

Corporate Report

REPORT NUMBER 087-2025-Infrastructure & Operations-Parks & Open Spaces

DATE

PREPARED

March 14, 2025

FILE

MEETING DATE

April 7, 2025

SUBJECT

Outdoor Rink Options

RECOMMENDATION

WITH RESPECT to Report (087-2025-Infrastructure & Operations-Parks & Open Spaces), we recommend that Outstanding Item 2024-102-INOPS be removed from the Outstanding list;

AND THAT any necessary by-laws be presented to City Council for ratification.

LINK TO STRATEGIC PLAN

Under **Safety and well-being**, the following goals:

- Enhance safety and well-being at the community level through climate action and environmental design.
- Create and maintain strong neighbourhoods and Indigenized spaces where people connect and engage.

Under **Sustainability** the following goals:

- Take decisive action to respond to the climate emergency
- Plan and deliver cost-effective services

EXECUTIVE SUMMARY

At the request of Council on June 3, 2024, Administration has explored five different rink enhancement options to help provide resilience to the Outdoor Rink program in the face of climate change and warmer winters. The five options include the utilization of: **synthetic rink** material as an alternative to traditional ice; a **refrigeration system** to be able to create ice at higher ambient temperatures; a **covered structure** to provide shade over the rink surface; **concrete pads** to be a flat base for the creation of ice, or as a year-round inline skate surface alternative and **outdoor rink hubs** to create operational efficiencies.

Each option was explored for their advantages and disadvantages, cost, estimated life span, service level improvement as well as the feasibility and implications of adding the option to existing rink sites. This information will help to guide future capital and operating budget considerations for the winter outdoor rink program. It should be noted that the current asset management plan and capital budget projections do not include upgrades to rink sites and these would come out of existing Parks & Open Spaces budget envelopes.

The annual outdoor winter rink user counts for the 2024/2025 season are also included in this report for information, shown in Attachment A. Administration will be conducting analysis of this data as it relates to the Outdoor Rink Policy and will report back prior to the 2025/2026 outdoor rink season if any changes to the program are recommended. A fulsome review of the efficacy of the Outdoor Rink Policy and inclusion of any of the enhancement options identified in this report will be completed in coordination with the updated Recreation, Parks, and Facilities Master Plan, which is an item in the City Manager's Work Plan.

DISCUSSION

Currently the Parks & Open Spaces Division operates 31 outdoor winter rink sites across the City. Each year during the month of February rink user counts are completed to determine utilization rates. The 2025 user counts have been provided in Attachment A as part of the 5 year summary for each site.

Generally, over time we have experienced a decline in utilization rates in the program. Winter weather patterns in Thunder Bay have altered with climate change seeing a general trend to a warmer late fall/early winter making it more difficult to establish rink ice. Occasional mid-winter rain and warm spells have resulted in temporary mid-season closures, and intense sun and warmth in March can close rinks for the season before the March break. While the outdoor rink program is still currently viable compared to other municipalities further south, with continued climate change in the future there may be a time where this is no longer the case with our existing program and infrastructure.

The Parks & Open Spaces Division has investigated the following rink enhancements for Council's information at this time.

1) Synthetic Rinks:

- a. What they are:
 - Fabricated polymer panels that fit together to provide a flat surface that can be used with ice skates similar to real ice. There is a wide range of products and vary from self-lubricating to requiring a lubricant to be applied to the surface.

b. Advantages compared to traditional ice:

- *Longer use season:* can be used in all seasons, and generally not as weather dependent.
- *Less skilled maintenance required:* vacuuming, sweeping and washing replaces manual scraping and water flooding.
- *Cost-effective:* for lengthening the skating season compared to refrigeration.
- *Resistant to weather damage:* is resistant to damage from precipitation, UV exposure, and high temperatures.
- *Potential reduced environmental impact:* many products are made with recycled materials and there is no use of potable water to make ice.

c. Disadvantages compared to traditional ice:

- *Dulls blades:* can dull skate blades more quickly.
- *Potentially not as smooth:* more dependent on precise base and subgrade preparation.
- *Higher friction:* surface generally creates 10-15% more friction requiring more physical effort to skate on.
- *Higher impact on the body:* the landing impact is different.
- *Dirt and debris:* on the surface greatly reduces the quality of the surface and longevity.
- *Vandalism:* surface can be more prone to the effects of vandalism.
- *Realism:* differing opinions on how different the feel is when skating and the difficulty in performing some skills.

d. Cost:

- Estimated cost is approximately \$147,060 plus site preparation and surfacing that can add an additional \$100,000 to the cost.

e. Estimated Life Span:

- Varies by product, but generally most manufacturers for commercial grade are 10-14 years with some being double sided, doubling the life, with proper surface protection.

f. Service Level Improvement:

- The main benefit to City residents is that the facility can be used year-round extending the current approx. 3-month use of the surface for skating. However, if used year-round comes with year-round maintenance.

g. Feasibility & Implications:

- Must be installed on a hard stable surface such as asphalt or concrete with adequate granular subgrade to obtain a flat surface with little tolerance for deviation over the long term.

- Generally, for public use it is recommended to have a roofed structure to reduce debris and standing water or snow that will otherwise have to be removed from the surface to be useable.
- Having to maintain the surface dirt and debris free, benefits from having supervision during hours when open and access control when rink is closed.
- While having year-round ice surface increases the opportunity for skating, it decreases the opportunity for other forms of recreation such as court games like basketball and pickleball, or community gathering on the same surface.

2) Refrigerated Rinks:

a. What they are:

- A circulating cooling system consisting of a condenser, compressor, chiller and pump to move brine, glycol or carbon dioxide through piping to the rink floor and lower the rink surface temperature ideally to -4C or lower to allow water on the rink surface to freeze to make ice and be retained at air temperatures above 0C.

b. Types:

- Permanent
- Portable

c. Advantages compared to traditional ice:

- Can make ice up to +10C
- Can *extend season* in both fall and spring
- *Less dependent on weather* and seasonal variations
- Can result in *better and more consistent quality* of ice
- Can result in *reduced labour costs* for ice surface maintenance

d. Disadvantages compared to traditional ice:

- *High equipment and installation costs*
- *High electrical energy consumption and environmental impact*
- *Regular high-cost maintenance* of the cooling system
- *Safety of the system*, especially if it fails

e. Cost:

- For ice plant, mechanical/ electrical room and piping, as well as subgrade and asphalt or concrete surfacing ranging from \$1,200,000 to \$1,500,000

- f. Estimated Life Span:
 - Approximately 15 years or more with required regular maintenance for cooling system.

- g. Service Level Improvement:
 - Municipalities in southern Ontario using refrigeration are able to have ice typically from late November and typically closing in March. Systems seem more effective at the beginning of season with higher temperatures due to low sun angles, rather than late in the season where ice plants can have a hard time keeping ice near or below 0C due to high sun angles. Given this it might be possible in Thunder Bay to expect reliable ice mid-November to mid to late March.

- h. Feasibility & Implications:
 - Currently Thunder Bay has one refrigeration system unit that is in place at the Port Arthur's Landing rink. Its typical season is early to mid-December to mid to late March.
 - The high capital and maintenance cost together with the environmental footprint make this option less attractive on its own in a typical park setting. It may be a more viable option at a rink hub or specialty site.
 - Conceivably a refrigerated system could extend the season by 6 weeks in the fall to the beginning or middle of November, but by maybe only a few weeks in the spring due to the high sun angle by mid-March in our latitude.
 - The maximum benefit of a refrigerated system may be realized if coupled with a covered roof to provide shade. This would extend the springtime season.

3) Covered Rinks:

- a. What they are:
 - An open-air structure with a covered roof supported on posts that provides shelter over a concrete or asphalt surface below it.

- b. Types:
 - *Prefabricated/ modular engineered* systems made in standard sizes and assembled on site.
 - *Custom designed and engineered* and can be unique to a site.
 - Constructed out of *steel or wood* or a combination of.

c. Advantages compared to traditional ice:

- Provides *shade over the rink surface* that can extend the life of ice especially in the spring with high sun angles.
- Provides *protection to the rink surface* from rain and snow and other blowing debris reducing winter snow clearing maintenance and protecting the quality of the ice surface.
- Provides *opportunity for four-season use* with shelter from elements for private or community events.

d. Disadvantages compared to traditional ice:

- *Size of building/ overhangs must be much larger than the rink surface* to account for sun angles to be able to shade the entire surface which adds additional capital costs to a rink.
- *Orientation of ice surface and roof height* can also influence the above.
- *The open-air quality of skating outside can be limited.*
- *It can appear dark and less inviting during the day during low hours of sunshine.*
- *Can be a target of vandalism* and prone to roosting and nesting birds

e. Cost:

- Costs can vary widely with size and materials. The cost escalates exponentially as width of span increases.
- In 2016 a proposed cost estimate to cover the rink at North End Park with a Pre-Engineered package was \$320,000. It is estimated that this cost would be at least double or more in today's dollars. In 2024 the Municipality of Shuniah constructed a custom rink shade structure in the value of \$1,300,000.
- Site preparation and concrete or asphalt surfacing can add an additional \$100,000 to the cost.

f. Estimated Life Span:

- An estimated 50-60 years with regular maintenance.

g. Service Level Improvement:

- It can be expected that the covered roof structure has the potential to extend the skating season by two weeks in the spring due to the intensity of March sun. It is not expected that it would extend much time in the fall due to low sun intensity and angle.
- It can improve the quality of the ice during times of spring sunshine, and shelter from winter rain and wet snow.
- The structure provides shelter against weather elements in all seasons and can allow for a wider range of cultural and recreational activities in all seasons.

h. Feasibility & Implications:

- A well-designed covered structure may be a cost-effective way to extend the winter skating season, but also at the same time increase the ability to have outdoor activities year-round that are covered from the elements.
- The covered rink model could be utilized at rink hub sites, which also function as multi-activity recreation hubs, such as one in the north side of the City at North End Park and one in the south end of the City at Northwood Playfield where a covered structure could help augment and support additional activities in both parks.

4) Concrete Pads:

a. What they are:

- A concrete slab with a smooth finished surface, generally graded at 1% or less for drainage and typically flush with surrounding landscape.

b. Types:

- *Seasonally flooded for winter ice skating rink use.*
- *Seasonally cleared for year-round inline skating use.*

c. Advantages compared to traditional ice:

- *Provides a smooth flat impermeable surface at consistent low slope to allow the creation of consistent ice in quick time.*
- *The white/grey colour of concrete is more reflective than asphalt or bare ground and reduces surface heat absorption from the sun.*
- *Concrete with mesh or rebar resists surface deformation due to freeze thaw compared to asphalt or bare ground.*
- *Concrete generally has a longer life span than asphalt or bare ground.*
- *When used as a winter ice surface, the surface is useable immediately after ice has melted for other court and recreational uses.*
- *Rink boards and lights can easily be permanently mounted to the concrete surface reducing seasonal take down and set up time and cost.*
- *When cleared on a regular basis can provide a year-round surface for inline skating or other court activities.*
- *Poor winters with lack of freezing temperatures or difficult conditions for making ice would have little effect on in-line skating year-round.*

d. Disadvantages compared to traditional ice:

- Concrete is a *totally impervious surface*, and as a result increases stormwater run-off quantity.
- The production of concrete *creates greenhouse gas emissions*.
- When wet, *smooth concrete can become slippery* especially with the presence of fine particles of debris.
- In shade or prolonged moist conditions smooth concrete can be *prone to mold and algae growth* that can make the surface slippery over time and requires cleaning.
- For in-line skating year-round *snow in wintertime would have to be cleared immediately after snowfall* to prevent a build-up of hard pack on the surface.
- Any *melting on the surface could cause patches of ice* that would provide a significant hazard to inline skating or other court use in winter. The use of de-icing salts has the potential to damage the surface.
- Generally, *the wheel material of in-line skates becomes very hard* in colder conditions reducing enjoyment and safety of use on a hard concrete surface.

e. Cost:

- Including concrete pad and typical granular base it is expected to be approximately \$100,000.

f. Estimated Life Span:

- An estimated 30-50 years with regular maintenance.

g. Service Level Improvement:

- Adding a concrete pad to a park site can increase the usability of a site by providing the opportunity for additional recreational activities in all seasons whether ice is made on the surface for ice skating, or it is kept free and clear for inline skating.

h. Feasibility & Implications:

- Concrete pads have been installed at Dease Park and North Neebing Park and are being used for permanent winter rinks, as well as pickleball and basketball courts during non-ice seasons.
- Concrete pads require a capital cost outlay, but when done with other park renewals have been a cost-effective strategy to make better year-round use of a winter rink area and has removed rink board setup and take down cost and labour.
- Concrete pads for year-round in line skating use as an alternative to winter ice skating would require a very high level of maintenance to keep the concrete surface ice and snow free through the winter months. It is unlikely this would be less maintenance than maintaining winter ice. There is also some

uncertainty if there would be enough demand in the community to justify the required maintenance costs.

5) Outdoor Rink Hubs:

a. What they are:

- A grouping of winter ice surfaces, generally with a minimum of two full sized boarded and lit rinks and an un-boarded skating pond. They commonly include heated change facilities and washrooms, a source of water for flooding, storage for maintenance equipment, parking and supervision 7 days per week from 1pm to 9pm. They are associated with a community centre or other heated facility.

b. Types:

- Currently in the City the following sites are Outdoor Rink Hubs: *West Thunder Park, Northwood Park, North End Park and Carrick Park.*

c. Advantages compared to traditional one pad ice sites:

- *A rink attendant provides oversight and maintenance every day resulting in better quality of ice more consistently.*
- *Greater maintenance efficiency* having more rinks adjacent to each other reducing travel time between rinks.
- *Allows for variable time flooding* so that one rink is generally always in service.
- *Allows for different user groups* to skate at the same time with reduced conflict
- *Allows for amenities to be provided* for users cost effectively.
- *Allows for a greater number of users*, which may encourage more families to attend the site

d. Disadvantages compared to traditional one pad ice sites:

- *Requires large physical area.*
- *Some users may feel the area is too busy.*
- *Requires staff to be on site* even when there is no or little use on the rinks.

e. Cost:

- Generally, there is no additional capital cost to clustering ice surfaces, provided there are existing amenity facilities that can be utilized.
- The outdoor rink hub generally requires supervision and thus a full time FTE during the time the rink is open.

- For a new rink building, if no other opportunity exists on a site the cost could be approx. \$250,000
- f. Estimated Life Span:
- It's assumed there would be no change in life span of components compared to single rink sites
- g. Service Level Improvement:
- It is estimated that focusing on fewer rink sites across the City and focusing more on the 4 existing rink hubs may improve the consistent quality of ice.
 - It would provide a consistent level of service at all sites.
 - It would reduce the number of walk-to neighbourhood rinks, which could in turn impact those residents that do not have access to a vehicle or just wish to stay in their neighbourhood.
- h. Feasibility & Implications:
- A hub system for rinks may be an option going forward, but Parks & Open Spaces will first need to articulate the number of such sites across the City that is appropriate and sustainable, where these will be, and the costs associated with it.
 - This may require the closure of some rinks that would be unpopular with some nearby neighbourhood residents

LINK TO EARTHCARE SUSTAINABILITY PLAN

Under **Climate Adaptation Goal:** Build a community that reduces the risk of climate change through available opportunities and initiatives.

FINANCIAL IMPLICATION

There are no direct financial implications as this Report is for information only. Currently there is no dedicated or allocated Capital Budget available to provide additional infrastructure to extend the Outdoor Rink season.

CONCLUSION

Administration explored five different rink enhancement options to help provide resilience to the Outdoor Rink program in the face of climate change and warming winters. Each option was explored for advantages and disadvantages, cost, estimated life span, service level improvement as well as the feasibility and implications of adding to existing rink sites. This information will help to guide capital and operating budget considerations for the winter outdoor rink program, as well as the development of the

updated Recreation, Parks, and Facilities Master Plan as part of the City Manager's Work Plan.

BACKGROUND

At the June 3, 2024 Committee of the Whole meeting, Council directed by resolution that Administration investigate the various options outlined in this Report relative to Outdoor Rinks. The resolution requested Administration report back on or before December 16, 2024.

At the December 9, 2024 Committee of the Whole meeting, Council approved a motion that the report back date for Outdoor Rink Options be deferred from December 16, 2024 to April 7, 2025.

REFERENCE MATERIAL ATTACHED

Corporate Report 087-2025 Attachment A - Outdoor Rinks 2024-2025 Usage Statistics

REPORT PREPARED BY

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REPORT SIGNED AND VERIFIED BY

Kayla Dixon, Commissioner Infrastructure & Operations

March 27, 2025