

EHRC  **RHIEC**

ONTARIO **POWER**
GENERATION

Canada 



Electricity in Demand: Labour Market Insights

**FACTSHEET FOR PRAIRIES
2023-2028**



Prairies Outlook

STRUCTURE OF THE ELECTRICITY MARKET

The production and consumption of electricity differs significantly across the Prairie provinces. The regulatory environment and market dynamics of Alberta, Saskatchewan and Manitoba are unique in many respects.

Moreover, the mix of fuels they use to generate electricity, as well as the workforces they rely upon to provide services, reflect technical, economic and natural resources conditions in each jurisdiction.

In **Alberta**, electricity is available through a competitive market, with regulated transmission and distribution functions. Approximately twenty companies cater to retail services for industrial and large commercial consumers. The generation, transmission, and distribution facilities in the province are privately owned and operated.





Regulating electricity sector activities, the provincial regulatory body has unique features, including Alberta's deregulated wholesale generation market, distinct market structure, and a dynamic regulatory-litigation culture. This independent agency strives to balance consumer and utility needs, ensuring the provision of cost-effective service.

Another central entity oversees the safe and reliable operation of the province's electrical system. It also develops and administers transmission tariffs, procures ancillary services for system reliability, and manages the settlement of the hourly wholesale market and transmission system services.

One entity in **Manitoba** owns and operates nearly the entire electricity industry in the province. The Manitoba Public Utilities Board, acting as a quasi-judicial administrative body making decisions independently of government involvement, oversees the regulation of retail electricity rates. Notably, it does not regulate the transmission tariff of the entity managing most of the province's electricity industry.

In **Saskatchewan**, one principal Crown Corporation oversees the processes of electricity generation, transmission, and distribution. The Saskatchewan Rate Review Panel evaluates proposed rate increases, with the final decisions resting with the provincial Cabinet.





ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, the Prairies' largest fuel source for electricity generation is natural gas, making up more than half (52%) of the region's total (see *Figure 1, panel A*).

Hydro power is the next leading source of generation at 25%, followed by coal & coke and wind power, at 10% each. The foremost energy source for Canada's electricity generation, meanwhile, is hydro power, at 58%. Canada as a whole has a smaller share of natural gas at 14%, and a larger share of nuclear power, at 13% (*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 facilitate these goals).

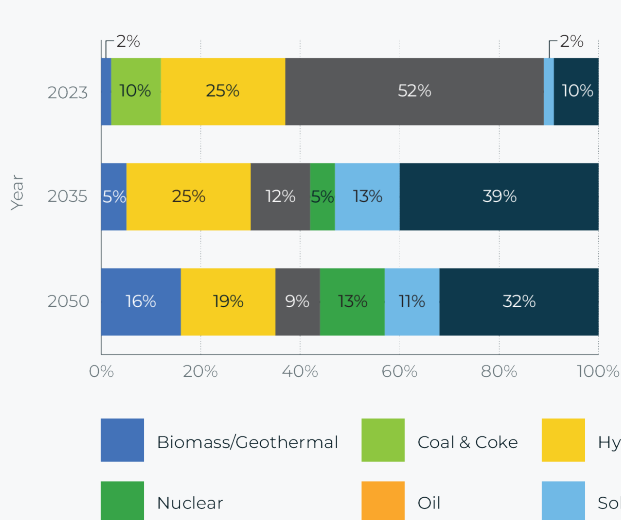
Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in both the Prairies and Canada as a whole. The need to generate, transmit and distribute a growing volume of electricity will severely stress the electrical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



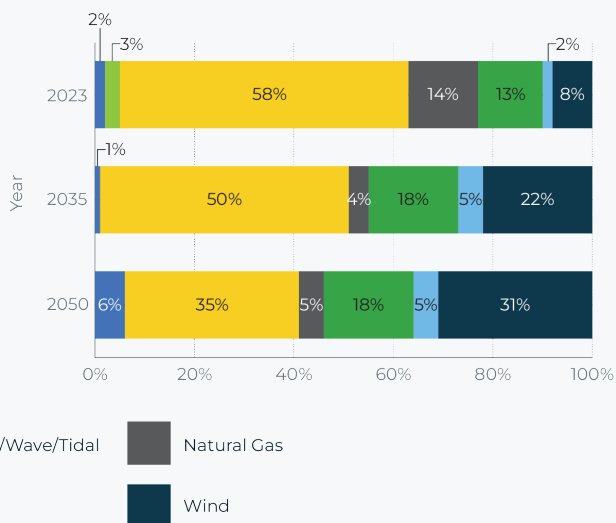


Figure 1. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)

Panel A: Prairies



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 electrical generation from wind power in the Prairies would more than triple by 2035 to reach 39%. The share of natural gas would significantly decrease, as other sources, like wind, nuclear, and solar power increase their relative shares. To some extent this mirrors what will be required at the national level to achieve net zero goals, i.e., declining share of natural gas, growing importance of wind and solar power, and with coal & coke production being phased out entirely over this period in both the Prairies and Canada.

Between 2035 and 2050 under this scenario, the share of wind power in total electricity generation would decline slightly in the Prairies, while the share of electricity generation from biomass/ geothermal would triple. The share of natural gas in the Prairies would continue to decline, landing at 9% by 2050 (Figure 1, panel A).



Under this scenario, in 2050, the Prairies would have five significant fuel sources for electricity generation: wind, hydro, biomass/geothermal, nuclear, and solar power (in addition to retaining some generation from natural gas). For Canada as a whole, the share of hydro power would fall by over 20 percentage points by 2050, while wind power is poised to account for just over 30% of total electricity generation (*Figure 1, panel B*). At the same time, the share of electricity generated with natural gas would fall to 5% for Canada, while the share of solar power will grow only modestly.

In addition to significant shifts in the fuel mix, as mentioned above, it is expected that the total volume of electricity generated will increase substantially. The amount of electricity generated by some fuel sources will rise dramatically, relative to their current levels (*Table 1*). In many instances, the increases will be dramatic given the comparably low levels of electricity currently generated through such sources.

For instance, between 2023 and 2035, in under the net zero scenario, the Prairies' biggest increase in electricity generation is expected to come from nuclear power (which as of 2023 does not exist), followed by solar power (22.5% average growth per year) and wind (16% average growth per year).

Between 2035 and 2050, growth in electricity generation is, under this scenario, set to remain rather stable with the exception of nuclear and biomass/geothermal, both of which would increase significantly (8% and 10% average growth per year, respectively).





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

Energy Source	Prairies			Canada		
	2023	2035	2050	2023	2035	2050
Natural gas	73,428	27,023 (-8.0%)	27,243 (0.1%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Hydro/wave/tidal	35,416	53,826 (3.5%)	55,592 (0.2%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Wind	14,616	83,725 (15.7%)	91,966 (0.6%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Coal & coke	13,861	0 (-100%)	0	19,594	-	-
Solar	2,502	28,679 (22.5%)	32,302 (0.8%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Biomass/geothermal	2,165	11,332 (14.8%)	47,219 (10.0%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Oil	33	0 (-100%)	2 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
Nuclear	0	11,625 (100%)	37,182 (8.1%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	142,020	216,210 (3.6%)	291,507 (2.0%)	645,028	936,600 (3.2%)	1,359,716 (2.5%)

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

Note: n.a. is not applicable. Figures in parenthesis for 2035 refer 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.

In contrast, over the period 2023 to 2035, Canada's increased level of electricity generation is expected to primarily come from solar and wind (12% average growth per year) as well as nuclear (6% average growth per year). For the period 2035 to 2050, 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).

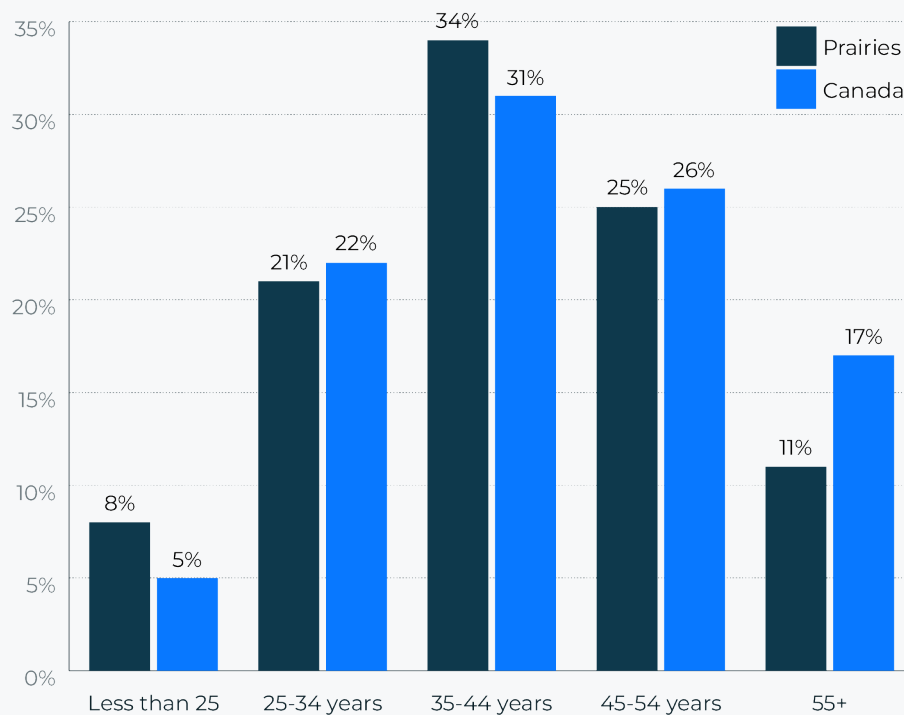


AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, the age profile of workers in the Prairies is by and large younger on average than what prevails at the national level (*Figure 2*).

The share of workers 55 years of age and over in the Prairies (11%), is lower than the national average of 17%. Additionally, the share of workers under the age of 35 in the Prairies (29%) is somewhat higher than the national average of 27%.

Figure 2. Age Distribution (%), 2022



Source: Statistics Canada, Labour Force Survey, 2022.



DISTRIBUTION OF FEMALE EMPLOYMENT

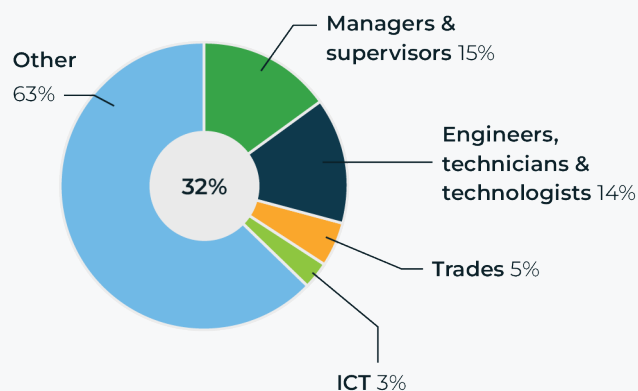
Figure 3 highlights that in the Prairies, at 32%, the overall share of women employed in the electricity sector is relatively high compared to the national average (27%).

However, the occupational profile of women in the electricity sector's workforce in the region is broadly similar to that at the national level. In both instances, women are overwhelmingly concentrated in *Other corporate* occupations in both the Prairies and Canada (63% and 67%, respectively).

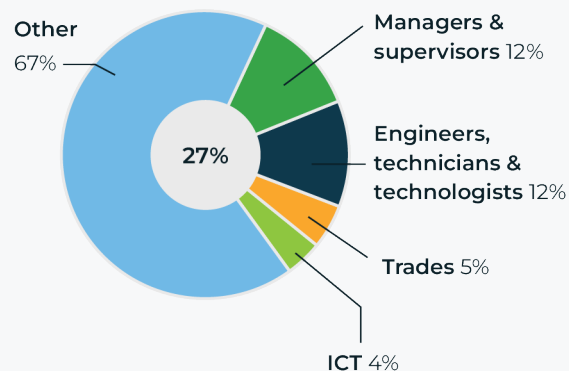
The *ICT* (3%) and *Trades* (5%) occupational groups employ the lowest shares of women in the Prairies' electricity sector (but these are comparable to the Canada-wide averages). Compared to Canada, the Prairies' electricity sector workforce has a slightly larger share of women employed in the *Management & supervisors* and *Engineers, technicians, & technologists* occupational groups.

Figure 3. Distribution of female employment by occupational group

Panel A: Prairies, 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.

Like other sectors, the electricity sector benefits significantly from a diverse workforce, as it brings a wider array of perspectives, ideas, and innovative solutions than would otherwise exist. However, according to the 2021 Census, the electricity sector workforce in the Prairies is by large more diverse than both the Canadian electricity sector and the broader economy:

- **Indigenous peoples:** The Prairies collectively have the largest share (9%) of electricity sector workers identifying as Indigenous peoples, among all provinces/regions of Canada. This is nearly double the national figure for the electricity sector at 5% (the latter of which 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 about 2.6% of the Prairies' electricity sector identified as persons with disabilities, more than double that of the national level.
- **Racialized groups:** A little more than 27% of workers in the Prairies' electricity sector identified as being from a racialized group, higher than the national figures for the electricity sector at close to 22% (and broadly consistent the share of racialized groups working across all sectors of the economy at 26%).
- **Immigrants:** Nearly 18% of workers in the region's electricity sector are immigrants, which while consistent with the national figures for the electricity sector, at 18%, is considerably 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 about 3% of the electricity sector employees in the Prairies identify as gender diverse, slightly above the national average 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.

The comparable figure for the Prairies is higher, at 43%.

In both the Prairies and Canada, educational attainment is high across the main occupational groups that constitute the electricity sector's workforce (*Figure 4*):

- **Managers & supervisors:** In the Prairies, 89% of *Managers & supervisors* have at least a post-secondary or trades certificate or diploma compared to 94% in Canada. The share of *Managers & supervisors* with at least a bachelor's degree in the Prairies is 66%, compared to just over half in Canada.
- **Trades:** Among this occupational group, 79% have at least a post-secondary or trades certificate or diploma (with 22% having a bachelor's degree or more). In Canada, the corresponding figures are 87% with at least a post-secondary or trades certificate or diploma and 15% having a bachelors' degree or more.
- **Engineers, technologists and technicians:** 57% of the Prairies' workers within this occupational group hold a bachelor's degree or above (the corresponding figure in Canada is 63%).
- **ICT:** 69% of the workers within this occupational group in the Prairies region hold a bachelor's degree or above (the corresponding figure in Canada is 55%). 95% and 99% of workers in the Prairies and Canada, respectively, have at least some post-secondary education or higher.

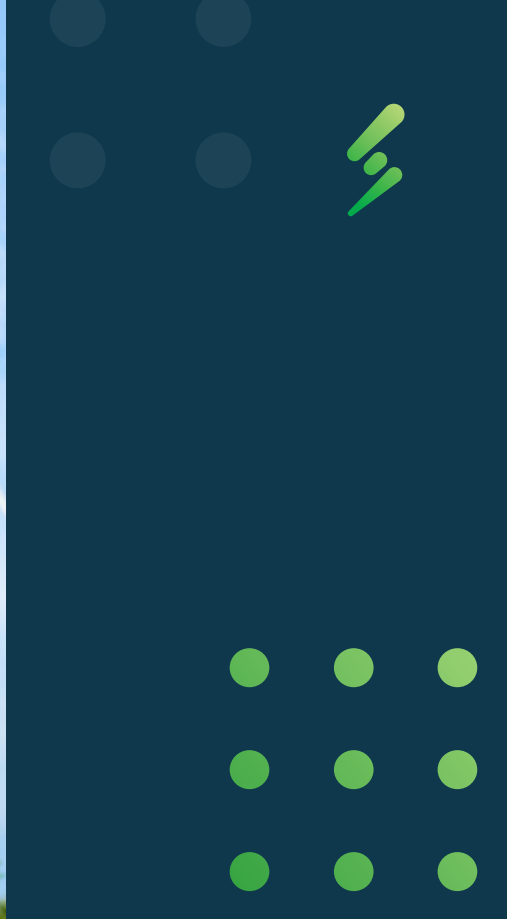
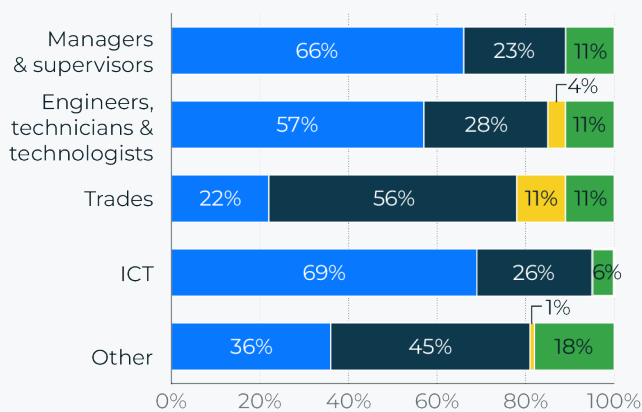
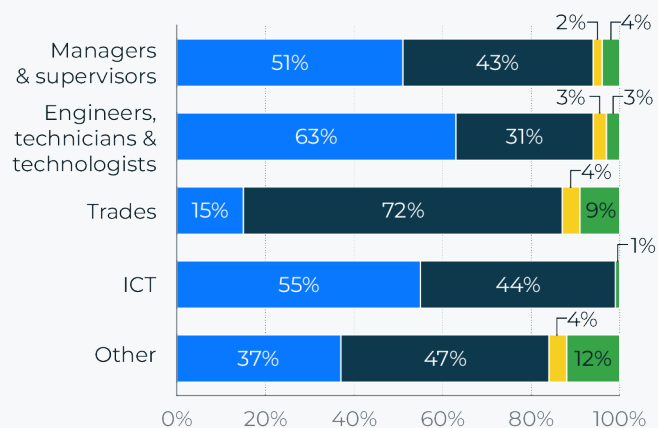


Figure 4. Educational attainment by occupational group

Panel A: Prairies, 2022



Panel B: Canada, 2022



Source: Statistics Canada, Labour Force Survey, 2022.



EMPLOYMENT PROFILE AND RECENT TRENDS

The distribution of employment across the four occupational groups is broadly consistent between the Prairies and Canada (*Table 2*).

The Prairies have a slightly higher share of *Managers & supervisors* (12%) occupations than exists at the national level. Otherwise, the shares of the remaining occupational groups are comparable to that of Canada (with a slightly smaller share of employment in *ICT* and *Other corporate professionals* in the Prairies).

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

Occupational Group	Prairies		Canada	
	Volume	%	Volume	%
<i>Managers & supervisors</i>	2,600	12.0	9,800	8.9
<i>Engineers, technologists & technicians</i>	3,200	14.7	16,500	14.9
<i>Trades</i>	6,000	27.0	29,600	26.8
<i>ICT</i>	1,100	5.1	6,700	6.0
<i>Other corporate professionals</i>	9,100	41.3	48,100	43.4
Total	22,100	100.0	110,700	100.0

Source: Statistics Canada, Labour Force Survey, 2022.

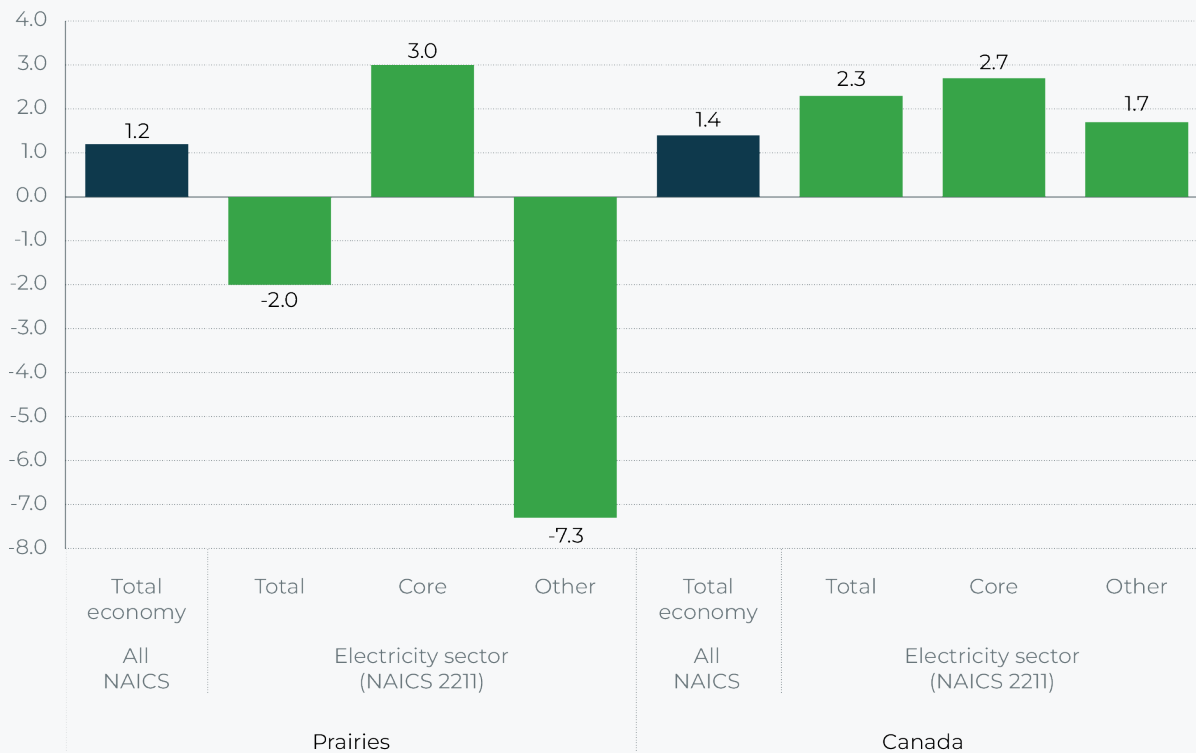
Note: Figures are rounded to the nearest 100.



Employment growth in Canada's electricity sector over the past 5 years has outpaced growth in the Prairies (Figure 5).

Between 2017 and 2022, the Prairies' electricity sector contracted by 2%, while overall employment in the region grew by 1.2%. During the same period, employment growth in Canada's electricity sector was 2.3% per year. In the Prairies, job gains of 3% per year on average were seen among the core group of occupations compared to a 7.3% contraction among the other group of occupations. In contrast, for Canada's electricity sector as a whole, employment growth among core and other occupations averaged 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 in terms of employment patterns and the shift towards net zero is the critical role of renewable energy occupations.

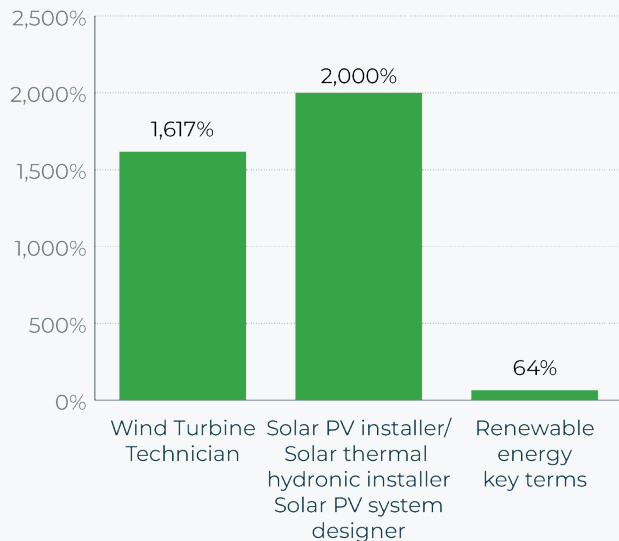
However, official data on such jobs is not available as they tend to be captured by broader job titles within the National Occupational Classification system. Online job posting data from Vicinity Jobs, while not to be conflated with employment, can be leveraged to capture valuable insights on recent trends in terms of these specific job titles.

The growing demand for workers with specialized skills in the renewable energy sector is clearly evident: between 2018 and 2022, the number of online job postings in the Prairies that contained the key phrases 'renewable energy,' 'solar power,' and/or 'wind power generation' increased by 64% (Figure 6, panel A).

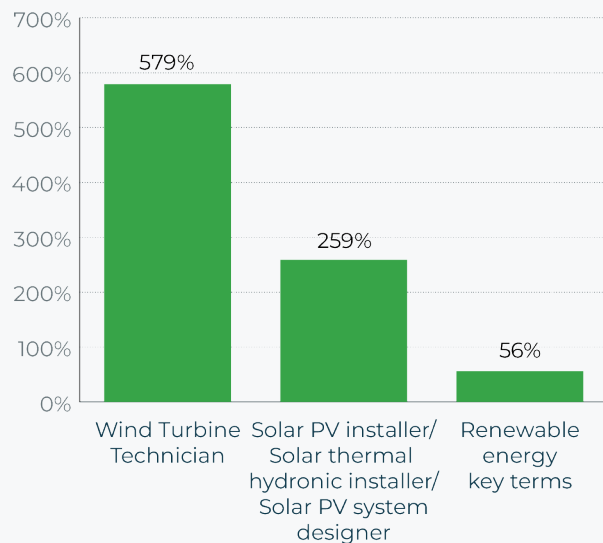
Additionally, postings in the Prairies for Wind turbine technicians grew by over 1600% and those related to Solar PVs expanded by 2000%. The corresponding Canada-wide figures are 56% growth over the period 2018 to 2022 in job postings with the same key phrases, 579% growth in Wind turbine technician job postings and 259% growth in Solar PV related job postings (Figure 6, panel B).

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

Panel A: Prairies



Panel B: Canada



Source: Vicinity Jobs.



LABOUR MARKET OUTLOOK

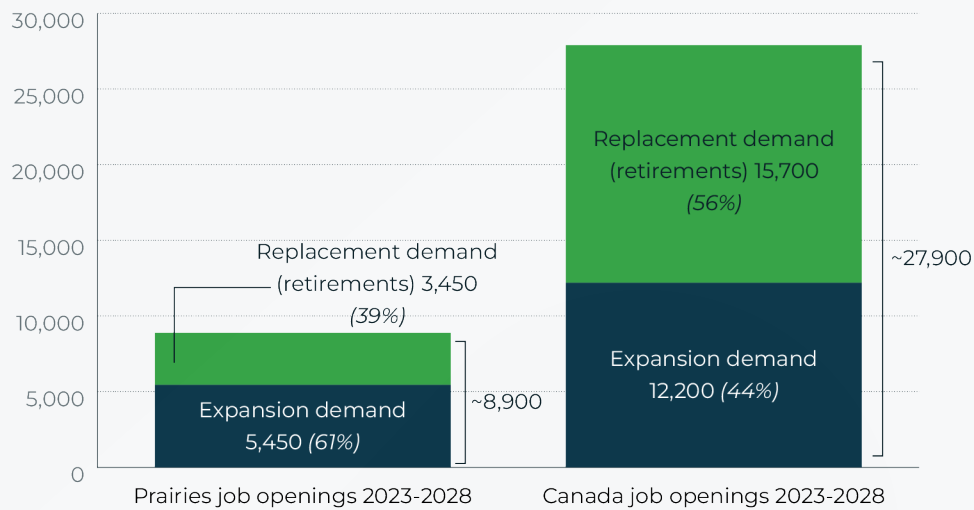
Leveraging the assumptions and data underpinning the long-term scenarios envisaged in the Canada Energy Regulator's *Canada's Energy Future 2023*, EHRC developed a forecast model to shed light on the potential medium term employment implications for the electricity sector under the path to net zero scenario.

Between 2023 and 2028, the number of job openings in the Prairies' electricity sector are anticipated to exceed a little more than 8,900 (Figure 7).

This includes approximately 5,450 job openings due to expansion demand and an additional 3,450 that are expected to arise from replacement demand, i.e., from retirements. For Canada, the additional job openings associated with expansion demand are just over 12,000 and the total number of retirements or replacement demand expected in the electricity sector is estimated at 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 the Prairies, with the exception of *ICT* occupations, which will see a modest decline, the total number of job openings anticipated from expansion demand over the 2023–2028 period is rather robust (and particularly so among *Managers & supervisors* and *Engineers, technologists & technicians*).

Replacement demand is expected to also be strong across all occupational groups but noticeably so for *Other corporate professional occupations*, even when positive replacement demand is taken into account among the remaining occupational groups. 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 as a result of 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 Prairies' electricity sector under the path to net zero scenario by occupational group, 2023–2028

Occupational Group	Prairies		Canada	
	Expansion demand	Replacement demand	Expansion demand	Replacement demand
<i>Managers & supervisors</i>	2,200	550	- 2,100	1,200
<i>Engineers, technologists & technicians</i>	1,500	450	1,200	1,900
<i>Trades</i>	1,100	750	2,800	3,700
<i>ICT</i>	50	100	3,800	800
<i>Other corporate professionals</i>	700	1,550	6,500	8,050
Total	5,450	3,450	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.





Alberta Outlook

STRUCTURE OF THE ELECTRICITY MARKET

Alberta's electricity market is competitive, whereas its transmission and distribution functions are regulated.

Approximately twenty companies provide retail services to industrial and large commercial consumers. The province's generation, transmission, and distribution facilities are privately owned and operated. Alberta's electricity sector has other distinctive features, including a deregulated wholesale generation market and a dynamic regulatory-litigation culture. The independent agency that oversees the sector strives to balance the needs of utilities and consumers, thereby ensuring the provision of cost-effective services.

A separate entity oversees the safe and reliable operation of the province's electrical system. It develops and administers transmission tariffs, procures ancillary services to facilitate system reliability, and manages the settlement of the hourly wholesale market and transmission system services.





ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, Alberta's largest source of electrical generation is natural gas, making up 70% of the province's total (see Figure 8, panel A).

Wind power is the next leading source at 15%, followed by coal & coke (8%). In contrast, the largest contributor to Canada's electrical generation is hydro power, at 58%. The share of electricity generated from natural gas in Canada as a whole is less than that of Alberta (Figure 8, 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 result in achieving these goals).

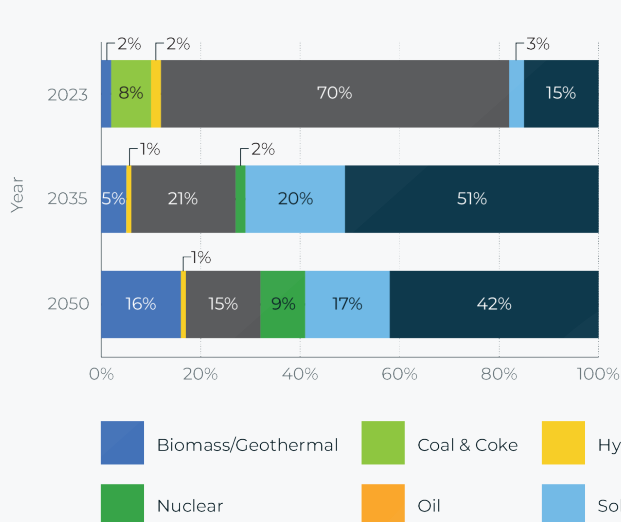
Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in Canada and nearly double in Alberta. The need to generate, transmit and distribute a growing volume of electricity will severely stress the electrical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



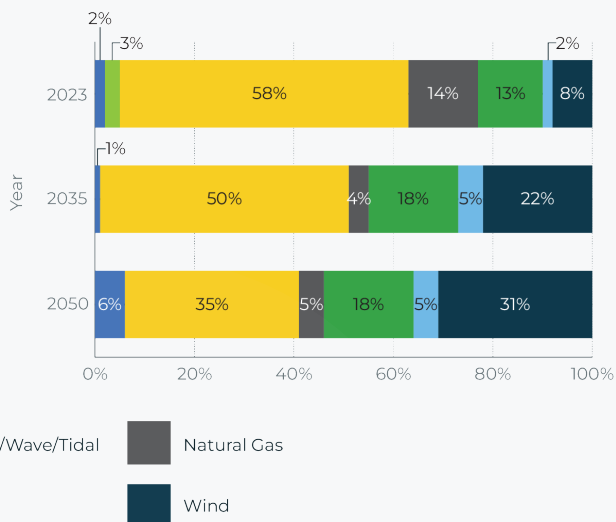


Figure 8. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)

Panel A: Alberta



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 from wind power would more than triple in Alberta by 2035 to reach just over half (51%). Solar power would also significantly increase, reaching 20% by 2035. In some respects, this mirrors what will be required at the national level to achieve these goals, i.e., growing importance of wind and solar power to reach a net zero electricity grid by 2035, with coal & coke production being phased out entirely over this period. However, Alberta's electricity generation from natural gas is poised to decline more significantly.



By 2050 under this net zero scenario, wind (42%), solar power (17%) and biomass/geothermal (16%) would be the leading sources of electricity generation in Alberta.

The share of natural gas would continue to decline to reach 15% in 2050 (Figure 8, panel A). For Canada as a whole under this net zero scenario, the share of hydro power will fall by over 20 percentage points by 2050, while wind power will account for just over 30% of total electricity generation in 2050 (Figure 8, panel B). Out to 2050, the relative share of natural gas will fall to 5% and solar power will grow modestly.

In addition to significant shifts in the fuel mix, it is expected that the total volume of electricity generated will increase substantially. The amount of electricity generated by some fuel sources will rise dramatically, relative to their current levels (Table 4). For instance, in Alberta between 2023 and 2035, the biggest increase in electricity generation will come from solar (22% average growth per year), wind power (14% average growth per year) and biomass/geothermal (close to 12% average growth per year).

Although solar power would register a considerable increase in percentage terms relative to its baseline, its share of total electrical generation would remain relatively low. Between 2035 and 2050, growth in electricity generation is, under the path to net zero scenario, set to be strongest among nuclear (nearly 11% average growth per year) and biomass/geothermal (nearly 10% average growth per year). Among the other energy sources, little growth is expected over this time frame.

In contrast, over the period 2023 to 2035, Canada's increased level of electricity generation is expected to primarily come from solar and wind (12% average growth per year) as well as nuclear (6% average growth per year). For the period 2035 to 2050, 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.)





Table 4. Anticipated growth in electricity generation by fuel source under a net zero scenario, (compound annual %), 2023–35 and 2035–2050

Energy Source	Alberta			Canada		
	2023	2035	2050	2023	2035	2050
Natural gas	61,387	26,515 (-6.8%)	25,539 (-0.2%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Wind	13,372	65,155 (14.1%)	69,446 (0.4%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Coal & coke	7,142	- (-100%)	- (n.a.)	19,594	-	-
Solar	2,336	25,494 (22.0%)	28,788 (0.8%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Biomass/geothermal	1,810	6,776 (11.6%)	26,428 (9.5%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Hydro/wave/tidal	1,651	1,351 (-1.7%)	1,351 (0.0%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Oil	16	- (-100%)	0 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
Nuclear	-	3,201 (n.a.)	14,813 (10.8%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	87,713	128,492 (3.2%)	166,365 (1.7%)	645,028	936,600 (3.2%)	1,359,716 (2.5%)

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

Note: n.a. refers to not applicable. Figures in parenthesis for 2035 refer the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. For those in the 2050 column, they 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.



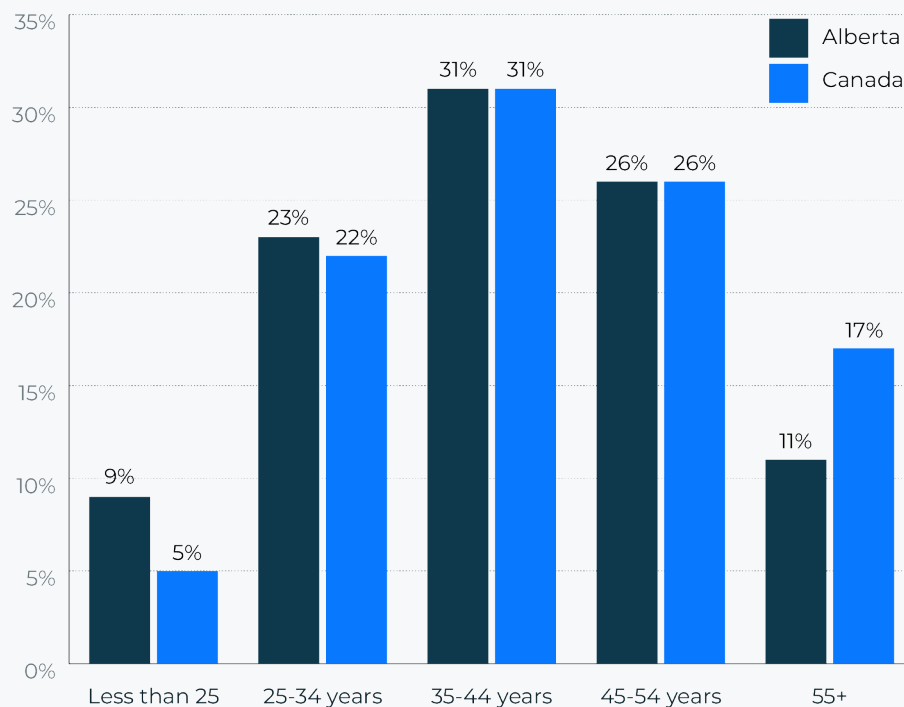


AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, Alberta workers tend to be younger on average than is the case at the national level (*Figure 9*).

Indeed, Alberta's electricity sector employs slightly more workers under the age of 35 years of age than in the national case (32% vs. 27%) and the aged 55 and over is considerably lower (11% in Alberta vs. the Canadian average of 17%).

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 Alberta's electricity sector is considerably higher than for Canada as a whole (38% vs. 27%).



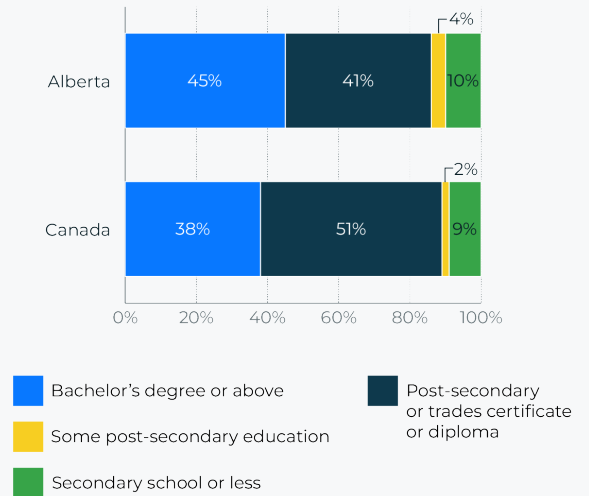
LEVEL OF EDUCATIONAL ATTAINMENT

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 10).

This figure is even higher in Alberta, with 45% of its electricity sector workforce having attained a Bachelor's degree or above.



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



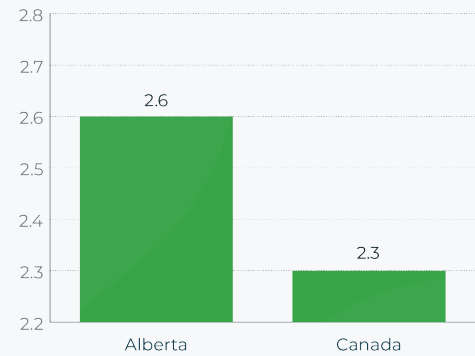
Source: Statistics Canada, Labour Force Survey, 2022.



RECENT EMPLOYMENT TRENDS

From 2017 to 2022 the average annual employment growth in the electricity sector was modestly higher in Alberta than in Canada, i.e., 2.6% vs. 2.3% respectively (Figure 11).

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



Source: Statistics Canada, Labour Force Survey, 2022.





Saskatchewan Outlook

STRUCTURE OF THE ELECTRICITY MARKET

In Saskatchewan, a Crown Corporation oversees the generation, transmission and distribution of electricity.

The Saskatchewan Rate Review Panel evaluates proposed rate increases, however the final decisions rests with the provincial Cabinet.





ELECTRICITY GENERATION BY FUEL TYPE

As of 2023, Saskatchewan's largest source of electrical generation is natural gas, making up 50% of the province's total (Figure 12, panel A).

Coal & coke is the next leading source at 28%, followed by hydro power (17%). In contrast, the largest contributor to Canada's electrical generation capacity is hydro power, at 58%. The proportion of electricity generated from natural gas is much higher in Saskatchewan (50%) than Canada (14%). Nuclear power plays a larger role in electricity generation for the country as a whole (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 (recognizing that there are multiple paths and different energy mixes that could result in achieving these goals).

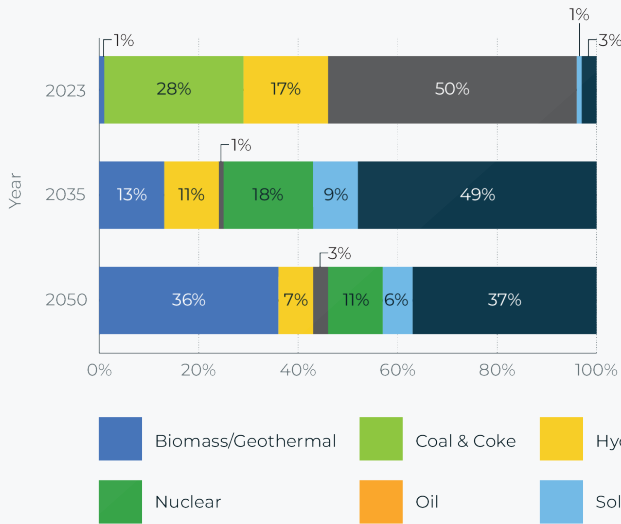
Under the CER "Canada net zero" scenario, electricity generation in terms of gigawatt hours (GWh) is set to more than double over the next 27 years in Canada. It is anticipated that in 2050 Saskatchewan's electricity generation will need to be two and half times the prevailing level. The need to generate, 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.



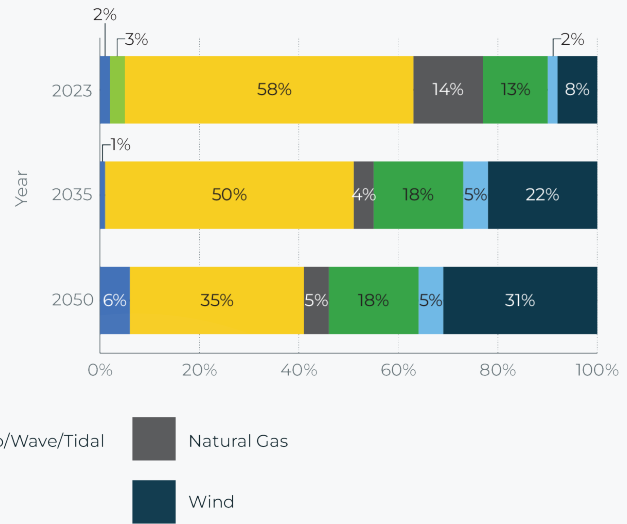


Figure 12. Shares of electricity generation by source and year (2023, 2035, and 2050), net zero scenario (%)

Panel A: Saskatchewan



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.

In Saskatchewan, under the net zero scenario outlined by the CER, wind power's share of electrical generation would increase from 3% in 2023 to 49% in 2035. The province would also see growth in nuclear power, biomass/geothermal, and solar power. Beyond 2035, the relative share of electricity generation from wind would decline somewhat under the net zero scenario, while biomass/geothermal would continue to increase, becoming the second leading source of electricity by 2050 (Figure 12, panel A).

To achieve net zero goals at the national level, wind and solar power will assume growing importance by 2035, with coal & coke production being phased out entirely over the period. The share of hydro power would fall by over 20 percentage points by 2050, while wind power would account for just over 30% of Canada's electricity generation in 2050 (Figure 12, panel B). The share of electricity generation from natural gas will fall to 5% and solar power will grow modestly.



In addition to significant shifts in the fuel mix, it is expected that the total volume of electricity generated will increase substantially. The amount of electricity generated by some fuel sources will rise dramatically, relative to their current levels (*Table 5*).

In the case of Saskatchewan, the most dramatic anticipated growth in electricity generation between 2023 and 2035 relates to wind (just over 30% average growth per year), followed by solar (nearly 29% average growth per year) and biomass/geothermal (26% average growth per year).

In many instances, the increases will be dramatic given the comparably low levels of electricity currently generated through such sources. Between 2035 and 2050, continued strong growth in biomass/geothermal is expected (nearly 11% average growth per year) and among natural gas (over 8% average growth per year). Although, in terms of the latter, it is partially related to the comparably low levels of electricity generation foreseen in 2035.

In contrast, over the period 2023 to 2035, Canada's increased level of electricity generation is expected to primarily come from solar and wind (12% average growth per year) as well as nuclear (6% average growth per year). For the period 2035 to 2050, 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).





Table 5. Anticipated growth in electricity generation by fuel source under a net zero scenario, (compound annual %), 2023–35 and 2035–2050

Energy Source	Saskatchewan			Canada		
	2023	2035	2050	2023	2035	2050
Natural gas	11,865	508 (-23.1%)	1,704 (8.4%)	90,568	32,851 (-8.1%)	62,772 (4.4%)
Coal & coke	6,719	-	-	19,594	-	-
Hydro/wave/tidal	3,980	3,773 (-0.4%)	4,183 (0.7%)	376,053	467,766 (1.8%)	474,316 (0.1%)
Wind	706	17,252 (30.5%)	21,124 (1.4%)	53,498	207,476 (12.0%)	425,064 (4.9%)
Biomass/geothermal	276	4,492 (26.2%)	20,714 (10.7%)	10,224	18,446 (5.0%)	71,889 (9.5%)
Solar	149	3,100 (28.8%)	3,400 (0.6%)	11,060	44,914 (12.4%)	74,699 (3.4%)
Oil	1	- (-100%)	1 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
Nuclear	-	6,255 (n.a.)	6,513 (0.3%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	23,696	35,380 (3.4%)	57,639 (3.3%)	645,028	936,600 (3.2%)	1,359,716 (2.5%)

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

Note: n.a. refers to not applicable. Figures in parenthesis for 2035 refer the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. For those in the 2050 column, they 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.



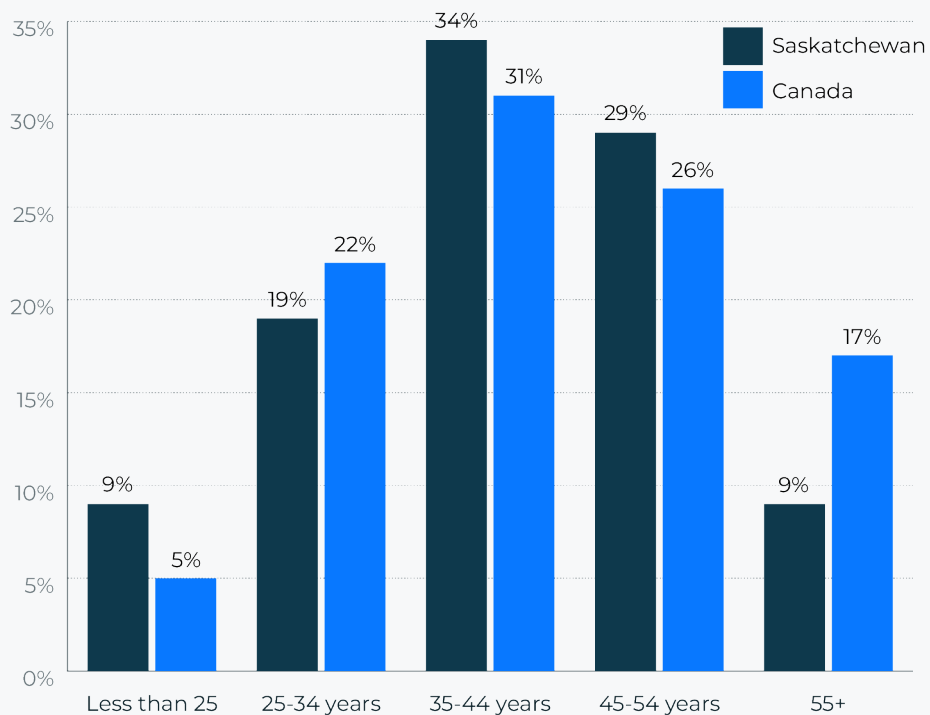


AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, the age profile of Saskatchewan's workers broadly resembles the corresponding situation at the national level (Figure 13).

However, Saskatchewan's electricity sector employs slightly more workers under the age of 35 than in the national case (28% vs. 27%). The share of workers aged 55 and over in Saskatchewan's electricity sector is smaller than for the country as a whole (9% vs. 17%). The shares of workers between 35 and 44 years of age, and 45 and 54 years of age, are larger for Saskatchewan's electricity workforce.

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 Saskatchewan's electricity sector is broadly consistent with the national average (28% vs. 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 14).

This figure is noticeably lower in Saskatchewan with only 30% of its electricity sector having attained a Bachelor's degree or above.

The share of workers with a post-secondary or trades certificate, or diploma, is similar for both Saskatchewan and Canada. However, Saskatchewan's share of workers with no post-secondary education (16%) exceeds that of Canada (9%).

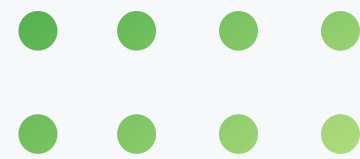
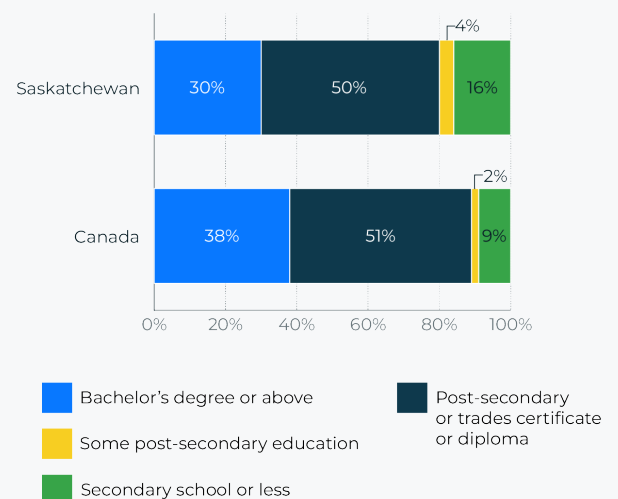


Figure 14. Educational attainment in the electricity sector, 2022 (%)



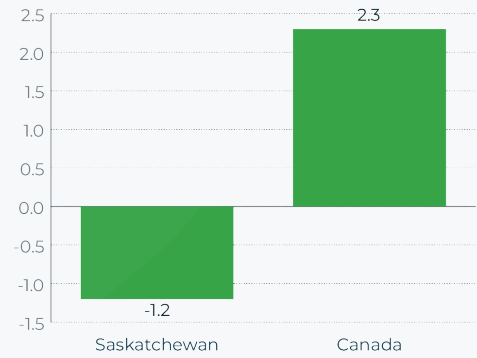
Source: Statistics Canada, Labour Force Survey, 2022.

RECENT EMPLOYMENT TRENDS

On average, employment in Saskatchewan's electricity sector contracted by 1.2% annually (2017 – 2022), while employment in Canada's electricity sector expanded by 2.3% annually (*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.





Manitoba Outlook

STRUCTURE OF THE ELECTRICITY MARKET

In Manitoba a single entity owns and operates virtually the entire electricity industry.

The Manitoba Public Utilities Board, a quasi-judicial administrative body, makes decisions independently of government involvement. It oversees the regulation of retail electricity rates, but has no influence over transmission tariffs.



ELECTRICITY GENERATION BY FUEL TYPE



As of 2023, Manitoba's largest source of electrical generation is hydro power, making up 97% of the province's total (see Figure 16, panel A).

The largest contributor to Canada's electrical generation capacity 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 (recognizing that there are multiple paths and different energy mixes that could result in achieving 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 both Manitoba and Canada. 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.

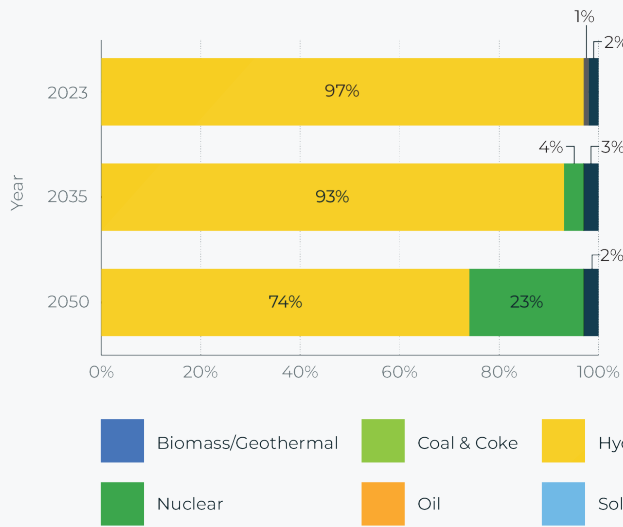
In Manitoba, under the net zero scenario outlined by the CER, hydro's share of electrical generation would decline modestly to 93% in 2035 and to 74% in 2050 (*Figure 16, panel A*). This will be matched by corresponding increases in the share of electricity from nuclear, i.e., rising from 0% to 4% by 2035 and climbing to account for nearly one-quarter (23%) of total electricity generation in the province by 2050.



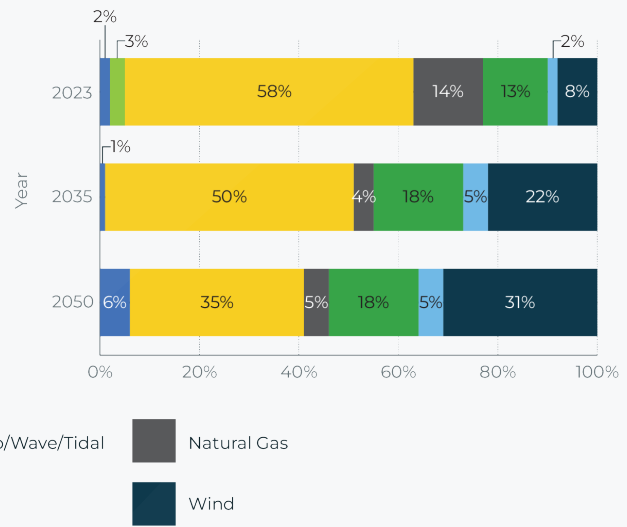


Figure 16. Shares of electricity generation by source and year (2023, 2035 and 2050) (%)

Panel A: Manitoba



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.

To achieve net zero goals at the national level, wind and solar power will assume growing importance by 2035, with coal & coke production being phased out entirely over the period. The share of hydro power would also fall by over 20 percentage points by 2050, while wind power would account for just over 30% of total electricity generation in 2050 (Figure 16, panel B). The share of electricity generation from natural gas will fall to 5% and solar power will grow modestly.

In addition to significant shifts in the fuel mix, as discussed above, it is expected that the total volume of electricity generated will increase substantially (Table 6). In the case of Manitoba, electricity generation from hydro will continue to grow, notably between 2023 and 2035 (4.2% average growth per year) and for the period 2035 to 2050, the growth in electricity output is almost entirely the result of anticipated growth in electricity from nuclear (14% average growth per year over this period). Over the period 2023 to 2035, Canada's expanding electrical output is expected to primarily come from solar and wind (12% average growth per year) as well as nuclear (6% average growth per year). For the period 2035 to 2050, 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).



Table 6. Anticipated growth in electricity generation by fuel source under a net zero scenario, (compound annual %), 2023–35 and 2035–2050

Energy Source	Manitoba			Canada		
	2023	2035	2050	2023	2035	2050
<i>Hydro/wave/tidal</i>	29,785	48,703 (4.2%)	50,058 (0.2%)	376,053	467,766 (1.8%)	474,316 (0.1%)
<i>Wind</i>	538	1,317 (7.8%)	1,397 (0.4%)	53,498	207,476 (12.0%)	425,064 (4.9%)
<i>Natural gas</i>	177	- (-100%)	- (n.a.)	90,568	32,851 (-8.1%)	62,772 (4.4%)
<i>Biomass/geothermal</i>	79	64 (-1.7%)	77 (1.2%)	10,224	18,446 (5.0%)	71,889 (9.5%)
<i>Solar</i>	17	84 (14.1%)	114 (2.0%)	11,060	44,914 (12.4%)	74,699 (3.4%)
<i>Oil</i>	16	- (-100%)	1 (n.a.)	1,606	670 (-7.0%)	1,004 (2.7%)
<i>Coal & coke</i>	-	- (n.a.)	- (n.a.)	19,594	-	-
<i>Nuclear</i>	-	2,169 (n.a.)	15,856 (14.2%)	82,425	164,478 (5.9%)	249,972 (2.8%)
Total	30,611	52,337 (4.6%)	67,503 (1.7%)	645,028	936,600 (3.2%)	1,359,716 (2.5%)

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

Note: n.a. refers to not applicable. Figures in parenthesis for 2035 refer the average compound annual growth in electricity generation anticipated for that energy source between 2023 and 2035. For those in the 2050 column, they 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.



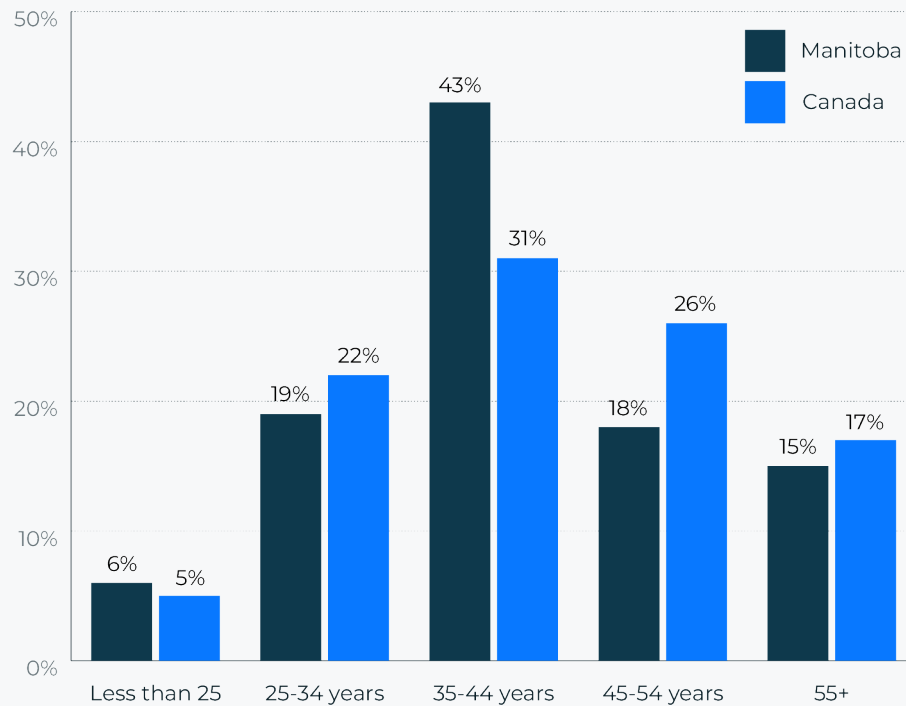


AGE DISTRIBUTION OF THE WORKFORCE

Within the electricity sector, the age profile of Manitoba's workers tends to be younger on average than the prevailing figures at the national level (*Figure 17*).

For instance, the share of workers aged 55 years and over in Manitoba's electricity sector is also smaller than in the national case (15% vs. 17%). Manitoba's electricity sector also has a higher share of workers between the ages of 35 and 44. However, Manitoba's electricity sector employs a smaller share of workers under the age of 35 than for Canada as a whole (25% vs. 27%).

Figure 17. Age Distribution (%), 2022



Source: Statistics Canada, Labour Force Survey, 2022.



DISTRIBUTION OF FEMALE EMPLOYMENT

The share of women working in Manitoba's electricity sector is much lower than the national average. In Manitoba, the share of women employed in the electricity sector is 18%, compared to 27% in Canada.

LEVEL OF EDUCATIONAL ATTAINMENT

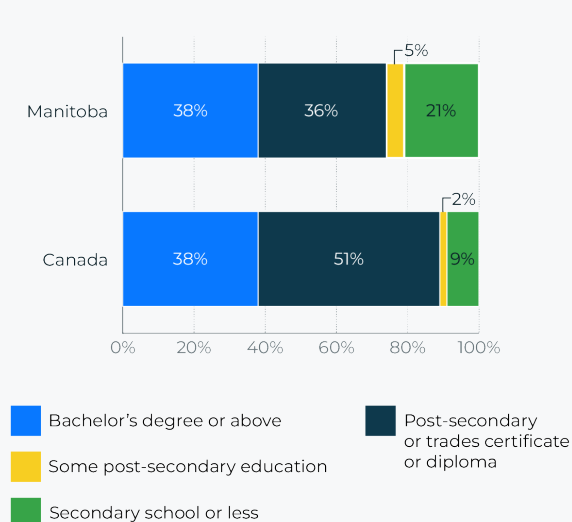
Educational attainment is relatively high in Canada's electricity sector, with more than one in three workers (38%) having attained a Bachelor's degree or above (Figure 18).

This figure is consistent in Manitoba (38%).

Manitoba's electricity sector employs a smaller share of workers with a post-secondary or trades certificate or diploma than in Canada (36% vs. 51%), and the province has a higher share of employees with secondary school or less (21% vs. 9%).



Figure 18. Educational attainment in the electricity sector, 2022



Source: Statistics Canada, Labour Force Survey, 2022.

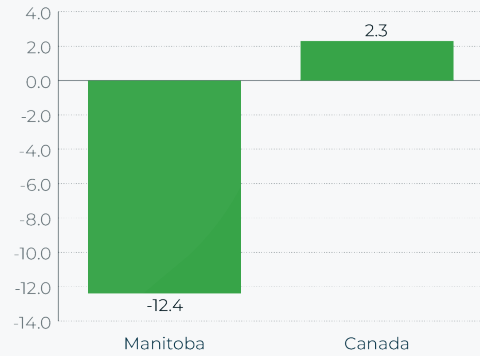


RECENT EMPLOYMENT TRENDS

On average, employment in Manitoba's electricity sector has contracted by 12.4% annually (2017 – 2022), while employment in Canada's electricity sector has expanded by 2.3% annually (*Figure 19*).



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



Source: Statistics Canada, Labour Force Survey, 2022.

