



Atlantic Canada's Energy Workforce

Regional Labour Market Outlook
to 2035

February 2024

Canada

Funded in part by the Government of Canada's Sectoral Workforce Solutions Program

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Key Insights



Atlantic Canada has a unique opportunity to diversify its energy industry

With relatively short shipping times to Europe, Atlantic Canada is well-positioned to play a vital role in meeting demand for secure energy, particularly in regions where energy supply is disrupted by geopolitical factors. Along with producing and refining crude oil, the region is projected to grow its biomass-based fuels and low-carbon hydrogen sectors.



Momentum growing for an integrated energy system and workforce

Atlantic Canada's energy industry is becoming increasingly integrated and so is its workforce. Foundational technology, equipment, skills and expertise are being expanded and applied in innovative ways to develop new low-carbon energy sources. Many qualifications required by the region's emerging energy sectors already exist within its established energy sectors.



Responding to global need for secure energy

As Atlantic Canada's energy industry responds to global demand for affordable and secure energy, it is simultaneously advancing sustainable practices and investing in low-carbon energy sources. Established and emerging sectors working together to provide low-carbon energy solutions will contribute to a robust and dynamic job market in Atlantic Canada.





Increase in quality energy jobs

Diversifying Atlantic Canada's energy industry increases the number of quality jobs in both established and emerging sectors. Transferable foundational skills and expertise across sectors provide job security, opportunities for career growth and horizontal career pathways while offering fair and competitive wages. Energy careers make meaningful contributions to society with their key role in ensuring a secure, affordable and low-carbon energy supply.

Two scenarios for Canada's energy future

Careers in Energy (CIE) evaluated two scenarios to project a potential range of workforce requirements to 2035. Many variables influence Canada's future energy workforce, such as uncertainty for how new energy sources will be scaled and the pace emissions-reduction technologies will be deployed. This outlook for Atlantic Canada's energy labour market reflects the following scenarios:



Current Measures

Based on investment and development leading to energy production and carbon sequestration *most likely* to occur based on announced plans, policies and programs as of July 2023.



Opportunity

Based on investment and development leading to energy production and carbon sequestration that could *realistically* occur if competitive policies, programs, incentives and economic conditions are in place.

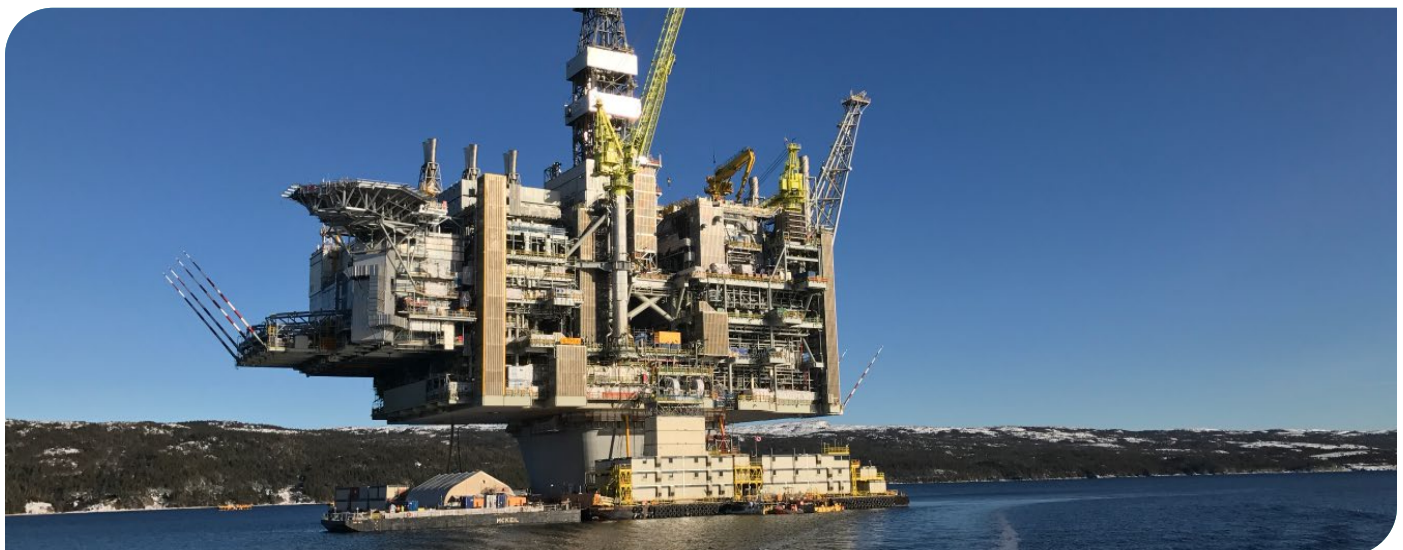


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By the numbers



9,200

people are directly employed by Atlantic Canada's energy industry (2023E for established and emerging sectors)



12,000

indirect jobs across Atlantic Canada are sustained annually to support the industry's operations supply chain



5,400

indirect jobs are created across the economy for every \$1 billion spent on energy capital projects



6 Canadian energy sectors are included in this outlook:

conventional exploration and production (E&P), energy services, pipelines, petroleum refining, low-carbon hydrogen and biomass-based fuels



81 occupations

are included in Careers in Energy's (CIE) labour market modelling system



2,700 to 3,000

direct jobs are projected to be added between 2022 and 2035



3,100

Atlantic Canadian energy workers are eligible to retire over the forecast period



2.4x

energy industry pays 2.4x the Canadian average total compensation



5,800 to 6,150

net hiring requirements are projected over the forecast period if Atlantic Canada's energy industry fills all job openings created by industry activity and retirements



Uniquely Positioned to Diversify and Export Low-Carbon Energy



Atlantic Canada has a significant opportunity to increase and diversify its energy production by **leveraging its low-carbon assets for domestic use and meeting global export demand**. Short shipping times to Europe position Atlantic Canada to play a vital role in meeting demand for secure energy supply, particularly in regions where supply is disrupted by geopolitical factors.

Like the rest of Canada's energy industry, the Atlantic region is tasked with a dual mandate of growing production to meet energy demand, while simultaneously pursuing a low-carbon future. The region's offshore oil will remain a vital component of a reliable and affordable energy future—even as momentum for other energy sources increases.

New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island directly employ about 9,200¹ energy workers responsible for the development and delivery of the region's energy resources. In addition, close to 12,000 indirect jobs are sustained annually in Atlantic Canada to support the industry's operations supply chain. Another 5,400 indirect jobs are created for every \$1 billion spent on energy capital projects.²

For decades, Atlantic Canada's energy industry has demonstrated resilience as it continues to innovate and operate in some of the most extreme environmental conditions. Now, the industry is responding to increasing demand for an accessible, affordable and secure energy

supply. Along with producing and refining oil, the region is producing biomass-based fuels and is in the early stages of leveraging its world-class wind resources to produce renewable power for low-carbon hydrogen. The region's low-carbon hydrogen can be converted to ammonia for export. Ammonia's higher density means larger volumes can be transported—safely shipped by train or vessel—and make use of existing global ammonia infrastructure.

Atlantic Canadians fill energy worker demand in Alberta

Data on the number of rotational workers in the energy industry is difficult to obtain, but skilled Atlantic Canadian workers have long been an important source of talent. Broad estimates indicate Alberta is regularly in excess of 10,000 rotational workers from Atlantic Canada per year.³



Germany expects a need of 90 to 110 terawatt-hours of hydrogen in 2030. We believe that Atlantic Canada presents a huge opportunity for us but also for Canada to contribute to a green energy transition. Canada is a close and like-minded partner in the energy transition.⁴

- Olaf Scholz, Chancellor of Germany

Expanding Canada's energy industry labour market outlook

This report provides an overview of the energy workforce projections for Atlantic Canada from 2022 to 2035, driven by the region's investment in oil production, low-carbon energy sources and new technology and emissions-reduction initiatives.

To more accurately reflect Canada's changing energy system, CIE expanded its labour market modelling system beyond the established oil and gas industry, including exploration and production (E&P), oil sands, energy services, pipelines and petroleum refining.

Canada's emerging energy sectors—liquefied natural gas (LNG), low-carbon hydrogen, biomass-based fuels and carbon capture and storage (CCS)—have been included for the first time as part of the national energy direct employment outlook (Figure 1). For this regional outlook, LNG export and CCS are not forecast to be part of Atlantic Canada's energy diversification initiatives.

Emerging energy sources and technologies contribute to decarbonization in Canada and offer nearer-term domestic and global solutions, particularly for hard-to-electrify sectors. While electrification—using low- or no-carbon power generation technologies as the energy source—is a significant strategy for reaching net-zero, it is not a universal option. For energy-intensive industrial sectors such as oil and gas production, heavy-duty transportation, and cement and steel manufacturing, electricity is not technically or financially feasible.⁵ Established and emerging sectors working together to provide low-carbon energy solutions can contribute to a robust and more dynamic job market in Canada.

Occupational scope

CIE's labour market modelling system includes 81 occupations as represented by the National Occupational Classification (NOC) system.⁶ Workforce projections are for those directly hired by companies⁷ involved in the forecasted production, operation and maintenance of in-scope sectors.⁸

National and other regional reports available

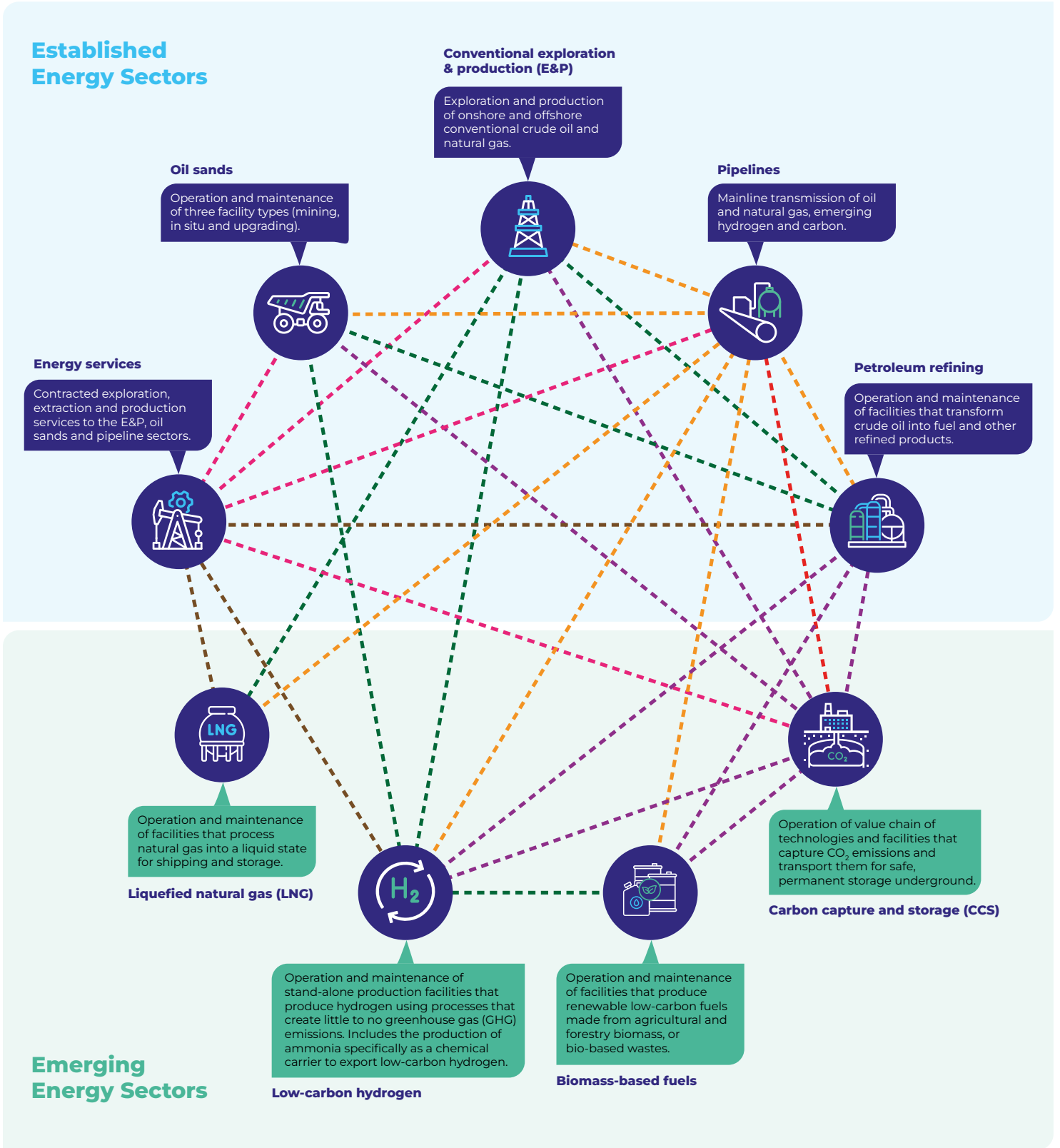
This report complements the *National Labour Market Outlook to 2035* and regional reports: *Western Canada and Central Canada*. Data, including workforce projections by year, region, sector and occupation, can be found online at [CareersinEnergy.ca](https://careersinenergy.ca)



Photo courtesy of Saint John LNG



Figure 1: Expanded sector scope of Careers in Energy's labour market modelling system



Legend

Transport product: required to transport product to customer



Transport CO₂: specific to CCS



Feedstock: produces raw materials required for energy source production



Feedstock production: key role in producing feedstock



Emissions reduction: energy source or technology that support reducing emissions



Contracted service: equipment, technology and workforce required for production process



Outlook Scenarios: Current Measures and Opportunity



Given variables that will influence Canada's future energy workforce, such as uncertainty for how new energy sources will be scaled and the pace emissions-reduction technologies will be deployed, **CIE used a scenario approach for projecting workforce requirements to 2035.**

CIE evaluated two scenarios to project a potential range of workforce requirements to 2035.⁹

- **Current Measures**, based on investment¹⁰ and development leading to energy production and carbon sequestration *most likely* to occur based on announced plans, policies and programs as of July 2023 (Figure 2).
- **Opportunity**, based on investment and development leading to energy production and

carbon sequestration that could *realistically* occur if competitive policies, programs, incentives and economic conditions are in place (Figure 2).

Scenario assumptions report available

Find detailed information on CIE's scenario approach and underlying assumptions online at [CareersinEnergy.ca](https://careersinenergy.ca)

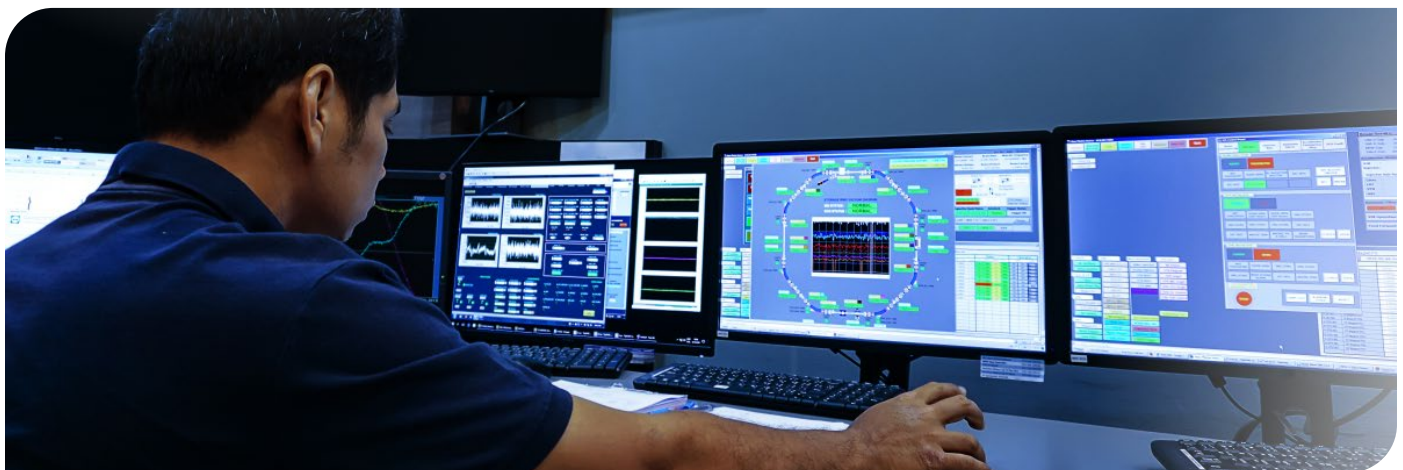
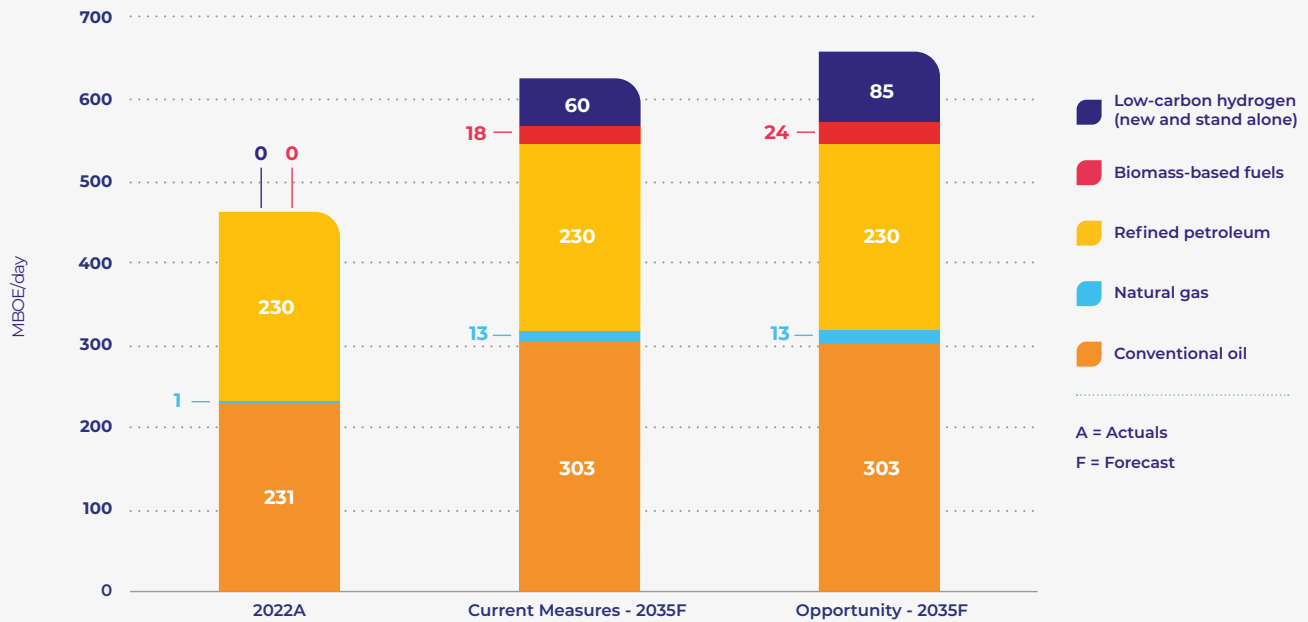


Figure 2: Atlantic Canada's production by energy sector, 2022 and both scenarios in 2035

In thousands of barrels of oil equivalent per day (MBOE/day)



Building on Atlantic Canada's energy strengths

This employment outlook for Atlantic Canada aligns with its regional strengths including crude oil production, petroleum refining, and development of energy decarbonization pathways including biomass-based fuels and low-carbon hydrogen.

Atlantic Canada scenario assumptions

Atlantic Canada is projected to experience the greatest diversification of its energy production mix of the three regions included in CIE's outlooks to 2035.

Oil production continues to play major role

Regardless of scenario, oil production is projected to rise with the Bay du Nord project anticipated to move

into operation by 2031. A small increase in natural gas production is also projected in both scenarios, driven by increased industrial demand in the region and northeast US during the winter season.

As we navigate the energy evolution, the lower-carbon oil produced offshore Newfoundland and Labrador will be a valued commodity, and as one of the lowest carbon projects in the world, Bay du Nord will have a significant role to play in meeting global energy demand. – Charlene Johnson, CEO, Energy NL



Refining petroleum remains stable

Production of refined petroleum products in Atlantic Canada is projected to remain stable in both scenarios over the forecast period, with enhanced focus on reducing emissions generated from the refining process. Emissions reductions are expected to be realized with the use of low-carbon hydrogen during the production process and co-processing end-use petroleum products with biomass-based fuels to create lower-carbon fuels.

*This [electrolyzer] unit is going to allow us to produce a form of hydrogen from the electrolysis process that will allow us to essentially turn down the other forms of hydrogen production that already take place in our refinery that are more carbon intensive.*¹²

– Andy Carson, Director of Energy Transition, Irving Oil Ltd.

Biomass-based fuels for transportation grow

Both scenarios project growth in biomass-based fuels to support the transportation sector. Reducing emissions with biomass-based fuels is anticipated to be more feasible than electrification for heavy transport and aviation, as they can be converted into liquid transportation fuels equivalent to fossil-based fuels. Additional biomass-based fuels production forecast in the **Opportunity Scenario** will depend on implementation of policies, programs and incentives to attract investment.

Low-carbon hydrogen production leverages wind power

Both scenarios assume the majority of low-carbon hydrogen produced in the Atlantic region to 2035 will be produced using onshore and offshore wind power and electrolysis technology. The **Opportunity Scenario** assumes 40% more low-carbon hydrogen production than the **Current Measures Scenario**, based on domestic deployment and export demand.



Energy industry characteristics differ across the Atlantic region

Workforce requirements for the Atlantic provinces are dependent on the characteristics of their energy industry. This outlook assumes each province will leverage and build upon its strengths.

New Brunswick produces small amounts of onshore natural gas and is home to Canada's largest petroleum refinery, the Irving Oil Refinery, in Saint John. There are five wood pellet plants in the province producing a form of biomass-based fuel mainly used for power generation as a replacement for coal and heating. Approximately 90% of production is exported to Europe through the Ports of Belledune and Halifax.¹³ An LNG import facility operates on the province's East Coast, but for the purposes of this outlook, is not in-scope.

Newfoundland and Labrador currently has four offshore oil production facilities—Hebron, Hibernia, Terra Nova and White Rose. A fifth, Bay du Nord, is projected to move into production during this outlook's forecast period. The province is also home to Braya Renewable Fuels, a petroleum refinery in Come-By Chance, that has been converted to produce renewable diesel and sustainable aviation fuels using corn oil, soybean oil and animal fats as feedstock. Onshore and offshore wind power offers significant opportunity to produce low-carbon hydrogen using electrolysis technologies.

Saint John LNG state-of-the-art LNG receiving terminal Canada's first LNG receiving and regasification terminal is located in Saint John, NB. It imports natural gas for distribution across Atlantic Canada and the northeast US. The facility provides more than 100 jobs for employees and contractors.¹⁴

Nova Scotia has not produced crude oil, crude oil equivalents or offshore natural gas since 2018 and does not have any refineries. However, there is significant potential to produce low-carbon hydrogen by leveraging the province's onshore and offshore wind power coupled with electrolysis technologies. Nova Scotia is also establishing itself as a low-carbon energy hub as many of the emerging energy companies establish their head offices in the province.

Using legacy oil and gas infrastructure for hydrogen EverWind Fuels Company's provincially approved low-carbon hydrogen project at Point Tupper, NS plans to use a former oil and gas storage facility for its operations.¹⁵

Prince Edward Island's oil and natural gas industry is in its infancy. It currently uses renewable electricity sources in energy sectors that are not included in-scope for this outlook. The Wind Energy Institute of Canada is located in the province, offering an opportunity to leverage research, demonstration and testing expertise as the region looks to grow its onshore and offshore wind energy.



Photo courtesy of Saint John LNG



Atlantic Canada Labour Market Outlook to 2035

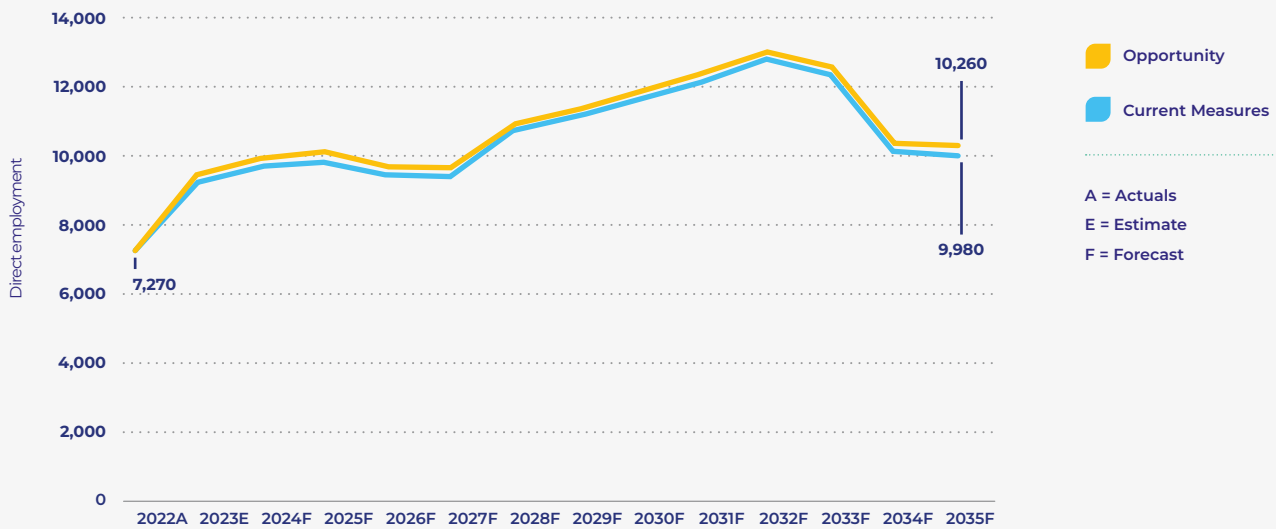


Atlantic Canada’s expanded energy industry is **projected to generate between 2,710 and 2,990 direct jobs** between 2022 and 2035.

In 2022, the baseline year for this outlook, in-scope sectors accounted for 7,270 direct jobs across Atlantic Canada. It is anticipated **2,710 new jobs will be generated by industry activity under the Current Measures Scenario** for a total of **9,980 direct jobs** by

2035. If the greater investment, production and industry activity assumptions are realized, **2,990 new jobs will be generated in the Opportunity Scenario**, for a total of **10,260 direct jobs** (Figure 3).

Figure 3: Direct employment by year, by scenario, 2022-2035



Workforce projections for the **Current Measures** and **Opportunity Scenarios** look fairly similar throughout the forecast period. Early growth in employment is driven by biomass-based fuels and low-carbon hydrogen production. Growth midway through the forecast period is due to the Bay du Nord offshore production facility moving into operation as well as additional low-carbon hydrogen production projects. The key difference in employment growth between the two scenarios is an increase in the amount of biomass-based fuels and low-carbon hydrogen production in the **Opportunity Scenario**. Projected job growth for the conventional E&P and energy services sector is the same in both scenarios and could peak in 2032 if potential offshore production declines are not offset.

While established energy sectors continue to generate the majority of new jobs, emerging sectors are key contributors to job growth in Atlantic Canada's energy industry to 2035 (Table 1).

Energy services and conventional E&P are projected to see job growth of approximately 45% and 23%, respectively. Offshore oil exploration may occur throughout the forecast period, but employment primarily grows in the middle years of the forecast when the Bay du Nord offshore platform becomes operational.

With a focus on decarbonization and the opportunity to capitalize on developing low-carbon energy for domestic use and export, Atlantic Canada's biomass-based fuels and low-carbon hydrogen sectors also add direct jobs.

Table 1: Direct employment and new jobs by sector, by scenario, 2022-2035

	Sector	Direct employment in 2022A	Current Measures		Opportunity	
			Employment in 2035F	# and % change	Employment in 2035F	# and % change
	TOTAL	7,270	9,980	2,710 (37%)	10,260	2,990 (41%)
Established energy sectors	Conventional E&P	3,450	4,240	790 (23%)	4,240	790 (23%)
	Energy services	2,440	3,540	1,100 (45%)	3,540	1,100 (45%)
	Pipelines	140	110	-30 (-21%)	110	-30 (-21%)
	Petroleum refining	1,240	1,240	0	1,240	0
Emerging energy sectors	Biomass-based fuels	minimal*	660	660 (all new jobs)	880	880 (all new jobs)
	Low-carbon hydrogen	minimal*	180	180 (all new jobs)	250	250 (all new jobs)

* The small number of workers currently working in these emerging sectors in 2022 were not quantified for this outlook. Numbers may not add up due to rounding.

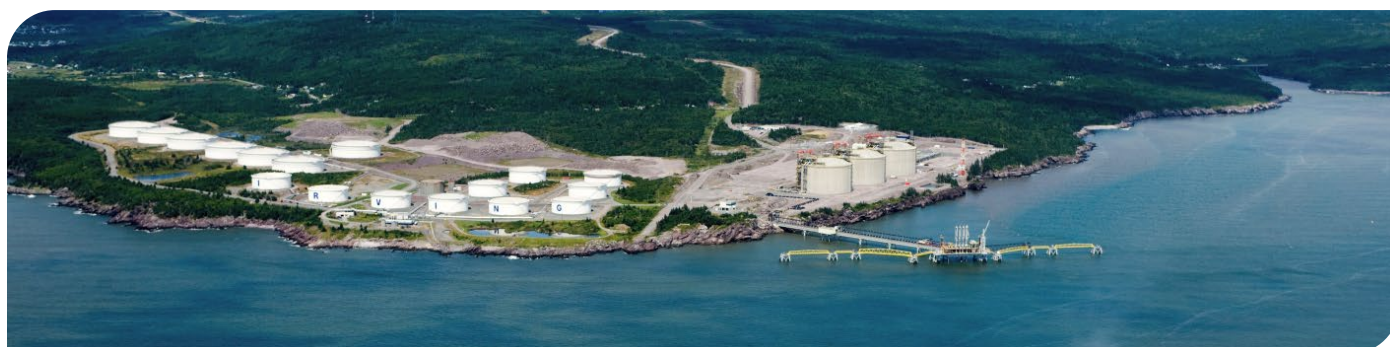


Photo courtesy of Irving Oil



Energy jobs are quality jobs

Pay, hours of work, future prospects, hard work, job content, interpersonal relationships and skills alignment are seven essential factors that emerge as indicators of job quality, or what is considered a “good” job.¹⁶

Energy jobs demonstrate many of these qualities.

- Greater job security and opportunities for career growth as the diversification of Canada's energy industry will rely heavily on similar occupations, skills and expertise of the established energy workforce to deploy emerging energy sources and emissions-reduction technologies.
- Opportunities to make meaningful contributions to society as the globe looks to decarbonize while addressing growing demand for affordable, accessible energy.
- Workers seek fair and competitive pay that reflects and recognizes the value of their skills, experience and ensures financial stability.

Jobs in the energy industry are the highest paying amongst Canada's largest sectors. In 2022, established and emerging energy sectors included in CIE's outlook paid an average total compensation of \$173,760—2.4x more than the national average of \$72,640.¹⁷

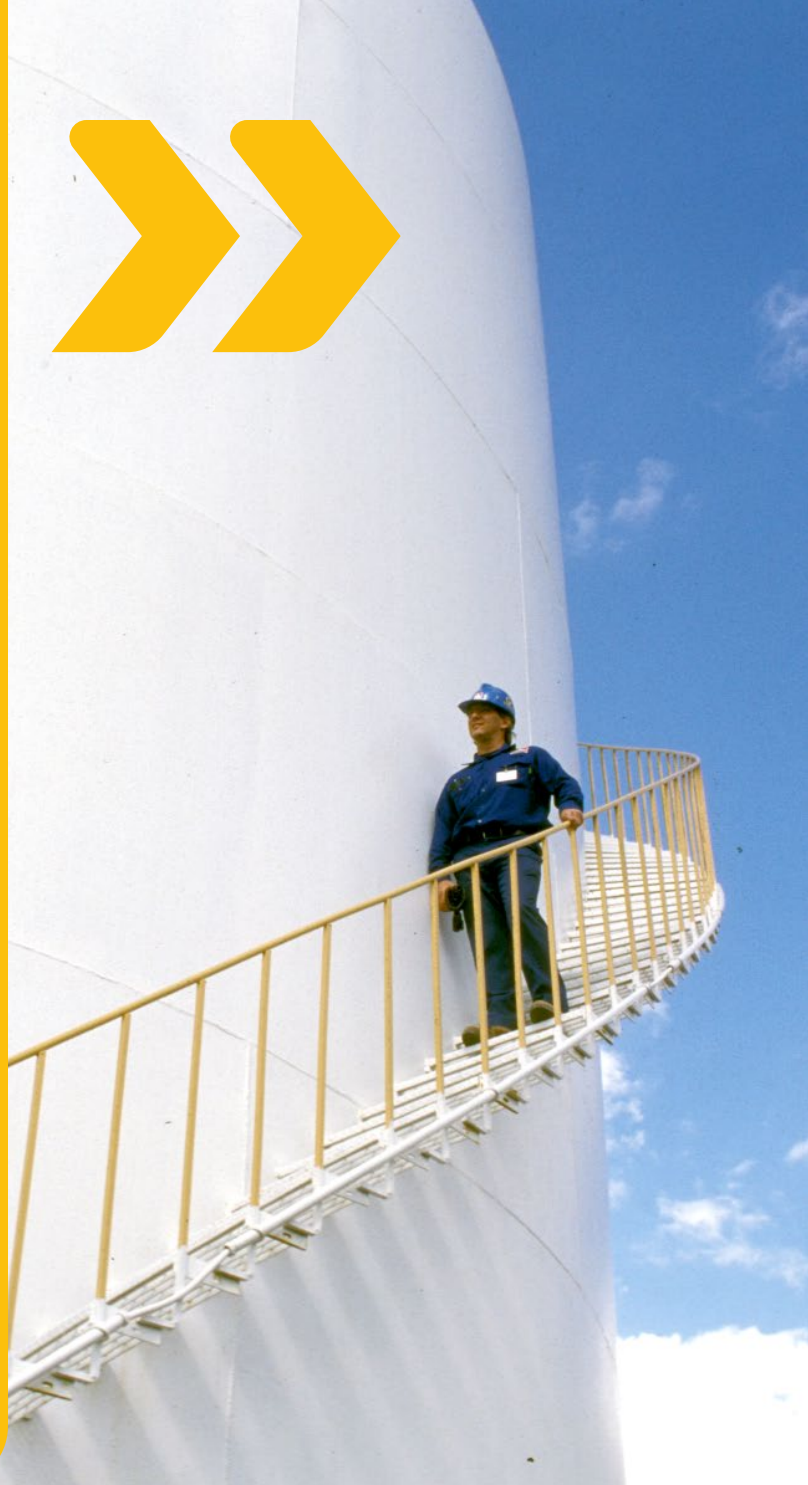


Photo courtesy of Canadian Association of Petroleum Producers (CAPP)

Emerging sectors outperform in job growth

Over the forecast period, Atlantic Canada's emerging sectors outperform in employment growth compared to their percentage of the overall workforce.

In 2022, emerging energy sectors did not account for any significant employment in Atlantic Canada. The

Current Measures Scenario projects they will account for 31% of new jobs and increase their percentage of the total workforce to 8% by 2035. The **Opportunity Scenario** forecasts emerging sectors will account for 38% of new jobs and 11% of the total workforce by 2035 (Figure 4).



Figure 4: New jobs and percentage of workforce, established and emerging sectors, by scenario, 2022-2035



CIE's labour market modelling system also provides projections for job growth due to industry activity at an occupational level. Table 2 lists the top 10 occupations projected to experience the most hiring due to increased industry activity and production.

Looking at the percentage of increase across the industry, the average rate of occupational growth from 2022 to 2035 is between 38% and 41%, depending on the scenario. Occupations experiencing a higher-than-

average growth rate are those that are more likely needed across both established and emerging sectors. Occupations experiencing lower-than-average growth may be more focused on a particular sector within Atlantic Canada's expanded energy system. They may also represent occupations impacted by deployment of technologies designed to increase operational efficiency.

Table 2: Top 10 occupations with greatest hiring due to industry activity, by scenario, 2022-2035

Occupation (NOC)	Current Measures	Opportunity
	# of new jobs added and % change	# of new jobs added and % change
TOTAL	2,700 (38%)	2,990 (41%)
Central control, process and plant operators (9210, 9310, 94110, 9414)	230 (30%)	280 (36%)
Energy drilling, servicing and related labourers, workers and operators (83101, 84101, 85111)	170 (36%)	170 (36%)
Transport truck drivers (73300)	110 (48%)	120 (52%)
Contractors and supervisors, oil and gas drilling and services (82021)	100 (34%)	100 (33%)
Managers in natural resources production (80010)	80 (43%)	80 (43%)
Technical sales (6001, 6210, 6410, 6440)	70 (59%)	80 (68%)
Heavy equipment operators (73400)	70 (25%)	70 (25%)
Procurement and purchasing agents and officers (12102)	70 (46%)	70 (48%)
Information technology (20012, 212111, 2122, 2123, 21311, 2222)	60 (32%)	60 (36%)
Managers in manufacturing and utilities (9001)	50 (74%)	70 (96%)



Occupations projected to experience the greatest job growth across a diversified energy system in Atlantic Canada include:

- > **Central control, process and plant operators** will be in greater demand to operate the additional offshore oil production platform and facilities producing low-emissions fuels such as low-carbon hydrogen and biomass-based fuels. These complex facilities will use state-of-the-art technologies such as those already found in established energy sectors.
- > **Energy drilling, servicing and related labourers, workers and operators, and contractors and supervisors** will be required to support continued exploration, growth and maintenance of both onshore and offshore oil and natural gas production.
- > **Transport truck drivers and occupations involved in the distribution of materials and energy** will be in demand to support growth and diversification of the energy system.
- > **Managers in natural resources production** will be needed to oversee and ensure safe and efficient production operations and facilities in both established and emerging energy sectors.
- > **Technical sales and procurement occupations** will grow, driven by the need to diversify customers for Atlantic Canada's low-carbon energy sources and

develop new supply chains to produce low-carbon hydrogen and biomass-based fuels.

- > **Heavy equipment operators** will primarily support the onshore movement of materials required by offshore energy production.
- > **Information technology occupations** will play an increasingly important role as advanced technologies are deployed industry-wide to automate some operations, improve safety, enhance decision-making and efficiency, and conduct real-time monitoring of assets. New energy infrastructure will also utilize the most advanced digital technologies available.
- > **Managers in manufacturing and utilities** will be needed to support expansion into emerging sectors, including low-carbon hydrogen that will use renewable power in its production process.

Access detailed data on CIE's interactive dashboard
Find all the information and data from this labour market outlook—including projections by year, sector and occupation—online at [CareersinEnergy.ca](https://careersinenergy.ca)



Net Hiring Requirements



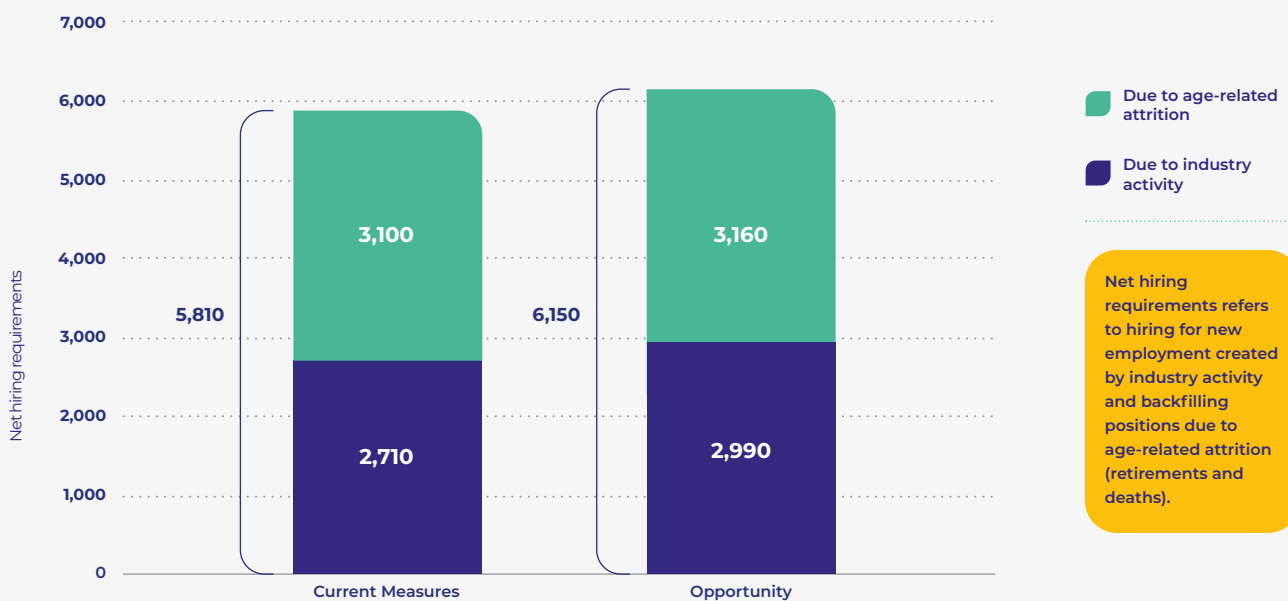
Based on annual age-related attrition rates, approximately **3,100 energy workers in Atlantic Canada are eligible to retire** over the forecast period to 2035.

Hiring for age-related attrition outpaces industry activity

By contrast, industry activity is expected to drive hiring of between 2,710 and 2,990 workers, depending on the scenario. This means hiring for age-related attrition outpaces industry activity.

If Atlantic Canada's energy industry replaces all job openings created by age-related attrition, those, combined with industry activity, could result in **net hiring requirements of between 5,810 and 6,150 jobs** over the forecast period, depending on the scenario (Figure 5).

Figure 5: Atlantic Canada net hiring requirements forecast, by scenario, 2022-2035



Near-term risk of an aging workforce

Having already realized efficiencies and a leaner workforce due to restructuring during the COVID-19 pandemic and the preceding industry downturn, companies will likely need to fill job openings created by both expanded activity levels and age-related attrition in the near-term. Attracting enough talent to expand and diversify Atlantic Canada’s energy system is likely to be a challenge, in part due to the small local labour pools available where projects are planned.

Over time, shifting skill requirements due to the adoption of digital solutions such as automation, remote monitoring, artificial intelligence (AI) and machine learning (ML) may decrease urgency to replace

retiring workers. However, industry may not be able to implement digital solutions at the same pace as the growing talent gap.

The magnitude of hiring requirements due to age-related attrition will have greater impact on established energy sectors, simply due to the size of their existing workforce. Age demographics of established energy sectors create potential for more job vacancies due to retiring workers than those generated by increased industry activity. For emerging sectors—where seasoned workers can assist with knowledge gaps and problem-solving that can arise during start-up phases of new operations and technologies—the loss of experienced workers may be felt more keenly. For emerging sectors, industry activity will be the larger driver of net hiring.

Table 3: Atlantic Canada net hiring requirements (NHR) by sector, by scenario, 2022-2035

Sector	Current Measures			Opportunity			
	Industry activity	Age-related attrition	NHR	Industry activity	Age-related attrition	NHR	
TOTAL	2,710	3,100	5,810	2,990	3,160	6,150	
Established energy sectors	Conventional E&P	790	1,040	1,830	790	1,040	1,830
	Energy services	1,100	1,240	2,340	1,100	1,240	2,340
	Pipelines	-30	30	0	-30	30	0
	Petroleum refining	0	470	470	0	470	470
Emerging energy sectors	Biomass-based fuels	660	250	910	880	330	1,210
	Low-carbon hydrogen	180	70	250	250	50	300

Numbers may not add up due to rounding



Photo courtesy of Irving Oil

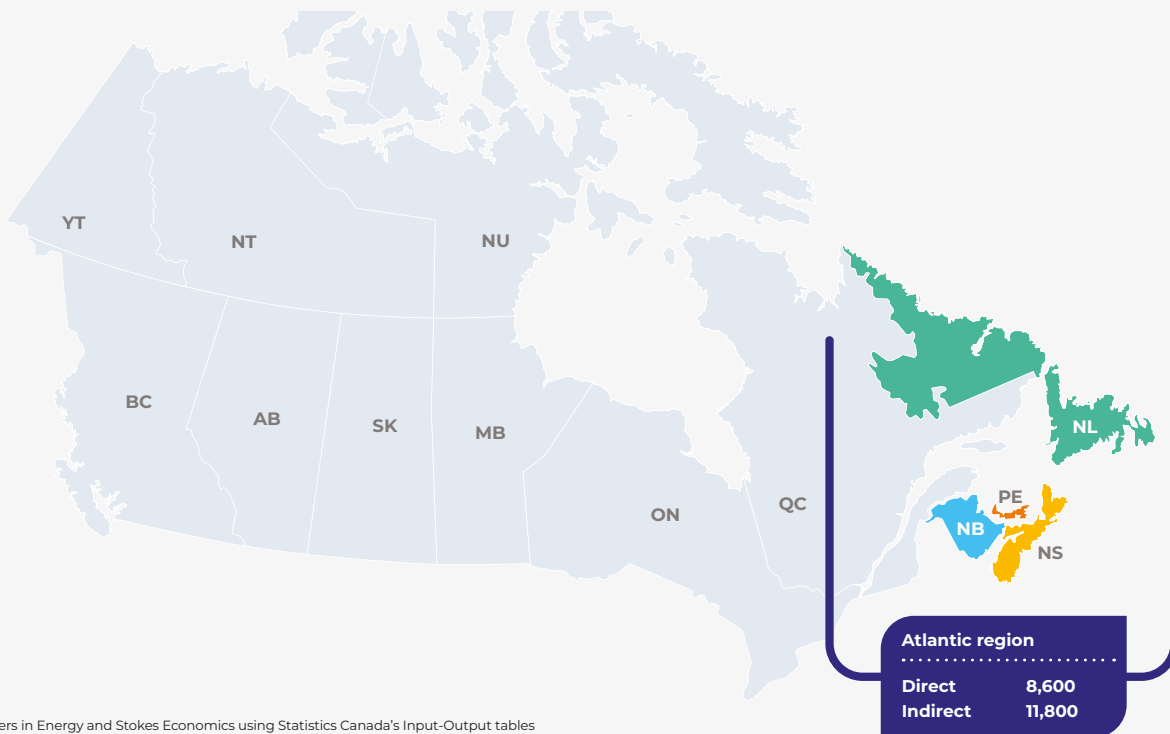


Indirect Employment



In addition to jobs directly hired for the production, operation and maintenance of CIE’s in-scope sectors, **thousands of jobs are generated across the Atlantic Canadian economy** in sectors providing goods and services to industry’s operations supply chain and capital projects.

Figure 6: Atlantic region direct employment and indirect jobs supported by established energy sector operational spending, 2023



Source: Careers in Energy and Stokes Economics using Statistics Canada's Input-Output tables
2023 estimate for direct employment in this figure is for established energy sectors only.



These employment opportunities, referred to as the energy industry's "indirect jobs", are significant in numbers. In 2023, **11,800 indirect jobs** were supported in Atlantic Canada from operational spending by established energy sectors (Figure 6). These indirect jobs are in sectors providing a broad range of goods and services required to sustain ongoing operations in conventional E&P, oil sands, energy services, pipelines and refineries. As the energy industry expands as projected in this outlook, the number of indirect jobs required to sustain operations is also expected to increase.

Indirect jobs generated by established energy sector operational spending span a variety of industries, including:

- > Professional, scientific and technical services
- > Wholesale and retail trade
- > Finance, insurance, real estate, rental and leasing
- > Administrative and support, waste management and remediation services
- > Transportation and warehousing
- > Manufacturing
- > Repair construction
- > Accommodation and food services
- > Mining and quarrying
- > Government services
- > Utilities
- > Information and culture

Energy-related construction drives thousands of jobs

An additional **5,400 indirect jobs** are created across the economy for every **\$1 billion spent on developing and constructing energy infrastructure projects**.¹⁸ Sectors

seeing the greatest employment benefit from the energy industry's capital project spending include:

- > Oil and gas engineering construction
- > Legal, accounting and architectural, engineering and related services
- > Wholesale trade
- > Machinery and fabricated metal manufacturing

Major refinery turnaround employed 2,300 skilled workers

In September 2023, Irving Oil Ltd. initiated one of its largest turnaround projects at its Saint John refinery. Operation Ram, as the project was called, required a capital investment of \$190 million. The maintenance project was undertaken to ensure continued safe, sustainable and reliable operations of Canada's largest refinery. Operation Ram took approximately seven weeks, employed an additional 2,300 skilled workers and generated significant economic benefits to the regional economy, including boosts to short-term accommodations, recreation services, restaurants, retail and other sectors.¹⁹

The methodology used to determine the number of indirect jobs generated by energy spending relies on a historical relationship, so only indirect jobs associated with investment by established energy sectors can be estimated.²⁰ The relationship between investment in emerging energy sectors and generation of indirect jobs is yet to be determined.



Labour Supply and Demand Analysis



Labour shortages in the energy industry returned with recovery from the impacts of COVID-19.

CIE's labour market modelling system indicates labour shortages that affected industry with the recovery from the COVID-19 pandemic and increased demand for energy are likely to continue.

Hiring due to industry activity and age-related attrition is projected to create a tight labour market for the duration of the forecast period to 2035. All in-scope occupations are forecast to experience a labour shortage.

A full labour supply and demand analysis can be found in the *National Labour Market Outlook to 2035* online at [CareersinEnergy.ca](https://careersinenergy.ca)



Photo courtesy of Canadian Association of Petroleum Producers (CAPP)



Conclusion: Atlantic Canada's Opportunity to Diversify and Export Low-Carbon Energy



Looking ahead to 2035, Atlantic Canada is expected to remain a significant producer of oil and refined petroleum products and has a **considerable opportunity to diversify and expand into emerging low-carbon energy sources.**

Atlantic Canada is projected to diversify its energy system more than other regions in Canada. The region's energy industry is forecast to invest in biomass-based fuels production and leverage the availability of world-class renewable wind power and electrolysis to produce low-carbon hydrogen. In addition, Canada's East Coast offers a gateway to Europe to meet growing demand and supply reliable, low-carbon energy, particularly to regions disrupted by geopolitics.

In 2023, some progress was made to build a more robust energy system including; the announcement of a modified Atlantic Loop; direction was given on how to replace coal-fired generation; legislation progressed to enable hydrogen projects; decisions on major hydrogen export opportunities were made; the beginning of an offshore wind industry was put into motion; and new solar and wind projects were brought online.²¹

– Stephen MacMackin, Chair of Atlantica Centre for Energy



PEI East Point Wind Farm



Atlantic Canada's evolving energy system is anticipated to generate high-quality, well-paying jobs for years to come. Established energy sectors will continue to be the mainstay of employment in the region. Emerging sectors of biomass-based fuels and low-carbon hydrogen are expected to create new opportunities, outperforming in job growth relative to their percentage of the total energy workforce.

Specific knowledge and skills may be required to work in Atlantic Canada's emerging sectors, but many foundational core qualifications already exist within the current workforce. Reskilling and upskilling through short, competency-based learning opportunities, such as those offered through micro-credential programs, may be key to career resiliency for energy workers.

The impact of age-related attrition and need to address job vacancies due to retiring workers is significant and potential productivity risks of an aging workforce exist, especially in the near-term. Established sectors will feel the loss due to the sheer number of retirements, whereas emerging sectors will feel the loss of experience more keenly.

To attract and retain talent, Atlantic Canada's energy industry needs to continue focusing on:

- Advocating for its role as a global leader in providing secure, stable and sustainable energy and solutions to global climate concerns.
- Strengthening the opportunity for talent to build resilient energy careers with flexible career paths, training and development opportunities, career mobility and succession planning.
- Implementing policies and programs for diverse, equitable and inclusive workplaces to enhance the ability to tap into under-utilized talent pools.

This *Regional Labour Market Outlook to 2035* is one of a number of tools and resources developed by CIE to build a roadmap that will support a robust energy sector for decades to come.

Dig deeper into CIE's labour market information

Find national and regional labour market information and data in CIE's labour market outlook reports online at [CareersinEnergy.ca](https://careersinenergy.ca)



Endnotes

- ¹ Careers in Energy and Stokes Economics, 2023 estimate for both established and emerging in-scope energy sectors. This differs from the 2023 estimate for direct employment in Figure 6, which is for established energy sectors only.
- ² Careers in Energy and Stokes Economics using Statistics Canada Input-Output tables, 2023.
- ³ Fraser Institute. (2021, September). *Voting with Their Feet: Migration in Atlantic Canada*. <https://www.fraserinstitute.org/sites/default/files/voting-with-their-feet-migration-in-atlantic-canada.pdf>
- ⁴ CBC/Radio Canada. (2022, August 24). "Hydrogen Alliance" formed as Canada, Germany sign agreement on exports. CBC news. <https://www.cbc.ca/news/canada/newfoundland-labrador/canada-germany-hydrogen-partnership-nl-1.6559787>
- ⁵ Workforce requirements for Canada's electricity sector are produced by Electricity Human Resources Council (EHRC) and can be found here: https://electricityhr.ca/wp-content/uploads/2023/10/EHRC_LMIReport-EN-2.pdf
- ⁶ Statistics Canada uses the National Occupational Classification (NOC) system to identify and categorize jobs (occupations) based on the training, education, experience and responsibilities they require.
- ⁷ Investment in the in-scope sectors will generate further indirect employment opportunities across other industries such as engineering, finance and insurance, fabrication, accommodation and transportation. An analysis of indirect employment associated with the in-scope sectors can be found on pages 22 and 23.
- ⁸ Construction workforce is not included, although it is recognized that expanding Canada's energy system will require significant new infrastructure. Construction workforce is a critical component to seeing necessary build being completed on time and on budget. Workforce projections for Canada's construction industry can be found at BuildForce: <https://www.buildforce.ca/en>
- ⁹ Scenarios were developed with the guidance of an Energy Scenarios Working Group and consultation with industry to help fine-tune energy production assumptions from a variety of sources including Canada Energy Regulator, Environment and Climate Change Canada, and Rystad Energy. More detailed information on scenario assumptions can be found online at [CareersinEnergy.ca](https://careersinenergy.ca)
- ¹⁰ CIE's labour market model takes capital and operational expenditures into account for the conventional exploration and production, oil sands and energy services sectors. Further details can be found in the methodology report online at [CareersinEnergy.ca](https://careersinenergy.ca)
- ¹¹ Oliver, J. (2023, August 14). *Energy NL CEO statement regarding Equinor Exploration Program*. Energy NL. <https://energy.nl.ca/2023/08/energy-nl-ceo-statement-regarding-equinor-exploration-program/>
- ¹² McLean, T. (2022, July 14). *Irving oil to introduce hydrogen to regional market*. Huddle.Today. <https://huddle.today/2022/07/13/irving-oil-to-introduce-hydrogen-to-regional-market/>
- ¹³ Atlantica Centre for Energy. (2022, November 21). *Bioheat: A natural solution for the Maritimes*. <https://www.atlanticaenergy.org/bioheat-a-natural-solution-for-the-maritimes/#:~:text=New%20Brunswick%20is%20home%20to,institutional%20buildings%20in%20New%20Brunswick>
- ¹⁴ Saint John LNG. (n.d.). *About Saint John LNG*. <https://www.saintjohnlng.com/about-saint-john-lng>
- ¹⁵ Laroche, J. (2023, February 7). *Province approves Green Hydrogen Project for Point Tupper*. CBCnews. <https://www.cbc.ca/news/canada/nova-scotia/proposed-green-hydrogen-project-in-point-tupper-approved-1.6740003>
- ¹⁶ LMIC (2023, November 14). *What is a "good" job?* Labour Market Information Council. <https://lmic-cimt.ca/what-is-a-good-job/>
- ¹⁷ Statistics Canada. Table 36-10-0489-05. Total compensation per job, by NAICS industry.
- ¹⁸ Careers in Energy and Stokes Economics using Statistics Canada's Input-Output tables.
- ¹⁹ Irving Oil. (2023, August 9). *Irving Oil announces major refinery turnaround – \$190-million investment will bring an additional 2,300 skilled workers on site*. <https://www.irvingoil.com/en-CA/press-room/irving-oil-announces-major-refinery-turnaround-190-million-investment-will-bring>
- ²⁰ The methodology used to determine the indirect employment generated by investment in Atlantic Canada's established energy industry is separate from Careers in Energy's modelling system used to determine direct employment. The economic impact analysis presented uses interprovincial, inter-industry input-output tables of the economy published by Statistics Canada to estimate the economic impacts (including employment impacts) of specific industry expenditures on other industries and across provinces.
- ²¹ MacMackin, S. (2024, January 23). *Will 2024 be a pivotal year for energy transition?* Atlantica Centre For Energy. <https://www.atlanticaenergy.org/will-2024-be-a-pivotal-year-for-energy-transition/>



Acknowledgements and Disclaimer

The Careers in Energy division of Energy Safety Canada gratefully acknowledges the Government of Canada for the funding to undertake and complete this study.

Careers in Energy is also grateful for the time and expertise provided by the following organizations:

- Advanced Biofuels Canada
- Atlantica Centre for Energy
- Avatar Innovations
- Canadian Association of Energy Contractors (CAOEC)
- Canadian Fuels Association (CFA)
- Canadian Association of Geophysical Contractors (CAGC)
- Canadian Association of Petroleum Producers (CAPP)
- Carbon Management Canada (CMC)
- Enbridge Inc.
- Energy Futures Lab
- Energy NL
- Enserva
- geoLOGIC systems Ltd.
- LNG Canada
- Myriad Consulting Inc.
- Pathways Alliance
- Precision Drilling Corporation
- Rystad Energy
- Shell Canada Ltd.
- Treeline Well Services LP.

Thank you to the following contributors who were essential to the development of this report:

- Creative Links International Inc.
- Stokes Economics
- Systematic Solutions Inc.
- Beanstalk Communications Inc.
- Mario Scaffardi Design Inc.



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Published February 2024*

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Careers in Energy, a division of Energy Safety Canada, is the leading authority on labour market information and trends in Canada's energy industry. We engage and inform people about careers in energy, removing barriers to information, addressing industry and worker needs, and providing the resources and tools needed to maintain and build a skilled energy workforce for today and tomorrow.

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Funded in part by the Government of Canada's
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