

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, SEPTEMBER 25, 2024**

SUBJECT Demand Management Program Update

ISSUE SUMMARY

To provide an update to the Demand Management Program.

BACKGROUND

Demand management forms an integral component of the regional drinking water service. Current and future demand determines operational needs, capital planning and strategic focus on the long-term sustainability of providing an adequate, safe supply of drinking water for the region.

A knowledge of the current and future demand curve influences how the Capital Regional District (CRD) manages the overall service and what strategies it should use to inform the public and reach the CRD's demand targets and objectives.

The program aims to understand the "who, when, why and where" of drinking water use, as well as how much is and will be used (daily, seasonally, annually and long-term) through data analysis, trend analysis and projections. Beyond climate change impacts, the program also identifies and evaluates factors that influence demand projections (e.g., population growth, economic growth, residential housing stock/fixture replacement, tourism impacts, agricultural demand and consumer habits) and then applies a targeted water conservation strategy that can influence the demand curve over time. The region has a healthy supply of water and the overall message is focused on using that supply wisely. There is a Water Conservation Bylaw that provides guidance for increasing water restrictions, with enforcement; however, because of the CRD's stewardship and planning, the key tools for water conservation are through education and outreach.

There are multiple objectives for the Regional Drinking Water Service. Most of the region's drinking water is consumed by the residential or household sector. However, water remains an integral part of our community's objectives. Providing potable water for our growing tourism industry that is a major component of the regional economy, as well as supporting the regional agricultural sector and ensuring food security and economic opportunities, are also important for the region and our drinking water service. The CRD needs to manage the service to meet operational objectives while supporting these other regional objectives.

The CRD monitors the annual cycle of reservoir drawdown in the summer and replenishment through the winter months and plans accordingly for long-term demand and to ensure water quality. The daily cycle is also important. Peak instantaneous demand at the start of the day can impact operations at the treatment plants and through the distribution systems. Demand management will also support the strategic planning to ensure a sustainable water supply for our growing region. This vision is part of our Strategic Plan and, together with the Master Plan, will inform the management of the service in the coming decades.

Demand Trends

Total regional demand reached its lowest point in 2013 and has shown an increasing trend of an average annual increase of +2% since then (Appendix A). This indicates that population growth and increased water use in response to a changing climate, and possibly behaviour changes, are beginning to overtake ongoing water conservation efforts and advancements in water efficiency.

The declining trend in regional per capita demand, from a high of approximately 400 litres per capita per day in 2011 to a low of approximately 340 litres per capita per day in 2020, is consistent with observations from other jurisdictions. Early drivers to reduce demand were the introduction rebates for high-efficiency appliances and fixtures, new housing construction with efficient indoor technologies, and densification in housing, which resulted in a decrease in demand due to smaller yards and less irrigatable area. Recently, greater general awareness of water conservation has driven further behavioral changes, resulting in further reductions.

The 2023 regional per capita demand was approximately 340 litres per capita per day (lcpd), which compares favourably to similar utilities in the Pacific Northwest. Future work will focus on further refining usage trends from year to year across the region and creating projections based on regional growth patterns.

Demand data can be broken down by land-use type. Residential demand accounts for 68% of total regional water consumption, while Institutional, Commercial, and Industrial (ICI) demand accounts for 22%, agricultural demand is 3% and non-revenue water (i.e., losses and leaks) comprises approximately 7% of total regional demand. Municipal retail data shows demand patterns for different ICI sectors. The five consistently highest demand ICI sectors in 2023 (% of total annual demand) are: retail/general sales (6%), schools and research facilities (4%), agriculture (3%), hotels (2%) and recreation centres/hall/arenas (2%).

Regional residential-only per capita demand is 230 lcpd, while the average Canadian residential demand is 220 lcpd. One significant factor that contributes to the higher residential demand in the region is that spring starts earlier and summer extends longer than in many other areas, leading to greater outdoor water use compared to some other utilities. Climate change will likely further intensify this, as the summer seasons are expected to become hotter, drier and longer and lead to more demand in the future.

Outreach & Education

The CRD has focused on education and outreach in its water conservation strategy in recent years. Appendix B describes the outreach and education components of the Demand Management program. High water users and key sectors or businesses are identified for targeted outreach through analysis of the demand data. There are targeted programs currently underway to reduce residential indoor water use, educate the public on outdoor watering (irrigation) best practices, and reduce peak demands that often occur on the mornings of watering days. The CRD has leveraged print and digital materials, social media, as well as in-person engagement with irrigation and other water-related industries, and delivering workshops and information booths at fairs, public events and trade shows. In addition, the CRD has encouraged changing out once-through-cooling equipment through a rebate program and offered free water audits for ICI businesses with high volumes of water use.

Future initiatives for outreach and education include expansion of the leak detection and mitigation program, reducing water use in multi-family residential buildings, exploring incentives to encourage better water efficiencies, conducting market research into the knowledge and attitudes of residents in the region around water conservation, and engaging with the agricultural community to identify water use efficiencies.

NEXT STEPS

Staff will continue to refine the per capita consumption targets for the region based on current and future trends.

Staff will also enhance messaging around shifting the early-morning peak demand. There are significant impacts from the intensity and volume of flow at the treatment plant where the start of

the household day, together with initiating irrigation systems, puts tremendous pressure on the infrastructure, most noticeably at 4:00 am.

The 2025 workplan will also include formalizing the CRD’s efforts around demand management into a comprehensive Water Conservation Plan. This will involve documenting water conservation efforts being undertaken across the regional and municipal systems and will require coordination with municipal staff to compile this Plan.

IMPLICATIONS

Environmental & Climate Implications

Climate change will impact the regional water cycle, with a general trend of warmer temperatures, shorter, wetter and more intense winters and hotter, drier and longer summers. Growing seasons for agriculture will also be extended and result in increased demand. More extreme heat events and prolonged droughts have the potential to increase future demands by extending the need for seasonal irrigation. One challenge for the CRD is aligning the regional messages that there is a safe, sufficient supply of potable water versus the situation faced by the Gulf Islands and up-island with water supply, along with the provincial messages for drought conditions throughout Vancouver Island.

Alignment with Existing Plans & Strategies

Regional water demand information supports the CRD and municipalities in their strategic planning processes related to supply and distribution infrastructure upgrades, including Water Master Plans.

CONCLUSION

The demand management program conducts research and analysis in support of the overall regional drinking water service with the strategic goal to provide a long-term supply of safe drinking water. The program is integral to the delivery of the overall drinking water service by informing on current water usage patterns and trends and engaging the public on the value of the water to drive behavioral changes. Regional growth, climate change, as well as changing demographics and development patterns, are all drivers affecting water demand and, by extension, strategic, financial, capital and operational decisions. The CRD is committed to maintaining a strong focus on demand management to achieve long-term sustainability goals.

RECOMMENDATION

There is no recommendation. This report is for information only.

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ATTACHMENTS

- Appendix A: Demand Management Research & Planning
- Appendix B: Demand Management Outreach & Education