REPORT
Parks & Recreation

Meeting: Special Council Meeting

Date: October 30, 2024

Report No.: REC-24-24

RESOLUTION NO:_____ BY-LAW NO: _____

Subject: Keeler Centre Refrigeration System Issues

Recommendation(s):

BE IT RESOLVED THAT Council receive Report REC-24-24 for information; and

THAT Council provide staff with direction.

Background:
The refrigeration plant at the Keeler Centre is a geothermal system consisting of six 13.5HP Kube units and is 1 of 3 known systems in the Province of Ontario. The system has a very difficult time keeping up with the demand in the fall and spring as the cooling capacity is insufficient. On average, the plant takes 25 days from the time it starts to get down to ice making temperature.

95% of arena refrigeration systems are ammonia plants. Ice making can begin 24-36 hours after starting the plant depending on numerous variables (compressor size, outside temperatures, humidity levels, etc.).

There have been several issues with the system in the past 5 years.

Year	Issue	Price
2019	Kube Failure	$20,000
2021	Kube Failure x2	$42,000
2022	Kube Failure	$32,000
2023	Kube Failure	$24,000

During the 2022 budget, $100,000 was approved to add a chiller to the system to increase cooling capacity. This project came back at $115,000 with another possible $15,000 required. It was not completed.

Previous Budget Asks

2022		
REC-04-22, Issue Paper	$100,000 To secure funding to add a chiller to the Keeler Centre refrigeration plant, funded by Arena reserves. **Report Overview** Two options were explored with Cramahe Townships refrigeration mechanic to increase the cooling capacity to the current system. Option one was to add two more Kube compressor units to the system. There was some concern with the additional load being added to the ground loop and it was determined that this was not the best solution. Option two was to add an air-cooled chiller to the system. This would increase cooling capacity by approximately 40% without added any load to the ground loop. Trained staff and the refrigeration mechanic agree that this is the best option. Failure to install this chiller could result in revenue loss due to the delay in installing the ice surface. It will also continue to restrict Cramahe Townships ability to extend the ice season.	Approved

2023		
REC-03-23, Issue Paper	$100,000 Arena Floor Transfer to Reserves, funded by Taxation. **Report Overview** The life expectancy of a refrigerated concrete arena floor is 30 years. This is due to the yearly freezing and thawing which results in shifting of the concrete over time. This shifting causes high spots, low spots, cracking and possible breaking of the refrigeration pipes in the concrete. The current estimated cost to replace the floor is $1,000,000.	Approved
REC-04-23, Issue Paper	$100,000 Refrigeration Upgrade Transfer to Reserve, funded by Taxation.	Approved

	Report Overview There have been several issues with the system in the past 3 years. In 2021, two of the units needed to be replaced at a cost of $42,000. During the 2022 budget, $100,000 was approved to add a chiller to the system in increase cooling capacity. This project came back at $115,000 with another possible $15,000 required. It was not completed. Currently two more Kube units have failed and could result in another $42,000 repair if required. The contractor that installed the system is located in Port Elgin and has since retired. It has been very difficult to locate another company that understands and knows how to repair the current system. Failure to investigate the replacement of the current refrigeration plant could result in more emergency repairs of the aging system.	

2024		
REC-01-24, Issue Paper	$100,000 Refrigeration Upgrade Transfer to reserves, funded by Taxation. **Report Overview** The refrigeration plant at the Keeler Centre is a geothermal system consisting of six 13.5HP Kubes. The system has a very difficult time keeping up with the demand in the fall and spring as the cooling capacity is insufficient. There have been several issues with the system in the past 4 years which has resulted in over $100,000 is repairs. These repairs included the replacement of 4 Kube units. These issues have also resulted in delayed ice installation and weeklong shutdowns of the Keeler Centre. This is a loss of revenue. Failure to investigate the replacement of the current refrigeration plant could result in more emergency repairs of the aging system.	Approved
REC-02-24, Issue Paper	$100,000 Arena Floor Transfer to Reserves, funded by Taxation. **Report Overview**	Denied

	The life expectancy of a refrigerated concrete arena floor is 30 years. This is due to the yearly freezing and thawing which results in shifting of the concrete over time. This shifting causes high spots, low spots, cracking and possible breaking of the refrigeration pipes in the concrete. The current estimated cost to replace the floor is $1,000,000. Failure to plan for this future repair could result in pushing the floor past its life expectancy and leaving the Township with a tough financial and political decision.	
REC-19-24 Regular Report	$12,500 plus HST Heat Pump **Report Overview** Heat pump 1 controls the bathrooms, staff offices and the referee's rooms and has been failing for the past 6 months. Refrigerants have been topped up and a sealer has been put through the system to find any leaks, but the unit continues to fail. This means we have no heating or cooling in these areas. To protect the Keeler Centre infrastructure and to ensure all patrons are comfortable, a new heat pump was ordered on August 13th, 2024, with an expected delivery and installation date of mid-October.	Supported

Current Issues:

We are currently having issues cooling the arena floor. Throughout the day of rentals, the floor slowly heats up and is heating up at a higher rate than normal. The temperature should then drop back down overnight ready for the next day. This has been happening at a slower than normal rate. This means we are lacking cooling capacity. Over the weekend, we had paint migrate up to the surface as it was so warm. This is unsafe for user groups, so we made the decision on October 28th to shut the building down for 2 days. All ice rentals were cancelled.

Lacking cooling capacity means that something in the system is not working the way it should and we're currently investigating possible issues. We have 2 Kube units that do not appear to be cooling like the other 4. We are also losing pressure in our secondary refrigerant lines which means there could be a possible leak in the system. This is currently being investigated.

Staff Comments / Options:

An immediate and long-term solution is required.

To solve the current lack of cooling capacity, a 30Ton chiller could be rented for an estimated price of $6000 per month and a $2000 install fee. This would increase our cooling capacity and allow us to keep proper ice temperatures again.

This would result in $14,000 being spent on the 2024 budget to get us through the months of November and December.

Additionally, $18,000 would be required for the months of January-March in the 2025 budget. If no long-term options are resolved, an additional $30,000 would be required for the months of August-December in the 2025 budget.

A long-term solution would be to replace the refrigeration system at the Keeler Centre. The system continues to fail year after year and parts to repair the system are becoming very difficult to obtain as the company no longer operates. Budget pricing to have an ammonia packaged system in a prefabricated room installed is $1.8 million.

Staff have applied for the max contribution of 1 million from the Community Sport & Recreation Infrastructure Fund, Stream 1: Repair and Rehabilitation, on October 29, 2024. The Community Sport and Recreation Infrastructure Fund (CSRIF) is a $200 million capital funding program delivered by the Ministry of Sport (the Ministry) to revitalize existing community sport and recreation infrastructure and support the construction of new facilities across the province.

Concluding Comments:

Council direction required.

Submitted by: _____
Chris Curwin, Manager of Parks, Recreation and Facilities

Reviewed by: _____
Holly Grant, CAO/Clerk