



# Western Canada's Energy Workforce

Regional Labour Market Outlook  
to 2035

**February 2024**

**Canada**

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# Key Insights



## Western Canada's energy continues to be significant for Canada

Western Canada's abundant resources make the region a significant player in North America's energy landscape and major contributor to the Canadian economy. Western Canada's energy industry generates direct and indirect jobs, invests in vital infrastructure and contributes to government revenues.



## An integrated energy system and workforce

Western 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 and deploy emissions-reduction technologies. Many of the qualifications required by the region's emerging energy sectors already exist within established energy sectors.



## Responding to the emissions challenge

Western Canada's energy industry is responding to the need for affordable and secure energy while simultaneously advancing sustainable practices, investing in low-carbon energy sources and adopting leading-edge technologies to achieve emissions-reduction goals. Established and emerging sectors working together to provide low-carbon energy solutions will contribute to a robust and dynamic job market in Western Canada.







## Increase in quality energy jobs

Diversifying Western 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 Western 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.



Photo courtesy of ARC Resources Ltd.



# By the numbers



**182,000**

people are directly employed by Western Canada's energy industry



**280,000**

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



**5,400**

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



## 9 Canadian energy sectors are included in this outlook:

conventional exploration and production (E&P), oil sands, energy services, pipelines, petroleum refining, liquefied natural gas (LNG), low-carbon hydrogen, biomass-based fuels and carbon capture and storage (CCS)



**81** occupations

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



**38,800 to 43,200**

direct jobs are projected to be added between 2022 and 2035



**63,000**

energy workers are eligible to retire over the forecast period



**2.4x**

energy industry pays 2.4x the Canadian average total compensation



**102,100 to 107,100**

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



# Meeting the Challenge of Sustainable, Secure and Stable Energy



Western Canada will continue playing a **vital role in supplying accessible, affordable and secure energy** to North America while expanding its global export capacity.

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

Western Canada's energy industry directly employs about 182,000 people<sup>1</sup>—90% of the country's total energy workforce. These workers are responsible for the development and delivery of the region's vast resources, including Canada's largest oil and natural gas producing basin, the Western Canadian Sedimentary Basin (WCSB), and Alberta's oil sands.

In addition, about 280,000 indirect jobs are generated annually in support of industry's operations supply chain. Another 5,400 indirect jobs are created for every \$1 billion spent on energy capital projects.<sup>2</sup>

For the purpose of this report, Western Canada's energy industry includes British Columbia, Alberta, Saskatchewan and Manitoba.

The region's history demonstrates resilience in the face of new challenges, navigating major disruptions such as

geopolitical unrest and the global COVID-19 pandemic. Its track record of successfully innovating and deploying cutting-edge technology, such as horizontal drilling and hydraulic fracturing, has enabled industry to unlock natural gas reserves from shale rock formations, and use steam-assisted gravity drainage (SAGD) to access in situ oil sands deposits too deep to reach by open-pit mining.

Western Canada's energy industry is now responding to the challenge of meeting increased demand while advancing sustainable practices, investing in low-carbon energy sources and adopting leading-edge technologies to achieve emissions-reduction goals. To build a low-carbon future, it will lean on its established energy sources, expertise and technology to expand and evolve.

***Canada's energy sector has the potential to offset the risks associated with a turbulent transition to NZE [net-zero emissions] by providing a secure and increasingly cleaner source of energy to trading partners.<sup>3</sup>***

- Stu Morrow, Chief Investment Strategist, Morgan Stanley Wealth Management Canada



## Expanding Canada's energy industry labour market outlook

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

To more accurately reflect the changes to Canada's energy system, Careers in Energy (CIE) has 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 energy direct employment outlook (Figure 1).

These emerging energy sources and technologies contribute to decarbonization in Canada and offer nearer-term national 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.<sup>4</sup> Established and emerging sectors working together to provide low-carbon energy solutions will contribute to a more robust and dynamic job market in Canada.

### Occupational scope

CIE's labour market modelling system includes 81 occupations as represented by the National Occupational Classification (NOC)<sup>5</sup> system. Workforce projections are for those directly hired by companies<sup>6</sup> involved in the forecasted production, operations and maintenance of in-scope sectors.<sup>7</sup>

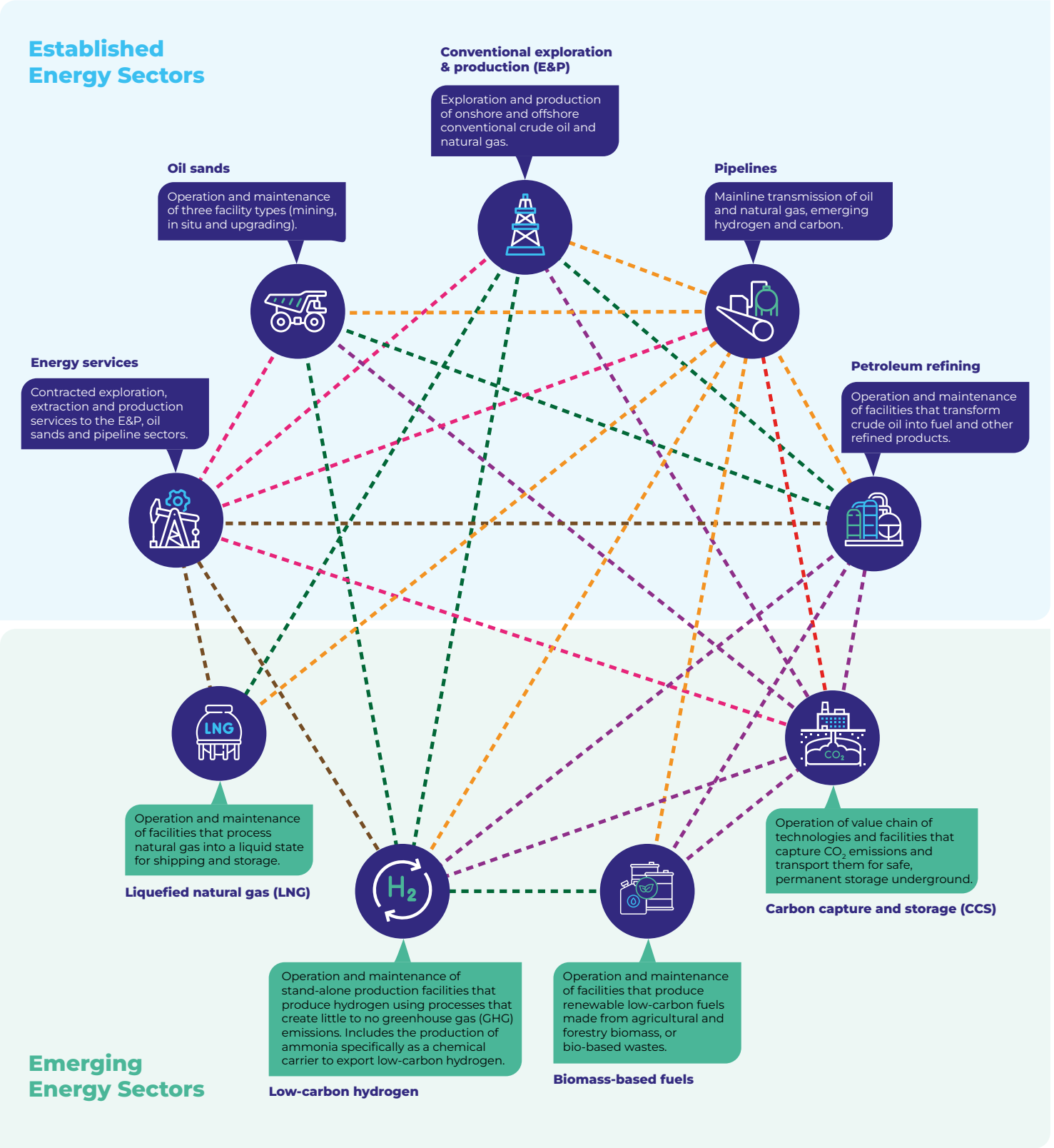
### National and other regional reports available

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





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



Legend	Transport product: required to transport product to customer	Transport CO <sub>2</sub> : 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
	Orange dashed line	Red dashed line	Green dashed line	Brown dashed line	Purple dashed line	Pink dashed line



## Outlook Scenarios: Current Measures and Opportunity



Given the 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.<sup>8</sup>**

CIE evaluated two scenarios to project a potential range of workforce requirements to 2035.

- > **Current Measures**, based on investment<sup>9</sup> 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, Figure 3 and Figure 4).
- > **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, Figure 3 and Figure 4).

### Scenario assumptions report available

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

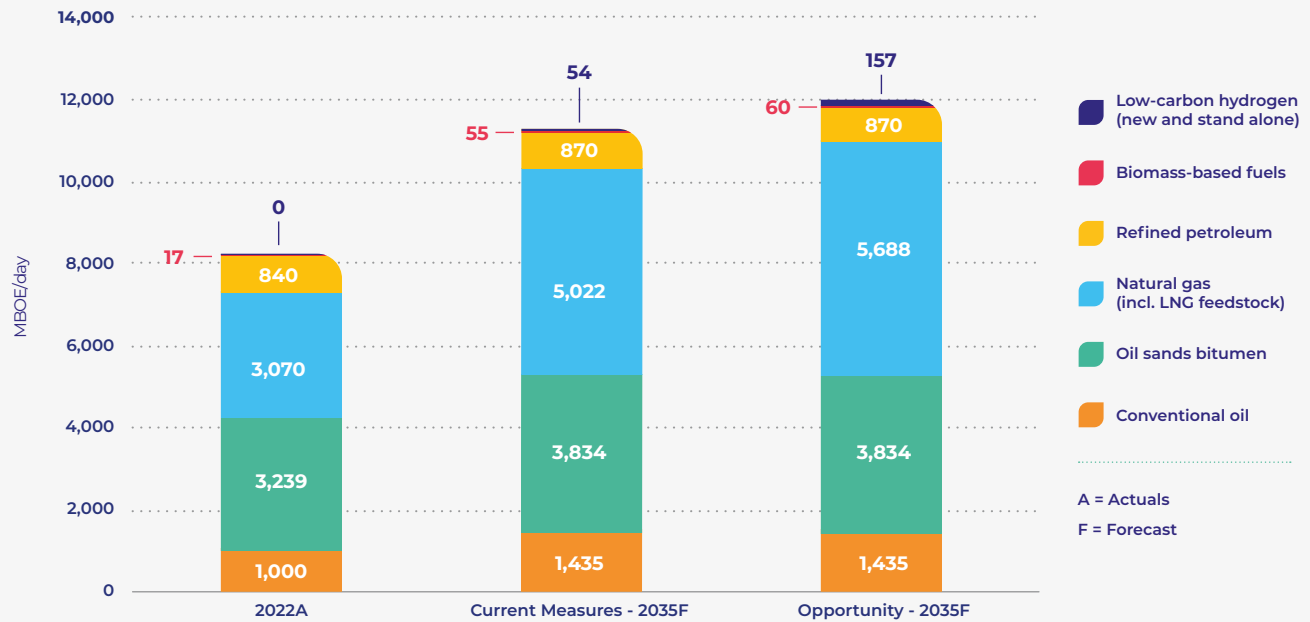


Photo courtesy of LNG Canada



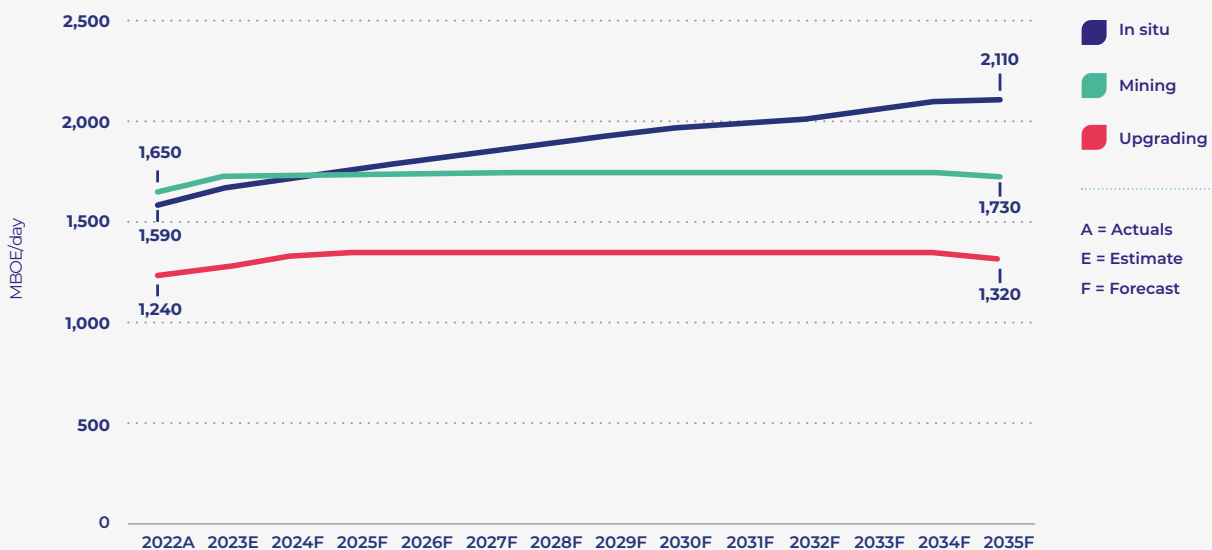
**Figure 2: Production by energy sector, 2022 and both scenarios in 2035**

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



**Figure 3: Western Canada's oil sands production by operations type, 2022 and both scenarios in 2035**

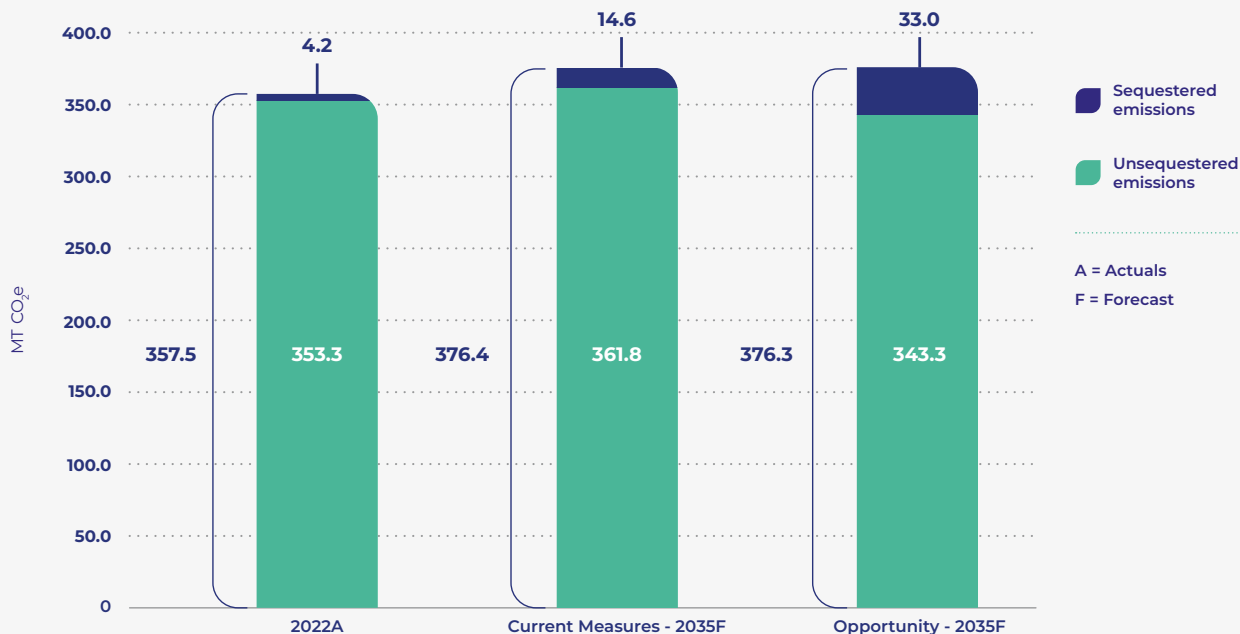
In thousands of barrels of oil equivalent per day (MBOE/day)





**Figure 4: Oil and gas and industrial CO<sub>2</sub> emissions and sequestration, 2022 and both scenarios in 2035**

In megatonnes of carbon dioxide equivalent (MT CO<sub>2</sub>e)



## Western Canada scenario assumptions

### Oil and natural gas continue to play major role

Regardless of scenario, oil and natural gas production is projected to rise, with an upswing in natural gas production to support domestic demand and LNG export requirements. Oil sands production gains are achieved by optimizing and expanding existing facilities, rather than new operations, with the pace of growth varying across facilities. A significant focus on emissions-reduction technologies and activities within oil sands is also forecasted.

***Climate change is a critical challenge, and the oil sands industry has an essential role to play in reducing emissions. Our path to net-zero emissions from operations will help our country achieve a sustainable future.***<sup>10</sup> – Kendall Dilling, President Pathways Alliance



## LNG export sector gains momentum

Western Canada's developing LNG sector takes a significant step forward with the first major export facility coming into operation in Kitimat, BC, in 2025. The **Current Measures Scenario** includes production and export capacity from four LNG liquefaction processing units, or liquefaction "trains". Two additional trains are forecast in the **Opportunity Scenario**, increasing potential for LNG exports by 50%.

## Refining petroleum remains stable

Production of refined petroleum products in Western Canada is expected to remain stable over the forecast period in both scenarios, with an enhanced focus on reducing emissions generated from the refining process. Emissions reductions are expected to be realized by deploying CCS and co-processing the end-use petroleum products with biomass-based fuels to create a lower-carbon fuel.

## Biomass-based fuels for transportation grow

The **Current Measures Scenario** projects growth in biomass-based fuels to support Canada's 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 that are equivalent to fossil-based fuels. The 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 existing expertise

Both scenarios assume the majority of low-carbon hydrogen produced in the Western region will come

from reforming natural gas coupled with CCS to reduce emissions with small amounts using renewable energy and electrolysis technology. The **Opportunity Scenario** assumes 200% greater low-carbon hydrogen production than the **Current Measures Scenario** based on deployment and export demand.

## CCS moves the decarbonization needle

The **Current Measures Scenario** reflects expanded use of CCS to move the needle on decarbonizing hard-to-abate industries such as oil sands operations, refining and cement and steel manufacturing. CO<sub>2</sub> sequestration has the potential to more than double in the **Opportunity Scenario**, but depends on the confirmation of policy, programs and incentives that make CCS economically feasible and attractive for investment.

## Saskatchewan's CCS facility offers lessons for the world

**SaskPower's Boundary Dam 3 CCS Facility (BD3), located near Estevan, Saskatchewan, is the world's first fully-integrated and full-chain CCS facility on a coal-fired power plant. It provides for a full demonstration and operation of proven and safe CCS. This comprehensive commercial operating experience provides insight into technology and other requirements which are not available anywhere else."**



## Energy industry characteristics differ across the Western region

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

**British Columbia** is Canada's second-largest natural gas producer, with some refining and biomass-based fuels production and relatively small oil production. Most significant is British Columbia's opportunity to be a gateway for energy exports. Ramp up of LNG export operations and the opportunity for expanded natural gas liquids (NGL) exports are forecast to have a lasting impact on the province's natural gas production. Low-carbon hydrogen production and CCS are included in the Opportunity Scenario.

**Alberta** is Canada's largest oil (including oil sands) and natural gas producer with significant refining operations and biomass-based fuels production. Going forward, Alberta is projected to leverage its experience producing hydrogen for industrial feedstock by producing low-carbon hydrogen using natural gas and CCS. Alberta is home to three CCS operations and the 240km Alberta Carbon Trunk Line (ACTL), the world's largest carbon pipeline.

**Saskatchewan** is Canada's second-largest producer of crude oil and also has natural gas reserves. It is home to refining operations, biomass-based fuels production operations and Canada's first large-scale CCS project. The CCS and low-carbon hydrogen sectors are projected to see some growth in the Opportunity Scenario.

**Manitoba** is a producer of crude oil, with production nearly quadrupling since 2000. While it has no natural gas production to date, it does produce biomass-based fuels. The province is in the early stages of developing its low-carbon hydrogen sector and small amounts of hydrogen production are included in the Opportunity Scenario.



Photo courtesy of Imperial Oil Limited



## Western Canada Labour Market Outlook to 2035

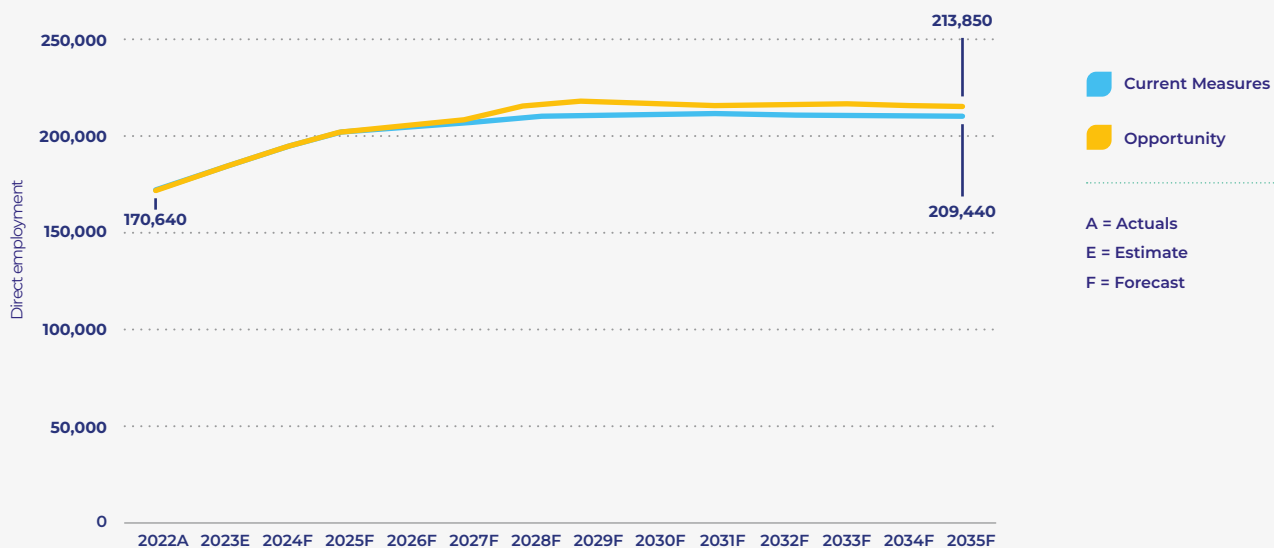


Western Canada's expanded energy industry is **projected to generate between 38,800 and 43,210 direct jobs** between 2022 and 2035.

In 2022, the baseline year for this outlook, in-scope sectors accounted for 170,640 direct jobs across Western Canada. It is anticipated **38,800 new jobs will be generated by industry activity under the Current Measures Scenario** for a total of **209,440 direct jobs**

by 2035. If the greater investment, production and industry activity assumptions are realized, **43,210 new jobs will be generated in the Opportunity Scenario**, for a total of **213,850 direct jobs** (Figure 5).

Figure 5: Direct employment by year, by scenario, 2022-2035



Workforce projections for the **Current Measures** and **Opportunity Scenarios** look very similar until 2027, when differences in employment growth come from jobs supporting increased demand for natural gas production and opportunities generated by emerging sectors.

While established energy sectors continue to generate the majority of new jobs and grow their workforce to 2035, not all sectors will add jobs through the forecast period (Table 1).

Oil sands mining and upgrading are not projected to add to their headcount as these sectors focus on achieving operational efficiencies to increase production rather than developing new major projects. Oil sands in situ is forecast to add jobs to support expansion of existing facilities. The oil sands sector's investment

in emissions-reduction technologies, including CCS, will generate direct employment opportunities and is reflected in the projected employment growth for that emerging sector.

Conversely, energy services and conventional E&P are projected to see job growth of approximately 30%. This growth is primarily in the early years of the forecast period when oil prices and takeaway capacity encourages industry activity and increased natural gas production is required to meet demand.

With a focus on providing affordable, accessible and reliable energy to Canadians and the world, emerging sectors—biomass-based fuels, low-carbon hydrogen, LNG and CCS—also add direct jobs.

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

	Sector	Employment in 2022A	Current Measures		Opportunity	
			Estimated employment in 2035F	# of new jobs and % change	Estimated employment in 2035F	# of new jobs and % change
	<b>TOTAL</b>	<b>170,640</b>	<b>209,440</b>	<b>38,800 (23%)</b>	<b>213,850</b>	<b>43,210 (25%)</b>
Established energy sectors	Conventional E&P	69,730	88,670	18,940 (27%)	90,740	21,010 (30%)
	Oil sands	24,650	22,710	-1,880 (-8%)	22,770	-1,880 (-8%)
	Mining	13,450	10,940	-2,510 (-19%)	10,940	-2,510 (-19%)
	In situ	7,660	8,610	950 (12%)	8,610	950 (12%)
	Upgrading	3,540	3,220	-320 (-9%)	3,220	-320 (-9%)
	Energy services	59,640	76,980	17,340 (29%)	78,170	18,530 (31%)
	Pipelines	11,730	13,720	1,990 (17%)	13,880	2,150 (18%)
	Petroleum refining	4,140	4,300	160 (4%)	4,300	160 (4%)
Emerging energy sectors	Biomass-based fuels	620	2,020	1,400 (226%)	2,220	1,600 (258%)
	Low-carbon hydrogen	minimal*	160	160 (all new jobs)	470	470 (all new jobs)
	LNG	minimal*	450	450 (all new jobs)	700	700 (all new jobs)
	CCS	130	370	240 (185%)	600	470 (362%)

\* 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





## Energy jobs are quality jobs

Pay, hours of work, future prospects, hard work, job content, interpersonal relationships and skill alignment are seven essential factors that emerge as indicators of job quality, or what is considered a “good” job.<sup>12</sup>

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.
- The opportunity to make a meaningful contribution 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 Canadian average of \$72,640.<sup>13</sup>

### Emerging sectors outperform in job growth

Western Canada’s established energy sectors add the most jobs over the forecast period. However, emerging sectors outperform in employment growth compared to their percentage of the overall workforce—especially later in the forecast after related infrastructure is built and they move into operations.



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In 2022, emerging energy sectors made up only 0.4% of direct employment in Western Canada. In the **Current Measures Scenario**, they are expected to account for 6% of projected new jobs to 2035 and increase their percentage of the total workforce to 1% by 2035. In the **Opportunity Scenario**, emerging energy sectors are projected to account for 7% of estimated new jobs generated in Western Canada and 2% of the total workforce in 2035 (Figure 6).



**Figure 6: New jobs and percentage of workforce, established and emerging sectors, by scenario, 2022-2035**



Photo courtesy of LNG Canada





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. Looking at the percentage increase across industry, the average rate of occupational growth between 2022 and 2035 is between 23 and 25%, depending on the scenario. Occupations experiencing a higher-than-average growth rate are

those more likely needed across both established and emerging sectors. Occupations experiencing lower-than-average growth may be more focused on a particular sector within Western Canada's expanding 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
<b>TOTAL</b>	<b>38,800 (23%)</b>	<b>43,210 (25%)</b>
Central control, process and plant operators (9210, 9310, 94110, 9414)	4,260 (23%)	4,750 (25%)
Energy drilling, servicing and related labourers, workers and operators (83101, 84101, 85111)	3,040 (28%)	3,280 (31%)
Contractors and supervisors, oil and gas drilling and services (82021)	1,890 (28%)	2,050 (31%)
Transport truck drivers (73300)	1,440 (29%)	1,550 (32%)
Heavy equipment operators (73400)	1,000 (10%)	1,150 (11%)
Information technology (20012, 212111, 2122, 2123, 21311, 2222)	1,000 (20%)	1,100 (26%)
Petroleum engineers (21332)	880 (23%)	980 (26%)
Construction millwrights and industrial mechanics (72400)	850 (24%)	950 (26%)
Managers in natural resources production (80010)	850 (21%)	950 (23%)
Geoscientists and oceanographers (21102)	670 (23%)	750 (26%)



Occupations projected to experience the greatest job growth include:

- > **Central control, process and plant operators** will be in greater demand to operate facilities that produce and transport low-emission fuels such as low-carbon hydrogen and biomass-based fuels. These complex facilities and pipelines will use state-of-the-art technologies similar to those already found in established energy sectors.
- > **Energy drilling and servicing labourers, workers, operators, contractors and supervisors** will still be largely employed by the energy services sector, but their role in emerging sectors will grow, primarily for natural gas production to support national and global emissions-reduction measures, and low-carbon hydrogen production. These operators will also drill, complete and service wells used to sequester CO<sub>2</sub> underground for CCS. While the related sectors of helium, lithium and geothermal energy are not in-scope for CIE's current model expansion, these occupations and the equipment and technology they operate are integral components in their production.

***Today's rigs can work on a natural gas well in one period, move to a geothermal or carbon storage well in the next, and increasingly drill exploration wells for lithium and helium. By building off of Canada's world-class drilling technology, the energy services sector is at the epicentre of sustainable jobs and Canada's energy transformation. Our workforce and technology will lead the way.***<sup>15</sup>

– Mark A. Scholz, President and CEO, Canadian Association of Energy Contractors

- > **Transport truck drivers and occupations involved in the distribution of energy by pipelines** will face continued demand.

***The natural gas delivery industry is committed to constantly improving its offering while pursuing emission-reduction targets, enhancing environmental performance and advancing innovation. Enabling increased hydrogen blending can provide pathways to those ends for our society while leveraging existing natural gas infrastructure.***<sup>14</sup>

– Timothy M. Egan, President and CEO, Canadian Gas Association

- > **Heavy equipment operators** play a key role in constructing oil and gas well sites and an important role within oil sands mining.
- > **Information technology occupations** 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 utilize the most advanced digital technologies available.
- > **Geoscientists and petroleum engineers** will be in demand to support development of oil and gas resources and provide vital expertise for developing secure and permanent underground CO<sub>2</sub> storage.
- > **Trades** occupations will be required across all energy-producing facilities and pipeline infrastructure to ensure efficient and safe operations. Construction millwrights and industrial mechanics are specifically identified in the top 10 list, but industrial electricians and industrial instrumentation technicians, welders and mechanics are also projected to be in demand.



# Job growth in Western provinces depends on energy mix

Provincial job growth aligns with the corresponding established and emerging sectors in each area.

**Alberta** is forecast to add the largest overall number of jobs between 2022 and 2035 in both scenarios, given the presence and growth projected for all in-scope sectors within its borders.

**British Columbia**, however, is projected to see the greatest magnitude of growth, driven by increases in biomass-based fuels production, the start-up of LNG export operations and increased demand for natural gas feedstock. The difference in job growth between the **Current Measures Scenario** and **Opportunity Scenario** is based on the anticipated volume of LNG exports.

**Saskatchewan** adds employment in both scenarios to support increased production of biomass-based

fuels and low-carbon hydrogen and expansion of the province's CCS sector. Oil production also increases, but employment does not see a corresponding increase due to its focus on operational optimization and efficiencies. In the **Opportunity Scenario**, employment in Saskatchewan's oil industry decreases slightly as Canadian oil and gas investment is drawn to natural gas production.

**Manitoba's** oil industry does not see the same kind of production or employment increases as the rest of Western Canada. Oil production is expected to be relatively stable in the early years of the forecast period, then decline in the latter years. Biomass-based fuels production remains steady in both scenarios and low-carbon hydrogen production is projected to come on stream midway through the forecast period under the **Opportunity Scenario**.

Table 3: Direct employment, by province, by scenario, 2022-2035

Province	Direct employment in 2022A	Current Measures		Opportunity	
		Employment in 2035F	# and % change	Employment in 2035F	# and % change
WESTERN REGION	170,640	209,440	38,800 (23%)	213,850	43,210 (25%)
BC	12,870	18,210	5,340 (41%)	19,420	6,550 (51%)
AB	145,680	178,690	33,010 (23%)	181,970	36,280 (25%)
SK	10,530	11,320	780 (7%)	11,250	720 (7%)
MB	1,550	1,230	-320 (-21%)	1,210	-340 (-22%)

Numbers may not add up due to rounding



Photo courtesy of ARC Resources Ltd.



## Net Hiring Requirements



Based on annual age-related attrition rates, approximately **63,000 energy workers in Western 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 38,800 and 43,200 workers, depending on the scenario. This means that hiring for age-related attrition outpaces industry activity.

If Western 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 102,120 and 107,140 jobs over the forecast period, depending on the scenario (Table 4).

**Net hiring requirements refers to hiring for new employment created by industry activity and backfilling positions due to age-related attrition (retirements and deaths).**



Photo courtesy of ARC Resources Ltd.



**Table 4: Western 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
	<b>TOTAL</b>	<b>38,800</b>	<b>63,320</b>	<b>102,120</b>	<b>43,210</b>	<b>63,930</b>	<b>107,140</b>
Established energy sectors	Conventional E&P	18,940	26,930	45,870	21,010	27,280	48,290
	Oil sands	-1,880	7,100	5,220	-1,880	7,070	5,190
	Energy services	17,340	23,020	40,360	18,530	23,210	41,740
	Pipelines	1,990	4,300	6,290	2,150	4,300	6,450
	Petroleum refining	160	1,550	1,710	160	1,550	1,710
Emerging energy sectors	Biomass-based fuels	1,400	240	1,640	1,600	240	1,840
	Low-carbon hydrogen	160	30	190	470	40	510
	LNG	450	100	550	700	140	840
	CCS	240	50	290	470	100	570

Numbers may not add up due to rounding

### 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.

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 sectors simply due to the size of their current workforce.

Due to the age demographics of established energy sectors, there is potential for more job vacancies due to retiring workers than those generated by the increase in industry activity. For emerging sectors—where seasoned workers can assist with knowledge gaps and problem-solving during start-up phases of new operations and technologies—the loss of experienced workers may be felt more keenly. Industry activity will be the larger driver of net hiring in emerging sectors.

### Net hiring requirements by province

The following provides a breakdown of net hiring requirements, including expected hiring due to industry activity and age-related attrition, across each Western province. Given the prevalence of established and emerging sectors in Alberta, the province is projected to have the greatest net hiring requirements.



## British Columbia

Hiring due to industry activity and age-related attrition is relatively similar in the **Current Measures Scenario**. In the **Opportunity Scenario**, hiring due to industry activity will be higher than age-related attrition. British Columbia is the only Western province where jobs generated due to investment and new energy production is projected to outpace vacancies created by retirements.

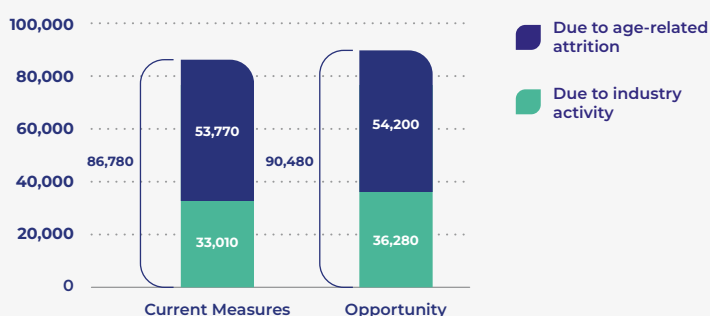
Figure 7: BC net hiring requirements, both scenarios, 2022-2035



## Alberta

Despite significant hiring due to industry activity, age-related attrition has the potential to drive more hiring in both scenarios.

Figure 8: AB net hiring requirements, both scenarios, 2022-2035



## Saskatchewan

Net hiring requirements in the **Opportunity Scenario** are slightly lower than the **Current Measures Scenario** due to a small decrease in employment in the oil sector. Hiring due to age-related attrition, however, has the potential to be more than four times that of hiring due to industry activity in both scenarios.

Figure 9: SK net hiring requirements, both scenarios, 2022-2035



## Manitoba

Hiring due to age-related attrition will drive all hiring requirements, offsetting any job losses projected for the province in both scenarios.

Figure 10: MB net hiring requirements, both scenarios, 2022-2035

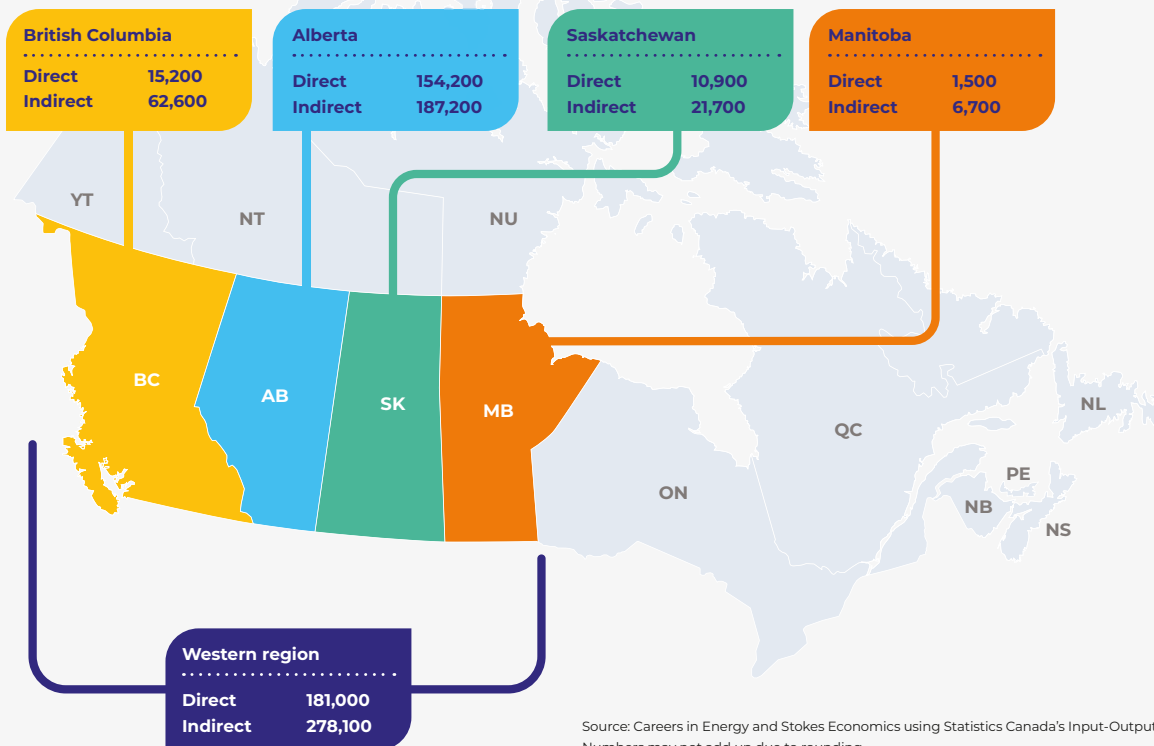


## Indirect Employment



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

**Figure 11: Western region direct employment and the indirect jobs supported by established energy sector operational spending in 2023**



Source: Careers in Energy and Stokes Economics using Statistics Canada's Input-Output tables  
Numbers may not add up due to rounding.





These employment opportunities, referred to as the energy industry's "indirect jobs", are significant in numbers. In 2023, **278,100 indirect jobs** were generated in Western Canada from operational spending by established energy sectors (Figure 11). These indirect jobs are in sectors that provide 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.

### Trans Mountain prioritizes Indigenous, local and regional hiring

**The Trans Mountain Expansion Project (TMEP) will provide increased capacity to support Canadian crude oil production growth and ensure access to global energy markets. About 990 km of new pipeline, new and modified facilities and a dock complex at the Westridge Marine Terminal in Burnaby, BC are being constructed. Trans Mountain and its contractors have hired approximately 35,000 people, of whom 3,600 are Indigenous Peoples, 15,700 are Albertans and 15,100 are British Columbians. As of December 31, 2023, there were about 9,900 people working on the TMEP.<sup>16</sup>**

Indirect jobs supported 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**.<sup>17</sup> Sectors that see 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

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.<sup>18</sup> The relationship between investment in emerging energy sectors and generation of indirect jobs is yet to be determined.



## Labour Supply and Demand Analysis



Photo courtesy of ARC Resources Ltd.

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

### Tight labour market anticipated

CIE's labour market modelling system indicates the labour shortages that affected the 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* report online at [CareersinEnergy.ca](https://careersinenergy.ca)**



Photo courtesy of Photographic Services, Shell International Limited



## Conclusion: Western Canada Fuels Growth and Emissions Reductions



Looking ahead to 2035, Western Canada's energy industry will **need to manage dual priorities** of growing production to meet global energy demand while addressing climate concerns. Western Canada's evolving energy system, including established and emerging sectors, will generate high-quality, well-paying jobs for years to come.

Western Canada is expected to remain a significant producer of oil, natural gas and refined petroleum products while also leveraging its deep experience to accelerate growth in emerging energy sectors. The Western region's energy industry is projected to invest in and take advantage of the availability of abundant and affordable natural gas feedstock to produce low-carbon hydrogen and to export LNG and NGL.

Canada's West Coast offers a gateway to Asia and an opportunity to supply its growing energy demand. Canada's first shipment from a large-scale LNG export facility is a significant milestone with potential to be expanded on. Few countries have the CCS experience and expertise that Western Canada brings, and the industry is on the cusp of widescale deployment of this emissions-reduction technology.

While established energy sectors in Western Canada will continue to be the mainstay of new job creation, emerging sectors such as LNG, biomass-based

fuels, low-carbon hydrogen and CCS will create new opportunities. They are also anticipated to outperform job growth relative to their percentage of the total energy workforce.

Specific knowledge and skills may be required to work in these new energy sectors, but many of the 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 the need to address job vacancies due to retiring workers is significant and potential productivity risks of an aging workforce exists, 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, Western 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 regional labour market data**

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



## Endnotes

- <sup>1</sup> Careers in Energy and Stokes Economics, 2023 estimate for in-scope sectors.
- <sup>2</sup> Careers in Energy and Stokes Economics using Statistics Canada Input-Output tables, 2023.
- <sup>3</sup> Heaven, Pamela. (2023, October 19). *Posthaste: Canadian oil touted as best place for investors to ride out the energy transition turmoil*. <https://financialpost.com/news/canada-oil-gas-best-investment-energy-transition>
- <sup>4</sup> Workforce requirements for Canada's electricity sector are produced by Electricity Human Resources Council (EHRC). EHRC. (2023). *Electricity in Demand: Labour Market Insights 2023-2028*. [https://electricityhr.ca/wp-content/uploads/2023/10/EHRC\\_LMIReport-EN-2.pdf](https://electricityhr.ca/wp-content/uploads/2023/10/EHRC_LMIReport-EN-2.pdf)
- <sup>5</sup> 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. Statistics Canada. (2023, September 14). *Introduction to the National Occupational Classification (NOC) 2021 version 1.0*. Statistics Canada. <https://www.statcan.gc.ca/en/subjects/standard/noc/2021/introductionV1#a1>
- <sup>6</sup> 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. Analysis of indirect employment associated with the in-scope sectors can be found on pages 25 and 26.
- <sup>7</sup> Construction workforce is not included in this forecast, although it is recognized expanding Canada's energy system will require significant new infrastructure. Construction workforce is a critical component to seeing necessary builds being completed on-time and on-budget. Workforce projections for Canada's construction workforce can be found at BuildForce: <https://www.buildforce.ca/en>
- <sup>8</sup> Scenarios were developed with guidance of an Energy Scenarios Working Group and in consultation with industry which helped finetune energy production assumptions from a variety of sources including Canada Energy Regulator, Environment and Climate Change Canada, and Rystad Energy.
- <sup>9</sup> 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. <https://careersinenergy.ca/>
- <sup>10</sup> Dilling, K. (2024, January 25). *Net-zero initiative*. Pathways Alliance. <https://pathwaysalliance.ca/net-zero-initiative/>
- <sup>11</sup> International CCS Knowledge Centre. (n.d.). *Boundary Dam 3 Carbon Capture and Storage (CCS) Facility*. <https://ccsknowledge.com/bd3-ccs-facility>
- <sup>12</sup> LMIC (2023, November 14). *What is a "good" job?* Labour Market Information Council. <https://lmic-cimt.ca/what-is-a-good-job/>
- <sup>13</sup> Statistics Canada. Table 36-10-0489-05. Total compensation per job, by NAICS industry.
- <sup>14</sup> Egan, T. M. (2023, August 18). *Canadian Gas Association releases a foundational report on increasing hydrogen blending in natural gas distribution infrastructure*. Canadian Gas Association. <https://www.cga.ca/news/canadian-gas-association-releases-a-foundational-report-on-increasing-hydrogen-blending-in-natural-gas-distribution-infrastructure/>
- <sup>15</sup> CAOEC. (2023, 24 November). *CAOEC Announces the Release of the 2023/2024 Drilling and Service Rig Forecast and the 2023 State of the Industry Report*. Canadian Association of Energy Contractors. <https://caoec.ca/content.asp?admin=Y&contentid=539>
- <sup>16</sup> Trans Mountain. (2017, June 23). *Project benefits*. <https://www.transmountain.com/benefits>
- <sup>17</sup> Careers in Energy and Stokes Economics using Statistics Canada's Input-Output tables
- <sup>18</sup> The methodology used to determine the indirect employment generated by investment in Western 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.



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