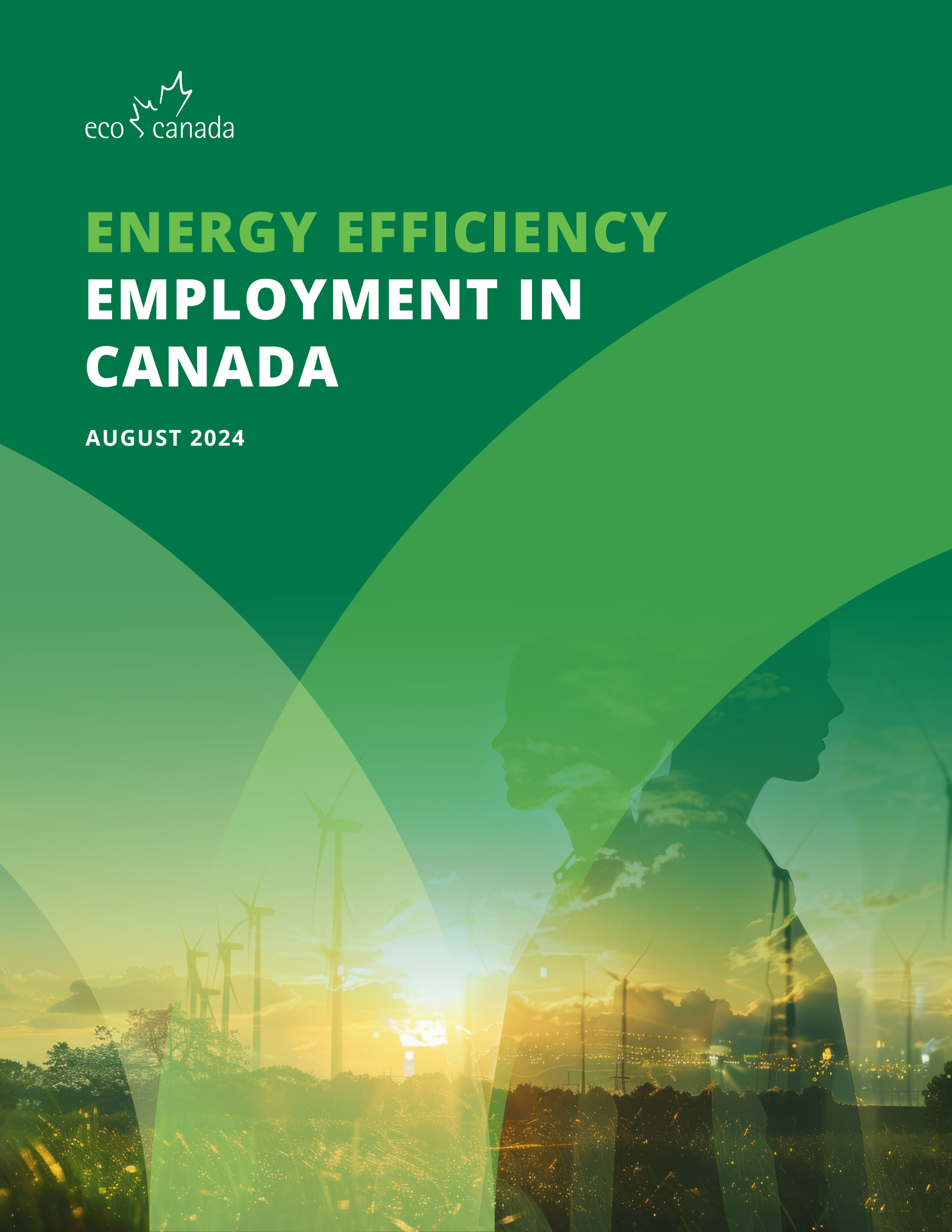




ENERGY EFFICIENCY EMPLOYMENT IN CANADA

AUGUST 2024



ABOUT ECO CANADA

Environmental Careers Organization of Canada (ECO Canada) stewards Canada's growing environmental workforce across all industries. For over 30 years, we have worked with some of Canada's brightest minds, and the organizations that employ them.

We provide workforce insights and solutions to ensure an adequate supply of skilled talent is available both now and in the future. From job creation and career resources to training and certification, we deliver programs and services to help:

- individuals prepare for and build their environmental careers,
- employers find and keep qualified practitioners,
- governments develop programs and update policies, and
- educators and trainers adapt their offerings to prepare the workforce that is and will be in demand.

As a not-for-profit organization, we provide up-to-date and relevant workforce data and insights for policy, business, and educational purposes. Our knowledge and expertise span nationally across all provinces and territories, as well as within major Canadian industries including agriculture, forestry, energy, mining, construction, manufacturing, professional and technical services. We not only look back at historical data of the sector, we also continuously work to find and identify trends that will impact the future of the workforce.

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ACKNOWLEDGMENTS

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PREFACE

Improving energy efficiency stands as a crucial element in the worldwide effort to address climate change. In 2018, ECO Canada commissioned a first of its kind study on the energy efficiency workforce in Canada. This study addressed an existing research gap in Canadian data and brought about a robust and detailed analysis on direct and permanent energy efficiency employment within the following six key industries:

- Construction
- Manufacturing
- Wholesale Trade
- Professional and Business Services
- Utilities
- Other Services (for more information about the industries, see Appendix A.)

This report updates and broadens the energy efficiency workforce estimates established in the original 2018 study. It includes new data detailing energy efficiency employment across different geographical areas (provinces and territories), along with insights into Canadian firms' international export capabilities in energy efficiency products and services.

The report is a result of a comprehensive survey conducted in winter 2023/24 with 2,694 business establishments across Canada, providing a point-in-time snapshot of the energy efficiency workforce. Our research and statistical analysis revealed the following key findings:

- The energy efficiency sector is growing, it has outpaced the national job growth average and seen an enormous increase in operating revenue.
- Employers in the energy efficiency sector are experiencing difficulties hiring workers, predominantly due to a lack of qualified candidates.
- The geographic distribution of the energy efficiency workforce in Canada is consistent with the overall national workforce.
- The Canadian energy efficiency workforce is less diverse than the overall national workforce average, in particular with an underrepresentation of women in the sector.

In 2023, the energy efficiency sector employed over 466,000 permanent workers, among over **55,000** establishments. Overall, the Canadian energy efficiency sector generated **\$126.3 billion** in estimated operating revenues within the year, a sharp uptick from the \$82.6 billion estimated in our 2018 study.

The energy efficiency sector plays a vital role in Canada's transition to a low-carbon economy. Enhancing energy efficiency is anticipated to decrease greenhouse gas (GHG) emissions, a pivotal component of the Pan-Canadian Framework on Clean Growth and Climate Change. This not only reduces national energy consumption but also cuts costs for businesses and consumers alike.

Considering the impact of energy efficiency initiatives on employment is vital for Canadian policymakers and program developers. By conducting and sharing this study, we aim to engage stakeholders in governments, industries, educational institutions, and individuals to address current and future labor market challenges in the sector. Expanding the pool of skilled workers ensures a robust, efficient, and sustainable workforce in energy efficiency, supporting economic growth while managing environmental impact and resource use both sustainably and effectively.

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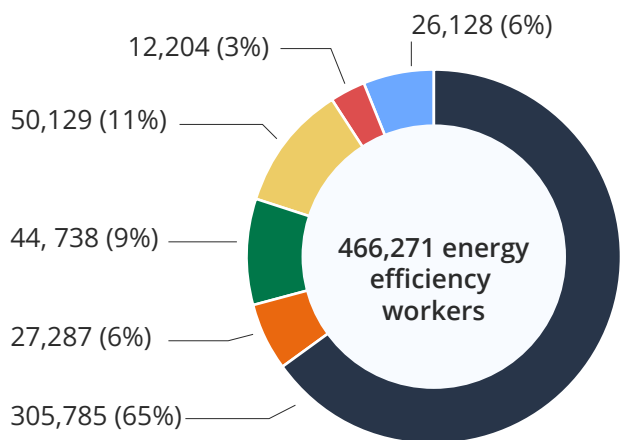
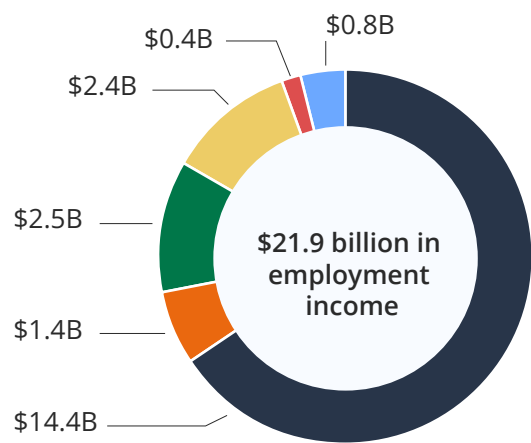
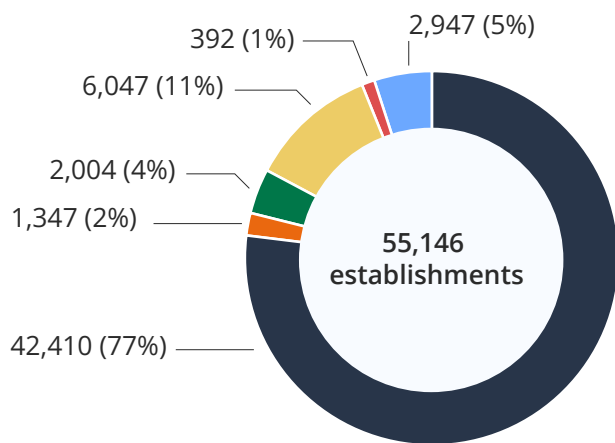
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EXECUTIVE SUMMARY

Canada has invested significantly in combating the climate crisis, focusing on transitioning to a low-carbon economy across all industries. As a result, energy efficiency activities are rapidly growing across all industries, and so is energy efficiency employment. As of 2023, **over 55,000 establishments** across six major Canadian industries, namely Construction, Manufacturing, Wholesale Trade, Professional and Business Services, Utilities, and Other Services, generated **\$126+ billion** in estimated operating revenues from the provision of energy efficiency goods and services.

KEY FINDINGS:



1. Six major industries collectively employed nearly 466,000 permanent energy efficiency workers, generating an estimated employment income of \$22 billion in 2023.

In the **past 5 years**, the sector's permanent workforce has increased by:



6.9%

Number of establishments has grown from:



50,711 - 55,146

Reflecting an increase of:

8.7%

Total operating revenues have doubled, from:



86.2 Billion - 126.3 Billion

2. The energy efficiency sector has expanded from 436,000 employees in 2018 to over 466,000 in 2023.

The construction industry held the largest share of Canada's energy efficiency workforce, **accounting for 65% of the total.**



27% of workers

primarily focused on LED, CFL, and other efficient lighting technologies, representing the highest proportion of any sub-technology.



3. The energy efficiency workforce is not evenly distributed across industries or technologies.

Only **18% of workers** in this sector identify as female, compared to the **national average of 48%**



Indigenous persons make up 3% of the energy efficiency workforce, slightly below the **national average of 4%**



Only 34% of the sector's workforce holds an associate degree, academic certificate, bachelor's degree, or higher, compared to the **national average of 70%**.



4. The energy efficiency workforce is less diverse and has lower levels of formal education relative to the overall Canadian workforce.

OVERALL ENERGY EFFICIENCY WORKFORCE PROJECTIONS



ENERGY EFFICIENCY WORKFORCE GROWTH PROJECTIONS OVER THE NEXT 12 MONTHS, BY INDUSTRY



ENERGY EFFICIENCY HIRING DIFFICULTIES

Over three in four employers face ongoing hiring challenges due to high demand, a small applicant pool, and insufficient qualifications.

The occupations most frequently cited as “difficult to recruit for” were:



Installation workers
or technicians



Managers or
Supervisors

5. Despite growing demand for energy efficiency workers, employers are already facing hiring shortages.

INTRODUCTION

Canada has made significant investments toward combating the climate crisis by accelerating the transition to a low-carbon global economy and creating decent jobs.¹ Billions of dollars have been invested into programs such as the Smart Renewable and Electrification Pathways Program to deploy renewable and electrical grid modernization projects across Canada, reducing emissions while generating clean energy jobs. In 2022, Canada allocated nearly \$4 billion to job creation for Indigenous peoples focused on critical minerals, which serve as the building blocks for clean energy technologies.

Moreover, in March 2022, Canada released a 2030 Emissions Reduction Plan, which includes a plan to create a building code adoption acceleration fund, increased support for energy management systems for small and medium enterprises, and revised timelines for a light-duty zero-emission vehicle mandate. The plan outlines a sector-by-sector path for Canada to reach an emissions target of 40 percent below 2005 levels and net-zero emissions by 2050.²

According to the American Council for an Energy-Efficient Economy (ACEEE), Canada's investments in energy efficiency per capita were among the highest of the 25 countries evaluated. These include the Canada Greener Homes Grant Program, which provided Canadian homeowners with grants of up to \$5,000 to improve the energy efficiency of their homes and Canada's 2016 Energy Efficiency Act and Energy Efficiency Regulations which define federal energy efficiency standards for regulated products that are imported into Canada or shipped between provinces for sale or lease. Six provinces; British Columbia, Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia have actually gone beyond this and have adopted their own energy efficiency regulations for many of these federally regulated products.³ Despite this, Canada only ranks 13th on energy efficiency policies and performance.⁴

While considerable investments have been made in clean energy and energy efficiency in recent years, it can be difficult to quantify the effects of these investments on energy efficiency. Thus, ECO Canada engaged BW Research Partnership on behalf of Natural Resources Canada (NRCan) to conduct a survey of establishments in Canada to determine the workforce size of industries directly involved in the supply of energy efficiency goods and services.

¹ Canada ranked 19th of 120 countries on the World Economic Forum (WEF)'s Energy Transition Index (ETI), which benchmarks countries on their current energy system performance and provides a forward-looking measure of transition readiness. [Fostering Effective Energy Transition](#). WEF. June 2023

² [Canada's 2030 Emissions Reduction Plan](#). June 2022.

³ [Energy efficiency regulations by province](#). Last updated September 6, 2023.

⁴ [The 2022 International Energy Efficiency Scorecard](#). ACEEE. April 2022.



This study updates and expands the energy efficiency workforce estimates developed in the original 2018 study⁵ with data on energy efficiency employment by geography (by province and territory) and data on the international export capabilities of Canadian firms, as they relate to energy efficiency products and services. The findings presented in this report aim to quantify the impacts of Canada's investments in energy efficiency, offering insights into workforce composition, the GDP contributions of energy efficiency employment, and the future of energy efficiency employment.

This study was guided by similar research methodologies conducted by BW Research Partnership on energy employment in the United States, including those within the energy efficiency workforce.⁶ For further details on the scope and methodology of the study, see Appendix A.

⁵ Energy Efficiency Employment in Canada. ECO Canada. April 2019. Available upon request.

⁶ The U.S. Energy and Employment Report (USEER) is an annual report prepared for the U.S. Department of Energy (DOE) by BW Research. The USEER reports cover four major sectors in addition to Energy Efficiency, namely: Electric Power Generation; Transmission, Distribution and Storage; Fuels; Energy Efficiency; and Motor Vehicles. The Canadian survey only addresses Energy Efficiency. [United States Energy & Employment Report 2023](#). U.S. Department of Energy. June 2023.

SPOTLIGHT: PROGRESS AND CHALLENGES IN ENERGY EFFICIENCY EMPLOYMENT AND INVESTMENT

Growth in energy efficiency employment over the last five years was lower than originally anticipated due primarily to the effects of the COVID-19 pandemic, which derailed economic activity all over the world. In fact, according to the International Energy Agency (IEA), 2020 was “the worst year for energy efficiency in a decade,” as energy prices fell, the rate of technological progress slowed, and the balance of economic activity shifted from less energy-intensive activities, such as hospitality in tourism.

While the global economy began to recover in 2021, demand for commodities increased and bottlenecks in supply chains emerged, creating shortages of goods and services needed for new investments in energy efficiency, including construction, and delays in building completions.

Despite these challenges, Canada’s government continued to invest in energy efficiency measures as part of its ongoing transition to a clean energy economy. However, the measurement of impacts generated by energy efficiency investments is affected by timing issues, as there are lags between the date in which a new regulation is passed and the date at which it may go fully into force. Additionally, lags may arise due to slow stock turnover and the time needed to incorporate changes into product designs and existing manufacturing processes.⁷ Certain types of equipment could also have a useful life of up to 20 years, translating to a significant delay in product replacements incorporating more energy-efficient technologies and underscoring the importance of incentives and replacement programs in accelerating stock turnover. In addition, energy efficiency gains may have been partially moderated by consumer lifestyle choices, in which households counterbalance energy-saving measures in one aspect of their lives with an increase in consumption in another.

These factors universally temper the pace of growth across the global energy efficiency economy, so it is important to recognize that while the impacts of current investments in energy efficiency measures may not be fully realized immediately after implementation, that their impacts are cumulative and must be sustained to ensure continued progress in the transition to a clean economy.

⁷ Turnover rates vary by product type and by sector and depend in part upon products’ useful lives.

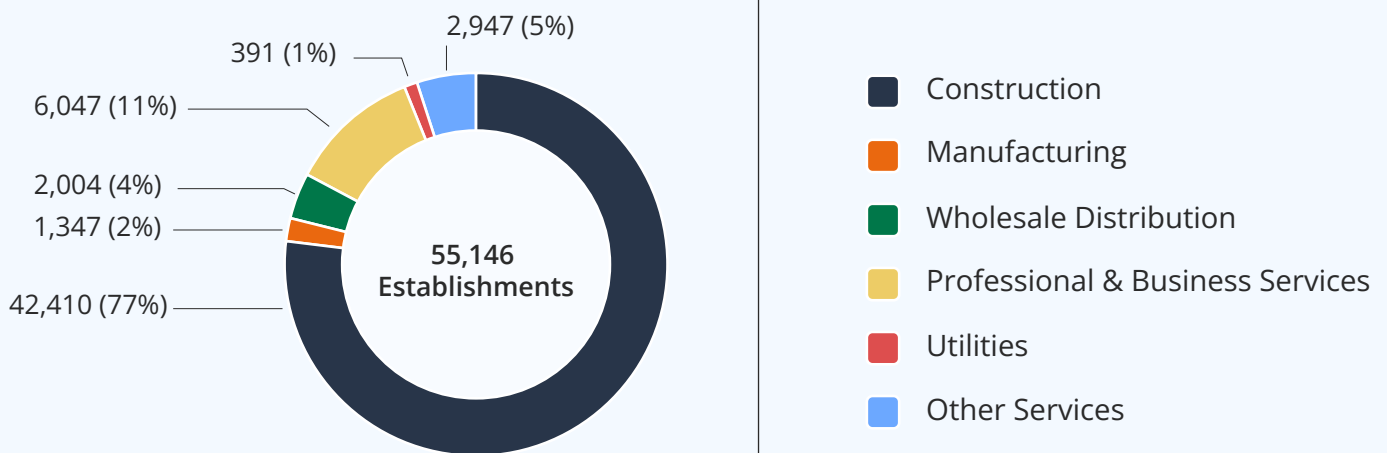
OVERALL FINDINGS

ESTABLISHMENTS

An energy efficiency establishment in this survey is defined as a firm that was involved in energy efficiency products and services but that did not necessarily derive all its revenue from energy efficiency.

In 2023, over 55,000 establishments within the six industry groups were involved in energy efficiency activities across Canada (Figure 1). The largest number of energy efficiency establishments were found in the Construction industry (77%).

FIGURE 1. ENERGY EFFICIENCY ESTABLISHMENTS BY MAJOR INDUSTRY SECTORS, 2023:



The distribution of establishments across industries did not change significantly over the last five years. In 2018, the Construction industry also represented 77% of establishments; Professional & Business Services represented 10% of establishments; Other Services represented 5% of establishments; and Wholesale Trade, Manufacturing, and Utilities each represented less than 5% of establishments.



REVENUE CONTRIBUTION

Estimated operating revenues from all energy efficiency firms grew by more than 50 percent over the last five years to 2023, totaling CAD \$126.3 billion (3% of total operating revenues across the six industries in Canada).⁸ The Construction industry was the largest contributor to energy efficiency operating revenues, accounting for \$54.4 billion (43% of total energy efficiency operating revenues); followed by Wholesale Trade, which accounted for \$36.9 billion (29% of total energy efficiency operating revenues), and Manufacturing, which accounted for \$16.8 billion (13% of total energy efficiency operating revenues).

TABLE 1. OPERATING REVENUE CONTRIBUTION OF ENERGY EFFICIENCY BY MAJOR INDUSTRY, 2023

INDUSTRY	INDUSTRY OPERATING REVENUES (IN MILLIONS)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (IN MILLIONS)
CONSTRUCTION	\$433,046	12.6%	\$54,403
MANUFACTURING	\$1,056,034	1.6%	\$16,777
WHOLESALE TRADE	\$1,059,158	3.5%	\$36,858
PROFESSIONAL & BUSINESS SERVICES	\$1,412,750	1.1%	\$15,651
UTILITIES	\$49,199	4.2%	\$2,065
OTHER SERVICES	\$50,618	1.1%	\$561
TOTAL	\$4,060,805	3.1%	\$126,314

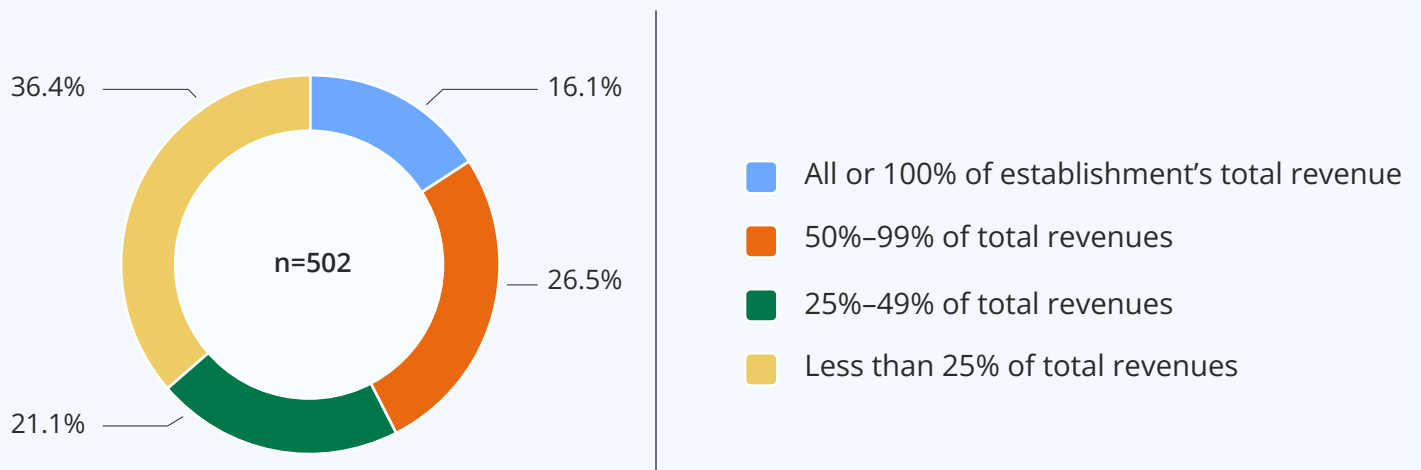
In ranking the industries by percentage of revenue derived from energy efficiency, the Construction industry held the number one spot, with 13% of industry revenues derived from energy efficiency activities; energy efficiency activities accounted for less than 5% of industry revenues for all other industries.

⁸ Calculated by multiplying total 2023 operating revenue by industry (Quarterly Survey of Financial Statements - Incorporated companies only. Source: Statistics Canada. Table 33-10-0226-01 Quarterly balance sheet and income statement by industry (x 1,000,000), Q1 to Q4 2023) by share of energy efficiency establishments in an industry and proportion of total gross revenue derived from energy efficiency according to survey responses. Does not include public expenditure on energy efficiency programs.

The percentages of revenue derived from energy efficiency did not change significantly for most industries between 2018 and 2023, with the exception of the Utilities industry and the Construction industry. In the Utilities industry, revenue from energy efficiency increased by 2.3 percentage points over the last five years; in the Construction industry, revenue from energy efficiency increased by 1.8 percentage points over the last five years. In each of the other industries, revenue from energy efficiency increased by less than 0.5 percentage points.

In 2023, 43% of firms indicated that energy efficiency-related goods and services accounted for at least 50% of their revenue. Furthermore, 16% of firms indicated that energy efficiency-related goods and services accounted for all their revenues (as compared to 12% of firms in 2018); the rising share of firms solely dedicated to energy efficiency reflects maturation in the industry, as an increasing amount of work is devoted to energy efficiency activities over time.

FIGURE 2. REVENUE FROM ENERGY EFFICIENCY



The total gross domestic product (GDP) derived from energy efficiency firms summed to approximately CAD \$35.7 billion (3.5% of total industry GDP across the six industries in Canada).⁹ The Construction industry accounted for the largest contribution to energy efficiency GDP, with CAD \$20.9 billion dollars (59% of total energy efficiency GDP).

TABLE 2. CONTRIBUTION OF ENERGY EFFICIENCY BY MAJOR INDUSTRY SECTOR

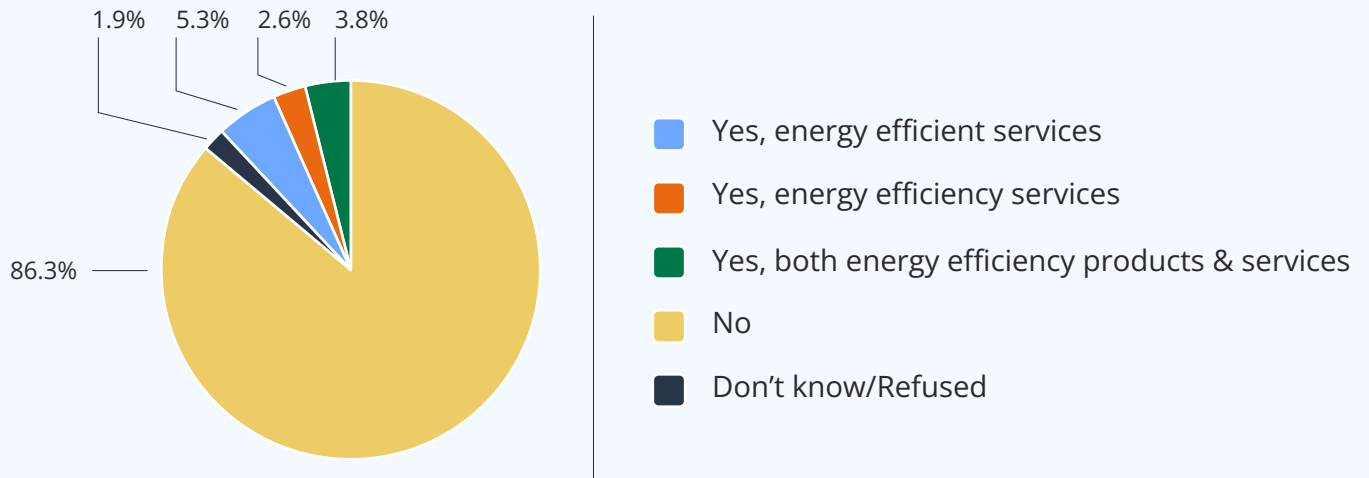
INDUSTRY	TOTAL GDP (MILLIONS)	% OF TOTAL INDUSTRY GDP DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY GDP (MILLIONS)
CONSTRUCTION	\$166,052	12.6%	\$20,861
MANUFACTURING	\$212,106	1.6%	\$3,370
WHOLESALE TRADE	\$118,490	3.5%	\$4,123
PROFESSIONAL & BUSINESS SERVICES	\$443,098	1.1%	\$4,909
UTILITIES	\$45,241	4.2%	\$1,898
OTHER SERVICES	\$44,683	1.1%	\$496
TOTAL	\$1,029,670	3.5%	\$25,657

⁹ Calculated by multiplying total gross domestic product (GDP) by industry (Source: Statistics Canada Table 36-10-0434-02 - Gross domestic product (GDP) at basic prices, by industry, monthly, growth rates (x 1,000,000), November 2023) by share of energy efficiency establishments within each NAICS industry. That proportion is then multiplied by the percentage of total gross revenue derived from energy efficiency according to survey respondents. The survey uses firms' revenue proportion estimates as a proxy for GDP as firms typically do not know their GDP impact, whereas revenue is easily recalled. Does not include public expenditure on energy efficiency programs.

EXPORT CONTRIBUTION

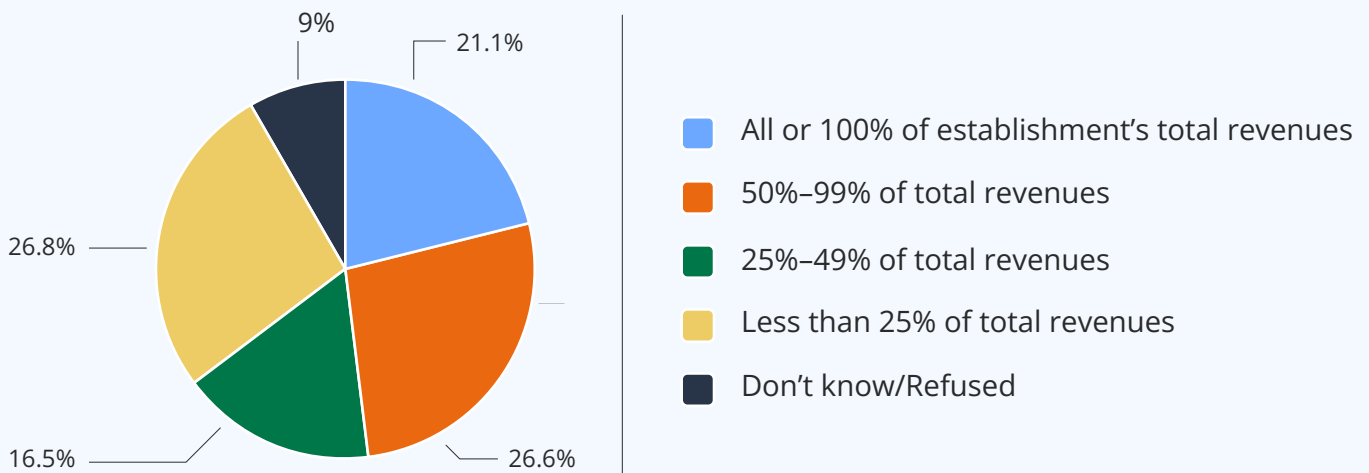
Just under 12% of firms surveyed indicated that they exported energy efficiency products or services outside of Canada.

FIGURE 3. FIRMS EXPORTING ENERGY EFFICIENCY PRODUCTS AND/OR SERVICES OUTSIDE OF CANADA



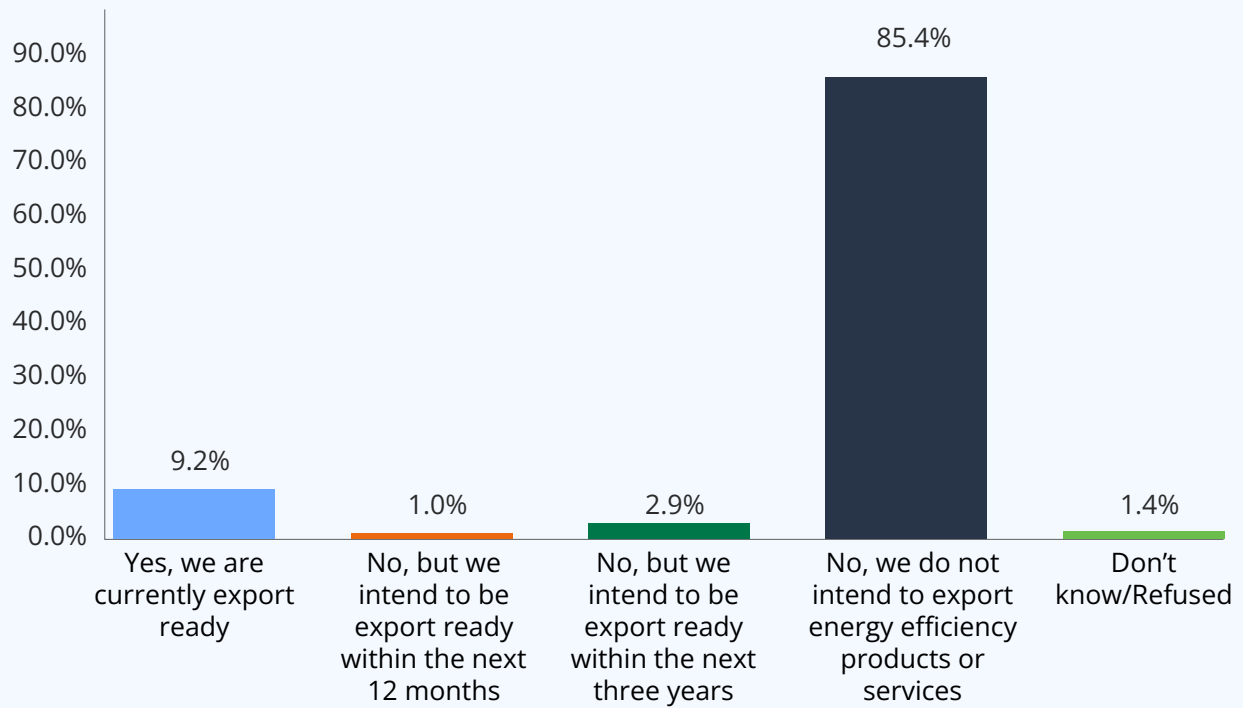
Just under half of the firms who indicated that they exported energy efficiency products or services outside of Canada reported earning 50 percent or more of their revenues from those export activities.

FIGURE 4. FIRM REVENUE FROM THE EXPORT OF ENERGY EFFICIENCY PRODUCTS OR SERVICES



Firms that were not currently exporting energy efficiency products or services were asked to assess their export readiness for energy efficiency products or services. While most of these firms (85%) indicated that they did not intend to export energy efficiency products or services in the future, more than 10% indicated that they were export-ready, or intended to be export-ready, within the next 12 months. An additional 3% intended to be export-ready within the next three years.

FIGURE 5. EXPORT READINESS OF FIRMS NOT CURRENTLY EXPORTING ENERGY EFFICIENCY PRODUCTS OR SERVICES



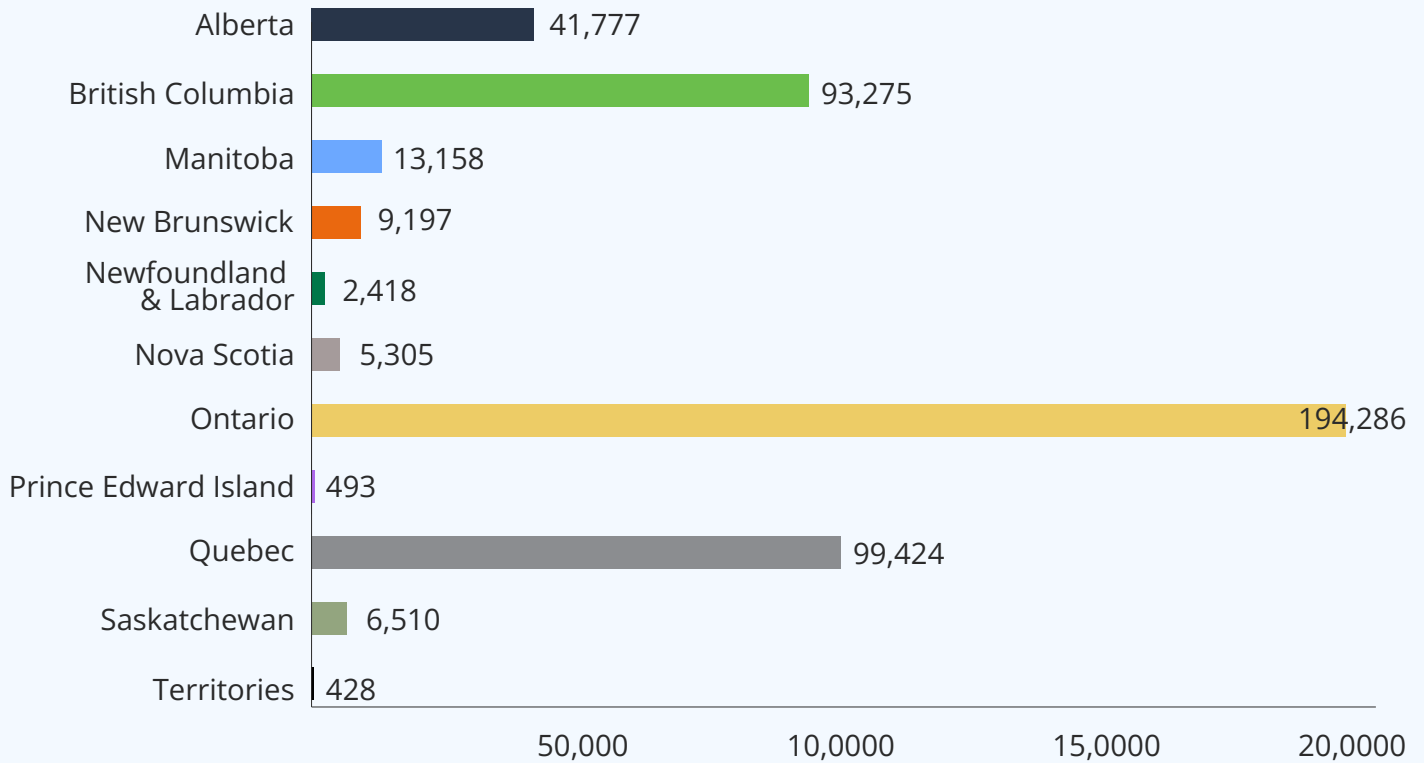
EMPLOYMENT

EMPLOYMENT BY GEOGRAPHIC REGION

Ontario accounted for the largest share of energy efficiency employment, with 194,286 energy efficiency workers; followed by Quebec, with 99,424 energy efficiency workers; and British Columbia, with 93,275 energy efficiency workers. ENERGY STAR and Efficient Lighting accounted for the largest share of energy efficiency employment of all energy efficiency sub-technologies in all three of these provinces, accounting for approximately 3 in 10 energy efficiency jobs. Furthermore, consistent with national trends, the Construction industry accounted for the largest share of energy efficiency employment (approximately 60-70%) within each of the surveyed regions.

The geographic distribution of energy efficiency employment is generally consistent with the geographic distribution of the overall workforce across Canada.¹⁰ (Figure 6 and Table 3)

FIGURE 6. ENERGY EFFICIENCY EMPLOYMENT BY GEOGRAPHIC REGION, 2023



¹⁰Statistics Canada. Table 14-10-0201-01 Employment by industry, monthly, unadjusted for seasonality. Statistics Canada. Table 17-10-0009-01 Population estimates, quarterly

TABLE 3: ENERGY EFFICIENCY EMPLOYMENT PER CAPITA AND AS A % OF TOTAL EMPLOYMENT, 2023¹¹

PROVINCE	EMPLOYMENT, Q4 2023 ESTIMATE	ENERGY EFFICIENCY EMPLOYMENT	% POPULATION	% TOTAL EMPLOYMENT
CANADA (TOTAL)	18,216,079	466,271	1.2%	2.6%
NEWFOUNDLAND AND LABRADOR	216,504	2,418	0.4%	1.1%
PRINCE EDWARD ISLAND	74,006	493	0.3%	0.7%
NOVA SCOTIA	451,404	5,305	0.5%	1.2%
NEW BRUNSWICK	353,683	9,197	1.1%	2.6%
QUEBEC	4,070,888	99,424	1.1%	2.4%
ONTARIO	7,092,651	194,286	1.2%	2.7%
MANITOBA	644,955	13,158	0.9%	2.0%
SASKATCHEWAN	513,542	6,510	0.5%	1.3%
ALBERTA	2,140,338	41,777	0.9%	2.0%
BRITISH COLUMBIA	2,585,895	93,275	1.7%	3.6%
TERRITORIES	72,213	428	0.3%	0.6%

¹¹ Statistics Canada. Table 14-10-0201-01 Employment by industry, monthly, unadjusted for seasonality, December 2023. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410020101>

TABLE 4. ENERGY EFFICIENCY SUB-TECHNOLOGY EMPLOYMENT BY GEOGRAPHIC REGION, 2023¹²

PROVINCE	ENERGY STAR & EFFICIENT LIGHTING	TRADITIONAL HVAC	HIGH EFFICIENCY HVAC & RENEWABLE HEATING & COOLING	ADVANCED MATERIALS	OTHER	TOTAL EE EMPLOYMENT
CANADA (TOTAL)	147,988	118,286	84,424	55,185	60,389	466,271
ALBERTA	8,530	10,020	11,020	5,120	7,080	41,777
BRITISH COLUMBIA	25,570	21,830	16,130	16,220	13,530	93,275
MANITOBA	7,450	1,770	1,870	400	1,670	13,158
NEW BRUNSWICK	2,110	1,910	2,210	1,640	1,330	9,197
NEW-FOUND-LAND AND LABRADOR	830	780	170	280	360	2,418
NOVA SCOTIA	620	1,480	1,380	830	990	5,305
ONTARIO	69,440	55,610	36,250	13,250	19,730	194,286
PRINCE EDWARD ISLAND	90	120	70	30	180	493
QUEBEC	30,830	24,020	13,920	16,810	13,830	99,424
SASKATCHEWAN	2,380	620	1,330	520	1,660	6,510
TERRITORIES	130	130	80	80	30	428

¹² Sub-technology application employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

TABLE 5. ENERGY EFFICIENCY INDUSTRY EMPLOYMENT BY GEOGRAPHIC REGION, 2023¹³

PROVINCE	UTILITIES	CONSTRUCTION	MANUFACTURING	WHOLESALE TRADE	PROFESSIONAL AND BUSINESS SERVICES	OTHER SERVICES	TOTAL EE EMPLOYMENT
CANADA (TOTAL)	12,204	305,785	27,287	44,738	50,129	26,128	466,271
ALBERTA	1,980	23,860	1,690	4,420	4,660	5,160	41,777
BRITISH COLUMBIA	1,600	65,100	4,520	8,500	8,770	4,790	93,275
MANITOBA	430	9,100	640	1,470	870	660	13,158
NEW BRUNSWICK	420	6,210	310	1,140	640	480	9,197
NEWFOUNDLAND AND LABRADOR	180	1,550	20	390	150	130	2,418
NOVA SCOTIA	190	3,660	170	720	340	230	5,305
ONTARIO	5,830	122,980	12,480	18,640	25,910	8,440	194,286
PRINCE EDWARD ISLAND	20	360	20	40	30	30	493
QUEBEC	1,300	68,650	7,260	8,330	8,320	5,550	99,424
SASKATCHEWAN	200	4,060	180	1,020	410	640	6,510
TERRITORIES	40	270	-	70	20	20	428

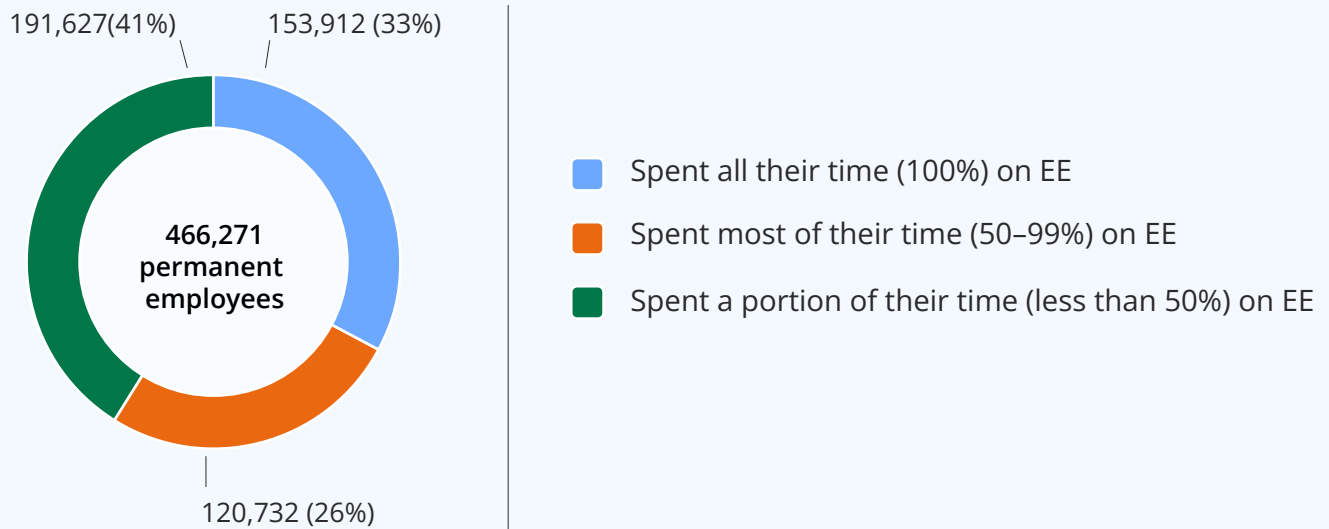
¹³ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

EMPLOYMENT WORK INTENSITY

As of 2023, over 466,000 permanent workers were directly employed in Canada's energy efficiency sector, representing over 2% of all jobs in Canada.¹⁴ Furthermore, among the direct and permanent energy efficiency workforce, approximately one-third (33%) spent all their time, slightly over one-quarter (26%) spent most of their time, and approximately two in five (41%) spent a portion of their time on energy efficiency activities (please refer to Appendix D for a breakdown by industry).

The share of employees spending all their time on energy efficiency activities has increased over the last five years (rising by approximately 4 percentage points since 2018), while the share of employees spending only a portion of their time on energy efficiency activities has decreased (falling by approximately 3 percentage points since 2018), reflecting maturation of energy efficiency activities within firms as some energy efficiency employees move from part-time to full-time work.

FIGURE 7. ENERGY EFFICIENCY EMPLOYMENT BY WORK INTENSITY



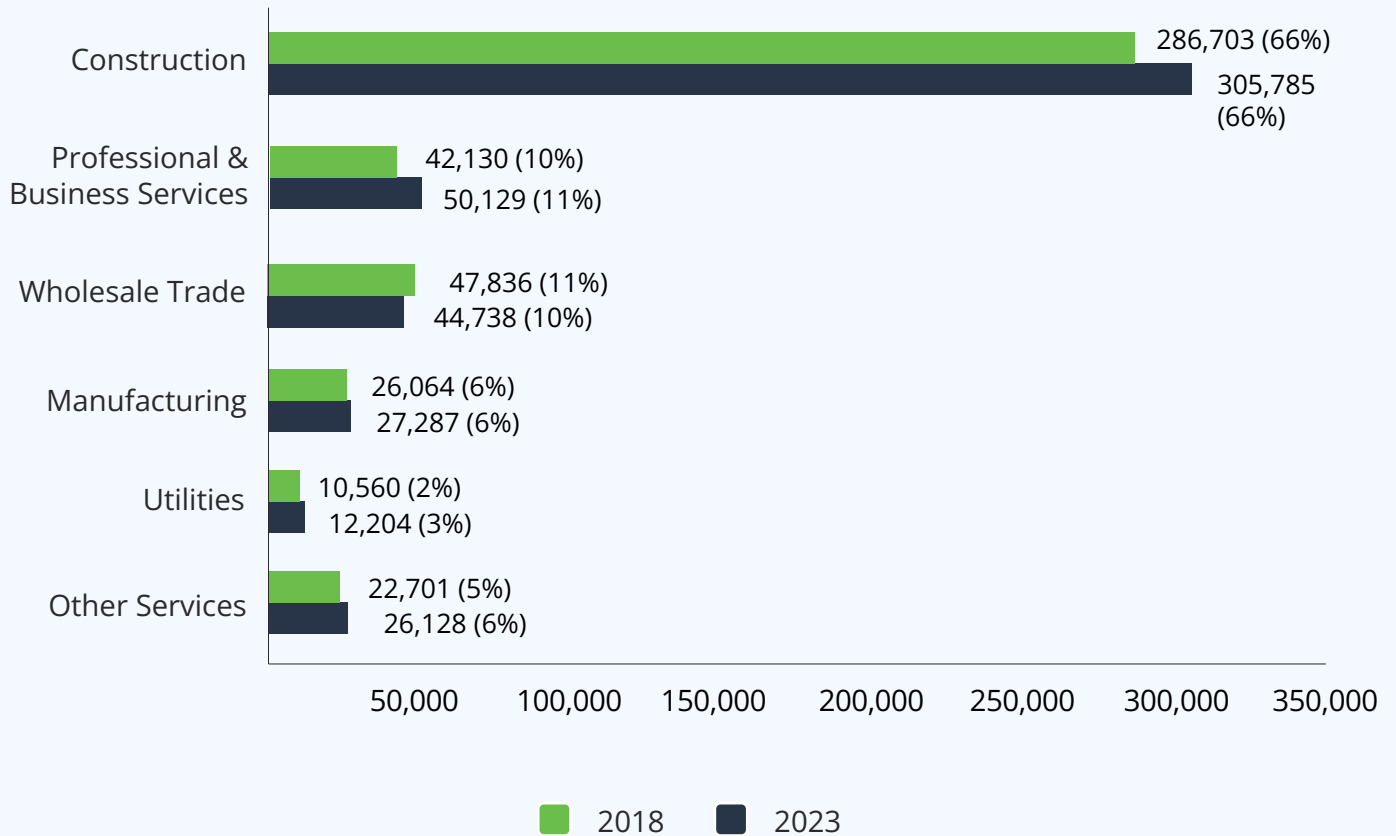
EMPLOYMENT BY INDUSTRY

Consistent with the 2018 study, the largest share of energy efficiency workers was employed in the Construction industry in 2023 (66%). Employment in all major industry sectors rose over the five-year period, except for the Wholesale Trade sector, where employment fell by approximately 6%.

The Canadian energy efficiency sector remains focused on deployment activity, with growth primarily driven by installing or servicing energy efficiency goods and performing energy efficiency-related services.

¹⁴ Statistics Canada. [Table 14-10-0023-01 Labour force characteristics by industry, annual \(x 1,000\), Total, all industries](#), 2023.

FIGURE 8. ENERGY EFFICIENCY EMPLOYMENT BY MAJOR INDUSTRY SECTORS

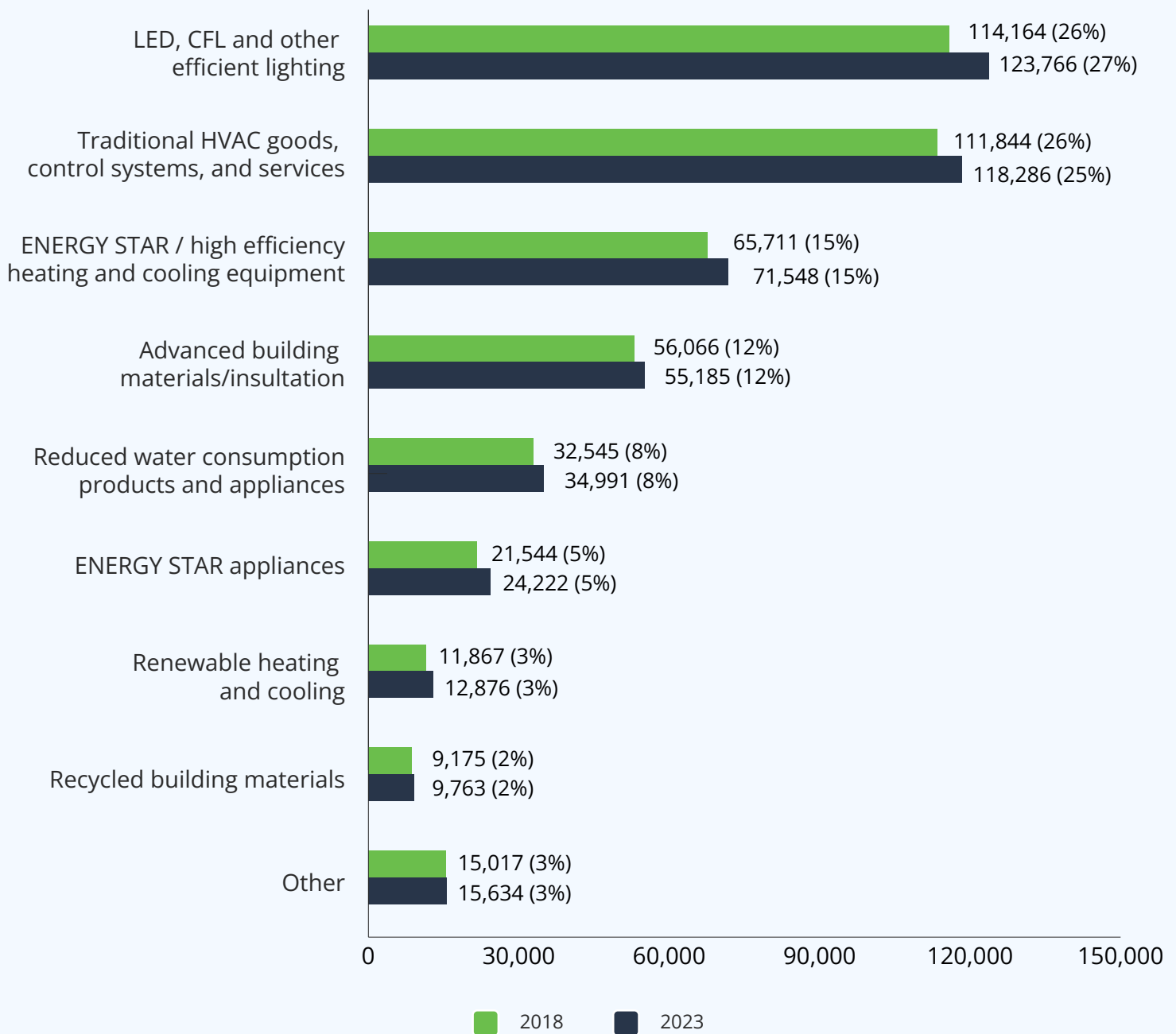


EMPLOYMENT BY SUB-TECHNOLOGY APPLICATION

Energy efficiency workers were classified according to the detailed sub-technology where they spent the most time.¹⁵ The two most frequently cited sub-technology applications were LED, CFL, and other efficient lighting (27% of 2023 employment); and traditional HVAC goods, control systems, and services (25%). The employment shares by sub-technology application remained roughly consistent between 2018 and 2023.

¹⁵ Please see the Glossary of Terms for detailed descriptions of each of the Sub-Technology Applications.

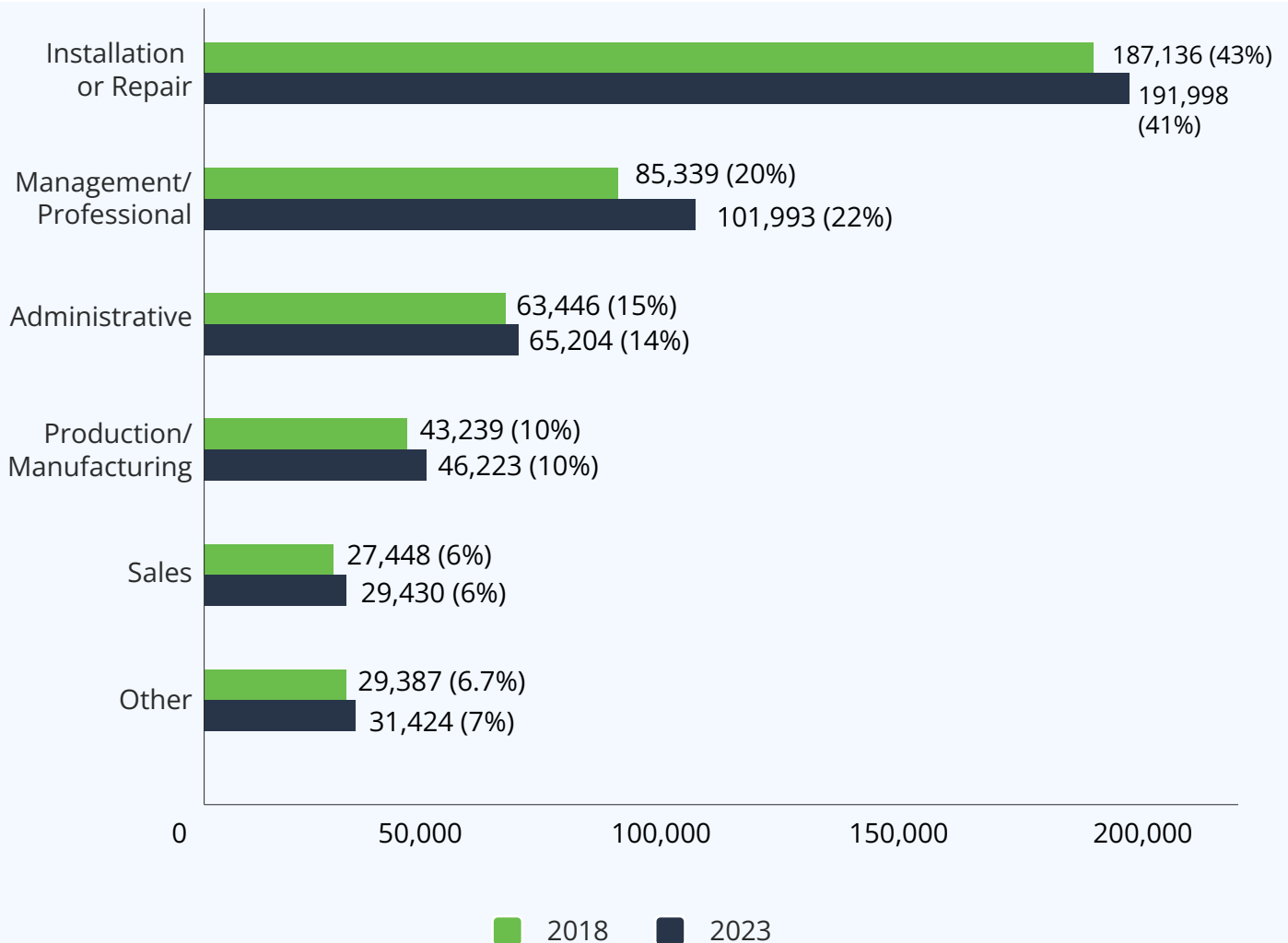
FIGURE 9. ENERGY EFFICIENCY EMPLOYMENT BY DETAILED SUB-TECHNOLOGY APPLICATION



EMPLOYMENT BY OCCUPATION

In 2023, installation or repair jobs represented the largest share of energy efficiency employment, accounting for approximately 41% of energy efficiency, while approximately 22% were employed in management/professional jobs, 14% were employed in administrative positions, 10% were in production/manufacturing roles, and 6% were in sales positions. The remaining 7% could not be classified and fell within the “Other” category. The distribution of jobs across occupational categories remained consistent between 2018 and 2023.

FIGURE 10. ENERGY EFFICIENCY JOBS BY OCCUPATIONAL CATEGORY



WORKFORCE CHARACTERISTICS

Canada's energy efficiency workforce remains less diverse than the national workforce, with just under one-fifth or 18% of workers identifying as female, as compared to 48% for the national workforce. However, these results are largely attributable to the large share of Construction workers in the energy efficiency workforce, as women account for a relatively small share of workers in the Construction industry.

Indigenous persons constituted 3% of the energy efficiency workforce, as compared to the national workforce average of 4%.

The energy efficiency workforce was younger than the national average, with 42% of energy efficiency workers falling between the ages of 18 and 34, as compared to a national average of 36% for Canada's entire workforce. Furthermore, the share of workers ages 55 and up was only 14% for the energy efficiency workforce, as compared to a national average of 22% for Canada's entire workforce.

The energy efficiency workforce also held lower levels of educational attainment compared to the national average, with just over a third of energy efficiency workers holding an associate degree, academic certificate, bachelor's degree or beyond (34%) as compared to a national workforce average of 70%. Approximately 30% of energy efficiency workers held a vocational or technical postsecondary certificate or credential, as compared to a national workforce average of 34%.

There were very few changes in the demographic profile of Canada's energy efficiency workforce over the last five years. The share of females in the energy efficiency workforce held steady at 18%, while the share of Indigenous persons increased by 1 percentage point. The age distribution of the energy efficiency workforce remained unchanged from 2018 and 2023, but educational attainment levels rose slightly: the share of energy efficiency workers that held a bachelor's degree or higher rose by 1 percentage point, the share of energy efficiency workers that held an associate's degree or academic certificate rose by 2 percentage points, and the share of energy efficiency workers that held a vocational or technical postsecondary certificate or credential rose by 2 percentage points.

TABLE 6. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY WORKFORCE¹⁶

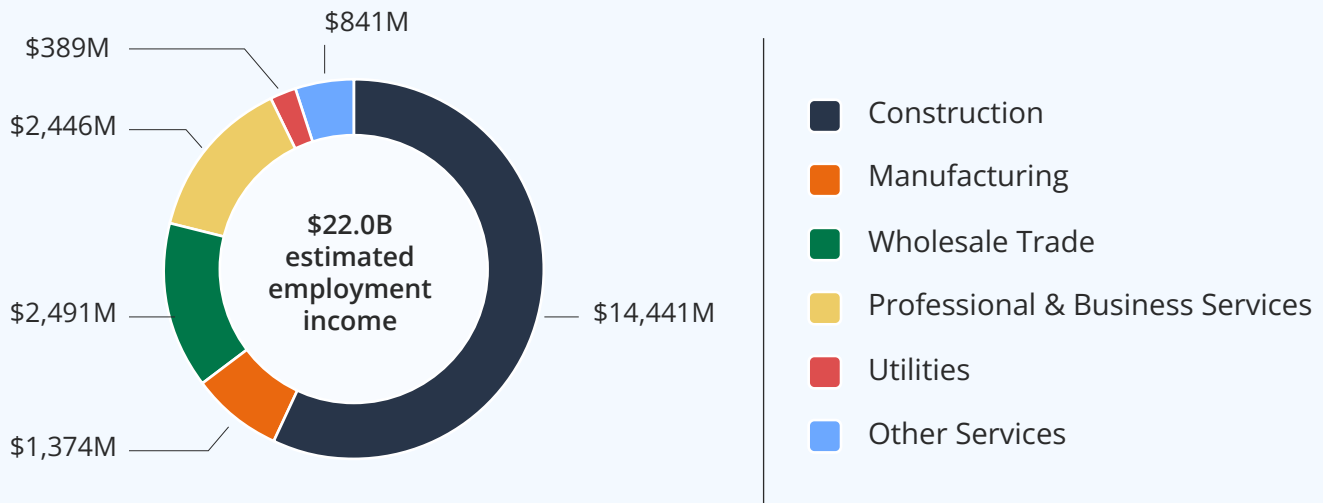
	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	378,730	81%	52%	50%
	Female	86,156	18%	48%	50%
	Gender non-binary	1,395	<1%	N/A	N/A
CULTURAL	Indigenous Persons	15,606	3%	4%	4%
AGE	18–34 years old	196,809	42%	36%	31%
	35–54 years old	204,227	44%	43%	31%
	55 and over	65,235	14%	22%	38%
EDUCATION LEVEL	Bachelor’s degree or beyond	72,215	15%	36%	30%
	Associate degree or academic certificate	86,737	19%	34%	32%
	Vocational or technical postsecondary certificate or credential	140,202	30%	34%	32%

¹⁶ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYMENT INCOME

Estimated employment income for all energy efficiency workers totaled \$22.0 billion (\$2023), a nominal increase of approximately 47% over 2018 levels. After adjusting the 2018 energy efficiency workers employee income of \$14.9 billion to 2023 inflation levels, the total energy efficiency employee income in 2023 increased by 25% in real terms since 2018.¹⁷

FIGURE 11. ENERGY EFFICIENCY TOTAL EMPLOYMENT INCOME BY INDUSTRY (2023)¹⁸



¹⁷ 2018 energy efficiency employee income adjusted from 2018 dollars to 2023 dollars using Statistics Canada's Consumer Price Index (Statistics Canada Table 18-10-0005-01, Consumer Price Index, annual average, not seasonally adjusted).

¹⁸ Sources: Average employment income for each industry is from Statistics Canada's 2016 Census (Statistics Canada Table 98-10-0595-01, Income Statistics (17), Occupation - National Occupational Classification (NOC) 2021 (13A), Industry - North American Industry Classification System (NAICS) 2017 (23A) and Work Activity During the Reference Year (9) for the Population Aged 15 Years and Over) and adjusted from 2020 dollars to 2023 dollars using Statistics Canada's Consumer Price Index (Statistics Canada Table 18-10-0005-01, Consumer Price Index, annual average, not seasonally adjusted). Where an industry is comprised of multiple NAICS (e.g., Professional & Business Services - NAICS 51, 52, 53, 54, 55 and 56), a weighted average employment income is calculated using the number of workers with employment income in each NAICS. Estimated full time equivalents (FTE) are calculated using the assumption that energy efficiency workers who spent all their time on energy efficiency engage in energy efficiency activities 100% of the time, those who spent a majority but not all their time on energy efficiency engage in energy efficiency activities 75% of the time and other energy efficiency workers engage in energy efficiency activities 25% of the time. Many energy utilities across Canada have EE programs for residential, commercial, and industrial properties, and are largely classified as employees in either the electric power generation or transmission and distribution. As a result, utility workers, by nature of their classification by Statistics Canada, are primarily (majority of their time) in electric power generation or transmission and distribution. Any work in energy efficiency for utility workers is secondary, and therefore less than 50% of their dedicated work time.

EMPLOYMENT OUTLOOK

Energy efficiency employment grew by 7% between 2018 and 2023, as compared to 6% for all jobs in Canada.¹⁹ Energy efficiency employment grew less robustly than initially predicted due in large part to adverse macroeconomic conditions spurred by the COVID-19 pandemic. In 2020, the pandemic led to an unprecedented global shutdown, spurring historic job losses across a multitude of industries, including the energy industry.

In fact, in 2020, Canada's nominal GDP shrank by nearly 5 percent, and its real GDP shrank by over 5 percent, the steepest annual decline since quarterly data was first recorded in 1961. Household spending fell by 6 percent, export volumes fell by nearly 10 percent, and import volumes fell by 11 percent in 2020.²⁰ In fact, according to the International Energy Agency (IEA), 2020 was "the worst year for energy efficiency in a decade," as energy prices fell, the rate of technological progress slowed, and the balance of economic activity shifted from less energy-intensive activities, such as hospitality in tourism.

Furthermore, fears of infection caused homeowners to become more reluctant to allow strangers into their homes during the COVID-19 pandemic. In the buildings sector, social distancing requirements prevented energy efficiency contractors from gaining access to residential properties to perform retrofits, leading to delayed revenue streams.

At the same time, lower fuel prices lengthened the payback periods for energy efficiency upgrades during the pandemic. Combined with reductions in disposable incomes, energy efficiency investments became less attractive.

¹⁹ Statistics Canada. Table 14-10-0023-01 Labour force characteristics by industry, annual (x 1,000), Total, all industries, 2023. ²⁰ Statistics Canada. <https://www150.statcan.gc.ca/n1/daily-quotidien/210302/dq210302a-eng.htm>

²¹ Energy Efficiency Alberta was a government agency tasked with raising awareness among energy consumers of energy use and the associated economic and environmental consequences, and to promote, design, and deliver energy efficiency and energy conservation programs; as well as to promote the development of an energy efficiency services industry in Alberta. Since its inception in 2017, Energy Efficiency Alberta reduced greenhouse gas emissions by 5.7 million tonnes and generated \$692 million in savings from emissions reductions and energy savings. In addition, the agency facilitated the installation of 1,387 residential solar projects and 87 commercial or nonprofit solar projects.
<https://edmontonjournal.com/news/politics/850-million-in-economic-growth-energy-efficiency-alberta-releases-annual-report>

Furthermore, in 2020, provincial policy changes resulted in a decrease in energy efficiency gains. In 2020, Ontario temporarily capped its electricity conservation spending, and eliminated electricity residential programs. Alberta also dissolved Energy Efficiency Alberta, transitioning some of its programs and associated staff to Emissions Reduction Alberta (ERA) and others to the Municipal Climate Change Action Centre (MCCAC) and Alberta Environmental and Parks.²¹ Most provinces did not meet their 2020 efficiency spending program targets, and many missed low-income efficiency program spending targets.²²

While the global economy began to recover in 2021, demand for commodities increased and bottlenecks in supply chains emerged, creating shortages of goods and services needed for new investments in energy efficiency, including construction, and delays in building completions. In 2023, energy efficiency demand was affected by transitory factors, such as disruptions that occurred due to wildfires and a federal worker strike in April and was dampened by slower GDP growth and lingering uncertainties engendered by macroeconomic conditions, such as stubborn inflation, higher borrowing costs, and elevated debt levels.

In addition, energy efficiency deployments have been slowed by lags that occur between the passage of legislation and its implementation. For example, the pan-Canadian Framework on Clean Growth and Climate Change called for all provinces to adopt a net zero energy ready building code by 2030. The development of a national model building code in 2020 was the first step but was not released until March 2022. Canada's climate plan also called for an energy efficiency retrofit code to be developed for existing buildings by 2022, but the committee tasked with developing the code provided a timeline that would delay it until 2030.

In the absence of harmonized regulations across Canada's provincial and territorial borders, municipalities and provinces have forged ahead with their own strategies for addressing energy use and emissions in buildings. Specifically, they began implementing minimum energy performance standards (MEPS). While these efforts have gained traction, additional leadership is needed to guide and standardize Canada's building energy codes to achieve net-zero emissions by 2050.

²² <https://www.energycanada.org/wp-content/uploads/2022/05/FINAL-Canada-USA-Score-card-Comparison.pdf>



Additionally, lags in measuring energy efficiency investment impacts have arisen due to slow stock turnover and the time needed to incorporate changes into product designs and existing manufacturing processes.²³ Certain types of equipment can have a useful life of up to 20 years, translating to a significant delay in product replacements incorporating more energy-efficient technologies and underscoring the importance of incentives and replacement programs in accelerating stock turnover. In addition, energy efficiency gains may have been partially subdued by consumer lifestyle choices, for example, households may counterbalance energy-saving measures in one aspect of their lives with an increase in consumption in another. These factors are not unique to Canada but should be taken into consideration when evaluating the impacts of energy efficiency investments over time.

Thus, there are several factors that have influenced energy efficiency employment in Canada over time, moderating growth in energy efficiency jobs. However, based on employer expectations, energy efficiency employment is projected to grow by 8% over the next year, which will translate to an addition of more than 37,000 new jobs.

Energy efficiency jobs in the Other Services category are predicted to grow considerably more rapidly than jobs in the five major industries, increasing by nearly 17%. In contrast, energy efficiency jobs in each of the other five major industries are projected to grow by approximately 7% to 9% over the next year.

Across sub-technologies, a growth rate of 8% is projected in the next year. Work with recycled building materials and reduced water consumption products and appliances is expected to see the highest projected employment growth at 11% and 10%, respectively.

²³ Turnover rates vary by product type and by sector and depend in part upon products' useful lives.

FIGURE 12. ENERGY EFFICIENCY EMPLOYMENT GROWTH, 2018 (ACTUAL), 2023 (ACTUAL), AND 2024 (FORECAST)

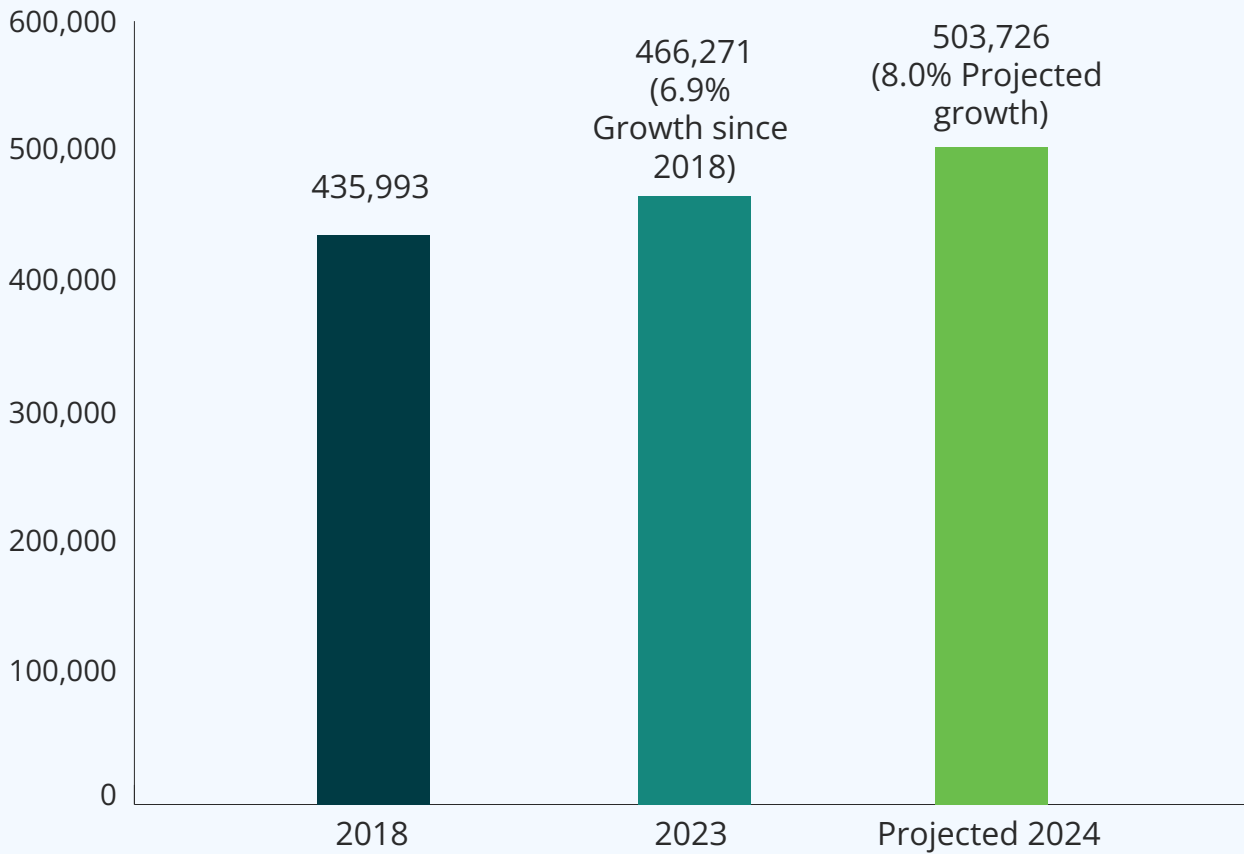


FIGURE 13. ENERGY EFFICIENCY PROJECTED EMPLOYMENT GROWTH BY MAJOR INDUSTRY, 2023-2024

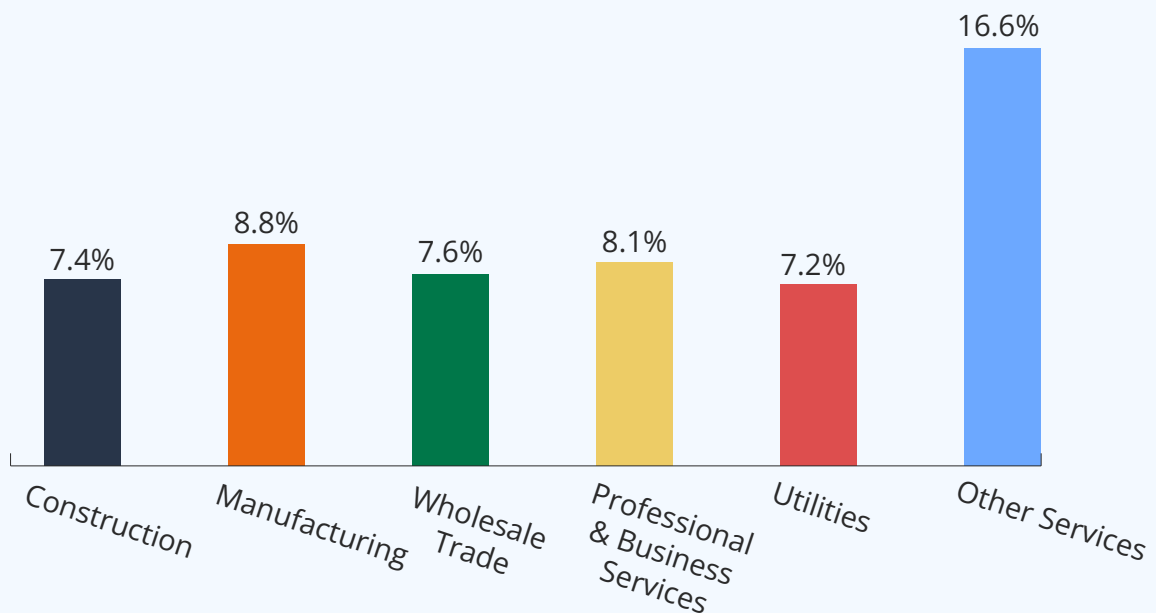


TABLE 7. PROJECTED EMPLOYMENT GROWTH 2023-2024 BY SUB-TECHNOLOGY APPLICATION

DEMOGRAPHIC	TOTAL
RECYCLED BUILDING MATERIALS	11.4%
REDUCED WATER CONSUMPTION PRODUCTS AND APPLIANCES	10.4%
ADVANCED BUILDING MATERIALS/INSULATION	9.4%
ENERGY STAR / HIGH EFFICIENCY HEATING AND COOLING EQUIPMENT	8.7%
OTHER	8.7%
TRADITIONAL HVAC GOODS, CONTROL SYSTEMS, AND SERVICES	7.9%
RENEWABLE HEATING AND COOLING	7.3%
ENERGY STAR APPLIANCES	6.8%
LED, CFL AND OTHER EFFICIENT LIGHTING	6.4%
OVERALL	8.0%

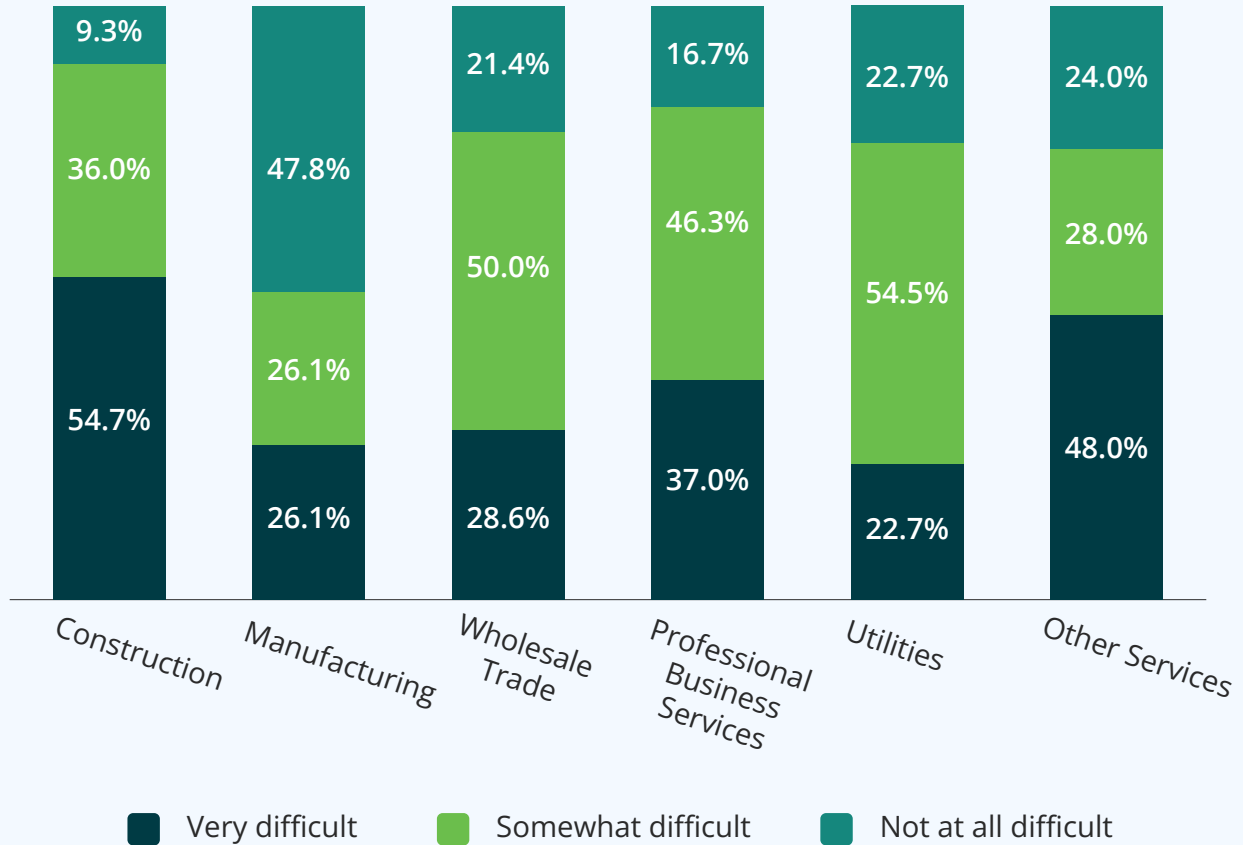
HIRING CHALLENGES

In all industries other than Manufacturing, more than three in four energy efficiency employers reported some level of hiring difficulties over the last year. While employers in the Manufacturing industry reported the lowest level of hiring difficulties, more than half (52%) still reported some level of hiring difficulties over the last 12 months.

Hiring difficulties were the most severe in the Construction industry, with over 90% of employers reporting some level of difficulty over the last 12 months; over half (55%) of Construction employers indicated that those difficulties had been severe. Furthermore, nearly half (48%) of employers in the “Other Services” category also found hiring to be “very difficult” over the last 12 months.

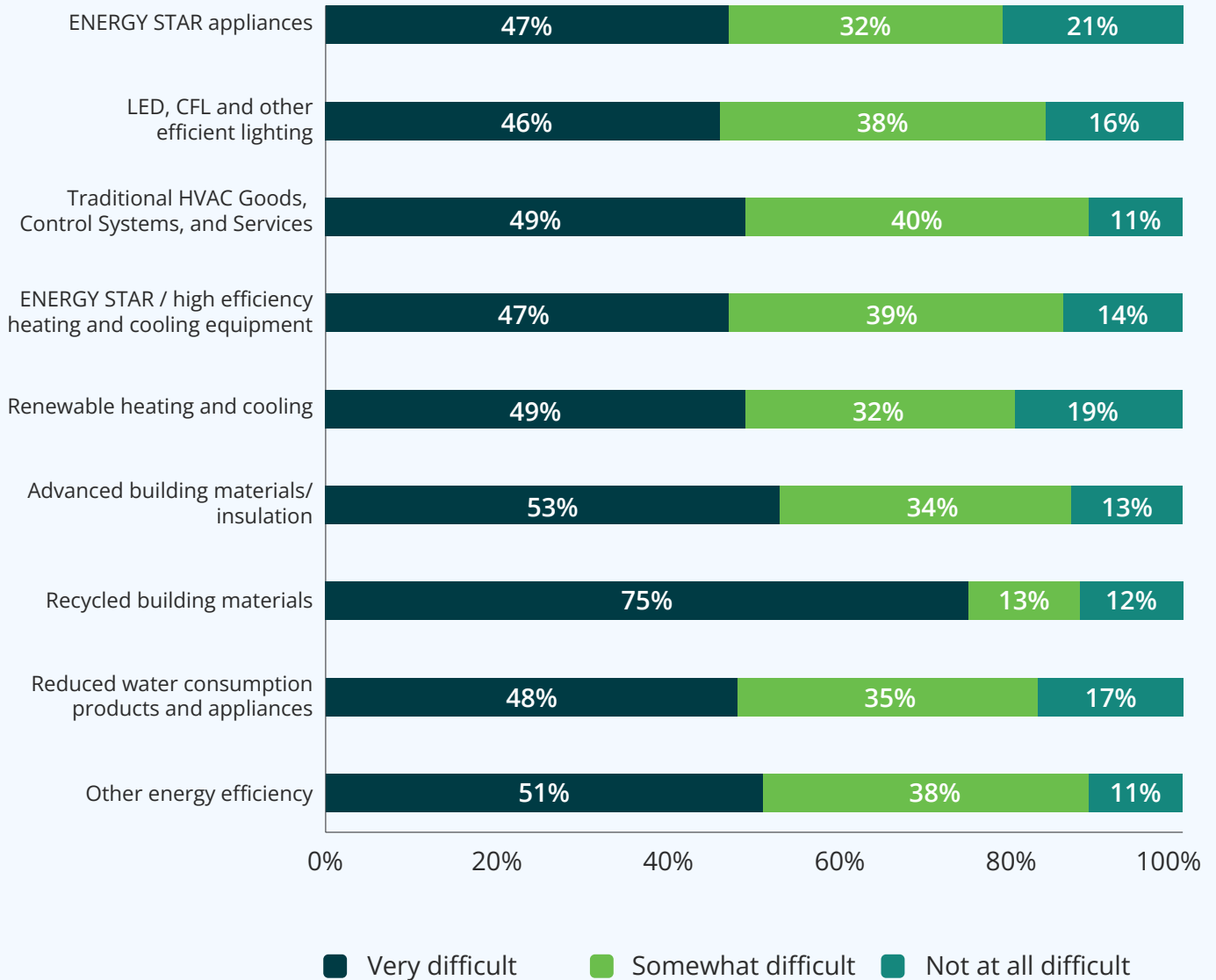


FIGURE 14. ENERGY EFFICIENCY HIRING DIFFICULTY BY MAJOR INDUSTRY, 2023



By sub-technology application, recycled building materials posed the most significant challenges for energy efficiency hiring, with approximately three in four employers (75%) indicating that hiring had been “very difficult” over the last 12 months. Approximately half of employers in all other sub-technology applications reported that hiring had been “very difficult” over the last 12 months.

FIGURE 15. ENERGY EFFICIENCY HIRING DIFFICULTY BY SUB-TECHNOLOGY APPLICATION²⁴



²⁴ Employers were asked to rate overall hiring difficulties. For employers with multiple sub-technology applications, the same difficulty rating was applied to each of the technologies.

Installation worker and technician positions were ranked as the most difficult occupations to fill by energy efficiency employers across all industries. Managerial and supervisory positions were ranked as the second most difficult to fill for energy efficiency employers in the Construction, Manufacturing, and Utilities industries, and as the third most difficult to fill for energy efficiency employers in the Wholesale Trade industry. Sales positions were ranked as the second most difficult to fill in the Wholesale Trade industry, and as the third most difficult to fill in the Construction, Utilities, and Other Services industries.

Competition and a small applicant pool were ranked as the top reasons for hiring difficulties across all major industries other than Utilities, where nearly half (47%) of employers indicated that lack of experience, training, or technical skills was the top reason for hiring difficulties.

Insufficient education or training and experience were ranked as the number two and number three most significant causes of hiring difficulties across the Construction, Manufacturing, and Wholesale Trade industries. In addition, lack of non-technical skills (such as dependability, work ethic, and critical thinking) were ranked among the top three reasons for hiring difficulties by employers in the Utilities and Other Services industries. Over a quarter (27%) of employers in the Utilities industry also indicated that the inability to provide competitive wages was a significant barrier to hiring.

TABLE 8. ENERGY EFFICIENCY TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES BY MAJOR INDUSTRY

CONSTRUCTION	MANUFACTURING	WHOLESALE TRADE	PROFESSIONAL AND BUSINESS SERVICES	UTILITIES	OTHER SERVICES
Installation workers or technicians (65%)	Installation workers or technicians (25%)	Installation workers or technicians (32%)	Installation workers or technicians (30%)	Installation workers or technicians (13%)	Installation workers or technicians (42%)
Managers or supervisors (21%)	Managers or supervisors (17%)	Sales positions (32%)	Engineers or architects (27%)	Managers or supervisors (13%)	Drivers, or transportation and warehousing (16%)
Sales positions (6%)	Production positions (8%)	Managers or supervisors (14%)	Analysts or consultants (20%)	Sales positions (7%)	Sales positions (11%)

TABLE 9. ENERGY EFFICIENCY TOP THREE REASONS FOR HIRING DIFFICULTIES BY MAJOR INDUSTRY

CONSTRUCTION	MANUFACTURING	WHOLESALE TRADE	PROFESSIONAL AND BUSINESS SERVICES	UTILITIES	OTHER SERVICES
Competition/ small applicant pool (44%)	Competition/ small applicant pool (33%)	Competition/ small applicant pool (32%)	Competition/ small applicant pool (45%)	Lack of experience, training, or technical skills (47%)	Competition/ small applicant pool (58%)
Insufficient qualifications (certifications or education) (34%)	Insufficient qualifications (certifications or education) (33%)	Insufficient qualifications (certifications or education) (27%)	Difficulty finding industry- specific knowledge, skills, and interest (30%)	Insufficient non-technical skills (work ethic, de- pendability, critical think- ing) (40%)	Lack of experience, training, or technical skills (26%)
Lack of experience, training, or technical skills (26%)	Lack of experience, training, or technical skills (25%)	Lack of experience, training, or technical skills (23%)	Insufficient qualifications (certifications or education) (16%)	Cannot provide competitive wages (27%)	Insufficient non-technical skills (work ethic, dependability, critical thinking) (21%)

VACANCIES

Total employment would be 13% higher if energy efficiency employers were able to find qualified applicants to fill current positions.

TABLE 10. POTENTIAL INCREASE IN ENERGY EFFICIENCY EMPLOYMENT IF VACANCIES WERE FILLED, 2023

INDUSTRY	2023 TOTAL ENERGY EFFICIENCY JOBS	UNFILLED POSITIONS	TOTAL ENERGY EFFICIENCY JOBS IF ALL POSITIONS WERE FILLED
Utilities	12,204	1,518	13,722
Construction	305,785	41,971	347,756
Manufacturing	27,287	3,541	30,829
Wholesale Trade	44,738	4,198	48,936
Professional and Business Services	50,129	6,602	56,731
Other Services	26,128	1,940	28,068
TOTAL	466,271	59,770	526,041



ENERGY EFFICIENCY BY INDUSTRY

This section provides energy efficiency workforce numbers by industry.

CONSTRUCTION

In 2023, there were over 42,000 energy efficiency Construction establishments in Canada with estimated energy efficiency operating revenues of approximately \$54.4 billion, accounting for nearly 13% of operating revenues in Canada's Construction industry. This represents an 8% increase in the number of energy efficiency Construction establishments and a 45% increase in energy efficiency operating revenues over 2018 levels.

Approximately 306,000 energy efficiency workers were employed in Construction firms, representing one in four Construction jobs nationwide and representing an addition of approximately 19,000 energy efficiency Construction jobs since 2018. Furthermore, in 2023, nearly two-thirds (65%) of these energy efficiency Construction workers spent most or all their time on energy efficiency activities, an increase of 2 percentage points over 2018.

Over \$14.4 billion in energy efficiency employment income was generated by energy efficiency Construction workers in 2023.

Decarbonizing Construction: Enhancing Energy Efficiency in Canadian Buildings

A key priority for Canada and many regions is the decarbonization of buildings, which represents the third-largest source of emissions in Canada. There were over 16 million dwellings and 482,000 commercial and public buildings in Canada in 2022. Emissions were primarily generated by space and water heating due to fossil fuel-based equipment. The National Energy Code of Canada for Buildings (NECB) has been developed as part of a commitment to reducing greenhouse gas emissions and improving the energy efficiency of buildings. NECB 2020, the latest version published by the National Research Council in March 2022, establishes four progressive performance tiers to maximize energy efficiency in new construction, enabling provinces and territories to incrementally adopt higher levels of performance within one code.

ESTABLISHMENTS, EMPLOYMENT, AND REVENUE







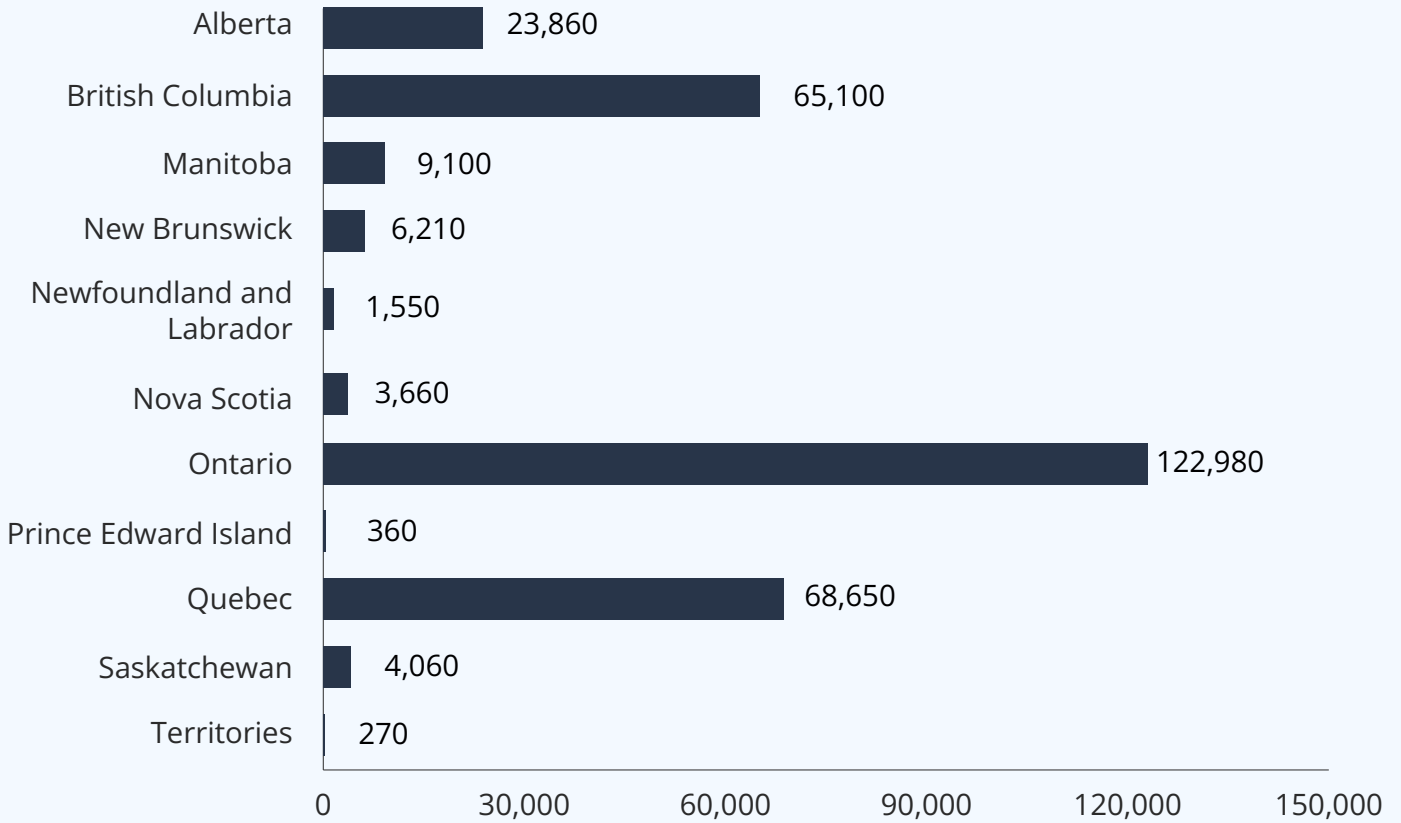
ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>42,410</p> <p>Energy Efficiency Establishments in Construction</p>	 <p>\$54.4 B</p> <p>12.6% of Total Industry Operating Revenues</p>	 <p>\$14.4 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>
 <p>1.2 M</p> <p>Total Industry Employment</p>	 <p>306,000</p> <p>Worked in Energy Efficiency</p>	 <p>65%</p> <p>Spent All or Most of Their Time on Energy Efficiency Activities</p>

FIGURE 16. ENERGY EFFICIENCY CONSTRUCTION EMPLOYMENT BY GEOGRAPHIC REGION²⁷TABLE 11. REVENUE - ENERGY EFFICIENCY CONSTRUCTION²⁸

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Construction	\$433,046	12.6%	\$54,403

²⁷ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment

²⁸ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)



WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Construction industry were less diverse than the national average, with only 14% of energy efficiency construction workers identifying as female, as compared to a national workforce average of 48%. The energy efficiency construction workforce was also younger than the national average, with only 13% of workers in the energy efficiency construction workforce aged 55 years and up (as compared to 22% of the national workforce). Only 8% of energy efficiency construction workers held a bachelor's degree or higher, as compared to 36% of the national workforce; and only 19% of energy efficiency construction workers held an associate degree or academic certificate, as compared to 34% of the national workforce.

²⁹ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

TABLE 12. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY CONSTRUCTION WORKFORCE²⁹

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	263,772	86%	52%	50%
	Female	41,533	14%	48%	50%
	Gender non-binary	480	<1%	N/A	N/A
CULTURAL	Indigenous persons	9,564	3%	4%	4%
AGE	18–34 Years old	133,848	44%	36%	31%
	35–54 Years old	132,615	43%	43%	31%
	55 And over	39,323	13%	22%	38%
EDUCATION LEVEL	Bachelor’s degree or beyond	24,236	8%	36%	30%
	Associate degree or academic certificate	57,978	19%	34%	32%
	Vocational or technical postsecondary certificate or credential	107,157	35%	34%	32%

²⁹ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Competition and a small applicant pool was the most frequently cited reason for hiring difficulties amongst energy efficiency Construction employers, followed by insufficient qualifications, and lack of experience, training, or technical skills. Nearly two-thirds (65%) of energy efficiency Construction workers indicated that it was most difficult to fill installation worker or technician positions.

TABLE 13. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY CONSTRUCTION

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Competition/ small applicant pool (44%) • Insufficient qualifications (certifications or education) (34%) • Lack of experience, training, or technical skills (26%) 	<ul style="list-style-type: none"> • Installation workers or technicians (65%) • Managers or supervisors (21%) • Sales positions (6%)

MANUFACTURING

In 2023, there were over 1,300 energy efficiency Manufacturing establishments in Canada with estimated energy efficiency operating revenues of approximately \$16.8 billion, representing nearly 2% of operating revenues in Canada's Manufacturing industry. This represents an addition of 53 energy efficiency Manufacturing establishments over the last five years.

Approximately 27,000 energy efficiency workers were employed in Manufacturing firms, accounting for less than 2% of Manufacturing jobs nationwide. This represents an addition of nearly 1,200 energy efficiency Manufacturing workers since 2018.

In 2023, more than three in five (62%) energy efficiency Manufacturing workers spent most or all their time on energy efficiency activities, and nearly \$1.4 billion in energy efficiency employment income was generated by energy efficiency Manufacturing workers in 2023.



ESTABLISHMENTS, EMPLOYMENT, AND REVENUE







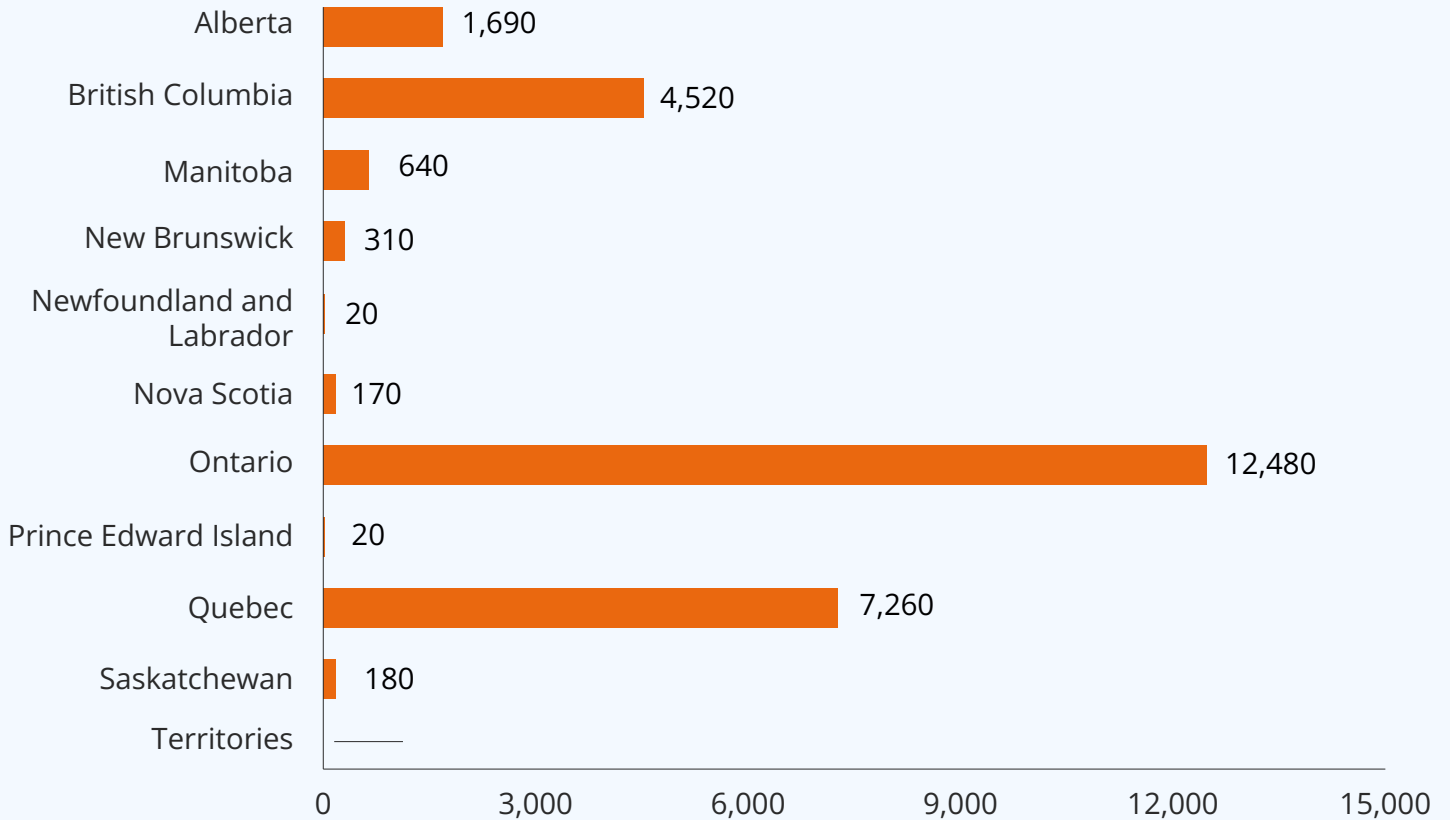
ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>1,347</p> <p>Energy Efficiency Establishments in Manufacturing</p>	 <p>\$16.8 B</p> <p>1.6% of Total Industry Operating Revenues</p>	 <p>\$1.4 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>
 <p>1.6 M</p> <p>Total Industry Employment</p>	 <p>27,000</p> <p>Worked in Energy Efficiency</p>	 <p>62%</p> <p>Spent All or Most of Their Time on Energy Efficiency Activities</p>

FIGURE 17. ENERGY EFFICIENCY MANUFACTURING EMPLOYMENT BY GEOGRAPHIC REGION³⁰TABLE 14. REVENUE - ENERGY EFFICIENCY MANUFACTURING³¹

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Manufacturing	\$1,056,034	1.6%	\$16,777

³⁰ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

³¹ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)

WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Manufacturing industry were less diverse than the national average, with only 23% of energy efficiency Manufacturing workers identifying as female, as compared to a national workforce average of 48%. The energy efficiency Manufacturing workforce was also younger than the national average, with only 14% of workers in the energy efficiency Manufacturing workforce aged 55 years and up (as compared to 22% of the national workforce). Only 16% of energy efficiency Manufacturing workers held a bachelor's degree or higher, as compared to 36% of the national workforce; and only 17% of energy efficiency Manufacturing workers held an associate degree or academic certificate, as compared to 34% of the national workforce.



TABLE 15. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY MANUFACTURING WORKFORCE³²

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	21,017	77%	52%	50%
	Female	6,188	23%	48%	50%
	Gender non-binary	83	<1%	N/A	N/A
CULTURAL	Indigenous persons	1,184	4%	4%	4%
AGE	18–34 Years old	12,260	45%	36%	31%
	35–54 Years old	11,266	41%	43%	31%
	55 And over	3,761	14%	22%	38%
EDUCATION LEVEL	Bachelor's degree or beyond	4,335	16%	36%	30%
	Associate degree or academic certificate	4,526	17%	34%	32%
	Vocational or technical postsecondary certificate or credential	6,894	25%	34%	32%

³² Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Energy efficiency Manufacturing firms reported competition and a small applicant pool, and insufficient applicant qualifications as the two primary reasons for hiring difficulties. Installation worker/technician positions were considered the most difficult to fill (25%), followed by manager and supervisor positions (17%), and production positions (8%).

TABLE 16. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY MANUFACTURING

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Competition/ small applicant pool (33%) • Insufficient qualifications (certifications or education) (33%) • Lack of experience, training, or technical skills (25%) 	<ul style="list-style-type: none"> • Installation workers or technicians (25%) • Managers or supervisors (17%) • Production positions (8%)

WHOLESALE TRADE

In 2023, there were over 2,000 energy efficiency Wholesale Trade establishments in Canada with estimated energy efficiency operating revenues of approximately \$36.9 billion, representing nearly 4% of operating revenues in Canada's Wholesale Trade industry. The number of energy efficiency Wholesale Trade establishments has fallen by 45 since 2018, as has employment, which has fallen by over 3,000 workers since 2018.

In 2023, approximately 45,000 energy efficiency workers were employed in Wholesale Trade firms, representing approximately 5% of Wholesale Trade jobs nationwide. More than half (52%) of energy efficiency Wholesale Trade workers spent most or all their time on energy efficiency activities, as compared to 54% in 2018.

Approximately \$2.5 billion in energy efficiency employment income was generated by energy efficiency Wholesale Trade workers in 2023.

ESTABLISHMENTS, EMPLOYMENT, AND REVENUE







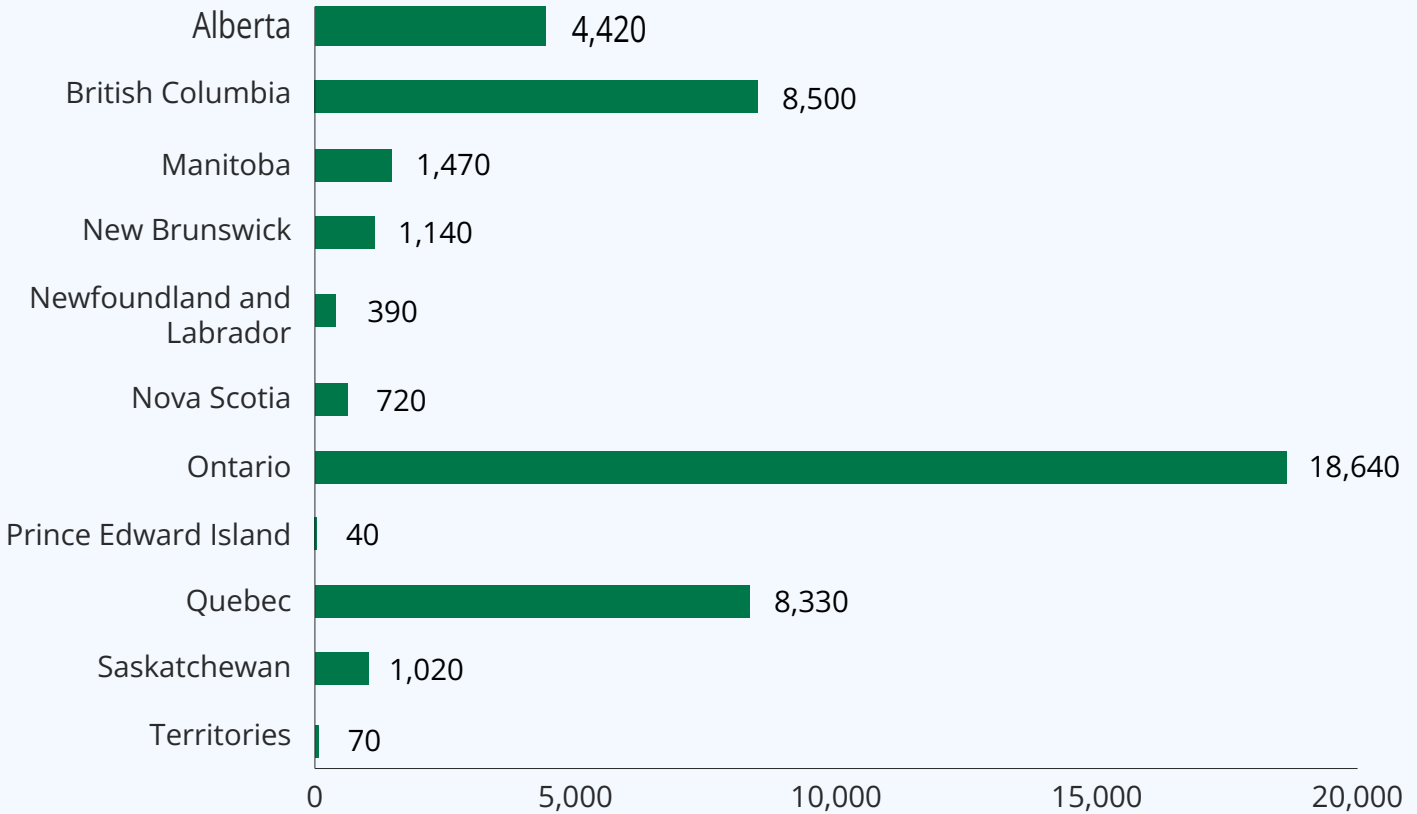
ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>2,004</p> <p>Energy Efficiency Establishments in Wholesale Trade</p>	 <p>\$36.9 B</p> <p>3.5% of Total Industry Operating Revenues</p>	 <p>\$2.5 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>
 <p>830,000</p> <p>Total Industry Employment</p>	 <p>45,000</p> <p>Worked in Energy Efficiency</p>	 <p>52%</p> <p>Spent All or Most of Their Time on Energy Efficiency Activities</p>



FIGURE 18. ENERGY EFFICIENCY WHOLESALE TRADE EMPLOYMENT BY GEOGRAPHIC REGION³³TABLE 17. REVENUE - ENERGY EFFICIENCY WHOLESALE TRADE³⁴

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Wholesale Trade	\$1,059,158	3.5%	\$36,858

³³Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

³⁴Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)

WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Wholesale Trade industry were less diverse than the national average, with only 24% of energy efficiency Wholesale Trade workers identifying as female, as compared to a national workforce average of 48%. The age distribution of the energy efficiency Wholesale Trade workforce was similar to the national average, with a slightly larger share of 18-34-year-olds and a slightly smaller share of 55 and over workers than the national workforce average. Only 15% of energy efficiency Wholesale Trade workers held a bachelor's degree or higher, as compared to 36% of the national workforce; and only 18% of energy efficiency Wholesale Trade workers held an associate degree or academic certificate, as compared to 34% of the national workforce.



TABLE 18. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY WHOLESALE TRADE WORKFORCE³⁵

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	33,764	75%	52%	50%
	Female	10,536	24%	48%	50%
	Gender non-binary	437	1%	N/A	N/A
CULTURAL	Indigenous persons	1,274	3%	4%	4%
AGE	18–34 Years old	17,106	38%	36%	31%
	35–54 Years old	19,238	43%	43%	31%
	55 And over	8,394	19%	22%	38%
EDUCATION LEVEL	Bachelor’s degree or beyond	6,627	15%	36%	30%
	Associate degree or academic certificate	8,075	18%	34%	32%
	Vocational or technical postsecondary certificate or credential	10,469	23%	34%	32%

³⁵ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Energy efficiency Wholesale Trade employers reported that competition and a small applicant pool was the primary reason for hiring difficulties (32%), followed by insufficient qualifications (27%), and lack of experience, training, or technical skills (23%). Installation worker/technician positions and sales positions tied as the number one most difficult type of position to fill (32%), followed by manager or supervisor positions (14%).

TABLE 19. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY WHOLESAL TRADE

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Competition/ small applicant pool (32%) • Insufficient qualifications (certifications or education) (27%) • Lack of experience, training, or technical skills (23%) 	<ul style="list-style-type: none"> • Installation workers or technicians (32%) • Sales positions (32%) • Managers or supervisors (14%)

PROFESSIONAL AND BUSINESS SERVICES

In 2023, there were over 6,000 energy efficiency Professional and Business Services establishments in Canada with estimated energy efficiency operating revenues of approximately \$15.7 billion, representing approximately 1% of operating revenues in Canada's Professional and Business Services industry. This represents growth of 16% in the number of energy efficiency Professional and Business Services establishments over the last five years. Energy efficiency operating revenues more than doubled over the last five years, accounting for \$6.7 billion in 2018.

Approximately 50,000 energy efficiency workers were employed in Professional and Business Services firms, accounting 1% of Professional and Business Services jobs nationwide and representing an addition of more than 8,000 energy efficiency jobs over the last five years. In addition, in 2023 more than two in five (42%) energy efficiency Professional and Business Services workers spent most or all their time on energy efficiency activities, as compared to 37% in 2018.

Approximately \$2.4 billion in energy efficiency employment income was generated by energy efficiency Professional and Business Services workers in 2023.



ESTABLISHMENTS, EMPLOYMENT, AND REVENUE







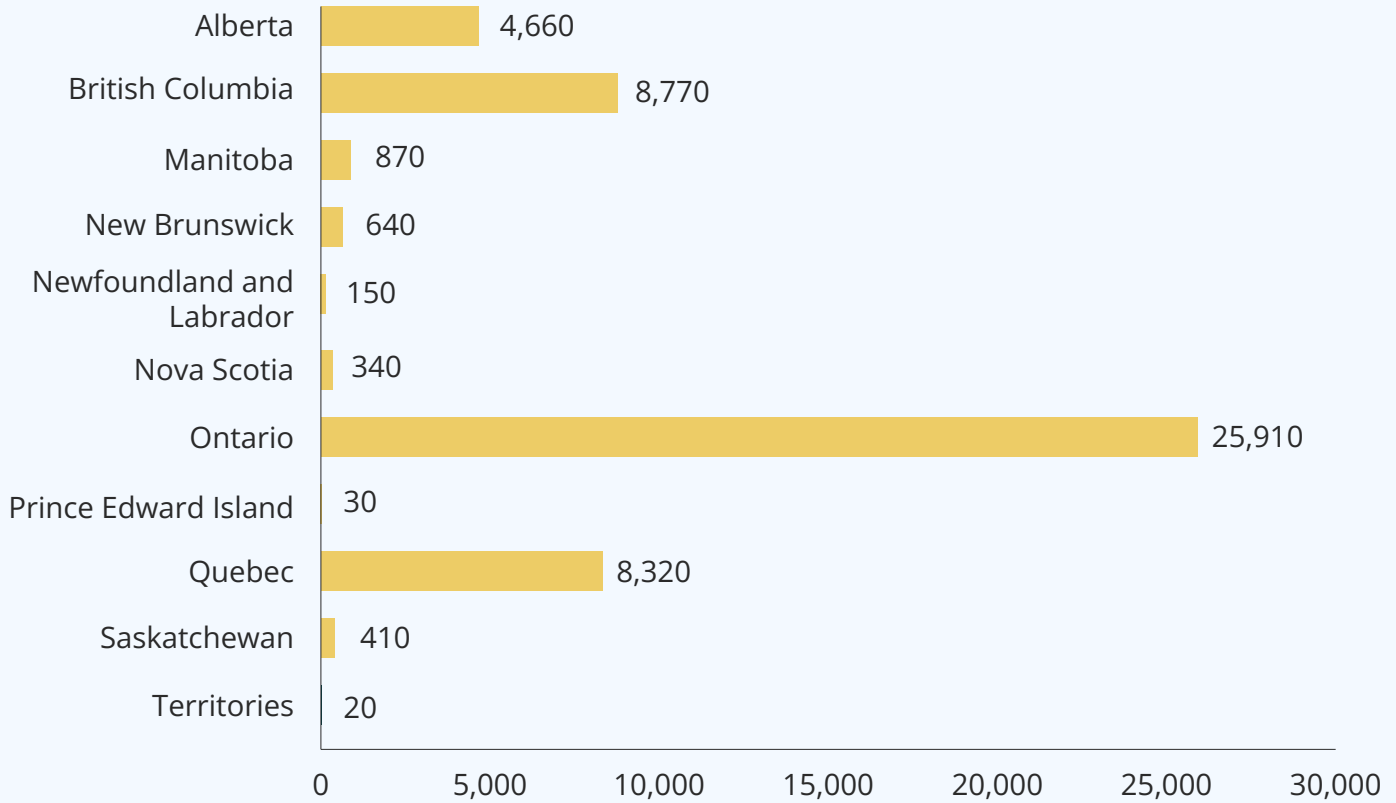
ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>6,047</p> <p>Energy Efficiency Establishments in PBS</p>	 <p>\$15.7 B</p> <p>1.1% of Total Industry Operating Revenues</p>	 <p>\$2.5 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>
 <p>3.7 M</p> <p>Total Industry Employment</p>	 <p>50,000</p> <p>Worked in Energy Efficiency</p>	 <p>42%</p> <p>Spent All or Most of Their Time on Energy Efficiency Activities</p>

FIGURE 19. ENERGY EFFICIENCY PROFESSIONAL AND BUSINESS SERVICES EMPLOYMENT BY GEOGRAPHIC REGION³⁶



³⁶ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

TABLE 20. REVENUE - ENERGY EFFICIENCY PROFESSIONAL AND BUSINESS SERVICES³⁷

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Professional & Business Services	\$1,412,750	1.1%	\$15,651

WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Professional and Business Services industry were less diverse than the national average, with only 35% of energy efficiency Professional and Business Services workers identifying as female, as compared to a national workforce average of 48%. The age distribution of the energy efficiency Professional and Business Services workforce was similar to the national average, with a slightly larger share of 18-34-year-olds and 35-54-year-olds than the national workforce average; and a slightly smaller share of workers 55 and up as compared to the national workforce average.

Energy efficiency Professional and Business Services workers had higher levels of educational attainment than the national workforce average, with 60% of energy efficiency Professional and Business Services workers holding a bachelor's degree or higher, as compared to 36% of the national workforce.

³⁷ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)

TABLE 21. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY PROFESSIONAL AND BUSINESS SERVICES WORKFORCE³⁸

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	32,303	64%	52%	50%
	Female	17,438	35%	48%	50%
	Gender non-binary	389	1%	N/A	N/A
CULTURAL	Indigenous persons	1,875	4%	4%	4%
AGE	18–34 Years old	20,035	40%	36%	31%
	35–54 Years old	22,839	46%	43%	31%
	55 And over	7,255	14%	22%	38%
EDUCATION LEVEL	Bachelor’s degree or beyond	29,847	60%	36%	30%
	Associate degree or academic certificate	10,318	21%	34%	32%
	Vocational or technical postsecondary certificate or credential	6,478	13%	34%	32%

³⁸ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Energy efficiency Professional and Business Services employers cited competition and a small applicant pool as the primary reason for hiring difficulties (45%), followed by difficulty finding industry-specific knowledge, skills, and interest (30%), and insufficient qualifications (16%). Installation worker/technician positions were cited as the most difficult to fill (30%), followed closely by engineer or architect positions (27%), and analyst or consultant positions (20%).

TABLE 22. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY PROFESSIONAL AND BUSINESS SERVICES

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Competition/ small applicant pool (45%) • Difficulty finding industry-specific knowledge, skills, and interest (30%) • Insufficient qualifications (certifications or education) (16%) 	<ul style="list-style-type: none"> • Installation workers or technicians (30%) • Engineers or architects (27%) • Analysts or consultants (14%)

UTILITIES

In 2023, there were nearly 400 energy efficiency Utilities establishments in Canada with estimated energy efficiency operating revenues of approximately \$2.1 billion, representing approximately 4% of operating revenues in Canada's Utilities industry. Approximately \$0.4 billion in energy efficiency employment income was generated by energy efficiency Utilities workers in 2023.

ESTABLISHMENTS, EMPLOYMENT, AND REVENUE




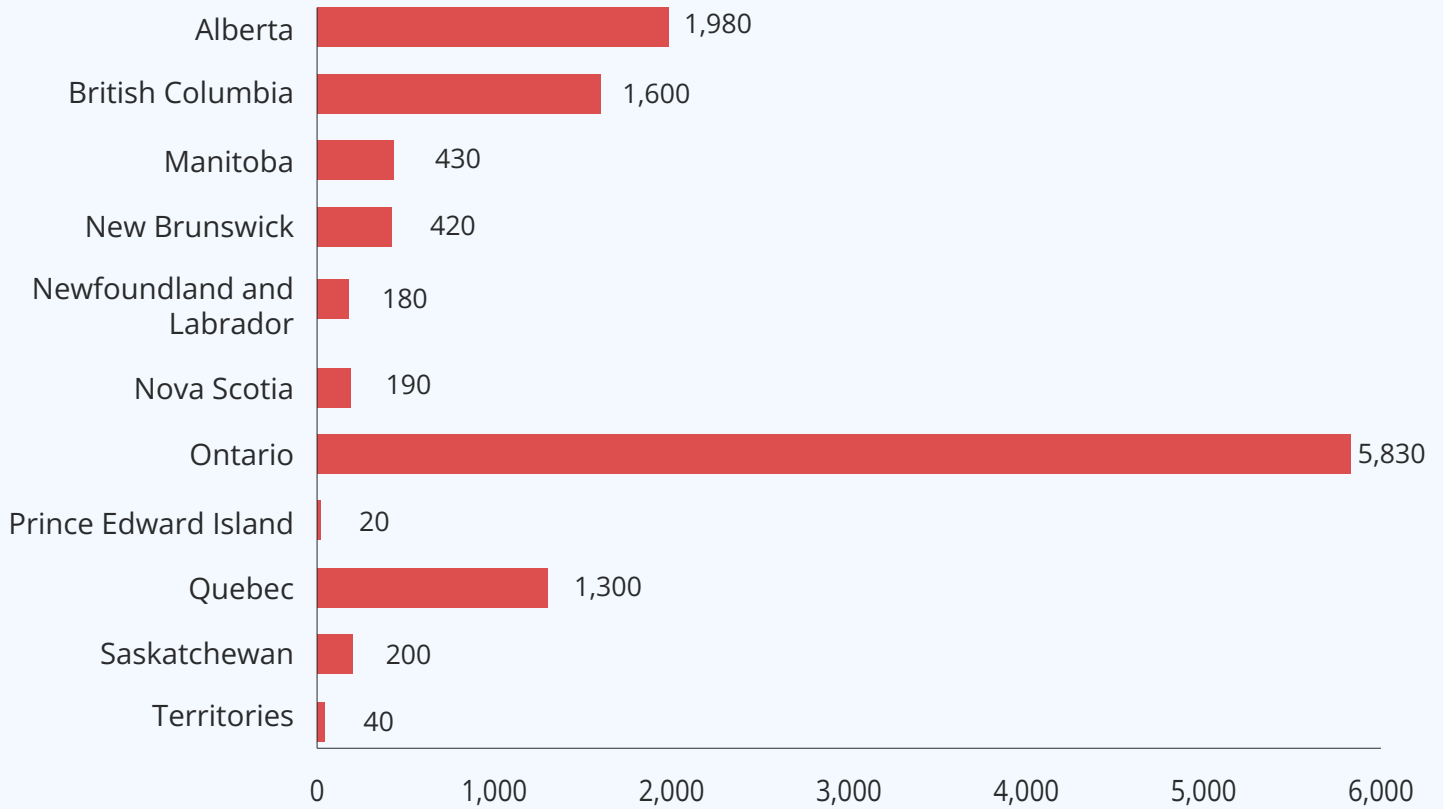
ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>392</p> <p>Energy Efficiency Establishments in Utilities</p>	 <p>\$2.1 B</p> <p>4.2% of Total Industry Operating Revenues</p>	 <p>\$0.4 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>

FIGURE 20. ENERGY EFFICIENCY UTILITIES EMPLOYMENT BY GEOGRAPHIC REGION³⁹TABLE 23. REVENUE - UTILITIES⁴⁰

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Utilities	\$49,199	4.2%	\$2,065

³⁹ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

⁴⁰ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)

WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Utilities industry were less diverse than the national average, with only 29% of energy efficiency Utilities workers identifying as female, as compared to a national workforce average of 48%. The age distribution of the energy efficiency Utilities workforce was similar to the national average, with a slightly larger share of 18-34-year-olds and 35-54-year-olds than the national workforce average; and a smaller share of workers 55 and up as compared to the national workforce average.

Energy efficiency Utilities workers had lower levels of educational attainment than the national workforce average, with 18% of energy efficiency Utilities workers holding a bachelor's degree or higher, as compared to 36% of the national workforce; and 21% holding an associate degree or academic certificate, as compared to 34% of the national workforce.



TABLE 24. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY UTILITIES WORKFORCE⁴¹

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	8,634	71%	52%	50%
	Female	3,563	29%	48%	50%
	Gender non-binary	<10	<1%	N/A	N/A
CULTURAL	Indigenous persons	805	7%	4%	4%
AGE	18–34 Years old	4,622	38%	36%	31%
	35–54 Years old	5,678	47%	43%	31%
	55 And over	1,904	16%	22%	38%
EDUCATION LEVEL	Bachelor’s degree or beyond	2,256	18%	36%	30%
	Associate degree or academic certificate	2,571	21%	34%	32%
	Vocational or technical postsecondary certificate or credential	2,737	22%	34%	32%

⁴¹ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Lack of experience, training, or technical skills was the most frequently cited reason for hiring difficulties amongst energy efficiency Utilities employers (47%), followed by insufficient non-technical skills (40%), and the inability to provide competitive wages to attract qualified workers (27%). Installation worker/technician and manager/supervisor positions tied as the most difficult type of position to fill amongst energy efficiency Utilities firms (13% each), followed by sales positions (7%).

TABLE 25. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY UTILITIES

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Lack of experience, training, or technical skills (47%) • Insufficient non-technical skills (work ethic, dependability, critical thinking) (40%) • Cannot provide competitive wages (27%) 	<ul style="list-style-type: none"> • Installation workers or technicians (13%) • Managers or supervisors (13%) • Sales positions (7%)

OTHER SERVICES







Other Services refers to the industry (or value chain) designation (NAICS 81) that is comprised of establishments that are not classified in any other sector, which includes establishments primarily engaged in repairing, or performing general or routine maintenance on motor vehicles, machinery, equipment, and other products; and non-governmental organizations (NGOs).

In 2023, there were nearly 3,000 energy efficiency Other Services establishments in Canada with estimated energy efficiency operating revenues of approximately \$0.6 billion, accounting for approximately 1% of operating revenues in Canada's Other Services industry. This represents an addition of over 200 energy efficiency Other Services establishments since 2018.

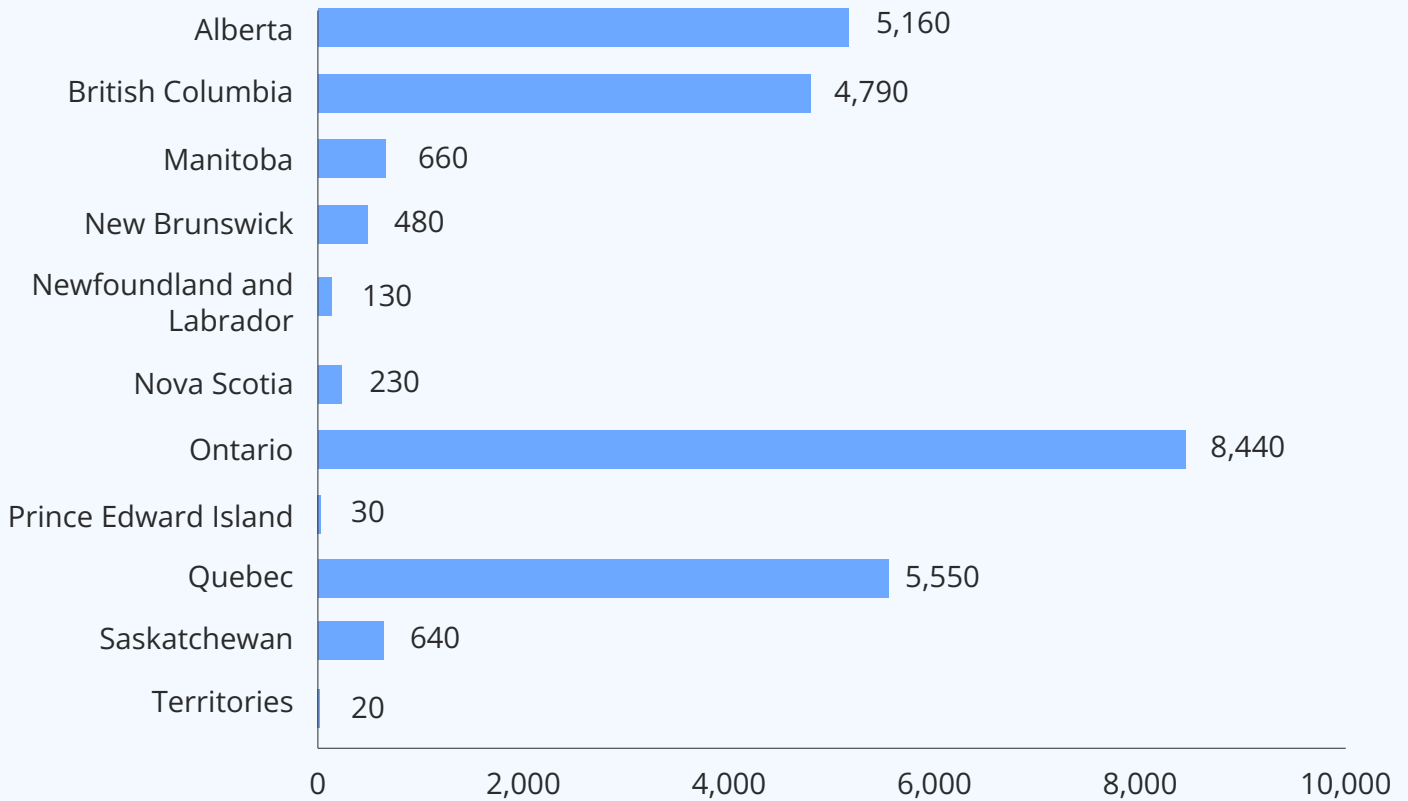
Approximately 26,000 energy efficiency workers were employed in Other Services firms, accounting for nearly 5% of Other Services jobs nationwide. Energy efficiency employment in the Other Services industry has grown by over 3,400 jobs over the last five years. In addition, in 2023, nearly three in five (57%) energy efficiency Other Services workers spent most or all their time on energy efficiency activities, as compared to approximately two in five (37%) in 2018.

Approximately \$0.8 billion in energy efficiency employment income was generated by energy efficiency Other Services workers in 2023.⁴²

ESTABLISHMENTS, EMPLOYMENT, AND REVENUE

ESTABLISHMENTS	REVENUE	EMPLOYMENT INCOME
 <p>2,947</p> <p>Energy Efficiency Establishments in Other Services</p>	 <p>\$0.6 B</p> <p>1.1% of Total Industry Operating Revenues</p>	 <p>\$0.8 B (\$2023)</p> <p>Energy Efficiency Employment Income</p>
 <p>0.6 M</p> <p>Total Industry Employment</p>	 <p>26,000</p> <p>Worked in Energy Efficiency</p>	 <p>57%</p> <p>Spent All or Most of Their Time on Energy Efficiency Activities</p>

⁴² Among the six industries included in the study, Other Services might have a substantial proportion of non-operating revenues contributing to its total revenues, which could explain the higher estimated value for employment income than operating revenue associated with energy efficiency.

FIGURE 21. ENERGY EFFICIENCY OTHER SERVICES EMPLOYMENT BY GEOGRAPHIC REGION⁴³TABLE 26. REVENUE - ENERGY EFFICIENCY OTHER SERVICES⁴⁴

INDUSTRY	OPERATING REVENUES (\$M)	% OF INDUSTRY REVENUE DERIVED FROM ENERGY EFFICIENCY	ENERGY EFFICIENCY OPERATING REVENUE (\$M)
Other Services	\$50,618	1.1%	\$561

⁴³ Industry employment is rounded to nearest tenth digit, summing sub-technology application may not add up to total energy efficiency employment.

⁴⁴ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)



WORKFORCE CHARACTERISTICS

Energy efficiency workers in the Other Services industry were less diverse than the national average, with only 26% of energy efficiency Other Services workers identifying as female, as compared to a national workforce average of 48%. The energy efficiency Other Services workforce had a slightly larger share of 35-54-year-olds than the national workforce average; and a smaller share of workers 18-34 and 55 and up as compared to the national workforce average.

Energy efficiency Other Services workers had lower levels of educational attainment than the national workforce average, with only 19% of energy efficiency Other Services workers holding a bachelor's degree or higher, as compared to 36% of the national workforce; and only 13% holding an associate degree or academic certificate, as compared to 34% of the national workforce.

⁴⁴ Statistics Canada. [Table 33-10-0226-01 Quarterly balance sheet and income statement by industry \(x 1,000,000\), Q1 to Q4 2023](#)

TABLE 27. DEMOGRAPHIC PROFILE OF THE ENERGY EFFICIENCY OTHER SERVICES WORKFORCE⁴⁵

	DEMOGRAPHIC	EMPLOYEES	PERCENT OF SECTOR	NATIONAL WORK-FORCE AVERAGES	NATIONAL POPULATION AVERAGES
GENDER	Male	19,240	74%	52%	50%
	Female	6,888	26%	48%	50%
	Gender non-binary	<10	<1%	N/A	N/A
CULTURAL	Indigenous persons	904	3%	4%	4%
AGE	18–34 Years old	8,939	34%	36%	31%
	35–54 Years old	12,592	48%	43%	31%
	55 And over	4,597	18%	22%	38%
EDUCATION LEVEL	Bachelor's degree or beyond	4,914	19%	36%	30%
	Associate degree or academic certificate	3,267	13%	34%	32%
	Vocational or technical postsecondary certificate or credential	6,466	25%	34%	32%

⁴⁵ Workforce and population averages for “associate degree or academic certificate” and “vocational or technical postsecondary certificate or credential” are from the same source due to definitional discrepancies. Reported percentages are for “postsecondary certificate or diploma.” Workforce and population averages are ages 15+ and were provided by the Statistics Canada Labour Force Survey, Tables 14-10-0017-01 (Labour force characteristics by age and detailed age group, monthly, unadjusted for seasonality, December 2023), 14-10-0359-01 (Labour force characteristics by Indigenous group and educational attainment, annual, 2023), and 14-10-0019-01 (Labour force characteristics by educational attainment, monthly, unadjusted for seasonality, December 2023).

EMPLOYER OUTLOOK AND HIRING CHALLENGES

Competition and a small applicant pool was the most frequently cited reason for hiring difficulties amongst energy efficiency Other Services firms (58%), followed by lack of experience, training, or technical skills (26%), and insufficient non-technical skills (21%). Installation worker/technician positions were considered the most difficult jobs to fill (42%), followed by drivers, or transportation and warehouse workers (16%), and sales positions (11%).

TABLE 28. HIRING DIFFICULTIES WITHIN ENERGY EFFICIENCY OTHER SERVICES

TOP THREE REASONS FOR HIRING DIFFICULTIES	TOP THREE OCCUPATIONS WITH HIRING DIFFICULTIES
<ul style="list-style-type: none"> • Competition/small applicant pool (58%) • Lack of experience, training, or technical skills (26%) • Insufficient non-technical skills (work ethic, dependability, critical thinking) (21%) 	<ul style="list-style-type: none"> • Installation workers or technicians (42%) • Drivers, or transportation and warehousing (16%) • Sales positions (11%)

CONCLUSION

In the past five years Canada's energy efficiency sector has grown significantly, with the number of establishments involved in energy efficiency activities increasing by 8.7% and total operating revenues doubling to \$126.3 billion. Employment in the sector has also expanded, with nearly 470,000 permanent workers as of 2023. This reflects increased investment into energy efficiency activities in pursuit of a net-zero 2050 and a growing population, highlighting energy efficiency as a driver of economic activity and job creation.

Looking ahead, the energy efficiency work is expected to continue expanding. Projections indicate an 8% growth in employment over the next year, amounting to roughly 37,000 new jobs. This growth will likely be driven by continued investments in energy efficiency initiatives and increased adoption of energy-efficient technologies.

OPPORTUNITIES AND CHALLENGES

Despite its growth, the energy efficiency sector faces several challenges. Employers report hiring difficulties, primarily attributed to a lack of qualified candidates. This shortage is especially felt in the construction industry, which employs the largest share of energy efficiency workers. At the same time, the energy efficiency workforce continues to be less diverse than the overall Canadian workforce, with an underrepresentation of women and Indigenous persons. Increasing diversity and inclusivity within the workforce is essential for tapping into a broader talent pool to mitigate hiring challenges.

Realizing this potential requires addressing current hiring challenges and enhancing workforce training and education. This can include increased access to hands-on experience, on-the-job training opportunities, micro-credentials, and ongoing professional development as new energy efficiency technologies emerge. By developing targeted programs to upskill workers and attract new talent, Canada can ensure a skilled and knowledgeable energy efficiency workforce.



APPENDIX A: SCOPE AND METHODOLOGY

Consistent with the original 2018 study, in this study energy efficiency is defined as the production or installation of energy-saving products or provision of services that reduce end-use energy consumption. The services include the manufacture of ENERGY STAR® appliances and other ENERGY STAR® labelled products, but also building design and contracting services that provide insulation, improve natural lighting, and reduce overall energy consumption across homes and businesses.

Furthermore, consistent with the USEER, the energy efficiency workers of interest in this study are those directly employed within the following industries:

- Construction (NAICS 23): constructing, repairing and renovating buildings and engineering works, and in subdividing and developing land.
- Manufacturing (31-33): chemical, mechanical or physical transformation of materials or substances into new products.
- Wholesale Trade (41): wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.
- Professional and Business Services (51 to 56): information and cultural industries; finance and insurance; real estate and rental & leasing; professional, scientific and technical services; management of companies and enterprises; and administration & support, waste management and remediation services.
- Utilities (22): electricity, gas, and water infrastructure.
- Other Services (81): repair and maintenance; personal and laundry services; religious, civic, and other professional organizations; and private households.

The study relied on a comprehensive survey, conducted from November 13, 2023, to January 9, 2024, of 2,694 business establishments across Canada. To accomplish this task, the team conducted a representative sampling of businesses within the six industries across the country.

For this survey, a **Qualifying Firm** is:

An organization with employees in Canada that is directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, goods or services related to energy efficiency, including heating, cooling, building envelope or advanced materials, ENERGY STAR® appliances, efficient lighting, building controls or other energy efficiency activities that reduce energy demand pursuant to the ENERGY STAR® standards regulated by NRCan in Canada or the EPA in the United States, or other standards of NRCan or the U. S. Department of Energy. This also refers to establishments that are involved with heating, ventilation and air conditioning (HVAC), whether thermal or hot water solar, from renewable energy sources or work that increases the energy efficiency of HVAC systems. This also includes supporting services such as consulting, finance, tax, and legal services related to energy efficiency goods or services.

Neither this study nor the USEER captures employment related to energy efficient manufacturing processes (as distinct from the manufacture of energy efficient products). USEER occasionally measures some energy efficiency activity in related energy sectors, such as Mining, Quarrying, and Oil and Gas Extraction (NAICS 21), which were not included in this study.

Results in this study also exclude retail employees, such as those selling energy efficient light bulbs. Because Retail Trade (NAICS 44-45) is a very large industry employer and retail employees mainly engage in distinct and unrelated energy efficiency activities, they distort the clarity of the energy efficiency workforce data. Secondary statistical data find that retail trade industries that sell and distribute ENERGY STAR® appliances and building materials as well as non-qualifying appliances and building materials employ approximately 242,000 Canadians across several subsectors.⁴⁶ As the Retail workforce exceeds the total for Construction and Wholesale Trade energy efficiency workforce; including retail would have distorted meaningful characterization of energy efficiency employment.

⁴⁶ These industries include Household Appliance stores and Electronics stores (4431), Building Material and Supplies dealers (4441), and Department Stores (4421) These are retail establishments that are not defined by their sale of ENERGY STAR® appliances or energy efficient products. Some are defined by their sale of appliances in general but even these are not the sole retailers of energy efficient products – they could be general retailers as well such as big box stores that sell wide varieties of items.

For this survey, **Qualifying Workers** are:⁴⁷

Permanent employees of a qualifying firm that spend some portion of their time supporting the qualifying energy efficiency portion of the business.

The report provides details into levels of employment activity that include “a portion of their time (less than 50%)”, “most of their time (50-99%)” and “all their time (100%)” when referencing qualifying workers. This is especially important within the energy efficiency sector where the employing construction or repair firms frequently are engaged in both traditional energy-related construction or installation as well as in high-efficiency activities that qualify for ENERGY STAR® designation.

The total energy efficiency workforce size and other data such as demographics and occupational distribution were estimated by applying survey numbers to data gathered by Statistics Canada, particularly 2023 Labour Force Survey employment data.

Survey results were also used to filter and analyze the concentration, intensity, and distribution of various energy efficiency technologies and activities throughout traditional industries. As with the USEER, the data in this report also provides an additional layer of information to track sector-specific growth, obstacles, and opportunities.

⁴⁷ Energy efficiency workers often perform both traditional energy efficiency work and high-efficiency work that qualifies for Energy Star® designation. Where “portion of their time” includes employees whose activities are less than 50% of their time, specific reference will be made to that fact. The numbers of energy efficiency employment quoted in this report are based on headcount, and not full-time equivalent (FTE) numbers as typically presented in other studies.

The Energy Efficiency Employment in Canada report provides data for direct and permanent employment only within the six industry groups and with no attempt to analyze indirect or induced employment. This study therefore excluded the indirect jobs that support this sector, such as iron foundries (raw materials), aluminum production, and extrusion activities for frame manufacturing, or other aspects of the far-upstream value chain. Induced jobs created throughout the economy due to employees of this sector spending their wages were not included either. Input/output modelling has been used in many studies to generate direct, indirect, and induced employment estimates, including those related to energy efficiency.

The research is a point-in-time design, measuring the direct energy efficiency workforce at the time of survey, which is across the fall months from December 2023 into January 2024. Data is provided at the national level with additional breakdown by industry, sub-technology application, occupational groups, workforce demographics and others. Estimates on number of establishments, operating revenue estimates and employment income involved or derived from energy efficiency are also included, as well as geographic distribution by province/territory or region.

Appendix C presents a summary of Survey Analysis and Methods. A Glossary of Terms is also available starting on page 65.

AN OVERVIEW OF INPUT/OUTPUT (I/O) MODELS

I/O modelling typically begins by defining an activity within a defined industry or activity, such as Leadership in Energy and Environmental Design (LEED) building construction. In the LEED building example, construction firm activity employment would provide the “direct” jobs. “Indirect” employment would include manufacturing jobs related to producing building materials, appliances, and other products for the construction, as well as professional services such as architecture and engineering firms. A third calculation may be “induced” employment, which includes jobs created or supported by wages paid and other benefits provided by employers of direct and indirect employees.

APPENDIX B: 2023 CANADA AND UNITED STATES COMPARISON

In 2023, energy efficiency jobs represented a slightly larger share of total jobs in Canada (2.63%) as compared to the U.S. (1.44%), primarily due to higher incidence rates and differences in the relative sizes of each industry in Canada versus the United States.

With respect to employment by industry, as in the U.S., the Construction industry accounted for the largest share of energy efficiency jobs in Canada (representing 1.73% of total jobs in Canada, and 0.78% of total jobs in the U.S.), followed by Professional and Business Services (representing 0.28% of total jobs in Canada and 0.32% of jobs in the U.S.). However, in Canada, the Wholesale Trade industry held the number three spot, whereas in the U.S., the Manufacturing industry held the number three spot.

By sub-technology application, LED, CFL, and other energy-efficient lighting constituted the largest share of energy efficiency employment in Canada (0.70% of total jobs). In contrast, in the U.S., traditional HVAC goods, control systems, and services constituted the largest share of energy efficiency employment (0.37% of total jobs). This category took the number two spot in Canada, and energy efficiency jobs in traditional HVAC accounted for 0.67% of total jobs in the nation.

TABLE 29. ENERGY EFFICIENCY EMPLOYMENT – CANADA AND UNITED STATES⁴⁸

	TOTAL EE JOBS CA ⁴⁹	TOTAL EE JOBS US	TOTAL EE PER TOTAL JOBS CA	TOTAL EE PER TOTAL JOBS US
Energy Efficiency (Total)	454,068	2,215,431	2.63%	1.44%
Construction	305,785	1,193,136	1.73%	0.78%
Manufacturing	27,287	302,318	0.15%	0.20%
Wholesale Trade	44,738	193,631	0.25%	0.13%
Professional & Business Services	50,129	486,043	0.28%	0.32%
Other Services	26,128	40,303	0.15%	0.03%
LED, CFL and other efficient lighting	123,766	351,423	0.70%	0.23%
Traditional HVAC goods, control systems, & services	118,286	564,498	0.67%	0.37%
Renewable heating and cooling	12,876	243,330	0.07%	0.16%
ENERGY STAR appliances	24,222	160,137	0.14%	0.10%
Reduced water consumption products and appliances	34,991	86,462	0.20%	0.06%
Advanced building materials/insulation	55,185	339,152	0.31%	0.22%
ENERGY STAR / high efficiency heating & cooling equipment	71,548	280,577	0.40%	0.18%
Recycled building materials	9,763	75,554	0.06%	0.05%
Other	15,634	114,297	0.09%	0.07%

⁴⁸ United States Department of Energy, (2023). [United States Energy & Employment Report 2023.](https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20REPORT-v2.pdf)
<https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20REPORT-v2.pdf>

⁴⁹ Utility jobs are not included in Table 24 of comparisons as utilities in the United States were not measured as part of the Energy Efficiency sector. In Canada, the size of the Energy Efficiency Utilities workforce was estimated at 12,204. When the Total EE Jobs CA in Table 24 above of 454,068 (not including utilities) is added to 12,204 (for utilities), the total is 466,271 which is the number shown throughout the tables of Canadian results.

Despite the higher share of energy efficiency jobs as a percent of the total workforce in 2023, Canada has consistently been ranked lower than the U.S. in ACEEE's International Energy Efficiency Scorecard, which assesses the policies and performance of the world's top 25 energy-consuming countries. According to ACEEE, Canada ranked higher than the United States in terms of policy in 2022: Canada maintained a relatively high level of spending on energy efficiency R&D, and investments in energy efficiency per capita were among the highest of the countries analyzed.⁵⁰

However, Canada scored relatively low in industrial efficiency, and the ACEEE recommended that Canada establish a mandate for plant energy managers and mandatory energy audits. In addition, Canada scored relatively low on energy efficiency in its transportation sector, with high vehicle miles traveled per capita in 2022. The ACEEE recommended that Canada increase its investments in rail and public transit to improve performance in its transportation sector. Thus, as of 2022, Canada was leading the U.S. in terms of energy efficiency policy, but the U.S. was leading Canada in terms of energy efficiency performance in the buildings and industrial sectors.

Furthermore, to date, the U.S. has been more successful than Canada in developing its ESCO sector and in implementing consistent minimum performance standards for existing buildings. The U.S. has also ranked within the top five global economies with the highest level of government energy-efficiency related investment support between April 2020 and June 2023, according to the IEA.^{51 52} Since 2020, the U.S. has invested more than \$200 billion in public spending on energy efficiency investment support, of which \$140 billion has been dedicated toward transportation. The U.S. Inflation Reduction Act (IRA) allocated \$86 billion to energy efficiency provisions, including grants, loans, and tax rebates for low-carbon vehicles; and included energy efficiency tax credits, rebates, and grants for low-income households and disadvantaged communities in the residential sector.

⁵⁰ Because the ACEEE International Energy Efficiency Scorecard is released once every two years, the 2022 Scorecard is the most current edition available as of the time of the writing of this report.

⁵¹ <https://iea.blob.core.windows.net/assets/dfd9134f-12eb-4045-9789-9d6ab8d9fbf4/EnergyEfficiency2023.pdf>

⁵² The other nations in the top five included Italy, Germany, Norway, and France.

APPENDIX C: SURVEY AND ANALYSIS METHODS

The 2023 Energy Efficiency Employment in Canada survey methodology relies on the most recently available detailed data from Statistics Canada (July 2023, employment for Canada, Province, or territory), together with a detailed supplemental survey of business establishments across Canada designed and conducted by BW Research Partnership and ECO Canada on behalf of NRCan. During a time of rapid change in energy technology and business employment structure, supplemental surveys in addition to traditional databases are a useful tool to capture developing trends. Taken together, the Statistics Canada and the survey data provide the most comprehensive calculation of energy efficiency-related employment available.

The research methodology for this study closely tracks the USEER (United States Energy and Employment Report), relying on a large and comprehensive survey of businesses in industries throughout the value chain, nationwide. The survey is similar to the USEER survey (slight changes are made to conform to Canadian terminology and standards); thus, the data are highly comparable to the USEER data.

The 2023 Energy Efficiency Employment in Canada survey uses a stratified sampling plan that is representative by geography (Province or territory), industry code (NAICS), and establishment size to determine the proportion of establishments that work with specific energy efficiency technologies, as well as the proportion of workers in such establishments that work with the same. These data are then analyzed and applied to existing public data published by Statistics Canada, effectively constraining the potential universe of energy efficiency establishments and employment.

Canadian firms were contacted to assess their activity in the energy efficiency space. Organizations were required to have at least one location with employees in Canada. In addition, firms were required to provide an answer to the following question at the beginning of the survey:

“

Is your organization involved, in whole or part, with an activity related to energy efficiency, including heating and cooling, building envelope or advanced materials, ENERGY STAR appliances, efficient lighting, building controls or other energy efficiency activities?

We define this as being directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, goods or services that reduce energy demand pursuant to the Energy Star standards regulated by NRCan in Canada or the EPA in the United States, or other standards of NRCan or the U. S. Department of Energy or refers to establishments that are involved with heating (thermal or hot water solar), ventilation and air conditioning (HVAC) from renewable energy sources or work that increases the Energy Efficiency of HVAC systems, including heating, cooling and building envelope This also includes supporting services such as consulting, finance, tax, and legal services related to energy.

”

Respondents providing a “yes” answer were filtered as energy efficiency-related and were asked to complete the remainder of the survey. All others were terminated from the survey and their responses were used to develop industry incidence for energy efficiency activity.

The 2023 survey was administered by telephone (more than 255,000 outbound calls) and by web, with more than 500 emails sent to participants throughout Canada. The phone survey was conducted by ReconMR. The web instrument was programmed internally, and each respondent was required to use a unique ID to prevent duplication.

The sample was split into two categories, referred to as the known and unknown universes. The known universe includes establishments that have previously been identified as energy-related, either in prior research or in some other manner, such as membership in an industry association or participation in government programs. These establishments were surveyed census-style, and their associated establishment and employment totals were removed from the unknown universe for both sampling and for resulting employment calculations and estimates.

The unknown universe included approximately 121,000 firms in potentially energy efficiency-related NAICS codes, across utilities, construction, manufacturing, wholesale trade, professional and business services, and other services, including repair and maintenance. The distribution of firms nationally was carefully analyzed to develop representative clusters by establishment size (employment).

In total, approximately 2,694 business establishments participated in the survey effort. Of those who participated in the survey, 1,266 establishments confirmed they were engaged in the provision of energy efficiency goods and services. These responses were used to develop incidence rates among industries as well as apportion employment across various industry categories. The margin of error for incidence in the study is +/- 1.88% at the 95% confidence interval.

RISKS AND LIMITATIONS

Survey work inherently carries risks, limitations, and possibilities of error; however, our methods are designed to minimize the risk by careful survey design, field control and statistical weighting to population parameters. For example, because the energy efficiency studies may be replicated for tracking purposes, the initial sample size is kept very large to produce ultimate small margins of error.

The major risks are:

- Non-response bias especially from larger firms which are more likely to refuse the survey or are less likely to know the details of energy work at their locations (if energy work is a small part of operations),
- Misidentification of energy efficiency work according to our definitions, and/or
- Improper allocation of energy employment by survey respondents.

Value chain and sub-technology findings, and findings by province/region also have higher margins of error due to smaller sample sizes. The associated margins of error for each province/region are shown in Table 30 below.

TABLE 30. MARGIN OF ERROR BY PROVINCE/REGION

PROVINCE / REGION	MARGIN OF ERROR
Newfoundland and Labrador	+/-8.64%
Prince Edward Island	+/-8.67%
Nova Scotia	+/-6.02%
New Brunswick	+/-8.75%
Quebec	+/-3.47%
Ontario	+/-4.32%
Manitoba	+/-8.61%
Saskatchewan	+/-8.41%
Alberta	+/-4.29%
British Columbia	+/-4.19%
Territories	+/-8.13%

APPENDIX D: ADDITIONAL DATA TABLES

TABLE 31. ENERGY EFFICIENCY EMPLOYMENT WORK INTENSITY BY INDUSTRY

INDUSTRY	TOTAL	SPENT ALL THEIR TIME (100%) ON EE	SPENT MOST OF THEIR TIME (50-99%) ON EE	SPENT A PORTION OF THEIR TIME (LESS THAN 50%) ON EE
Construction	305,785	102,851	95,807	107,127
Manufacturing	27,287	9,165	7,839	10,283
Wholesale Trade	44,738	19,224	3,857	21,657
Professional & Business Services	50,129	16,852	4,102	29,176
Utilities ⁵³	12,204	—	—	—
Other Services	26,128	5,819	9,127	11,181
TOTAL	466,271	153,912	120,732	191,627

⁵³ Many energy utilities across Canada have EE programs for residential, commercial and industrial properties, and are largely classified as employees in either the electric power generation or transmission and distribution. As a result, utility workers, by nature of their classification by Statistics Canada, are primarily (majority of their time) in electric power generation or transmission and distribution. Any work in energy efficiency for utility workers is secondary, and therefore less than 50% of their dedicated work time.

TABLE 32. ENERGY EFFICIENCY EMPLOYMENT BY INDUSTRY AND BY DETAILED SUB-TECHNOLOGY APPLICATION

	TOTAL	CON- STRUC- TION	MAN- UFAC- TUR- ING	WHOLE- SALE TRADE	PROFES- SIONAL SER- VICES	UTILITIES	OTHER SER- VICES
ENERGY STAR® Appliances and Efficient Lighting	147,988	82,137	17,880	17,196	10,091	6,279	14,405
Traditional HVAC Goods, Control Systems, and Services	118,286	94,703	1,368	6,196	12,201	1,726	2,092
High Efficiency HVAC and Renewable Heating and Cooling, including ENERGY STAR HVAC Equipment	84,424	61,928	1,057	8,700	7,550	2,215	2,973
Advanced Materials	55,185	34,950	1,016	4,652	9,456	291	1,821
Other Energy Efficiency	60,389	32,067	2,967	7,994	10,832	1,692	4,837
TOTAL	466,271	305,785	27,288	44,738	50,130	12,203	26,128

TABLE 33. ENERGY EFFICIENCY EMPLOYMENT BY INDUSTRY AND BY OCCUPATIONS, 2023

	TOTAL	CON- STRUC- TION	MANU- FACTUR- ING	WHOLE- SALE TRADE	PROFES- SIONAL SERVICES	UTILITIES	OTHER SER- VICES
Installation or Repair	191,998	169,624	3,369	8,725	3,169	1,921	5,190
Manage- ment/Pro- fessional	101,993	62,937	2,540	6,377	25,841	1,466	2,831
Administra- tive	65,204	33,726	4,272	10,735	5,682	4,276	6,513
Production/ Manufactur- ing	46,223	14,253	14,455	5,107	2,199	1,984	8,224
Sales	29,430	12,889	2,258	10,515	1,218	754	1,796
Other	31,424	12,356	393	3,279	12,020	1,803	1,573
TOTAL	466,271	305,785	27,287	44,738	50,129	12,204	26,128

GLOSSARY OF TERMS

Activity: For the purposes of this report, an establishment's activity refers to the primary value-chain industry with which it most associates its work. Activities include research, development and engineering, manufacturing, sales and distribution, installation and maintenance, legal, finance, and other professional services, and other.

Advanced Building Materials/Insulation: All materials that represent advances in efficiency over the traditional materials.

Energy Efficiency Establishment: For the purposes of this report, an establishment is any establishment that is involved with an activity related to the energy efficiency industry.

Energy Efficiency Worker: Full-time and part-time permanent employees who support the energy efficiency (including management) portion of the business, including administrative staff, excluding interns and other temporary workers.

ENERGY STAR® Appliances: Appliances that meet the international ENERGY STAR® standard for energy efficient consumer products regulated by NRCan in Canada or the EPA in the United States.

ENERGY STAR®/High Efficiency Heating and Cooling Equipment: HVAC that meets the international ENERGY STAR® standard for energy efficient consumer products regulated by NRCan in Canada or the EPA in the United States or has high Average Fuel Utilization Efficiency (AFUE) rating of 90 or greater or 15 SEER or greater.

Establishment: For the purposes of this report, a business location in Canada with at least one employee.

Firm: A business organization, such as a corporation, company, or partnership. A firm can have multiple establishment locations.

LED, CFL and Other Efficient Lighting: Energy efficient lighting sources.

Professional Service: Any sort of finance, legal, architecture, or other mathematical or scientific services that support clean energy technology development and deployment.

“Other” Energy Efficiency Sub-technologies: Other Energy Efficiency sub-technologies include variable speed pumps, other design services not specific to a sub-technology, software services not specific to a sub-technology, energy auditing, rating, monitoring, metering, and leak detection, energy efficiency policy not specific to a sub-technology, LEED certification, consulting not specific to a sub-technology, and phase-change materials.

Other Services Industry: Other services refers to the industry (or value chain) designation (NAICS 81) that includes repair and maintenance, NGOs, etc.

Recycled building materials: Building materials sourced from recycled materials.

Reduced water consumption products and appliances: High efficiency (HE) washing machines, faucet aerators, low flow shower heads, etc.

Renewable Heating and Cooling (including Solar Thermal): Refers to establishments that are involved with heating, ventilation and air conditioning (HVAC) from Renewable Energy sources or work that increases the Energy Efficiency of HVAC systems (solar thermal - uses the sun's energy to generate thermal energy).

Sub-technology: For the purposes of this report, sub-technology refers to splits within a technology. For Energy Efficiency, examples are LED lighting, Energy Star ® appliances and the like.

Technology: For the purposes of this report, technology refers to the primary application or end-use of an establishment's produced goods or services. Examples are Energy Efficiency, Electric Power Generation, Fuels and the like.

Traditional HVAC goods, control systems, and services: Heating, ventilation, and air conditioning systems (HVAC), including building retro-commissioning and retrofits connected to heating and cooling.



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