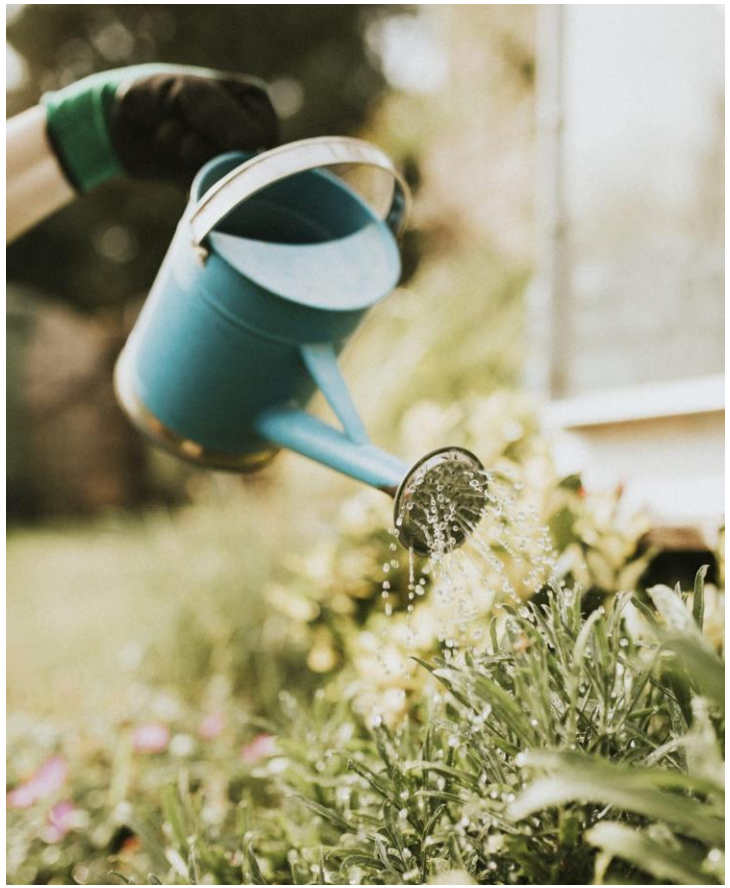
Committee of the Whole – July 17, 2025

# Water Supply Capacity: Updated Objectives and Scenario Analysis



# Water Supply Capacity Objectives

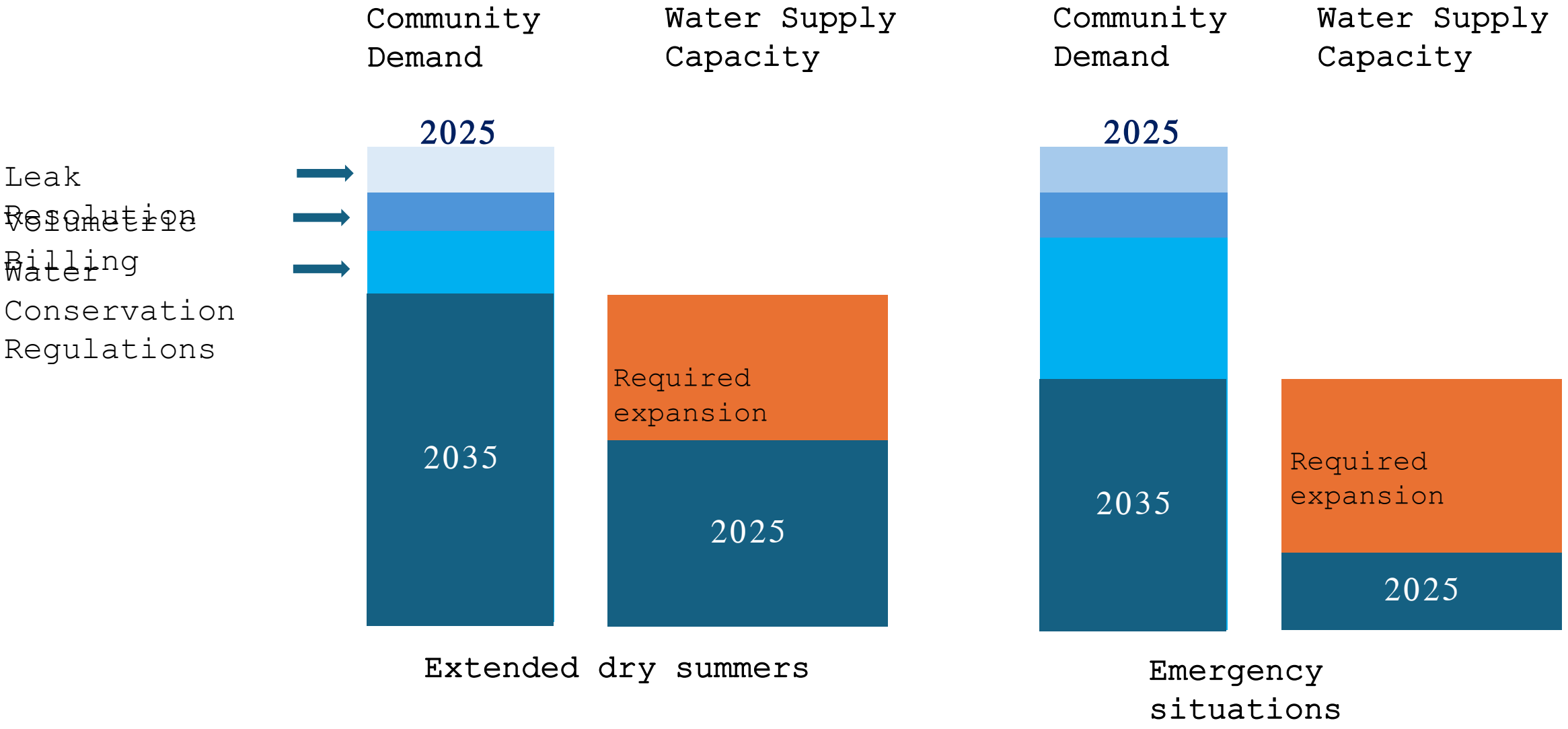
Including Water Supply Objectives in the 2025-2035 Water Strategy would:

1) confirm the level of service the SCRD aims to provide to the community
2) enable the SCRD to confirm how much additional supply needs to be developed

Water Supply Objectives are proposed to ensure that:

1) there is sufficient water supply if there was a period with very minimal rain between May 1 and November 31
2) there is a basic water supply capacity for all users in case of an emergency situation
3) there is regulatory compliance for the full duration related to Environmental Flow Needs (EFN)

# Relationship Demand and Capacity



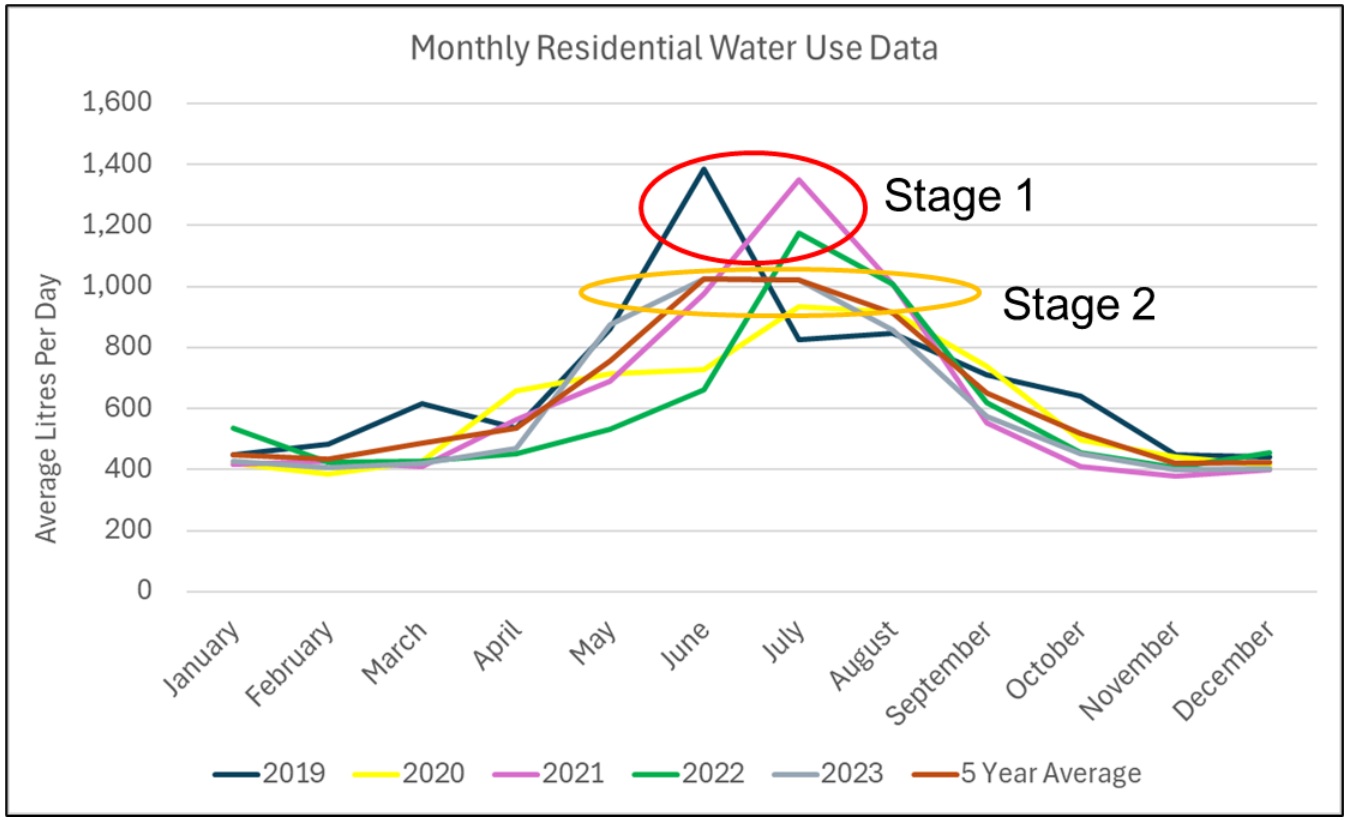
# Extended Dry Summer Water Supply Objective

Why monthly average residential demand as an indicator?

- Residential demand makes up most of the community water demand
- Water meters are read once a month
- Average demand allows for extrapolation to required water supply capacity

Historical monthly average residential demand at Stage 1 was up to 1,400 litres per day.

Historical monthly average residential demand at Stage 2 was up to 1,000 litres per day.

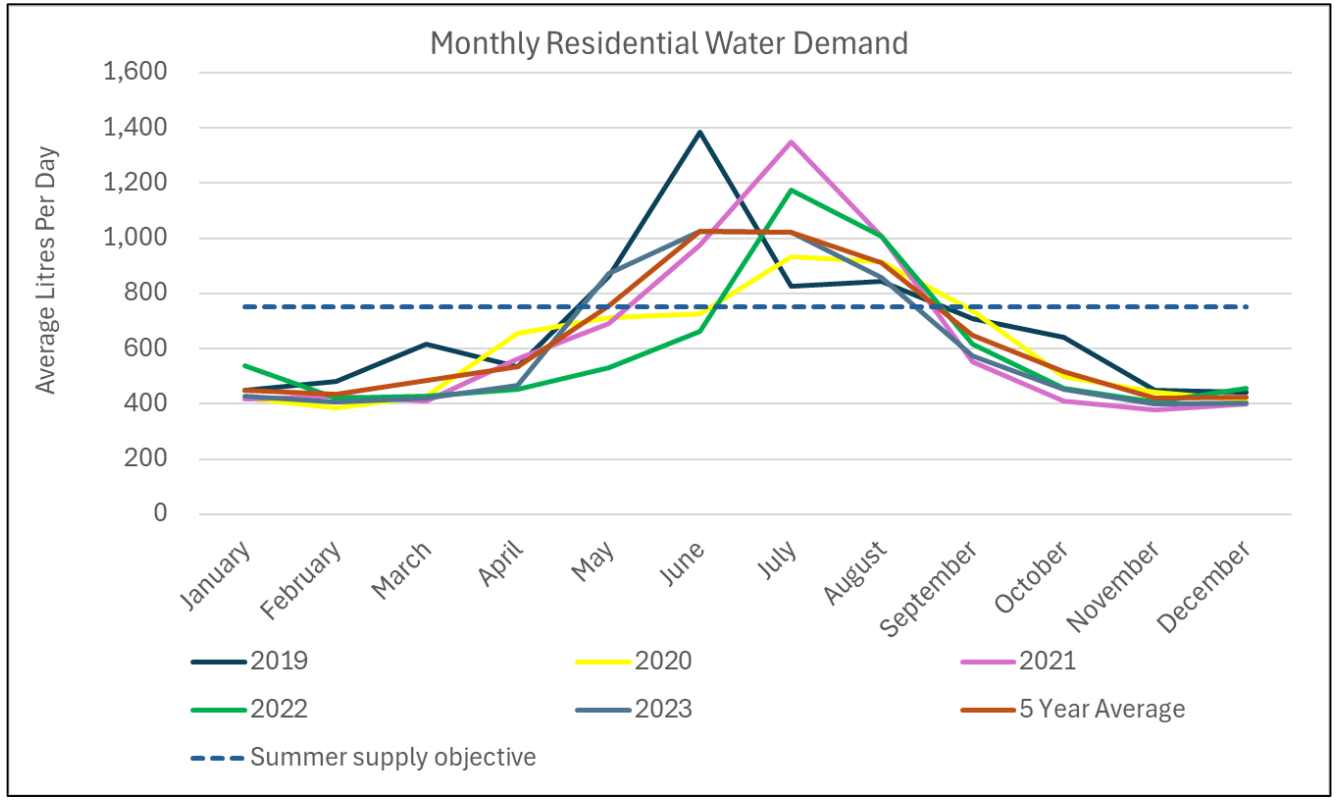


# Extended Dry Summer Water Supply Objective (2)

Volumetric billing and leak resolution combined are estimated to result in a 20-30% reduction in community demand.

<u>Proposed objective:</u>

The water supply capacity for all systems is such that an average monthly residential water demand of 750 litres per connection can be guaranteed during an extended dry summer (May 1 – November 31) with only Stage 1 or Stage 2 Water Conservation Regulations being implemented.



# Emergency Water Supply Objective

Emergency situations:

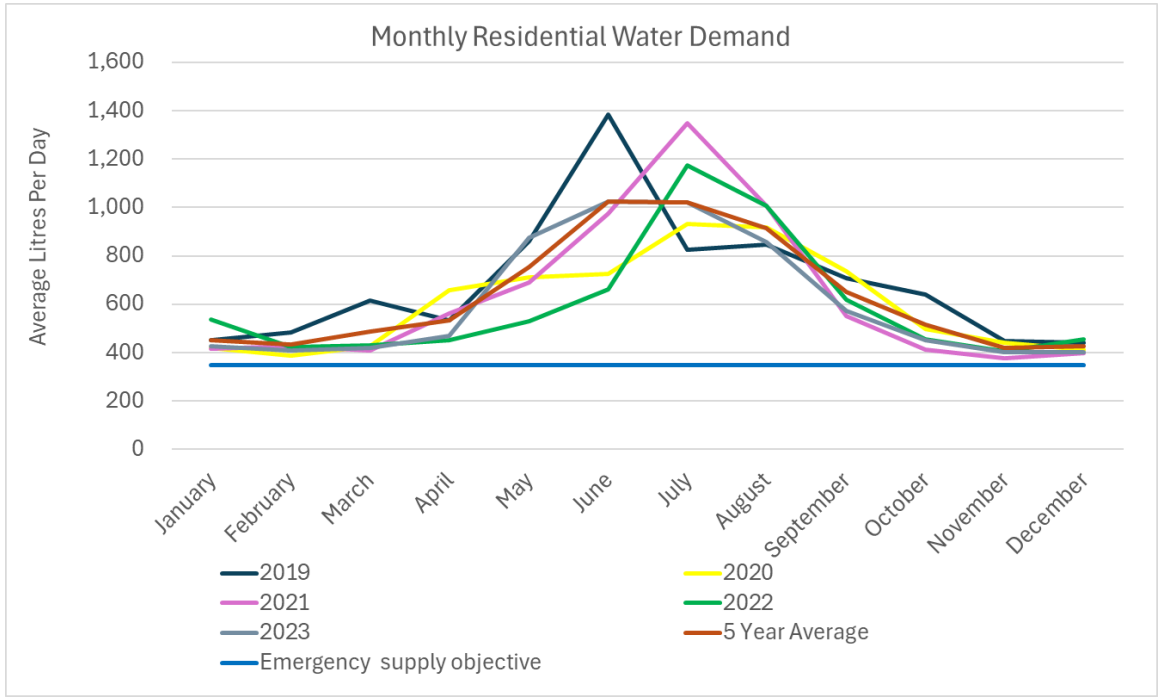
One or two (Chapman system) of the primary water sources for a water system can no longer be used (e.g., intake, well, treatment plant, key transmission mains).

Winter residential demand is on average just above 400 litres per day.

In emergency situations it should be reasonable to expect a lower demand from the community.

<u>Proposed objective:</u>

The emergency water supply capacity for the water systems is based on a residential demand of 350 litres per residential connection.



# Environmental Flow Needs

Environmental Flow Needs (EFN) requirements included in Water Licences for Chapman Creek and Church Road Wellfield

- Chapman Creek - 200 Litres per second
- Soames Creek - 15.5 and 22.7 Litres per second

<u>Proposed objective:</u>

The water supply capacity is adequate to ensure regulatory compliance related to the EFN requirements for Chapman Creek and Soames Creek.

# Scenarios to meet these objectives by 2035

## Active Water Supply Expansion Options:

- Emergency Siphon Systems
- EFN Optimization
- Leak Resolution
- Volumetric Billing
- Langdale Wellfield
- Lower Crown Raw Water Reservoir
- Hospital Wellfield – Phase 1 (up to 74 l/s)
- Hospital Wellfield – Phase 2 (up to max flow)

# Initial Scenario Analysis - Chapman Water System

1. Same Water Supply and Water Demand Model as used for analysis presented on January 13, 2025.
2. Based on current available information (including technical and financial).
3. Assumptions:
   - 10 - year outlook
   - volumetric billing and leak resolution average reduced demand by 20%
   - average 2% annual growth
   - considerable impacts of climate change (extended periods with very limited rain and high evaporation)
4. Each of the water supply sources still have several critical dependencies (e.g., permitting, electoral approval, funding confirmation, Land Use Agreements).

# Findings – Extended Dry Summer

1. The impact of volumetric billing and leak resolution could mitigate the impacts of growth.

2. The siphon systems at Edwards Lake and Chapman Lake are critical to maintain Chapman Creek EFN-requirements during an extended dry summer.

<u>If continued use of both siphon systems is approved:</u>

a) Only additional large water sources would provide sufficient capacity to meet the average demand during an extended dry summer (e.g., Langdale Wellfield, Hospital Wellfield, or Lower Crown Reservoir).

b) Further analysis is required to confirm if one additional source would also be sufficient in peak demand situations.

c) A second large additional water source could provide operational and financial benefits, if located in a different part of the water system as another new source.

# Findings – Extended Dry Summer (2)

<u>If continued use of syphon systems is NOT approved:</u>

a) Two additional large water sources are required to provide sufficient capacity to meet the average demand during an extended dry summer (e.g., Langdale Wellfield, Hospital Wellfield, or Lower Crown Reservoir).

b) Further analysis is required to confirm if a third additional supply source is required for peak demand situations.

c) There is almost no impacts of a potential reduction in EFN on water supply capacity.

# Findings – Emergency Water Supply

1. The Lower Crown Raw Water Reservoir's functionality as an emergency water supply source for Chapman Creek is dependent on whether the Chapman Creek Water Treatment Plant is also impacted by an emergency.

2. Only additional large water sources could provide sufficient capacity to meet demand during an emergency situation (e.g., Langdale Wellfield, Hospital Wellfield, or Lower Crown Reservoir).

3. A second large additional water source would provide the desired redundancy in the water system if located in a different part of the water system as other new source.

# Financial Implications

| | Development Costs | Operating Costs |
|---|---|---|
| **Siphon Systems** | - | Low |
| **EFN-Optimization** | low | low |
| **Leak Resolution** | Low | Low |
| **Volumetric Billing** | Low | Low |
| **Langdale Wellfield** | Moderate / High | High |
| **Lower Crown Raw Water Reservoir** | Low | High / Very high |
| **Hospital Wellfield – Phase 1** | Moderate | Low |
| **Hospital Wellfield – Phase 2** | Low | Low |

- Additional operating cost per cubic meter:
  i. Low $0.00 - $0.50
  ii. Moderate $0.50 - $1.00
  iii. High $1.00 - $1.50
  iv. Very High >$1.50

- Development costs for SCRD:
  i. Low $0M - $5M
  ii. Moderate $5M - $10M
  iii. High $10M - $15M
  iv. Very High $15M - $20M

# What could be next?

- Confirmation of Water Supply Objectives in 2025-2035 Water Strategy
- Advancing active water supply expansion projects to confirm their feasibility (including technical, permitting, funding, agreements with partners).
- More detailed analysis, including required water supply capacity to meet objectives (including during peak demand).
- Development of an SCRD Water Supply Capacity Strategy to guide development of Water Master Plans (infrastructure plan).

# QUESTIONS ?