

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 18, 2026**

SUBJECT **Summary of Peak Demands and High Water Users – Operational Implications and Action Plan**

ISSUE SUMMARY

The regional drinking water service is managed to achieve several objectives, including operational stability. Peak demands are periods of the day when water demand achieve maximum levels. Excessive levels can present a challenge to water treatment and distribution infrastructure. This includes infrastructure damage (i.e., water hammer) compromised water treatment efficiency and/or reduced pressure for domestic and firefighting requirements. This information report highlights several strategies used to mitigate the risks from peak demand events.

BACKGROUND

The drivers of peak demands for the regional water system are primarily residential irrigation systems, public works irrigation systems, and high-water users across several industrial, commercial and institutional sectors. The regional system experiences elevated peak demands during the summer months, seen as periodic and short-lived events with incomplete disinfection, elevated turbidity, and pressure changes, that are impacting operations and introducing new, albeit minor, risk to water quality. Short duration peak demands put stress on both the treatment plant and the transmission system. Sudden changes in flow make it harder to manage chlorine and ammonia dosing. These same demand spikes create pressure swings in the transmission system, leading to unstable pressures and low pressure at the edges of the system. This limits operating flexibility and requires increased operator intervention to maintain service levels.

Water use data analysis indicates that residential irrigation use is the most significant cause of the peak demand across the region. A strong growing climate, civic pride, interest in gardening, and the advancement of automate sprinkler systems, all combine to increase water demand during our dry summer months. Data indicates 38% of residential properties in the capital region have sprinkler systems compared to a range of 5-20% of residences in comparable communities.

With this knowledge, staff have considered and adopted several steps to reduce peak demand (Appendix A). The first step included amendments to the Capital Regional District (CRD) Water Conservation Bylaw No. 4099. On March 20, 2024, the Commission amended the Water Conservation Bylaw to expand lawn watering times in an effort to reduce demand at the critical time of 4 am on Wednesdays. Research identified that many irrigation systems are programed to start at 4 am on the allowable watering days, which results in peak and instantaneous demands that occur in a very short time. For example, on June 16, 2025, which was the maximum peak day this year, demand increased from 233 MLD (million litres/day) to 314 MLD in 16 minutes.

The amendments also included changing the allowable day for public works irrigation from Wednesday to Tuesday during the bylaw period to again reduce pressure on the treatment and transmission systems, specifically on Wednesday mornings. Staff developed and implemented an outreach and education campaign to support the bylaw amendments. Extensive public education was implemented prior to and during the summer seasons in 2024 and 2025, an

overview of this outreach is included in Appendix B. As a result, there has been a slight shift in demand towards 2:00 am and away from 4:00 am, which is further detailed in Appendix A. This indicates that irrigation timers are being reprogrammed to move away from the critical 4:00 am start time. Instantaneous demand in 2025 was also slightly lower than in previous years as outlined in Appendix A. This reduction supports the conclusion that irrigation system start times are being spread out over the new bylaw period. However, the rate of change in demand around the top of the hour and the magnitude of peak demands are not sufficiently reduced to mitigate the risk to operations and water quality. Staff will continue to reevaluate the efficacy of the current approach in subsequent years and adjust as additional data is collected.

IMPLICATIONS

Institutional, Commercial and Industrial Implications

Staff have also investigated and developed strategies for high water users along with key sectors or businesses that have high water needs as part of their operations (Appendix B). For these users, staff developed targeted outreach and education for awareness around peak hour usage and the need to amend business practices. Further, approaches to encourage water conservation for users in the industrial, commercial, and institutional (ICI) sectors, including phasing out Once-Through Cooling, water use audits, and assessments, also complement efforts to modify when water is being consumed. These approaches have been voluntary to date given the current adequate quantity of water in the reservoirs, and the early stages of trying to modify behaviour changes. Initial results indicate modest results.

Environmental & Climate Implications

Climate change will impact the regional water cycle with a general trend of warmer temperatures, along with shorter, wetter and more intense winters and hotter, drier and longer summers. There is a direct correlation between demand and weather conditions which does lead to some variability in daily and seasonal demand. However, a growing regional population, along with changes in development form through land use planning, will also impact the annual demand trend.

Service Delivery Implications

The CRD continues to provide regional water of good quantity and quality. Staff are responding now to address risks that would likely increase with a growing demand for water; likely accelerated by climate change. Given the sufficient spread between current demand and supply, current water conservation efforts have been voluntary and are predominantly focused on education and outreach to address and promote water conservation efforts. The CRD implements staged restrictions (i.e., the annual Stage 1 water restrictions that define reasonable outdoor water use during the drier summer months) and is authorized to impose more severe restrictions, if necessary, through the regional Water Conservation Bylaw. Future results may alter strategies for water conservation tactics.

Financial Implications

The current demand management budget for 2026 is \$859,872 with \$409,758 dedicated to the residential sector and \$156,506 dedicated to the ICI sector. The outreach program for peak demand management is included in these figures.

Staff will continue to deliver the existing programs through an expanded outreach and education strategy in 2026 but within the current budget. The effectiveness of strategies to modify the daily demand curve in the summer will be evaluated annually following an adaptive management framework and adjusted based on data, progress reviews, community feedback, and cost-benefit analyses. Any additional resources will be determined through service planning and budget processes in future years. This framework aims to ensure the program remains responsive, resilient, and effective in supporting the strategic plan goals.

Alignment with Existing Plans & Strategies

A strong water conservation and demand management program supports the commitments made in the 2025 Regional Water Supply Strategic Plan, specifically the peak demand management initiative supports our commitments to provide high quality, safe drinkable water and provide an adequate, reliable long-term supply.

CONCLUSION

Summertime daily peak demands within the regional drinking water system are resulting in operational challenges and minor water quality risks. Staff will continue to implement an action plan based on voluntary education and outreach to inform residents, business owners, and property owners around these operational challenges seeking behaviour changes consistent with service objectives. Based on a two-year data set, staff have observed a small shift in residential consumption, especially around residential irrigation use. However, these reductions are not yet sufficient to mitigate risks, especially with increasing regional demand enhanced by population growth and climate change. Staff will reevaluate the efficacy of this approach in subsequent years and adjust the approach as required to ensure a reliable supply of high quality water that also meet current treatment and operational objectives.

RECOMMENDATION

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

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Luisa Jones, MBA, General Manager, Parks, Recreation & Environmental Services
Concurrence:	Alicia Fraser, P. Eng., General Manager, Infrastructure and Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENTS

Appendix A: Impact on Peak Demands Following Bylaw Amendment

Appendix B: Approach to Institutional, Commercial and Industrial High-Water Users