

# ENERPRO SYSTEMS

## Case Study: Granite Terrace

Highlights include:

- 44.4% reduction in gas consumption from business as usual figures
- 53.1% reduction in total water consumption from business as usual figures
- Annual reduction of 71.7 tons of greenhouse gas emissions
- \$29,170 savings per year
- \$50,000 total capital cost (2 year payback)
- No subsidy required



## Granite Terrace: Achieving substantial reductions in gas and water consumption

### Project Overview

UBC's Granite Terrace has reduced gas consumption by 44.4% from business as usual figures following implementation of Enerpro's Intelligent Energy Management System (iEMS), completed in the summer of 2009. Enerpro implemented iEMS to integrate the management and optimization of mechanical systems and increase awareness of energy and water consumption among residents.

Enerpro's customized iEMS for Granite Terrace included

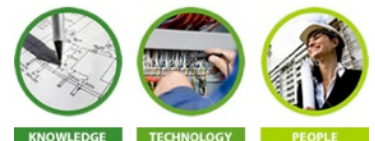
metering for domestic hot water, and digital controls for boilers.

### The Opportunity

Overall climate change targets in BC have been set at a 30% reduction in GHG emissions from 2007 levels by 2020.

Energy reduction strategies for multi-use residential buildings represent a substantial opportunity in terms of reducing energy costs and consumption, particularly as Enerpro impacts the consumption of energy across utilities.

Granite Terrace is part of UBC's University Town development, built with sustainability principles under the University's Residential Environmental Assessment Program (REAP). Enerpro's iEMS contributed to the REAP Gold rating obtained by Granite Terrace.



## Granite Terrace

### Integrated management of gas and water consumption

#### Integrated Approach

Enerpro achieves its mission of “creating value from energy” by incorporating the following elements in its iEMS:

- Reducing energy and water consumption
- Increasing awareness of building residents
- Allocating energy costs fairly and accurately
- Improving energy efficiency of mechanical systems
- Recovering cost of energy upgrades equivalent to savings from utility bills with a return on investment within 2 years

#### Enerpro’s iEMS Solution for Granite Terrace

Following an energy analysis of the building, Enerpro designed an integrated solution specific to Granite Terrace.

Components of iEMS designed for Granite Terrace include:

- Monitoring and optimization of mechanical systems
- In-suite meters for domestic hot water



#### Building Type:

Multi-unit mixed-use residential strata

#### Number of Units:

77

#### Mechanical systems:

3 standard boilers, 2 make-up air units, electric baseboard heaters

#### Baseline consumption:

3,234 GJ gas/ year  
22,765,050 litres water/ year

#### Consumption after iEMS:

1,799 GJ gas/ year  
10,671,015 litres water/ year

#### Savings:

1,435 GJ/ year  
12,094,035 litres water/ year  
\$29,170/ year

#### Critical Success Factors

- Cross-utility intervention
- Integration of mechanical systems
- Individual awareness of consumption per-unit

#### Results

- Reduced energy consumption of mechanical systems
- Increased lifespan and reduced maintenance of mechanical equipment
- Increased efficiency of mechanical systems
- Reduced operating costs

## Lessons Learned

### Substantial reduction in energy consumption, replicable, no subsidy required

- The integrated approach at Granite Terrace reduced gas consumption by 44.4% and water consumption by 53.1%
- The energy savings achieved at Granite Terrace are typical for the application of iEMS. Enerpro’s custom designed iEMS has the potential to replicate the results from Granite Terrace at any multi-use residential building regardless of existing energy systems, age, or size
- No subsidy was required. The capital cost of the iEMS will be paid for within the savings provided over 2 years



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