GREEN MUNICIPAL FUND
FONDS MUNICIPAL VERT

GETTING TO NET-ZERO IN COMMUNITY CENTRES WITH INDOOR POOLS

Chinguacousy Wellness Centre in Brampton, Ontario

The rapidly growing City of Brampton has been focused on how to decarbonize their buildings to meet their Community Energy and Emissions Reduction Plan (CEERP) goal of reducing community-wide emissions by 50% from 2016 levels by 2041. The City's strategy is to focus on the buildings with the highest emissions, primarily community centres. As part of this strategy, the Chinguacousy Wellness Centre participated in the Mayors' Megawatt Challenge's Roadmap to Net-Zero Indoor Pools Cohort project, which set out a pathway for developing net-zero feasibility studies for community centres with indoor pools.

BRAMPTON

CLIMATE CHALLENGE NETWORK

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Chinguacousy Wellness Centre is a 25-year-old building that includes three indoor swimming pools, two of which are connected, totaling 43,287 square feet with approximately 3,500 square feet of pool and deck area. The building also has a large fitness area, aerobics studio, offices, preschool rooms, and multi-purpose rooms. The facility operates 105 to 115 hours a week during the regular season.

The study for Chinguacousy identifies two potential low-carbon scenarios for implementing energy and carbon-reduction measures. One option is to aggressively reduce emissions with deep retrofits, taking the facility from its baseline (2019) emissions of 437.87 tonnes of carbon equivalent (tCO_2e) down to 85.9 tCO_2e in five years for an 80.4% reduction. The other option is to reduce emissions over time when planned capital replacements or upgrades take place for an 80% reduction in 10 years (44.25 tCO_2e) and 100% in 20 years.

Key deep retrofit measures to achieve these goals are:

Annual emissions savings (tCO_2e)	**152.4**	**108.5**	**98.4**	**54.1**	**413.4**
% total emissions reduction	**24.1**	**17.2**	**15.6**	**12.4**	**69.3**
	Replacing fuel-fired roof top units with air source heat pumps	Replacing natural gas boilers serving both the building heating system and swimming pool heating with air source heat pump boilers	Replacing natural gas domestic hot water heaters with air source heat pump boilers	Installing a fully automated pool cover	**Total**

The study also identified operational and low-cost measures to achieve greenhouse gas (GHG) reductions immediately without deep retrofits. Some of these include:

- Roof top unit scheduling and optimization for a reduction of 44.9 tCO_2e annually (7% reduction)
- Demand control ventilation through roof top units for an annual savings of 32.5 tCO_2e (5% reduction)
- Optimizing the pools' air space, temperature, and humidity to save 18.2 tCO_2e annually (3% reduction)

The results of this study feed into the Brampton Energy Management team's ongoing work developing a City-wide strategy that promotes climate change action in their own buildings.

Here are their recommendations for success:

1

HAVE A STRATEGY FOR DEVELOPING YOUR MUNICIPAL NET-ZERO PLAN FOR YOUR BUILDINGS

The Mayors' Megawatt Challenge's Roadmap to Net-Zero for Indoor Pools Cohort project at Chinguacousy is only one part of the City's larger strategy to decarbonize its buildings. "You can't do an audit or a study on every building, so you must take a prioritized approach," says Junaid-Saleem Khan, Supervisor, Energy Management. Khan worked with the Energy Management team to develop a list of high-priority buildings, including those with high operational emissions planned capital upgrades and older buildings. One centre, Susan Fennell Sportsplex, received Green and Inclusive Community Buildings program implementation funding and is undergoing a deep retrofit through an energy performance contract. Other large GHG-emitting buildings are undergoing ASHRAE Level 3 audits to find opportunities for reducing emissions over time as equipment and infrastructure are renewed or replaced. Building archetypes are being developed through audits to identify low-carbon measures that can be implemented in similar buildings not receiving audits.

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>
> —Junaid-Saleem Khan,
> *Supervisor, Energy Management*

2

GROW SUPPORT ALONG THE WAY

"Getting the studies done is a group effort," says Khan. Bringing all the stakeholders into the integrated design review process is the "first strategy of decarbonization." It helps get everyone on board and eliminates future retrofits by getting it right the first time. Khan found the project's integrated design workshops helpful for initiating buy-in and bringing all staff and stakeholders together to determine the right net-zero path for the centre. Members of the capital and retrofit project team bring their expertise as project managers and design and construction subject matter experts. Finance and asset management personnel need to be involved, as well as IT experts who must be comfortable with any upgrades or new software systems. Recreation staff, vital during site walkthroughs and for their knowledge of the facilities, need to be consulted on measures that will improve occupant comfort and meet decarbonization goals. These people understand the community being served and can speak on behalf of users who want to minimize facility shutdowns.

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>
> —Junaid-Saleem Khan,
> *Supervisor, Energy Management*

3

MAKE A COST-EFFECTIVE BUSINESS CASE

Outlining the economics of the Chinguacousy improvement measures is only the first step in getting the business case approved for investment. Although the Energy Management team has the support of council for the investigation stage, the cost of implementation must be approved while being weighed against other planned repair and construction projects that compete against all the other City priorities. It is also challenging to predict the actual capital costs for budgeting purposes and to build budget contingencies that will cover increased prices and unexpected technical challenges during the implementation phases. The team is focused on ensuring the planned projects will be the most cost-effective way to reach the GHG-reduction targets, and this includes exploring all incentives or grants to reduce costs to the municipality.

4

PUSH FOR NEW BUILDINGS TO BE BUILT NET-ZERO

Looking forward, Khan says it is vital to learn from each retrofit and apply the knowledge to new buildings as well as existing ones. Communicating with the team responsible for new construction is a key outcome. "No matter what type of retrofits we are going to do, whether short-term or long-term, and no matter how cost-effective those retrofits are, they will always, always be more expensive than decarbonizing at the design phase of a new building. We have to get it right the first time."