

TowerWise Energy Retrofit Program



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TowerWise Program Background

Multi-residential buildings represent the backbone of the housing stock in the Greater Toronto and Hamilton Area (GTHA). In Toronto, such buildings house over 50 per cent of the population and account for approximately 2 million tonnes of carbon dioxide equivalent of emissions every year. While these buildings are a critical asset to the region, many of them are also in serious need of reinvestment and renewal. Deep energy retrofits can renew the housing stock while also achieving a wide range of benefits - reducing operating costs, improving indoor environmental quality and resident comfort, extending the lifespan of these buildings, and creating local jobs.

To significantly reduce urban carbon emissions across the GTHA and meet our 2050 targets, we need to achieve steep energy performance improvements across the multi-residential building stock. However, due to a lack of capital and real world retrofit cases, building owners and operators are routinely reluctant to undertake the necessary retrofits.

To de-risk and demonstrate readily available retrofit technologies, The Atmospheric Fund (TAF) and a number of partners have launched a new phase of the TowerWise program. The goal: accelerate deep energy and emission retrofits across the residential building sector.

TowerWise: A Success Story

As one of few such demonstration projects in Canada, earlier TowerWise activities showed that 20-30 per cent energy savings are achievable and profitable through targeted upgrades. The demonstration sites consisted of ten social housing buildings and over 1,500 low-income households. Building upgrades included the installation of new condensing boilers, gas absorption heat pumps, fresh air systems, low-flow water appliances, LED lighting, and in-suite heating controls and smart thermostats.

In partnership with the University of Toronto, TAF conducted research on thermal comfort and indoor air quality, which helped prioritize the retrofits across seven multi-residential buildings. The research team deployed a cutting-edge environmental monitoring program to evaluate the efficacy of the energy performance, indoor air quality and comfort improvements.

Next Steps: Achieving Deep Energy Efficiency

Through the next phase of TowerWise, TAF aims for a minimum of 40 per cent savings through deep energy retrofits at a new set of multi-residential demonstration sites. This goal is in line with Toronto's TransformTO climate plan, which calls for existing buildings to achieve an average of 40 per cent energy performance improvement through retrofits in order to meet our 2050 emission targets.

The new demonstration sites represent a variety of building forms from stacked townhouses, to low-rise multi-family, and high rise multi-family buildings – including low-income housing. By undertaking retrofits across these varied sites, we can develop a wide range of best practice strategies for Canada’s multi-residential building sector. This is significant as deep energy retrofits must be scaled up drastically in the near future to reach our climate targets. This program phase is designed to be scaled beyond the four demonstration sites as additional funding becomes available

After securing initial project funding, retrofit design and implementation will start in 2018. The next TowerWise phase will achieve deep energy efficiency using key technologies such as heat pumps that have not yet been adequately demonstrated in a retrofit context in Canada. We will also continue to pioneer innovative financing methods and map out viable pathways to scale-up. The project’s multiple benefits (including energy savings, comfort and indoor environmental quality improvements) will be rigorously monitored using a combination of real-time web-based monitoring technologies and the Government of Canada’s EnerGuide performance labelling system.

Project Costs

- Over \$9 million, including planned capital costs

Cash Funding Sources

- \$500,000 (IESO)
- \$487,700 (Natural Resources Canada)
- Matching TAF internal allocations

Project Funders and Partners

- Natural Resources Canada
- Independent Electricity Systems Operator
- CityHousing Hamilton
- Toronto Community Housing
- Toronto Hydro
- Alectra Utilities (formerly Horizon)
- Pembina Institute
- University of Toronto

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