



INFORMATION REPORT

TO:	Mayor and Members General Issues Committee
COMMITTEE DATE:	December 7, 2018
SUBJECT/REPORT NO:	Capital Lifecycle Renewal – FirstOntario Centre Brine Lines and Ice Plant Safety (PW18091) (Ward 2)
WARD(S) AFFECTED:	Ward 2
PREPARED BY:	Anne McArthur (905) 546- 2424, Extension 1223 Robyn Ellis (905) 546-2424, Extension 2616
SUBMITTED BY:	Rom D'Angelo, C.E.T.; CFM Director, Energy, Fleet and Facilities Management Public Works Department
SIGNATURES:	

Council Direction:

At its meeting of April 26, 2017, City Council received the ninth Report of the General Issues Committee which approved Item 7.1 (b) as follows:

FirstOntario Centre (CM17008) (City Wide) (Item 7.1)

(b) That staff be directed to manage the lifecycle renewal of FirstOntario Centre with the funds in the Council approved capital budget and report back to the General Issues Committee if any critical unfunded capital needs arise in the future.

Information:

The primary purpose of this report PW18091 is to report back to Council unfunded capital needs for the life-cycle renewal of the FirstOntario Centre (FOC) Brine Lines and Ice Plant Safety upgrades and immediate risks of the current situation of running end-of-life assets to fail.

2019 priorities are anticipated to cost \$7.3M as follows:

1. Replace end-of-life brine piping system, including any related refrigeration system elements, and reduce rink size from Olympic to OHL for cost savings (\$6M);
2. Add a new 1250kW natural gas generator in order to maintain ice and safe operations in the event of a power failure (\$1.3M).

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Public Works staff uses the software called Asset Planner to proactively manage the lifespan of all building components, and track their replacement costs. Because the backlog of unfunded end-of-life facility assets across the portfolio exceeds \$216M and grows annually, it is not practical to show most end-of-life items within the 10 year capital budget.

Current capital funding levels are not sufficient for capital renewal of key systems at FOC, therefore staff must manage these systems as run-to-fail. It is not possible to sustain the facility condition at FOC, nor is it possible to sustain the condition for the Entertainment Facility Portfolio as a whole (FirstOntario Centre, FirstOntario Concert Hall and Hamilton Convention Centre). In order to sustain facility infrastructure conditions at the current level and help to prevent further deterioration, the Entertainment Facilities annual block funding would need to be increased significantly. The current Entertainment Facilities annual block funding, 0.26% (\$800,000 annually) of the whole Entertainment Facility Portfolio, would need to be increased significantly to reach 1.7% - 2.5% annually, which is the replacement reinvestment range determined by the Canadian Infrastructure Report Card (CIRC) for facilities. There is a shortfall between the capital funds required to address the infrastructure backlog. Based on the CIRC minimum industry standard the current block funding model for the Entertainment Facilities will need to be increased by at least 6.5 times its current contribution in order to be sustainable.

Report CM17008 - "First Ontario Centre" was presented at General Issues Committee on April 5th 2017 which referenced a study conducted by BBB Architects, labelled "First Ontario Centre Arena Renovation Study", which consist a partial-upgrade to the existing facility with remodelling of key areas with an estimated cost of \$68 million. This option would greatly extend the life of the existing facility in capital priorities at FOC, which can be expected over the next 10 years. Capital reinvestment has been deferred for all non-critical items to ensure responsible spending while the Strategic Partnerships and Revenue Generation Division continue to develop Terms of Reference to further investigate the future requirements for the facility. However, there is a requirement for some capital reinvestment to maintain FOC preventing unexpected shutdowns of the facility due to infrastructure failures.

In the meantime, the following are priority capital requirements to address immediate concerns over the next 5 years at FOC (estimated to exceed \$34M):

- 2019/2020: Brine Lines & Ice Plant Safety (\$7.3M);
- 2021: Roof & Structure Replacement (\$7M);
- 2022-2023: Mechanical, Electrical, Life Safety Systems & Security (\$15M)
 - Ex. Pumps, heating system repairs, fire protection, outlets, infrastructure, security system, life safety (including other generator replacement), communication/sound system upgrades & Wifi for patrons;
- 2024: AODA, Civil Works, Modernization & Wayfinding (\$5M)

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- Ex. Public washrooms, entrance doors, paint, wayfinding and other signage, remediation of walkway pavers and civil works causing heaving outside & dressing rooms.

It is important that lifecycle replacement and upgrades to the FOC proceed as follows:

1. End-of-life brine piping system replacement (with recurrent leaks);
2. Run-to-failure, public perception and reliability;
3. Maintain ice and mitigate risk in event of power failure;

HISTORICAL BACKGROUND

The FirstOntario Centre (previously Copsps Coliseum) was built and opened in 1985, as a sports and entertainment facility with a capacity of 19,000 for concerts and 17,400 for hockey. Many years have passed where funding has not been sufficient to keep up with all capital renewal requirements. In a single year, there are often insufficient funds to complete even a single capital infrastructure renewal project at FOC.

Furthermore, there is a Management Agreement between the City of Hamilton and Spectra (formerly Global Spectrum) to operate the FirstOntario Centre, in which the City of Hamilton is responsible for significant capital repairs & replacements at the facility.

In the past 5 years, during the first term of the agreement with Spectra, the City has made capital expenditures totalling \$4.36M including, but not limited to, elevator & escalators replacement design, partial roof & exterior door replacements and a washroom renovation.

In 2013, the ice plant was replaced with an Ammonia based chilling system; however brine lines were not replaced (due to budget limitations). In 2014 Asset Planner identified the brine lines at FOC as end-of-life. The City's Operations & Maintenance staff confirmed this by their experience of system failures. The brine line headers, for the existing in-slab piping, began to experience failures in 2016, causing loss of ethylene glycol, and have been patched to ensure functionality of the ice. Thus far it has been fortunate that the leaks in the lines were in an accessible location. In order to replace the brine lines, the concrete slab floor below the ice must be drilled out and replaced along with the brine lines embedded within the floor.

In 2017, the Strategic Partnerships and Revenue Generation Division brought Report CM17008 to Council who directed staff not to move forward with recommendations but to manage the lifecycle renewal of FOC with funds in the Council approved capital budget and report back to the General Issues Committee if any critical unfunded capital needs arise. Staff engaged independent consultants to review the existing conditions and best practices of the brine lines and ice plant safety.

It is important that lifecycle replacement and upgrades to the FOC proceed as follows:

1. End-Of-Life Brine Piping System Replacement

The brine lines that run from the old mechanical room up to and including the in-slab piping system are original (circa 1985). Ongoing leaks of ethylene glycol experienced in these lines continue to make the system unreliable. Leaks of ethylene glycol to the environment are considered spills which are regulated under the Environmental Protection Act resulting in a duty to report, clean up and restore the site to pre-spill conditions. Fortunately, thus far no leaks have resulted in unexpected facility closures.

The current rink at the FOC is designed to be convertible between an Olympic sized rink (100ft x 200ft) to an OHL sized rink (85ft x 200ft). The larger, Olympic size has only been used twice. Strasman Architects Inc, engaged to review the facility, recommended to remove the ability for the larger rink and proceed with an OHL size rink only. Reducing the rink size mitigates the risk of slips and falls, due to frost built up on the slab required for the Olympic size rink, and reduces costs for the required end-of-life replacement.

2. Run-to-Failure, Public Perception and Reliability

Further leak(s) of the ethylene glycol in the brine piping system will result in staff stopping the ice plant to drain the system and repair the leak. Should the City choose to not complete the life-cycle replacement failure will occur and affect the maintenance of ice surface operations and could lead to unexpected cancellations of events.

The cost of failure, leading to the close of FOC, will include a significant net operating loss and reduction in revenue incurred by the City. There will be additional cost impacts to the tenants, which are unknown at this time.

3. Maintain Ice and Mitigate Risk in the Event of Power Failure

Due to the 2017 ammonia leak from a refrigeration system workplace accident at the City of Fernie, BC, staff outsourced and conducted a due diligence review of the FOC refrigeration system and report on best practices. Recommendations included; upgrades to policy & procedures in addition to installing a new stand-by generator to maintain the ice surface and the operating range of a refrigeration system during a power failure. This mitigates the potential risk to life or health due to accidental release of liquid ammonia becoming airborne. The recommendations presented from the review aligned with emergency measures taken during a power outage in 2017, when Spectra brought in emergency generators to maintain the operating conditions of the ice plant. If a new generator is funded, Staff will proceed with a feasibility study to assess the incremental costs versus the financial benefits for the implementation peak load management of this generator.

Appendices and Schedules Attached

None.