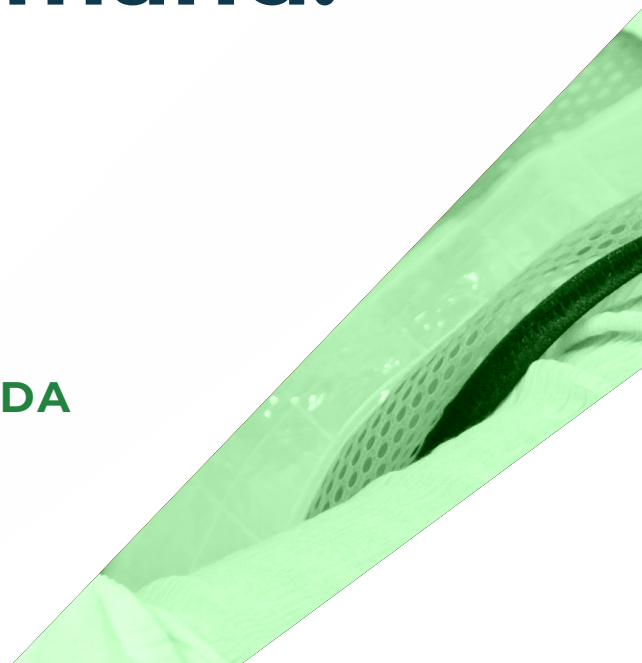
EHRC RHIEC

ONTARIO POWER GENERATION

Canada

Electricity in Demand: Labour Market Insights

FACTSHEET FOR ATLANTIC CANADA 2023-2028



Atlantic Canada Outlook

STRUCTURE OF THE ELECTRICITY MARKET

The Atlantic Canada region comprises the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador.

It has a relatively small electricity market and much of its power is exported to Quebec. There is a wide variation in the type of organizations that generate electricity in the region. They include Crown Corporations, investor-owned utilities, municipal utilities, and a growing number of independent power producers. The Atlantic provinces are endowed with abundant sources of renewable power.

A Crown Corporation in **Newfoundland and Labrador** plays a key role in electricity generation and transmission within the province. This entity sells wholesale electricity to a regulated distributor, which is responsible for supplying power to urban areas. Regulatory oversight for these operations is provided by a government body. The provincial leadership emphasizes the province's role in regional collaboration, specifically in the development of hydrogen, wind, and hydroelectric resources.

To address greenhouse gas levels, the province aims to reduce emissions by 40% by 2030, 60% by 2040, and 75-85% by 2050 relative to 2001 levels.

A fully integrated and regulated private utility, operating under the regulatory oversight of an independent commission, serves the majority of electricity customers in **Prince Edward Island**. A municipally owned utility handles the rest, with regulations based on cost-of-service principles. In the past, the province legislated renewable energy targets, but these were amended, and as of 2020, the government is reassessing its energy laws. The most recent energy strategy was presented in 2016/2017 and is undergoing revisions. The current Net Zero Framework aims for urgent action to reduce greenhouse gas emissions, particularly in the electricity sector. A recent initiative involves seeking public input on a new energy strategy, emphasizing climate action, electrification, sustainable fuels, innovation, and workforce development in the green energy sector.

A provincially owned utility manages the generation, transmission, and distribution of electricity in a substantial part of **New Brunswick**, operating as a regulated monopoly to serve nearly all residential and industrial consumers in the province. Electricity rate changes are subject to regulatory oversight.

In **Nova Scotia**, vertically integrated public utility supplies most of the province's electricity, with distribution managed by six municipally owned independent utilities. Regulatory oversight is provided by an entity ensuring fair utility service rates, and certain legal constraints dictate the frequency of rate applications. Nova Scotia has implemented a cap-and-trade system since 2019 to control carbon emissions, complemented by the *Environmental Goals and Climate Change Reduction Act* enacted in the fall of 2021, outlining ambitious climate change objectives. Legislative measures introduced in October 2022 impose limits on electricity rate increases, prompting discussions on the feasibility of transitioning away from coal-fired power plants and the potential impact on environmental targets.

The market for each province in the region and its primary energy source vary considerably — as do the workforce requirements associated with the push towards net zero.

ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, Atlantic Canada's largest source of electrical generation is hydro power, making up 71% of the region's total *(see Figure 1, panel A)*.

Coal and Coke are the next leading source of generation at 9%, followed by nuclear and wind power at 7% each. Similarly, most (58%) of Canada's electrical generation also comes from hydro power. However, Canada as a whole has much larger shares of natural gas and nuclear power at 14% and 13%, respectively *(Figure 1, panel B)*.

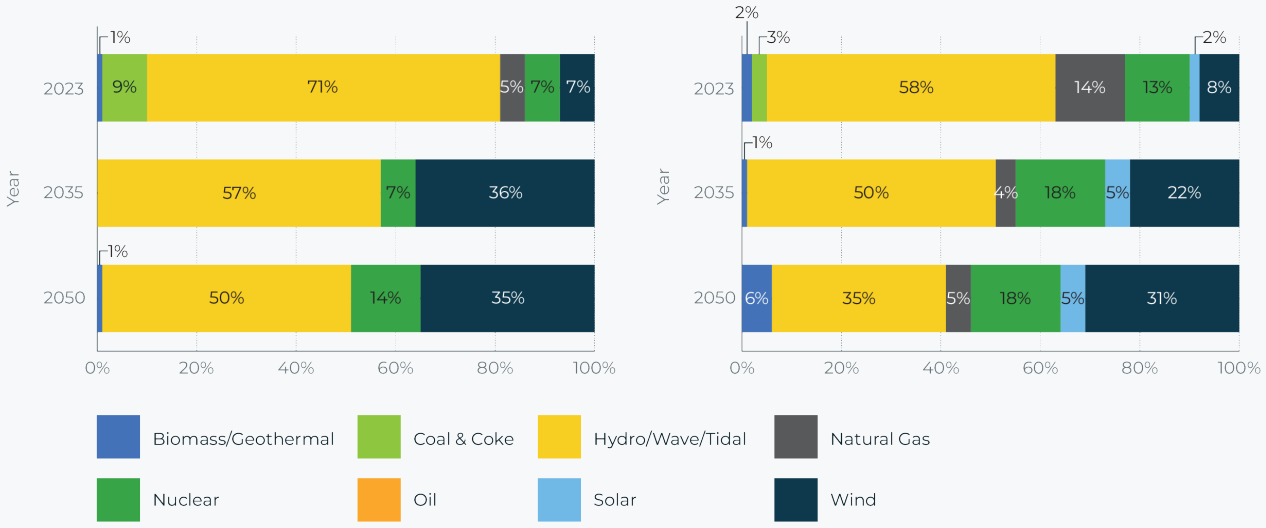
A recent report from the Canada Energy Regulator (CER) sets out a potential path and corresponding provincial energy mixes that could enable Canada to achieve a net zero greenhouse gas (GHG) emissions electricity grid by 2035 and realize economy-wide net zero GHG emissions by 2050 (recognizing that there are multiple paths and different energy mixes that could achieve these goals).

Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in Canada. In Atlantic Canada electricity generation is expected to expand by nearly 50%. The need to generate, transmit and distribute a growing volume of electricity will severely stress the electrical system, and likely necessitate significant investments in infrastructure (i.e.: expansion and upgrades) and human resources.

Figure 1. **Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)**

Panel A: **Atlantic Canada**

Panel B: **Canada**



Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *"Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix and growth path for electricity generation that will enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

Under the scenario outlined by the CER, the share of electricity generated by wind power would more than triple in Atlantic Canada by 2035, reaching 36% as a share of total. In contrast, the share of hydro power is anticipated to decrease, with volumes remaining at similar levels. At the national level, electricity generation from wind is also set to grow significantly, but solar power's share of electricity generation is anticipated to double to reach a net zero electricity grid by 2035 (with coal and coke production being phased out entirely over this period).

Beyond 2035, wind power's share of generation would remain constant, while that of nuclear power would double between 2035 and 2050. The relative share of hydro power in Atlantic Canada would fall to 50% by 2050 *(Figure 1, panel A)*. In this scenario for 2050, Atlantic Canada would have primarily only three fuel sources for electricity generation: hydro, wind, and nuclear.

Under this net-zero scenario for Canada, the share of hydro power will fall by over 20 percentage points to reach 35% by 2050, while wind power would constitute just over 30% of total electricity generation (Figure 1, panel B). Out to 2050 under this net zero emissions scenario, the share of natural gas would fall to 5%, and solar power would grow only modestly.

In addition to significant shifts in the fuel mix for generation, it is expected that the total volume of electricity generated will rise substantially *(Table 1)*. Some of the changes will be dramatic given the comparably low levels of electricity currently generated by a number of sources.

For instance, in Atlantic Canada between 2023 and 2035 the biggest increase in electricity generation will come from solar power (35% average growth per year), followed by wind power (17% average growth per year).

Although solar power is poised to increase dramatically in percentage terms, it is starting from comparably low levels. For Canada over the same period the increase in electricity generation is expected to primarily come from solar, wind (12% average growth per year) and nuclear (6% average growth per year).

Between 2035 and 2050, the growth in Atlantic Canada's electricity generation will be fastest in oil, but this is primarily because it will have been virtually eliminated by 2035.

Table 1. Anticipated changes in electricity generation (GWh) by fuel source under a net zero scenario (volumes and compound annual %), 2023–2050

	Atlantic Canada			Canada		
Energy Source	**2023**	**2035**	**2050**	**2023**	**2035**	**2050**
Hydro/wave/tidal	48,052	48,293 (0.0%)	49,916 (0.2%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Coal & coke	5,733	- (-100%)	-	19,594	-	-
Nuclear	5,027	5,748 (1.1%)	14,343 (6.3%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Wind	4,449	30,072 (17.3%)	35,396 (1.1%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Natural gas	3,306	35 (-31.6%)	28 (-1.4%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Biomass/geothermal	468	166 (-8.3%)	409 (6.2%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Oil	233	2 (-33.6%)	124 (33.1%)	1,606	670 (-7.0%)	1,004 (2.7%)
Solar	5	205 (35.4%)	355 (3.7%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Total	**67,273**	**84,519 (1.9%)**	**100,571 (1.2%)**	**645,028**	**936,600 (3.2%)**	**1,359,716 (2.5%)**

Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *Figures in parenthesis for 2035 refer to the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. Those in the 2050 column refer to the average compound annual growth anticipated between 2035 and 2050. "Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix scenario for electricity generation that could enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

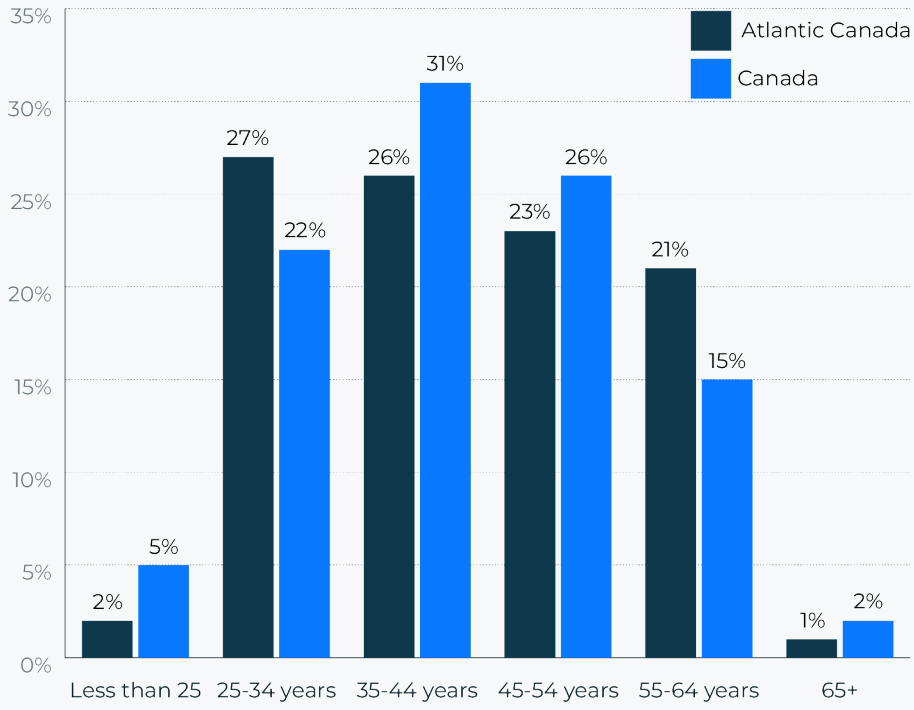
Nuclear and biomass/geothermal are also expected to grow rapidly. In particular, electricity generation from nuclear would grow more than 6% per year on average between 2035 and 2050. Over the same time horizon, percentage increases in electricity generation in Canada are largest among biomass/geothermal (more than 9% average growth per year), followed by wind (5% average growth per year).

AGE DISTRIBUTION OF THE WORKFORCE

The age profile of Atlantic Canada's electricity sector workforce is quite distinct from the situation at the national level *(Figure 2)*.

The share of workers 55 years of age and over in Atlantic Canada (22%), is higher than the national average of 17%. In contrast, however, the share of workers under the age of 35 in Atlantic Canada (29%) is also somewhat higher than the national average of 27%.

Figure 2. Age Distribution of employment in the Electricity Sector (%), 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

DISTRIBUTION OF FEMALE EMPLOYMENT

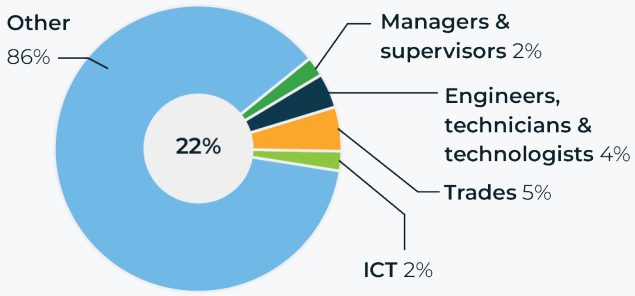
***Figure 3* highlights that in Atlantic Canada, the proportion of women in the electricity sector's workforce is relatively low, i.e., 22% compared to 27% in Canada.**

In terms of the distribution of employment across occupational groups, women are overwhelmingly concentrated in *Other corporate occupations* in both the Atlantic region and Canada, with almost 20 percentage points of difference (86% and 67%, respectively). *ICT* occupations (2%) and *Managers & supervisors* (2%) employ the lowest share of women in Atlantic Canada's electricity sector.

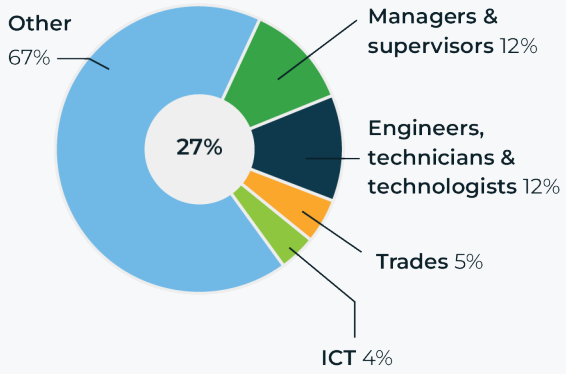
Nationally, *ICT* occupations (4%) employ the lowest share of women in Canada's electricity sector. Compared to Canada, the electricity sector workforce in Atlantic Canada has smaller proportions of women employed in the *Management & supervisors*, *Engineers, technicians, & technologists*, and *ICT* occupational groups.

Figure 3. Distribution of female employment by occupational group

Panel A: Atlantic Canada, 2022



Panel B: Canada, 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

Note: *The figures in the centre of the charts refer to the share of female workers in the total electricity sector workforce. See Appendix A of EHRC's Electricity in Demand: Labour Market Insights 2023–2028 for information regarding the occupations covered in each of these broad groups.*

DIVERSITY, EQUITY, AND INCLUSION

Efforts to increase Diversity, equity, and inclusion (DEI) are pivotal to the success of the electricity sector's human resources strategy.

As is the case in other sectors of the economy, the electricity sector greatly benefits from a diverse workforce, as it brings a wider array of perspectives, ideas, and innovative solutions than would otherwise be possible. According to the 2021 Census, Atlantic Canada's electricity sector workforce is less diverse than its national counterpart, except as it relates to Indigenous peoples:

- ***Indigenous peoples:*** Close to 8% of workers in Atlantic Canada's electricity sector identify as Indigenous, higher than the national figure for the electricity sector at 5% (the latter is on par with the share of Indigenous peoples working across all sectors of the economy at 5%).
- ***Persons with disabilities:*** According to the EHRC Employer survey 1.8% of Atlantic Canada's electricity sector identified as persons with disabilities, slightly above the national level at 1%.
- ***Racialized groups:*** Approximately 13% of workers in Atlantic Canada's electricity sector identify as being from a racialized group, lower than the national figure for the electricity sector, at close to 22%, and well below the share of racialized groups working across all sectors of the economy at 26%.
- ***Immigrants:*** Just over 5% of workers in Atlantic Canada's electricity sector are immigrants, more than three times lower than the national figure for the electricity sector at 18% and almost six times lower than the share of immigrants working across all sectors of the Canadian economy at 29%.
- ***Gender diverse people:*** EHRC's employer survey revealed that 2.8% of the electricity sector employees in Atlantic Canada identify as gender diverse, slightly above the national rate at 2%.

LEVEL OF EDUCATIONAL ATTAINMENT

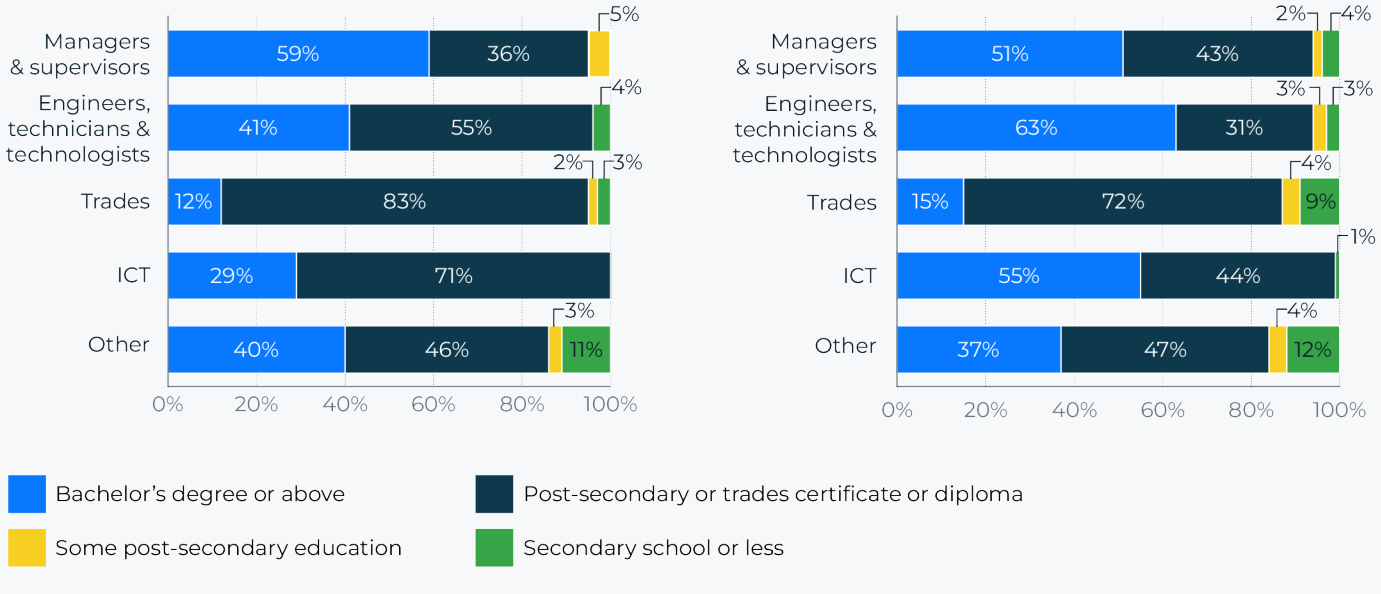
Educational attainment is relatively high in Canada's electricity sector workforce, with more than one in three workers (37%) having attained a Bachelor's degree or above *(Figure 4)*.

The comparable figure for Atlantic Canada is lower, at 23%.

In both the Atlantic region and Canada as a whole, educational attainment is high across the main occupational groups that constitute the electricity sector's workforce:

- ***Managers & supervisors:*** In Atlantic Canada, 95% of *Managers & supervisors* have at least a post-secondary or trades certificate or diploma or higher compared to 94% in Canada. The share of *Managers & supervisors* with at least a bachelor's degree in Atlantic Canada is 59% compared to just over half in Canada.
- ***Engineers, technologists and technicians:*** 41% of Atlantic Canada's workers within this occupational group hold a bachelor's degree or above (the corresponding figure in Canada is 63%).
- ***Trades:*** Among this occupational group, approximately 95% have at least a post-secondary or trades certificate or diploma or higher (with 12% having a bachelor's degree or more). In Canada, the corresponding figures are 91% with at least some post-secondary and 15% having a bachelors' degree or more.
- ***ICT:*** 29% of Atlantic Canada's workers within this occupational group hold a bachelor's degree or above (the corresponding figure in Canada is 55%). 99% of ICT workers in both the Atlantic region and Canada have some post-secondary education or higher.

Figure 4. **Educational attainment by occupational group**



Source: *Statistics Canada, Labour Force Survey, 2022.*

EMPLOYMENT PROFILE AND RECENT TRENDS

The distributions of employment across the four occupational groups in the electricity sectors of Atlantic Canada and Canada as a whole differ considerably *(Table 2)*.

The share of *Managers & supervisors* at just over 5%, is noticeably lower than the prevailing figures for Canada (nearly 9%). Similarly, differences emerge among the *ICT* group of occupations where the share in Atlantic Canada is noticeably lower. In contrast, the share of *Trades* is markedly higher (by 10 percentage points) in Atlantic Canada.

Table 2. **Employment shares in the electricity sector by occupational group and region (%), 2022**

	Atlantic Canada		Canada	
Occupational Group	**Volume**	**%**	**Volume**	**%**
Managers & supervisors	500	5.5	9,800	8.9
Engineers, technologists & technicians	1,100	12.2	16,500	14.9
Trades	3,200	36.8	29,600	26.8
ICT	100	1.4	6,700	6.0
Other corporate professionals	3,800	44.0	48,100	43.4
Total	**8,700**	**100**	**110,700**	**100**

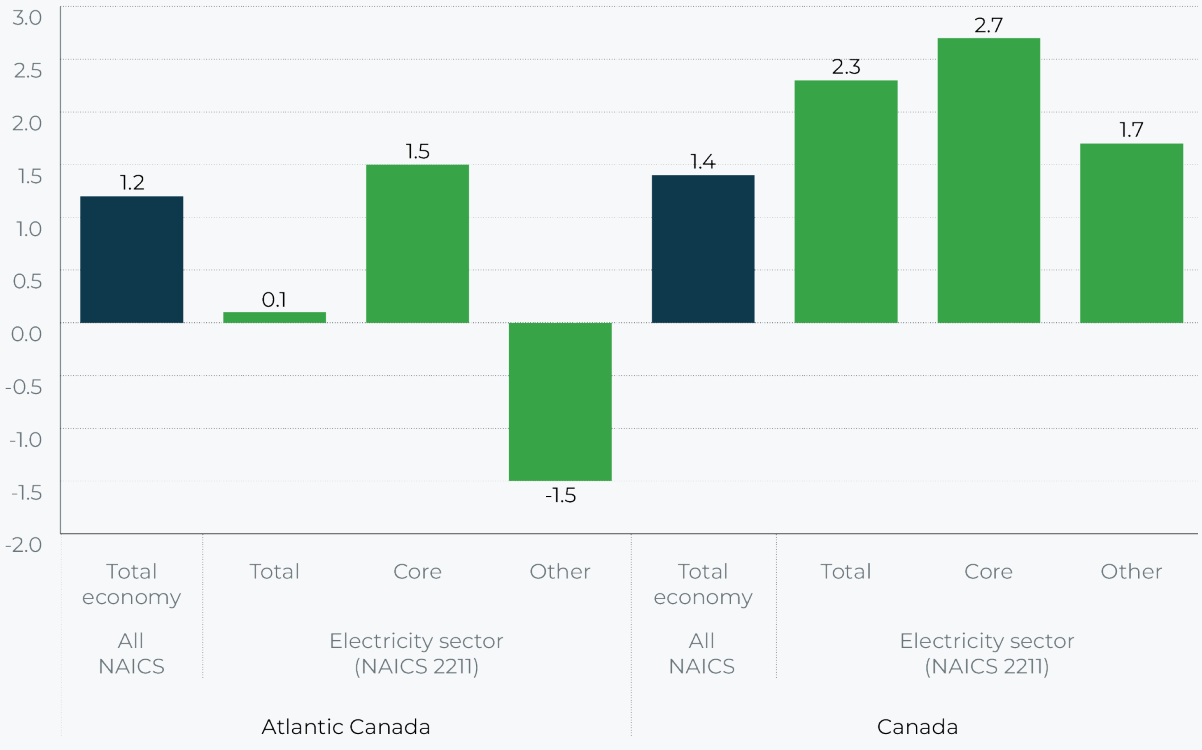
Source: *Statistics Canada, Labour Force Survey, 2022.*

Note: *Figures are rounded to the nearest 100.*

Employment growth in Canada's electricity sector over the past 5 years has outpaced that of Atlantic Canada *(Figure 5)*.

Between 2017 and 2022, average annual employment growth in Atlantic Canada's electricity sector was 0.1%, which is much lower than overall employment growth in the region (1.2%). The employment growth in Atlantic Canada's electricity sector was also lower than the comparable figure in Canada's electricity sector, which was 2.3% per year between 2017 and 2022. In Atlantic Canada, net employment creation in the electricity sector was driven by job gains among the core group of occupations, which averaged 1.5% per year compared to the negative rate of -1.5% among the other group of occupations. In contrast, for Canada's electricity sector as a whole, employment growth among core and other occupations was at 2.7% and 1.7% per year, respectively.

Figure 5. Average annual employment growth in Canada's electricity sector (%), 2017–2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

Note: *Core occupations refer to the group of 34 occupations that are central to the electricity sector (See Appendix A of EHRC's Electricity in Demand: Labour Market Insights 2023–2028 for information regarding the occupations covered). "Other" refers to the remaining occupations covered in the electricity sector.*

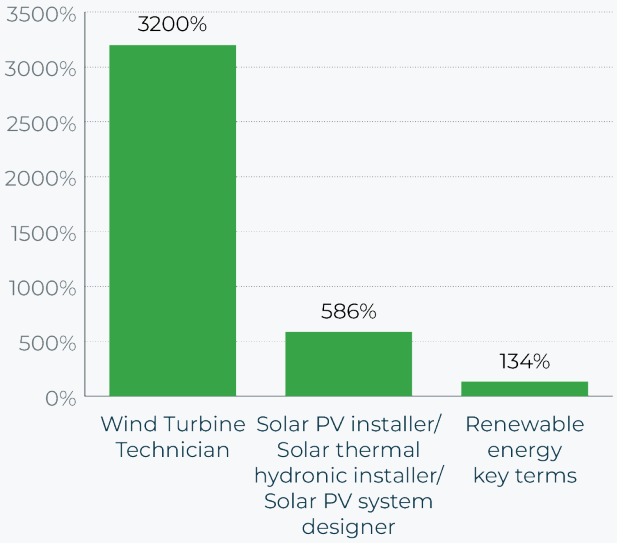
An important consideration relative to employment patterns and the shift towards net zero is the critical role of renewable energy occupations.

Unfortunately, there is a scarcity of official data on such jobs, since they are captured as part of broader occupations within the National Occupational Classification system. However, online job posting data from Vicinity Jobs, while not to be conflated with employment, yields valuable insights into recent trends in terms of these specific job titles.

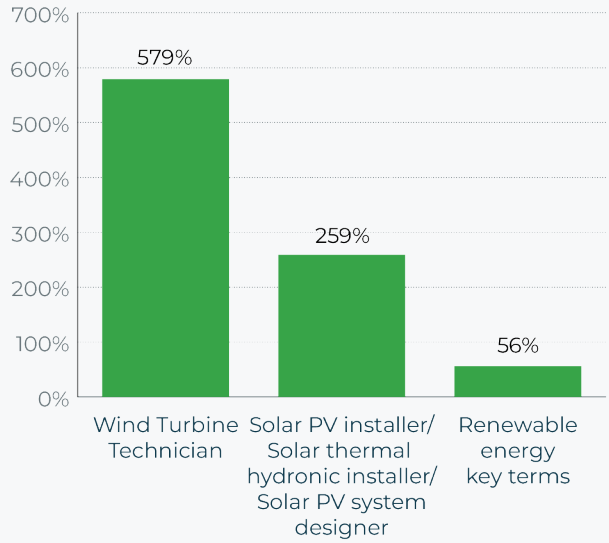
The growing demand for workers with specialized skills in the renewable energy sector is clearly evident: the number of online job postings in Atlantic Canada that contain the key phrases 'renewable energy,' 'solar power,' and/or 'wind power generation' increased by 134% between 2018 and 2022 *(Figure 6)*. Additionally, postings in Atlantic Canada for Wind turbine technicians grew by over 3200% and those related to Solar PVs expanded by 586%. The percentage increases in the number of job postings are higher in Atlantic Canada than for the country as a whole.

Figure 6. Online job postings for renewable energy and related occupations (%), 2018–2022

Panel A: Atlantic Canada



Panel B: Canada



Source: *Vicinity Jobs.*

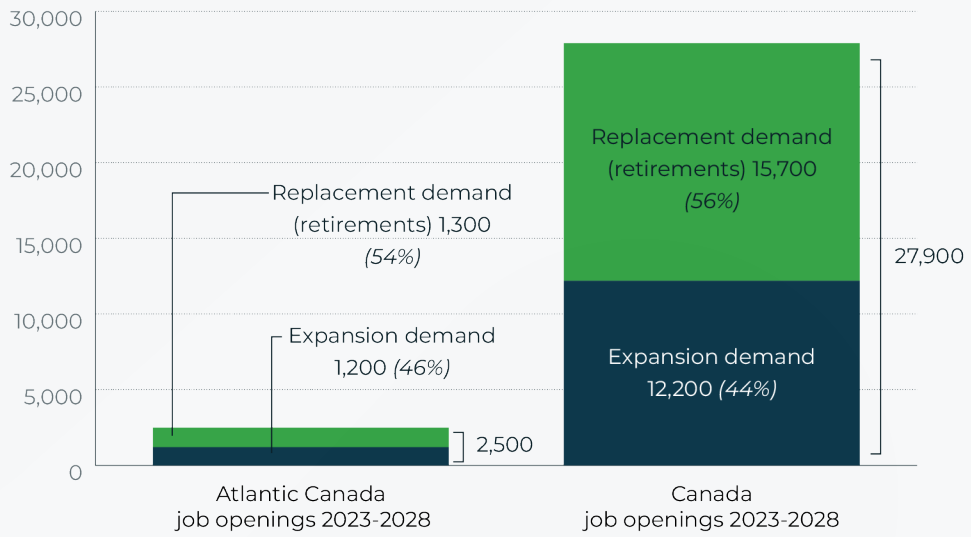
LABOUR MARKET OUTLOOK

Leveraging the assumptions and data underpinning the long-term scenarios from the Canada Energy Regulator's *Canada's Energy Future 2023*, EHRC developed a forecast model to shed light on the potential medium-term employment implications for the electricity sector under the "path to net zero" scenario.

Between 2023 and 2028, employment in Atlantic Canada's electricity sector is anticipated to grow by nearly 2,500 jobs, as Canada charts its path towards net-zero *(Figure 7)*.

This includes approximately 1,200 jobs from expansion demand and an additional 1,300 job openings that are expected to arise from replacement demand, i.e., from retirements. These shares in demand are similar to those for overall job openings at the national level. For Canada, the additional job openings associated with this expansion demand are just over 12,000, while the total number of retirements or replacement demand estimated is 15,700. Combined, in Canada the expansion demand and replacement demand are anticipated to result in a total of nearly 28,000 job openings in the sector over the period from 2023 to 2028.

Figure 7. Composition of demand for workers in the electricity sector, 2023–2028



Source: *EHRC estimates based on Labour Force Survey, EHRC model 2023 and Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Between 2023 and 2028, the relative size of replacement and expansion demand varies by occupational group *(Table 3)*. In Atlantic Canada, the total number of job openings expected over the 2023–2028 period due to expansion demand is positive across the board, with the exception of the *Trades*. Expansion demand is anticipated to be particularly strong among *Engineers, technologists & technicians* and *Other corporate professional occupations*.

The number of job openings resulting from retirement are highest among *Other corporate professional occupations*. At the national level, despite expected retirements in the order of 1,200 among *Managers & supervisors*, expansion demand is projected to decline (-2,100) over the forecast period, i.e., between 2023 and 2028. Across all other occupational groups, strong job openings are anticipated due to expansion demand and replacement demand.

Due to an aging workforce, with the exception of ICT occupations, replacement demand is set to exceed expansion demand over the forecast time horizon.

Table 3. Composition of demand for workers in Atlantic Canada's electricity sector under the path to net zero scenario by occupational group, 2023–2028

	Atlantic Canada		Canada	
Occupational Group	**Expansion demand**	**Replacement demand**	**Expansion demand**	**Replacement demand**
Managers & supervisors	200	100	- 2,100	1,200
Engineers, technologists & technicians	1,000	200	1,200	1,900
Trades	-1,000	250	2,800	3,700
ICT	100	-	3,800	800
Other corporate professionals	900	700	6,500	8,050
Total	**1,200**	**1,300**	**12,200**	**15,650**

Source: *EHRC estimates based on Labour Force Survey, EHRC model 2023 and Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *Figures rounded to nearest 50. Expansion demand refers to the anticipated employment growth that occurs in the path to net-zero scenario. Replacement demand is estimated using occupation-specific retirement rates, weighted by each occupation's share of employment in the electricity sector in 2022. These estimates do not reflect openings that could result from the death or emigration of employees.*

Nova Scotia Outlook

STRUCTURE OF THE ELECTRICITY MARKET

Nova Scotia's vertically integrated public utility supplies most of the province's electricity, with distribution managed by six municipally owned independent utilities.

Regulatory oversight seeks to ensure fair utility rates, and and certain legal constraints dictate the frequency of rate applications. Nova Scotia has implemented a cap-and-trade system since 2019 to control carbon emissions, complemented by the Environmental Goals and Climate Change Reduction Act enacted in the fall of 2021, outlining ambitious climate change objectives. Legislative measures introduced in October 2022 impose limits on electricity rate increases, prompting discussions on the feasibility of transitioning away from coal-fired power plants and the potential impact on environmental targets.

ELECTRICITY GENERATION BY FUEL TYPE

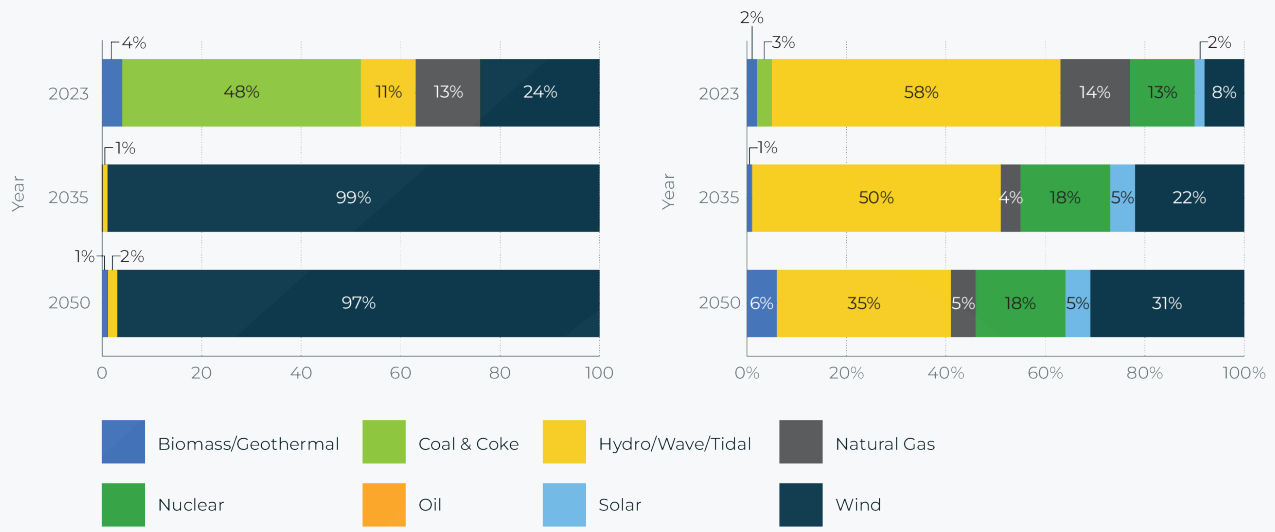
As of 2023, the largest fuel source for electricity generation in Nova Scotia is coal and coke, making up 48% of the province's total (*see Figure 8, panel A*).

Wind power is the next leading source at 24%, followed by natural gas and hydro power. In comparison, the largest contributor to Canada's electricity generation is hydro power, at 58%. The proportion of power produced with natural gas (14%) is virtually the same in Canada and Nova Scotia, but a larger share of the former's generation is nuclear *(Figure 8, panel B)*.

Looking ahead, a recent report from the Canada Energy Regulator (CER) sets out one potential path and corresponding provincial energy mixes that could enable Canada to achieve a net zero greenhouse gas (GHG) emissions electricity grid by 2035 and realize economy-wide net zero GHG emissions by 2050 (recognizing that there are multiple paths and different energy mixes that could achieve these goals).

Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in Canada. In Nova Scotia, it is expected to more than triple. In all probability, the need to generate, transmit and distribute a growing volume of electricity will severely stress the electrical system. It will necessitate significant investments in infrastructure (i.e.: expansion and upgrades) and human resources.

Figure 8. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)



Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *"Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix and growth path for electricity generation that will enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

Under the scenario outlined by the CER, wind power's share of Nova Scotia's electrical capacity would more than triple by 2035, reaching 99%. This broadly mirrors what will be required at the national level to achieve these goals, i.e., growing importance of wind, but for Canada as a whole, solar power will also need to double to reach a net zero electricity grid by 2035 (with coal & coke production being phased out entirely over this period in both Nova Scotia and Canada).

Wind power's share of electricity would remain around the same level beyond 2035. Hydro power, being the province's only other source of electricity, would remain low, reaching 2% of the total by 2050 *(Figure 8, panel A)*.

Under this net-zero scenario for Canada, the share of hydro power will fall by over 20 percentage points by 2050, while wind power reaches just over 30% of total electricity generation *(Figure 8, panel B)*.

Out to 2050, under a net zero emissions scenario, the relative share of natural gas would fall to 5% and solar power would grow only modestly.

In addition to significant shifts in the fuel mix, it is expected that the total volume of electricity generated will rise substantially *(Table 4)*. In many instances, the increases will be dramatic given the comparably low levels of electricity currently generated through such sources. For instance, in Nova Scotia between 2023 and 2035, the biggest increase in electricity generation will come from wind (21% average growth per year) and solar (20% average growth per year).

It is important to note that in 2035, the amount of electricity generated in the province from solar will be negligible. For Canada, between 2023 and 2035, increases in electricity generation are expected to primarily come from solar, wind and nuclear. Looking past 2035 under the net zero scenario, in Nova Scotia modest increases will take place but wind will, as discussed above, be the primary source of electricity.

Between 2035 and 2050, percentage increases in Canada's electricity generation are largest among biomass/ geothermal (more than 9% average growth per year), followed by wind (5% average growth per year).

Table 4. Anticipated changes in electricity generation (GWh) by fuel source under a net zero scenario (volumes and compound annual %), 2023–2050

	Nova Scotia			Canada		
Energy Source	**2023**	**2035**	**2050**	**2023**	**2035**	**2050**
Coal & coke	4,208	0 (-100%)	0	19,594	-	-
Wind	2,152	21,346 (21.1%)	25,772 (1.3%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Natural gas	1,159	34 (-25.5%)	0 (-100%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Hydro/wave/tidal	966	229 (-11.3%)	508 (5.4%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Biomass/geothermal	303	39 (-15.8%)	250 (13.3%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Solar	2	17 (20.3%)	42 (6.2%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Oil	0	0	26 (100%)	1,606	670 (-7.0%)	1,004 (2.7%)
Nuclear	-	-	-	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	**8,789**	**21,665 (7.8%)**	**26,598 (1.4%)**	**645,028**	**936,600 (3.2%)**	**1,359,716 (2.5%)**

Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

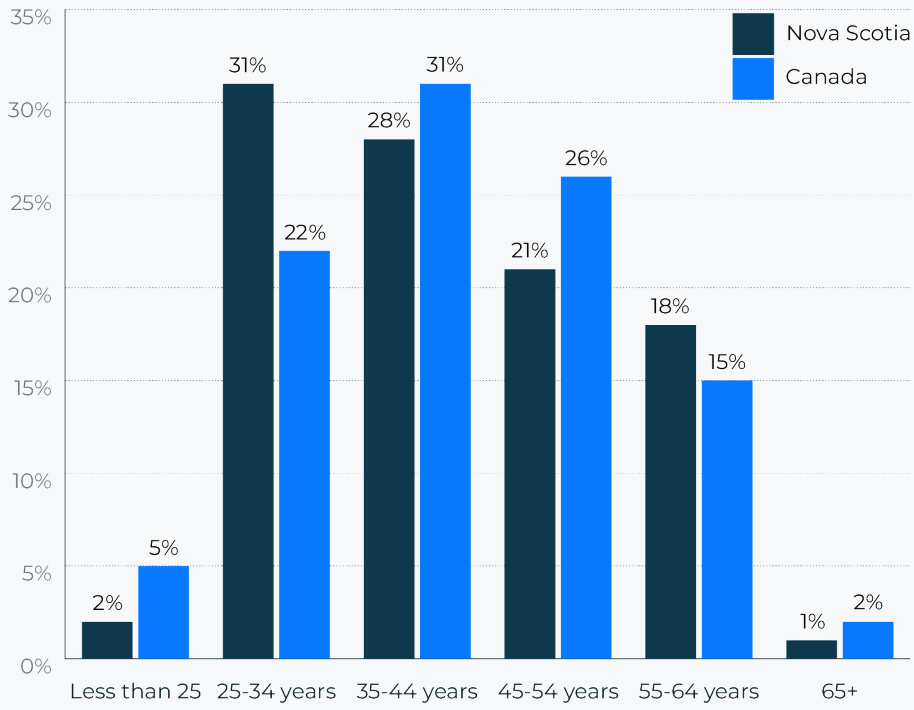
Note: *Figures in parenthesis for 2035 refer to the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. Those in the 2050 column refer to the average compound annual growth anticipated between 2035 and 2050. "Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix scenario for electricity generation that could enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, the age profile of Nova Scotia's workers stands in contrast to the corresponding situation at the national level *(Figure 9)*.

Nova Scotia's electricity sector employs slightly more workers under the age of 35 than its national counterpart (33% vs. 27%). At the same time, the share of workers aged 55 to 64 is noticeably higher in Nova Scotia, i.e., 18% to only 15% in Canada.

Figure 9. Age Distribution of employment in the Electricity Sector (%), 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

DISTRIBUTION OF FEMALE EMPLOYMENT

The share of women working in Nova Scotia's electricity sector is consistent with the national average. In both Canada and Nova Scotia, the share of women employed in the electricity sector is 27%.

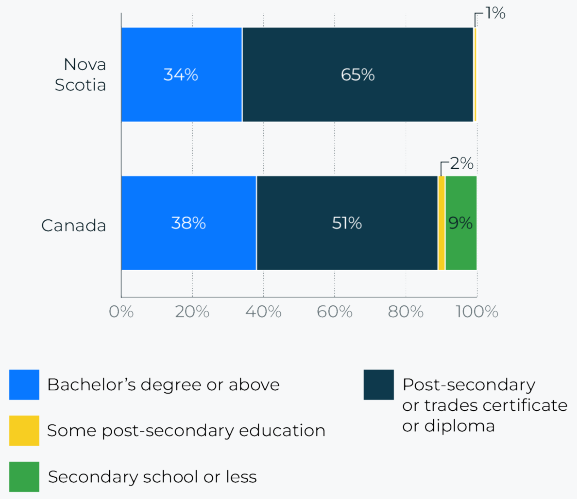
LEVEL OF EDUCATIONAL ATTAINMENT

The overall level of educational attainment is relatively high in Canada's electricity sector, with more than one in three workers (38%) having attained a Bachelor's degree or above *(Figure 10)*.

Nova Scotia's corresponding figure is lower in that only 34% of the electricity sector workforce has attained a Bachelor's degree or above.

A larger share of Nova Scotia's electricity sector holds post-secondary education (below a Bachelor's degree) than in Canada (65% vs. 51%).

Figure 10. Educational attainment in the electricity sector, 2022 (%)



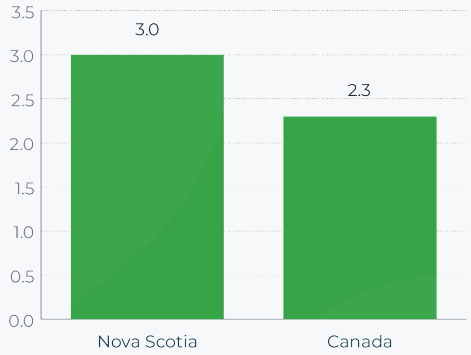
Source: *Statistics Canada, Labour Force Survey, 2022.*

Note: *There are not enough observations to observe educational attainment by occupational group for Nova Scotia for electricity sector.*

RECENT EMPLOYMENT TRENDS

Between 2017 and 2022 the average annual employment growth in Canada's electricity sector was greater in Nova Scotia than in Canada (3% compound average annual growth vs. 2.3%).

Figure 11. Average annual employment growth in Canada's electricity sector (compound growth rates in %), 2017–2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

New Brunswick Outlook

STRUCTURE OF THE ELECTRICITY MARKET

A provincially owned utility generates, transmits and distributes most of New Brunswick's electricity.

It operates as a regulated monopoly, serving nearly all residential and industrial consumers in the province. Electricity rates are subject to regulatory oversight.

ELECTRICITY GENERATION BY FUEL TYPE

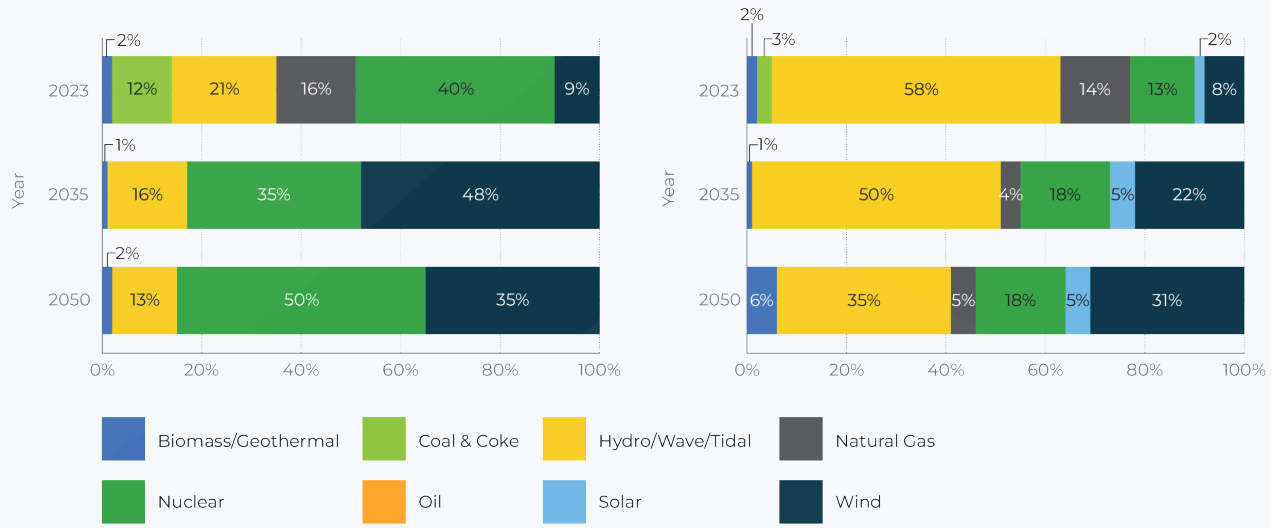
As of 2023, New Brunswick's largest source of electricity is nuclear, making up 40% of the province's total *(see Figure 12, panel A)*.

Hydro power is the next leading source at 21%, followed by natural gas (16%) and coal & coke (12%). The largest contributor to Canada's electrical generation capacity is hydro power, at 58%. The relative shares of natural gas in Canada (14%) and New Brunswick are similar, however nuclear power plays a larger role in the latter jurisdiction *(Figure 12, panel B)*.

A recent report from the Canada Energy Regulator (CER) sets out a potential path and corresponding provincial energy mixes that could enable Canada to achieve a net zero greenhouse gas (GHG) emissions electricity grid by 2035 and realize economy-wide net zero GHG emissions by 2050.

Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWH) is set to more than double over the next 27 years in Canada. A similar expansion is expected in New Brunswick. This will put severe pressure and strong demands on the sector's capacity to transmit and distribute a growing supply of electricity — necessitating upgrades and investments in infrastructure and human resources to respond to the demand.

Figure 12. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)



Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *"Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix and growth path for electricity generation that will enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

Under the scenario outlined by the CER, wind power's share of New Brunswick's electrical capacity would more than triple by 2035, reaching 48%. This broadly mirrors what will be required at the national level to achieve these goals, i.e., growing importance of wind, but for Canada as a whole, solar power will also need to double to reach a net zero electricity grid by 2035 (with coal & coke production being phased out entirely over this period in both New Brunswick and Canada).

Wind power generation would remain around the same level beyond 2035. In New Brunswick, the nuclear share of electrical capacity will grow to 50% by 2050, thus becoming the province's leading source *(Figure 12, panel A)*.

Under this net-zero scenario for Canada, the share of hydro power will fall by over 20 percentage points by 2050, while wind power reaches just over 30% of total capacity *(Figure 12, panel B)*.

Out to 2050, under a net zero emissions scenario, the relative share of natural gas will fall to 5% and solar power will grow only modestly.

In addition to significant shifts in the fuel mix for generation, it is expected that the total volume of electricity generated will rise substantially *(Table 5)*. In many instances, the increases will be dramatic given the comparably low levels of electricity currently generated through such sources. For instance, in New Brunswick, between 2023 and 2035, the biggest increase in electricity generation will come from solar (37% average growth per year) and wind (17% average growth per year).

However, the total electricity generated from solar in 2035 in New Brunswick will be negligible, although as mentioned above, wind will have become the largest source of power. For Canada, between 2023 and 2035, the growth in electricity generation is expected to primarily come from solar, wind and nuclear. Looking past 2035, nuclear power will expand rapidly in New Brunswick, while other sources will only grow modestly.

Between 2035 and 2050, at the national level, percentage increases in electricity generation will be largest among biomass/geothermal (more than 9% average growth per year), followed by wind (5% average growth per year).

Table 5. Anticipated changes in electricity generation (GWh) by fuel source under a net zero scenario (volumes and compound annual %), 2023–2050

	New Brunswick			Canada		
Energy Source	**2023**	**2035**	**2050**	**2023**	**2035**	**2050**
Nuclear	5,027	5,073 (0.1%)	11,044 (5.3%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Hydro/wave/tidal	2,666	2,310 (-1.2%)	2,886 (1.5%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Natural gas	2,066	1 (-49.9%)	0 (-100%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Coal & coke	1,525	0 (-100%)	0	19,594	-	-
Wind	1,100	6,994 (16.7%)	7,766 (0.7%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Biomass/geothermal	159	124 (-2.1%)	155 (1.5%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Oil	42	0 (-100%)	64 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
Solar	2	73 (37.0%)	107 (2.6%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	**12,587**	**14,575 (1.2%)**	**22,022 (2.8%)**	**645,028**	**936,600 (3.2%)**	**1,359,716 (2.5%)**

Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

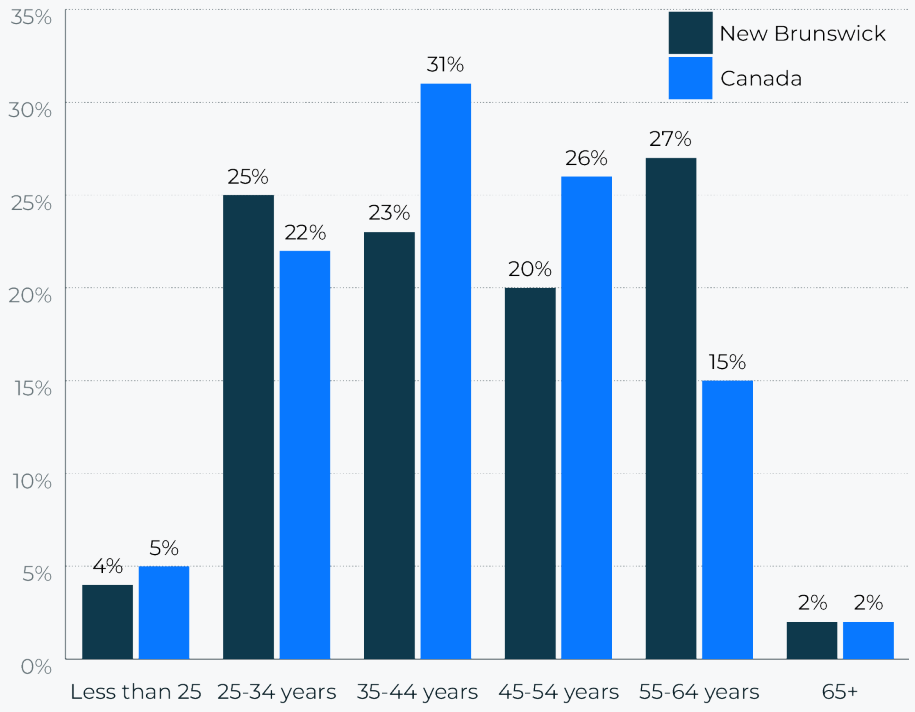
Note: *Figures in parenthesis for 2035 refer to the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. Those in the 2050 column refer to the average compound annual growth anticipated between 2035 and 2050. "Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix scenario for electricity generation that could enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, New Brunswick's workers are considerably older, on average, than that of Canada *(Figure 13)*.

The share of workers aged 55 and over in New Brunswick's electricity sector exceeds the corresponding figure at the national level (29% vs. 17%). However, New Brunswick's electricity sector employs slightly more workers under the age of 35 than its national counterpart (29% vs. 27%).

Figure 13. Age Distribution of employment in the Electricity Sector (%), 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

DISTRIBUTION OF FEMALE EMPLOYMENT

The share of women working in New Brunswick's electricity sector is much lower than the national average. In New Brunswick, the share of women employed in the electricity sector is 19%, compared to 27% in Canada.

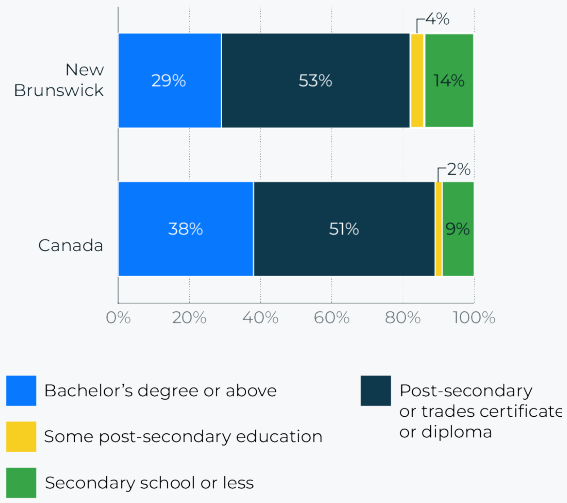
LEVEL OF EDUCATIONAL ATTAINMENT

Educational attainment is relatively high in Canada's electricity sector, with more than one in three workers (38%) having attained a Bachelor's degree or above *(Figure 14)*.

This figure is lower in New Brunswick, with only 29% of its electricity sector having attained a Bachelor's degree or above.

However it employs a larger share of workers with no post-secondary education than Canada (14% vs. 9%).

Figure 14. Educational attainment in the electricity sector, 2022 (%)

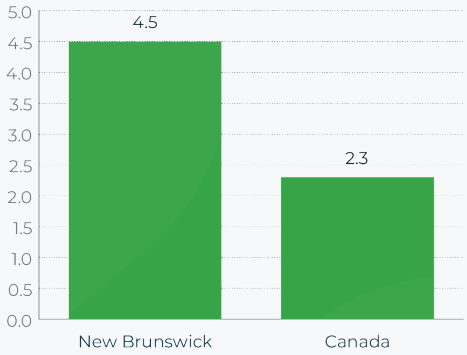


Source: *Statistics Canada, Labour Force Survey, 2022.*

RECENT EMPLOYMENT TRENDS

Over the period from 2017 to 2022 the average annual employment growth in New Brunswick's electricity sector exceeded that of Canada (4.5% vs. 2.3%) *(Figure 15)*.

Figure 15. Average annual employment growth in Canada's electricity sector (compound growth rates in %), 2017–2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

Newfoundland and Labrador Outlook

STRUCTURE OF THE ELECTRICITY MARKET

In Newfoundland and Labrador a Crown Corporation oversees the generation and transmission of electricity.

Regulatory oversight is provided by a government body. The province promotes the development of hydroelectric, wind and hydrogen resources. To combat climate change, Newfoundland and Labrador aims to reduce GHG emissions by 40% by 2030, 60% by 2040, and 75-85% by 2050, relative to 2001 levels.

ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, Newfoundland and Labrador's largest source of electricity is hydro power, making up 99% of the total *(see Figure 16, panel A)*.

Canada's largest source of electricity is also hydro power, at 58%, followed by natural gas (14%) and nuclear power (13%).

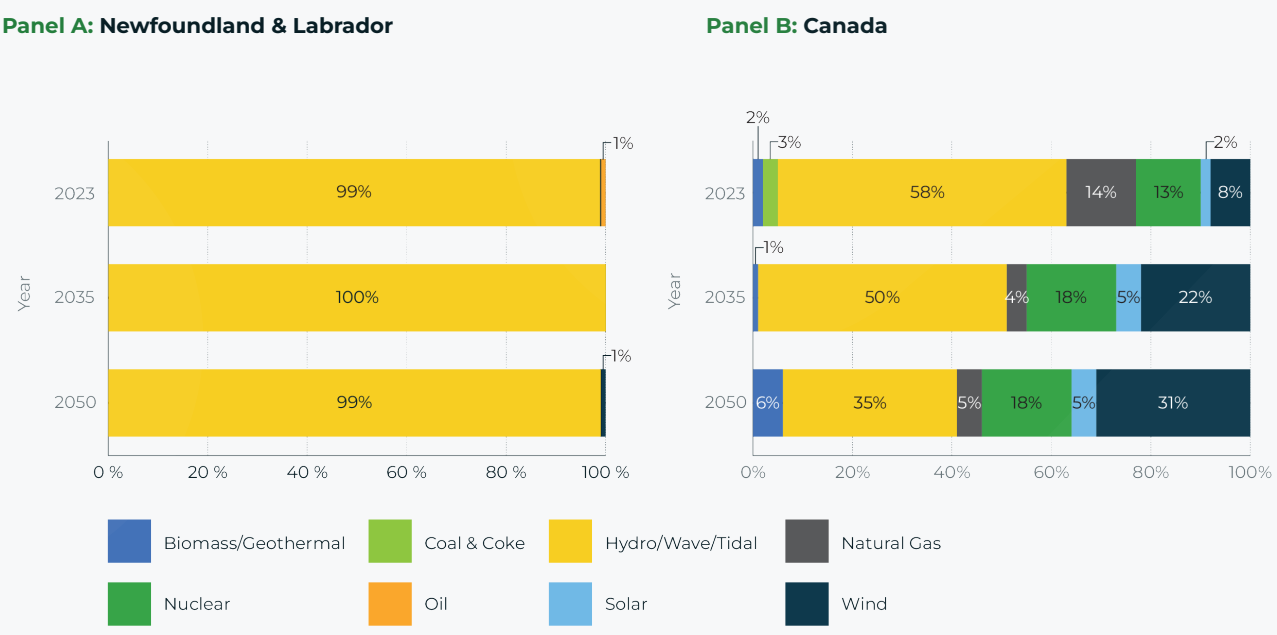
A recent report from the Canada Energy Regulator (CER) sets out a potential path and corresponding provincial energy mixes that could enable Canada to achieve a net zero greenhouse gas (GHG) emissions electricity grid by 2035 and realize economy-wide net zero GHG emissions by 2050.

Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWH) is set to more than double over the next 27 years in Canada. In Newfoundland and Labrador, however, it is anticipated that electricity generation over the same time horizon will be little changed. Under the scenario outlined by the CER, hydro power will remain Newfoundland and Labrador's dominant source of electricity. All other sources will remain negligible through 2035 and 2050.

Under this net-zero scenario, Canada's share of electricity generation from hydro power will fall by over 20 percentage points by 2050, while wind power reaches just over 30% *(Figure 16, panel B)*. Out to 2050, the relative share of natural gas could fall to 5%, while solar power is poised to grow only modestly.

In addition to significant shifts in the fuel mix, it is expected that the total volume of electricity generated will rise substantially *(Table 6)*. For instance, between 2023 and 2035, increases in Canada's electrical output are expected to primarily come from solar, wind and nuclear. Between 2035 and 2050, the increases will be largest among biomass/geothermal (more than 9% average growth per year), followed by wind (5% average growth per year). However, in Newfoundland and Labrador, given the electricity generation is expected to remain largely stable, little changes are expected in terms of growth.

Figure 16. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)



Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *"Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix and growth path for electricity generation that will enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

Table 6. **Anticipated changes in electricity generation (GWh) by fuel source under a net zero scenario (volumes and compound annual %), 2023–2050**

	Newfoundland & Labrador			Canada		
Energy Source	**2023**	**2035**	**2050**	**2023**	**2035**	**2050**
Hydro/wave/tidal	44,420	45,753 (0.2%)	46,521 (0.1%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Wind	195	195 (0.0%)	297 (2.9%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Oil	169	0 (-100%)	34 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
Natural gas	81	0 (-100%)	28 (n.a)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Solar	1	14 (23.3%)	24 (3.5%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Biomass/geothermal	-	-	-	10,224	18,446 (5.0%)	71,889 (9.5%)
Coal & coke	-	-	-	19,594	-	-
Nuclear	-	-	-	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	**44,865**	**45,962 (0.2%)**	**46,904 (0.1%)**	**645,028**	**936,600 (3.2%)**	**1,359,716 (2.5%)**

Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

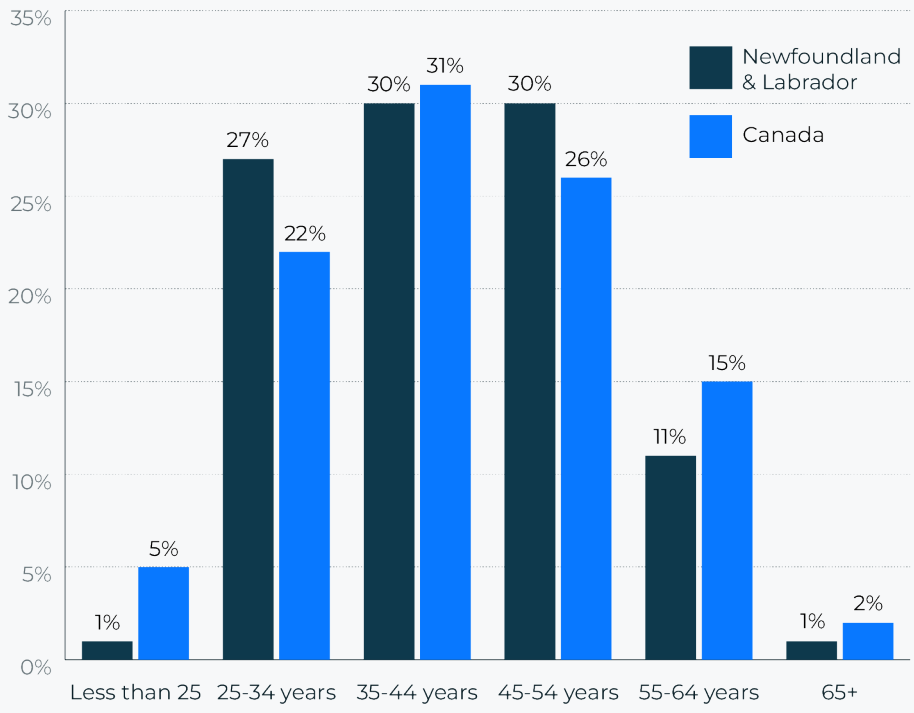
Note: *Figures in parenthesis for 2035 refer to the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. Those in the 2050 column refer to the average compound annual growth anticipated between 2035 and 2050. "Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix scenario for electricity generation that could enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

AGE DISTRIBUTION OF THE WORKFORCE

Electricity sector workers in Newfoundland and Labrador are younger on average than their national counterparts *(Figure 17)*.

In particular, the province employs slightly more workers under the age of 35 than is the case at the national level (28% vs. 27%). In addition, its share of workers aged 55 years and over is less than that of Canada (12% vs. 17%).

Figure 17. Age Distribution of employment in the Electricity Sector (%), 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

DISTRIBUTION OF FEMALE EMPLOYMENT

The share of women working in Newfoundland and Labrador's electricity sector is much lower than the national average. The share of women employed in the province's electricity sector is 20%, compared to 27% in Canada.

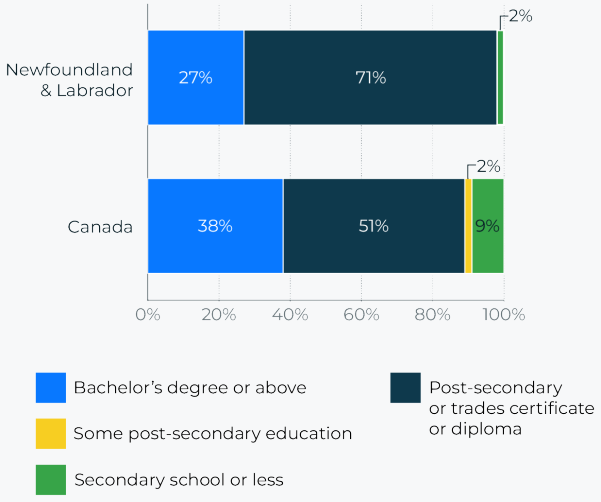
LEVEL OF EDUCATIONAL ATTAINMENT

Educational attainment is relatively high in Canada's electricity sector, with more than one in three workers (38%) having attained a Bachelor's degree or above *(Figure 18)*.

This figure is lower in Newfoundland and Labrador, with only 27% of its electricity sector having attained a Bachelor's degree or above.

However, the province employs a larger share of workers with a post-secondary or trades certificate or diploma than does Canada (71% vs. 51%).

Figure 18. Educational attainment in the electricity sector, 2022

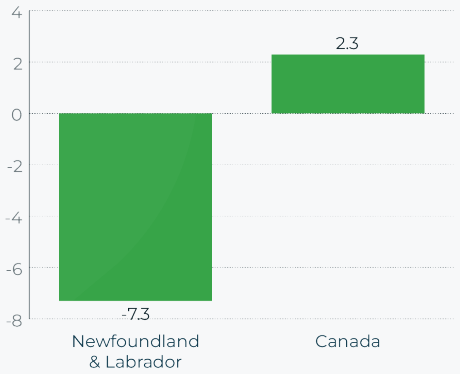


Source: *Statistics Canada, Labour Force Survey, 2022.*

RECENT EMPLOYMENT TRENDS

As shown in *Figure 19*, from 2017 to 2022, employment in Newfoundland and Labrador's electricity sector contracted by an average of 7.3% per year, while employment in Canada's electricity sector expanded by 2.3% per year on average.

Figure 19. Average annual employment growth in Canada's electricity sector (compound growth rates in %), 2017–2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

Prince Edward Island Outlook

STRUCTURE OF THE ELECTRICITY MARKET

A fully integrated and regulated private utility, operating under the purview of an independent commission, serves most of Prince Edward Island's (PEI) electricity customers.

A municipally owned utility serves the remaining customers, based on a cost-of-service model. Previously, the province had legislated renewable energy targets. Its 2016/2017 energy strategy has been suspended, and in 2020, the government began revising its energy strategy. The current Net Zero Framework aims to reduce greenhouse gas emissions, particularly in the electricity sector.

A recent initiative involves seeking public input on a new energy strategy that addresses issues such as climate change, electrification, sustainable fuels, technological innovation, and workforce development, particularly in relation to green jobs.

ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, PEI's largest source of electricity is wind power, making up 97% of the province's total *(see Figure 20, panel A)*.

The largest contributor to Canada's electrical generation is hydro power, at 58%.

A recent report from the Canada Energy Regulator (CER) sets out a potential path and corresponding provincial energy mixes that could enable Canada to achieve a net zero greenhouse gas (GHG) emissions electricity grid by 2035 and realize economy-wide net zero GHG emissions by 2050.

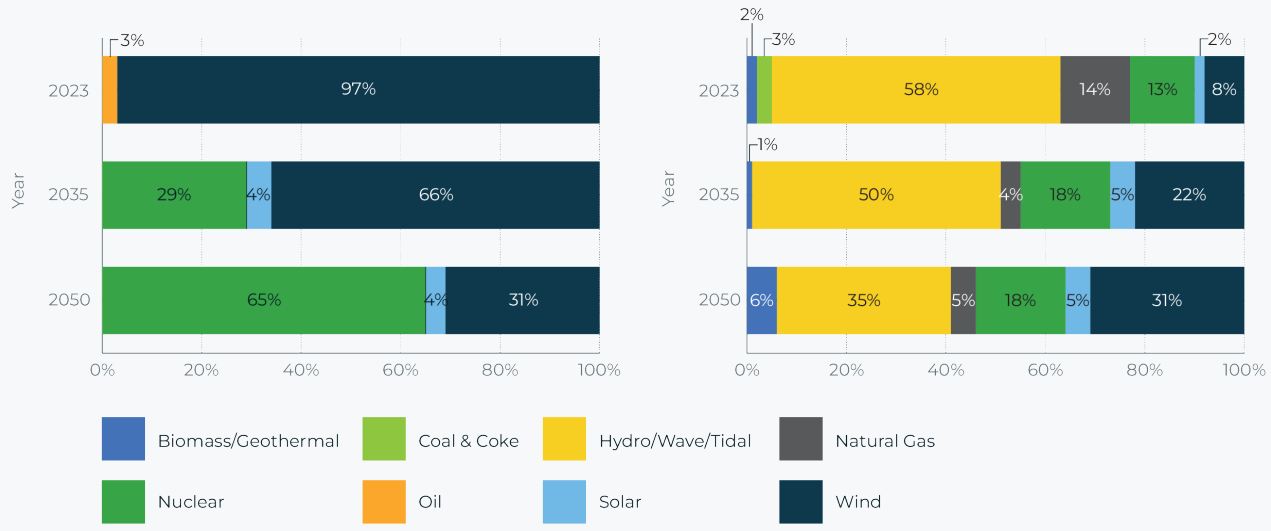
Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in Canada. In the case of PEI, electricity generation under this scenario would increase fivefold. This will put severe pressure and strong demands on the sector's capacity to transmit and distribute a growing supply of electricity — necessitating upgrades and investments in infrastructure and human resources to respond to the demand.

Under the scenario outlined by the CER, the nuclear share of electrical generation capacity would nearly triple in PEI by 2035, reaching 29%. It would continue to expand thereafter, reaching nearly two-thirds of electricity generation by 2050 *(Figure 20, panel A)*.

Figure 20. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)

Panel A: Prince Edward Island

Panel B: Canada



Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

Note: *"Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix and growth path for electricity generation that will enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

Due to rounding, figures may not add to 100

Over this period, the share of natural gas will decline continuously, reaching two-thirds by 2035 and one-third by 2050. At the national level wind power's share of generation will increase significantly and solar power will also need to double to achieve a net zero electricity grid by 2035 (with coal & coke production and natural gas all but being phased out entirely over this period). By 2050, the share of hydro power in Canada's electricity generation will fall by over 20 percentage points, while wind power reaches just over 30% of total electrical capacity *(Figure 20, panel B)*. In addition, the share of electricity generated from natural gas will fall to 5% and solar power will grow only modestly.

In addition to significant shifts in the fuel mix, it is expected that the total volume of electricity generated will rise substantially *(Table 7)*. In many instances, the increases will be dramatic given the comparably low levels of electricity currently generated through such sources. For instance, in PEI, wind power will grow at 3.6% per year on average between 2023 and 2035 (leveling off thereafter), whereas nuclear power, which is currently non-existent, will grow at average annual pace of 11.2% between 2035 to 2050. Over the same period, Canada will see greater increases in biomass/geothermal, followed by natural gas and wind.

Table 7. Anticipated changes in electricity generation (GWh) by fuel source under a net zero scenario (volumes and compound annual %), 2023–2050

	Prince Edward Island			Canada		
Energy Source	**2023**	**2035**	**2050**	**2023**	**2035**	**2050**
Wind	1,003	1,537 (3.6%)	1,561 (0.1%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Oil	23	2 (-19.4%)	0 (-14.6%)	1,606	670 (-7.0%)	1,004 (2.7%)
Biomass/geothermal	6	4 (-4.6%)	5 (1.5%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Solar	1	100 (51.6%)	182 (4.0%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Coal & coke	-	-	-	376,053	467,766 (1.8%)	474,316 (0.1%)
Hydro/wave/tidal	-	-	-	376,053	467,766 (1.8%)	474,316 (0.1%)
Natural gas	-	-	-	90,568	32,851 (-8.1%)	62,772 (4.4%)
Nuclear	-	674 (n.a.)	3,299 (11.2%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	**1,032**	**2,317 (7.0%)**	**5,047 (5.3%)**	**645,028**	**936,600 (3.2%)**	**1,359,716 (2.5%)**

Source: *Canada Energy Regulator, Canada's Energy Future Data Appendices.*

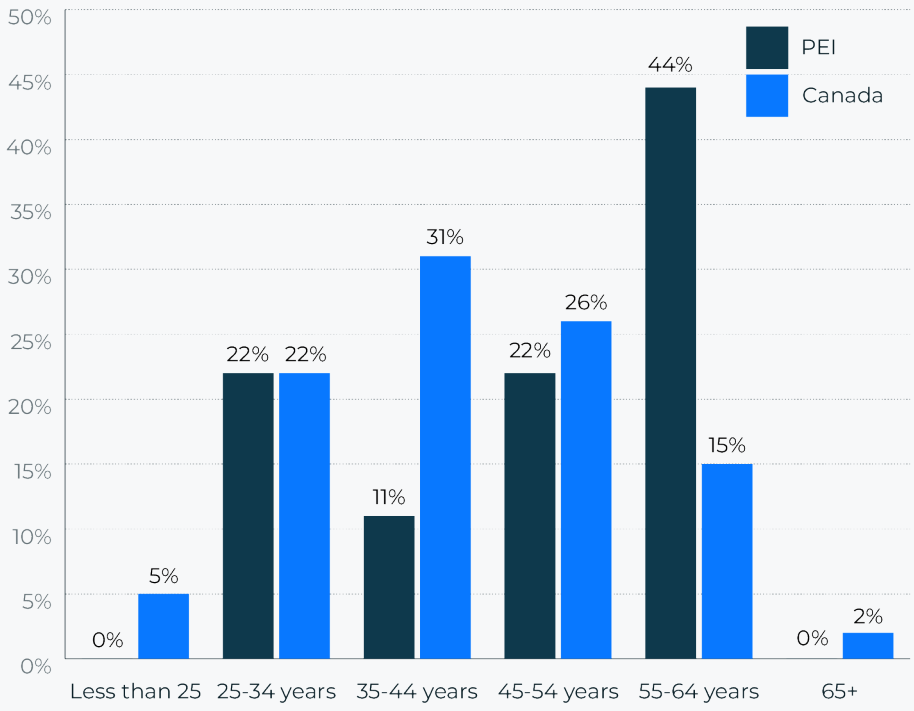
Note: *Figures in parenthesis for 2035 refer to the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. Those in the 2050 column refer to the average compound annual growth anticipated between 2035 and 2050. "Net-zero" refers to CER's "Canada net zero" scenario and reflects an energy mix scenario for electricity generation that could enable Canada to achieve a net-zero electricity grid by 2035, and net-zero GHG emissions by 2050.*

AGE DISTRIBUTION OF THE WORKFORCE

The age profile of PEI's electricity sector workers differs from the corresponding situation at the national level *(Figure 21)*.

PEI has significantly more workers between the ages of 55 and 64 employed than Canada (44% vs. 15%). The electricity sector also employs significantly fewer workers between the ages of 35 and 44 in PEI than Canada (11% vs. 31%).

Figure 21. Age Distribution of employment in the Electricity Sector (%), 2022



Source: *Statistics Canada, Labour Force Survey, 2022.*

DISTRIBUTION OF FEMALE EMPLOYMENT

The share of women working in PEI's electricity sector (22%) is much lower than the corresponding figure for Canada (27%).

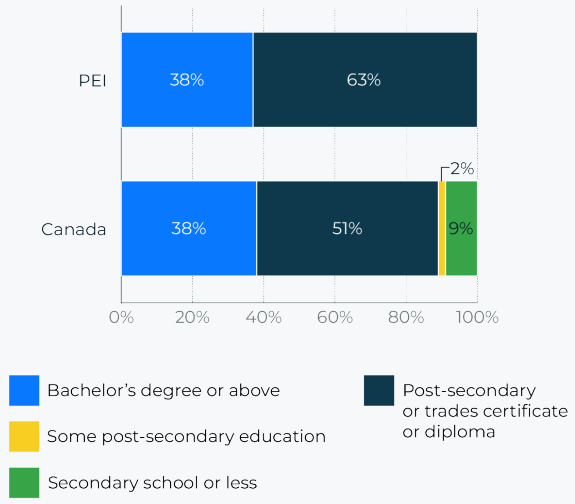
LEVEL OF EDUCATIONAL ATTAINMENT

Educational attainment is relatively high in Canada's electricity sector, with more than one in three workers (38%) having attained a Bachelor's degree or above *(Figure 22)*.

This figure applies to PEI, in that 38% of its electricity sector having attained a Bachelor's degree or above.

However, the proportion of workers with a post-secondary or trades certificate or diploma in PEI's electricity sector is higher than that of Canada (63% vs. 51%).

Figure 22. Educational attainment in the electricity sector, 2022

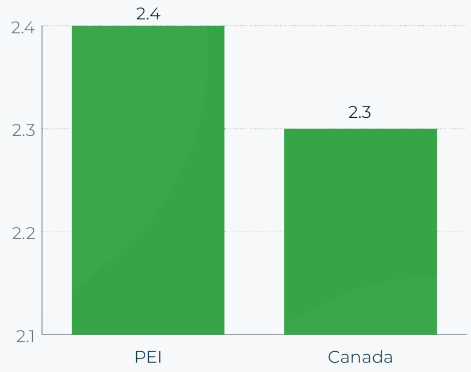


Source: *Statistics Canada, Labour Force Survey, 2022.*

RECENT EMPLOYMENT TRENDS

The average annual employment growth in Canada's electricity sector for 2017 to 2022 is comparable between PEI and Canada, i.e., average annual growth of 2.4% compared to 2.3%, respectively *(Figure 23)*.

Figure 23. Average annual employment growth in Canada's electricity sector (compound growth rates in %), 2017–2022



Source: *Statistics Canada, Labour Force Survey, 2022.*