Ecology Action Centre

Building Nova Scotia's Green Workforce:

Addressing Labour Gaps for a Net-Zero Future.

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Finally, we recognize the skilled trades professionals and workers in Nova Scotia whose commitment and adaptability are key to achieving the province's energy efficiency and net-zero goals.

PURPOSE

This report examines the challenges, potential solutions, and socioeconomic impacts of developing the skills of Nova Scotia's building-retrofit workforce to support the province's energy-efficiency objectives. It focuses on understanding Nova Scotia's national position in energy efficiency, and providing clear recommendations for policy makers. The research is centred primarily on residential and commercial energy retrofits.

In laying the groundwork for strengthening the local economy in Nova Scotia, this report aligns with the key priorities outlined in **Nova Scotia's 2025-26 budget.** It outlines opportunities to uplift equity-deserving communities in skilled trades. It supports making life more affordable via the expansion of capacity in the construction sector to build energy-efficient housing and complete energy retrofits to lower energy bills. Reducing emissions also plays a vital role in building a healthy population, as cleaner air and greener electricity contribute to public health while mitigating the impacts of climate change.

Achieving Nova Scotia's ambitious climate goals—80% renewable energy by 2030 and net-zero emissions from electricity generated by 2050—requires significant progress in energy efficiency, particularly in reducing emissions from buildings. According to an **Atlantic Economic Council report**, approximately 41,000 homes and 2 million square meters of commercial space will require upgrades in the Atlantic region annually until 2040, at an estimated cost of $1.5 billion. **Pembina Institute's 2021 report** estimates that in Nova Scotia about 16,500 homes, and several commercial properties will require upgrades at an estimated cost of approximately $0.6 billion annually.

Some of the main challenges include a shortage of skilled workers, an aging population and workforce, outdated building codes, and barriers to workforce participation of Black, Indigenous, and People of Colour (BIPOC), Women, Individuals with a disability, youth and newcomers.

On February 19, 2025, the government of **Nova Scotia introduced legislation** aimed at strengthening the financial accountability and sustainability of post-secondary institutions, and alignment with government priorities. Some of the changes include amending existing laws to grant degree-awarding powers to Nova Scotia Community College, hoping to address worker shortages, and establishing consistent governance standards across universities. While these measures intend to align educational offerings with provincial priorities, it remains uncertain what impact they will have on workforce gaps.

This report aims to identify potential demand gaps in the retrofitting and energy efficiency jobs sector and outline actionable recommendations for policymakers. Additionally, we seek to highlight the importance of cultural awareness to ensure that, as the sector evolves to meet these demands, marginalized groups are integrated equitably into the workforce.

This report's analysis draws from a comprehensive evaluation of the current state of the retrofitting and energy efficiency sector. It includes a jurisdictional scan that compares Nova Scotia with other provinces, in-depth industry consultations through surveys and key informant interviews, and a predictive modelling component to forecast upcoming labour shortages in the retrofitting and energy efficiency construction sector.

SUMMARY OF KEY FINDINGS

This report highlights several critical issues in Nova Scotia's retrofitting and green jobs sector. It identifies a significant workforce age gap, with over 35% of skilled tradespeople over 55, facing high attrition risks especially in carpentry, electrical, and HVAC trades. New entrants into the workforce are currently insufficient, with graduation rates only meeting 2-10% of needed workforce replacements.

Moreover, our findings highlight significant opportunities for enhancing diversity and inclusion within the sector, which currently faces challenges due to the low representation of women, individuals with disability and BIPOC in skilled trades. Issues such as workplace culture, harassment, and a lack of role models continue to impede progress toward inclusivity. Additionally, low green literacy and public awareness, along with slow adoption of national building codes and complex permitting processes, restrict the uptake of energy-efficient practices and technologies. These areas present critical avenues for improvement and growth in the sector. Below we discuss critical components of some of the key findings.

(I) JOB FORECASTS FOR MEETING NET-ZERO:

The forecast was produced using data from Statistics Canada and Lightcast, a labour market analytics company, to analyze the key occupations required for energy efficient retrofits.

1. **AGING WORKFORCE & REPLACEMENT:** Over 35% of skilled trade workers in Nova Scotia are over 55, with the highest attrition risks in carpentry, electrical, and HVAC trades.
2. **NEW ENTRANTS DEFICIT:** Graduation rates in key trades meet only 2-10% of workforce needs. Carpenters have a 2% replacement rate, while electricians have 5.8%.
3. **WORKFORCE SHORTAGES UNDER DIFFERENT SCENARIOS (2025-2031):** Three scenarios were analyzed based on different levels of investment in workforce development and policy changes.

   BASELINE (2020 STANDARDS): Carpenters (-5,520 jobs), Electricians (-3,409 jobs).

   WORKFORCE EXPANSION: Carpenters (-6,016 jobs), Electricians (-3,703 jobs).

   AGGRESSIVE GROWTH (2025 STANDARDS): Carpenters (-7,010 jobs), Electricians (-4,292 jobs).
4. **DIVERSITY & INCLUSION:** Women represent only 3% of electricians and 1% of plumbers, while BIPOC workers account for less than 5% of skilled trades.
5. **PROJECTED INDUSTRY GROWTH & TRENDS:** Retrofitting will drive job growth in HVAC, electrical, and building-finishing trades at a 1-2% annual rate post-2025, while automation may reduce traditional facility operation roles.

(II) SURVEY RESULTS:

We conducted an online survey that had 78 respondents to explore perspectives, challenges, and opportunities in Nova Scotia's green jobs and skilled trades. Over half (52%) of respondents were aged 25-44. About 59% self-identified as women, 37% as men, and the rest preferred to not disclose. Participants self-identified their backgrounds as White (68%), African NS & Black (12%), Indigenous (8%), and Asian (4%).

The top three reported challenges for Women and Marginalized groups were 1) workplace culture and sexism, 2) stigma and stereotypes, and 3) lack of representation. These barriers were aligned with our key findings from the primary research and informant interviews.

Approximately 30% reported having experienced or witnessed harassment in the net-zero or construction related sector workplace. Commonly reported types of harassment included 1) discriminatory behaviour based on gender or race, 2) verbal harassment (insults), and 3) bullying or intimidation. This implies that there is a significant need for cultural inclusivity and a stronger stance against all forms of harassment in the skilled trades workforce.

The awareness of green job opportunities observed was low, with 61% reporting having "a little" to "no" awareness of green jobs, while 76% reported "no" and "not sure" when asked if they believed their communities had enough green jobs for them to stay and work there. This lack of awareness is indicative of the opportunity to showcase the viability and financial rewards of trades careers.

(III) INFORMANT INTERVIEWS & INDUSTRY REPORTS:

These are the gaps identified from industry reports (e.g., **BuildForce Canada**, & **YWCA Halifax**), and from over 30+ key-informant interviews from the construction industry and energy-efficiency organizations.

1. **Low green literacy and lack of awareness** of energy efficiency within the sector and general public create barriers of adoption. Homeowners are unaware of practical benefits like saving up to $2,200 annually with a heat pump. Informants reported that there is resistance within the construction industry to building and retrofitting to the highest standards, due to a lack of a clear building code implementation timeline and perceived high costs. Among job seekers, there is a limited awareness of green job career pathways, particularly from marginalized communities and youth, as they struggle to access information about training.

2. **A lack of representation and worksite readiness** to include people from equity-deserving communities limit women and BIPOC representation. Over 90% of women reported harassment in YWCA Halifax's 2024 Sexual and Gender-Based Harassment in the Skilled Trades report. Worksites aren't adequately prepared for diverse workers, as personal protective equipment doesn't fit all body types and accessible facilities for disabled workers and women remain limited. Early and mid-career professionals struggle finding mentors with a shared background to guide them through completion of apprenticeships and Red Seal Certification.

3 **Slow 2020 national building code (NBC) adoption in Nova Scotia** and limited information on timelines have created challenges for the industry and slowed adoption of higher efficiency standards. There is also a significant opportunity to expedite the implementation of mandatory energy efficiency upgrades during retrofits, which currently hinders efforts to enhance energy performance in the province's aging housing stock—21% of which was constructed before the 1960's. Complex permitting & incentive processes cause longer project timelines, resulting in added costs, making developers prioritize cost savings over building to higher efficiency standards.

4 **Educational and training barriers** limit access in rural areas. They include low access to transportation and historical traumas associated with schooling/education systems among marginalized groups. Trades curricula adapt slowly to industry demands, creating knowledge gaps in emerging efficient technologies. Installing heat pumps requires 2 certifications with over +5,000 hours of training, and a more flexible solution could be developed. Financial barriers & unpaid training periods affect BIPOC groups disproportionately. And there is a lack of learning support to accommodate the needs of tradespeople who struggle with theoretical training and exam anxiety.

Based on these findings, we propose several policy recommendations aimed at achieving net-zero targets while fostering a more inclusive workforce. These suggestions address critical areas to enhance both environmental and social outcomes within the sector.

POLICY RECOMMENDATIONS

1. WORKFORCE TRANSITION

According to our analysis over 35% of the retrofitting workforce in Nova Scotia is 55+ years old, with shortages expected in carpentry, HVAC, and electrical trades. There is a potential risk that current replacement rates will struggle to meet the growing demand for housing and energy efficiency implementation. These challenges can result in increased costs faced by individuals seeking housing, including higher electricity bills (leading to energy poverty), and shortages in available labour.

We make the following four recommendations to the Governments of Canada and Nova Scotia, in collaboration with industry, trade unions, and training institutions:

1. **Workforce Transition & Mentorship:** Create programs for retiring tradespeople to mentor new professionals, supporting knowledge transfer. Prioritize mentorship for BIPOC groups.
2. **Fast-Track Apprenticeship Grants:** Offering grants to businesses to hire and train apprentices before experienced workers retire can help get ahead of the looming shortage. With 10,600 skilled tradespeople set to retire in Nova Scotia in the next decade, early action is critical.
3. **Skilled Trades Immigration Pathways:** Making it easier for Newcomers, including professionals over 30, to validate their credentials and gain local experience to fill labour shortages.
4. **Rural & On-Reserve Training:** Bringing hands-on HVAC and retrofitting training to rural and Mi'kmaw communities through mobile units can create new career opportunities. Supporting Indigenous-led programs like Trade Winds to Success and programs that support First Nation schools like Green Schools Nova Scotia, can help grow a diverse workforce.

2. INCLUSION

Inclusion in Nova Scotia's skilled trades remains a challenge, with equity-deserving groups facing systemic exclusion, harassment, and inadequate accommodations. In a 2024 **YWCA Halifax** study, 90% of women and gender-diverse participants in the trades reported harassment. The lack of mentors from similar backgrounds as apprentices limits professional development. Non-inclusive hiring processes and inadequate facilities, like ill-fitting protective gear and inaccessible changerooms, limit inclusion.

We make the following three recommendations to the Governments of Canada and Nova Scotia, in collaboration with the trades sector:

1. **Increase Representation in Leadership:** Support mentorship programs and equity policies to help prepare professionals from equity-deserving communities for leadership roles. Partner with organizations like PREP Academy to pair Black mentors with students in the Clean Energy sector for hands-on learning.

2. **Advocate for Accessibility Practices:** Use gender-neutral and inclusive language in job postings to attract diverse applicants. Collaborate with programs like CWB's Women of Steel and provide accessible facilities, including change rooms and protective gear for all workers, including those with disabilities.

3. **Address Workplace Harassment:** Implement mandatory workshops and inclusivity training for staff and management to proactively address harassment. Expand partnerships with programs like YWCA's Shift Change to foster a welcoming workplace, particularly for women in trades.

3. EQUITY

Equity-deserving communities, including African Nova Scotians, Indigenous Peoples, Women, Newcomers, 2SLGBTQIA+, and persons with disabilities, face generational trauma and systemic barriers due to historical inequities. These barriers result in generational trauma, wealth gaps, and mistrust in institutions, especially in rural areas.

We make the following three recommendations to the Governments of Canada and Nova Scotia in collaboration with the private sector and learning institutions:

1. **Expand Wraparound Support:** Provide comprehensive support for food, housing, security, and education to help equity-deserving groups succeed. Increase funding to organizations like Iron & Earth, Energy Trailblazer Program, and Building UP to enhance their impact. Wraparound programs have proven effective in improving exam pass rates and education on cultural inclusion.
2. **Increase Cultural Sensitivity:** Foster pride and inclusion by building cultural awareness and collaborating with programs like YWCA's Shift Change, which promotes full inclusion of marginalized groups in skilled trades.
3. **Support Diverse Career Paths:** Support racialized students in exploring career paths beyond STEM to build confidence and expand opportunities across diverse fields. Continue to extend support for programs like Business is Jammin' (BIJ) by Black Business Initiative will be critical to develop and inspire the youth.

4. ADOPTION

Nova Scotia's commitment to Tier 3 energy codes by 2029 is a step toward net-zero energy ready, but many industry experts say stronger measures are needed for 2050. Developers hesitate due to perceived high short-term costs of insulation and materials, plus unpredictable timelines. Inconsistent funding, like the 2024 Canada Greener Homes Grant pause, weakens trust in incentives. With most retrofits still voluntary, mandatory upgrades during renovations could drive greater impact.

We make the following two recommendations to the Governments of Canada and Nova Scotia, in collaboration with the construction sector:

1. **Streamline Incentives & Public-Private Communication:** Build stable programs that are resilient to policy changes to get consumers to trust them. Maintain a closer public-private dialogue to address industry concerns of meeting high housing demand and government's 2050 Net-Zero targets. Communicate building code implementation timelines and incentives through public-awareness campaigns to increase efficiency adoption.

2. **Efficiency Upgrades (Retrofits & New Builds):** Include efficiency requirements during major renovations (upgrades) and for new buildings to accelerate the process of meeting Tier 5 building standards. Initially building to net-zero offers long-term savings and reduces future disruptions.

5. EDUCATION & EXPANSION

Low success and pass rates in trades exist, especially among marginalized groups, due to financial constraints, exam anxiety, and unclear green jobs career pathways. High costs for tuition, materials, and living expenses limit participation, while lengthy exams create stress, especially for those with historical educational trauma. A lack of mentorship, inadequate accommodations for diverse learning styles, and poor outreach in rural areas further hinder success for equity-deserving groups.

We make the following five recommendations to Governments of Canada and Nova Scotia, in collaboration with the construction sector, educational institutions, and community organizations:

1. **Expand micro-credential programs:** Provide flexible, lower-cost training in specialized areas like heat pump installation to overcome barriers such as affordability, transportation, and long program durations.
2. **Increase wraparound support:** Help professionals with childcare, housing, and transportation, following successful models like the Mainland Nova Scotia Building Trades initiative, which has helped to improve apprenticeship completion rates.
3. **Awareness of career pathways:** Strengthen career outreach through partnerships with schools and industry, modelling programs like YWCA Halifax's Shift Change to rural and marginalized communities to showcase trades as viable careers.
4. **Combat trades stigma:** Highlight success stories through public campaigns featuring diverse trades workers, emphasizing sustainability and the financial benefits of careers in skilled trades.
5. **Partner with Mi'kmaw communities:** Support education programs like Green Schools which provide local energy-efficiency training on First Nation schools. Bringing training solutions to communities can help overcome trust challenges caused by intergenerational trauma.

6. COLLABORATION

Weak public-private coordination and a lack of centralized frameworks causes misalignment between government policies, industry demands, and education programs. The construction sector resists the estimated 8% cost increase for net-zero energy ready buildings, while the government prioritizes Net-Zero by 2050. Limited industry involvement in education leads to skills gaps, and the absence of public-private funding models worsens long-term development.

We make the following three recommendations to Governments of Canada and Nova Scotia, in collaboration with industry, trade unions, and educational institutions:

1. **Establish a provincial green workforce council:** Foster collaboration between government, industry, unions, and educators to align workforce strategy. Partner with groups like Building to Zero Exchange (BTZx) to adopt best practices from Canada's efficiency leaders in Nova Scotia.

2. **Integrate industry-led curriculum development:** Require trade schools and apprenticeship programs to co-develop curricula with industry to keep pace with emerging demands like heat pumps. While the Nova Scotia Association of Architects (NSAA) holds annual industry meetings, faster adoption of new training, through micro-credentials and fast-track programs, is needed to close skills gaps.

3. **Expand public-private funding partnerships:** Match government investments with industry contributions to create sustainable upskilling programs. Direct funding to proven initiatives like YWCA's Shift Change and Women of Steel by CWB Foundation to maximize impact.

7. AWARENESS

Many homeowners aren't aware they could save up to $2,200 a year with a heat pump, while developers are motivated by cost savings. Complex permitting processes make meeting Nova Scotia's Net-Zero 2050 goals even harder. With 21% of homes built before 1960 and new building codes in place, a mix of financial incentives and stronger regulations will be key.

We make the following four recommendations to the Governments of Canada and Nova Scotia, in collaboration with industry, trade unions, and training institutions:

1. **Promote Green Literacy & Awareness:** Educate homeowners, property managers, and tenants on energy efficiency benefits such as saving up to $2,200 annually with heat pumps. Highlight the risks of inaction and simplify permitting processes to encourage long-term adoption.
2. **Promote Construction's Role in Net-Zero:** Launch government and industry-led campaigns to show how energy-efficient building practices support climate goals. Expand environmental education, micro-credentials, and training for construction professionals.
3. **Standardize Trades & Update Curricula:** Align compulsory trades and training programs to reduce worker loss to other provinces. Integrate energy efficiency standards and upskill workers in key areas like heat pumps to meet growing industry demands.
4. **Expand & Streamline Incentives:** Strengthen retrofitting and construction incentives, following models from BC, Quebec, PEI, and New Brunswick. Simplify applications and make programs resilient to political shifts to boost participation.

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