BUILDING TO ZERO EXCHANGE

BTZx ENGAGEMENT & ACTION

REPORT #3

Building Decarbonization in Nova Scotia

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NOVA SCOTIA

BUILDING TO ZERO EXCHANGE

Building Decarbonization Alliance pour la décarbonation des bâtiments

Welcome to the Building Decarbonization Alliance & BTZx Joint Report

Prepared for

NOVA SCOTIA'S DEPARTMENT OF ENERGY

INTRODUCTION

On November 28, 2024, BTZx convened leaders in Nova Scotia's building decarbonization space to hear from the Building Decarbonization Alliance (BDA) a set of key takeaways gleaned from pre-workshop interviews, other BTZx-hosted roundtables, and decarbonization initiatives outside the province. This report is a synopsis of the findings.

The Context

Situational Analysis

There are many energy efficiency initiatives across Canada, and Nova Scotia has a rich ecosystem of energy efficiency programs, rebates, companies, and civil society organizations. But while there is lots of talk of energy efficiency and energy poverty reduction (and rightly so), there are relatively fewer strategic conversations on building decarbonization specifically.

Greenhouse gas emissions (GHG) from buildings in Canada have remained steady over the past 20 years. **Without accelerated action on decarbonization, we will fall well short of the reductions needed to meet our country's 2050 net-zero commitments.** Fortunately, in Nova Scotia we have seen progress, as GHG emissions in residential, commercial, and institutional buildings were more than 30% lower in 2021 compared to 2000 due to a combination of economic changes, energy efficiency, and growth in the renewable energy supply.

Nonetheless, buildings remain the third-largest emitting sector in Nova Scotia at 14% of emissions, behind electricity generation at 39% and transportation at 35%. Energy consumption in residential, commercial, and institutional buildings is predominantly for space heating, and the continued reliance on fossil fuels—particularly heating oil—significantly contributes to GHG emissions.

We must urgently decarbonize our buildings by fuel-switching to rely on electricity that is clean and renewable—and not generated from coal or other fossil fuels.

The Context

About the Leading Organizations

The Building Decarbonization Alliance (BDA)—an initiative of the Transition Accelerator—is a non-partisan, national, cross-sectoral coalition that works with over 290 partners to help identify practical, proven solutions that reduce energy costs, improve reliability, and create lasting and tangible benefits for families, businesses, and investors. By building on Canada's proven capacity for innovation and foward-thinking solutions, we can ensure a stronger, more competitive, and less costly future for all Canadians.

The Building to Zero Exchange (BTZx) is a Nova Scotian hub that serves as a rallying point for the building sector to convene, connect, and collaborate for net-zero buildings. BTZx supports and amplifies work in the sector by showcasing leadership, inspiring local innovation, promoting collaboration, and highlighting workforce opportunities in the low-carbon transition.

Our Methodology

To enable fulsome and productive discussions, the action accelerator workshop was split into two parts. Priming the participants was a presentation by the BDA, reporting back on what they learned from previously BTZx-hosted sessions, what they heard in pre-workshop interviews with leaders in Nova Scotia's building decarbonization space, and what they gleaned from decarbonization initiatives outside of our province. As a bridge to the second part, participants were given an opportunity to comment on whether or not the overview was an accurate representation, and their feedback was incorporated into the discussion topics for part two. Following the overview, participants were invite to expand on the matter within a succession of roundtables discussions with key questions and topics provided by the facilitators to spur conversation.

Overview Presentation

- The current state of building electrification in Nova Scotia.
- How Nova Scotia is different within the Canadian energy landscape.

Conversation Structure

- Begin with a list of seven key barriers.
- Prioritize list for discussion by participants post-presentation.
- Final list of areas requiring targeted actions.

Who was invited

- Utilities
- Energy efficiency organizations
- Engineering companies
- Consultants
- Building owners
- Contracting organizations
- ENGOs
- Government officials

The range of participants was chosen with by who has a part in meeting the urgent need to decarbonize our buildings.

The Background

The current state of building electrification in Nova Scotia

Nova Scotia's electricity grid remains carbon intensive. However, the provincial electricity grid is transitioning away from fossil fuels and reduced its emissions intensity by 25% between 2005 and 2022. Historically reliant on coal, **Nova Scotia is moving towards renewable energy sources such as wind and hydroelectric power.**

In 2023, Nova Scotia Power sourced 42.5% of its electricity from renewables, meeting the requirements set by Nova Scotia's 2010 Renewable Electricity Regulations under the Electricity Act. A cleaner grid supports building decarbonization by providing a lower-emitting energy source for heating, cooling, etc.

Nova Scotia has made important progress in adopting heat pumps as their primary heating source, with significant uptake in recent years. Uptake increased from 6% of households in the province in 2013 to 21% in 2021. Heat pumps have gained high market penetration in the province—outpacing the national adoption rate—due in part to their cost-competitiveness compared to oil heating.

Some municipalities are taking the lead on building decarbonization. For example, Halifax has launched an ambitious climate action plan, HalifACT, which aims to reduce community-wide emissions by 75% and achieve net-zero for municipal operations by 2030. While HalifACT outlines aggressive goals, interviewees noted significant implementation challenges, including policy gaps, financial barriers, limited market and workforce capacity, and difficulties in coordinating action across sectors.

Several programs provide incentives and support to help Nova Scotia homeowners transitioning to energy-efficient technologies, including heat pumps. Federally, the Oil to Heat Pump Affordability program provides grants of up to $15,000 to assist low- to median-income households in transitioning from oil heating to heat pumps.

In Nova Scotia, EfficiencyOne offers incentives and collaborates with industry partners to offer training and certification programs for professionals in energy efficiency. These programs cover areas such as energy auditing, heat pump installation, and building envelope improvements.

The Background

How Nova Scotia is different within the Canadian energy landscape

Higher cost of energy: Nova Scotia has some of the highest electricity and natural gas costs in Canada. Combined with the high cost of heating oil and propane, efficient electrification (e.g., using an air source heat pump) can be the lowest-cost alternative for space heating.

Higher reliance on oil for heating: Oil remains a prominent heating source in Nova Scotia, adding to GHG emissions and placing financial burdens on homeowners. The high cost of oil intensifies poverty issues in rural areas, where alternatives like electrification are less accessible and more expensive to implement.

Higher rates of energy poverty: Approximately 27% of households in Halifax Regional Municipality (HRM) and about 43% elsewhere in Nova Scotia experience energy poverty. Many low-income households rely on costly heating oil. This dynamic is especially visible in rural areas, where poverty rates are higher, and the population is older, leading to increased vulnerability to rising energy costs.

Lower population density and smaller market: Compared to larger provinces, Nova Scotia has a lower population density and fewer large commercial buildings, making it challenging to achieve economies of scale in building retrofits and electrification projects. Available funding models, which are often adapted to more dense markets, may not be as effective in Nova Scotia. Aggregating smaller projects to secure funding or achieve scale is often required, adding complexity to the process.

Background Discussion

Was this an accurate overview of Nova Scotia's decarbonization context?

- Slow pace of new building codes adoption, and variances in municipal approaches to codes and net zero goals. While municipalities have differing ambitions and approaches to municipal codes, Nova Scotia's building code sets a standard compliance requirement province wide. This is said to alleviate issues for contractors and builders (e.g., varying codes could increase complexity), but it is important to note that some builders will always focus on the minimum effort needed for compliance. Meeting today's code does not result in a net zero emissions ready building.

- High rates of energy poverty put pressure on immediate relief, versus long-term, strategic investments that can offer year-after-year cost relief.

- Limited funds for smaller buildings and homeowners to decarbonize – there are generally more funds and supports made available for larger and commercial buildings.

- There are 'carrots' to decarbonize (rebates, grants), but not as many 'sticks' yet in the form of policies. (It should be noted that the use of certain sticks is contentious, even within the decarbonization sector. As such, carrots should remain in place to accompany any such sticks.)

- With an older housing stock, there will be 'orphan' buildings that aren't easy (or financially feasible) to electrify. How do we decarbonize these buildings that continue to use traditional heating?

- High upfront costs to deep retrofits and decarbonization remain a major barrier to adoption. Existing Property Assessed Clean Energy (PACE) programs in some municipalities—designed to address upfront costs—are insufficient in scope and size, lacking the financial means to address these challenges.

- Buildings are complicated. They require many players that are aligned around the same goals, and the workforce is not sufficiently prepared (or sufficient in size) for decarbonization efforts. And how do we better benchmark across all heating types?

Background Discussion cont'd

Was this an accurate overview of Nova Scotia's decarbonization context?

- Plus, many buildings are old—are we able (and willing) to do the analysis required on building lifespans to match measures and payback ratios with the age and condition of the buildings?

- There are limited funds for enabling updates. To achieve deep efficiency and decarbonizations, many buildings require retrofits to enable energy upgrades, and many buildings have deferred maintenance to address.

- Typical procurement processes can be time-consuming, complicated, and fragmented (tender the design, then the build, then the supplies—each separately). This can put immense pressure on builders and contractors; and the longer a process can take, the higher the risk that prices of supplies will go up in the meantime.

- Nova Scotia is facing more extreme weather, and climate resilience will need to be factored into building upgrades. This could be especially important for vulnerable communities who are often most susceptible to weather impacts. In most cases, major retrofits are a once-in-a-generation opportunity—we need to do it right. And right now.

The Conversations

Seven Key Barriers

The Building Decarbonization Alliance outlined seven key barriers they determine as factors slowing down or even preventing decarbonation in Nova Scotia. The highlighted barriers, several of which were also identified by the workshop participants, were identified as requiring targeted actions to accelerate the transition to net zero.

1. **An existing focus on energy efficiency over decarbonization.**
2. **Need for policy changes to spur market transformation.**
3. Slow implementation of updated building codes.
4. Need for integrated design processes.
5. **High upfront cost of electrification.**
6. Limited knowledge and market literacy.
7. **Stakeholder misalignment.**

The Conversations

A summary of discussions

The November workshop participants were asked to pick their top four key barriers, which were then discussed in small groups for in-depth exploration of opportunities.

High upfront cost of electrification

Heard: “Is there the political will for more ‘sticks’? Maybe we need much bigger carrots. We need to shift away from the tried and true—it’s not enough anymore.”

Suggested solutions:

- More funding/programs (including demand response/peak use) for affordability, including a strong equity component.
- Support for industrial, commercial and institutional buildings to ensure decarbonization efforts lead to enhanced profitability.
- Programs that reduce the urban/rural divide on electricity/energy costs.
- Better aggregation of learnings on decarbonization/climate solutions across building types (residential, MURBs, etc.)—make upgrades easier to do, and programs easier to navigate.

Discussion highlights:

- When implementing decarbonization retrofits, remember that the full cost of electrification must include the costs of energy back-ups.
- We need to re-align policies to encompass full-cost accounting and full-cost building ownership. At this time, we may need to offset or incentivize the cost of cleaner energy/decarbonization upgrades. (In the case of building owners, ensure costs offsets also help tenants.)
- Improve PACE (Property Assessed Clean Energy) and introduce other programs (on-bill financing, other financing options, etc.) to help address upfront cost challenges (including costs of what’s called enabling upgrades.)
- Tools such as Cap & Trade and carbon pricing can bankroll better incentives and programs. What happens if governments view these mechanisms negatively and end them? How do we create more and better ‘carrots’ to encourage decarbonization? But carrots won’t be enough – regulatory “sticks”, including building performance standards and other regulatory mechanisms will be needed to drive market transformation.
- There are messaging challenges too: many still believe energy from oil is and will continue to be cheaper than cleaner energy. Energy affordability still trumps GHG reductions for many (even though decarbonization will help Nova Scotians in terms of long-term affordability.)

The Conversations

cont'd

A summary of discussions

The November workshop participants were asked to pick their top four key barriers, which were then discussed in small groups for in-depth exploration of opportunities.

Need for policy changes to spur market transformation

Heard: "Now is the time to really focus on market transformation and stop concentrating so much on individual incentives. It's gotten us to where we are, but we need more."

Suggested solutions:

- Improve/streamline training programs for the essential decarbonization labour we need in Nova Scotia. Review time required for trades training.
- Create Director of Apprenticeship for each province to build skills strategy, improve decarbonization skills apprentice programs, speed up foreign credential recognition, implement tracking on number of workers in building space, allow for journeyman license transfer between provinces.
- Strategic research/planning on improved stick and carrots policy levers/incentives in the context of diminished government support for carbon pricing.

Discussion highlights:

- We require market transformation to support electrification (heat pump, heat pump hot water) across the entire ecosystem: from Efficiency One to suppliers to contractors. Misalignment of government departments around decarbonization must end.
- We need to get the insurance sector deeply involved in decarbonization: insurance can incentivize electrification and discourage fossil fuel heating.
- For true market transformation, scale matters: heat pumps have greater impact than lightbulbs, etc.
- More decarbonization measures should be contractor-driven and not rely mainly on homeowner research/requests.
- Access to cooling is increasingly critical, and this should mean access to heat pumps.
- How do we encourage/speed up more innovation, such as the Cogswell district thermal energy example? How do we better learn from pilots (both successful and unsuccessful)?
- We need to speed up implementation of updated building codes. How do we change the reality that builders often follow code to the minimum standard, prioritizing cost savings?
- Many building owners know they need to decarbonize, but they don't know what the best paths are. We need more awareness about available market options and advanced technologies.

The Conversations

cont'd

A summary of discussions

The November workshop participants were asked to pick their top four key barriers, which were then discussed in small groups for in-depth exploration of opportunities.

Stakeholder misalignment

Heard: "We may be good at engaging, but we're not very good at creating solid actions that we all buy into."

Suggested solutions:

- Net-zero decarbonization plans for buildings that better integrate design across all parts of the sector.
- Integration of funding options/opportunities in residential, industrial, commercial, and institutional. We need better market mapping to identify gaps and align priorities.
- A full IRP (Integrated Resource Plan) for decarbonization in the province with deep input from across the energy/building sector.

Discussion highlights:

- This work is complicated; some siloing is inevitable. But we can do better, and ultimately, we're all stakeholders in decarbonization. However, the reality is that everyone is extremely busy—there's both time and cognitive capacity challenges.
- To reach more stakeholders, we need to have more clarity on terms. For example, what is a 'green job'? It might be more expansive than many think. Is there even a consensus on what building labour force we need, and their readiness for the challenges we face?
- We look to government and utilities for funding—what's the role of the private sector? Insurance industry could be a bigger player.
- Incentives, rebates, and programs should be available for all fuel types. Actions must be tied to the provincial energy policy; a better market mapping could help as well.
- Retrofit stakeholders must work harder to reduce emissions, not just reduce energy use.

The Conversations

cont'd

A summary of discussions

The November workshop participants were asked to pick their top four key barriers, which were then discussed in small groups for in-depth exploration of opportunities.

An existing focus on energy efficiency over decarbonization

Heard: "The problem is that energy efficiency on its own is cheaper than decarbonization. We have to re-define demand response to be about fossil fuels, not just using less energy."

Suggested solutions:

- More funding and support for decarbonization.
- New incentive structures for each GHG reduction: 'pay for performance'.
- Better energy education in the marketplace—energy efficiency and DSM are only parts of the solution.

Discussion highlights:

- The conversation around GHG emissions has shifted and has moved beyond just efficiency—funding programs and policy drivers (including codes) must follow. Currently, existing incentives tend to favour electricity savings versus electrification, favouring efficiency versus decarbonization.
- Energy efficiency has a clearer business case—but the marketplace must account for, and better understand, the full cost of building ownership.
- Incentives could cover the cost differential between energy efficiency and full decarbonization, which would encourage supply-side decarbonization. They go hand-in-hand… efficiency makes decarbonization cheaper, and decarbonization makes efficiency more impactful.
- Grid decarbonization must continue at an accelerated rate, to ensure electrification's impact on lowering GHG emissions.
- Embodied carbon is a challenge—labelling of energy efficiency supplies could help with decision-making.
- Using traditional payback calculations, energy efficiency has a 'better' payback than full decarbonization. But this changes when full-cost accounting includes the environmental, economic, and social costs of climate change. Decarbonization isn't just about traditional costs savings.
- We need improved research and planning to better understand the best options.
- Empower the leaders: Halifax, Bridgewater, institutions that want to be on the cutting edge of GHG reductions.

Thank You

If you have questions about the roundtables, please reach out to the BTZx team. To read the BDA's full range of original research, analysis, and opinion pieces on decarbonization and electrification, please visit their analysis page at https://buildingdecarbonization.ca/analysis/

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