



What is LEED®?

The Leadership in Energy and Environmental Design (LEED®) program is a voluntary green building rating system with international recognition. It allows for different buildings to measure and compare their level of 'sustainability', and addresses factors such as energy and water use, construction materials, and the indoor environment. Since its beginnings in 1998 under the U.S. Green Building Council, LEED has evolved to encompass a variety of building types across a variety of conditions. The Canadian Green Building Council (CaGBC) currently oversees the Canadian-specific versions of LEED. As of 2015, there are over 2,000 certified projects across Canada, ranging from retail shops to schools to hospitals to institutional buildings.

To achieve LEED certification, projects like the Paradise Double Ice Complex must meet 8 mandatory prerequisites, then select additional measures from 110 different sustainability initiatives and thresholds. The level of LEED depends on the number of initiatives and thresholds (or 'credits') achieved, as follows:

LEVEL OF CERTIFICATION	NUMBER OF CREDITS REQUIRED (OUT OF 110)
Certified	40-49
Silver	50-59
Gold	60-79
Platinum	80+

After construction is complete, the project documents, including drawings, specifications, narratives, and calculations, are all scrutinized for compliance by an independent third party. Final certification is only awarded after this third party is satisfied that the requirements have been met.

The following describes some of the sustainability initiatives implemented at the Arena to help achieve LEED certification.

Construction Activity Pollution Prevention (SSp1)

This is one of the eight mandatory prerequisites that all LEED projects need to follow. During construction, strategies must be put into place to limit erosion and sedimentation due to dust, wind, and vehicle traffic. Anyone that's ever driven by an active construction site in the driest part of the year, and seen the amount of dust blowing across the roadway, can understand the importance of this prerequisite!



The Paradise Double Ice Complex implemented several strategies to minimize the impact of construction, including filtering runoff prior to discharge, constructing temporary roadways using coarse stone to limit vehicle runoff, and compacting stockpiles to minimize dust.

Site Selection (SSc1)

The intent behind this credit is to limit development and sprawl, and reward projects that select appropriate, and in most cases previously developed, areas of land for their building. To comply with this requirement, the site had to comply with the following criteria:

- Could not be prime farmland
- Could not be habitat for endangered species
- Could not be within a prescribed distance of a water body, wetland, or flood plain
- Could not have previously been parkland

Building on previously developed land minimizes the Arena's environmental footprint.

Alternative Transportation (SSc4)

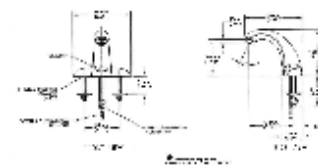
Several strategies have been implemented on this site to encourage alternative forms of transportation, including encouraging carpooling for guests and families, and providing charging infrastructure for plug-in vehicles. These designated spaces have been located in preferred locations directly outside the building entrance to encourage use.



Did you know there are over 10 different makes and models of electric or plug-in hybrid vehicles (PHEV) currently available in Canada? Or that there are over 30 models of the more conventional gas electric hybrid vehicles available in Canada? Visit the CAA website to learn more about PHEV and EV vehicles, as well as find the charging stations nearest you!

Indoor Water Use Reduction (WEp1 and WEc3)

To achieve any level of LEED certification, every project must meet a minimum level of water efficiency when it comes to plumbing fixtures, specifically 20% more efficient than a 'conventional' building. Not stopping there, this category further rewards projects that exceed this level of performance, with thresholds at 30%, 35%, and 40% more efficient than a 'conventional' building.



For the Double Ice Complex, we've installed low-flow showers for the athletes and visitors, low-flow lavatory sinks that automatically shut off, as well as low-flow kitchen faucets for staff use. When everything is added together, including toilets and urinals, we're predicting a 35% savings over a conventional building!

Water Efficient Landscaping (WEc1)

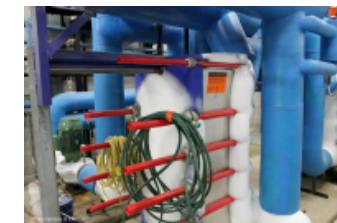
Ever pass by a neatly landscaped site, only to see the irrigation system watering the parking lots or sidewalks? Ever wonder whether the irrigation system still waters just before or after it rains? Ever

wonder why they needed an irrigation system at all? This credit rewards projects that take these questions into account.

For this project, the landscape was designed using plantings and seeds that are native to the region, or that have adapted to the climate and rainfall in Paradise. We've provided a sufficient volume of soil to allow the landscaping to grow properly – no mini-islands or planting beds here! – and are carefully monitoring it for the next few seasons. Thanks to these design considerations, the project does not need a permanently-installed irrigation system, and therefore uses a lot less water!



Minimum and Optimal Energy Performance (EAp2 and EAc1)



Ever notice that it gets really warm behind your refrigerator at home? That's because as the refrigerator cools everything on the inside, it rejects the waste heat out the back! The same science and technology used in your refrigerator at home is used to make ice and keep the rinks frozen here at the Double Ice Complex. Only instead of rejecting the waste heat, we reuse it in several ways.

Behind the scenes, there's a bunch of equipment that takes the heat from the ice-making equipment, and uses it to warm up the air in other spaces, such as the changerooms and lobby! The waste heat is also used to help warm up water for the washrooms and other sinks! In fact, we're reusing so much waste heat and energy that our energy footprint is less than half of a more 'conventional' ice arena!

Refrigerant Management (EAp3 and EAc4)

Refrigerants are liquids that are used to move heat around, absorbing heat at low temperatures, and rejecting heat at higher temperatures. They can be found in appliances, air conditioners, and ice rinks, and anywhere else that needs cooling. But they can be dangerous for the environment! If they ever leak out, some refrigerants could directly contribute to global warming, while others could deplete the ozone layer, while others might even do both! There is, however, a better option.

For the Double Ice Complex, the refrigeration systems have been specially designed to use a natural refrigerant, ammonia, instead of more damaging refrigerants, such as hydrochlorofluorocarbons and hydrofluorocarbons (try saying that three times fast!). While it's still dangerous, and needs to be handled carefully, ammonia is less harmful than the other options. If it accidentally leaks out during maintenance or when equipment needs to be replaced, it won't harm the ozone layer, and won't contribute to global warming.





Recycled and Regional Materials (MRc4 and MRc5)

During design and construction, materials were selected based on the amount of recycled content, as well as whether they were manufactured locally. Examples of material with recycled content include the steel structure, reinforcing steel in the concrete, interior drywall, and insulation. Examples of material that were manufactured locally include concrete, concrete block, asphalt, and granular stone. The quantity of these materials was tracked throughout construction to ensure that there was sufficient environmental and economic benefit to achieve these LEED credits.



Did you know that steel has one of the highest recycling rates in North America? According to the Steel Recycling Institute, more steel is recycled annually than paper, plastic, aluminum, and glass combined!

Low Emitting Materials (EQc4)

Volatile Organic Compounds, or VOCs, are compounds that vaporize at normal room temperatures, and can have a detrimental effect on respiratory health. They commonly are present in paints, adhesives, and other liquid products, as well as in furniture and certain types of wood. For this project, all liquid products, including paints, adhesives, sealants, and coatings were selected to comply with the most stringent industry standards governing VOC concentration. The use of these products was carefully monitored during construction to ensure that there were no unacceptable substitutions.



Did you know that certain VOCs continue to emit toxic fumes for months or even years after being installed? This gradual off-gassing has been linked to respiratory illnesses and other negative health impacts. Selecting low-VOC alternatives, which are increasingly available, can significantly improve the quality of the indoor environment.

Indoor Chemical and Pollutant Source Control (IEQc5)



This credit rewards projects that install measures to limit the introduction and concentration of chemicals and pollutants within the building. When you entered this building, you passed over one of the more visible examples of these types of measures. The main entrance is equipped with a permanent grille and temporary mats to collect sand, salt, oil, and any other contaminants that would have been introduced into the building. Other not-so-obvious measures include some of the highest-rated filtration media on all ventilation equipment (to filter out dust and pollen), as well as dedicated drainage and exhaust for rooms that may contain chemicals or other pollutants.

Electric Ice Maintenance Equipment



Studies have shown that the largest contributor to poor indoor air quality in enclosed ice arenas are the ice resurfacer and the edger. Typically fuel-fired, these two pieces of equipment emit carbon monoxide (CO), nitrogen dioxide (NO₂), and particulate matter (PM), which can negatively contribute to health issues. At the Double Ice Complex, all ice maintenance equipment is electric, helping to ensure a high quality indoor environment for the community.

Scent Free and Green Cleaning Policy

Perfumes, colognes, shampoos, and cleaning products can contain chemicals that negatively affect human health, especially for people with asthma or pre-existing lung conditions. Several organizations, including the Canadian Lung Association as well as the Canadian Centre for Occupational Health and Safety advocate for a scent-free workplace. In the Paradise Double Ice Complex, visitors and employees are encouraged to limit the use of scented products in order to maintain a healthy indoor environment for everyone.



Notice an irritating scented product? The Town welcomes any feedback as an opportunity for improvement. Log on to the Town's eServices website and provide your feedback directly to staff.

What's Next?

Want to learn more about these and other sustainability strategies? The Town conducts regular tours for community members. Contact us either through the Town's website, or through the eServices portal.

Thanks to the hard work of the designers, builders, and Town staff, we are hoping to achieve official certification under the LEED program by summer 2016! This would make the Paradise Double Ice Complex one of only a handful of buildings in the province to achieve this sustainability milestone, and further showcase our commitment to the environment.

Additionally, the LEED system is continuously evolving, with a new rating system effective fall 2016. This new rating system features additional sustainability metrics and initiatives, such as life cycle analysis, connectivity and walkability, and a more rigorous focus on energy and water conservation, that continue to advance environmental stewardship.

To learn more about the current and future versions of LEED, or find out more about LEED projects in the province, visit the Canadian Green Building Council's website, at www.cagbc.org.

PARADISE DOUBLE ICE COMPLEX

The Leadership in Energy and Environmental Design Program

