

DATE OF MEETING | DECEMBER 12, 2018 |

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PARKS AND RECREATION |

**SUBJECT | FRANK CRANE ARENA – AMMONIA CHILLER REPLACEMENT
AND REFRIGERATION PLANT UPGRADE**

OVERVIEW

Purpose of Report

To obtain Council approval for amending the current 2018– 2022 Financial Plan required to tender replacement of the Frank Crane Arena Ammonia Refrigeration Plant. |

Recommendation

That the Finance and Committee recommend that Council approve amending year two of the current 2018 – 2022 Financial Plan to include \$471,211 in additional funding from the Facility Development Reserve for a low-charge ammonia chiller system and refrigeration plant upgrades for Frank Crane Arena.

BACKGROUND

The Frank Crane Arena ammonia refrigeration plant, used to maintain the ice surface, has reached the end of its useful life.

Renewal of the existing (1,254 lbs. ammonia charge) plant was originally budgeted for replacement in 2018, using a similar ammonia charge system. In 2018, Staff issued a Request for Tender for replacing the ammonia chiller and upgrading the refrigeration plant, and received only one (1) submission. This tender was subsequently cancelled following further review of refrigeration system options and costs. It became evident that significant advances in system design now provide a low-charge (75 lbs. ammonia charge) option, which uses 94% less ammonia compared to traditional large-charge systems.

The low-charge ammonia refrigeration design offers additional benefits including:

- Higher energy efficiency and annual energy savings;
- Smaller footprint able to provide equivalent cooling capacity to traditional design;
- Less frequent maintenance; and,
- Containment of the entire ammonia charge within the Plant Mechanical Room, if there were a system leak, lowering risk significantly.

The low-charge system does have a higher initial cost; however, the energy and maintenance savings throughout the equipment lifecycle offset this cost. In contrast, a large charge system, like the existing one, would need to release a leak to atmosphere, increasing public safety risk. In consideration of this information, Staff are recommending to re-budget the project and request additional funding to install a low-charge (75 lbs. charge) ammonia refrigeration plant including modern controls and enhanced safety features.

The project is funded from the Facility Development Reserve Fund. This reserve fund is projected to have a closing balance of \$2.5 million at the end of 2018. It is available to fund operating and capital improvements to existing Parks, Recreation and Culture facilities.

Tendering the project in December would allow the lead time required to be able to install when the ice comes out in April, to ensure no interruption to arena programming while upgrades are conducted.

OPTIONS

1. That the Finance and Audit Committee recommend that Council approve amending year two of the current 2018 – 2022 Financial Plan to include \$471,211 additional funding from the Facility Development Reserve for a low-charge ammonia chiller system and refrigeration plant upgrades for Frank Crane Arena.
 - **Budget Implication:** request amending the current 2018 to 2022 Financial Plan to include \$471,211 additional funding for a low-charge system.
 - **Legal Implication:** Reducing public risk by reducing ammonia charge and containing any potential leak within the plant room.
 - **Policy Implication:** aligns with City's Energy Conservation and Management Policy, and Corporate Climate Change Plan towards continually reducing energy and emissions.
 - **Strategic Priorities Implication:** aligns with Strategic Energy Management Plan and Corporate Sustainability Strategy.

2. Direct Staff to return with alternative options.

SUMMARY POINTS

- The Ammonia Chiller system at Frank Crane Arena has reached end-of-life and requires replacement;
- A new low-charge ammonia refrigeration plant utilizes 94% less ammonia charge compared to the existing system and reduces public safety risk;
- The new system also has reduced maintenance compared to older designed systems;
- A low-charge system would see energy savings in \$4,200 in electricity costs and \$12,620 in water use per year, compared to the existing refrigeration system.

Submitted by:

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Concurrence by:

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