

Emissions Reduction Alberta (“ERA”) Expanded Technology Pilot (ETP) Final Project Report | January 23, 2024

Project Information	
ETP Project ID:	ETP0162099
Project Title:	Ecopilot Alberta Demonstration
Recipient Organization:	Ecopilot AI
ERA Project Start Date:	April 13, 2023
ERA Project Completion Date:	September 30, 2023 (Milestone 1)
Total Eligible Project Budget:	\$278,385 (Actual budget \$266,728.21)
Total ERA Funding:	\$139,193 (Actual ERA funding \$133,364.11)

ABOUT ETP

The Expanded Technology Pilot (ETP) offered a new pathway for Alberta businesses to propose effective, commercially viable technologies that could offer high return on investment but were not supported through the Energy Savings for Business (ESB) program. Successful proposals received funding to support project implementation and will help expand ERA’s understanding of the technology’s performance, market potential, and how it could be best supported in future initiatives.

ETP was open to applications between December 2021 to May 2023.

PROJECT SCOPE

Ecopilot software is an add-on to an existing Building Automation System (BAS) that uses real-time data, 5-day weather forecasts to exploit the building thermal mass to provide heating and maintain cooling within higher mass concrete building structures.

Specifically, the primary building control strategy is to provide a more predictive boiler and chilled water supply temperature adjustments (commonly referred to as a supply water temperature outdoor air temperature reset) strategy. Additional temperature sensors are installed in the building to substantially increase the number of space temperatures data points compared to the existing BAS system. This information is analyzed and through algorithms it is optimized to improve and control building temperatures in zones of approximately 1,000 ft².

Ecopilot completed the installation of the technology in three buildings (Aspen, Kanas and Triovest) in order to increase energy savings and reduce utility bill costs.

Below, Ecopilot has provided additional detail on the outcomes of their project.

PART 1: Commercialization & Technology Benefits:

1. List and briefly describe any knowledge-sharing activities since the completion of your ERA funded project. E.g., attendance and presentations at conferences or workshops, news articles, social media promotions, etc.

Triovest Sustainability Symposium – Ecopilot traveled to Edmonton in November 2023 to present early results of the ERA funded installation at their ATCO building to internal Triovest staff, including teams from other buildings. A few weeks after the presentation Triovest has signed on to install Ecopilot into another building and scheduled a similar presentation to their Calgary team in February 2024.

Ecopilot will be traveling to Vancouver February 14th and 15th to host a kiosk at BuildEx British Columbia. During this trip Ecopilot will be sharing success stories about our work in Alberta to gain traction in the BC market.

2. What is the plan for further commercialization of the technology? i.e. what does the next 3-5 years look like, will the technology be used/exported outside of Alberta/Canada etc.

Ecopilot's room for growth is huge, every Multi-Unit Residential Building (MURB), office building, library, school, seniors care facility etc. that fits Ecopilot criteria would benefit from smart technology. There could be 1000's of potential fits in Alberta. The obvious places for growth are Edmonton, Calgary, and other small cities (Lethbridge, Medicine Hat, Fort McMurray, Red Deer, Grande Prairie, St. Albert, Canmore, etc.). Industrial and Agricultural buildings are not a good fit.

3. List any additional benefits from the technology system (e.g. water use, land use, social benefits, etc.). Were there any other learnings from installing the technology? (e.g. any new insights into technology capability, difficulties or setbacks, what other markets the technology could be utilized in etc.)

Ecopilot reduces cold calls and adds another layer of supervision of a building's performance, this will reduce building operations responsibility and improves occupant comfort. Additional opportunities for BAS improvements, such as improved tuning and scheduling were identified.

Another additional benefit is that Ecopilot identifies additional building issues that are out of the automation system's control, such as problem areas in the building that are unproportionally driving HVAC energy consumption, or mechanical issues like valves that are sticking or passing.

For example, Ecopilot is only controlling the secondary heating system at the Aspen building right now until their new voltaic joints are replaced. They leak every time they shut down the main heating system, meaning Ecopilot is unable to disable the heating system. Aspen has had delays in receiving parts. The heating system is expected to be repaired by the spring of 2024.

Despite a successful Ecopilot commissioning, Ecopilot control at Kanas has been very inconsistent due to the Kanas BAS setpoint control not working. Even without Ecopilot in the building, the boilers would not be able to be automated in its current state. The boiler plant is currently being run in manual. In January 2024, Kanas gave Ecopilot permission to work directly with Converging to speed up this repair. Converging is scheduled to be onsite February 1st to rectify the situation.

The Triovest installation has gone smoothly.

Project setbacks have mostly come from BAS contractor scheduling delays and our customers internal maintenance and outages.

As the Alberta grid introduces more renewable energy sources, changing grid demand will also be a challenge. Ecopilot has an added feature called Peakpilot (for an additional fee), that helps building's HVAC system curtail energy consumption during peak demand events.

PART 2: Economic and GHG Impact

4. Provide your best estimate of the number of FTE's supported because of the ERA funded project since project completion:

Ecopilot has been able to hire a Sales and Marketing specialist to support promotion of existing Ecopilot successes, and to allow existing staff to focus on customer support and business development.

Additionally, each of the three installations in this project have required BAS integration and sensor installation that have been completed by 3rd parties.

5. Provide updated estimated direct lifetime GHG emissions reductions in tCO₂e. Please provide any available evidence, calculations, or data to support this claim, e.g. relevant activity date, verification report, assumptions or project plan.

	Total GHG reductions (tCO ₂ e)
Lifetime Savings	1,380*

*Values calculated by ERA prior to project completion.

Please specify the number of years the equipment is expected to remain operational: 10

6. Provide any operational data required in the Contribution Agreement (indicate if there is an additional attachment(s)). E.g., how much time the technology is operational, how much fuel it uses, etc.

Ecopilot has provided three months of post installation utility bill data for the following three buildings:

- Aspen

- Kanas
- Triovest

7. Provide an update on the Technology Success Metrics identified in the Contribution Agreement:

Currently Ecopilot is on track to meet GJ reduction goals in 2 of 3 building pilots.

Success Metric	Project Target	Target Achieved?
Energy consumption reduction at Triovest	≥ 418 GJ per annum	<i>On track (based on two months of data)</i>
Energy consumption reduction at Aspen	≥ 688 GJ per annum	<i>On track (based on one month of data)</i>
Energy consumption reduction at Kanas	≥ 1,170 GJ per annum	<i>To be confirmed (not on track based on one month of data)</i> <i>As further described above, Ecopilot control at Kanas has been very inconsistent due to the Kanas BAS setpoint control not working. Efforts are currently underway to confirm the energy consumption reduction metric can be achieved.</i>

PART 3: Technology Transfer Plan

8. Provide a brief overview of what the problem the technology solves.

Without the Ecopilot software, the BAS response is to adjust the heating supply water temperatures. The Ecopilot software reduces overheating and uses the building mass to reduce the supply water temperature earlier in the daily schedule to achieve improved temperature set-back performance.

9. Describe where people can access the technology. Who is responsible for manufacturing, selling and servicing the technology?

Ecopilot AI sales team is available for contact on our [website](#) and LinkedIn page. We provide onsite service in Alberta and Nova Scotia, working through 3rd parties in other provinces. Ecopilot AI distribution rights in North America are held by Canadian ownership and headquartered out of Halifax, Nova Scotia. Hardware is mostly purchased from the company's headquarters in Europe. Ecopilot's Alberta presence is based in Calgary.

10. Describe who will use the technology and what the target market is. i.e., industry, geography, size, quantity of customers etc.

Ecopilot technology is typically used by building operators, managers, and consultants. Target market is real estate, in North America, including commercial real estate, commercial office, institutional buildings, medical facilities, and long-term care facilities. In Canada alone, there are more than 17,000 properties that could benefit from the installation of Ecopilot.

This technology can be implemented in any building that has a central HVAC system, an existing BMS/BAC/DDC in place (though Ecopilot can install one with the technology as well), and is made of heavier materials such as concrete, brick, or stone.

11. Identify specific competitors for similar technologies and substitutes. Include a brief comparison of the technologies and strengths/weaknesses of each. Identify any advantages that might exist with this technology system or that of your competitors.

Ecopilot believes there is no substitute for Ecopilot AI, as we are the only technology that leverages thermal mass in HVAC control. Other companies in the space include Parity Go and Brainbox, although their technologies are not as mature (Ecopilot's technology has been available for 15 years). Ecopilot specializes in specific building types (MURB, Commercial, etc.) whereas Brain Box focuses on large, big box retail and Parity Go specializes in small MURB.

Ecopilot AI offers low risk solution for energy savings. Other technologies are still experimenting with control schemes, but sometimes less is more. Ecopilot sends only temperature setpoint offsets to the existing BAS, reducing risk of negatively impacting air flow, equipment reliability, and tenant comfort. Our pilot partners in Alberta have commented on how reliable Ecopilot has been regarding avoiding unintended consequences (unlike their previous pilot HVAC AI technology pilots).

12. Describe the primary marketing mediums that either your company uses to market the technology or how you found out about the technology. i.e., advertising, industry contacts, word-of-mouth, public demonstrations etc.

Ecopilot explores many avenues to market our services. These include but are not limited to:

- *Social media platforms - LinkedIn*
- *Targeted trade shows and associations*
 - *BOMA, NCBFO, BuildEx, AEEA, SSRIA*
- *Digital advertising and newsletters*
- *Live demonstrations online and at trade shows*
- *Channel partners*
- *Word of mouth*

13. Describe what you are doing to promote the technology to others.

- *LinkedIn*

- *Referrals*
- *Case Studies*
- *Running booths and delivering public demonstrations at conferences or tradeshows (BuildEx, Bomex, Innovation Summit, NCBFO Commissioning Conference, etc.) newsletters.*