



## Research case study > Net-Zero Buildings & Electrification

# Electrification of Buildings

Version 2 (July, 2026)

**Context:** The city of Toronto is driving to net zero target. The city's main sources of greenhouse gas emissions stem from space heating and transport. Toronto Community Housing Corporation (TCHC) is their agent with a huge portfolio of buildings. Today, most of these buildings use natural gas for space and water heating. TCHC has partnered with CUE to explore heating system electrification across its 2,000+ building portfolio.

**Problem:** Transitioning of existing heating systems across TCHC buildings from natural gas to electricity will result in high electricity bills while reducing carbon emissions. It challenges the affordability and sustainability goals of TCHC residents, as the cost of electrification and the resulting electricity bills can be very high.

**Solution:** Conducted a full study to assess and recommend electrification options, supported by forecasting, concept designs, and algorithm development to identify opportunities for smart metering, system aggregation, and heating electrification. Specifically, the project explored option of base board type heating, air source heat pumps. In addition, special electricity tariff structure for class B buildings were also explored, i.e. demand shaped pricing of fixed cost such as global adjust were explored.

**Impact:** Informs future energy strategy, enabling cost savings and emissions reductions across a largescale social housing portfolio. The exploration of demand shaped pricing scheme gave an understanding of how class B buildings of TCHC may help provincial system mitigate peak demand by incenting them to better shape their electricity consumption.

**CUE's Role:** Led technical research and analysis including forecasting, assessments, concept design, and algorithm development.

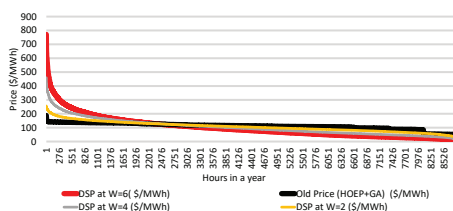


Figure 1 Price Duration Curve

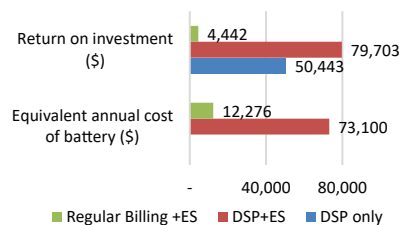


Figure 2 Economic Benefits

**Partners:** Toronto Community Housing Corporation (TCHC), Mitacs

**Timeline:** 2023 – 2026

### Research team:

Bala Venkatesh, Soosan Beheshti, Mohamed Shekeew, Shima Bagher Zade Homayie, Mahtab Aboufazeli, Eleonora Achiluzzi

### Key Stats:

2 Technical Reports  
2 Software