EPCOR
WATER TREATMENT AND DISTRIBUTION & WASTEWATER TREATMENT

2019 ANNUAL OPERATIONAL PLAN

CONTENTS

INTRODUCTION

This document presents the 2019 Operational Plan for the Water Treatment and Distribution and Wastewater Treatment (collectively referred to as "Water Services") business units of EPCOR Water Services Inc. (EWSI). EPCOR Water Services Inc. also contains the Drainage Services business unit which has developed a 2019 Operational Plan. That plan is being presented as a separate report.

The purpose of this document is to provide Edmonton City Council, Utility Committee and stakeholders an overview of the various operational initiatives planned for the 2019 calendar year. The overarching goal of Water Services is to provide customers with safe and reliable water and wastewater services while meeting or exceeding all environmental requirements, delivering value and achieving a fair return. This goal will be accomplished by a team of safe and accountable employees that are engaged in the operation of EPCOR Water Services.

Over 2019, Water Services will focus on seven strategic areas through a number of initiatives detailed in the following sections of this document. These initiatives typically impact multiple functional areas or departments across the organization. Beyond these strategic initiatives, each of the functional areas have developed individual plans with initiatives that either support these strategies or are more operationally focused. These operational plans are not contained within this document as they tend to be tactical in nature but they do serve to ensure alignment among the overarching strategic initiatives, functional area plans and employee's individual goals and objectives for the year.

Water Services' Strategic Initiatives for 2019 are summarized as follows:

CUSTOMER SERVICE

- Improve Customer Service in Edmonton.
- Improve development processes and coordination with City of Edmonton, UDI and IDEA.
- Improve operational coordination with the Regional Water Customer Group (RWCG) customers.
- Develop and implement a Gold Bar stakeholder consultation plan.

PUBLIC HEALTH AND THE ENVIRONMENT

- Develop climate change and North Saskatchewan River (NSR) flooding resiliency plan.
- Develop NSR water supply interruption plan (Troubled Waters).
- Develop enhanced Lead Management Program.
- Move to adopt ISO 14001 across all Water Services sites.

- Complete the E.L. Smith Solar Project and Smart Grid System.
- Execute green energy purchase agreement.
- Develop a renewable natural gas project at Gold Bar.
- Develop a proactive residuals strategy.

EMPLOYEE AND PUBLIC SAFETY

- Develop and implement company-wide standard operating procedures for all high hazard activities.
- Move to adopt ISO 45000 across all sites.
- Review effectiveness of safe work planning.

EMPLOYEE DEVELOPMENT

- Develop and implement company-wide competency-based training for all high hazard activities.
- Develop and implement a company-wide employee rotation program.
- Improve employee engagement and build a respectful, inclusive, collaborative, safe and healthy work culture.

OPERATIONAL PERFORMANCE

- Develop a process improvement program to support productivity increases.
- Develop a standardized approach to asset management across Water Services by conforming to IS0 55000.
- Development standardized Project Management Office (PMO) and capital project management tools.
- Develop and implement strategies for realizing synergies between Water Services and Drainage Services.
- Optimize meter reading function.

GROWTH

- Develop and maintain Master Plans/IRPs for all Water Services sites.
- Develop transfer plan for annexation areas in south Edmonton.

FINANCIAL PERFORMANCE

- Prepare for the 2022-2026 Edmonton PBR

OUR VALUES

Underlying all of our activities are the values that we demonstrate every day. If our mission is to provide clean water and safe, reliable energy, living our values is what is going to make us the premier essential services company we want to be. The six values that come alive in our work are:

Safety: You see a safety hazard and do something to eliminate it before starting on a job. That's putting safety first in everything we do.

Integrity: You treat your co-workers respectfully and approach your work responsibly. That's acting with integrity.

Teamwork: You support your co-workers and if your work or ideas can benefit other members of your team or another area, you share it. That's working as a team.

Customers: You support keeping the lights on and the water flowing — and when there's an issue, you make sure customers know what's going on and you help fix it. That's being trusted by our customers.

Shareholder value: You support the growth of the company, whether through your involvement in new acquisitions, projects, capital work, or by demonstrating operational excellence. That's creating shareholder value.

Environment: You do whatever you can to avoid waste or pollution — whether in a vehicle, on a site, or in the office. That's being environmental leaders.

1.0 CUSTOMER SERVICE

Strategic Objective: "*Exceed Customer Expectations* for Service Quality and Responsiveness"

1.1 IMPROVE CUSTOMER SERVICE IN EDMONTON WATER

In 2018, after a decline in the transactional customer service survey results, Water Distribution and Transmission (Water D&T) developed a plan to review the results and identify root causes of the decline. Through this review, the need to create a customer service culture with a focus on quality reviews and coaching was identified and a consultant was sourced to draft a plan on how to improve the customer experience. Some of these changes have already been implemented and improvements in the survey results have since been observed.

To further improve the customer experience in 2019, Water D&T will continue to implement the consultant's recommendations and develop a customer service strategy to improve customer interactions handled on the phone, in person and online. This strategy will identify possible improvements in customer interactions, including the introduction of automated solutions and improved customer service through dispatch.

1.2 IMPROVE DEVELOPMENT PROCESSES AND COORDINATION WITH CITY OF EDMONTON AND UDI/IDEA

Almost every group within Water D&T interacts with the City of Edmonton. Continued coordination with the City of Edmonton provides Water Services the opportunity to serve its customers better through improved planning of work, management of construction impacts and realization of cost efficiencies.

In particular, Water Services is focusing on coordination efforts with the City of Edmonton Roadways department to ensure construction and maintenance activities have as minimal an impact to traffic flow as possible, to reopen affected areas in a timely manner, and realize road paving synergies in neighborhood rehabilitation and alley paving programs. EPCOR Utilities (water, power, and drainage) is also working with the City of Edmonton LRT group to discuss scope and schedule requirements for utility relocates needed for the upcoming Valley Line West and Metro North West Line route realignments. Other interactions include coordination with the City of Edmonton's Development and Planning group for both greenfield and infill

development work as well as local industry associations such as the Urban Development Institute (UDI) and Infill Development in Edmonton Association (IDEA).

Water D&T works closely with developers and City of Edmonton planners to address developers' concerns. Water D&T has established various touchpoints with developer's vis-a-vis development processes, including pre-application meetings, land development applications, biweekly meetings with development engineering consultants, Servicing Agreements, and water servicing. At any point in the development process, developers may contact Water D&T for information on water infrastructure requirements to meet the needs of their development.

In 2019 and beyond, Water D&T will continue to work to:

- Maintain positive and collaborative interactions with the City of Edmonton regarding surface restoration, traffic disruptions and development permitting processes;
- Continue / implement regular meetings with the City of Edmonton, UDI and IDEA to develop solutions to ongoing development-related challenges; and
- Improve processes and ensure proactive and timely communication with all interested parties.

1.3 IMPROVE OPERATIONAL COORDINATION WITH THE RWCG CUSTOMERS

The Edmonton water system operated by EPCOR and the water system in the surrounding region, which is operated by seven regional water service commissions (represented by the Regional Water Customer Group (RWCG)), is intended to operate as an integrated network. Decisions and changes made in one part of the network may result in an effect in another part of the network. Various events have occurred in the recent past that could have been either prevented or minimized if there was a more proactive approach to understanding each other's operational and system needs. This strategic 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.

Water D&T has had success coordinating communication strategies for emergency demand measures that can be instituted when plant shutdowns or main breaks interrupt service to regional water customers. A similar approach will be taken when coordinating operational information between Water D&T and the RWCG. This initiative will ensure information such as reservoir levels, pressure data and other important operational information can be shared between all parties, which will increase Water D&T's 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.

1.4 DEVELOP AND IMPLEMENT A GOLD BAR STAKEHOLDER CONSULTATION PLAN

Water Services has historically shown our commitment to ongoing community engagement by bringing together groups of people representing the viewpoints of different stakeholders to receive information and provide input related to emerging issues in the water utility and the impact on the community, watershed area, customers and the environment (e.g., Community Advisory Panels, Community Liaison Committee, and Community Advisory Task Groups). Development projects, in particular, have the potential to create impacts, and require regulatory approval from varying levels of government. Stakeholder understanding and support is critical. Water Services aims to engage in collaborative, transparent and respectful planning that results in permitting, building and operating critical infrastructure in a way that is aligned with the interests and priorities of the community, and that meets the needs of the broader society.

Gold Bar is currently developing a long-term master plan that will review requirements for the site over the next several decades. This comprehensive review will also address treatment processes, new technologies and the optimized placement of various buildings and facilities on site. As the Gold Bar facility is located in the river valley in close proximity to residences, it is critical that these homeowners as well as other stakeholder be engaged with the planning process in order for them to provide their perspective. The Gold Bar Stakeholder consultation plan is intended to provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions. It will also solicit feedback on the analysis, alternatives and/or decisions. In addition to objectives, the consultation plan will also be the basis upon which we provide feedback on how public input influenced the decision to the Utility Committee and City Council.

2.0 PUBLIC HEALTH AND THE ENVIRONMENT

Strategic Objective: "Maintain the *Trust* of our Customers, Clients and Regulators"

2.1 DEVELOP CLIMATE CHANGE ADAPTATION – RIVER FLOODING RESILIENCY PLAN

In 2018, Water Services developed a Climate Change Adaptation action plan that identified 14 key risks for the Edmonton water treatment plants (WTP), water transmission and distribution systems and the Gold Bar Wastewater Treatment Plant (WWTP) that will be significantly affected by climate change. Risk mitigation strategies and specific actions were developed for each of these risks. River flooding was identified as the greatest of the sudden onset risks for the Edmonton facilities. Severe river flooding has the potential to impact both the Rossdale and E.L. Smith WTPs, causing damage to critical components and potentially preventing production of treated drinking water to 1.2 million people Edmonton and the region. The Gold Bar Wastewater Treatment Plant would also be impacted by river flooding, potentially resulting in a significant environmental release. Consequently, River Flood Resiliency Plans aimed at reducing the flood risk to an acceptable level are under development for the Edmonton WTPs and the Gold Bar WWTP.

In 2018, Water Services initiated a flood hazard analysis for the two Edmonton WTPs. This analysis was focused on determining the impact of the 1:180 (the June 1915 flood event) and 1:500 river flood events. Without intervention, both events would have a significant impact on the ability of the plants to produce drinking water. A Flood Protection Plan has been developed to mitigate these risks that will consider raising or relocating equipment critical equipment, additional protection of reservoir roof hatches and measures to prevent flow of water into the plant through waste stream piping. Capital plans will be developed in 2019 to put these resiliency measures in place within 2017-2021 PBR period. Additional resiliency measures for the 2022-2026 PBR period will include improving landscaping around the Rossdale WTP to improve flood resiliency. Water Services will complete an engineering study to determine the scope and feasibility of transmission system upgrades required to allow supply of the entire water system through only the E.L. Smith WTP.

At the Gold Bar WWTP, a River-Based Flood Risk Assessment was completed in 2018. In 2019, Gold Bar Engineering will conduct a flood hazard analysis to complement the risk assessment and will develop a mitigation plan to include cost estimates for specific mitigation measures. Water Services will also examine the potential impact of the flooding due to heavy precipitation

events in the City. This work will be coordinated with the Drainage Stormwater Integration Resource Plan initiative.

2.2 DEVELOP DRINKING WATER EMERGENCY PLAN (TROUBLED WATERS)

In recent years there has been a greater emphasis in the water industry on the planning and preparation of a drinking water emergency plan. Drinking water emergencies could involve loss of supply due to major damage to the water treatment plants or transmission system, or widespread drinking water contamination due to a spill into the river or backflow into the distribution system. The Edmonton water system supplies potable water to over 1.2 million people in the Edmonton and the Edmonton region, therefore, water emergency event originating in the Edmonton system could potentially have a regional impact.

Since 2014, EPCOR has been working with our stakeholders on the EPCOR Water Quality Advisory Council ("WQAC ") to develop a framework for responding to a potential region-wide drinking water emergency impacting several jurisdictions. Alberta Health Services, Alberta Environment and Parks, Alberta Emergency Management Agency, City of Edmonton and the Regional Water Customer Group are they key stakeholders involved in these "Troubled Water" discussions. Also, in 2016-2018, Water Services developed the "Release Response Plan" to address a potential raw water contamination event due to a large hydrocarbon release in the river upstream of Edmonton. These two initiatives have resulted in the creation of a working plan to provide an alternative drinking water supply to EPCOR customers in a large-scale drinking water event.

In 2018, Water Services prepared draft plans including *Framework for Drinking Water Supply Emergencies in the Greater Edmonton Region, Human Life Safety/Public Health* and *Alternate Drinking Water Distribution Plan* and the components of a strategy for addressing a potential major hydrocarbon contamination event in the river. Water Services plans to finalize these plans in 2019 and have in place a clear framework and a documented Business Continuity Plan (BCP) that addresses water supply or water quality emergencies.

Specifically, work in the 2019 will include working with stakeholders to finalize the *Framework for Drinking Water Emergencies* and the *Alternate Drinking Water Distribution Plan.* Also, two additional working groups will be focused on including the development a *Communications Plan* and *Drinking Water System Restoration Plan.* These four components will form the backbone of comprehensive BCP for water emergencies.

Water Services plans to finalize the BCP by end of 2019. In 2020, the focus will be on sharing the results of this work with our regional customers so they can be prepared to deal with similar emergencies. In addition, a five year-plan of annual table top exercises involving the WQAC stakeholders will be developed to test the BCP and ensure that a high level of communication and coordination between the various agencies is maintained. One specific goal is to be prepared for the Alberta Emergency Management Agency annual provincial emergency exercise that is scheduled for February 2020.

2.3 DEVELOP ENHANCED LEAD MANAGEMENT PROGRAM

Lead is usually found in drinking water as a result of leaching from distribution and plumbing system components. About one per cent of homes in Edmonton still have a water service line that is lead on the utility's portion. Most of these homes were built prior to 1960. At that time, lead was a material available to homebuilders for water lines. In-premise plumbing components such as solder, brass plumbing fixtures and lead deposits in plumbing systems can also contribute lead to drinking water. Lead can be harmful to the health of people of all ages, infants and children are a susceptible subpopulation for lead exposure, which is why, today, Water Services' Enhanced Lead Management Program aligns with Health Canada's *Risk Management Strategy for Lead*, which seeks to reduce lead exposure as much as possible. The proposed new Health Canada drinking water guideline for lead will reduce the maximum acceptable concentration for lead in drinking water (from 10 µg/L to likely 5 µg/L) and will move the point of compliance to the tap. Water Services is seeking to be proactive in terms of reducing public health risks to customers from lead and to ensure compliance with the new guideline in the longer term.

Minimization of lead exposure from drinking water and compliance with the proposed new Health Canada guideline is the ultimate outcome. The lead strategy will consist of:

- Improved corrosion control of the Edmonton Drinking water by addition of orthophosphate at the both drinking water plants;
- A program to accelerate complete lead service line replacements, including replacement of both EPCOR-owned and customer-owned sections and effective elimination of partial replacements; and
- An enhanced filter program that will provide an interim solution for lead exposure for customers with lead service lines until the corrosion control is implemented or the lead service line is replaced.

The key milestone will be to present the business case for the strategy to City Utility Committee in the first half of 2019. Assuming approval by Utility Committee, the next steps will be to complete the design of orthophosphate dosing systems at Rossdale and E.L. Smith WTPs in 2019 followed by construction in late 2019 and early 2020. Engagement with contractors to carry out coordinated service line replacements will also begin following approval. Other critical components of this program will include a financial model that determines impact on rates, an environmental impact assessment for orthophosphate, a customer engagement and communication plan and a resource plan that includes administrative and testing components required for the proposed program.

2.4 MOVE TO ADOPT ISO 14001 ACROSS ALL WATER SERVICES SITES

As part of its environmental regulatory requirements, Water Services has obtained registration to the internationally recognized ISO 14001 environmental management system standard in its core Edmonton operations, including the Rossdale and E.L. Smith WTPs, Water D&T and the Gold Bar WWTP. There are several key benefits to an organization obtaining registration to ISO 14001, these include:

i) Registration demonstrates to our customers, clients and regulators that EPCOR manages its environmental risks and seizes opportunities for improvement in environmental performance;
ii) Registration also provides assurances to Water Services operations that our environmental systems are sound;
iii) Registration provides a level of due diligence to our regulators when environmental incidents do occur;
iv) Registration may offer a competitive advantage to the organization when seeking new business opportunities; and
v) Once registration is obtained for one management system, effort is reduced to obtain registration for other internationally recognized standards, such as ISO 45001, for Health and Safety Management Systems as existing frameworks and tools can be leveraged for an integrated Management System (iMS) implementation approach.

Key objectives for 2019 include:

- Maintain existing ISO 14001 registrations.
- Based on outputs from Management Reviews and Audits, work with the Water Services Health and Safety Team and the site Management System Representatives to identify risks and opportunities to the business in standardizing iMS processes across Water Services.

- In consultation with Corporate HSE and Internal Audit, develop a comprehensive audit resource plan to sustain Water Services iMS registrations with the benefit of supporting management system internal audit requirements across the corporation.

2.5 COMPLETE E.L. SMITH SOLAR PROJECT AND SMART GRID SYSTEM

In the 2017-2021 Performance Based Rate Application Water Services included a Green Power Initiative which commits EWSI to obtaining approximately 10 per cent of its energy consumption from locally produced renewable sources starting in 2018. The inclusion of this initiative was to ensure alignment with the City of Edmonton's goals to become a sustainable and resilient city to reduce Edmonton's greenhouse gas emissions through the development of new renewable energy projects in the Edmonton Region.

Based on the results of analyses of potential alternatives for achieving this green power initiative, Water Services determined that a solar project on the E.L. Smith site is the optimal approach. The E.L. Smith Solar Project is planned as a 12 MW solar farm that will provide the majority of its output directly to plant operations. This project is in the final stages of approval after considerable public and stakeholder consultations. Pending formal approval, construction will commence in 2019.

In conjunction with the E.L. Smith Solar project, an opportunity was identified to develop a Smart Grid System which combines the solar power generation with a 6 MW / 15 MWh of battery energy storage and intelligent management controls with a primary objective of reducing greenhouse gas emissions. The intelligent management controls are implemented on a "behind the meter" microgrid system at the E.L. Smith water treatment plant site. The system is also key to exploring the potential of smart grids for increasing hosting capacity of renewables such as solar, stacked applications of storage, and the integration of a behind the meter microgrid into the EDTI electric distribution system with full visibility.

This project has received Natural Resources Canada (NRCAN) and Alberta Innovates funding contributions based on the entire ESGS scope. The Smart Grid System includes three main components which will be implemented as separate capital projects within EPCOR. The solar and battery projects will be EWSI assets while the Distributed Energy Resource Management System (DERMS) will be an EDTI asset when implemented. Development of the Smart Grid System is conditional upon the approval of the E.L. Smith Solar project.

2.6 EXECUTE GREEN ENERGY PURCHASE AGREEMENT

The largest source of greenhouse gas emissions within Water Services operations is from the consumption of electricity used in both water and wastewater treatment operations as well as in pumping water to final consumers. Water Services currently purchases electricity sourced from the Alberta grid through competitive procurement. As part of Water Services' commitment to reducing its environmental footprint, the company is exploring the feasibility of procuring 100% of its local electricity consumption from a portfolio of renewable sources. The portfolio approach aligns with the City of Edmonton's Climate Change Adaptation and Resilience Strategy, which sets targets for sourcing renewable electricity from new local sources, and for reducing Edmonton's overall greenhouse gas footprint.

Water Services is implementing this approach through two projects:

i. As noted above, the current 5-year Performance Based Regulation Rate Bylaw approved by City Council included the addition of new, local renewable generation. Water Services' proposed E.L. Smith Solar Project is being advanced to meet this requirement and is currently under regulatory review;

ii. In addition, Water Services is exploring a competitive procurement for new renewable power from other Alberta sources for the remainder of the grid sourced electricity currently used by Water Services. A Request for Information (RFI) will be used to solicit information from interested renewable generations suppliers as the first step in assessing the feasibility of procuring green energy for the balance of the energy requirements. The RFI results will form the basis of determining the viability of the initiative, and if proven feasible, an RFP will be issued to complete the transition to green power.

6.3 DEVELOP A RENEWABLE NATURAL GAS PROJECT AT GOLD BAR

The Gold Bar wastewater plant produces biogas as a by-product of the treatment process. Currently biogas is used to heat the facility and any excess is flared. In order to lessen the environmental impact of this process, Water Services initially investigated the development of a cogeneration facility that would burn the biogas and produce electricity as well as heating. The feasibility assessment for the project was completed in 2016 and indicated good financial results, while providing significant environmental benefits.

Recent developments in the North American gas market have indicated that opportunities exist to develop a renewable natural gas (RNG) project which may prove more beneficial than a cogeneration facility. Renewable natural gas is a biologically sourced gas that has been

upgraded to meet the same quality specifications as conventional natural gas. Because RNG is indistinguishable from conventional gas, it can be distributed via existing natural gas infrastructure. The “environmental attributes” of RNG can be decoupled from physical delivery of gas to allow trading/sales of RNG in a similar manner to how RECs are traded representing green electricity. The primary environmental benefit of RNG is the displacement of conventional natural gas by utilizing what would otherwise be a waste stream. The demand for is being driven by clean transportation fuel programs in both Canada and the United States.

Water services is currently investigation the operational and financial viability of a renewable natural gas initiative. 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.

6.4 DEVELOP A PROACTIVE RESIDUALS STRATEGY

The water treatment processes results in the generation of a waste stream often referred to as "residuals." Residuals are both the solid materials removed from the river water and the alum added to the water as part of the treatment processes. These solids as well as treated drinking water that does not meet water quality standards have been historically released back to the river.

Currently, solids produced during treatment processes are reduced through the adoption of direct filtration in the fall and winter months. During this time frame, the raw water quality of the North Saskatchewan River is very good and much less alum is required in the treatment process. The switch to direct filtration reduces the amount of solids from the treatment process that is released to the river. The primary objective of direct filtration is to achieve environmental benefits (reducing solids loading to the river) without compromising the health and safety of drinking water.

In order to continue to ensure environmental responsibility and to prepare for the potential of increased regulation limiting the level of residuals that can be returned to the river, a Residuals Strategy will be developed. This strategy will revisit options for the potential diversion of water treatment plants residuals to sanitary sewer, landfill or other solids disposal in addition to exploring opportunities to further reduce solids loading to the river and expanding water plants residual solids management to other seasons. The net environmental benefit of any of these options will be considered.

3.0 EMPLOYEE AND PUBLIC SAFETY

Strategic Objective: "There is *Nothing More Important* than the Health and Safety of Our Employees, Contractors and the General Public"

3.1 DEVELOP AND IMPLEMENT COMPANY-WIDE STANDARD OPERATING PROCEDURES FOR ALL HIGH HAZARD ACTIVITIES

Water Services will develop and implement company wide operating procedures for all high Hazard activities throughout 2019 to effectively increase layers of protection for people and assets. These procedures are currently in place but have been structured differently across the various sites. A more common approach is seen as facilitating greater protection as staff move from one site to another as well as forming the foundation for the implementation of competency-based training (as outlined below). This development includes procedures for fall protection, hazardous energy isolation, confined space and lifting devices.

Implementing standard operating procedures across Water Services Operations has significant benefits in identifying hazards, implementing controls and reducing potential risk. The emphasis is on personal safety, process safety and worker competency to enhance a capable workforce and support the health and safety of employees, contractors and the public.

3.2 MOVE TO ADOPT ISO 45000 ACROSS ALL WATER SERVICES SITES

Management systems require good document management, procedures and internal and external communication plans that set clear objectives, targets, programs and plans to successfully maintain independent third-party registration that has the benefit of improved health and safety performance.

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. Water D&T, Gold Bar WWTP and the Edmonton WTP's will be registering their health and safety management systems to the new ISO45000 standard at the end of 2018.

There are several key benefits to an organization obtaining registration to ISO 45000, these include:

i) Registration demonstrates to our customers, clients and regulators that EPCOR manages its environmental risks and seizes opportunities for improvement in health and safety performance;
ii) Registration also provides assurances to Water Services operations that our health and safety systems are sound;
iii) Registration provides a level of due diligence to our regulators when health and safety incidents do occur;
iv) Registration may offer a competitive advantage to the organization when seeking new business opportunities; and
v) Once registration is obtained for one management system, effort is reduced to obtain registration for other internationally recognized standards for Health and Safety Management Systems as existing frameworks and tools can be leveraged for an integrated Management System (iMS) implementation approach.

3.3 REVIEW EFFECTIVENESS OF SAFE WORK PLANNING ACROSS ALL WATER SERVICES SITES

Safe work planning includes implementing a field level hazard assessment that effectively identifies hazards and implements controls to prevent potential injury to employees, contractors and the public. Water Services will review safe work planning for all Water Services operating locations to strengthen hazard assessment and control and reinforce safety integration into routine and non-routine tasks.

The review includes application of an electronic safe work planning tool. This will provide a consistent approach for workers to identify and control hazards so everyone can focus their efforts in the right areas specific to the hazards at their work locations before someone gets hurt.

4.0 EMPLOYEE DEVELOPMENT

Strategic Objective: "Develop a *Capable*, *Engaged and Empowered* Workforce"

4.1 DEVELOP AND IMPLEMENT COMPANY-WIDE COMPETENCY BASED TRAINING FOR ALL HIGH HAZARD ACTIVITIES

Water Services will be focusing on the development of a competency-based training program related to high hazard activities throughout 2019 to effectively increase employee competency. Competency training extends class room and eLearning training currently provided to staff to include demonstrated in-field competency for the specific tasks. Accomplishment of safely executing tasks is tracked in "passports" in order to ensure only qualified individuals are assigned specific tasks. Competency training will include Fall Protection, Hazardous Energy Isolation, Confined Space and Lifting Devices in the initial development. This initiative will work along-side the company wide standard operating procedures for all high hazard activities initiative.

Implementing a competency-based training program has significant benefits to Water Services Operations by ensuring that employees have the knowledge, skills and competence one must achieve to perform their high hazard activities in a safe manner.

4.2 DEVELOP AND IMPLEMENT A COMPANY-WIDE EMPLOYEE ROTATION PROGRAM

In 2016, Water Services began the Professional Growth Initiative to support employee development and succession planning to ensure a strong pool of talent, now and in the future. This was cascaded to Stratum 3's across the company in 2017 and Stratum 2 managers in 2018. We want to provide employees with meaningful opportunities to take their careers where they want to go – whether it's moving up, laterally or otherwise expanding skills, knowledge and abilities in a particular area. While Water Services acknowledges that employees are principally responsible for their careers, we want to be intentional in our approach to supporting professional development. Job rotation is an important aspect of this. The Human Resources team will engage with business leaders and provide tools to assist with identifying suitable candidates for job-to-job or project-to-project opportunities. Human Resources will also support all aspects of the transition including initial preparations, execution and any subsequent evaluation of outcomes.

4.3 IMPROVE EMPLOYEE ENGAGEMENT AND BUILD A RESPECTFUL, INCLUSIVE, COLLABORATIVE, SAFE AND HEALTHY WORK CULTURE

This strategic initiative is comprised of efforts to develop both employee engagement and diversity and inclusion at EPCOR.

i) Employee Engagement

The employee engagement survey is one of the primary ways EPCOR solicits feedback from employees to determine where we can improve and where we need to focus our efforts on our quest to ensure EPCOR is a great place to work. The Human Resources team will deliver the bi-annual engagement survey and work with leaders across our Business Unit to review and interpret the survey results and implement action plans. Action plans will address the top key drivers and opportunities identified in the engagement survey results. Quantifiable measurements will be used to ensure engagement action plans are successful within the business. These measurements include action planning completion rates and engagement scores and could include additional measurements depending on the action planning item.

The Public and Government Affairs team will develop communications to support the activities identified in engagement action plans. This initiative includes developing communications focused on enhancing the evaluation of most influential engagement drivers; developing plans to promote existing and upcoming professional development resources; packaging a high-level strategic plan for Water Services into a simple, easy to reference document delivering the message in a memorable fashion; and enhancing employee understanding of the business and its drivers.

ii) Employee Diversity and Inclusion

Great places to work are where people feel respected, valued and part of a team. Not only is it important to our employees, it's seen as critically important to EPCOR's leadership team and Board of Directors. In 2018 a Diversity Council was formed and their first task was to create a Diversity & Inclusion Framework, to guide our approach to this important topic. In 2019, the Diversity Council, in concert with leaders across our Business Unit, will be pursuing a variety of activities and initiatives to drive this focus. Some of these activities and initiatives include:

- increasing awareness of diversity and inclusion at EPCOR;
- incorporating diversity and inclusion into training;

- incorporating diversity into hiring practices;
- supporting employee resource groups (e.g. HerStory); and
- working with *Careers: The Next Generation* to provide work experience opportunities for indigenous youth.

5.0 OPERATIONAL PERFORMANCE

Strategic Objective: "Continuously Strive to Improve Operational Performance and Reduce Costs by Focusing on *Process Improvement* and *Innovation*"

5.1 DEVELOP A PROCESS IMPROVEMENT PROGRAM TO SUPPORT PRODUCTIVITY INCREASES

In order to increase profitability, maintain reasonable rate increases and offset the impact of the PBR efficiency factor, it is necessary to ensure that Water Services maintains and increases productivity over time. Process improvement is currently done across the organization, but generally under a number of different approaches with varying degrees of success. The vision of this initiative is to develop a standardized process or continuous improvement program to support productivity increases and service quality improvements across all of Water Services. The program would encompass methods, techniques and tools and be used to design, control and analyze both business and operational processes. It is critical that any approach chosen involves the people aspect of the process and integrates processes and systems.

There are several standardized approaches that would be explored as part of the development of this initiative, including Six Sigma, Lean, Baldridge, Shingo etc. Potentially, several different approaches could be selected depending upon the specific processes under discussion. This initiative is seen as an extension of, and building upon, the innovation strategy developed over the past several years and is directed towards building a "tool kit" for all to use, rather than a specific department focused on process improvement. The long-term objective of this strategy will be to become an organization where process improvements occur systematically and in a sustainable manner.

5.2 DEVELOP A STANDARDIZED APPROACH TO ASSET MANAGEMENT ACROSS WATER SERVICES BY CONFORMING TO IS0 55000

The Asset Management (AM) Framework outlines the approach, processes and tools required to ensure Water Services has accurate and comprehensive information about our assets to meet our goals. The framework aims to provide consistent mechanisms to identify the costs and risks associated with operating and maintaining assets, in addition to standardizing the approach to investing in our assets to manage both cost and risk. This Framework includes processes around:

- Asset Hierarchy Configuration;

- Criticality Assessments;
- Condition Assessments;
- Review of Asset Deterioration Patterns and Replacement Frequencies;
- Reliability-Centered Maintenance Assessments;
- Level of Service Requirements;
- Review of Operation, Maintenance and Replacement Costs; and
- Development of Asset Management Plans.

The Asset Management Methods Office ("AMMO") is expanding and adapting 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. The benefits of this alignment include more efficient and effective implementation of Asset Management across Water Services, which enhances asset reliability as well as risk management, allowing us to provide reliable service in the most cost-effective manner.

5.3 DEVELOP STANDARDIZED PROJECT MANAGEMENT OFFICE/CAPITAL PROJECT MANAGEMENT TOOLS

In order to improve efficiency and effectiveness of our project management, Water Services is standardizing the way project managers across the Business Unit plan, execute and monitor their projects and programs. This initiative involves creation of one Project Management Methodology along with several processes, tools and templates. Currently, although we have skilled project managers and key project governance processes in place, the underlying framework to ensure that projects are handled consistently across Water Services is missing in some cases. In addition to the creation of an overarching Project Management Standard, we will undergo a review and re-development of processes, procedures, templates, tools and systems which are currently in use to ensure the use of best practices and consistency for all users.

This initiative will be completed in conjunction with similar Project Management initiatives taking place across the rest of EPCOR. The benefits of this initiative include consistency, efficiency and higher engagement, as well as potential cost savings through better project execution. The Success Measures for this initiative will be a consistent Project Management Methodology that allows for effective and efficient execution of projects across Water Services

5.4 DEVELOP AND IMPLEMENT STRATEGIES FOR REALIZING SYNERGIES BETWEEN WATER

Over the majority of their history, Drainage Services and Water Services worked closely together as departments of the City and leveraged many of the natural operational synergies that existed between them. With the transfer of Drainage to EPCOR, these synergies can be redeveloped and operating and capital efficiencies realized in both departments. EPCOR has committed to a minimum of one per cent annual operational efficiency savings for 2018 to 2022, and capital cost efficiencies of 10 per cent by 2022 for Drainage Services.

The exploration and analysis of potential opportunities to gain synergies between drainage and other EPCOR business has commenced. The initial focus has been on integrating drainage into EPCOR processes and ensuring appropriate change management practices have been utilized to minimize operational disruption. More recent activities have focused on cross functional teams of Senior Leaders from across water and drainage services meeting to identify and prioritize efficiency opportunities in the areas of planning, capital and operations. In addition to identifying the opportunities, these teams worked to determine which items should be executed first, the associated implementation plan and the quantification of expected benefits. An overall plan to identify the specific steps and priorities to achieve those synergies is currently being developed based on this work. This plan will form the basis of work over the next several years.

5.5 OPTIMIZE METER READING FUNCTION

Over 2019, 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. This technology, referred to as either Automatic Meter Reading (AMR) or AMI (Advance Metering Infrastructure) automatically collects consumption, diagnostic and status data from water meters and transfers that date to a central database for billing, troubleshooting and other uses. AMI extends beyond AMR into remote utility management. AMI meters can collect date based on programmed logic and are often referred to as smart meters.

The advantage and AMR/AMI technology it allows more sophisticated system monitoring in addition to saving the expense of trips to physically read meters. The analysis of these technologies will determine the benefits of their introduction in comparison to the potential costs savings to determine if they should be introduced.

6.0 GROWTH

Strategic Objective: "Identify and Act on Opportunities to *Profitably* and S*ustainably* Grow our Business"

6.1 DEVELOP AND MAINTAIN MASTER PLANS/IRP'S FOR ALL SITES

Master Planning and Integrated Resource Planning (IRP) are comparable approaches used to develop long term plans of utility infrastructure. While the PBR process and most contracts addresses infrastructure in 5 year or less increments, a longer-term view of 40 or more years is required. The longer-term view enables the supply side, the demand side, and other external issues such as potential changes to regulatory requirements, new technologies, etc. to be incorporated. Master planning/IRP's also serve to addresses shorter term considerations including reliability and life cycle (rehabilitation) requirements for existing assets.

Each operational area of Water Services will develop/redevelop master plans/IRPs over the planning term as follows:

Rossdale and E.L. Smith Water Treatment Plants

Declining water consumption has enabled the plants to keep pace with population growth for a considerable amount of time. However, the time is appropriate to develop a comprehensive review of the technology used in the WTP's to treat water and future growth trends. A study has been started which will look at planning for growth in the next 40-year horizon and a comprehensive review of water treatment plant process changes to meet the current and future challenges of a changing river. The benefit of this initiative will be to understand our vision for the WTP's going forward. The plan is to complete a finalized report with input from all stakeholders.

Water Distribution and Transmission

As part of the Master Plan update, Water D&T will complete the following during 2019-2021:

- Develop a Master Strategy for Distribution Pipe Materials to maximize the service life for investment in distribution system pipes and increase reliability of the distribution system.
- Develop a Long-Term Efficiency Plan focusing on the supply side of the network to develop and act on consumption-based strategies, and informing capital planning requirements in 2019.

- Develop a Transmission Master Plan to pro-actively inform a long-term capital plan for transmission mains in the primary zone, which allows effective management of renewals as they take place.
- The most significant component of Water D&T's Master Plan update will be the Asbestos Cement Pipe Assessment and the PVC Pipe Study which is required to evaluate service life expectations and to determine future research needs. These assessments will be undertaken, incorporating learnings and management approaches of other utilities, to determine future research needs and develop a plan to deal with expected failures related to the deterioration of the pipe material. A number of other utilities have already experienced increased failures, particularly of asbestos cement pipe, and have developed plans and strategies to deal with those failures. The potential evaluation of other pipe materials and components will also be undertaken, as issues and concerns are identified.

Gold Bar

For the last few years Gold Bar has been working on developing an Integrated Resources Plan (IRP) for the facility. The IRP is the long-term planning process used for Gold Bar and, unlike more traditional shorter-term planning approaches, includes a detailed review of supply side, demand side and other external issues such as potential changes to regulatory requirements and new technologies. In early 2017 a new revision of this document was issued (version 2.0), which recommends a considerable number of studies to be conducted in order to understand and address the longer-term capacity capabilities of the plant.

6.2 DEVELOP TRANSFER PLAN FOR ANNEXATION AREAS IN SOUTH EDMONTON

The City of Edmonton proposed the annexation of areas south of the City and made a formal application to the Municipal Government Board to enact the transfer. The transition date has been approved for January 2019. The proposed area includes two areas: 1) south of the City limits to the Edmonton International Airport on the west side of the QEII highway and east of the Town of Devon, and 2) the area between the City limits and the Town of Beaumont, and between range roads 234 and 243.

This annexation will result in a substantial increase in the geographic area served by Water Services and will likely be a primary growth area in the future as the City expands. Water Services has commenced discussion with the City of Edmonton, the water commission that currently service the areas and other stakeholders in order to ensure that plans are in place for

the transition. These discussions commenced in 2018 and include the acquisition of a water pipeline and booster station from the Southwest Water Service Commission. This is the major pipeline running alongside the QEII that services areas to the south of the City. Discussions are also on-going for the acquisition of a reservoir and related infrastructure currently under construction by the County of Leduc in the Discovery Park development north of the International Airport.

7.0 FINANCIAL PERFORMANCE

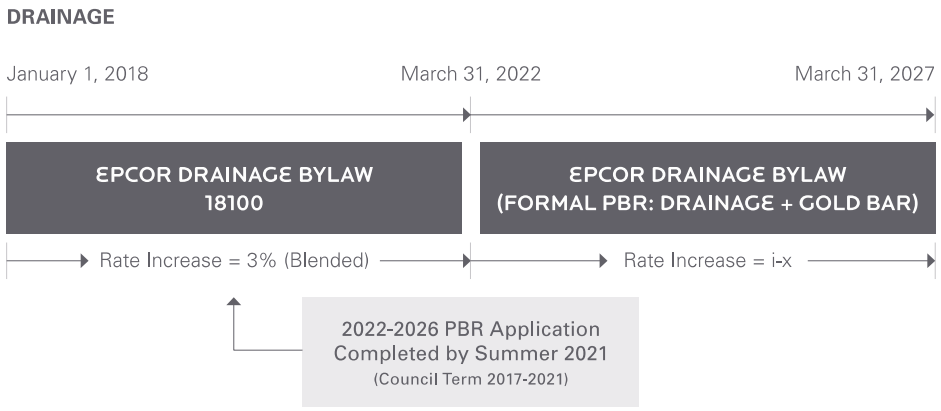
Strategic Objective: "Grow Net Income by 5% Annually While Ensuring Our Customer Rates are Competitive"

7.1 PREPARE FOR THE 2022-2026 EDMONTON PBR

The transfer of drainage has resulted in the need to develop an overarching regulatory strategy for water, Gold Bar and drainage in preparation for the next PBR applications for the respective utilities. The strategy will be developed based on EPCOR's proposal to Utilities Committee to achieve the following:

- Align Drainage under the same PBR Framework as Water and Gold Bar
- File the Drainage PBR Application and Gold Bar PBR together in 2021 for the period 2022-2026
- Extend the Water PBR by two years to March 31, 2024

The following presents the proposed PBR Application timelines for Water, Gold Bar and Drainage:



Early in 2019, Water Services will establish the overall PBR strategy and the renewal project plan and associated tasks that must be completed over a two-year period. A second component of this initiative will include addressing the directive received from City Council/Utility Committee as part of the 2017-2021 PBR process. Specifically, Water Services was directed to complete a number of activities in preparation for the next PBR application. These directions included the following:

- **Efficiency Factor Methodology** – in the presentation of the 2017-2021 PBR, the Utility Committee recognized that different approaches can be used by external experts in determining the efficiency factor used in the rate setting process. While all approaches are valid, they can provide differing measures of industry efficiency which results in some inconsistency from one PBR term to the next. The Utility Committee has directed that Water Services work with City Administration and determine an appropriate methodology based on Water Services' circumstances and use that approach in the 2024-2028 PBR application.

- **Rate of Return Risk Determination** – both Water Services' rate of return expert and the City's consultants who reviewed the 2017-2021 PBR application recognized that Water Services' regulatory structure is inherently riskier than contemplated by the Alberta Utility Commission's generic cost of capital decision. However, the Utility Committee observed that the exact extent of the risk has not been quantified resulting in uncertainty in the level of risk premium over the generic cost of capital that Water Services should be awarded. The Utility Committee has directed that Water Services work with City Administration to determine an approach to quantify this premium in order to support the return on equity proposal for the 2024-2028 PBR application.

- **Alternative Rate Structures** – the 2017-2021 PBR application maintained the same tiered rate structures by customer class as well as the fixed rate versus variable rate proportionality as was first introduced in the 2012-2016 PBR term. While the Utility Committee agreed that maintaining the structure was appropriate for the new term, they also directed EPCOR to review the rate structure and the fixed/variable split and present alternatives with benefits and drawbacks to the Utility Committee prior to commencing the preparation of the 2024-2028 PBR application.

8.0 2019 CAPITAL PLANS

The overall Water Services capital expenditures continues to align with the capital plan presented as part of the 2017-2021 PBR application. The forecast capital plan for 2019 along with 2017/2018 actual and 2020-2021 projected capital expenditures will be presented as part of the 2018 PBR Performance Report (presented at the June Utility Committee meeting). The capital expenditures will also be compared to the capital plan detailed in the PBR application in order to illustrate alignment with that plan as well as any areas of difference including changes in scope, expenditure level as well as new, cancelled and postponed projects. Presenting the full five years of the PBR capital plan in conjection with overall financial performance will allow a more complete perspective than would be possible with a single year capital presentation. Specifically, a single year presentation can present a misleading perspective as timing changes with projects moving from one year to another are not readily apparent and tend to distort the overall results. As previously noted to Utility Committee, often projects are moved from one year to another to accommodate operational requirements for plant shut downs or other operational priorities.