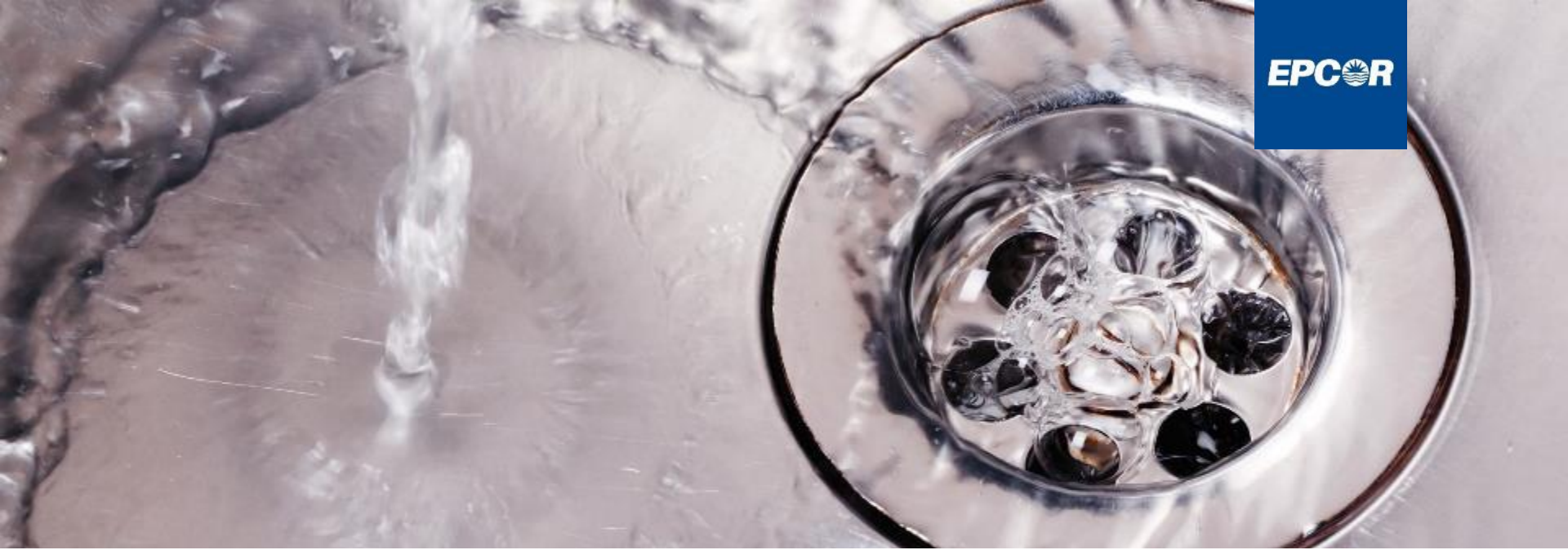
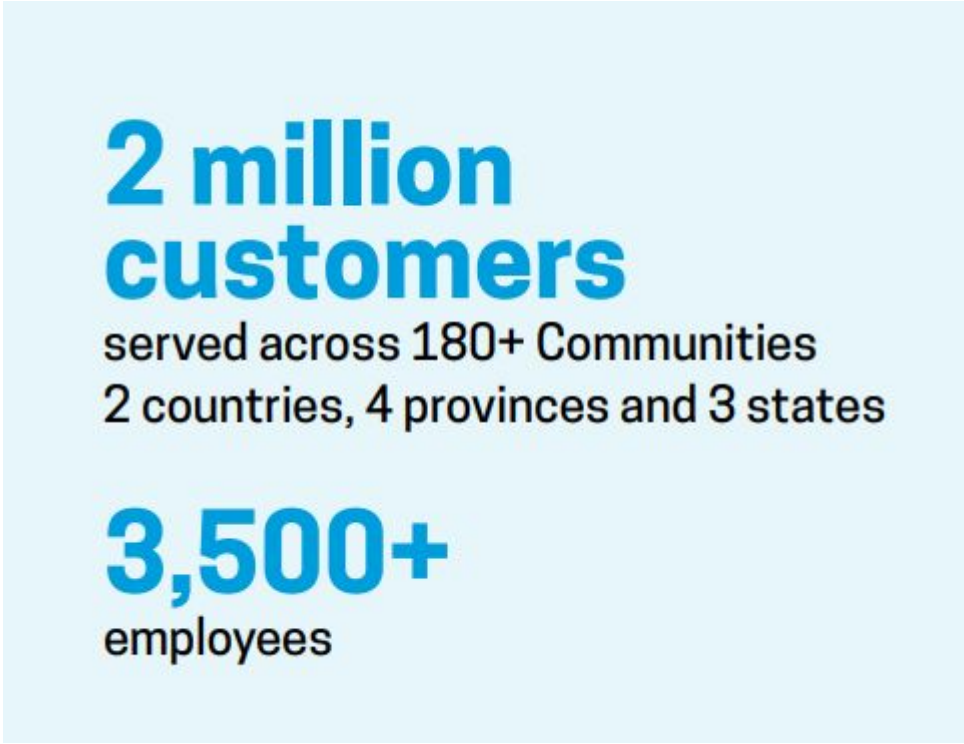


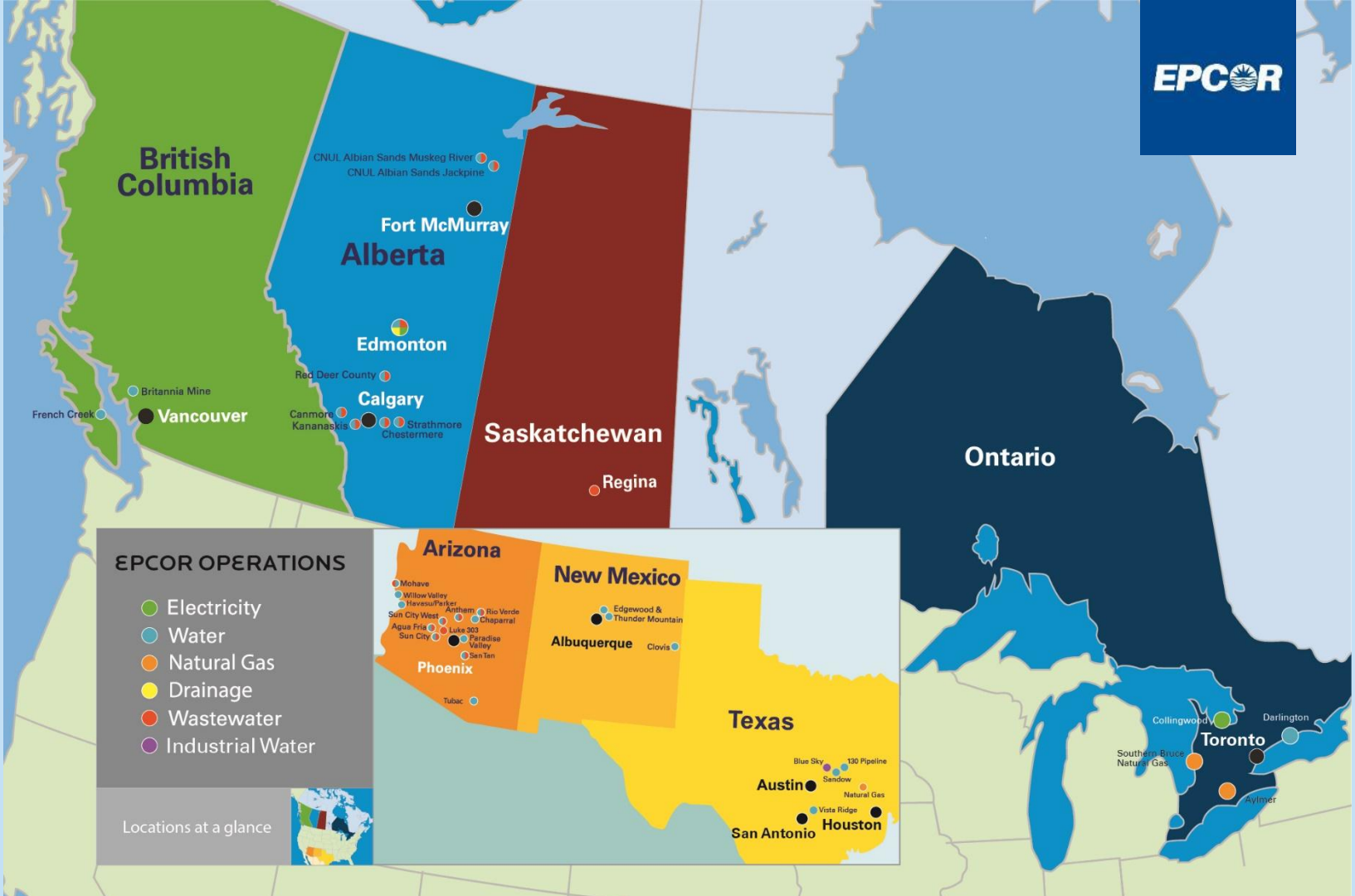
WATER RESEARCH CENTER
EPCOR RESEARCH PRIORITIES

February 4, 2025

About EPCOR...

- 100% municipally-owned company
- Water operations in Edmonton since 1903
- 1996 restructured into a municipal corporation model with mandate to grow beyond Edmonton
- Independent Board of Directors
- Municipal and industrial and across Water, Electricity and Natural Gas sectors
- $15.4 billion in assets (2023)
- Nearly $3.4 billion in dividends paid to the City of Edmonton since 1996




EPCOR
British Columbia
CNUL Albian Sands Muskeg River
CNUL Albian Sands Jackpine
Fort McMurray
Alberta
Edmonton
Red Deer County
Britannia Mine
Calgary
French Creek
Vancouver
Canmore
Kananaskis
Strathmore
Chestermere
Saskatchewan
Regina
Ontario
EPCOR OPERATIONS
Electricity
Water
Natural Gas
Drainage
Wastewater
Industrial Water
Locations at a glance
Arizona
Mohave
Willow Valley
Havasu/Parker
Anthem
Rio Verde
Sun City West
Chaparral
Agua Fria
Luke 303
Sun City
Paradise Valley
Phoenix
SanTan
Tubac
New Mexico
Edgewood &
Thunder Mountain
Albuquerque
Clovis
Texas
Blue Sky
130 Pipeline
Sandow
Austin
Natural Gas
Vista Ridge
Houston
San Antonio
Collingwood
Darlington
Toronto
Southern Bruce
Natural Gas
Aylmer

U of A – EPCOR Partnership History

- EPCOR has collaborated with the University of Alberta on research initiatives for decades
- EPCOR supports U of A by offering opportunities for co-op students to gain valuable work experience
- Students from Engineering, Business and other faculties and departments have had long, fulfilling careers at EPCOR
- The WRC will allow this work to continue, in a much more collaborative, strategic and effective manner.

EPCOR Water Research Mission Statement

Our mission is fostering a collaborative environment for innovation, research, and the implementation of best practices to continuously search out technologies and methods (novel and established), that are fit for purpose to EPCOR and that will improve the efficiency, sustainability, and cost effectiveness across the One Water cycle. We will share our learnings across EPCOR and industry, playing a pivotal role in shaping communities.

EPCOR Water Research Purpose

- Supporting the objectives from the EWS strategic plan related to meeting/exceeding environmental and public health standards.
- "Prevent pollution and reduce our environmental impacts affecting the ecosystems in which we operate” (HSE Commitment).
- Promote environmental excellence and stewardship by sustaining the long-term health of our water source: North Saskatchewan River.
- Using the principles of teamwork to assess deficiencies, identify problems, provide advice and recommendations, and implement strategies and controls.
- Identify and implement applied research initiatives that align with process de-bottlenecking and/or process optimization at water treatment plants, reservoirs, booster facilities, wastewater treatment plants, water distribution and transmission, wastewater collection, stormwater facilities, etc.

Key Theme Areas

Water Treatment Process Optimization

Description	We strive to achieve robust and efficient plant processes. Optimizing and strategically implementing refinements to existing and new processes can have significant benefits, including improved efficiency of processes, reducing our operating risk(s), and minimizing operating expenditure.
Initiatives	• Chemical dosing optimization • Water treatment robustness and resiliency • Impact of residuals on NSR • Raw water contamination mitigation • New technology to mitigate treatment risks and impacts of climate change

Wastewater Treatment Process Optimization

Description	Continuously improve the efficiency, sustainability, and cost effectiveness of the Gold Bar Wastewater Treatment Plant and Clover Bar Biosolids Resource Recovery Facility processes by fostering a collaborative environment for innovation, research, and implementation of best practices.
Initiatives	• Gold Bar Pilot plant operational strategy and objectives • Clover Bar operational improvements and strategy (biosolids) • Sidestream treatment and nitrogen loading evaluation for Gold Bar and Clover Bar • BNR performance review and optimization

Water Quality

Description	To leverage the expertise of professionals to understand and improve the quality of the one water cycle, protecting EPCOR customers and supporting public- and environmental-health decision making.
Initiatives	• Emerging substances of concern • Biological stability of drinking water • Lead management in drinking water • Water measurement techniques • Water quality monitoring

Digital Optimization

Description	Seamlessly integrate technology into every facet of our operations. Through data-driven insights, automation, and innovation, we aim to help achieve enhanced reliability, resilience and energy efficiency in our plant operations, distribution, transmission and collection systems.
Initiatives	• Enhance cybersecurity • Deploy AI/ML to enhance reliability, efficiency and optimize processes • Improve customer experiences • Increase network visibility by installing sensors

Climate Change Mitigation and Energy Management

Description	Manage and improve the energy efficiency of operating processes and buildings and to reduce Green House Gases (GHG) emissions. Create a climate change mitigation framework, manage or assist the climate change mitigation projects to achieve the 2050 EWS net-zero emission goal.
Initiatives	• GHG measurement and forecasting • Energy efficiency • Process optimization • Methane capture

Climate Adaptation and Environmental Sustainability

Description	Develop strategies to adapt to expected impacts from climate change on EWS facilities and operations and to coordinate and facilitate the alignment of integrated watershed management planning across the entire one water cycle.
Initiatives	• Effects of loading on North Saskatchewan River and urban creeks • Drought and flood management • Watershed management • Stormwater quality • Invasive species protection • Urban creek erosion protection

Field Construction and Safety

Description	Explore and develop techniques to improve the safety and efficiency of field construction, to allow for more reliable and resilient infrastructure
Initiatives	• Mechanization in underground construction (ex. shift from hand tunneling and shaft excavation to drill-assist) • Reduction in musculoskeletal injuries (ex. manhole opening tools, exoskeleton development) • Pursuit of trenchless rehabilitation methodologies (ex. blue light relining, manhole sealing, directional drilling) • Implementation of technical solutions (ex. GeoFIT, safe work planning app)

Linear Infrastructure Resilience

Description	Develop strategies to proactively identify opportunities to improve the resilience of both the water and wastewater networks. Identify and mitigate drivers for likelihood and consequence of failure in the networks.
Initiatives	• Sewer system solids management • Airflow/movement in sewer systems • Corrosion impacts to piping systems • Critical pipeline inspection techniques • Stray electrical current impact on water distribution pipes

Thank You