



# **EDMONTON'S CHANGING WATER USE**

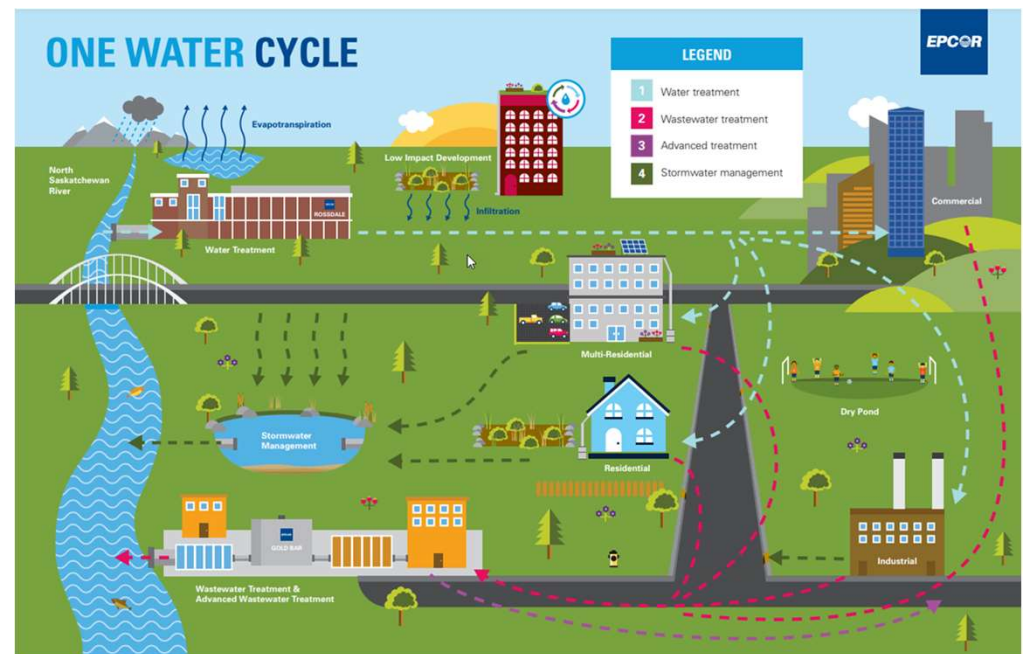
**Water Use Trends and Design Guidelines  
Utility Committee Meeting – May 20, 2022**

# Presentation Overview

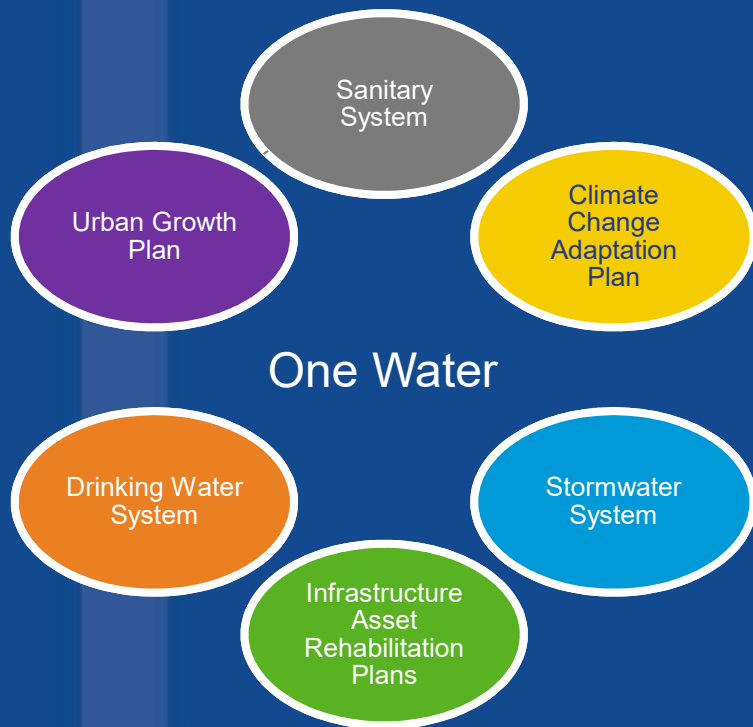
- One Water Planning Initiatives for 2022
- Edmonton Water Use and Sewer Generation Patterns
  - Total System
  - Residential
  - Multi Family
  - Institutional, Commercial and Industrial
- Future Design Standard Updates

# One Water Planning Current Focus Areas:

1. **Water Consumption and Sewage Generation Patterns** (this presentation)
2. **Growth Strategies for City and Region – alignment with City Plan**
3. **Fire Flow Protection Standards**
4. **Inflow & Infiltration Standards**
5. **Sanitary Integrated Resource Plan**



# Design Standards



City of Edmonton Design and Construction Standards

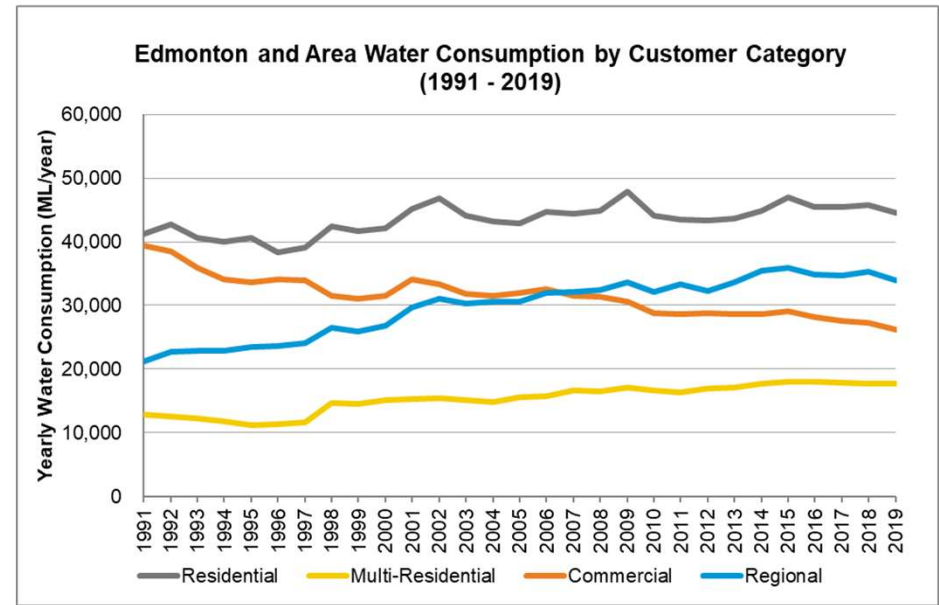
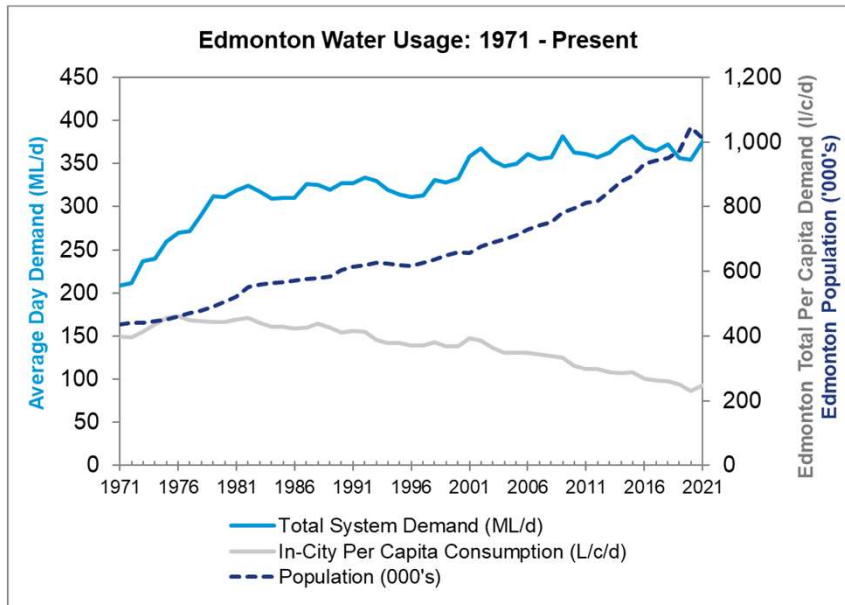
- Volume 3 – EPCOR Drainage
- Volume 4 – EPCOR Water

Supports Greenfield and Infill Development and Capital Projects completed by the Utility and City of Edmonton for Asset renewal and expansion

Seven Key Factors drive Infrastructure Sizing

- Water Consumption\ Sanitary Sewage Generation
- Fire Fighting Requirements
- Sanitary velocities to reduce H<sub>2</sub>S generation
- Climate Assumptions for Storms and Heat
- Stormwater Run-off from Parcels
- Inflow\Infiltration to Sanitary Network
- Growth Projections for Infill and Greenfield

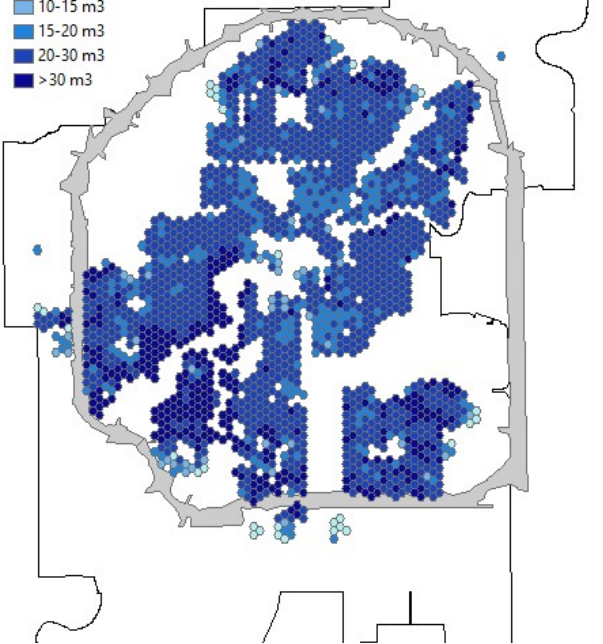
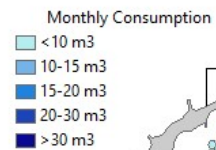
# Edmonton Total Water Use In-City and Region



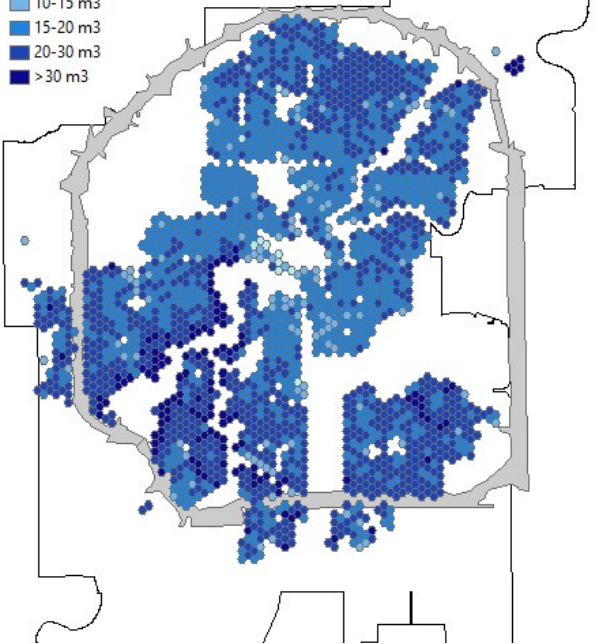
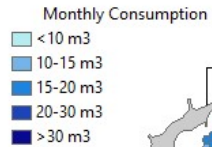


# Geographic Trends in Domestic Water Use

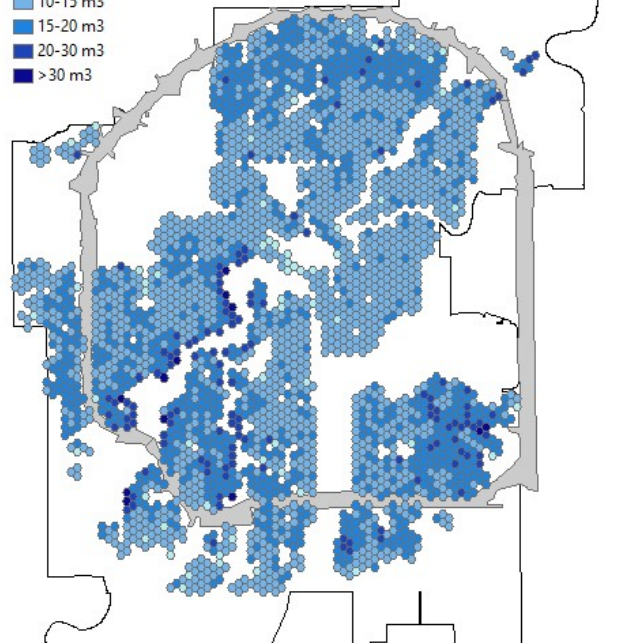
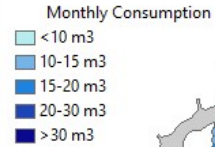
2002 - SUMMER



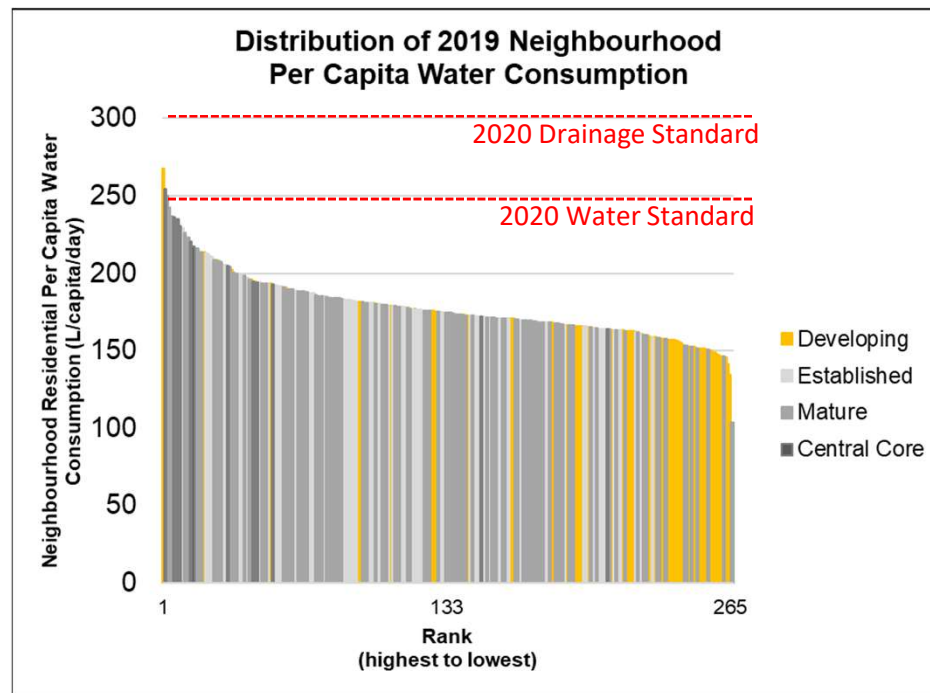
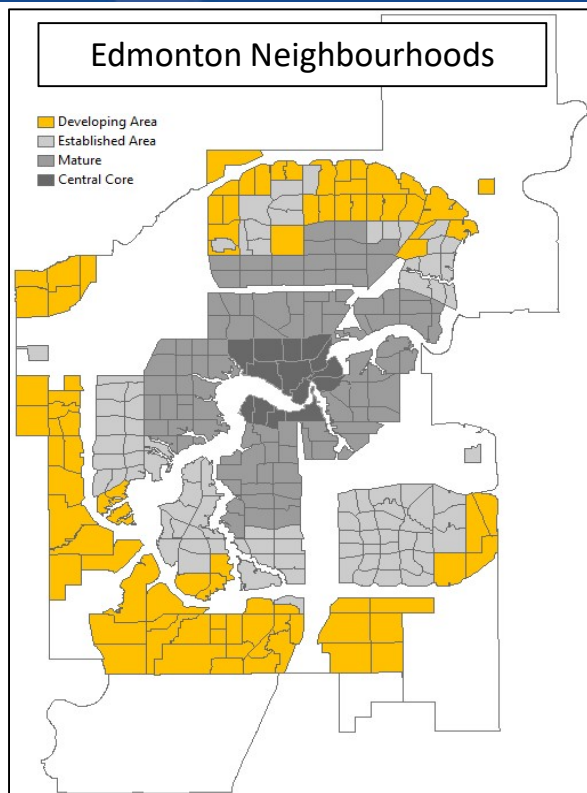
2009 - SUMMER



2019 - SUMMER



# Domestic Per Capita by Neighbourhood



# Residential



**Core**  
Oldest neighbourhoods



**Mature**  
Prior to 1970



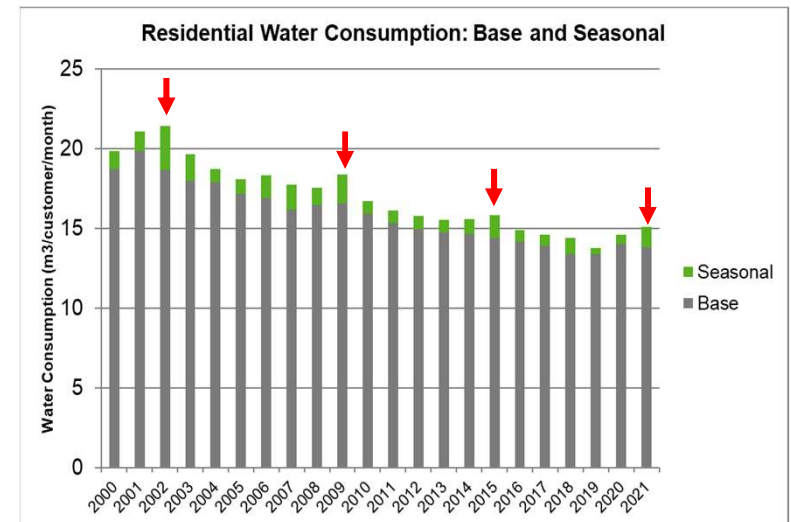
**Established**  
1970-1990



**Developing**  
1990+



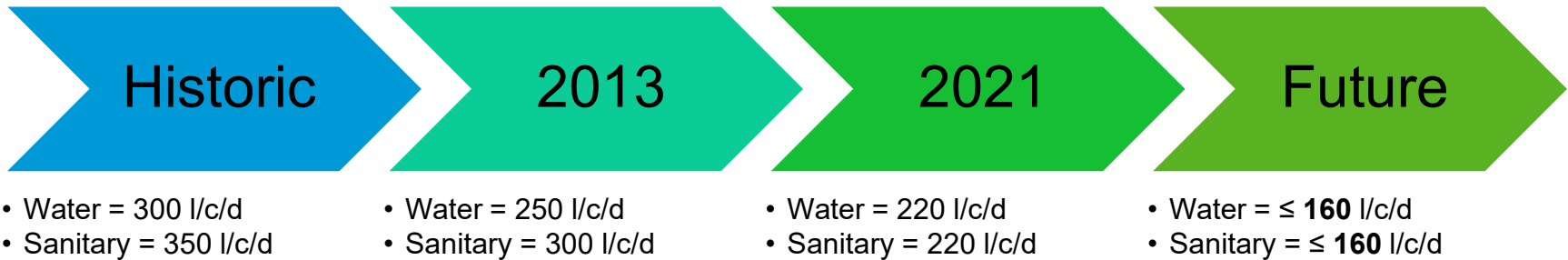
**Planned**  
2020+



Hot Weather Years with Greater  
Lawn Watering shown by red arrows



# Residential Water Consumption Standards



- Residential water consumption can be reported **per capita** or **per dwelling** using population density metrics.
- A typical dwelling is approx. 2.5-2.6 people per dwelling.
- 176 Litres/capita/day is approximately 13.4 m<sup>3</sup>/dwelling/month

$$\frac{\text{Litres}}{\text{person} * \text{day}} * \frac{\text{persons}}{\text{lot}} * \frac{\text{days}}{\text{month}} * \frac{1 \text{ cubic metre}}{1000 \text{ Litres}} = \frac{\text{cubic metres}}{\text{lot} * \text{month}}$$

# Multi-Residential



Low-rise Apartment



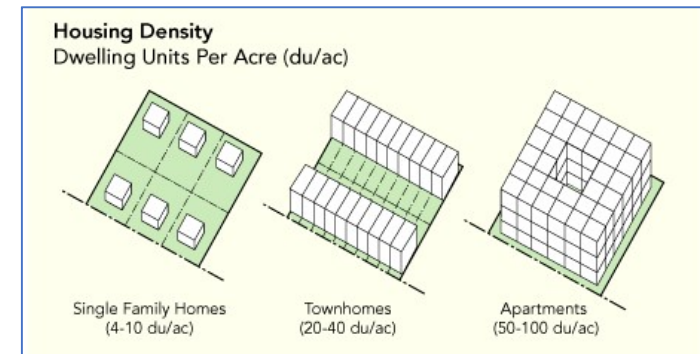
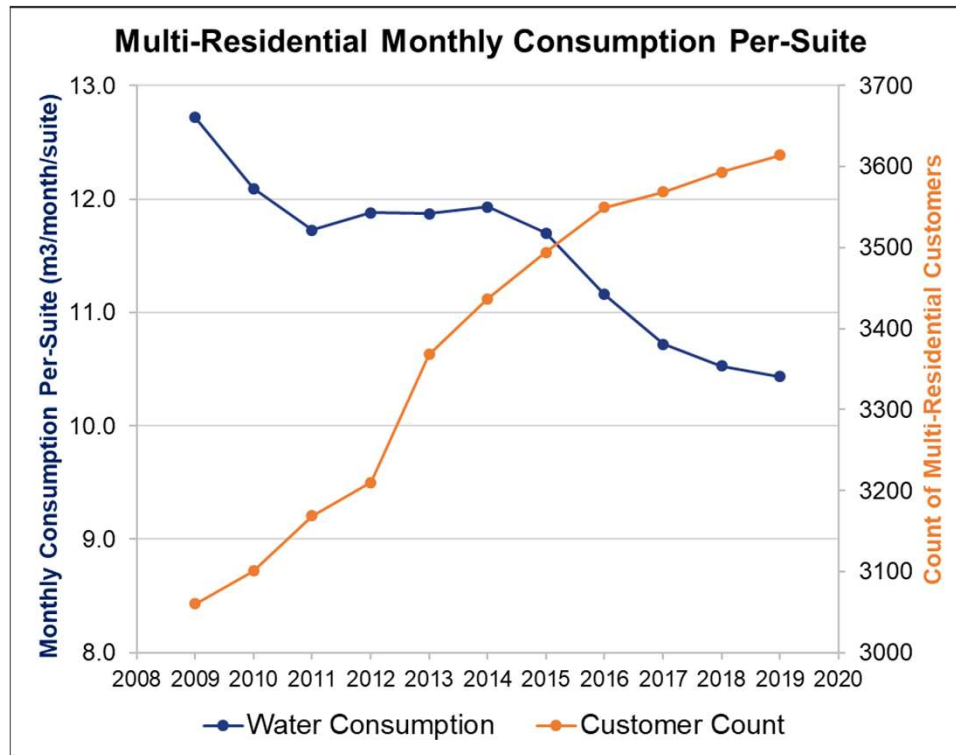
Mid-rise Apartment



High Rise Apartment



High Rise Apartment



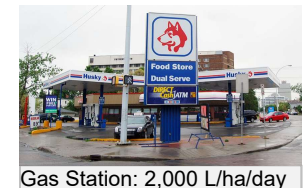
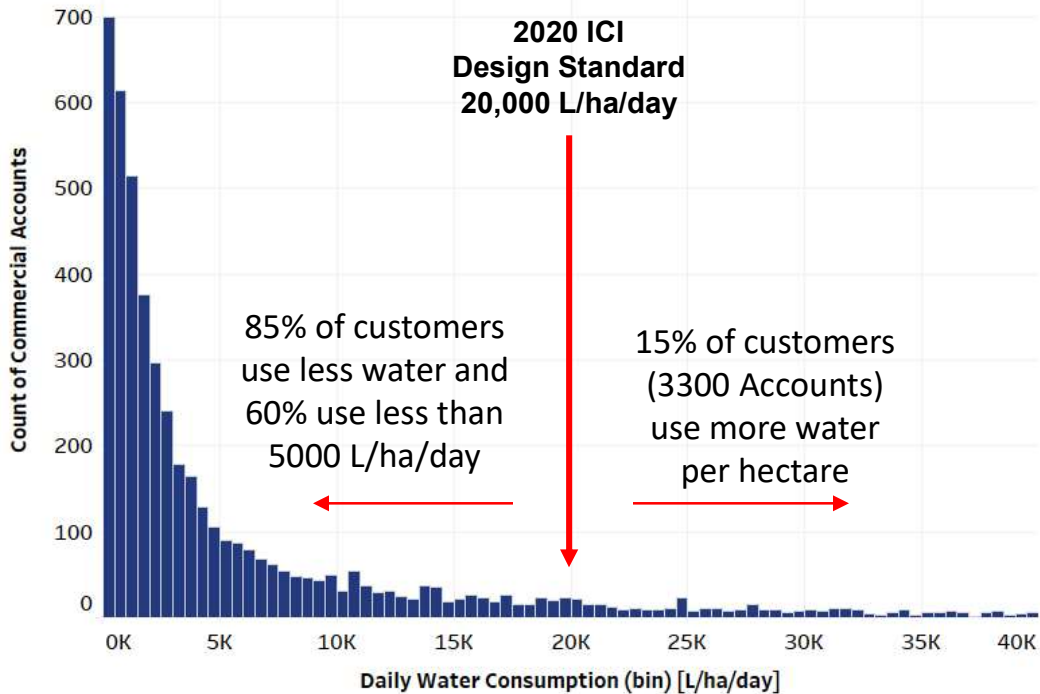
Single Family  
13.4 m<sup>3</sup>/dwelling/month

Apartment  
10.4 m<sup>3</sup>/dwelling/month



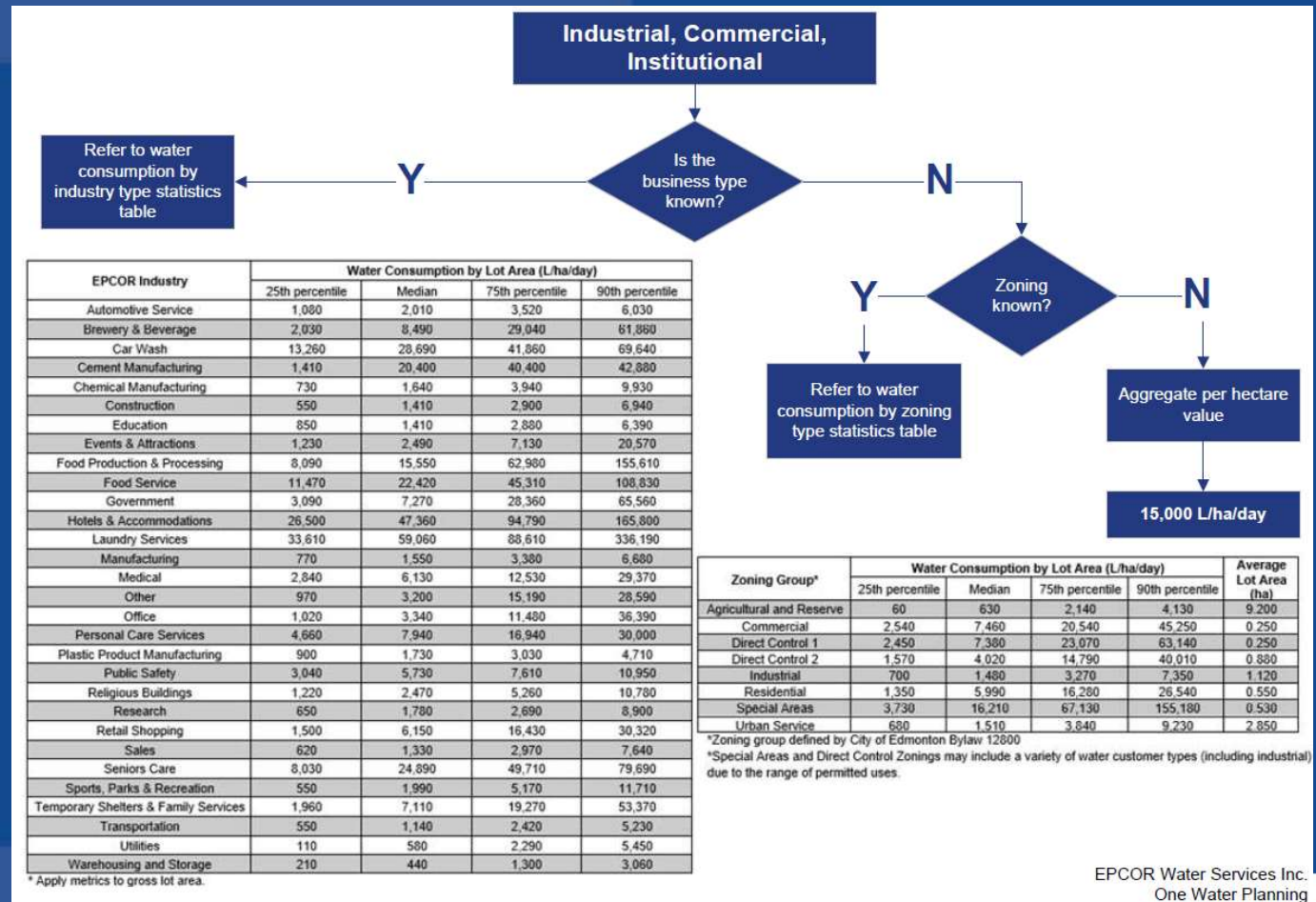
# Industrial, Commercial, Institutional (ICI)

Histogram of 2019 Commercial Accounts (Lot Area)



# Alternative Design Guideline for ICI if Zoning or Building Use is Known

(will Update when Zoning Bylaw is updated)



# Industry and Stakeholder Engagement

## Standards Modernization Discussions On-going with:

- City of Edmonton planning departments
- Urban Development Institute (UDI)
- Private Developers and Consulting Firms
- Sanitary Servicing Strategy Fund (SSSF) Committees
- Regional Water Customer Group
- Edmonton Metropolitan Region Board (EMRB)
- Industry Associations

Water and Drainage Design Standards updated in 2021 for Residential to 220 L/person/day.

New Option being provided for Developers at Start of Project to optimize the design standards for their specific development based on location and mix of development proposed

One Water Planning Team supports developer consultant in development of the design assumptions specific for their project



# Continuing the Journey to Modernize the Design Standards

- Working with Developers to implement new approach to define design assumptions at start of planning process to reduce infrastructure oversizing
- Reviewing and validating plans for upcoming major sewer trunk and water transmission investments
- Preparing Report for Committee on Modernization of Fire Flow Standards with COE Emergency Rescue Services
- System wide monitoring to support development of future revised Inflow and Infiltration Standards for Sanitary network
- Process in place to update more frequently and in particular once new Zoning Bylaw is approved.

# Discussion

Is there any additional information or analysis that Utility Committee would like to see regarding changing water and sewer consumption patterns in Edmonton?

Any other suggestions for outreach to the development community and/or the EMRB region?