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# REPORT ON FRACKING

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# REPORT ON FRACKING

## Aging oilfields renewed, at least for now

GORDON JAREMKO  
FOR THE CALGARY HERALD

When Peter Lougheed led the Conservatives into power in Alberta in 1971, they saw the writing on the wall for the province's oil and their election platform pledged to foster more durable wealth.

Deteriorating oil production lit a fire under the Tory ambition to build new livelihoods on economic diversification during Lougheed's second term as premier from 1975-79.

"It's no time for complacency or to coast," he told his party's 1977 convention.

Lougheed warned there was as little as 10 years left to counter the oil drain. His government poured effort into new fields from food processing to petrochemicals and plastics.

Not including the oilsands, the Tory regime founders' theory that the province was slowly but surely running out of black gold stayed right for 40 years, show records kept by the Alberta Energy Regulator and Canadian Association of Petroleum Producers.

The string of discoveries that followed the 1947 Leduc gusher ended in 1969. The lucky streak did not come back. The industry called itself mature and started managing the depletion of aging reserves.

After peaking at 1.4 million barrels per day in 1973, flowing wells dwindled to 460,000 barrels daily in 2010, Alberta's lowest annual average since 1962.

Enter horizontal drilling and hydraulic fracturing. The technology started an exploration revival with its methods of blasting flow channels into dense rock that kept oil locked up for eons in microscopic pores.

Fracking spread rapidly to more than 2,000 sites per year and reversed the decline. As of 2013, annual average Alberta oil output from flowing wells surged back to 583,000 barrels per day — a jump of 123,000 barrels daily, or 27 per cent, in just three years.

The AER, which dwells on well performance and bans all traces of wishful thinking or business optimism from its forecasts, suspects the growth revival will end this year.

The production drop is poised to resume in 2015 because old vertical wells look likely to deplete faster than they can be replaced by the limited pace of horizontal drilling to date, says the AER's 2014 annual reserves report.

CAPP foresees stronger fracking results. As an industry voice, the association observes investment trends and expects Canadian firms to catch the wave that has propelled the United States to its highest oil production in a quarter-century.

Since the technology began spreading in 2008 from its Texas cradle in the Dallas-Fort Worth region, American crude output grew by 50 per cent to about 7.5 million barrels per day right now.

Counting the lightest oil varieties, which are condensed from cloud-like vapour in natural gas, agencies from Washington's Energy Information Administration to the Bank of America expect the U.S. to rival Saudi Arabia and Russia as the No. 1 producer in the world.

Output is expected to exceed 10 million barrels per day for the rest of this decade.

CAPP's current forecast anticipates fracking will keep Alberta production of all oil types growing for 15 years to nearly 800,000 barrels daily. Saskatchewan wells, drilled mostly by Calgary firms, are expected to double to 313,000 barrels per day.

Fracking does not directly compete with the oilsands. But the revival of flowing wells has an indirect effect on the Alberta bitumen belt by softening North American oil prices, prompting costly mega-projects in slow down or postpone construction.

While predicting growth in fracking output, CAPP has lowered its oilsands expectations by 400,000 barrels per day to 4.8 million as of 2020 — a reduction about equal to three plants the size of the Syncrude project when it started production in 1978.



Kevin Heffernan, president of Canadian Society for Unconventional Resources, says industry and government are studying water usage. Wil Andruschak/For the Calgary Herald

## Process raises concerns over water usage, quality

JOEL SCHLESINGER  
FOR THE CALGARY HERALD

Most people have probably heard the term 'fracking' these days. This oil and gas exploration and production process, formally referred to as 'hydraulic fracturing,' is as controversial as it is revolutionary.

While it has been used for six decades, it's only in the last few years that advances in technology have allowed energy firms to access vast reservoirs once considered unviable because they were locked away deep underground in rock deposits such as shale.

Today, hydraulic fracturing makes up the majority of oil and gas wells drilled in Canada, according to the Canadian Association of Petroleum Producers.

Yet as fracking has rapidly expanded over the past decade, there has been growing concern about its impact on the environment.

In particular, conservation groups and other industry observers are concerned about hydraulic fracturing's impact on water resources.

"There are quality concerns and quantity concerns with regard to its impact on fresh water," says Carolyn Campbell, a conservation specialist with the Alberta Wilderness Association.

The primary issue for environmental groups who follow the industry has been water usage. As the name implies, water plays an important role in hydraulic fracturing. Water and sand, along with a small amount of chemical agents, are injected at high pressure into deposits of rock containing oil and gas, fracturing the rock and freeing the resource so it can be pumped out of the well.

Kevin Heffernan, president of Canadian Society for Unconventional Resources in Calgary, says the amount of water used in the process can vary by the size of the reservoir.

"There are parts of Alberta and British Columbia where it can take a lot of water — 30,000 cubic metres or more," he says.

Much of the controversy involves oil and gas producers' use of fresh water, says Duncan Kenyon, director of the unconventional oil and gas program for the Pembina Institute, an environmental think-tank.

"The industry would prefer to use fresh water because it's cheap if it's available and it's simple to do," he says. "And the volume of water that's being used is massive."

Some operations in northern Brit-



"There are quality concerns and quantity concerns with regard to its impact on fresh water," says Carolyn Campbell, a conservation specialist with the Alberta Wilderness Association. Wil Andruschak/For the Calgary Herald

ish Columbia use more than 70,000 cubic metres of fresh water — more than 18 Olympic-size swimming pools' worth.

Still, the overall amount of fresh water used by the industry remains relatively small, Heffernan says. For instance, in B.C., he says fresh water usage is less than one per cent of the total watershed. Furthermore, he says industry and government are closely monitoring the impact on fresh-water resources.

"What producers and government regulators are doing is trying to get an understanding of what the long-term demand for water will be and what the capacity is for the environment to provide those volumes of water," Heffernan says.

In addition, some producers have been proactive in developing other hydraulic fracturing techniques that reduce water usage, such as using brackish water from underground deposits and recycling used fresh water. Other techniques employ carbon dioxide, nitrogen and even propane instead of water.

Although welcome developments, Campbell says these advances still do not address the other concern — hydraulic fracturing's impact

on the quality of groundwater and well water.

"What is needed is more comprehensive transparency on its effect on water quality," she says.

Yet CAPP's Alex Ferguson says many worries about water quality are based on past operations involving coal-bed methane — shallow deposits in closer proximity to groundwater. These did occasionally contaminate water resources, he says. In some of the more infamous instances, affected landowners could light their well water on fire.

Yet new fracturing operations drill for deposits several hundred metres below groundwater, and Ferguson says water contamination as a result of these operations has yet to be proven conclusively.

"If there's something this dastardly going on, rational thinking would conclude that some evidence would show up somewhere," he says.

"It's curious to me that there's nothing out there yet."

Still, critics contend measuring the impact of hydraulic fracturing on water is difficult because scant research has been conducted thus far. In fact, a recent report commis-

sioned by the federal government and prepared by the Canadian Council of Academics stated more in-depth research is required, pointing to a dearth of comprehensive information on fresh-water usage and quality.

"Fundamentally, there are so many issues here we don't know about because we haven't taken the time to establish a baseline and study the impacts," Kenyon says.

Recently, a U.S. government report found regulation of its hydraulic fracturing industry has failed to adequately protect groundwater against contamination.

CAPP, however, contends industry and government in Canada have been proactive regarding environmental concerns, including CAPP itself, which has recently put in place its own set of "best practices principles."

Ferguson says the goal for all industry stakeholders is finding appropriate solutions that address both economic and environmental concerns.

"There will always be challenges — like any other industry," he says. "The challenge for us is to find the right balance."

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