Township of Douro-Dummer

Report to Council
Re: Shell and Tube Chiller Replacement
Recreation Facilities-2026-03
From: Mike Mood
Date: April 21, 2026

Recommendation:
That the report Recreation Facilities-2026-03, dated April 21, 2026, regarding the Shell and Tube Chiller Replacement be received and that Council approve the replacement of the existing shell and tube refrigeration chiller at a cost of $185,000.00 plus taxes to be completed by CIMCO in conjunction with the current arena ice surface floor replacement project; and

That funding for the project be approved from the Township's Capital Reserve.

Overview:

The Township is currently undertaking an ice surface floor replacement project at the Douro Community Centre with initial estimates brought to Council of $2,400,000.00 with in-floor heating and $2,153,000.00 without in-floor heating.

The current project sits at $1,987,750.00 with the addition of new LED lighting over the ice surface. The addition of the Shell and Tube Chiller of $185,00.00 would bring the total project cost to $2,172,750.00. That is an additional $19,750.00 from initial estimates for the floor only options.

As part of the original project planning and grant application, replacement of the shell and tube refrigeration chiller and conversion from Calcium Chloride Brine to Ethylene Glycol was included as part of the overall modernization of the refrigeration system.

During final project tender review, the chiller replacement component was removed from the scope due to overall project cost constraints. As a result, the project proceeded with floor replacement while retaining the existing chiller, with the expectation of maximizing its remaining service life to approximately 2032, as identified in the Township's energy feasibility study and asset management replacement plan.

Given the age of the existing chiller and the original intent to convert to glycol, staff requested CIMCO Refrigeration complete an internal camera inspection on Wednesday April 8th, 2026, to assess the feasibility of converting the system using the existing equipment. Staff sought to mitigate the risk of a premature chiller failure similar to that experienced at the Warsaw Community Centre, where failure occurred at year 12 of service in 2021.

The internal camera scope conducted by CIMCO identified significant concerns with the existing shell and tube chiller, including:

- Multiple plugged circuits within the brine tube bundle
- Restricted flow through tubes due to sludge buildup
- Evidence of internal corrosion within the tubes
- Overall poor internal condition of the chiller

The existing chiller was manufactured in 2007, making it approximately 19 years old. TSSA (Technical Standards & Safety Authority) guidance indicates a typical service life of approximately 20 years for this type of equipment and Township's insurer requires replacement at 25 years.

Current operational risks include:

- increased risk of unplanned equipment failure
- deterioration in ice quality and reliability
- potential loss of ice and temporary arena closure
- disruption to user groups, rentals, and programming
- increased maintenance and emergency repair costs
- reduced energy efficiency and higher operating costs
- risk of emergency replacement at premium cost
- negative impact on asset management and capital planning
- reputational risk arising from service interruptions

CIMCO further advised that attempting to flush the existing chiller to convert to glycol carries risk, as residual calcium chloride may react with glycol and form chromium hydroxide sludge, which could negatively impact system performance and reliability.

Based on these findings, CIMCO provided two primary options:

Option 1 — Maintain Existing Chiller and Continue with Brine

- Attempt to flush the existing chiller and pump
- Remove glycol conversion from project scope
- Replace with new calcium chloride brine charge
- Continue operation using aging chiller

Considerations:

- Flushing has no guarantee of success
- Additional costs for flushing procedures
- Continued reliance on equipment nearing end-of-life
- Annual brine treatment required (~$2,000 per year)
- Inevitable need for chiller replacement in near future

Arena floors typically last approximately 40 years, while shell and tube chillers typically last approximately 20 - 25 years, meaning two chillers will be required over the life of the new floor.

Option 2 — Replace Chiller and Convert to Glycol

- Replace existing shell and tube chiller
- Proceed with glycol conversion as originally planned
- Align chiller lifecycle with new ice floor

Benefits:

- Reduced risk of equipment failure
- Elimination of annual brine treatment costs (~$2,000 annually)
- Estimated $40,000 savings over 20 years
- Estimated $80,000 savings over 40-year floor lifecycle
- Improved system reliability
- Avoid disruption to newly installed floor in future

CIMCO provided budget pricing of $185,000 plus applicable taxes for the chiller replacement, including removal, installation, piping modifications, insulation, and commissioning.

CIMCO also noted this is currently considered an emergency chiller replacement, with a unit available on a first-come, first-served basis. If approved, the estimated timeline includes:

- Approximately 6 weeks engineering and processing
- Approximately 4 weeks installation
- Estimated completion July–August timeframe
- System required operational for floor cure and pull-down process

If the new chiller is required to be built it turns into a 25-week timeline.

As part of the overall project, Gerr Construction was awarded the ice surface floor replacement contract, which included pre-approved cash allowances for refrigeration work to be completed by CIMCO Refrigeration. The refrigeration system components are interconnected and operate using the same fluid system, making compatibility, commissioning, and warranty coverage critical to overall system performance. Issuing a separate tender for the chiller replacement would introduce potential for competing warranties, contractual complications, and responsibility gaps between contractors, while also delaying project timelines and potentially impacting the required schedule for floor curing and system commissioning.

In accordance with the Township's Procurement Policy — Exceptions to Methods of Acquisition, staff recommend sole sourcing this work to CIMCO Refrigeration under the

provisions allowing non-competitive procurement "where compatibility with an existing product, facility or service is required", where "components or replacement parts for which there is no substitute", and where "work is required at a location where a contractor has already been secured through a tender process and it is considered beneficial and cost effective to extend the work". Given that Gerr Construction has already been awarded the primary project, and CIMCO Refrigeration was identified within the original tender as the refrigeration subcontractor, staff believe sole sourcing this work represents the most cost-effective, low-risk, and operationally sound approach.

Conclusion:

Replacement of the shell and tube chiller was originally included in the grant application and overall project planning. Due to competing budget priorities, this component was deferred with the expectation that the existing component could continue operating to its anticipated end-of-life.

However, recent inspection findings indicate the existing chiller is nearing end-of-life and presents significant operational risks.

With the ice surface floor currently being replaced, this remains the most efficient and cost-effective time to complete the chiller replacement. Proceeding now would align lifecycle infrastructure investments, reduce long-term operational costs, and minimize risk to newly installed infrastructure.

Staff recommend Council approve replacement of the chiller at this time.

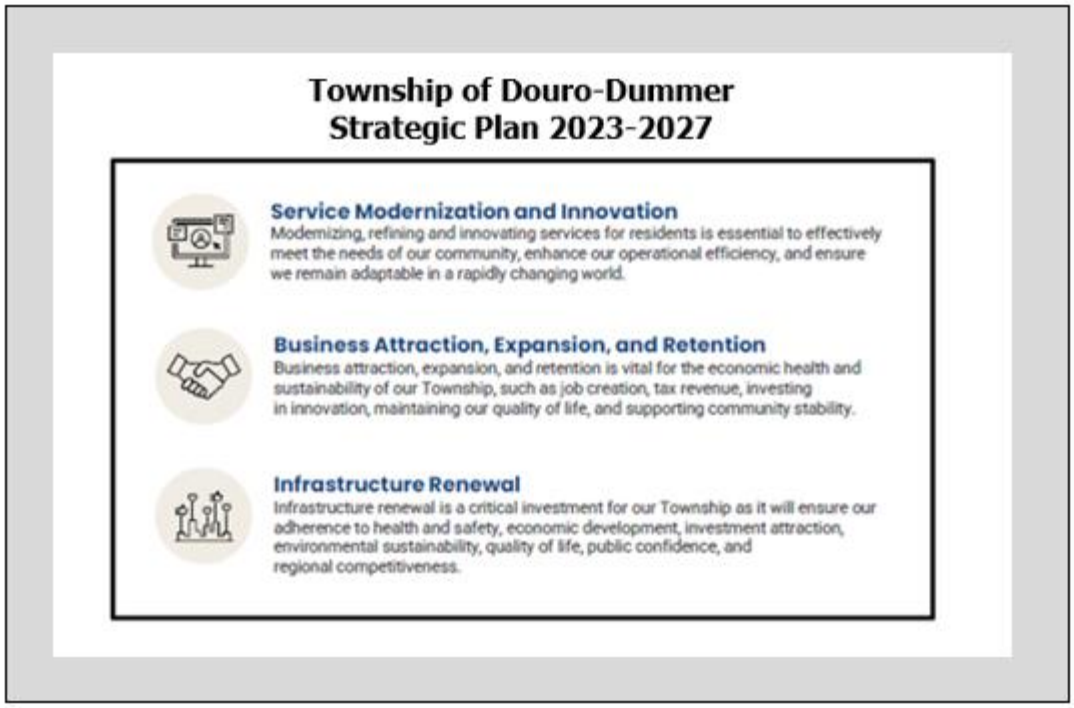
Financial Impact:

$185,000.00 plus applicable taxes

Additional Financial Considerations:

- Annual brine treatment savings (~$2,000 per year)
- Estimated $40,000 savings over 20-year chiller lifecycle
- Estimated $80,000 savings over 40-year floor lifecycle
- Reduced risk of emergency replacement costs
- Potential loss of ice season

Staff recommend funding the chiller replacement from the Township's Capital Reserve.


Township of Douro-Dummer
Strategic Plan 2023-2027
Service Modernization and Innovation
Modernizing, refining and innovating services for residents is essential to effectively meet the needs of our community, enhance our operational efficiency, and ensure we remain adaptable in a rapidly changing world.
Business Attraction, Expansion, and Retention
Business attraction, expansion, and retention is vital for the economic health and sustainability of our Township, such as job creation, tax revenue, investing in innovation, maintaining our quality of life, and supporting community stability.
Infrastructure Renewal
Infrastructure renewal is a critical investment for our Township as it will ensure our adherence to health and safety, economic development, investment attraction, environmental sustainability, quality of life, public confidence, and regional competitiveness.

Report Approval Details

Document Title:	Shell and Tube Chiller Replacement - Recreation Facilities-2026-03.docx
Attachments:	- Douro - Shell and Tube Chiller Replacement.pdf
Final Approval Date:	Apr 15, 2026

This report and all of its attachments were approved and signed as outlined below:

Martina Chait-Hartwig

Todd Davis