

# The oil industry's recent wild ride

## How prices, jobs, and wages fared over the last 2 years

By SARA TEEL

Unpredictability has been the norm for the oil industry in Alaska since the first barrel flowed down the Trans-Alaska Pipeline in 1977. But the last seven years — and especially the last two — have been a wild ride for jobs and prices.

When oil prices plunged in late 2014, triggering a statewide recession, Alaska's industry shed a record 4,800 oil jobs over the next three years. Pandemic-era losses haven't hit that level, but the storm isn't over.

The price of Alaskan oil fell to a record low of \$16.55 per barrel in April 2020 after the pandemic began, then skyrocketed over the \$100 mark in less than two years.

Oil and gas employment plummeted 30 percent between April and November and its recovery has been far more gradual at about 12 percent over the next year. Automation continues to reduce the need for workers, so when prices rise, even maintaining current production levels doesn't require as many people. (See the secondary article on the next page for more on production.)

### North Slope crude price shoots up



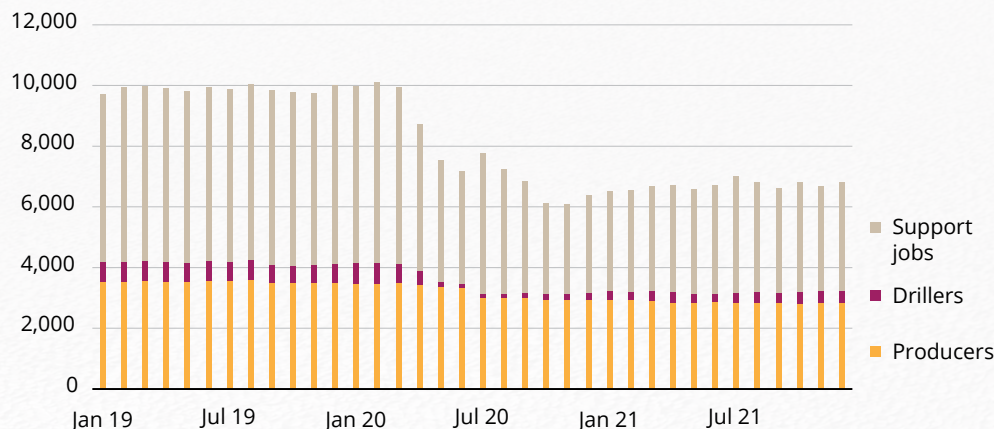
Source: Alaska Department of Revenue

### A closer look at the oil price rollercoaster and job counts

In 2017, prices began to rebound from the 2015 lows. The industry increased activity, especially on the North Slope, and oil employment ticked back up. By 2019, the price reached around \$65 per barrel and the number of industry jobs broke the 10,000 mark again for the first time in two years.

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### Oil and gas job count dropped in early 2020, stayed down



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

# Oil production: History and how Alaska stacks up now

## How Alaska got into the game

Alaska began producing commercial crude oil in 1959 when the Richfield Oil Corporation struck oil on the Kenai Peninsula. While the state's oil potential was clear at the time, it wasn't until the 1970s that Alaska made its mark.

The giant Prudhoe Bay field was discovered in 1968, four years after the first North Slope lease sale. Still one of the largest oil fields in North America, Prudhoe's estimated original oil in place was 25 billion barrels, with a possible recovery of about 40 percent. (With decades of technological advancements, anticipated recovery is now around 60 percent.)

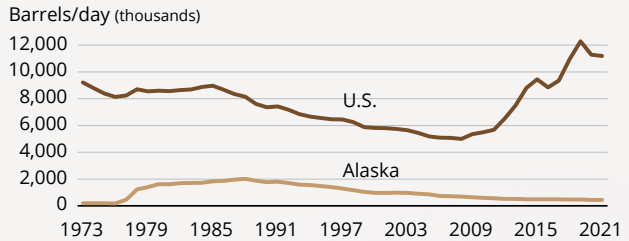
But there was no reliable way to transport the crude to market, and that led to the proposal of the Trans-Alaska Pipeline System before the year's end. Today, 95 to 98 percent of Alaska's yearly crude originates on the North Slope.

## A huge jump in production and revenue, then the equation changed

In 1973, Alaska produced just 2.2 percent of the United States' oil. Five years and an 800-mile pipeline later, it jumped to 14.1 percent.

The first full year of production was 1978, with 165

## Alaska's share of U.S. oil declines



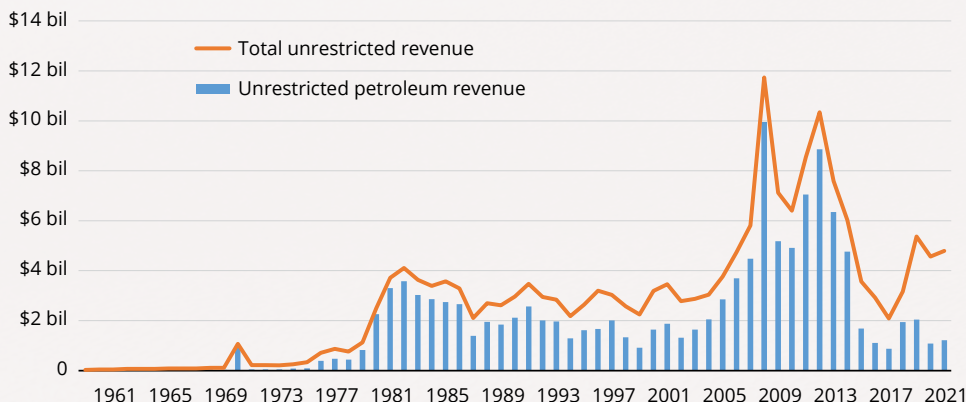
Source: U.S. Energy Information Administration

percent higher output than the year before and a hefty increase in petroleum revenue for the state. Within two years, petroleum revenue jumped from \$441.5 million to \$2.3 billion (in 2021 dollars: \$1.5 billion to \$6.3 billion).

By the early 1980s, petroleum revenue accounted for 80 to 90 percent of the state's unrestricted revenue. It was well over 50 percent in most of the years thereafter, depending on oil prices, until a legislative change in 2018.

That year, the state created a new revenue stream from the Alaska Permanent Fund's investment earnings using a percent-of-market-value draw. In that first year, an additional \$2.7 billion in general fund revenue became available. POMV markedly reduces the state's dependence on petroleum revenue, as the chart below shows.

## Petroleum now a smaller share of total Alaska revenue



**Note:** Starting in 2019, the State of Alaska began to draw from the Permanent Fund earnings account using a percent-of-market-value approach, which decreased the share of revenue that comes directly from petroleum.

Source: Alaska Legislative Finance



## Oil production by country, 2020

Area	Produced, mb/d*	Percent of world
1 United States	18,609	19.8%
2 Saudi Arabia	10,846	11.6%
3 Russia	10,496	11.2%
4 Canada	5,235	5.6%
5 China	4,863	5.2%
6 Iraq	4,152	4.4%
7 United Arab Emirates	3,780	4.0%
8 Brazil	3,769	4.0%
9 Iran	2,990	3.2%
10 Kuwait	2,735	2.9%
<b>World</b>	<b>93,826</b>	<b>100%</b>

\*Petroleum and other liquids produced, in millions of barrels per day

Source: U.S. Energy Information Administration

## How Alaska compares to other states

Alaska hit peak production in 1988 and became the top oil-producing state. Alaska crude represented 24.8 percent of all U.S. crude production, at 2 million barrels a day. Texas' production was a close second at 24.7 percent.

As Prudhoe Bay transitioned from a newly tapped greenfield to a mature brownfield (a field that has reached its peak production or has begun its decline), volume produced and its percentage of U.S. production fell. Production declines have been partially offset by new satellite fields such as Alpine and the use of secondary and enhanced oil recovery techniques.

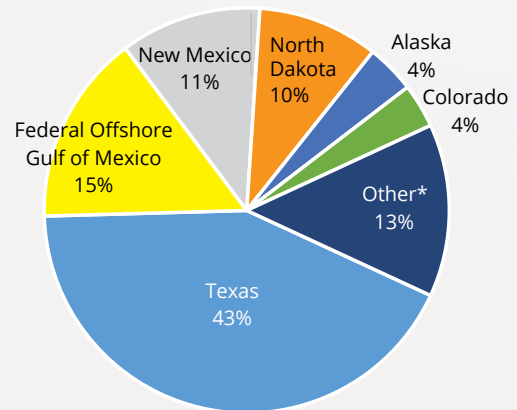
In 2021, Alaska produced about 437,000 barrels of oil per day, accounting for 3.9 percent of the U.S. total. Ninety-eight percent came from the North Slope.

Alaska now ranks fifth among producing states or regions, below Texas, the Federal Offshore Gulf of Mexico, New Mexico, and North Dakota.

## Shale was the other factor in Alaska's shrinking piece of the production pie

The natural production decline isn't the only reason Alaska's share of U.S. production has fallen. Technological advancements in the oil and gas industry spurred the shale boom in the Lower 48. These

## State shares of oil production, 2021



\*Oklahoma 3%, California 3%, Wyoming 2%, all other 5%

Source: U.S. Energy Information Administration

advancements work better for some reservoirs than others.

The dual use of horizontal drilling and hydraulic fracturing (fracking) first benefitted U.S. natural gas production and made the U.S. one of the largest natural gas producers in the world, but crude wasn't far behind. (Note: To date, fracking has not been as common in Alaska as in the Lower 48.)

U.S. oil production had fallen every year from 1985 to 2008, leading many to speculate that it had peaked, but oil shale producers were soon able to access previously unattainable deposits of oil and gas. From 2008 to 2021, U.S. oil production increased 124 percent.

## Meanwhile, the U.S. continues to grow global production share and is No. 1

According to the U.S. Energy Information Administration, in 2013 the United States once again became the leading global producer of petroleum and other liquids (for example, biodiesel, ethanol, other hydrocarbons, and liquids produced from coal, gas, and oil shale) at 13.6 percent of the world's total.

The U.S. share climbed steadily, to almost 20 percent in 2021. Saudi Arabia was second at 11.3 percent. Russia was third at 11.2 percent, but Russia's production will likely fall with the war in Ukraine and economic sanctions.

As the winter season wound down in early 2020, oil prices were expected to remain stable enough to spur investments and more jobs. Several large projects, namely Pikka and Willow, approached development. (See the end of this article for more on these two projects.)

Then, COVID-19 disruptions tanked oil prices again. Additionally, a price war between Russia and Saudi Arabia boosted global production as the two petrostates fought for market share in Asia. Contracts in the oil futures market expired in a way that caused a glut in crude oil supply. When stay-at-home mandates and other restrictions came worldwide that spring to slow the pandemic, demand collapsed and prices followed suit.

Oil production can't taper off so quickly, which put immense pressure on prices and storage capacity and resulted in daily spot prices in the unprecedented negative range for several days in 2020. A negative oil price means that due to oversupply, a seller must pay someone to take the oil, at least on paper. From February to April, Alaska North Slope crude's value fell 69.6 percent.

Demand for everything rebounded in 2021 as some pandemic measures eased up and vaccines rolled out. Pent-up demand pushed oil prices back up as people resumed working and going to school in person and made travel plans. Production cuts by OPEC countries also boosted prices.

Demand, supply chain constraints, inflation, and labor shortages all factor into the current jump in oil prices, compounded by the geopolitical uncertainty from the war in Ukraine. From April 2020 to April 2022, the price of Alaska North Slope crude increased from \$16.55 to \$109.41 per barrel — a whopping 561 percent.

In the past, the oil industry responded to higher prices by drilling more wells to increase production and revenue, but their risk tolerance has changed.

## What Alaska's oil industry jobs paid in 2019 and 2021

	2019	2021	Change
All oil and gas jobs	\$150,259	\$180,475	20.1%
Producing	\$232,546	\$261,758	12.6%
Drilling	\$112,690	\$124,522	10.5%
Support	\$103,564	\$119,458	15.3%

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

## Where N. Slope workers lived in 2020

Residence	Workers on North Slope	Percent of Slope workers
Matanuska-Susitna Borough	1,560	37.7%
Anchorage, Municipality	1,261	30.4%
Kenai Peninsula Borough	978	23.6%
Fairbanks North Star Borough	202	4.9%
Yukon-Koyukuk Census Area	33	0.8%
Copper River Census Area	16	0.4%
Southeast Fairbanks Census Area	15	0.4%
Dillingham Census Area	14	0.3%
Lake and Peninsula Borough	10	0.2%
North Slope Borough	9	0.2%
Kodiak Island Borough	7	0.2%
Juneau, City and Borough	7	0.2%
Other	31	0.7%

Notes: Alaska residents only, as determined by Permanent Fund Dividend applications, who work in the North Slope Borough in oil and gas extraction and oilfield services. 64.6 percent of oil workers are residents.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Publicly traded oil companies face shareholder pressure to reduce capital expenditures and tighten up their balance sheets after several years of disappointing market returns. According to S&P Global, 2022 oil industry capital expenditures will top 2021 by 10 to 20 percent — far less than the 50 percent we'd normally see with recent high prices — although U.S. production is still likely to grow modestly.

Activity in Alaska's oil patch has been muted, though, and higher prices haven't spawned rapid job growth. Projects here often require long lead times and high up-front costs. Price volatility creates extra risk.

After Alaska's oil and gas employment hit its pandemic bottom in November 2020 at 6,074 jobs, it ticked up to 6,805 by December 2021, an increase of 12 percent. Oil prices, on the other hand, soared 77 percent over the same period.

## The types of oil industry jobs and how they fared during COVID-19

For this article, oil industry jobs are those producing oil and gas or serving the industry directly. These jobs fall into three categories: producers, drillers, and oilfield support services.

In 2019, the oil and gas industry represented 3.0 percent of Alaska's jobs. After oil prices plunged in April 2020 and the economy contracted, that dipped



to 2.6 percent by year's end and averaged 2.2 percent in 2021. While oil jobs are a small share of total employment, they punch over their weight in wages, paying about two-and-a-half times the statewide average.

Like tourism, the oil industry lost more jobs than average during the pandemic. In 2019, Alaska averaged 9,885 jobs in oil and gas, which fell 32 percent by 2021, to 6,711. For comparison, Alaska lost 8 percent of its total employment in 2020, then added 2 percent the following year.

Oilfield support services, the largest slice of the industry, lost the most. These companies perform work such as fracking or workovers (maintenance or remedial treatment for existing wells) on a contract basis. Support services tend to rise and fall with oil prices.

In 2019, support services made up 58 percent of the oil industry's jobs. The 1,400 jobs lost in 2020, a 24.7 percent cut, was followed by another loss in 2021 of almost 800 jobs (-18.4 percent).

The number of producing jobs fell 9.2 percent in 2020 (-325) and another 10.7 percent in 2021 (-343). Drilling employment dropped 50 percent in 2020, although drillers make up just 6 percent of the oil industry in Alaska. In 2021, drilling was the only part of the industry to add jobs (23).

## The pandemic pushed oil industry wages even higher

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Oil and gas is known for paying the state's highest wages, at an average of \$150,289 in 2019. After employment fell 32 percent when the pandemic hit, the average annual wage rose to \$180,475 in 2021. (For comparison, the average Alaska job paid \$57,035 in 2019 and \$62,123 in 2021.)

Wage inflation and the types of jobs that were lost contributed to the higher average wage. Most of the lost jobs were from oilfield support services, which pays less than producing and drilling, and the loss of lower-paying jobs pushed up the industry average.

Oilfield support services' wages rose from \$103,564 in 2019 to \$119,458 in 2021. Drilling wages rose from \$112,690 to \$124,522, and producing wages increased from \$232,546 to \$261,758, which in this category included bonuses.

## The year ahead for oil and gas is murky, with many factors in play

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The uncertainties and obstacles of the last few years extend into this year's outlook. As mentioned earlier, companies face shareholder pressure to cut capital expenditures, and at the same time, some investors won't fund projects in environmentally sensitive areas such as the Arctic.

The price of oil must be relatively stable before the industry will invest in higher-cost, long-term projects. Prices are determined globally, though, and often hinge on investor and trader expectations.

At the same time, the war in Ukraine and the pending European Union ban on Russian crude are cutting the supply of crude oil and natural gas on the global market. New COVID-19 variants are an ongoing possibility, too, that could quickly alter people's choices and dampen demand.

Another question mark is China, a heavy user of crude and a major global manufacturer of goods. China's zero-tolerance approach to COVID has demanded factory and citywide shutdowns, leading to sudden drops in oil consumption and supply chain bottlenecks.

Alaska still has the Pikka and Willow projects on the near horizon, although steel piping for casing and other oilfield supplies as well as workers are becoming harder to find.

The North Slope's Pikka, discovered in 2013, is one of the largest conventional oil discoveries in the U.S. in the last 30 years. The Papua New Guinea-based company Oil Search acquired Pikka in 2018, and the state plans to issue its final investment decision in 2022. If it goes forward, drilling will begin in 2023.

Willow, first acquired by ConocoPhillips in 1999, saw its first Slope exploration wells drilled in 2016. ConocoPhillips anticipates 160,000 barrels of oil a day at Willow's peak, totaling 450-800 million barrels of recoverable oil at an estimated cost of \$8 billion. The permitting process began in 2018, although two court cases in 2021 delayed development. The U.S. Bureau of Land Management is conducting a supplemental environmental impact statement, and while construction could begin during the 2022-23 season, it will depend on a new record of decision.

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