Building
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DEEP RETROFIT ACCELERATORS IN CANADA

FIVE OPPORTUNITIES TO INCREASE IMPACT

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About GinkoLab

GinkoLab is a boutique consultancy providing strategy and facilitation services to support the collaborative stewardship of the commons: climate, health, housing, land, language.

About the Building Decarbonization Alliance

The Building Decarbonization Alliance is a non-partisan and cross-sector coalition working to change the narrative on building heat, inspire and inform industry and government leadership, and accelerate market transformation. We reach beyond rhetoric to engage with evidence and science, helping put in place the conditions for effective policy, change the narrative, and increase awareness of the benefits of decarbonized all-electric buildings. We've convened over 300 Partner organizations. We're working hard to expand the reach of our Alliance and proposing an exciting slate of research and initiatives to advance our mission and vision. If you are interested in supporting our work, visit our website or reach out to us at info@buildingdecarbonization.ca to find out how you can help accelerate building electrification.

We thank all interviewees for their time and insights:

- **Adam Trovato**, Simplify Energy and Four Winds and Associates
- **Andrea Linsky**, AB Ecotrust
- **Bala Gnanam**, BOMA-Canada
- **Betsy Agar**, Pembina Institute
- **Christian Brosseau**, SOFIAC Canada
- **Dallas Munro**, SaskPower
- **Darla Simpson**, ZEIC
- **Dave Ramslie**, OPEN tech
- **Jasmine Lyn**, BOMA-Canada
- **Keith Burrows**, TAF
- **Lorie Rand**, ReCover
- **Michael Jemtrud**, McGill
- **Olanrewaju (Lanre) Jaiyesimi**, ClearResult
- **Olivier Cappon**, CIET
- **Ololade Ayodeji-Bakare**, ClearResult
- **Peter Amerongen**, Retrofit Canada
- **Prashan Perera**, ClearResult
- **Ralph Evins**, UVIC
- **Vincent Guan**, Graham Capital Team

Introduction

January 2025 marked the midway point of the first four years of the Deep Retrofit Accelerator Initiative (DRAI). The DRAI is a federal initiative that funds organizations ("accelerators") and other projects supporting the development of deep retrofits in commercial, institutional, and mid- or high-rise multi-unit residential buildings. The accelerators' goals are to boost the depth and pace of retrofits in their targeted market segments, helping address the sector's shortfall in meeting emission reduction targets.

On this occasion, the Building Decarbonization Alliance conducted a series of short interviews with many of the accelerators as well as some academic and private-sector partners in order to:

1. Make an inventory of tools and resources in development to share with the broader building retrofit ecosystem; and

2. Discuss solutions to remaining gaps that are holding back the depth and pace of retrofits.

The purpose of the tool inventory (Table 1) was to make the innovation happening in the accelerators more visible to other actors involved in facilitating retrofits in the Canadian ecosystem and to encourage collaboration on the development of these resources before they are completed. The discussion of gaps focused not so much on barriers to scaling retrofits (which have already been discussed and documented)[1], but rather on tactical projects that could be advanced in the next year or so.

Table 1 presents a brief description of over 70 tools and resources these centers have developed in the last year or so. This list makes it clear that the retrofit accelerators have the means to identify capacity or knowledge gaps in their local ecosystem and develop tools or resources to address them. As such, discussions on "remaining gaps" tended to focus on challenges and solutions that were regional or national in scope, extending beyond the sphere of influence or capacity of any one accelerator. These require more coordination across and beyond the accelerators.

Below, we highlight five key opportunities for collaboration that emerged from our interviews. These are broader than what any single accelerator should pursue. Nevertheless, pursuing these opportunities would strengthen the accelerators' efforts and enhance the overall impact of the DRAI.

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1 See for example: Pace of Progress: Achieving the Necessary Momentum to Meet Canada's 2050 Climate Goals in the Residential Building Sector. Building Decarbonization Alliance, 2024; Green Retrofit Economy Study, CAGBC, 2022; Canada's Retrofit Mission, Efficiency Canada, 2021; Canada's Renovation Wave, Pembina Institute, 2021; and Deep Emissions Reduction in the Existing Building Stock, Pembina Institute, 2017.

National Repository for Retrofit Data

Each accelerator has created its own database to track the retrofits advanced under their watch, but because each of these were designed independently, there is no simple way to consolidate these results into a single database. While these local databases can be useful for reporting to funders, their relatively small sample size limits what insights can be gained from analyzing the dataset. Even as local datasets start to grow, discussion of retrofit outcomes still predominantly takes place using site-specific case studies.

Taken as a whole, the datasets generated by the accelerators could generate a broader range of insights on costing, suitability of different solutions to different contexts, differences between markets, and so forth. And this could be only the beginning: after establishing a structure to store and interrogate this information, it might be possible to integrate all studies generated to access utility or government programs. With sufficient privacy protection, real estate firms could be convinced to further amplify the movement and share their studies—akin to how the Canada Green Building Council's Disclosure Challenge led twelve firms with a combined $110 billion in managed real estate assets to voluntarily disclose the energy performance of their buildings in Energy Star Portfolio Manager.

One could argue that the intrinsic variability in scope and methodology of retrofit studies[2] makes drawing new insights from a large dataset mostly an academic exercise, and thus maybe does not warrant the significant efforts required to merge the accelerators' databases. Fortunately, there are already efforts underway to standardize audit reports and the analysis of retrofit business cases for financial objectives (e.g. Investor Confidence Project; Energy Performance Contracts terms) and regulatory objectives (e.g. energy performance standards for existing buildings). Thus while it is currently difficult to see the forest from the trees, even when several studies are brought into the same format, it is reasonable to expect that as the frequency and relevance of meta-analyses increases, so will the drive to standardize inputs.

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2 There are several key obstacles to analyzing retrofit outcomes as ensembles:
  1. the intrinsic complexity of deep retrofits, each of them including different technologies;
  2. the subjectivity of defining test case and baseline renovations (i.e. what upgrades are relevant to an energy retrofit, and which are maintenance expenditure or basic capital renewal, and for the energy system, what would have been the default replacement option and schedule); and
  3. variability in how consultants define, calculate, and report different metrics.

  Parsing the relative costs and benefits of test cases and baselines is further complicated by the addition of energy services (e.g. cooling, ventilation, on-site generation, storage), safety features (seismic upgrades, flood-proofing, fireproofing, radon remediation) or changes in floor area or end-uses (e.g. addition of units, remodeling, etc.).

  The notion of a baseline itself is a challenge, as it implies a business as usual which of course varies across different owner types, from "do nothing until it breaks" to "do a least the upgrades needed to meet corporate targets and ensure health of residents"—see conversation on baselines in REFRAMED REPORT.

Even before such harmonization, convergence of data on retrofits enabled by the accelerators would yield short-term benefits:

- **Help communicate the current and potential impact of the initiative as a whole:** Tallying uptakes of audits, number of buildings affected, number of residents engaged, possible economic ramifications if a portion of these retrofits go ahead, etc.

- **Generate insights on conversion rates:** Tracking of conversion rates at different locations would help identify market segments that are primed, increase insights on barriers to investment decisions, and improve effectiveness of different engagement strategies.

- **Collect better cost data:** Starting to track retrofit costs in a dynamic (and somewhat standardized) manner would enable feedback and improvement on costings provided by subscription services (e.g. RS Means); eventually paving the way to retrofit-specific costing data compiled by the accelerators and made available to the industry.

- **Support financial literacy:** Spur practitioner discussions on the use of different financial metrics (NPV, IRR, Discounted payback) and illuminate some divergences in how these are estimated in the context of retrofits.

- **Explore privacy concerns**: Test the boundaries of data privacy issues and illustrate how benefits of relaxing or managing these privacy concerns justify the efforts needed to do so.

The construction of such a retrofit database could also contribute to the establishment of a unique centralized database for all energy information at the building scale, including energy and building condition time series (energy, temperature, indoor air quality), information on assets, professional insights from studies, and audits. Considered by some the holy grail of market-transformation-enabling information, the merger of utility data, assessment data, environmental data (from smart meters and/or building operating systems) and contractor-generated data (depreciation reports, audits, quotes) into a single database accessible locally by successive owners, in fine-scale aggregate by government and utility planners, and in coarser-scale aggregate for development of commercial products or services.

It is important to note that Natural Resources Canada does plan to share accelerator-related data, including tools, resources, guidance materials, results and outputs through their website via the Retrofit Hub, and through the forthcoming development of a Retrofit Toolkit. As these materials become available, it will be important to assess how well they support data aggregation and identify what additional efforts could further enable integrated analysis.

Understanding of New Financial Offerings: From Energy Managers to Executives

There are several new financial offerings to pay for retrofits, following in the footsteps of the innovation driven by TAF with the Energy Service Performance Agreement, which led to the creation of Efficiency Capital. Since then, SOFIAC, BMO, Vancity, Johnson Controls International, ClearResult, and the Canada Infrastructure Bank, amongst others, have started offering new financing services to deliver energy retrofits with no or minimal upfront investments from the owner. Most of these newer financial products are only three to four years old, and despite value propositions that can be convincing, uptake has been slower than hoped. This can be attributed to the novelty and relative complexity of these new arrangements, which require early buy-in from internal champions and ultimate signoff from C-suite executives.

"When SOFIAC launched in early 2022, we anticipated a straightforward process in establishing a pipeline of projects. However, the reality proved more complex. From our perspective, the value proposition was clear: we were providing accessible capital, enabling organizations to redirect funds that would typically be allocated to these projects elsewhere. Furthermore, this financing structure did not appear on balance sheets as debt, preserving borrowing capacity for future initiatives. Additionally, energy cost savings were realized from day one, with ownership of all equipment and programs transferring to the organization at the project's conclusion—ultimately enhancing the value of their assets.

Despite these benefits, many organizations remained hesitant. While energy managers often championed the initiative, challenges arose primarily within two key groups: financial leadership, particularly CFOs, and legal counsel. The concern stemmed from the fact that these transactions did not follow traditional payback models but rather involved longer-term commitments. Decision-makers were wary of anything that might be perceived as restricting flexibility for property sales, renovations, or new tenant arrangements. Although contractual provisions addressed these concerns, the perceived risks often led to delays in adoption."

—Christian Brosseau, President & CEO, SOFIAC Canada

The problem is further compounded by decision makers not only needing to understand a new value proposition, but now facing several new offerings, each of them differing in terms and value proposition.

Given this, many interviewees flagged the need for independent education resources on the similarities and differences between these offerings tailored to four different audiences:

- **Coaches in accelerators, energy managers, and consultants**, which often are the driving force bringing these solutions forward;

- **Independent building owners or small business operators**, which might be presented such opportunities but might not have the financial or legal background to assess the opportunity;

- **C-suite and legal teams** in sophisticated property management firms, most of which are still unfamiliar with these novel contractual arrangements; and

- **REIT managers**, who are more familiar with investing or divesting capital by purchasing or selling properties than by refurbishing existing assets to generate more cashflow, improve valuation, or mitigate climate risks.

Proving the Value Proposition of Virtual Audits

Several online platforms have emerged in the last few years offering virtual energy audits for commercial buildings (e.g. OpenTech, Adaptis, Audette, Jobi, Power TakeOff). What they include varies, but generally they aim to provide: information on energy systems, recommendations for possible energy conservation measures, and potential cost and carbon reduction resulting from various options. Virtual audits can be produced faster and at a lower cost than walk-through audits, which can be a particular advantage for large portfolio managers that want a timely and harmonized survey of their managed assets to map out and prioritize retrofit projects.

The fact that there are many technology providers offering virtual audits is healthy for the retrofit innovation ecosystem, but this diversity, and the relative novelty of the tools, also poses some challenges:

- Interested users must infer from a range of promotional materials what functionalities are included in each platform and try to find the best fit for their needs. This creates an additional burden on building owners and the difficulty in comparing the different products may reduce total uptake.

- There are inconsistent levels of trust in the quantitative rigour of the insights provided by these tools, and uncertainty as to whether these are comparable to numbers generated by professionals after a walk-through. Most utilities and governments programs still require a walk-through audit to be completed to access custom incentive programs.

- The lack of familiarity with the methodology of energy audits and their quantitative limitations makes it difficult for a typical user to assess where a statistical inference might be as good as, or even superior to, the judgement calls made by professionals. Users of energy audits may not know which parameters used in the energy models are based on hard evidence (on-site observation or measurements), and which are based on professional judgement based on typical values. The lack of quantitative intuition on the sensitivity of energy models to the different assumptions that go into them further compounds this issue.

Given these challenges, several interviewees discussed the need for a third-party review of different virtual audit platform to:

1. Facilitate selection of a tool by building managers;

2. Encourage utilities and governments to accept some virtual tools as intake for custom programs; and

3. Stimulate ongoing improvement in the statistical analysis engine of the virtual platforms.

Results on baselines and projections would be compared to each other to clarify where the different tools converge or diverge (gauging precision) and compared to ground-truthed information not provided at intake (gauging accuracy). This could help compare between virtual tools and with current auditing approaches.

Because these platforms evolve over time, we believe an agile approach would be better suited than a one time "in depth" study. By keeping the process relatively simple, we can get results out quickly even if some areas of uncertainty remain and propose further iterations to refine insights where more subtleties are needed. This would allow the platforms more regular opportunities to test their product, keep the stakes manageable at each iteration, and reward ongoing improvement.

Support for Social Procurement and Mentorship

Several accelerators are pursuing social procurement or mentorship programs to provide additional benefits to local communities. Potentially transformative, these programs require specific knowledge and skill to run properly. To optimize impact, these programs should account for variations in design based on considerations including region, type of community, and additional supports required to encourage and/or enable participation. As such, their development and implementation can go beyond the usual skillset of retrofit accelerator staff.

SOCIAL PROCUREMENT

Social procurement is a way to get more community benefit from construction and renovation projects. It means including social goals—like employment, training, or local business support—when planning and delivering a project, alongside the usual focus on budget and timelines.

In practice, construction companies aren't usually expected to hire equity-seeking workers directly. Instead, they often partner with local employment or workforce development organizations. These groups specialize in connecting people from underrepresented communities—such as youth, newcomers, or people with disabilities—with job and training opportunities. Contractors commit to creating those opportunities, while the local partners do the recruitment, support, and coordination. Social procurement can also involve working with social enterprises, Indigenous businesses, or local suppliers to deliver parts of the project.

The idea is to use existing construction activity to create broader value: helping people get experience in the trades, supporting inclusive hiring, and keeping more economic benefits within the community. It shouldn't add much complexity to the build itself, but it brings intentionality to who benefits from the work being done.

Interviewees flagged two specific issues:

- **In areas where there are not yet established non-profits providing social procurement services for construction projects, who can accelerators connect with to spur the establishment of such entities?** The potential of having an initial demand for these services could act as a catalyst, but it is beyond the capacity and expertise of accelerators to bring in local stakeholders to establish social procurement non-profits. Are there national organisations with the mandate and capacity to initiate these programs?

- **Mentorship or job-shadowing programs can be transformational for youth or other equity-deserving groups with an interest in entering the trades or becoming construction professionals.** While a few accelerators have created such program, they observed that they lack the resources or know-how to accompany the participants through the process so they can address challenges and make most of the opportunities. Are there national or local organisations such as Mentor Canada that can be brought in to provide that personalized accompaniment, if the accelerators set up the initial opportunity?

Nurture and Extend Community of Practice

The interviews we conducted included only a subset of the many organisations that are actively trying to accelerate the rate and depth of retrofits in Canada; others include non-profits, industry associations or coalitions, research groups, private innovators, demand-side management branches of leading energy utilities, as well as various federal and provincial agencies. Alongside these different groups with a specific focus on the built environment and/or retrofits, there are other sectors with ancillary interests that are of importance to the retrofit effort, or conversely on which retrofits could have material impact: health, insurance and finance, labour and immigration, electricity planning, technological innovation, economic development, etc.

Natural Resources Canada is hosting regular calls between the retrofit accelerators (jointly the Retrofit Accelerator Network), but beyond a few conferences, there is currently no entity tasked with nurturing this broader ecosystem—facilitating sharing of information, coordination of projects, consolidation of resources, networking, mentoring, and coordination of advocacy. There are several formal and informal networks and sharing platforms already in place, but they are often, by design or by accident, impervious to each other and drawn along transversals rather than verticals: government employees of a certain level may talk to each other, staff from demand-side management teams at different utilities may collaborate, local government energy managers and/or planners have networks (CUSP, CEM, USDN), etc.—but there are fewer avenues to bring people from different sectors, and different levels of seniority, to collaborate with each other and forge trusted relations. Coordination of different working groups or communities of practice amongst this ecosystem—in horizontals, verticals, and across sectors—would lead to increased collaboration and accelerated innovation.

There is a scale challenge inherent in attempting to weave these threads: the more parties involved, the more resources it requires to connect them and pool resources, and the more complex the resulting data and insights become. To the geometric scale problem, advancements in AI and hosting technologies may offer some solutions. AI-driven Retrieval-Augmented Generation (RAG) could help structure and synthesize this knowledge by creating a dynamic repository where users can search for ongoing projects, research findings, and lessons learned. Over time, this tool could expand to house comprehensive retrofit market intelligence, reducing duplication and accelerating collaboration.

In addition, having access to a shared pool of tactical funding with the explicit goal of saving time at the onset of collaboration could save precious time by providing resources to start the work while cost sharing agreements for the budget as a whole are being sorted out across different parties. This initial fund would be reimbursed by the project proponent once the project is successfully launched, or absorbed as a loss by the fund if the collaboration fails to take off. This type of "quick start" funding is particularly important when partners from different sectors are brought together, since their models for resourcing projects can differ greatly, and significant efforts might be required by the driving force(s) behind the partnership to secure contributions (cash or in-kind) from the groups involved.

Conclusion

As Canada progresses towards its emissions targets, the DRAI has emerged as a vital enabler for commercial retrofits. The interviews and compiled tool inventory reveal that accelerators are not only addressing local gaps with creative solutions, but also identifying common systemic challenges that extend beyond their individual mandates. The five opportunities outlined—developing a national retrofit data repository, expanding understanding of new financial mechanisms, building confidence in virtual audits, scaling social procurement and mentorship programs, and nurturing a pan-Canadian community of practice—represent concrete actions to amplify the initiative's collective impact. By coordinating efforts, sharing resources, and engaging cross-sector allies, the accelerators and their partners can help shape a retrofit ecosystem that is more integrated, resilient, and ready to meet the scale of the retrofit challenge.

Appendix A - List of DRAI Tools

Lead	Tool Name	Status	Intended Access	Details	Partners	Key Audience	Keywords	Notes
Zero Emissions Innovation Centre	Accelerated adoption stream for electrification of DHW for strata	Completed - Development Ongoing	Public	Includes best practice guide for MURB DHW retrofits, governance evaluation, and policy recommendations to make that transition for strata. At this stage, piloting with a few buildings		Accelerators, Energy Managers	How-To	
Pembina Institute	Affordable Home Energy for All	Published	Public	How Alberta could help its most vulnerable households escape energy poverty	Alberta Ecotrust Foundation	Accelerators, Building Owners / Managers	Research & Analysis	
Four Winds and Associates	Awetza	Completed - Development Ongoing	Private	Community demographic and asset management software tailored for Indigenous communities. Interfaces with JOBI for energy management purposes . Includes local talent database to facilitate hiring of skilled Indigenous workers on projects	Sustainable Project Group	Indigenous Communities	Data Management, Decision Tool	
Zero Emissions Innovation Centre	Best practices for trade alliance networks	In Development	Public	Coordination and best practices on how to establish and maintain trade allied networks	Sustainable Workforce Coalition	Accelerators	How-To, Workforce	
Pembina Institute	Building Health - Valuing Deep Retrofits	In Development	Public	Understanding the non-energy benefits of retrofit projects	Alberta Ecotrust Foundation	Accelerators, Building Owners / Managers	Research & Analysis	
McGill University	Building Identification Tool	Completed - Development Ongoing	Public	Early decision making on site identification. An online platform allows users to augment a preprocessed geo-referenced building dataset with information relevant to retrofits, facilitating the identification of a scalable pipeline of projects for mass customizable over-cladding solutions. Users can import spreadsheet of properties, create a questionnaire and assessment, and export completed assessments. Allows various partners to access and fill in information - go as close as possible to a building condition assessment (i.e. NOT just energy), + other relevant information (building form, number of storeys, possible site obstructions...). Serves to help build out / fill in existing building stock data sets	Hydro Quebec	Accelerators, Building Owners / Managers	Market Assessment	https://aeechair.research.mcgill.ca/en/works/2024-bit-for-mass-der
The Atmospheric Fund	Building information database	Completed - Development Ongoing	Private	Building a database to track TAF-supported retrofit projects, using an open-source relational database (postgreSQL). Includes Indoor environmental data, submeter data, billing data. Data is all internal at moment, so database does not have privacy control functionalities		Accelerators	Data Management	
ReCover Initiative	Building Transformation Program (BTP)	Completed	Shareable On Demand	Owner readiness survey: acts as an energy + asset management literacy check for owners, offers points to start the conversation			Business Case, Communications Assets	
Foresight	Clean Tech Databases	In Development	Public	Produced databases of clean tech for local governments trying to access higher performance industrial technologies (mining, waste water treatment plan, etc.). The approach is currently being expanded to built environment		Accelerators	Research & Analysis	
Alberta Ecotrust Foundation	Climate resilience guidelines	Planned	Public	Recommendations for incorporating climate resilience practices into deep retrofit projects, with a focus on Alberta		Building Owners / Managers, Retrofit Consultants	Design Tool, How-To	
Pembina Institute	Climate risk assessment workshop / tool for BC retrofits	Completed	Private	As part of Reframed Lab, Pembina hired Integral to create a quick climate risk assessment tool to inform retrofits. Not published. BC Housing is also working to create a refined climate risk assessment tool combined with resiliency design details for new construction (not designed for retrofit applications, but could be adapted)		Retrofit Consultants	Design Tool, How-To	
The Atmospheric Fund	Climate risk assessments for building retrofits (Ontario)	Completed	Commercial Use	Climate risk for buildings based on future weather - quantify value of that climate risks which could get included in life cycle costs assessment: https://climatefirst.net/	ClimateFirst	Accelerators, Retrofit Consultants	Decision Tool	
Pembina Institute	Climate risk tools for AB retrofits	Published	Public	Paper making case for need to include climate risks assessment for AB retrofits and inventorying what databases and climate projection resources are available to inform these decisions	Alberta Ecotrust Foundation	Retrofit Consultants	Research & Analysis	https://www.pembina.org/pub/preparing-albertas-buildings-severe-weather
Alberta Ecotrust Foundation	Coaching resources	Completed - Development Ongoing	Shareable On Demand	Resources to support retrofit accelerator coaches and program participants (one-page explainers, videos, checklists, etc.)		Accelerators, Building Owners / Managers	Communications Assets	Please reach out to buildings@albertaecotrust.com for more information or to collaborate on tools/resources
Southern Alberta Institute of Technology	Code and regulatory environment in Alberta	Planned	Shareable On Demand	Review of the legislative and regulatory landscape in AB relating to deep energy retrofits including a review of the approval process for retrofits	Alberta Ecotrust Foundation			
Zero Emissions Innovation Centre	Commercial Building Electrification guide	Completed	Public	Offers a step-by-step repeatable process to help consultants and building owners achieve significant GHG reductions through electrification. The guide is divided into three sections: Electrification Process, Technical Considerations, and Resources	Building to Electrification Coalition (B2E)	Energy Managers, Retrofit Consultants	How-To	https://b2electrification.org/b2e-commercial-building-electrification-guide
Alberta Ecotrust Foundation	Comparison of performance of various desktop software options	Planned	Public	Report on various software options available for desktop-level energy assessments and decarbonization plans		Accelerators, Building Owners / Managers	Decision Tool	
McGill University	Cost analysis and LCA tool (in partnership with RMI-Onion Flats Architecture)	In Development	Public	Will integrate real-time cost data for different tiers of retrofit (1-3) for construction and long term pay-offs. To be integrated with the LCA tab (carbon embedded and operational) and incentive programs. Can integrate more specific data when made available. Support decision up to conceptual design stage (pre-design). Primarily looking at over cladding as an approach (for tier 2 and 3). Currently focused on MURBs, but further developed to integrate institutional, commercial, recreational buildings			Decision Tool, Design Tool	
Zero Emissions Innovation Centre	Database of costs and design decision	Completed - Development Ongoing	Private	Using Microsoft database tools, this in house database contains information on costing and design options for the strata projects that have passed through ZEIC. Some privacy limitations to sharing	Endeavour	Accelerators	Data Management	
Fresco	Database of market rental buildings	Completed - Development Ongoing	Private	Proprietary Fresco tool compiling data on rental buildings in BC/lower mainland	Zero Emissions Innovation Centre	Accelerators	Data Management	
Southern Alberta Institute of Technology	Database of training & market incentive programs	In Development	Shareable On Demand	List of training and skill development programs based on current funding, financing, and incentives for action in relation to deep energy retrofits for commercial buildings in AB	Alberta Ecotrust Foundation			
Building Owners and Managers Association of British Columbia (BOMA BC)	Deep Energy Retrofit Guide	Published	Public	Quick, graphical guide that summarizes key steps related to undertaking a deep energy retrofit	Zero Emissions Innovation Centre	Building Owners / Managers, Energy Managers	How-To	https://www.boma.bc.ca/case-studies-and-retrofit-guides
Building Owners and Managers Association of British Columbia (BOMA BC)	Deep Energy Retrofit Procurement Guide	Published	Public	Focuses on the concepts of deep energy retrofits; created to help building owners, property managers, and energy managers plan, design, and implement retrofits	Zero Emissions Innovation Centre	Building Owners / Managers, Energy Managers	Procurement	
Southern Alberta Institute of Technology	Deep Retrofit Discovery Sessions	In Development	Public	Series of 8 sessions in Alberta designed to educate participants, facilitate the exchange of information, and address challenges in the deep retrofit industry. Two are complete and recordings are available to the public	Alberta Ecotrust Foundation	Building Owners / Managers, Retrofit Consultants, Retrofit Contractors	Market Assessment	
Southern Alberta Institute of Technology	DER case studies list	In Development	Shareable On Demand	List of existing deep energy retrofit projects in Alberta	Alberta Ecotrust Foundation	Accelerators	Market Assessment	
McGill University	Digital twin	Completed - Development Ongoing	Public	Geospatial mapping platform that compiles and visualizes Canada's building stock using diverse physical, environmental, social, and health-related metrics (pulling data from hundreds of open-source data sets). Plan to include component and labour costs data. Includes 3D BIM models for specific buildings. Helps identify retrofit potential across Canada, promising pipelines, building typologies, at risk areas, etc. Can serve as a mapping and data hub (host) for other groups, including privacy access infrastructure	Carleton University	Accelerators	Data Management	https://cims.carleton.ca/project/Digital_Twin_Prototype

Lead	Tool Name	Status	Intended Access	Details	Partners	Key Audience	Keywords	Notes
Zero Emissions Innovation Centre	Dual fuel system analysis	In Development	Public	Real world vs modeled energy performance. Most hybrid system use more gas than they should - study to understand why (set points, process issues, tech issues, etc.). Focused on MURBs, maybe commercial	Building to Electrification Coalition (B2E)	Energy Managers, Retrofit Consultants	Research & Analysis	
Zero Emissions Innovation Centre	Electrical planning reports guidance for stratas	Published	Public	To meet BC's mandate for all stratas to have an Electrical Plan to inform their possible electrification, inspired by the Electrical Loads Assessment developed by BC Housing and BC Hydro for non profit housing	BC Housing, FRESCo	Condo Boards / Strata Councils, Energy Managers	Design Tool, How-To	https://www.b2electrification.org/electrical-planning-report-guidance-stratas-bc https://www.bchousing.org/sites/default/files/media/documents/MM23-Electrification-In-Multi-Unit-Residential-Buildings.pdf
BC Non Profit Housing Association	ENERGY STAR Portfolio Manager (ESPM) integration tool	Completed	Private	Tool to automate data input in ESPM and monitor for errors. Simple, low cost, scalable, but at this point only available to non-profit sector in BC	Zero Emissions Innovation Centre	Building Owners / Managers	Data Management	
The Atmospheric Fund	Enhanced reserve fund studies	Published	Public	Encourage reserve fund studies that do two capital plans - one for climate decarb, and the other following the typical 'like for new' approach		Energy Managers	Financing, How-To	
Southern Alberta Institute of Technology	Final market analysis report	Planned	Shareable On Demand	Key findings, recommendations, etc.	Alberta Ecotrust Foundation			
Pembina Institute	Financial analysis tool: total cost of building ownership and co-benefits	Completed	Private	Spreadsheet tool used to compare different ECM bundles at a retrofit site. Includes financial analysis and quantitative comparison of co-benefits. Allows to compile approach suggested for different buildings into one document and compare-contrast across the cohort		Accelerators, Building Owners / Managers	Decision Tool	
Alberta Ecotrust Foundation	Financing options for the RA program	In Development	Shareable On Demand	A list of financing options for retrofit projects		Accelerators, Building Owners / Managers	Financing	
Alberta Energy Efficiency Alliance	Funding source web resource	Published	Public	List of funding sources for retrofit projects	Alberta Ecotrust Foundation	Building Owners / Managers	Decision Tool	
City of Vancouver	Gas fireplace to heat pump feasibility study	In Development	Public	Can existing wall penetration for gas fireplaces in condos be used to install heat pumps? City of Vancouver is planning to do a market study. What would help people switch to heat pumps?		Condo Boards / Strata Councils	Research & Analysis	
The Atmospheric Fund	Granting and financing options for Ontario Multi-Unit Residential Buildings (MURBs)	Completed - Development Ongoing	Shareable On Demand	A list of granting and financing programs available in the Greater Toronto Area		Energy Managers	Business Case	
Building Owners and Managers Association of British Columbia (BOMA BC)	Green leasing guide	In Development	Public	Resources to support development and uptake of green leases	Zero Emissions Innovation Centre	Building Owners / Managers, Energy Managers	How-To	
OpenTech	Grid	Completed	Commercial Use	Tool for building energy data collection and management, includes ongoing data quality and building performance checks, compliance management options, and reporting		Accelerators, Building Owners / Managers, Energy Managers	Data Management	https://opentech.eco/products/grid/
The Atmospheric Fund	Guide on tax benefits for retrofits	In Development	Public	How to include federal tax credits and accelerated depreciation in retrofit business cases (at the moment, does not include MLI-select and impact on asset valuation)		Energy Managers, Retrofit Contractors	Business Case	
The Atmospheric Fund	Guide on using IPD in retrofit projects	In Development	Public	Includes how to do CCDC 30, early integration in other ways (i.e. 'IPD light'), and how to do IPD for public requirement		Building Owners / Managers, Housing Agencies	Procurement	
Pembina Institute	Healthy Buildings in a Changing Climate	Published	Public	Report on improving health with multi-unit residential building retrofits	Alberta Ecotrust Foundation	Accelerators, Building Owners / Managers	Research & Analysis	
Southern Alberta Institute of Technology	Heat map of Alberta with Training availability over last 10 years	Planned	Public	Heat map (e.g. physical jurisdictions, key market segments, and stakeholders served) of where training has been provided in the past 10 years and key demographics	Alberta Ecotrust Foundation			
Four Winds and Associates	Indigenous Toolkit	In Development	Public	Guide to support communities to manage and build buildings in a sustainable way. Tailored for different AB regions at the moment		Indigenous Communities	How-To, Tenant Engagement	
Southern Alberta Institute of Technology	Market barriers report to reaching critical mass of retrofit buildings	Planned	Shareable On Demand	Report on market barriers to reaching critical mass of deep energy retrofits	Alberta Ecotrust Foundation			
Alberta Ecotrust Foundation	Market Development Report - Post-Secondary	Planned	Public	Summary of market for retrofits in Alberta's post-secondary institutions		Accelerators	Market Assessment	
University of Victoria	Meta analysis	In Development	Public	Meta-analysis of case studies, similar to approach made with Reframed project but with a lot more data. May include a decision tree for design decision - will depend on quality of data	Zero Emissions Innovation Centre	Accelerators	Case Studies, Research & Analysis	
McGill University	Multi criteria decision making tool	Completed - Development Ongoing	Public	A decision-making framework that optimizes retrofit project selection, producing a ranked list of the best candidate buildings for deep energy retrofits; potential buildings are evaluated for energy performance, financial viability, environmental impact, non energy benefits (health), and scalability/feasibility, and then stakeholders weigh their priorities. Currently focused on over cladding, but the final tool will be highly adaptable, to accommodate user added variables (ex: resilience)			Decision Tool	
Southern Alberta Institute of Technology	Narrative report on innovations from other Jurisdictions for AB to consider	Planned	Shareable On Demand		Alberta Ecotrust Foundation			
University of Victoria	Net Zero Navigator	Completed - Development Ongoing	Public	An existing tool helps with new build design: similar to building pathfinder but valid across Canada and offering more refined in technology options. Based on machine learning models using simulations. Something like this could be created for retrofits	OpenTech	Retrofit Contractors	Design Tool	https://netzeronavigator.ca/
Retrofit Canada	Online library of assemblies, details, and case studies	In Development	Public	Web-based database that provides an inventory of case studies, a library of assemblies and details, 'how to' technical animations, etc.	McGill University	Accelerators, Retrofit Consultants, Retrofit Contractors	Case Studies, Communications Assets, How-To	
ClearResult	Opportunity register	Completed	Private	Excel based tool, providing some of the options of ECMs based on ASHRAE level 1 audit. Savings levels are qualitative (low, med, high); includes some cost effectiveness information (based on auditor experience)		Energy Managers	Decision Tool	
BC Non Profit Housing Association	Owner education group	Completed - Development Ongoing	Private	Various educational materials for non-profit MURB owners	Zero Emissions Innovation Centre	Building Owners / Managers	Communications Assets	
Pembina Institute	Preparing Alberta's Buildings for Severe Weather	Published	Public	Understanding barriers and supports needed to scale resilient retrofits in Alberta	Alberta Ecotrust Foundation	Accelerators	Research & Analysis	
The Atmospheric Fund	Pre-qualification process for over cladding suppliers	Completed	Public	Approved proponents in this screening process are added to a multi-use Prequalified Supplier roster that pre-qualify suppliers for bid calls regarding retrofits of multi-residential buildings in the GTHA. First cohort of three qualified panelizers was made public in Nov 2024		Housing Agencies	How-To, Workforce	https://taf.ca/custom/uploads/2024/11/TAF_WSP-Prefabricated-Overcladding-Solutions-for-Deep-Retrofits.pdf
Zero Emissions Innovation Centre	Program management database	Completed - Development Ongoing	Private	Track stratas that reached out to the program, what phase they are in, and key metrics produced by virtual audit (Adaptis). 300 buildings in next 3 years. BOMA BC also using the tool for their program	Building Owners and Managers Association of British Columbia (BOMA BC)	Accelerators	Data Management	
McGill University	Quick climate vulnerability assessment	Seeking Funding	Public	NSERC-Alliance grant in development to create a tool for rapid climate vulnerability assessment in context of retrofits			Design Tool, Tenant Engagement	
Retrofit Canada	Retrofit roadmap	In Development	Public	Guide for which assemblies and details make sense for which situation, linked to asset renewal plans	McGill University	Retrofit Consultants	Design Tool, How-To	

Lead	Tool Name	Status	Intended Access	Details	Partners	Key Audience	Keywords	Notes
ReCover Initiative	Retrofit roadmap	In Development	Public	Database of buildings in Atlantic Canada based on property tax data cross-referenced with utility data. ReCover is close to having utility data from all the Atlantic provinces. Publication expected March 2026		Accelerators	Market Assessment	
Alberta Energy Efficiency Alliance	Retrofit vendor network website	Completed - Development Ongoing	Public	Offers building owners access to a specialized directory of experienced contractors, consultants, and suppliers who lead Alberta in sustainable building practices	Alberta Ecotrust Foundation	Building Owners / Managers	Decision Tool, Workforce	
Building Owners and Managers Association of British Columbia (BOMA BC)	RFP guide for deep retrofits and electrification projects	In Development	Public	What to include in RFPs for these services. Focused on MURBs for now, but plan to expand to other sectors in next years (Strata, non-profit housing)	Zero Emissions Innovation Centre	Building Owners / Managers, Energy Managers	Procurement	
ReCover Initiative	Social procurement approach	Completed - Development Ongoing	Private	ReCover is targeting to have their building retrofit portfolio be comprised of serving 10% Indigenous communities and 10% African-Nova Scotian communities and 10% affordable housing projects. Trying to bring social procurement policies in retrofits as well. Created two pilot job shadowing program for youth to spend time with architects and engineers during a retrofit design phase. Planning to scale it up, and also include a trades-shadowing component		Accelerators, Housing Agencies	Communications Assets, How-To	
The Atmospheric Fund	Social procurement practice	Completed - Development Ongoing	Shareable On Demand	Developing a social procurement/social contracting for construction work; TAF offset some of the costs for projects that use a set of organisations		Building Owners / Managers	How-To, Workforce	
Zero Emissions Innovation Centre	Strata coach resources	Completed - Development Ongoing	Private	Collateral for coaching strata representatives and communicating with the sector: visual library of photos and videos, stories, etc. Resources shared with LC3s		Condo Boards / Strata Councils	Communications Assets	
Alberta Ecotrust Foundation	Study on impact of carbon tax removal	Planned	Public	Study examining how the removal of carbon taxes changes the financial case for deep retrofits		Accelerators, Building Owners / Managers, Retrofit Consultants	Business Case	
Pembina Institute	Survey for tenants and owners	Completed	Private	Survey was used to assess split incentive issues (costs vs benefits of retrofits) and explore whether health impacts could be used as a common ground to motivate retrofits	Alberta Ecotrust Foundation	Accelerators	Research & Analysis	
Alberta Ecotrust Foundation	Tax incentives: general	In Development	Public	A list of tax incentives relevant to deep energy retrofits and examples of how they are applied		Accelerators, Building Owners / Managers	Business Case	
Pembina Institute	Tenant engagement strategy	Completed	Private	As part of Reframed Lab, a consultant was hired to create a tenant engagement strategy for the six buildings involved. This included a new survey on tenant issues (to be used to inform design, and to assess impact using pre-post survey comparisons) and focus group discussions at one site. Assets exist, but have not been published yet		Accelerators	Research & Analysis	
The Atmospheric Fund	Tool and best practice guide for resident engagement	Completed - Development Ongoing	Shareable On Demand	Includes pre-post retrofit survey, templates, language with agreements of building owner, decision trees workflow (co-designed with FCM community of practice on Affordable MURBs)	Federation of Canadian Municipalities	Building Owners / Managers	Tenant Engagement	
Home Performance Network	Trade alliance network BC (for Part 9)	In Development	Public	BC Hydro interested to have HPN host such network for MURBs for in-suite support. This approach would make it easier to curate list and remove poor performers		BC Hydro	Workforce	
McGill University	Value case for non-energy benefits	Seeking Funding	Public	Aiming to quantify social value of retrofits, mainly health and well-being and resilience			Business Case	
OpenTech	Virtual Decarbonization Planner	Completed	Commercial Use	Virtual audit platform feeding ESPM data + owner questionnaire in machine learning algorithm to predict energy end uses and economic value of different retrofit options. Used by AB Ecotrust, Toronto Hydro, amongst others		Building Owners / Managers, Energy Managers	Decision Tool	https://opentech.eco/products/virtual-audits-and-decarbonization-planning/
Alberta Energy Efficiency Alliance	Web Resource: List of building owners / managers with ESG commitments	Published	Public	List of building owners /managers with ESG commitments	Alberta Ecotrust Foundation	Retrofit Consultants, Retrofit Contractors	Decision Tool	
Alberta Energy Efficiency Alliance	Web Resource: List of commercial real estate advisors with ESG commitments	Published	Public	List of commercial real estate advisors with ESG commitments	Alberta Ecotrust Foundation	Retrofit Consultants, Retrofit Contractors	Decision Tool	
Canada Green Building Council	Retrofits Now	Published	Public	Retrofits Now helps real estate owners, asset managers, and investors gain more clarity and confidence about deep retrofits for their assets and portfolios.	Purpose Build	Building Owners / Managers, Energy Managers	Case Studies, Research & Analysis	