CASE STUDY

EndoTherm®

City of Kingston - Two Sites

Ontario, Canada

12.32 %

AVG ENERGY SAVING

FINANCIAL SAVING

$1,913.80

CARBON SAVING

9,683kg CO_2e

INSTALLED DEC 2024 - 5 MONTH PILOT

"The City of Kingston's EndoTherm pilot demonstrated meaningful energy and carbon reductions, supporting our ongoing commitment to sustainability and operational efficiency."

Russell Horne
Manager, Facilities Energy & Asset Management
Facilities Management and Construction Services
City of Kingston

The City of Kingston, committed to achieving net-zero emissions by 2040, launched this EndoTherm pilot to cut natural gas use in its buildings. The project tested how hydronic efficiency additives can lower energy consumption and emissions without equipment changes, supporting the City's sustainability goals.

EndoTherm was piloted at the Kingston Fire & Rescue HQ and the Kingston Grand Theatre, delivering an average energy saving of 12.3% over a 5-month period. The project reduced natural gas use by 5,172 m^3, cutting 9,683 kg of CO_2e emissions and generating financial savings with an expected ROI of under two years.

The Kingston Grand Theatre is a historic venue, functioning as one of the city's major performing arts venues, with seats for 776 people, a proscenium stage and an orchestra pit. The Fire & Rescue HQ serves as the nerve center for managing emergency response operations across the region. The HQ is found at a strategic location allowing swift deployment of resources and provides further facilities for coordinating fire-fighting efforts and conducting training programs.

METHODOLOGY

The chosen M&V methodology takes guidance from IMPVP (Option C) using historical monthly consumption values between October 2021 and November 2024. A base-line is generated normalizing these monthly values with Heating Degree Days (HDD) to create a baseline for comparison. The trend-line equation from the baseline can then be used to predict consumption for each day in the post-install period and compared to the recorded value to determine the success of the pilot.

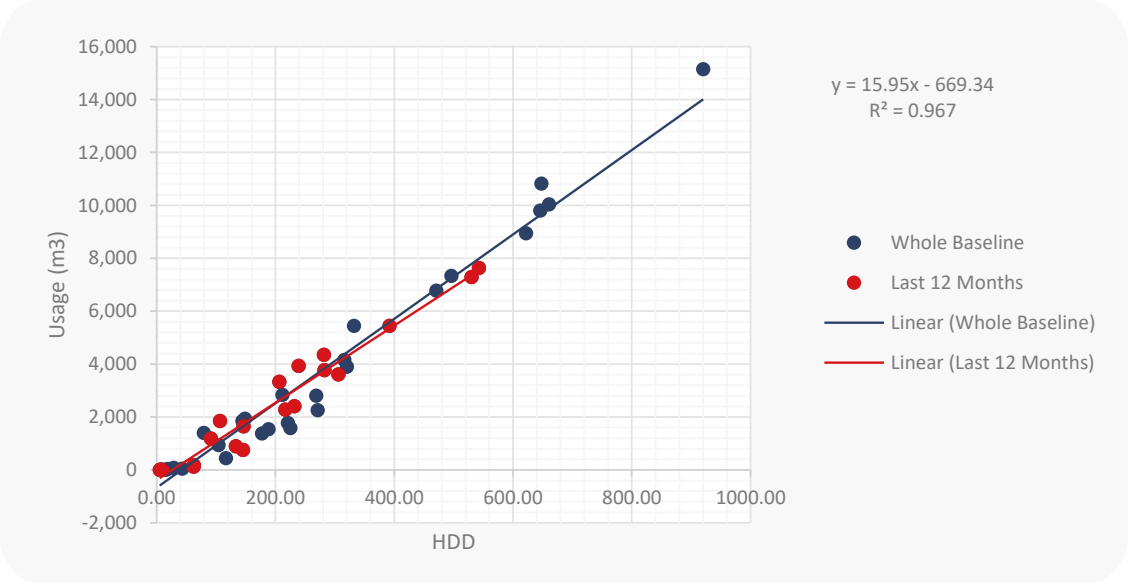

Figure 1: Baseline Analysis at Grand Theatre

RESULTS

EndoTherm was installed in early December 2024 with the analysis running until April 2025 (5 months).

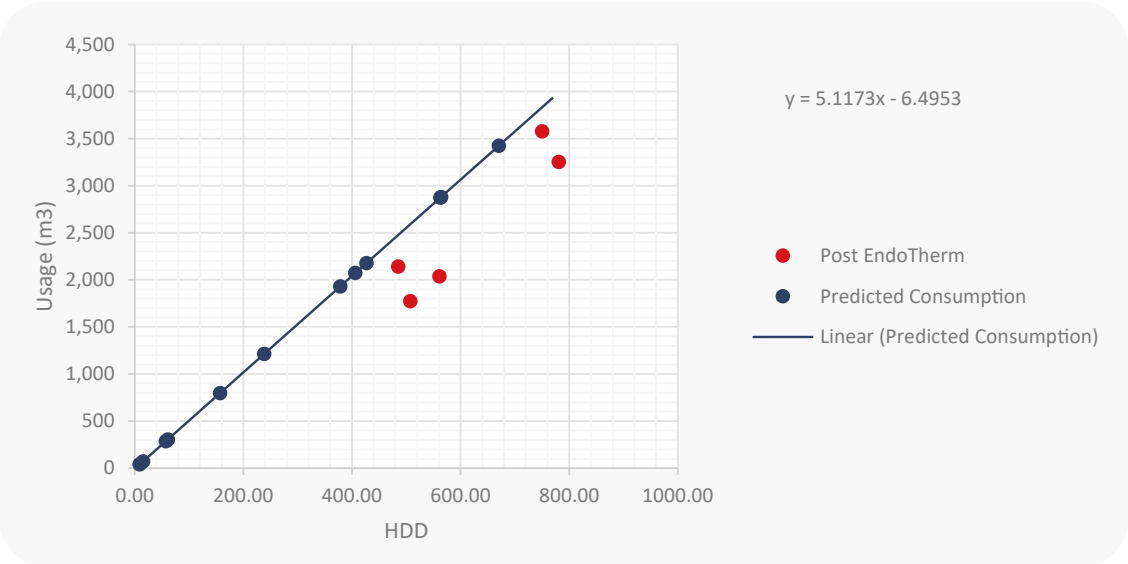

Figure 2: Post-EndoTherm Analysis at Kingston Fire & Rescue HQ

Over the 5-month pilot period the sites showed the following savings:

KINGSTON GRAND THEATRE	KINGSTON FIRE & RESCUE HQ	AVERAGE SAVING
5.79%	18.85%	12.32%

The lower saving at Kingston Grand Theatre is caused by a high consumption value during the coldest month of the year (January 2025). Removing this month increases the savings to 13.70%. The higher consumption during the extreme winter months is likely caused by increased run times as the system struggles to meet internal temperature demands.

Over the pilot period the sites saved a combined 5,172m³. Using a unit price of $0.37/m³ this is a total saving of $1,913.80 with an expected ROI within two years. As a result of the successful pilot, the City of Kingston is expanding the use of EndoTherm across additional municipal buildings to further reduce energy costs and emissions.

A reduction in natural gas emissions is also a reduction in buildings Scope 1 emissions. **A 5,172m³ reduction in Natural Gas is the equivalent reduction of 9,683kg of CO_2e emissions.** This can be visualised via the following equivalences: