilitation, the neighbourhood renewal program, and system expansion for private development.

EPCOR has included business cases for every project valued at \$10 million or more. These can be found in Appendix H and Appendix I of the application.

Investment in System Rehabilitation

Investments of \$166.0 million are proposed to rehabilitate Drainage system assets, with the largest investment (\$52.1 million) for the replacement of assets at the highest risk of failure.

Eight of the 91 pump stations will be rehabilitated (\$15.5 million) based on a condition assessment, and about \$13.1 million will be invested to replace or rehabilitate approximately 40 drill drop manholes, which provide access to the drainage system. The life cycle replacement of essential vehicles will require about \$13.2 million.

About \$18.8 million is targeted for the proactive rehabilitation of small trunk lines based on ongoing risk assessments, and \$10.3 million for proactive service renewals.



System rehabilitation investments include the repair and replacement of the Trestle 7 pipe, which failed due to internal corrosion. For more information on this project, see Appendix H-5.

Citywide Flood Mitigation (SIRP)

Investments of \$239.6 million are proposed to implement citywide flood mitigation measures, with the largest investments being in the construction of new dry ponds that protect property by capturing and holding stormwater, and the low impact development program which uses green infrastructure to slow the entry of stormwater into the drainage system, preserving pipe capacity during storm events and improving the quality of stormwater flowing to the river. The SIRP strategy is described in detail in Appendix I-1 of the application, and includes a mix of capital investments and operating expenses.

Investments in dry ponds are expected to be \$93.1 million, net of grants received from government. About one third is for the completion of infrastructure related to the Malcolm Tweddle and Edith Rogers dry ponds. At any one time, EPCOR expects to have six dry pond projects active – two in early planning, two in design, and two in construction.

Low impact development work includes installation of green infrastructure at 18 commercial and industrial sites, and at eight additional sites that align with City projects. This investment of \$53.1 million will capture, absorb and filter stormwater before it reaches the sewer system.

Preserving capacity in the stormwater system during rain events helps reduce the risk of flooding and sewer backups. Nearly \$41.6 million will be invested to reline 60 km of sanitary and combined sewer pipes, and seal and reline 3,000 manholes.

Flood mitigation plan wins Edmonton national recognition

Presented to City Council in 2019, EPCOR's SIRP is a 20-year \$1.6 billion system wide plan to mitigate flood risk. The plan requires less capital investment and delivers faster results than traditional engineering approaches.

SIRP has led to Edmonton receiving national recognition, with the Intact Centre on Climate Adaptation now ranking Edmonton first among 16 Canadian municipalities for the quality of its plans to limit the risk of flooding.

How SIRP Works

The goal of SIRP is to slow, move, secure, predict, and respond to flooding events to prevent or reduce the impact. This is achieved through a mix of capital and operational program investments.

- **Slow:** We slow the entry of stormwater into the drainage network by absorbing it in green infrastructure and holding it in ponds, creating space in the collection system during storm events.
- **Move.** We move excess water safely away from areas at risk, quickly and efficiently, by increasing capacity in the drainage system to handle peak water flow.
- **Secure.** We help secure individual properties in higher risk areas against sewer backups, overland flooding and river flooding.
- **Predict.** We predict and manage the movement of stormwater through smart sensors and technologies that integrate into the collection system.
- **Respond.** We respond through the fast rollout of flood barriers, traffic diversions and public communications to protect life, safety and property.



Dry ponds protect communities from flooding by slowing the entry of stormwater into the drainage system.

Corrosion and Odour Reduction (CORe)

Investments of \$180.4 million are proposed to protect the sewer system from corrosion and reduce odour in hotspot neighbourhoods. Hotspot neighbourhoods are areas that have persistently higher than normal volumes of odour reports. The CORe strategy is described in detail in Appendix I-2 of the application. It identifies the root causes of corrosion and odour issues and capital and operating investments to address them.

About \$79.0 million will be targeted at the rehabilitation of 4.9 km of large trunk lines rated in poor or very poor condition due to corrosion from hydrogen sulphide, which is also a source of odour when it exits the drainage system. The Duggan Tunnel project is a \$56.3 million investment in a replacement tunnel that is expected to reduce the release of hydrogen sulphide in the Steinhauer-Duggan corridor. An additional \$22.0 million will be invested in 21 drop structure modifications that reduce air pressure in the sewer system.

To improve access to the system for inspection and maintenance, \$17.9 million will be invested to construct 24 new access locations on major trunk lines.

Together, these investments and actions will lead to immediate reductions in odour levels and reduced frequency of odour events in hotspot neighbourhoods. To help communities monitor performance, performance measures will require multi-year reductions in odour reports.

Additional Investments

About \$76.5 million is expected to be invested to renew and replace drainage infrastructure in 18 communities that are part of the neighbourhood renewal program during the upcoming PBR term. The remaining utility relocations along the Valley Line West LRT route will be completed for \$48.5 million, and about \$8 million will be invested in performance improvement and efficiency initiatives. EPCOR will also contribute about \$4.5 million to the SSSF, a City-led Fund which pays for the construction of the deep trunk system.

THE DRAINAGE TRANSFER FOUR YEARS LATER

In 2017, EPCOR was given the opportunity to integrate all four components of the water utility cycle under its management by adding stormwater and sanitary services from the City of Edmonton. Since that time, significant effort has been placed on integrating Drainage Services with other EPCOR business units and identifying and realizing synergies to meet our commitments.

Creating Value for Edmonton customers

In 2017, an independent study by Grant Thornton's forecast that Drainage rates would need to increase 12-14% annually for the foreseeable future in order to fund the capital expenditures anticipated. The report also forecast the utility's financial performance would degrade over time.

Under EPCOR's management, Drainage base rate increases have been limited to 3% since the transfer. The PBR application for 2022-24 reflects annual average increases in the monthly sanitary and stormwater bill of 5.6%. This includes significant capital and operating investment to deliver both the SIRP and CORE programs. These lower rate increases are also being achieved despite the cost of dealing with a number of unplanned infrastructure failures.

Meeting our Original Commitments

EPCOR is proud of the work completed for the transfer and the continued integration work that has led to successful results over the past three years. Section 2 of the Drainage application reports on the implementation of commitments made during the transfer. Highlights include:

Commitments	Results
Employee Commitments	<ul style="list-style-type: none"> ✓ No layoffs and all existing collective bargaining agreements have been honoured. ✓ Significant improvement in safety performance, injury reduction and safety culture. To-date the team has achieved a 79% reduction in total injuries and a 75% reduction in incident severity.
Flood and Odour Commitments	<ul style="list-style-type: none"> ✓ Edmonton's rating for flood planning rose from C to B+ in a major national report, with the community now tied for the top ranking in Canada. ✓ Instead of previous plans focused on controlling the release of H₂S gas which causes odours, EPCOR's CORE strategy focuses on preventing or minimizing formation of H₂S gas, which will reduce community odour and lengthen the life of sewer network assets.
Capital Efficiencies	<ul style="list-style-type: none"> ✓ Commitments to find and achieve capital efficiencies of 10% below the City's forecasts have been greatly exceeded. The SIRP initiative alone reduced the cost of flood mitigation from as much as \$4.7 billion to \$1.6 billion.
Operating Efficiencies	<ul style="list-style-type: none"> ✓ Commitments to achieve a 5% operating efficiency by the start of the 2022-2024 PBR term have been exceeded and further efficiencies will be achieved and implemented during 2022 and 2023.
Dividend	<ul style="list-style-type: none"> ✓ Commitments to increase the dividend by \$20 million following the Drainage transfer have been met.
Relationship with the City	<ul style="list-style-type: none"> ✓ The relationship and interfaces between the City and Drainage continue to be strong.
Development	<ul style="list-style-type: none"> ✓ Drainage has developed a plan to rehabilitate the system on a prioritized basis.
Rate Commitments	<ul style="list-style-type: none"> ✓ The commitment to maintain the rate increase for the base operations (excluding SIRP and CORE) at 3% for the period 2018-2021 has been met.

OPERATING PLAN OVERVIEW

Operating costs for the water-cycle utilities are expected to average \$290 million a year in 2022 – 2024, compared to forecast costs of \$287 million in 2021.

Over the next three years, operating costs are forecast to increase at less than 1% a year, reflecting a continuing focus on operational excellence and efficiency.

Staff costs and employee benefits are the largest operating expense for the water-cycle utilities, and more than three-quarters of all staff are union employees. Personnel costs are 54% of Drainage operating costs, 30% in Water and 25% in Wastewater. The variation reflects higher costs for chemicals, electricity and other inputs into the water and wastewater treatment processes, as well as the contracted disposal of bio-solids from the wastewater utility.

Forecast operating costs also reflect savings from the real estate consolidation project described in Appendix F5. Nine operating locations in Drainage and Water are being consolidated into a single service centre through the redevelopment of land and industrial facilities on Aurum Road. Consolidation will lower costs by \$22 million over the life of the project, compared to continuing with the current facilities, many of which require refurbishment.

Electricity costs are a significant operating cost, and primarily related to pumping activity. The two water treatment plants and the wastewater treatment plant are three of the largest users of electricity in Edmonton, and the water transmission and reservoir network delivers water under pressure over the entire city. Forecast power consumption is expected to remain similar to 2021 levels.

The PBR applications include funding for the Green Power Initiative in all three water cycle utilities, including the procurement of renewable energy credits. The programs are part of EPCOR’s commitment to reduce and offset 100% of greenhouse gas emissions from its Edmonton water utility operations.

Forecast operating costs include the addition of a lead inhibitor to treated drinking water, protecting residents from exposure to lead that could otherwise leach from interior pipes and fixtures. Operating costs also fund the payment of franchise fees to the City of Edmonton, and property taxes where applicable. Operating costs do not include costs to serve water customers outside of Edmonton. Water is sold to adjacent regions at bulk rates that reflect their proportionate share of the costs to treat and deliver drinking water.

OVER THE NEXT THREE YEARS, OPERATING COSTS ARE FORECAST TO INCREASE AT LESS THAN 1% A YEAR, REFLECTING A CONTINUING FOCUS ON OPERATIONAL EXCELLENCE AND EFFICIENCY.

Table 2: Operating Costs (millions of dollars)

Note: 2021 is part of the current 2017 - 2021 PBR Application term and is provided for context. The proposed Water PBR term in the current Application extends from 2022 to 2026.

	2021F	2022F	2023F	2024F	2025F	2026F
Drainage	127.7	110.6	105.6	108.4		
Wastewater	55.7	70.8	77.8	77.4		
Water (In-City Only)	103.3	103.7	106.8	109.2	111.3	114.0
Water Cycle Utilities	\$286.7	\$285.1	\$290.2	\$295.0	\$111.3	\$114.0

HOW COSTS ARE DETERMINED & RATES ARE SET

The PBR system is based on determining how much revenue will be needed to pay for the cost of building, maintaining, operating, and financing the utility system over the next several years. The utility is required to make prudent decisions that are in the public interest. The regulator (Edmonton City Council) reviews these plans, and approves the utility's rates, fees and charges.

PRINCIPLES USED TO ALLOCATE COSTS AND SET RATES

How are utility rates set for each type of customer? There are five principles that determine the rates for each group of customers:

- *Based on cost of service.* The rates are designed to recover the annual operating and capital costs for the utilities, including a fair rate of return on the investment in utility assets.
- *No cross-subsidization between customer types.* Customers are grouped into classes based on common service needs (e.g. residential, multi-family, small commercial, large commercial). Each group pays only for its fair share of the costs to provide service to their group.
- *Equal rates within a customer class.* Every customer within a group pays the same rates, based on the total cost to provide service to their customer class.
- *Intergenerational equity.* Customers pay for the cost of utility services they receive, and do not pass on costs to future generations.
- *Rate stability and predictability.* Unexpected rate increases are minimized by using a formula, and EPCOR bears the risk of annual variances in the cost of service.

FIXED AND VARIABLE COSTS

Most of the costs to provide water cycle utility services (more than 85%) are for fixed assets such as reservoirs, treatment plants, water pipes, sanitary and stormwater pipes and wastewater treatment facilities. Whether you consume a lot of water, or a little, the cost to build this infrastructure is the same.

Utility bills include two types of charges: a fixed charge for each customer connection, and a variable charge that changes based on how much water you consume. For example, in the Water utility, about 19% of the revenue collected from residential bills is through the fixed charge, and 81% is based on consumption.

To address the mismatch between the utility costs (which are mostly fixed) and utility bills (which are mostly based on consumption) EPCOR is proposing to increase how much Water revenue comes from fixed charges. To help provide long-term stability in rates, EPCOR is proposing to increase how much revenue comes from fixed charges in water from 19% to 35%, and decrease how much revenue comes from variable charges from 81% to 65%.

COST OF CAPITAL

It takes large investments to build and maintain the pipes, pumps and plants that serve our community. From 2022 to 2024, EPCOR will invest about \$1.35 billion in capital into Edmonton's water cycle infrastructure, with additional assets contributed by developers and others as they build infrastructure in new neighbourhoods.

About 60% of the money to pay for EPCOR's investments comes from borrowing. EPCOR issues debt, and over time customers pay off the principal and the interest on these loans. In the PBR applications, EPCOR estimates that debt issued over the next three years will have an average interest rate of 3.5%. This forecast is based on EPCOR keeping its investment-grade credit rating.

The other 40% of the EPCOR's investment comes from EPCOR contributing equity into the utilities. In regulated utilities, contributors of equity are entitled to earn a fair return on their investment. The return is set by the regulator (Edmonton City Council) based on the principles that the utility should be able to maintain its financial integrity, be able to attract capital on reasonable terms, and be compensated for the risks it takes on.

A study by Grant Thornton for the 2017 – 2021 PBR concluded that water cycle utilities are substantially riskier to operate than electric utilities. Based on their analysis, a 10.175% return on equity was set for the water and wastewater utilities for the 2017 – 2021 period.

To ensure customers receive stable and predictable rates, EPCOR bears the risks of costs such as costs of chemicals, power costs and other inputs being higher or lower than forecast. EPCOR also bears the risk of revenues being higher or lower than forecast based on short-term variations in consumption due to weather and other factors. EPCOR is compensated for these risks under the PBR structure through the return on equity.

In Alberta, the provincial regulator has set a generic return on equity of 8.5% for electric utilities as a starting point, and then adjusts the capital structure for individual utilities based on their risk profile. More information on Return of Equity within the PBR can be found in each utility's Application in the Return On Rate Base section, and in Appendix D.

The PBR applications propose a 9.95% return on equity for the upcoming term. However, the applications also state that the risks of operating the water cycle utilities are increasing (due to the addition of Drainage), and would support a higher rate of return. The applications discuss the major factors that make water cycle utilities riskier to operate than electric utilities. The reasons include:

- *Public health and safety risk.* Water is a consumable product, ingested by the end user. It is essential that water utilities ensure their product remains safe and meets strict regulatory standards, and there are significant risks from failing to do so. As governments increase health and environmental standards, utilities have to make new investments.
- *Contributed and long-lived assets.* A large portion (currently more than 60%) of the assets in the Drainage utility are contributed by others. EPCOR does not earn any return on those assets, but takes on all of the operating and maintenance risk. The level of contributed assets in water and wastewater are also higher than in electric or gas utilities that receive a generic ROE. Our water cycle utilities also include long-lived assets, which means there is a longer period of time to recover the original capital investment, exposing EPCOR to additional risks.
- *Water demand and rate structure risk.* Water utilities are at risk of lower revenues due to long-term declines in residential water consumption, the impact of wet summer weather, and the mismatch between the mix of fixed and variable costs compared to the fixed and variable components of revenue.

Affordable and stable utility costs can be an important contributor to long-term economic recovery. To support Edmonton utility customers, EPCOR is proposing to discount the 9.95% return earned on equity invested in the Drainage utility to 5.50% in 2022, 6.61% in 2023, and 7.73% in 2024. This discount will save rate payers approximately \$66 million from 2022 to 2024. For more information, see: Edmonton Economic Recovery Rebate on page 24.

RATE CHANGES AND ADJUSTMENTS

The PBR applications include information on other important principles that are part of Edmonton's water cycle utility system. There are no changes proposed to any of these principles. Notable principles to continue are:

Routine rate changes

- *Inflation and the Efficiency Factor (I minus X).* Under the PBR framework, routine rate increases are limited to inflation, less an efficiency factor. This provides an incentive for the utility to keep its costs lower than inflation. For the next PBR term, the efficiency factor is proposed to continue at 0.25%. This reflects that the Water utility has operated under a PBR system for almost 20-years, and the opportunities for further cost reductions are limited – but should still be encouraged.

When transferring the Drainage utility to EPCOR in 2017, the City of Edmonton mandated EPCOR to deliver capital programs at 10% lower costs and operating programs at 5% lower costs by 2021. As discussed in the application, these efficiency targets have been met. The application recommends encouraging ongoing efficiencies in Drainage through a 0.25% efficiency factor.

Special Rate Adjustments

Special rate adjustments are required for increases to rates above inflation. This includes a special rate adjustment for re-basing, which is required to recover the difference between EWSI's revenue requirement forecast for the PBR term and the revenue that would be realized if annual rate increases were limited to PBR inflation. Other special rate adjustments may be required for programs or initiatives that are in addition to EWSI's core utility operations.

- *For water rates, special rate adjustments proposed for the upcoming PBR terms include:* re-basing of the revenue requirement, the recovery of costs for the 90-day bill deferral program, the collection of fire protection revenues, and the shift in the rate structure to collect more revenue from fixed charges and less based on consumption charges.
- *For wastewater treatment rates, special rate adjustments include:* re-basing of the revenue requirement and recovery of costs for the 90-day bill deferral program.

- *For sanitary and stormwater rates, special rate adjustments include:* re-basing of the revenue requirement, recovery of SIRP and CORE program costs, and recovery of costs for the 90-day bill deferral program.

Fairness in rate design

- *Inclining Block Rates.* Residential customers receive a base amount of water (10 cubic metres per month) at a low rate, and pay higher rates for consumption above that amount. This provides an incentive for water conservation, particularly during the high demand summer period.
- *Declining Block Rates.* Multi-residential customers have less seasonal variability in their water consumption and lower peak demand than residential customers. Their water charges are based on rates that decrease as volume increases, as well as a fixed charge based on the size of their service connection. Commercial customers include a large number of customers who use small quantities of water, and a small number of customers who use very large quantities of water, such as hospitals, educational institutions and beverage producers. Their water charges are also based on rates that decline at higher volumes of consumption, and a fixed charge based on the size of their service connection.

Usage-based rate design

- *Over-strength Wastewater.* Some customer discharge wastewater that is within legal limits, but which costs more to treat due to higher than normal levels of nutrients or other contaminants. These customers pay a surcharge for the treatment of over-strength wastewater.

RESIDENTIAL CUSTOMERS RECEIVE A BASE AMOUNT OF WATER AT A LOW RATE, AND PAY HIGHER RATES FOR CONSUMPTION ABOVE THAT AMOUNT. THIS PROVIDES AN INCENTIVE FOR WATER CONSERVATION.

FUNDING UTILITY COSTS THROUGH AFFORDABLE & STABLE RATES FOR 2022+

The PBR applications describe what's needed to build and operate Edmonton's water-cycle utilities for the next several years, the revenues that will be needed to fund this work, and the utility rates that will be used to collect these revenues.

While the PBR is in the form of three applications (one for each utility), EPCOR's approach has been to focus on planning for the total water cycle. That includes ensuring the total plan keeps utility rates affordable and stable, while also providing enough funding to deliver safe, reliable and environmentally responsible services. This section brings together information from all three applications to provide a picture of the total bill for an average residential and commercial customer.

Many customers are not average, of course. The individual PBR applications include detailed projections of utility costs for a variety of customer classes, including multi-family residential buildings, large commercial water consumers such as post-secondary institutions and food and beverage manufacturers, and over-strength sanitary sewer system users. No matter what customer class you belong to, the rates you pay are governed by City Bylaws, and are based on the principle that each customer class should pay rates that reflect the actual cost to provide services that meets their specific needs.

TRENDS AFFECTING UTILITY COSTS

Between 2002, when PBR was first implemented and 2019, average monthly residential consumption decreased from 21.4 m³ per customer per month to 13.8 m³ per customer per month. An additional decrease of 1.3 m³ is forecast by 2026.

As in the 2017-2021 PBR Application, the long-term decline in consumption per customer continues to affect In-City Water revenue, with declines in consumption more than offsetting customer growth.

Table 3: Customer Counts and Water Consumption Trends

	2017-2021 Decision	2022-2026 Forecast	Difference
Average Customer Counts	289,834	312,177	22,343
Annual Consumption (ML)	92,589	84,944	(-7,645)

CHANGES COMING IN 2022: FIRE PROTECTION SERVICES

Historically, EPCOR's water utility charged the City of Edmonton the cost of supplying fire protection infrastructure, and the City recovered the costs through property taxes.

In 2021, City Council decided to transfer the responsibility for paying these costs to water ratepayers. Beginning in 2022, water rates will include the collection of \$67.3 million over five years to supply fire protection infrastructure and maintenance that includes hydrants and the oversizing of water mains. For an average residential customer, this will increase utility charges by an average of \$2.70 per month over the next five years.

EDMONTON ECONOMIC RECOVERY REBATE: \$66 MILLION DISCOUNT FOR CUSTOMERS

The COVID-19 pandemic has profoundly disrupted economic and social life in our community, and around the world. Early in the pandemic, EPCOR led the development of a 90-day utility bill deferral program, which was offered province-wide to electricity consumers and to water-cycle utility customers in Edmonton. The recovery of about \$3.5 million in costs for this program are included in the PBR applications, consistent with Alberta's Utility Payment Deferral Program Act.

In 2020, EPCOR launched a community recovery fund to support the hard hit arts, culture and recreation sectors, and the social service agencies who provide direct aid to community members. EPCOR's extra investment in community recovery and relief efforts totaled \$2 million in 2020, and \$1 million in 2021, none of which was funded through utility rates.

At EPCOR, we believe that affordable and stable utility costs can be an important contributor to long-term economic recovery. Our PBR applications propose to discount utility costs by \$66 million from 2022 to 2024, keeping more money in the pockets of Edmonton's utility customers.

The Edmonton Economic Recovery Rebate is built into the proposed Drainage utility rates. EPCOR is proposing to discount the return earned on equity invested in Drainage base operations (excluding SIRP and CORe) to 5.50% in 2022, 6.61% in 2023, and 7.73% in 2024. This discount will reduce total utility costs by \$28 million in 2022, \$22 million in 2023, and \$16 million in 2024.



AVERAGE BILL CHANGES: RESIDENTIAL CUSTOMERS

In 2021, the average water-cycle utility bill for a residential customer is about \$102 per month, with the additional costs for fire protection infrastructure paid separately, through property taxes.

To fund the utility investments and operating costs proposed by EPCOR, an average residential customer will pay about \$109 per month in 2022 for water, drainage, and wastewater treatment utility services.

The \$7 change includes \$3.42 dedicated to new city-wide flood protection and sewer system odour reduction programs (SIRP and CORE), and \$2.59 to cover the cost of fire protection services transferred from the City.

Other bill changes in 2022 include re-basing to reflect the actual costs of providing utility service (\$2.20), inflation (\$1.96), impact of changes to the fixed and variable portions of the water bill (\$0.90), and recovery of costs for the utility bill deferral program (\$0.77). These are almost entirely offset by the continuing decline in water consumption, which will lower an average bill by \$5.10. The utility costs on the 2022 bill also reflect a discount of about \$5.21 per month from EPCOR's proposed \$66 million Edmonton Economic Recovery Rebate.

By 2024, the average water cycle bill for residential customers will be \$116 per month – a change of about 3.5% per year from 2022 to 2024. Roughly one third of the bill increase will fund the flood protection and odour programs. See Table 4: Average Residential Customer Water Cycle Utility Bill.

Figure 4: Average Residential Customer Water Cycle Utility Bill (\$/month)

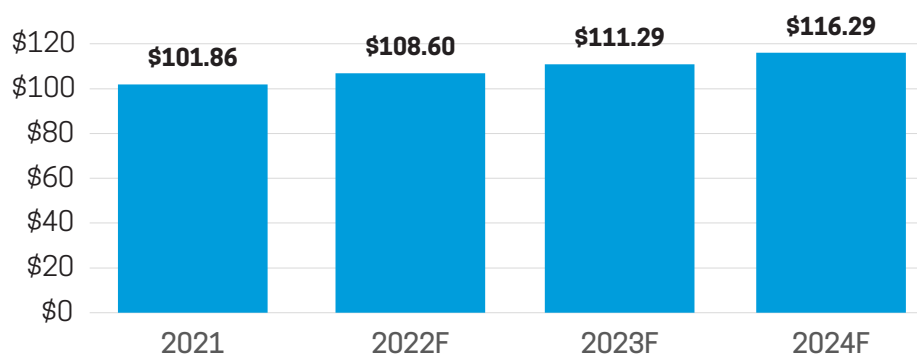


Table 4: Average Residential Customer Water Cycle Utility Bill

	2021	2022F	2023F	2024F
Monthly Water Consumption per Customer - m ³		13.4	13.2	12.9
Monthly Water Bill - \$*	41.28	43.37	44.59	46.14
Monthly Wastewater Treatment Bill - \$	20.51	22.86	22.85	23.00
Monthly Sanitary Utility Bill - \$	26.31	27.41	27.45	29.32
Monthly Stormwater Utility Bill - \$	13.76	14.96	16.40	17.83
Monthly Water Cycle Utility Bill - \$	101.86	108.60	111.29	116.29

*The PBR process will also set water utility costs and rates for 2025 and 2026. For more information see Section 12 of the Water Application.

AVERAGE BILL CHANGES: COMMERCIAL CUSTOMERS

For commercial customers, water consumption is closely linked to economic activity. A strong, growing business is likely to use more water, and have higher utility costs. Currently, an average commercial customer in Edmonton uses about 90 cubic metres of water a month – about seven times the consumption of an average residential customer. Over the next several years, as the economy recovers, EPCOR projects average commercial consumption to rise to 96 cubic metres of water a month, signaling a return to higher levels of business activity.

Because water consumption will be increasing, we forecast that the total bill for an average commercial customer will rise faster than utility rates. In this case, higher average bills are a positive indicator for the economy and job creation overall.

In 2021, the average water-cycle utility bill for a commercial customer is about \$559 per month. To fund the utility investments and operating costs proposed by EPCOR, and to cover the costs from higher water consumption, an average commercial customer will pay about \$633 per month in 2022 for water, drainage, and wastewater treatment utility services. The \$74 per month change includes about:

- \$31 dedicated to new city-wide flood protection and sewer system odour reduction programs (SIRP and CORe);
- \$16 to cover the cost of fire protection services transferred from the City;
- \$12 for increased water consumption; and
- \$15 to cover the cost of inflation, re-basing to reflect the actual costs of providing utility service, impact of changes to the fixed and variable portions of the water bill, and the recovery of costs for the utility bill deferral program.

By 2024, the average water cycle bill for commercial customers will be \$732 per month – reflecting a projected 7% increase in water consumption from 2022 to 2024, and a change in the total bill of about 7.6% per year from 2022 to 2024. Roughly one third of the bill increase will fund the flood protection and odour programs. See Table 5: Average Commercial Customer Water Cycle Utility Bill.

Figure 5: Average Commercial Customer Water Cycle Utility Bill (\$/month)

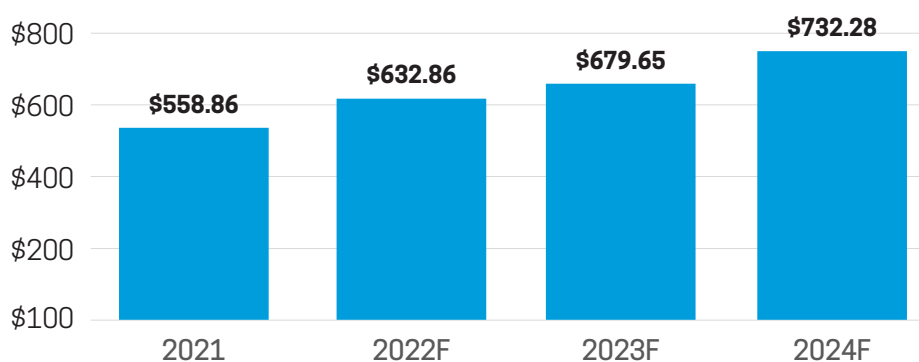


Table 5: Average Commercial Customer Water Cycle Utility Bill

	2021	2022F	2023F	2024F
Monthly Water Consumption per Customer - m ³		90.1	94.0	96.5
Monthly Water Bill - \$*	167.82	195.26	210.27	224.54
Monthly Wastewater Treatment Bill - \$	95.69	120.09	127.24	132.17
Monthly Sanitary Utility Bill - \$	124.65	132.02	138.67	154.37
Monthly Stormwater Utility Bill - \$	170.70	185.50	203.46	221.20
Monthly Water Cycle Utility Bill - \$	558.86	632.86	679.65	732.28

*The PBR process will also set water utility costs and rates for 2025 and 2026. For more information see Section 12 of the Water Application.

COMPETITIVE UTILITY COSTS

Competitive utility costs can help a community attract and retain businesses – especially in energy or water-intensive industries such as manufacturing, food and beverage production, and pharmaceuticals. Competitive utility costs are also an important benefit for residents.

But comparing costs between communities can be difficult. Appendix Q of the application provides a comparison of typical water and wastewater/drainage bills in Edmonton to those in other prairie communities. The chart below illustrates a monthly bill comparison for a residential customer consuming 15 cubic metres of water per month.

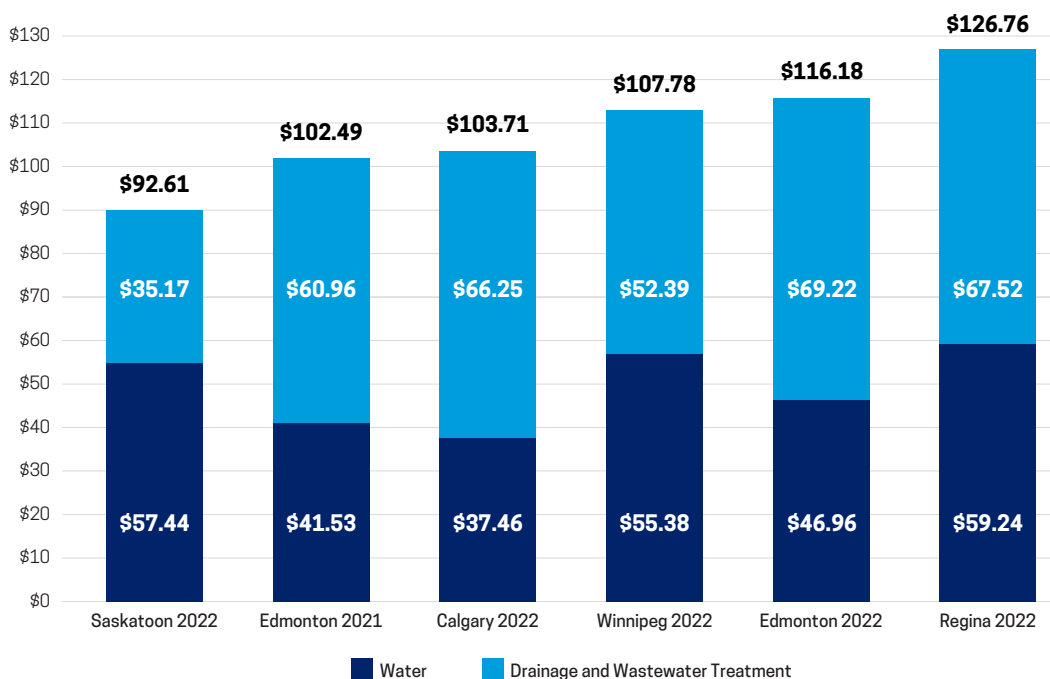
However, there are significant limitations to these comparisons:

- EPCOR rates are known for 2021 and 2022, costs in other communities are extrapolated by adding an assumed inflation factor to prior period costs (2021 in the case of water rates, and 2021 in the case of wastewater rates);
- City-determined franchise fees are included in Edmonton utility rates, but similar charges may not be assessed in other communities;
- EPCOR is making substantial investments in community flood resilience, while other communities may not be making comparable investments; and
- Communities differ in the extent to which they treat wastewater before it is returned to the river, the age and condition of their infrastructure, whether they recover fire protection infrastructure costs in utility rates, and whether they fully recover all utility costs through rates or subsidize utility cost through tax revenues.

Costs alone don't provide information on the reliability and quality of service delivered. A fast growing community, or one with aging infrastructure, might need higher levels of investment – while others might defer investing in maintenance to lower bills in the short term.

Despite the limits of these comparisons, overall costs for water-cycle utility services in Edmonton remain reasonable and comparable to other communities. The investments proposed over the next several years will help maintain reliable utility systems, continue a strong record of environmental performance, and improve Edmonton's flood resilience.

Figure 6: Residential Water and Wastewater Collection and Treatment Bill (2022, for 15 m³ of consumption)



*The comparative 2022 water bill information is based on the other utilities' water rates as of 2021, escalated by inflation to determine a 2022 rate.

EQUITABLE TREATMENT OF CUSTOMERS

UPDATES TO SERVICE CHARGES AND TERMS OF SERVICE

The PBR applications propose updates to service charges and terms of service for all three utilities. This section provides an overview of the changes, and why they are being proposed. More detail is available in each application.

ANNUAL ADJUSTMENTS

Historically, EPCOR did not adjust service charges annually for inflation — they remained the same throughout the PBR period, and were updated at the beginning of the next period. The applications propose to update service annually for inflation going forward, to ensure costs are properly accounted throughout the PBR term, and there is a less abrupt adjustment when transitioning to the following PBR term. The service charges are cost-based and adding inflation better reflects the actual costs of providing these services.

SMART METERS AND METER READING

EPCOR has successfully installed smart meters for its electricity customers in Edmonton, and is proposing to convert Edmonton water customers to smart meters. The meters encrypt usage data and transmit the information directly to us. This increases the accuracy of bills, lowers costs for customers, replaces current obsolete systems, and nearly eliminates the use of estimated meter reads.

We will no longer need to access customer property to read your meter, but we will still need to access households to install and inspect the meter. There are several changes to service charges and terms of service to make this happen:

- *Refusing a smart meter.* The Terms and Conditions for service will reflect that smart meters have become standard, and a charge will be assessed to recover the cost of in-person meter reading for customers who decline to allow us to install an advanced meter. This charge will ensure that customers participating in the advance meter program are not subsidizing customers who decline to participate.

BILLING RELATED CHANGES

There are a number of circumstances related to opening an account or the transition of an account from a renter to an owner that are not adequately addressed in the current Terms of Service. Proposed updates include:

- *Refusing to identify as a customer.* Sometimes a customer begins service at a property, but does not identify themselves to the utility. This presents challenges when determining the date for the beginning of service, and how much to charge for their consumption to date. The changes add a customer locate charge (our cost to find the property owner), and allow us to retroactively bill to the date of possession or occupancy based on a reasonable estimate of consumption. These changes will ensure that other customers are not paying for costs of supplying customers who receive service without identifying themselves.
- *Refusing to apply for metered water service.* Metering consumption is an integral part of how we ensure fair and equitable billing. When a customer with unmetered water service chooses not to apply for metered service as required, we would bill the customer retroactively, removing any incentive to delay applying for metered service.
- *Leased premises in arrears.* When a tenant is in arrears on their utility bill, billing is eventually shifted to the owner of the property. The change shortens the transition date from 150 days to 90 days, which will reduce the risk of lost revenue.
- *Other occupants liability.* When the customer of record vacates a property or defaults on bill payment, other occupants who continue to receive water service become the customers and are therefore responsible for payment. In these cases, we may request additional information to help us determine the identity, organization or control of the occupant.

OTHER CHANGES

- *Miscellaneous changes.* Other updates will: allow a security deposit to be charged when the water utility lends equipment to customers; provide EPCOR with the right to enter for the purpose of meter reading; allow a 'no access fee' to be charged in circumstances where entry into a customer's premises would be unsafe; clarify the customer's obligation to prevent their water meter from freezing and their liability for water loss if they inadequately protect their meter; allow a fee to be charged when a customer tampers with water equipment such as meters; and clarify and enforce requirements to install and maintain proper backflow devices as part of the Cross Control Program.
- *Interest on deposits.* To align with the interest rate payable for electricity service deposits, we propose to change from the current Bank of Canada rate to the rate paid under the Residential Tenancies Act, SA 2004. cR-17.1.
- *Changes to service charges.* A number of service charges have been updated for the upcoming PBR period to reflect the rising cost of service. These include charges for missed appointments and turning water service off or on during regular business hours.
- *Lead service line replacement.* Private service lines made of lead are most likely to be found in older residential neighbourhoods. Since these are the most likely to undergo infill development, demolition and replacement of aging buildings is a cost-effective and efficient opportunity to replace the lead lines. A bylaw change would allow us to require that customers with lead private service lines replace them with suitable materials when demolishing an old building.

DRAINAGE RELATED CHANGES

- *Application fees and hauled wastewater.* Because these services are not required by all customers, we propose to recover the costs of providing the service directly from the customer using the service.
- *Removal of service charges.* There are currently no Drainage customers who use sewer meters and only one large wholesale customer in the city. In the event a customer wishes to pursue either of these services, we would charge them based on the terms of the Miscellaneous Fee charge.
- *Additional service charges.* Customers occasionally book appointments with Drainage staff to perform flood assessments and remove obstructions. New service charges would allow us to recover costs when customers miss their appointments or fail to provide access to their sanitary service. However, we would waive this fee if access is provided within 30 days of the initial investigation request. As well, we would recover costs where the drainage problem is due to a private plumbing issue.
- *Service connection fees.* Historically, drainage service connection charges were based on a flat fee based on the size of the property's service. We are proposing to calculate the charge based on the cost of the service, rather than a flat fee, which would make customers benefitting from this service responsible for the cost. These charges were previously not included in the bylaws, and we are proposing to include them going forward.