

Leading Energy Services,
Supply, Manufacturing and Innovation

Workforce Development
Pacific NorthWest Economic Region (PNWER) Conference

Presentation by **Petroleum Services Association of Canada**
Elizabeth Aquin, Senior Vice President

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Presentation Overview



- Who is PSAC?
- Labour Force Requirements
- Workforce Development

Who is PSAC?

- PSAC is the national trade association representing over 250 service, supply & manufacturing companies within the upstream petroleum industry
- Member companies employ over 75,000 people
- Member companies work across the country and range from large multi-nationals to local mom and pop enterprises



Who is PSAC?



Labour Force Requirements

Employment Overview

In 2012, the industry directly employed 195,200 people within the upstream and midstream petroleum sector.

195,200

Estimated number of people employed in Canada's oil and gas industry in 2012, broken down into:



94,100 Oil and gas services workers

72,000 Conventional exploration and production workers

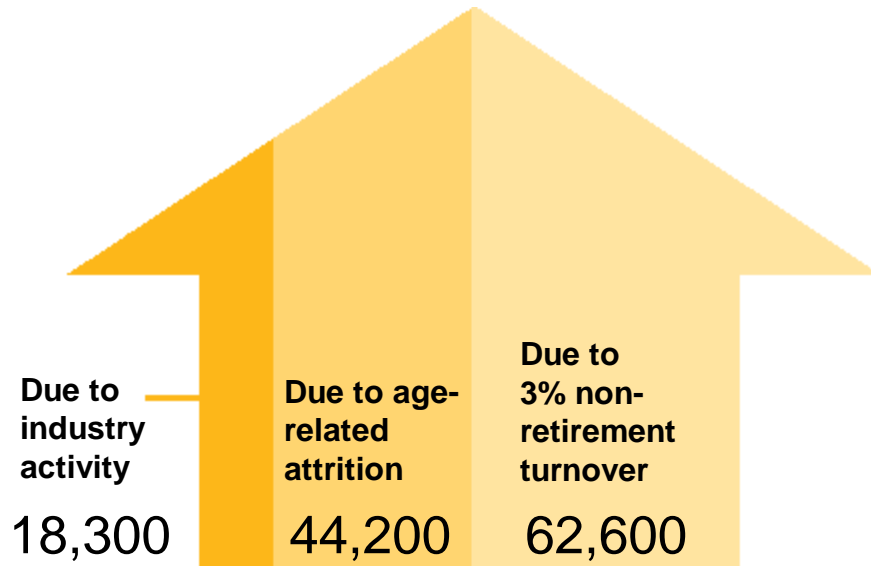
22,300 Oil sands operations workers

6,800 Pipeline workers

Source: **The Decade Ahead: Labour Market Outlook to 2022 for Canada's Oil and Gas Industry**, Petroleum Human Resources Council, May 2013

Labour Force Requirements

Total Recruitment Activity to 2022

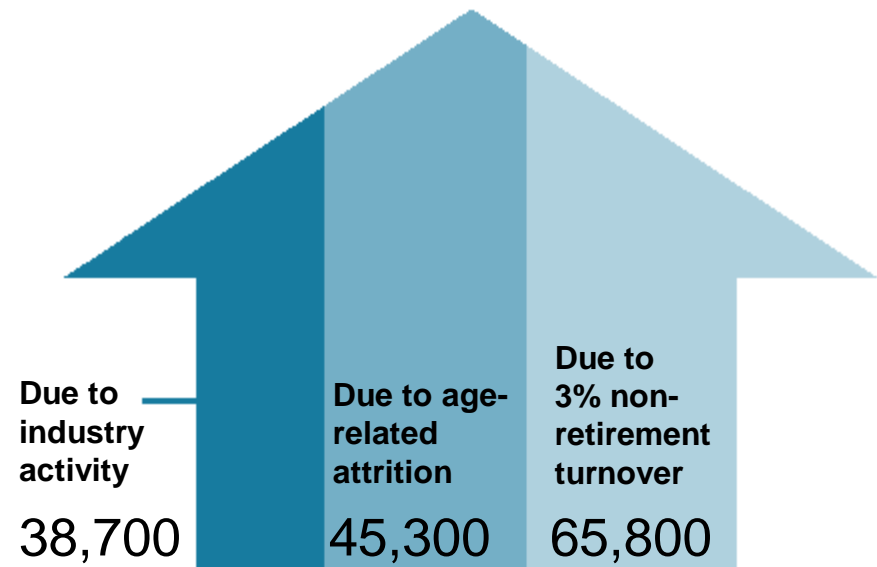


Expansion Scenario

149,800

Low Growth Scenario

125,100



Source: *The Decade Ahead: Labour Market Outlook to 2022 for Canada's Oil and Gas Industry*, Petroleum Human Resources Council, May 2013

Labour Force Requirements

Sample Occupations in the Upstream

- **Oil & gas well drillers, servicers, supervisors, operators, testers, related workers and labourers**
(includes perforators, wireline, slickline, service rig, seismic, swamper, helpers, hydraulic fracturing, pumping [cementing, acidizing], directional drilling, snubbing, coil tubing, etc.)
- **Truck drivers**
(includes bulk haul truck, winch tractor, boom truck, bed truck)
- **Heavy equipment operators**
(except crane)
- **Millwrights**
- **Petroleum, gas, chemical process operators**
(no steam-ticket required)
- **Welders**
- **Steamfitters & pipefitters**
- **Heavy-duty equipment mechanics**
- **Petroleum engineers**
- **Industrial electricians**
- **Machinists & machining & tooling inspectors**
- **Mechanical engineers**
- **Electrical & electronics engineering technologists & technicians**
- **Instrumentation technicians**
- **Quality assurance analysts**
- **Power engineers & power systems operators**
- **Electrical/instrumentation engineers**
- **Chemical engineers**
- **Chemical engineering technologists**
- **Crane operators**
- **Mechanical engineering technologists**
- **Drafting technologists & technicians**
- **Environmental technicians**
- **Insulators**
- **Production logistics coordinators**
- **Civil engineers**
- **Project/cost control engineers**
- **Industrial engineering & manufacturing technologists & technicians**
- **Drilling fluids services reps**
- **QHSE specialists**
- **Valve technicians**
- **Scientists**

Labour Force Requirements

Horizontal Drilling Workforce Study

In the past, it typically took

75 workers to drill and

complete a well. As of 2014,

it now takes between **239**

and 302 workers.

In 2013, work on horizontal /
multi-staged fractured wells
equaled **60,863** typical
full-time jobs!

Source: **Horizontal Drilling Workforce Study**, prepared by MNP LLP for the
Petroleum Services Association of Canada, April 30, 2014

Labour Force Requirements

Workforce Challenges

- Farm workers
- Changing demographics

Traditional labour pool



- Physically demanding
- Remote locations
- Several weeks away
- Weather +/- 40
- Long hours

Nature of the work



- Global and emerging markets
- Other industries
- E&P customers

Competition



- “Dirty Oil”
- Environment/ climate change
- Shifting societal values
- Sunset industry

Industry Image



- Invisible
- Unstable
- Cyclical
- Seasonal
- Low-tech

Sector Image



Workforce Development Initiatives On-Going / Underway

- **Connecting Canadians to Jobs**
 - **Occupational Skills & Qualifications Matrix**
 - **Occupational Standards of Competence – ‘Designated Occupations’**
 - Well Testing Supervisor Levels 1-5
 - Snubbing Services
 - Transportation Services
 - Slickline
 - **Virtual Career Fair with PHRC and government employment centres**
 - **Recruiting across the country**
 - fly-in/fly-out workers
 - relocation



Workforce Development Initiatives On-Going / Underway

- **Connecting Canadians to Jobs**
 - **Immigrants already in Canada**
 - Training programs provided by immigrant serving agencies targeted at oil and gas
 - **Canadian Military**
 - Development of policies to facilitate hiring reservists
 - Connecting employers to agencies for retiring military personnel
 - Development of matrix for transferrable military – private sector occupational titles/skills



Workforce Development Initiatives On-Going / Underway

- **Connecting Canadians to Jobs**
 - **Aboriginal**
 - Presentations on types of services and occupations
 - Training and employment opportunities
 - **Government / Industry**
 - BC Natural Gas Workforce Steering Committee
 - Northern Lights College – Entry-level training program
 - **Canada Job Grant**
 - **Canada Apprenticeship Loan**



Workforce Development Initiatives On-Going / Underway

- **PSAC Member Stories**
 - **Working Smarter**
 - Reliability-centred maintenance
 - Risk management
 - **Leadership Development**
 - Culture and diversity training
 - Succession planning
 - **Aboriginal training**
 - Build relationships
 - Cultural respect, focus on inclusion
 - Include the family



Workforce Development

What Else Can Be Done?

- **Apprenticeships**

- Harmonization across Canada
- More spaces available for trades in post-secondary
- Top up EI payments to continue current wage level; or
- Continue to pay base salary
- Continue benefits while on leave
- Employ year-round apprentices
 - even during slower periods
- Mentorship programs
- Develop employee engagement strategies for retention



Workforce Development

What Else Can Be Done?

- **Educational Institutions**

- More communication with industry
- Information on in-demand occupations to students

- **Harmonization**

- Professional occupations too – e.g. engineers
- Employment standards

Tax reform

- For fly-in/fly-out, drive-in/
drive-out workers/companies

- **Energy literacy**



Community Partners



PURPOSE | PARTICIPATING COMPANIES | GUIDING PRINCIPLES | SUPPORT | GET INVOLVED | CONTACT US |

Local concerns = **our concerns.**

dust. gates. garbage. noise. driving safety. traffic.



oilandgasinfo.ca and PatchWorks



oilandgasinfo.ca answers your questions about hydraulic fracturing work? What are the environmental questions – lots of information.

Questions like: How does hydraulic fracturing work? What is the environmental impact of oil and gas activity? Lots of information.

PATCHWORKS August 2013
HOW THE OIL PATCH WORKS

Hydraulic Fracturing Fluids – Part 2

Just the **gelling fluid**, fracturing fluid is necessary for the safe and efficient operation of equipment, and quite simply to get the job done right. Fracturing fluid chemicals perform inhibiting functions as increasing or maintaining viscosity, reducing friction, and eliminating bacteria.

And like drilling fluid, most of what's in fracturing fluid is water – about 99% actually! The remaining less than 1% or so is made up of additives, many of which are also found in consumer goods and household products. The [February 2013 issue of PatchWorks](#) explained how companies report on the composition of fluids used in hydraulic fracturing, but didn't have the space to offer examples of typical additives. Here's a short list:

- **Quat:** Emulsifying agent typically found in ice cream (emulsifying agents keep liquids in a compound from separating)
- **Citric acid:** used in lemon juice and food flavouring
- **Sodium chloride:** Used for table salt
- **Borate salts:** Used in laundry detergent, hand soaps and cosmetics
- **Petroleum distillates:** Used in make-up removers, laxatives and candy
- **Isopropylal:** Used in glass cleaner, antiperspirant and hair colour

Of course not all fracturing fluid additives are this easy to recognize. The [Frac Focus Chemical Disclosure Registry](#) website lists a number of the [chemical additives](#) most often used in fracturing fluid.

Every fracturing fluid additive is selected for a specific – and important – purpose.

Do there's an idea of what types of additives are used in fracturing fluid. The next question is: How many additives are used each time? There is actually no standard, one-size-fits-all recipe for fracturing fluid.

According to Frac Focus: "The number of chemical additives used in a typical fracture treatment depends on the conditions, such as depth or location, of the specific well being fractured and the characteristics of the formation, such as thickness and type of rock. A typical fracture treatment will use very low concentrations of between 3 and 12 additive chemicals, depending on the characteristics of the water and the rock formation being fractured."

One more question is: How much of these chemicals are being used? Obviously in the process of hydraulic fracturing, chemical additives are used in much higher volumes than any of us would ever use at home.

That's why hydraulic fracturing companies – like those involved in [CICAC's Working Energy Commitment](#) – are devoting time, money and expertise in labs and innovation centres to finding ways to reduce the use of chemicals (and water) in hydraulic fracturing.

Although they report on which additives they use for each fracturing job, hydraulic fracturing companies keep their specific fracturing fluid recipes a secret – just like any other company producing food items or other consumable goods. That's their competitive advantage!

PatchWorks explains how the oilpatch works in a series of short, monthly articles.

PatchWorks is part of PSAC's public outreach program, designed to strengthen the partnership between the oil and gas industry and the communities where we operate.

- Coming up in PatchWorks: Pipe coating
- For other PatchWorks articles and more oil and gas information, please visit: www.oilandgasinfo.ca
- Please send your PatchWorks questions and article ideas to: info@oilandgasinfo.ca

PSAC working energy



Oil & Gas & You

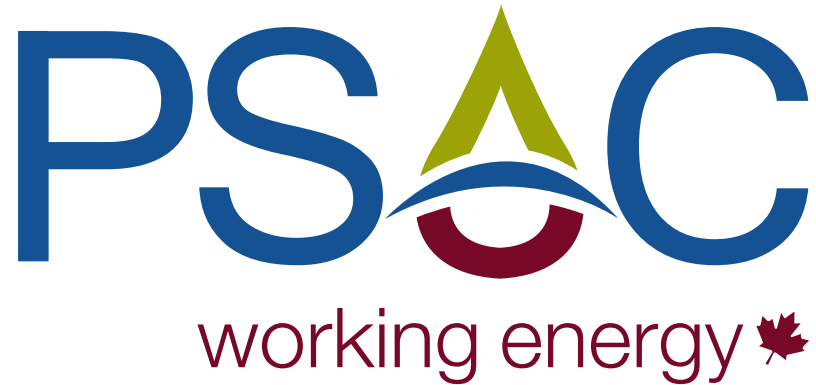
Products? Check. Jobs? Check. Economic benefits? Check! If you live in Canada, oil and gas is a big part of your life, whether you notice it or not.



Fracopedia

More than 175,000 wells have been hydraulically fractured in Alberta and BC since the 1950s, with no evidence of drinking water contamination. For more facts and figures on hydraulic fracturing in Canada, go to Fracopedia.

Alberta, but oil and gas is a big part of Canada's industry.



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Thank you

For more information, please visit:
psac.ca