

AIR CANADA CENTRE, HOME OF THE TORONTO MAPLE LEAFS AND RAPTORS



ARENA STATS

Location: Toronto, Ontario

Began Construction: March 12, 1997

Opened: February 19, 1999

Seating Capacity: 19,800 (20,511 with standing room)

Owner: Maple Leaf Sports & Entertainment

Operator: Maple Leaf Sports & Entertainment

Venue Uses: NBA, NHL, and NLL games, concerts, political conventions

Construction Cost: \$342 million (in 2012 dollars)

AIR CANADA CENTRE GREENING STORY: MOTIVATIONS, CHALLENGES AND LESSONS FROM THE FIELD

One of the busiest arenas in the world, Air Canada Centre holds an average of 180 ticketed events with 2.75 million attendees coming through the building each year. Beginning in 2008, Maple Leaf Sports & Entertainment (MLSE), owners of the Toronto Maple Leafs, the Toronto Raptors, and Air Canada Centre, launched “Team Up Green,” a five-year plan that set environmental goals for the arena. The sustainability plan specifically set goals to reduce energy use by 30 percent, reduce the arena’s carbon footprint by 30 percent, and divert 95 percent of waste from landfills by 2013—and they are close to meeting these goals. The arena has already met their carbon reduction goal two years early and they are diverting 74 percent of their waste from landfills. Energy use at the facility has also been reduced considerably, though the arena is waiting for an external audit to confirm this measurement.

WHY GO GREEN?

When Bryan Leslie, director of building operations and Team Up Green, joined the operations team at Air Canada Centre in 2007, senior management challenged him to create a viable environmental program at the arena. “I started with the company in 2007, and before I arrived there were not many environmental initiatives in place, but there was a lot of interest,” says Leslie. “I had experience with greening working for the federal government at a military base where we practiced demand response, deconstruction instead of demolishing, and energy-efficient lighting retrofits.”

“As for the kick-off of Team Up Green, it really was senior management that saw the need to investigate the environmental possibilities of the facility,” Leslie continues. “They had a good handle on our league’s environmental development, and wanted to be at the forefront of this

“WE TOOK A PRACTICAL LOOK AT THE CHALLENGE AND STARTED WITH THE MOST LOGICAL PROCESS—CAN WE OPERATE MORE EFFICIENTLY? CAN WE MODIFY THE WAY WE DO THINGS TO MAKE THEM MORE EFFICIENT?” explains Bryan Leslie, director of building operations.

important initiative,” Leslie explains. The MLSE Team Up Green mission statement reflects this objective: “Maple Leaf Sports & Entertainment is committed to being a responsible corporate citizen and leader in the community. To this end, it has created a committee dedicated to reducing the company’s and its venues’ environmental footprints.”¹

WHERE TO START?

“The lucky part, and the great news about the green program, is that our board of directors and senior management were engaged and interested at the very beginning,” says Leslie. “They told me that if we could develop an environmental plan that met our objectives, we could have the funding to get the job done. Our designed capital plan was \$5 million over 5 years.”

Air Canada Centre’s sustainability program began with a comprehensive plan. Over the course of 2007 Leslie and his operations team set objectives, developed a budget, and worked with senior management to determine reasonable and feasible goals to strive for. “We thought, what’s reasonable for an arena whose main focus is sporting and concerts in terms of waste diversion and reducing utility costs?” says Leslie. “We had a corporate partner—a

STANDOUT GREENING ACCOMPLISHMENTS

- ★ Reduced carbon emissions by 30 percent from 2007 to 2011
- ★ Use deep-lake water cooling, which eliminates the need for air-conditioning compressors
- ★ Use steam produced centrally instead of using many boilers
- ★ Upgraded lighting to LED and T8 lighting throughout the venue and office tower, estimated to reduce energy use by 1.34 million kWh
- ★ Installed occupancy sensors and lighting controls on office floors to reduce light levels
- ★ Employ overnight temperature set back
- ★ Installed variable speed drives on pumps and fans
- ★ Installing high-efficiency HVAC system
- ★ Updated refrigerators to EnergyStar-rated models
- ★ Proactive internal program aimed at reducing electricity usage and plug load in office tower
- ★ Reduced landfilled waste by 74 percent from 2007 benchmark through a combination of source reduction, recycling and composting, averaging 55 to 60 percent monthly diversion rates in 2012
- ★ Use tri-sorters to separate organics and recyclables
- ★ Divert 500 metric tons of organic materials annually, which is composted at a local farm and resold as soil
- ★ Purchase post-consumer recycled paper products
- ★ Sell or donate old furniture instead of sending to landfills
- ★ Donate approximately 15,000 pounds of unused food to Second Harvest Food Bank annually
- ★ Reduce packaging where possible and switched from cardboard box delivery to reusable plastic containers
- ★ Recycle fryer oil for conversion to biofuel
- ★ Shifting to bio-based/organic packaging materials
- ★ Use environmentally friendly cleaning supplies and chemicals, including Green Seal and Eco Logo certified products
- ★ Installed sensors and aerators on faucets
- ★ Filter ice-making water through reverse osmosis, instead of treating chemically
- ★ Treat the water in ice-making plant with “anode technology” instead of with chemicals

local utility, Direct Energy—that also saw a market for environmental planning. They did a lot of background research in conjunction with us, measuring our utility usage, how our waste stream was being managed, etc. We had a lot of brainstorming sessions where we bounced around ideas about what is reasonable, what is sensible. We tried to build a matrix of ideas for the entire five years, starting with what’s practical and moving up from there.”

In order to formulate these sustainability goals, the operations team needed to collect baseline data about the arena’s operations in order to track their current consumption. “To benchmark our processes, we conducted a survey of all systems in the building, auditing the waste stream, utilities, and general operational processes using an outside consultant to ensure that we could create goals that were attainable and measurable,” Leslie explains.

As a result, three main goals were officially set as organizational objectives in 2008: a 30 percent reduction in energy use, a 30 percent reduction in carbon footprint, and reducing waste going to landfills by 95 percent. “[The last was] our most lofty goal,” says Leslie. “But I’m adamant about having every piece of scrap out of landfill if I can do it.”

Once the objectives were in place, “we took a practical look at the challenge and started with the most logical process—can we operate more efficiently? Can we modify the way we do things to make them more efficient?” explains Leslie. “We looked at really basic things: creating tri-sorters for separating recyclables, diverting our waste, looking at the lighting. The first thing we did was figuratively put on green hats. Without pulling out our wallets, what can we do differently, based on what we have today, to be more efficient? Let’s think more effectively.”

They started with small, cost-saving changes. “By turning off lights when not needed, by reusing materials, by making the HVAC system operate on a tighter timeline, we reduced utilities by 5 percent in the first year,” he says. “We changed the way we operate and saw an immediate impact through using practical green sense. These changes for the most part were free, and set the stage to start modifying our operation more broadly.”

After the low-hanging fruit, Leslie and his team went after larger, more nuanced projects in the building. Fortunately they were able to tap into the highly efficient infrastructure of downtown Toronto. “This building is lucky in that we don’t have a boiler and we don’t have a chiller to cool the air. We are proud of the fact that we use a system called ‘deep lake water cooling,’ which is available here in downtown Toronto. They take 40-degree water from the bottom of the lake that they would be taking for domestic consumption and we use the energy from that cold water to cool the building. We also use a district heating plan which is in the downtown core that feeds many high-rise buildings. So instead of having 40 boilers, there is one working efficiently that can be staged based on demand, which is more effective.”

But Leslie’s team didn’t stop there—they kept looking for additional ways to reuse energy within the building. “We took it a step further because we heat the building through

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heat exchangers and direct steam. We have a condensate as a result of steam condensing and turning into hot water. We found that there was still energy in that hot water. We converted many of our hot water heating systems to use that condensate water to remove that last bit of energy to preheat our hot water tanks, therefore reducing utility further.”

His team is continuously looking for more efficient ways to operate and reduce the environmental impact of their building, an effort that is keeping them on the leading edge of sustainability in their industry. For instance, another innovative project they took on was eliminating the chemicals used in their ice making. Leslie explains, “We had a system in the building that de-ionized the water to make the ice rink. It’s a chemical additive to city water, used to purify it and make a clearer, harder, faster sheet of ice for our players—which is fairly typical. We looked at whether we were comfortable putting those chemicals in city water that ends up in the sanitary sewer, and ultimately decided we didn’t like that method. So we converted our ice-making plant to a reverse-osmosis system that uses no chemical additives, and we use water-based paint on the ice. So now all of our ice is chemical-free when it goes back into the drain.”

CHALLENGES: OVERCOME AND ONGOING

“The thing with an arena is that ‘the show must go on’ mentality is absolutely there,” explains Leslie. “But within that mentality, there are a lot of opportunities, and we found a ton.”

According to Leslie, many of these opportunities involved rethinking how the arena staff approached operations. “For example, it needs to be 60 degrees exactly before a hockey game. But do we need to open up all the valves 100 percent immediately at 3 a.m.? We found that wasn’t the case. It’s just because that is the typical way of doing it. We just relooked at the way we did things, and engaged our local utilities.

We asked our engineers to not control valves from 0-100 percent on/off, but instead look at what our goal was. Just by changing some of the controls we saved about \$60,000 and reduced utilities 6 percent in the first year, costing us nothing.”

Meeting their waste diversion goal was one of the biggest challenges for Air Canada Centre, since there was no comprehensive recycling program in place at the arena. They tackled this by starting small and working with what was already available. “There was no program here at first, so literally taking a plastic cup out of the waste stream was one of our ideas. Looking at infrastructure happened at the very beginning. We knew we wanted to recycle but knew that we only had single-stream [recycling available]. So we looked at how we could use the infrastructure we had internally in the building to be able to divert our waste.”

The arena started by investing in waste-sorting equipment and brainstorming with staff and suppliers about how to manage each part of their waste stream as efficiently as possible. “Not only did we buy tri-sorters, but we also developed an organics [management] plan to effectively collect organics out of the kitchens,” Leslie explained. “We looked at how we could use our compactors more effectively, using a cardboard compactor to also take plastics. We negotiated with our suppliers to improve the way we do things and worked with good companies to develop a plan using what we had in place already, as well as to change what we had to so that everything worked in conjunction with the new plan.”

Air Canada Centre has since reduced the amount of landfilled waste by 74 percent from their 2007 baseline. “That [reduction] is made up of two numbers,” Leslie explains, “our monthly diversion of what we generate, which is around 55 to 60 percent, and also from reducing the amount of material coming into the building overall.” Source reduction was a key factor in this initiative. “We found that through some practices we could reduce our landfill rate by not having some materials ever exist in the building to begin with.” For example, the arena switched to using reusable pallets instead of cardboard boxes for shipping.

Another area the arena has worked on reducing is water consumption. They began with small retrofits such as faucet sensors and aerators. They also installed a high-efficiency flushometer system to reduce water use—though this didn’t go exactly according to plan. “We originally increased our water consumption as a consequence of putting on that flushometer system,” says Leslie. “We wondered why this was happening—when we thought we were doing a good thing. Well, it turns out that a lot of our fans don’t use the manual flush on urinals—so when we installed the automatic flushometer our water use went up. We’ve minimized the water use as much as we can—and at the end of the day we can still justify the system because there’s a cleanliness and health benefit and a maintenance factor in not having to replace piping often.”



Waterless fixtures are still on the horizon at the arena, Leslie says. “We did research into waterless urinals but we’re not quite there yet. It’s still on our radar but we have to make a judgment call. Last time we researched it there was a little trepidation in terms of aesthetics in the building and the operation but I’m sure it will be here soon.”

LESSONS FROM THE FIELD

FORM A GREEN TEAM AND INVOLVE SENIOR MANAGEMENT: “One of the things I wanted to do with the Green Team is get people from all departments to have a solid cross-section of staff,” says Leslie. “We engaged our senior management immediately, (1) because they had buy-in, and (2) because we needed their endorsement and input. We quite regularly present our plans and ideas to senior management to make sure that our direction is going the same way that’s expected of us.”

CREATE AN INTEGRATED SUSTAINABILITY PLAN FOR YOUR BUILDING: “We developed these initiatives as a full-circle and all-encompassing program, touching all departments and processes where possible. Increasing recycling while leaving waste oil to be dumped didn’t make sense to us, so we looked at individual plans and factored in how they affect other aspects of operation, and made sure we considered all processes. Now all collected waste oil is converted into biodiesel, and we remove as much from the waste stream as possible, like fluorescent lights, batteries, toner, and all of the usual stuff. We also had the challenge of doing this on a 10+-year-old building, so we needed to rework older technology in a comprehensive way,” Leslie explains. “This program has been so successful that we are now in the process of applying for LEED Existing Building (EB) status.”

TRACK YOUR SAVINGS SO YOU CAN TOUT YOUR

PROGRESS: Without good data it's difficult to accurately estimate your savings and publicize your progress. This is a challenge that Air Canada Centre faces, explains Leslie. "We do not have a record of our utility savings but I wish we did. This is our final year of our five-year plan and the one thing that is always a moving target is addition and subtraction of devices and utility consumption in the building. So while we've replaced all of our T12 and T8 lighting and done heating improvements, etc., the numbers are confusing." Systemized data collection of the building's consumption is key to quantifying these savings, and is a major goal for the arena in order to make sure their Team Up Green objectives are being met. "Our target this year is to invest our capital dollars into specific measurement," Leslie continues. "I want to stand up and say we absolutely hit our targets. The only way I can do that is to engage the company and place metering devices within the building to make sure I hit my mark."

ENGAGE YOUR FANS: Make sure your fans know what you're doing, and how they can get involved, Leslie stresses. "We put our messages on the boards and on displays. Most nights we profess what we're doing in-house. We've done PSAs with teams; we've done interviews on the radio. We've had our suppliers literally set up on the concourse as fans are walking by to show them what happens to the beer cups when they're done with them. We use television, newsprint—we get the message out in any fashion we can."

"THE THING WITH AN ARENA IS THAT 'THE SHOW MUST GO ON' MENTALITY IS ABSOLUTELY THERE. BUT WITHIN THAT MENTALITY, THERE ARE A LOT OF OPPORTUNITIES, AND WE FOUND A TON," says Bryan Leslie.

SHARE IDEAS WITH PEERS—JOIN THE GREEN SPORTS

ALLIANCE: Sharing your successes and challenges with peers is crucial to creating widespread change, Leslie emphasizes. "With our green program, we don't like to keep all our ideas in-house. So when working with other groups we try to listen to them and then give back some of our good ideas to try and raise the bar everywhere. If we all raise the bar, we're all going to win. Through the Green Sports Alliance we've met so many contacts and gotten great information from them. All the ideas are good, even though they don't all work in all locations. We have discussions monthly with the NHL, and all of the arenas come to the table with their ideas. There are new ideas every month. Just last month I heard about electrically charged water that replaces a cleaner. Amazing stuff is coming out now and as much as I'm proud of what we've done, I see that there are so many new ideas out there. I'm learning every day just like everyone else."

ENDNOTES

1 Maple Leaf Sports and Entertainment, "Greening MLSE," *Air Canada Centre*, 2010. <http://www.theaircanadacentre.com/about/GreeningMLSE.asp> (accessed July 18, 2012).