

TTC Wayside Renewable Energy Storage for Subway

Grid Innovation Fund Project Details

Lead Proponent: Toronto Transit Commission

Partners: City of Toronto, PowerON

Strategic Area(s):	Enabling Non-Wires Alternatives
Project Total Cost:	\$2,500,000
Year Contracted:	2022
Status:	Active
Location:	Toronto
Economic Development:	N/A

Project Objectives

Led by the Toronto Transit Commission, this novel project is implementing a pilot project to capture, store and distribute electricity generated through an existing onboard regenerative braking system on subway trains. A feasibility study is being conducted and will be followed by a proof-of-concept implementation and testing of the energy management system at the TTC's Greenwood Yard location.

TTC trains use a regenerative braking system to capture a portion of the kinetic energy generated from braking and transfer that energy to other trains that use it to accelerate. Currently, the portion of the electricity that is not used by vehicles accelerating within the same circuit is burned off as heat.

The TTC would like to capture, store and distribute this untapped source of renewable energy.

A Wayside Energy Storage System (WESS) will be installed at the pilot location to capture and store excess electricity. The energy storage system will allow the TTC to use energy that would otherwise be burned off as heat to help reduce their own electricity demand and potentially support the grid. The project will demonstrate that WESS has the potential to reduce existing demand on the grid in a dense urban environment where existing resiliency issues exist.

Expected Outcomes

The project will demonstrate that Wayside Energy Storage System has the potential to reduce existing demand on the grid in a dense urban environment where existing resiliency issues exist. The situation will be exacerbated by the trend towards decarbonisation and is made challenging to resolve due to difficulty of new sources supply or major transmission feeder installation. By recapturing currently lost energy and by smoothing the power demand, the system will free up existing capacity for cost savings to the TTC.

If successful, this project will demonstrate energy saving, cost saving and potentially revenue generation through grid services for the TTC.