

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JULY 21, 2021**

SUBJECT **Water Conservation Initiative – Once-Through Cooling Project**

ISSUE SUMMARY

To report on the Demand Management Program's approach to Once-Through Cooling equipment use in the capital region.

BACKGROUND

Water conservation remains a key focus of the demand management program in support of delivering the regional drinking water service. Staff are currently addressing once-through cooling units (OTCs) with targeted outreach and education. These units, which transfer heat to a continuously running supply of cold water, account for approximately 6% of the water consumption in the region. Typical OTC appliances include air conditioners, refrigerators and ice machines. Best estimates indicate that approximately 150-200 units remain in the region and they are often used in small commercial cooling applications. Although they are inexpensive to install, the costs associated with constantly running water through the unit are often higher than readily available alternative cooling methods. At the June Regional Water Supply Commission meeting, staff were directed to report back on the jurisdictional questions and incentive funding considerations regarding the elimination of OTCs for the 2022 budget.

The Capital Regional District (CRD) has undertaken significant efforts to reduce and eliminate these units over the past several years. The CRD offered a rebate program from 2007-2017 that resulted in the replacement of 202 units and saved an estimated 746,000 m³ of potable water per year, or the equivalent average annual water consumption of 3,600 homes. The CRD distributed approximately \$262,000 in rebates during the program: a one-time cost of \$0.35/m³ of water saved annually.

In May 2016, the CRD Board approved a region-wide ban through the Water Conservation Bylaw (Bylaw No. 4099) prohibiting the use of OTC equipment, effective January 1, 2019. However, in 2017, staff identified changes in the new Building Act General Regulation that put the CRD's ban on OTCs in conflict with updates to the BC Building Code (BCBC). Those changes clarified that local governments did not have the authority to regulate building standards where they are the subject of the BCBC or any other provincial enactment. Staff are aware that the City of Vancouver has banned OTCs; this is possible due to the City of Vancouver's Building Bylaw and exemption from the BC Building Code.

CRD staff met with provincial staff (Ministry of Municipal Affairs and Housing) in February 2018 who indicated that one option available to local governments is to apply for a Ministerial waiver regarding a regional OTC ban. However, there was not enough time for that process to occur before the CRD's ban came into force. Staff decided to reengage with the Province within five years to pursue a potential OTC prohibition for the capital region. Concurrently, staff developed an enhanced outreach and education approach to identify OTC units and work with properties on the business case to replace these units.

Staff targeted hotels in 2019-2020 for free water use assessments that provided customized information and business cases for the replacement of inefficient fixtures, including OTC. To date, this approach has resulted in the removal of 28 OTC units, representing a savings of 10,700 m³/year. Follow-ups are ongoing, with another 32 identified units that remain, representing 35,000 m³/year. The program has identified grocery stores as the next target sector underway in 2021.

In addition to ongoing targeted assessments and outreach to building and property owners, staff have reengaged with the Province to determine options and next steps for a potential regional OTC ban.

ALTERNATIVES

Alternative 1

That staff be directed to:

1. Continue with the Regional Water Supply Demand Management Program Outreach, specifically the commercial sector based free water use assessments, that provide custom business cases for the replacement of inefficient fixtures, including once-through cooling equipment; and
2. Refrain from including a once-through cooling equipment replacement rebate program in the 2022-2026 budgets.

Alternative 2

That staff be directed to:

1. Continue with the Regional Water Supply Demand Management Program Outreach, specifically the commercial sector based free water use assessments, that provide custom business cases for the replacement of inefficient fixtures, including once-through cooling equipment; and
2. Include a once-through cooling equipment replacement rebate program in the 2022-2026 budgets, in the amount of \$40,000 per year.

IMPLICATIONS

Environmental Implications

Removal of OTC units from the region will lead to a significant reduction in the amount of water consumed. A typical 1-tonne (12,000 British Thermal Unit [BTU]) refrigeration-condensing unit uses 1,600 m³ of potable water/year. Depending on the ice machine, a water-cooled unit could use between 200 and 600 m³/year. Based on an estimate of 150 units, and assuming 30% of the estimated number of units remaining are coolers and the rest ice machines, OTC use could be approximately 110,000-120,000 m³/yr.

Financial Implications

The actual cost to a business to replace OTC equipment can vary widely depending on the size and types and conditions that may hinder direct replacement with equivalent air-cooled systems. For a business that both owns the equipment and pays its own water bill (i.e., not shared with other tenants), and if the replacement requires no additional engineering work, the payback would be approximately 1.5 years to replace a typical one tonne OTC refrigeration-condenser with an air-cooled unit. Payback for a simple ice machine replacement is three years, on average.

The previous rebate averaged at \$1,300/unit. That program gave the lesser of \$0.10/BTU/hour for condensing units and \$0.20/BTU/hour for ice machines to a maximum of \$5,000 per water account. A new rebate program, for example, at an average of \$1,000 per unit, would cost approximately \$150,000-\$200,000, spread over several years, not including annual staff and program costs.

If a new rebate program were initiated, funds would need to be identified and allocated in the 2022-2026 operational budgets. Currently, the program focuses on providing free water use assessments for targeted business sectors, outreach and education, and reengagement with provincial staff on a potential regional ban, and it is all incorporated within existing budgets.

Service Delivery Implications

The current regional water supply remains healthy and within typical annual patterns, as described in the Water Watch updates. Staff are overseeing the development of an updated forecasting model in 2021 that will assist in projecting demand and supply trends and support strategic planning for the regional service. Given our current understanding of the demand and supply curves for drinking water, staff have focused recent water conservation efforts on education and outreach rather than on enhanced restrictions and bylaw enforcement or financial incentives.

Environmental & Climate Implications

Reducing water use from OTC equipment is a cost-effective and proactive approach to water conservation that helps to mitigate the effects of climate change and regional growth by protecting the region's water supply and deferring the need for expansion by promoting water conservation and lower demand. For reference, these efforts also link to reduced wastewater conveyance volumes, as well as protecting future treatment capacity.

CONCLUSION

The reduction and elimination of once-through cooling units (OTCs) is a key component of the water conservation strategy for the regional water service. Efforts to date have reduced the number of units and resulted in significant water savings. Staff are currently using education and outreach to promote free water assessments that support the business case to replace these units, as well as pursuing a potential ban on these units with the provincial government. Current water demand and supply forecasts do not indicate any urgency to our water conservation efforts and staff recommend maintaining the current approach with respect to eliminating OTC units.

RECOMMENDATION

That staff be directed to:

1. Continue with the Regional Water Supply Demand Management Program Outreach, specifically the commercial sector based free water use assessments, that provide custom business cases for the replacement of inefficient fixtures, including once-through cooling equipment; and
2. Refrain from including a once-through cooling equipment replacement rebate program in the 2022-2026 budgets.

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