

GBTN 14

REAL-TIME ENERGY MONITORING AT SUNTERRA FARMS

[READ MORE >](#)

Project Typology: Industrial | Retrofit

Project Location: Various

Project Innovation: Real-Time energy monitoring

Project Lead: BuildSense

Project Partners: TrustBix, Sunterra Group

Building Owner: Sunterra Group



GREEN BUILDING
TECHNOLOGY
NETWORK

PROJECT OVERVIEW



PROJECT MOTIVATION

The project focused on three main aspects of energy management in swine production facilities:

1. Creating energy use intensity (EUI) and greenhouse gas emission intensity (GHGI) metrics for the swine production facilities owned and operated by Sunterra Farms in Alberta.
2. Validate the economic and emissions potential of energy conservation measure (ECM) recommendations generated through energy models conducted using industry standard energy modelling software (CanQuest and /or RETScreen).
3. The potential for real-time energy monitoring to reduce energy consumption and energy emissions through real-time visibility of energy consumption trends and anomalies in selected facilities.

The funding and support from SSRIA was instrumental in getting this project off the ground. Not only did we gain valuable insights into the challenges and opportunities for energy management initiatives in the animal husbandry sector, our team was able to build valuable relationships with project stakeholders and vendors that will continue to drive innovation across our professional ecosystem.

- DAVID NORRIS (BUILDSense)

	POST RETROFIT ESTIMATED
ANNUAL ENERGY CONSUMPTION IN GJ (% SAVINGS)	132 (10%)
ANNUAL GHG EMISSIONS IN tCO ₂ e (% REDUCTIONS)	75 (9%)

9%

ESTIMATED ANNUAL
GREENHOUSE GAS REDUCTIONS

10%

ESTIMATED ANNUAL
ENERGY USE SAVINGS

PROJECT INNOVATION



Innovation for this project involved assessing, improving, and optimizing the agricultural facilities through energy monitoring.

- Real-time circuit level energy monitoring in agricultural facilities.
- Creation of an energy benchmarking platform for swine husbandry facilities.
- Use of custom mobile applications to record energy audit data in digital records.
- Creation of an online real-time dashboard Integrating energy consumption, barn environmental conditions, and barn control system operation.

Key Findings

- **Improved access to barn operational data is more helpful to barn personnel** than originally assumed. A shift from legacy siloed systems with manual data downloads to integrated data visualizations and reporting allows barn operators to explore iterative changes in equipment use or operational practices by providing better insight into impacts and unintended effects.
- **More context is needed to derive actionable insights and interventions** from energy consumption data. Integration of animal occupancy, production outcome, equipment maintenance records, and barn operator workflows would provide needed context to improve anomaly detection, predictive insights, and targeted notifications.
- **Expanding the scope of the monitoring system to include more parameters around internal barn environmental monitoring** delivers more value to the barn operators than energy monitoring alone. Sunterra barn personnel are using the energy monitoring system to improve parameters for ventilation operation for humidity management in the winter months to improve animal health.
- **Better data on equipment operation via the barn control system improves both the quality and actionability of the insights derived from energy consumption data.** The project was originally intended to function without this information to reduce capital expense barriers to entry for future deployments, future projects will likely require inclusion of remote data access from barn control systems as either a pre-requisite or inclusion in project hardware requirements.
- **Barn operators should play a larger role in site equipment gathering for energy audits or facility assessments.** The development of an online, self-paced operator training platform will lead to cost reductions, increased engagement of barn operational personnel in energy management initiatives, and better context for existing equipment issues that could lead to broader ECM retrofit opportunities.
- **Offline functionality of the mobile application for site and equipment data collection** is needed for remote rural locations with poor connectivity.

ADDITIONAL RESOURCES



Visit the [Resource Library](#) to find resources on this project and others like it.

ABOUT THE TEAM

Take an in-depth look at [this project](#) to get to understand their collaboration and vision for a low-carbon built environment.