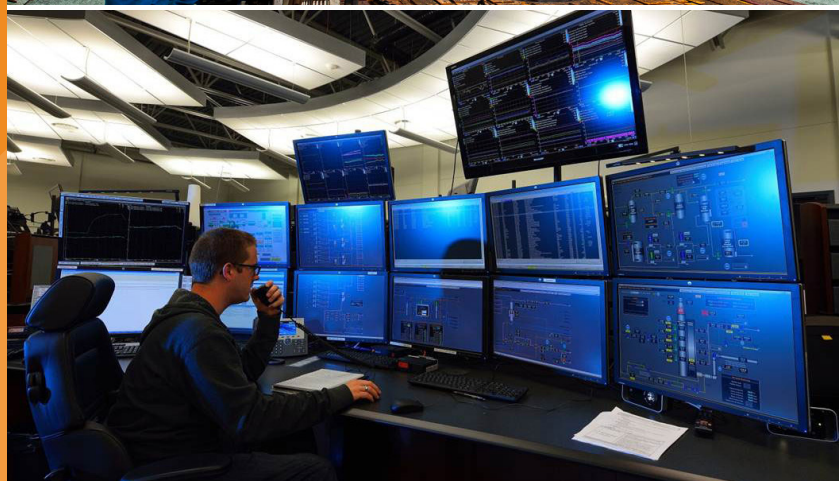


PetroLMI

DIVISION OF ENERGY SAFETY CANADA

LABOUR MARKET OUTLOOK 2021 to 2023:

CANADA'S OIL
AND GAS INDUSTRY



MARCH 2021

Canada

Funded by the Government of Canada's Sectoral Initiatives Program

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Introduction: Tenacity through Turbulence — The Industry Today

The oil and gas industry has changed from 12 months ago. The combined events of the past year — demand shock from the COVID-19 global pandemic and an oversupplied oil market — led Canadian companies across all oil and gas sub-sectors to take swift action to adjust their strategies. This had a significant impact on the industry and its workforce. In 2020, capital expenditures across the conventional exploration and production (E&P) sub-sector were slashed by an estimated 38% (to \$15.8 billion) and operating expenditures reduced by 14% (to \$19.8 billion). The oil sands sub-sector saw similar spending cuts with capital expenditures down 21% (to \$7.17 billion) and operating expenditures reduced by 8% (to \$21.8 billion), with a corresponding 2% decrease in production (down to 3.2 million b/d).

This outlook reviews the impact of those events and the associated forecast on employment and hiring through to 2023. The scope of our analysis is direct employment, those jobs in companies directly linked to finding, extracting and producing oil and gas, such as geologists and drillers, across the E&P, oil sands, oil and gas services and pipelines sub-sectors.



For more on how COVID-19 impacted
Canada's energy workforce, visit
[CareersinOilandGas.com](https://careersinOilandGas.com)

Find all the information and data
from the labour market outlook —
including projections by year, region,
sub-sector and occupation — online at
[CareersinOilandGas.com](https://careersinOilandGas.com)

To forecast employment, PetroLMI used a [modeling system developed in 2006](#) which is refined regularly through consultation with industry, labour market economists and workforce planning analysts.

The global events of 2020 accelerated the pace of change for an industry already in transition. Companies are focusing on profitability over production to add value, and optimizing and increasing the efficiency of their operations to improve competitiveness. This, combined with the cumulative impacts of the 2014

economic downturn, has resulted in a smaller oil and gas workforce (down 26% from 2014 levels), with the oil and gas services sub-sector most impacted.

The development of a [liquefied natural gas \(LNG\) sector](#) is a new area of focus which represents a significant opportunity. LNG facilities and associated pipelines will create operations and maintenance roles, many of which are transferable from other industry sub-sectors.

This growing sector will spur upstream natural gas and pipeline activity for the preparation and delivery of feedstock. Opportunities are emerging in areas like geothermal energy, hydrogen and [carbon capture utilization and storage \(CCUS\)](#) as the industry looks to low-carbon solutions to reach the global net-zero emissions commitment and address climate concerns.

.....
Lower commodity prices and reduced access to investment capital remain as accelerants to greater ingenuity and efficiency, not oblivion.

– **Peter Tertzakian, Deputy Director**
[ARC Energy Research Institute](#)
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Outlook Scenario: Modest Recovery

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Following the impacts of COVID-19, a strong energy industry will be important to Canada's growth and energy demand is expected to be in line with international market trends.

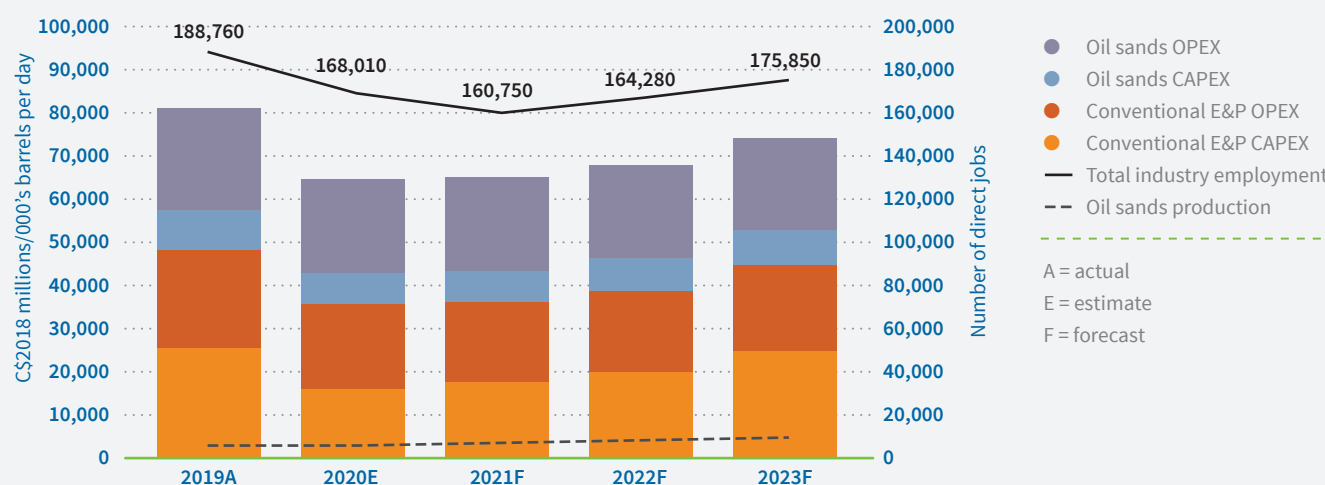
Looking to 2023, PetroLMI is forecasting a modest recovery for the oil and gas industry.

While projecting slight increases in capital spending in 2021, employment will not begin recovering until 2022.

Figure 1 shows the spending expected to drive employment. After a collapse in 2020 (-38%), E&P capital spending makes steady gains but does not climb to 2019 levels. Modest increases in operating expenditures are forecasted, reflecting actions industry is taking to improve profitability. Only expenditures in support of the ramp up of natural gas production for LNG in British Columbia will surpass 2019 levels.

Oil sands capital spending is expected to focus on sustaining production. By 2023, mining spending is projected to recover to 2019 levels but will focus on productivity improvements (e.g., debottlenecking). In situ and upgrading spending are not projected to recover during the forecast period, and year-over-year oil sands production sees limited gains in line

Figure 1: Total industry employment and employment driver forecast, 2019 to 2023



2019A from Statistics Canada as reported in CAPP's Statistical Handbook
2020E and 2021 – 2023F provided by CanOils

with the recovery of global oil demand. Efficiency improvements, debottlenecking and minor projects are expected to push production marginally higher. Additional major upgrading capacity is not expected and 2022 may see a temporary drop in upgrading production due to scheduled maintenance turnarounds.

This scenario is based on the following assumptions:

A cautious approach in 2021

Industry is predicted to take a more conservative investment approach as uncertainty remains about the impact of COVID-19 and how quickly energy demand will rebound. Factors include the production discipline by OPEC+, Iran sanctions and energy policies under the Biden administration, including the repercussions of halting the Keystone XL pipeline project.

Optimization and technology drive spending and modest recovery

In 2022 and 2023, industry is expected to improve productivity through efficiency, competitiveness and sustainability rather than increasing production. This includes the acceleration of structural shifts and use of technology, digitization, automation and data. Companies' ability to invest in [technologies](#) to manage costs and decarbonize — like digitization and automation — depends on profitability.

Economies of scale

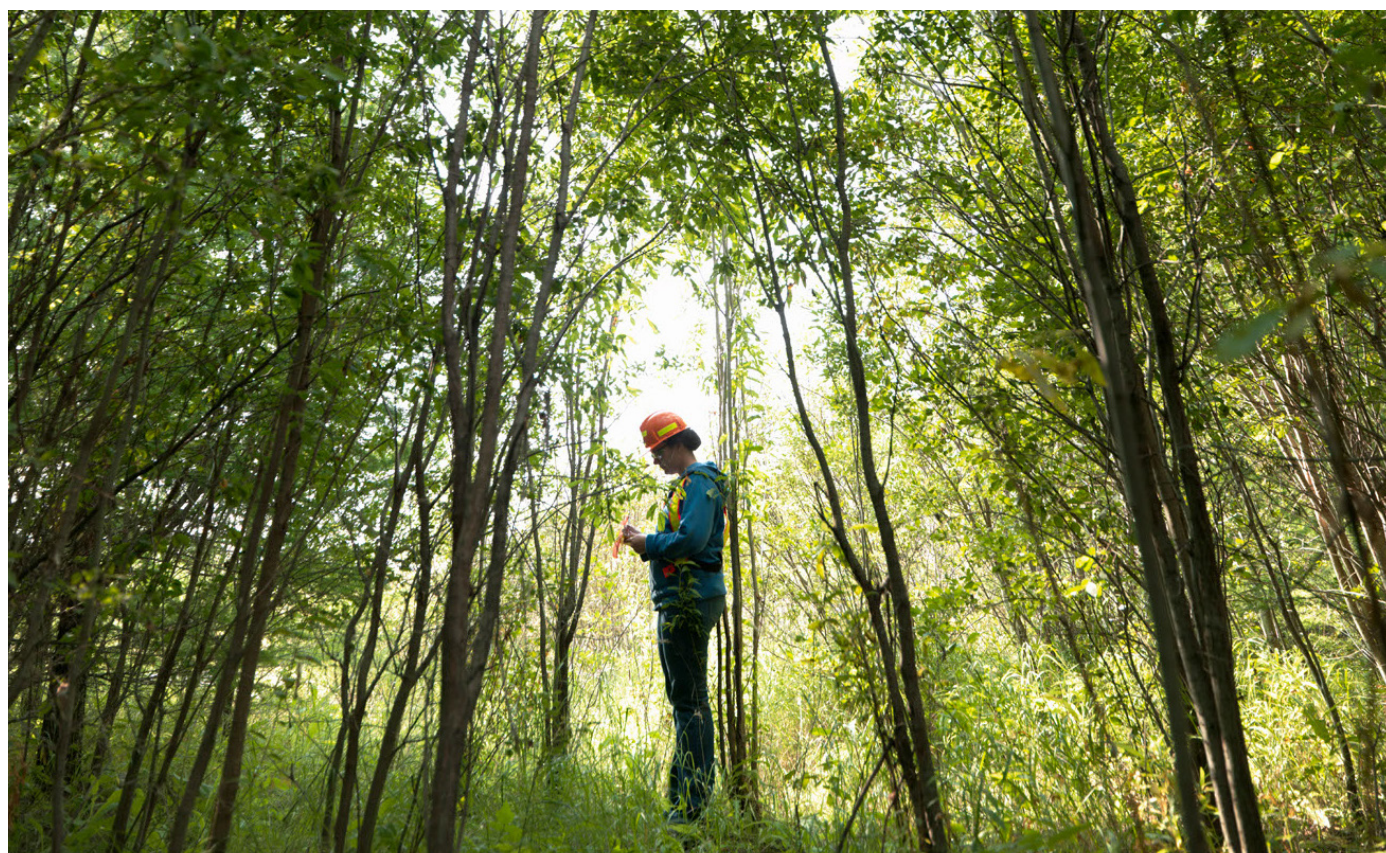
Consolidations and restructurings following the price collapse in 2014 are here to stay. Companies are expected to continue to seek out opportunities to realize economies of scale. Occupations supporting the structural and business model shifts will be those with the greatest net hiring requirements.

Natural gas before oil

Canadian natural gas activity is expected to recover more quickly than oil. Companies are expected to focus on higher value, liquids-rich natural gas production to provide feedstock for the petrochemical sector and liquid petroleum gas exports. Canada's emerging LNG industry will be a game-changer with the first large export facility coming onstream later in the decade. Natural gas can be a replacement for higher carbon fuels (like oil, diesel and coal) domestically and internationally and contribute to reducing global carbon emissions.

Environmental, social and governance (ESG)

Canada is already a responsible developer of oil and gas, but there is an increased need to track, record and report on performance. Evolving corporate practice means companies are building ESG metrics into all of their activities. Roles and responsibilities are also being aligned to create, measure, monitor and report these metrics — like Indigenous engagement, government affairs, environment and health and safety. While this has been on the radar of E&P, oil sands and pipeline companies for some time, oil and gas service companies are now projected to increase their hiring for these roles.

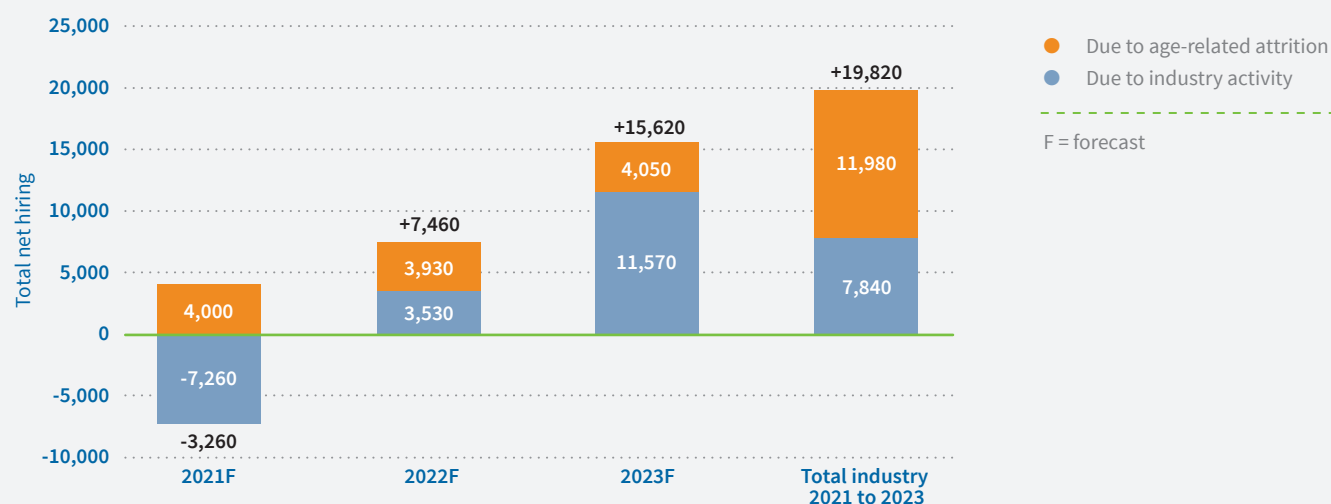


In 2019, Suncor allocated approximately 14% of its capital to technology and new energy initiatives.
– Source: [Suncor Q4 2020 Investor Relations Presentation](#)

2021 to 2023 Industry Outlook

Canada's oil and gas industry is anticipated to experience **net hiring requirements of 19,820 jobs over the forecast period: 7,840 due to industry activity and 11,980 from age-related attrition** as shown in Figure 2.

Figure 2: Industry net hiring requirements forecast, 2021 to 2023



Net hiring is the sum of job openings created due to industry activity and replacement demand due to age-related attrition (retirements and deaths).

Hiring due to industry activity

Canada's oil and gas industry is projected to add approximately 7,840 direct jobs from 2021 to 2023 due to industry activity. By 2023, industry's direct employment surpasses 2020 levels at 175,850 jobs but falls short of 2019 employment by 12,910 jobs.

2021: Restructuring continues to impact employment

Industry's employment in 2021 is challenged by the uncertainty of global economic recovery and the corresponding increase in energy demand. Capital

spending is projected to increase slightly, however, employment will not begin recovering until 2022.

The restructuring started in 2020 will continue into 2021, resulting in a decrease of 7,260 jobs.

Many of these losses occurred in the first quarter of the year. PetroLMI's modeling system does not account for specific impacts to occupations due to mergers and acquisitions. However, consultation with industry indicated the downsizing is focused on shared services and head office jobs where the greatest synergies are typically achieved. Operations and maintenance roles are less impacted by mergers and acquisitions because

assets and operations are in different locations, so it is difficult to realize economies of scale.

2022 to 2023: Modest recovery

Industry's employment picture looks more promising in 2022 and 2023. PetroLMI projects 15,100 positions will be added to 2021 employment due to increased investment and activity.

Impact of age-related attrition

Based on annual age-related attrition rates, **approximately 11,980 oil and gas workers will be eligible to retire over the forecast period** as shown in Figure 2. While vacancies due to age-related attrition do not add to overall employment levels, hiring activity may increase as companies backfill positions.


Companies indicated retirements are monitored and, despite lower retirement rates in recent years, there is a risk of losing experienced workers. Not all retiring workers will be replaced by the same occupation; companies may choose to fill a gap and hire someone with different skills. Some companies are implementing programs to transfer knowledge across their workforces.

2021: Age-related attrition does not offset job losses

In 2021, projected age-related attrition of 4,000 positions will not offset the job losses across the E&P, oil sands and pipelines sub-sectors. For the oil and gas services sub-sector, age-related attrition may drive hiring in addition to increased industry activity, particularly for the second half of 2021. Companies may be conservative in their hiring until they are certain E&P companies will deliver on forecasted investment plans, which will help to create stability for their workforce.

2022 to 2023: Industry-related activity drives hiring

It's a different story for 2022 and 2023. PetroLMI is projecting net hiring requirements of approximately 7,460 in 2022 and 15,620 in 2023 for a total of 23,080 positions. Job vacancies due to age-related attrition are expected to account for one-third, or just under 8,000 positions, of the net hiring requirements and will be most pronounced for the oil and gas services sub-sector.



For a full breakdown of employment,
including by region and sub-sector,
please visit [CareersinOilandGas.com](https://careersinOilandGas.com)

Net Hiring by Sub-Sector

Table 1 breaks down industry's projected net hiring requirements by sub-sector over the forecast period, with oil and gas services and E&P sub-sectors experiencing the most gains.

Table 1: Net hiring by sub-sector and total industry, 2021 to 2023

	E&P	Oil sands	Oil and gas services	Pipelines	Total industry
TOTAL Net Hiring (2021 to 2023)	6,880	-590	12,990	540	19,820
Due to industry activity	2,520	-2,690	8,390	-380	7,840
Due to age-related attrition	4,360	2,100	4,600	920	11,980

Exploration and production (E&P)

Activity-driven job growth over the forecast period is expected (2,520 new roles). In addition, the sub-sector is projected to have 4,360 job vacancies due to age-related attrition for a net hiring requirement of 6,880 positions.

Oil sands

Age-related attrition is expected to create 2,100 job vacancies. This will not counter-balance the projected decrease of 2,690 jobs due to industry activity, resulting in a net job loss of 590.

Oil and gas services

Employment in this sub-sector is expected to experience the most growth — up 8,390 new positions as a result of industry activity. This growth will be primarily driven by [LNG development](#) and [oil and natural gas site reclamation programs](#). Companies focused on this type of work are reporting difficulty hiring for well servicing occupations.

In addition, an estimated 4,600 oil and gas services workers will be eligible to retire, for net hiring requirements of 12,990 workers.

Pipelines

Age-related attrition is projected to offset the job losses due to restructuring, with net hiring requirements of 540 occupations.



“Our Canadian well service segment is experiencing an increase in demand driven in part by the Canadian well abandonment program, but also a broad-based increase in customer demand...We’re really having to become very creative in recruiting and looking at referral programs and things like that to get the base of employees up in well servicing...labour has gotten very tight.”

– **Kevin Neveu**

President and CEO, Precision Drilling Corporation

[Daily Oil Bulletin](#)

Occupations with Highest Net Hiring Requirements, 2021 to 2023

Job losses are expected to continue in 2021 due to consolidation and restructuring — especially for head office roles in Alberta. In 2022 and 2023, the outlook improves with increased hiring expected. Occupations projected to have the greatest demand across the industry are listed in Figure 3.

Oil and gas services roles are expected to grow due to the key role they play in the ramp up for LNG exports, and as industry takes advantage of government funding for site reclamation work. Petroleum and gas operators will also be required to support natural gas field operations and processing. Geoscience professionals and petroleum engineers — who were significantly impacted by industry restructuring and consolidation — will see an increase in hiring. Occupations supporting the structural and business model shifts are also projected to be in demand. For example, roles in regulatory, Indigenous engagement and partnerships,

and stakeholder relations will grow. Information technology occupations also make the top 15 as the industry increasingly uses digitization, automation and data to improve productivity. This holds true across all sub-sectors and regions.

For a full breakdown of the occupations forecasted to have the most hiring for each sub-sector, visit [CareersinOilandGas.com](https://careersinOilandGas.com)

Figure 3: Top 15 occupations with the greatest net hiring requirements by NOC*, 2021 to 2023

- 1 Supervisors, oil and gas drilling and services (8222)
- 2 Managers in natural resources production, drilling and well servicing (0811)
- 3 Purchasing agents and officers (1225)
- 4 Oil and gas well drillers, servicers, testers and related workers (8232)
- 5 Geoscientists and oceanographers (2113)
- 6 Transport truck drivers (7511)
- 7 Oil and gas well drilling workers and service operators (8412)
- 8 Environmental- and social-related occupations (regulatory, safety, environmental, Indigenous relations and stakeholder engagement, etc.) (1123, 1253, 1254, 1422, 1452, 1454, 2262, 2263, 4161, 4162, 4164, 4423)
- 9 Geological and mineral technologists and technicians (2212)
- 10 Construction millwrights and industrial mechanics (7311)
- 11 Petroleum engineers (2145)
- 12 Heavy equipment operators (except crane) (7521)
- 13 Petroleum, gas, chemical process operators (no steam ticket required) (9232)
- 14 Information technology occupations (2147, 2171, 2172, 2173, 2174, 2175, 2281, 2282, 2283)
- 15 Oil and gas drilling, servicing and related labourers (8615)

*National Occupational Classification (NOC) codes are the numbers in brackets.

WHAT IS A PURCHASING AGENT ANYWAY?

Purchasing agents and officers (NOC 1225) includes roles more commonly known as: surface land professional, mineral land professional, joint venture representative, surface land agent, land negotiator, landman/woman and surface rights administrator.



Find more information on the job descriptions, skill requirements and education required for these occupations on the [Career Directory](#).

Regional Analysis

Western Canadian provinces are expected to achieve positive net hiring as shown in Table 2, with most of the growth coming in 2022 and 2023.

Table 2: Net hiring by region, 2021 to 2023

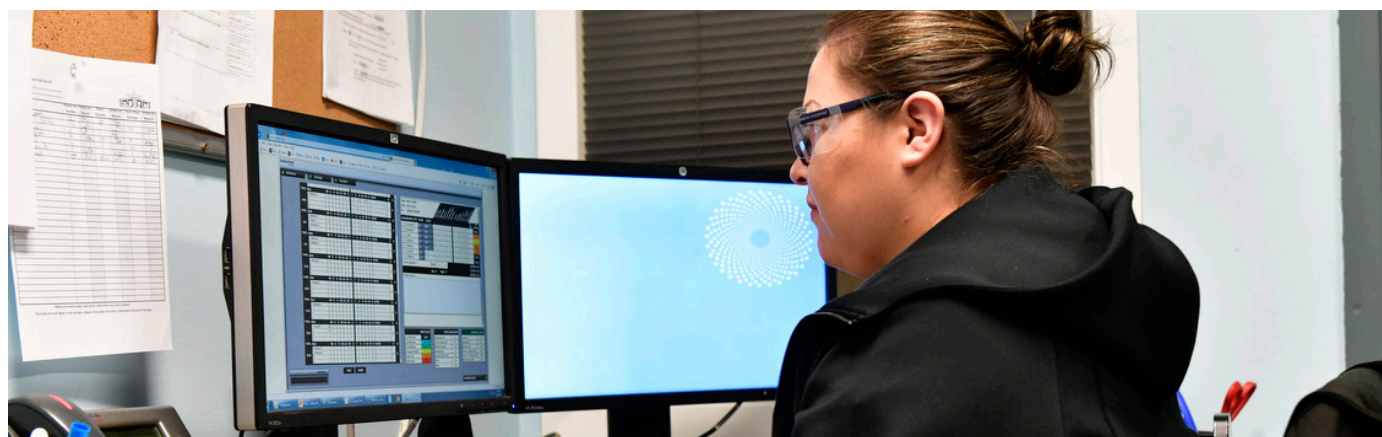
	British Columbia	Alberta	Saskatchewan	Rest of Canada	Total Industry
TOTAL Net Hiring (2021 to 2023)	2,810	15,140	2,230	-360	19,820
Due to industry activity	1,670	5,660	1,690	-1,180	7,840
Due to age-related attrition	1,140	9,480	540	820	11,980

British Columbia

British Columbia is projected to hire for 2,810 jobs with over half of the demand coming from industry activity (1,670). In 2021, the province will show a resiliency not seen in other energy-producing regions, adding jobs to deliver feedstock to LNG plants and for site reclamation as well as age-related attrition. Companies are already experiencing challenges attracting oil and gas services workers. For 2022 and 2023, hiring is expected primarily for field and plant operations and maintenance roles, as well as oil and gas services occupations.

Alberta

Net hiring requirements in the province are projected to be 15,140, with hiring due to age-related attrition (9,480 or 63%), outpacing demand by industry activity (5,660 jobs or 37%). Despite positive gains by 2023, Alberta's employment is expected to be hard hit in 2021 with job losses from restructuring and consolidation. Oil and gas services occupations are projected to be in high demand, and there is a risk of labour shortages for the sub-sector, particularly in northwest Alberta. Activity in the oil sands will not drive labour demand as it has in the past.



Saskatchewan

Saskatchewan is predicted to hire for a net 2,230 positions, of which 76% (1,690) will come from industry activity and 24% (540) from age-related attrition. In 2021, provincial employment is projected to stabilize from investment in site reclamation programs. Activity in 2022 and 2023 is expected to increase, mostly in the oil and gas services sub-sector.

Rest of Canada

Job vacancies due to age-related attrition (820) will not quite offset forecasted job losses due to project cancellations and delays (-1,180), for a net job loss of 360. These job losses are projected in 2021. For the remainder of the forecast, vacancies due to age-related attrition will counterbalance activity-related job losses even as uncertainty remains for the offshore sector.



Labour Supply Demand Analysis

Despite the economic downturn and corresponding job losses, industry expects [labour supply concerns during the forecast period](#). The magnitude of downsizing since 2014 has impacted industry's attractiveness. Job seekers have turned to industries perceived to have more employment stability. This is particularly true in the oil and gas services sub-sector where spring break-up already creates fluctuations in employment.

These factors, combined with a decline in post-secondary enrolment in core oil and gas disciplines, have made it more difficult to attract talent and replace an ageing workforce. The COVID-19 pandemic has also led to challenges attracting workers from other parts of

Canada, a decrease in international immigration and a lack of foreign students at post-secondary institutions. This has created gaps in the available labour pool that industry has typically tapped into. A "brain drain" from Alberta, where many industry head offices are located, has also occurred.

The oil and gas industry is in a strong position to support the energy transition. Its expertise, equipment and technology are transferable to the development of low-carbon and renewable resources. Tech-savvy workers will be increasingly valuable and Canada is already experiencing a talent shortage in the field.

Industry's increased focus on digitization and automation to realize efficiencies will mean fewer workers overall. Investments in technology create a disruption in the skills required by employers, and the industry supply chain. There will be opportunities for [workers willing to retrain or upgrade their skills](#).

“The oil and gas sector confronts depressed demand and low prices at the same time as the pressure to accelerate a transformation toward a low-carbon energy system. Consolidation and innovation, including such technologies as hydrogen or carbon capture, utilization, and storage, will be key ingredients of the journey.”

– **Bennett Jones**
[Fall 2020 Economic Outlook](#)

DID YOU KNOW?

52% of oil and gas workers worldwide need less than six months to reskill for a digital workplace.

– **Source: World Economic Forum**
[The Future of Jobs Report 2020](#)



Conclusion: The Road Ahead

While 2020 created new challenges, navigating change is not new for Canada's oil and gas industry and even the most turbulent of times can set the conditions to grow stronger. As the next decade unfolds, these will be the trends to watch:

Ageing sector

Workforce demographics are a concern for the industry. The labour pool is shrinking due to ageing workers and difficulties reattracting experienced workers, combined with challenges attracting new entrants and disruptions to the usual talent pipelines due to COVID-19. This may be partially offset by workers delaying their retirements in the face of the long economic downturn.

Energy transition

Canada's energy industry is working to reduce carbon emissions and become more diverse and efficient. As the industry looks to expand beyond traditional areas of oil and gas production, new opportunities in energy-

adjacent sectors — like renewables, CCUS and biofuels — hold promise. The underlying skills of Canada's oil and gas workforce are transferable to different forms of energy, such as wind, solar, biomass and LNG. For example, oil and gas drilling, completions and well servicing expertise is also required for geothermal, hydrogen and lithium development; predictive maintenance talent is required for solar, wind, hydrogen, LNG and biofuels assets; and emission measurement, reduction and reporting are required for all forms of petrochemicals manufacturing, biofuels and LNG.



Non-traditional equity partners

Innovative business arrangements, such as opportunities for Indigenous communities to have an equity stake in planned development projects, are gaining traction in the energy industry. Expanding investment partners and partnership types can improve the industry's ability to access capital and bring a diverse perspective to energy development. At the same time, it can provide sustainable, long-term revenue to partners.



Remote work solutions

The work from home shift that accompanied COVID-19 may remain in some capacity and has the potential to transform workplace culture. The industry will need to consider how this might change attraction and retention practices, and the associated impact on the development — or transformation — of leadership and management skills.

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The oil and gas sector is Canada's largest spender on clean technology, accounting for 75% of the 1.4 billion spent annually by all sectors.

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– Source: [CAPP](#)

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The energy sector is on the cusp of massive disruption in the face of evolving customer demands, regulatory policies and climate change. Calgary's energy companies are using the integration of information technologies and operational technologies, drones, Internet of Things (IoT), sensors, data analytics software, augmented reality (AR), virtual reality (VR) and autonomous vehicles (AV) to improve the safety, sustainability, productivity and reliability of their operations.

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– Source: [Calgary Economic Development \(2020\)](#)

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- Canadian Association of Petroleum Producers (CAPP)
- Canadian Energy Pipeline Association (CEPA) and CEPA Foundation
- Canadian Natural Resources Limited (CNRL)
- Cenovus Energy Inc.
- Explorers and Producers Association of Canada (EPAC)
- Petroleum Services Association of Canada (PSAC)
- Precision Drilling Corporation

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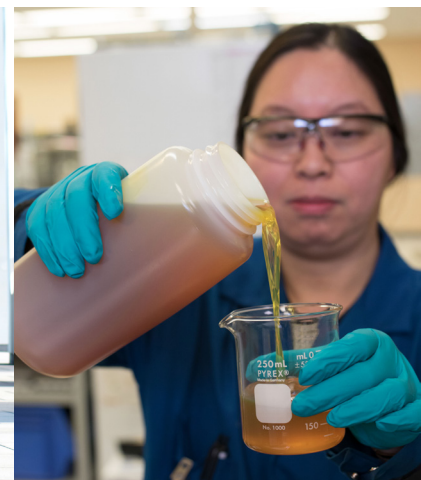
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