

# Alaska's Oil and Gas Industry

## A look at jobs and oil's influence on economy

Oil's contribution to Alaska's economic history has no equal. Historians write that the discovery of oil in Cook Inlet helped secure Alaska's quest for statehood, and the subsequent massive discovery of oil in Prudhoe Bay remains the largest in North America.

In the decades since, oil has played the leading role in all the state's major economic and population changes.

During the construction of the oil pipeline in the 1970s and the revenue boom that followed, Alaska's population surged like never before, followed by the state's only economic bust and its largest-ever outflux of population.

However, even after those losses, Alaska's econ-

"The balance sheet of Alaska history is simple: One Prudhoe Bay is worth more in real dollars than everything that has been dug out, cut down, caught, or killed in Alaska since the beginning of time."

**Terrence Cole, Alaska Historian**

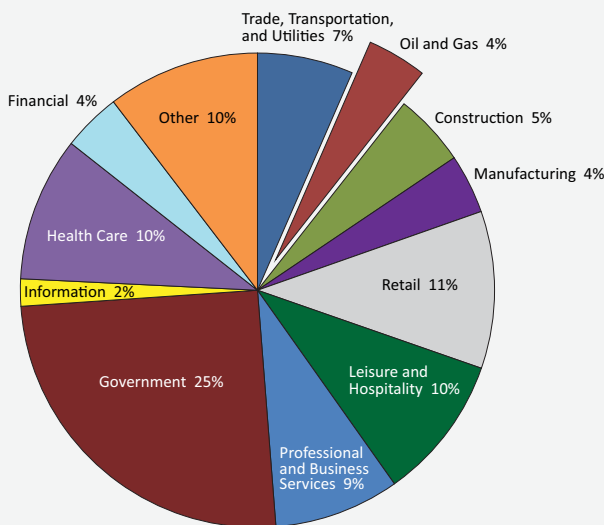
omy remained larger than it had ever been. The state's workforce recovered quickly and grew every year except one over the past 25 years.

Today, oil funds over half the state budget — 56 percent in fiscal year 2012 — and about 90 percent of state general funds.

In fiscal year 2012, the state collected \$8.9 billion in oil revenues. The Permanent Fund, initially created to share Alaska's oil wealth with its residents, has disbursed billions in dividends to Alaskans since it began in 1982.

Oil also generates about 19 percent of gross state

### 1 Oil a Small Slice of Alaska Jobs State's industry makeup, 2012



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

### Who's counted and who isn't

Employment numbers for the oil and gas industry used in this article and regularly published by the Alaska Department of Labor and Workforce Development include companies categorized under "oil and gas extraction" (North American Industry Classification System code 211111), "drilling oil and gas wells" (NAICS code 213111), and "support activities for oil and gas operations" (NAICS code 213112).

This definition does not include oil and gas pipeline transportation companies, refineries, and many construction companies involved in Alaska's oil and gas operations. It also excludes the tens of thousands of jobs created across a range of other industries — jobs that are often included in studies that quantify the importance of the industry to Alaska's economy.

product and supports at least a third of all jobs. On a local level, the industry is sometimes one of the largest property tax payers.

## Small employer, big reach

Using the industry definition explained in the sidebar on page 4, direct oil and gas jobs stood at 14,100 in April of this year. Using 2012’s annual averages, this represented 4 percent of Alaska’s wage and salary employment. (See Exhibit 1.)

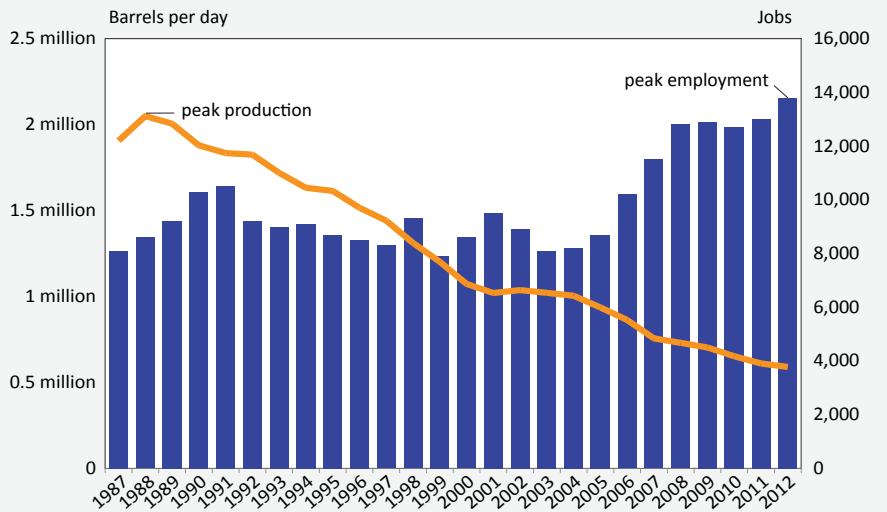
Because average earnings in the oil industry are more than two-and-a-half times the average for all Alaska industries, its payroll impact is more pronounced. The industry paid \$1.7 billion in 2012, or 10 percent of wage and salary payroll. Between 2002 and 2012, the oil industry’s payroll grew by 106 percent, considerably more than the 56 percent growth for all industries.

The effects of oil and gas employment go far beyond the scope of this article, though. Thousands of jobs that support the industry are not categorized as oil and gas employers.

For example, during the third quarter of 2012, nearly a quarter of the 11,100 jobs in Prudhoe Bay — all of which were oil-related — were

## 2 More Jobs Despite Production Decline

Alaska oil production and employment, 1987 to 2012



Sources: U.S. Department of Revenue; and Alaska Department of Labor and Workforce Development, Research and Analysis Section

not identified as oil industry employers. Some of these support jobs include security, catering, accommodations, facilities management, transportation companies, engineering services, and logistics.

## Employment waxes and wanes

The past 25 years of fluctuating oil employment were punctuated by an era of overall decline that began in the 1990s and lasted through the mid-2000s, accompanied by brief periods of recovery. (See Exhibit 2.)

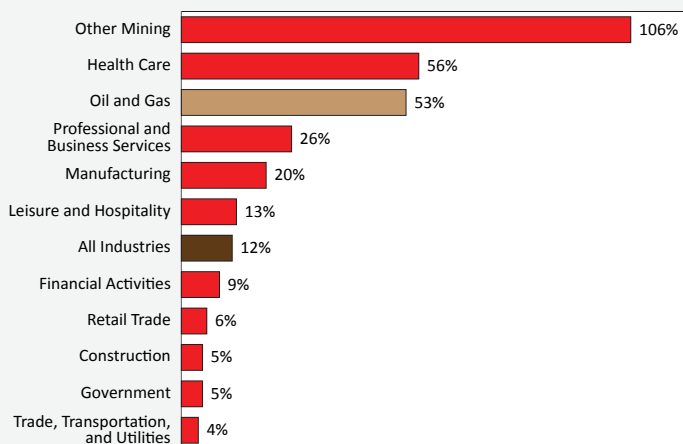
Oil production peaked in 1988 and employment hit a temporary high shortly thereafter, at 10,700 jobs in 1991. The job count dropped off after that and remained below 10,000 until 2006.

One of the largest workforce contractions was the 1,600 jobs lost between 1991 and 1992 — a record loss for a single year. Weak oil prices contributed to another drop in 1995.

By 1998, Alaska’s oil employment began to bounce back with the development of a number of new fields, but this upswing was temporary.

## 3 A Decade of Strong Job Growth

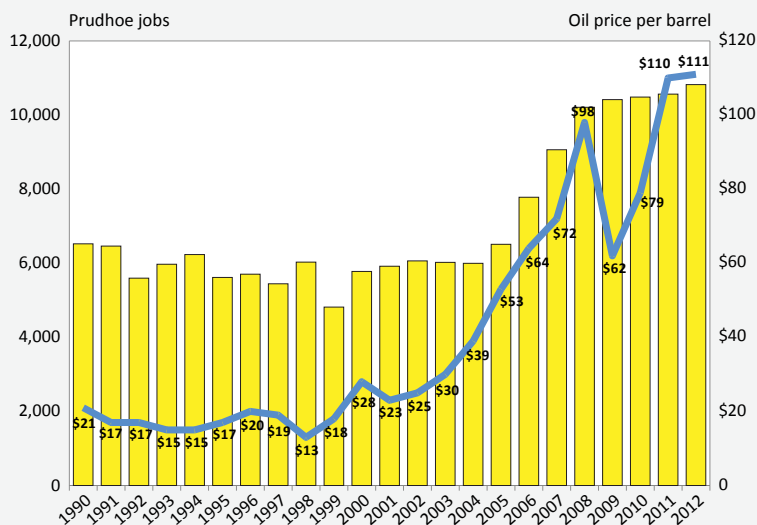
Alaska oil and gas vs. all industries, 2002–12



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

## 4 Record Employment in Prudhoe Bay

### Jobs and oil prices per barrel, 1990 to 2012



Sources: Alaska Department of Labor and Workforce Development, Research and Analysis Section; and Alaska Department of Revenue

Plunging oil prices brought record job losses again that year when oil prices fell to \$13 per barrel from nearly \$19 the year before. In 1999, oil industry employment fell below 8,000 for the first time since 1983, and those losses reverberated throughout the state's economy.

In 2001, employment climbed to a 10-year high, spurred largely by the concurrent development of the Alpine and North Star oil fields and augmented by the construction of large oil modules in Kenai and Anchorage — modules that had been built in the Lower 48 or overseas in the past.

When most of the work on the North Star and Alpine fields was complete, employment fell again and hovered at the 8,000 level through 2004. At the time, it appeared Alaska's oil workforce was entering an era of stagnation.

However, the industry began to grow again in 2005, possibly because four years of above-average oil prices had more than doubled the 2001 price low. Development that breathed new life into the industry included work on heavy oil in West Sak, repair of production wells in Prudhoe Bay, work around Alpine, construction of new connecting pipelines, and continued development of a number of satellite fields.

## Jobs, prices reach new highs

More than 25 years after oil production peaked in Alaska, its workforce broke new records and again became one of the fastest-growing industries in the state.

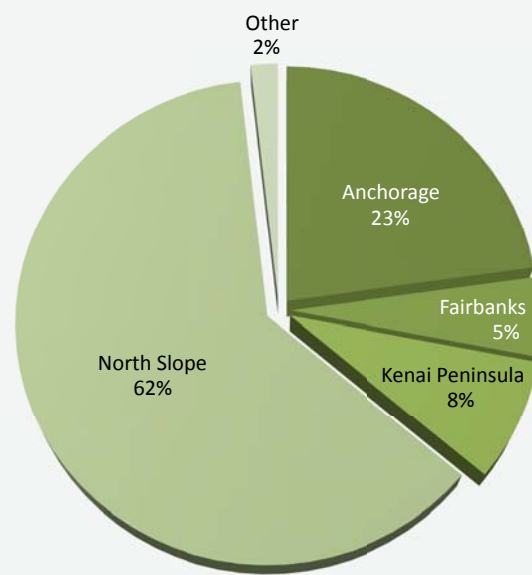
In early 2006, a section of BP's pipeline sprung a leak, which would eventually turn out to be the largest oil spill in the history of the North Slope. Soon after, additional corrosion problems required further work. All of this new activity spurred employment growth, bringing 2007's job levels past the 11,000 mark for the first time in history. In December of that year, jobs hit 12,000.

The average monthly job count rose above 12,000 in 2008, where it remained for the next three years despite large fluctuations over the course of some years in the monthly numbers. Then in 2011, job levels broke the 13,000 barrier and came up just short of 14,000 in 2012. (See Exhibit 3.)

High prices are the best explanation for the past decade's employment growth. In 2008, the average for Alaska North Slope crude climbed to \$98 per barrel, then peaked at \$134 per barrel in June of that year. (See Exhibit 4.)

## 5 Most Jobs on North Slope

### Alaska oil industry, 2012



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

## 6 Oil and Gas Jobs

Alaska by area, 2012

Area	Oil Industry Employment
Statewide	13,641
North Slope Borough	8,459
Anchorage, Municipality of	3,106
Kenai Peninsula Borough	1,113
Fairbanks North Star Borough	719
Valdez-Cordova Census Area	—
Yukon-Koyukuk Census Area	—

Notes: Numbers are preliminary. A dash means values can't be disclosed for confidentiality reasons.

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

Prices backed off during the middle of the recession but hit new highs again by 2011, when prices averaged more than \$100 a barrel for the entire year. They averaged more than \$100 again in 2012 and continued at that level through the first quarter of 2013.

A related explanation for the increase in production jobs amid lower output is that deeper and harder-to-reach oil reserves require greater effort to extract. As oil prices rise, it becomes more economically feasible for companies to explore these areas.

### New projects, new firms

New firms and new activity — along with continued maintenance and redevelopment of existing oil fields and exploration — helped spur the recent renaissance in Alaska's oil fields. The list of recent projects includes:

- Pioneer Natural Resources finished its offshore Ooguruk project in early 2008, making it the first independently operated oil field on the North Slope.
- ENI developed a similar offshore project, Ni-kaitchuq, shortly thereafter.
- ExxonMobil's massive undertaking at Point Thompson is boosting jobs on the North Slope to build miles of new roads, drill pads, and other oil field development infrastructure along with a 22-mile pipeline to ship condensate down the Trans-Alaska Oil Pipeline.

## 7 Oil Industry Earnings

Resident workers by area, 2011

### By borough/census area with 10 or more workers

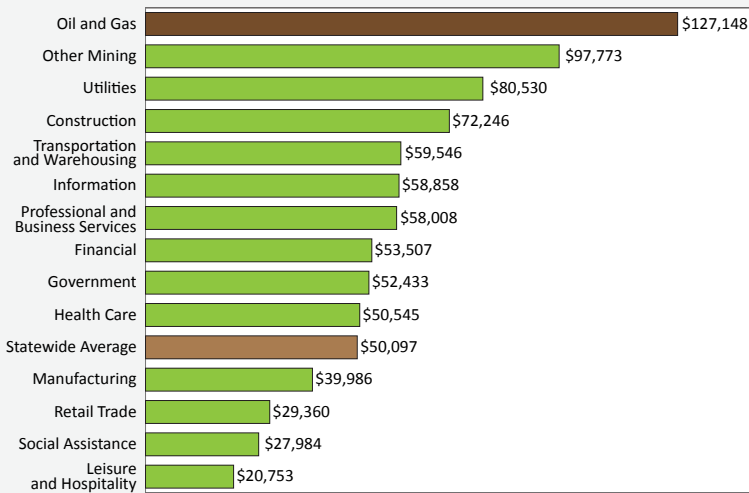
Borough or census area	Workers	Earnings
Anchorage, Municipality of	4,900	\$573,509,637
Kenai Peninsula Borough	2,886	\$261,181,653
Matanuska-Susitna Borough	2,444	\$222,790,362
Fairbanks North Star Borough	711	\$56,828,382
Valdez-Cordova Census Area	173	\$12,539,129
North Slope Borough	69	\$2,585,915
Yukon-Koyukuk Census Area	68	\$4,767,207
Southeast Fairbanks Census Area	61	\$4,660,955
Lake and Peninsula Borough	20	\$1,156,242
Kodiak Island Borough	20	\$1,340,859
Dillingham Census Area	15	\$666,944
Denali Borough	13	\$920,695
Juneau, City and Borough of	12	\$880,538
Nome Census Area	10	\$665,847
Bethel Census Area	10	\$445,892
Sitka, City and Borough of	10	\$694,257
Ketchikan Gateway Borough	10	\$941,422

### By place with 10 or more workers

Place	Workers	Earnings
Anchorage	4,179	\$487,616,617
Wasilla	1,540	\$142,110,757
Soldotna	991	\$92,405,634
Kenai	894	\$81,709,001
Fairbanks	685	\$54,801,105
Palmer	562	\$51,768,914
Eagle River	487	\$61,769,982
Sterling	270	\$25,058,872
Nikiski	257	\$21,747,456
Chugiak	171	\$17,838,331
Homer	143	\$12,770,050
Kasilof	127	\$10,356,331
Valdez	115	\$7,839,379
Big Lake	98	\$8,605,232
Willow	77	\$6,794,267
Anchor Point	75	\$5,817,048
Houston	58	\$4,440,533
Girdwood	54	\$5,737,019
Talkeetna	51	\$4,244,643
Seward	47	\$3,721,712
Ninilchik	44	\$4,207,352
Delta Junction	42	\$3,392,443
Sutton	35	\$3,006,731
Barrow	34	\$1,135,497
College	19	\$1,590,683
Glennallen	19	\$1,620,702
Copper Center	18	\$1,449,412
Kodiak	17	\$1,118,829
Trapper Creek	17	\$1,357,958
Tok	14	\$962,780
Juneau	12	\$880,538
Newhalen	12	\$567,405
Clam Gulch	11	\$1,008,731
Cooper Landing	10	\$936,488
Cordova	10	\$734,689
Sitka	10	\$694,257

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

## 8 Oil Industry Earnings Are High Alaska yearly averages, 2012



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

- Shell’s massive offshore drilling effort generated considerable economic activity and employment even though it ran into a host of problems.
- Cook Inlet, Alaska’s “mature” oil and gas province, had a notable upswing in recent years.

Some of the new and returning firms include Buccaneer Energy, ENI, Hilcorp, Apache, Armstrong Oil and Gas, NordAq, Brooks Range Petroleum, Respol, Statoil, and Petro Canada. Some of the newcomers, such as ENI, are among the largest oil producers in the world; others are mid-sized and smaller independents such as Hilcorp and Buccaneer, respectively.

### Jobs mainly in three areas

Anchorage, the North Slope, and the Kenai Peninsula Borough are home to nearly all of Alaska’s oil industry jobs. (See Exhibits 5 and 6.) The latter two are where all oil is produced, and Anchorage, which has a quarter of industry jobs, is often the headquarters or service center for many of these employers.

Over half the state’s oil workforce is employed in the North Slope Borough and nearly half of the borough’s employment is in the industry, which

is the highest concentration in the state.

Eight percent of the state’s oil and gas jobs are in the Kenai Peninsula Borough. Oil also provides a substantial number of pipeline transportation and refinery jobs, which are counted in other industries but have obvious connections to the state’s oil and gas resources. A liquid natural gas facility that will soon close has been another important employer in the borough.

Oil is fundamental to other areas such as Valdez, the pipeline’s terminus and home to a refinery. Oil properties generated 90 percent of the city’s property taxes in 2011.

Fairbanks’ direct oil and gas employment is small, but the city is a major logistical and supply center for the North Slope and has two refineries. In 2011, 10 percent of the city’s property tax revenue came from oil properties.

### Oil workers live all over the state

Though most of the oil industry’s jobs are concentrated in three areas, it draws workers from all over the state and nation. (See Exhibit 7.)

One of the more dramatic examples is the Matanuska-Susitna Borough, which has neither industry employment nor production. Eight percent of the borough’s working residents commuted to the North Slope in 2011, and they brought home \$223 million in wages.

Kenai Peninsula Borough is similar in that it had a little over 1,000 oil and gas jobs in 2011, but 2,900 of its residents worked in the industry. Even the state’s smaller communities have residents who commute to remote oil jobs.

It’s a different story in the North Slope Borough, however. Although half the state’s oil industry workers were employed on the North Slope in 2011, only 69 North Slope workers were also borough residents.

### Nonresident workers and wages

Over the past decade, the percentage of nonresident oil and gas workers has fluctuated between 26 and 31 percent. In 2011, nonresidents earned 29.6 percent of oil industry wages, up slightly from 2010. Resident workers earned more on av-

erage, at \$99,411 a year compared to \$92,559 for nonresidents.

## Highest-paying industry

Alaska’s oil industry is known for its high average wages — in 2012, the average oil and gas job paid \$127,148. (See Exhibit 8.) This was 254 percent above the statewide average for all wage and salary jobs.

Oil producers tend to pay more than oilfield or drilling support firms. For producing companies, 2012’s average earnings per job were \$188,133 versus \$102,669 for service companies. Earnings were also considerably lower for oil-related jobs classified in other industries.

There are several reasons for the industry’s high earnings, but the weights of these factors are not as clear. Production jobs require experience, a high skill level, and demanding work schedules with a considerable amount of overtime, which stems from nonstandard schedules such as those on the North Slope or on the platforms in Cook Inlet. Remote employees often work 84 hours a week, or the standard 40 hours plus 44 hours of overtime.

Another factor is that the oil and gas boom is in full swing around the world, which creates tremendous competition for experienced workers.

## Different from other oil states

Alaska ranked third in the nation for oil production for many years, but in 2012 it fell to fifth, surpassed by North Dakota and California. (See Exhibit 9.) As far as oil’s importance to the economy, though, Alaska ranks first when measured by the share of gross domestic product.

Alaska produces 8 percent of the nation’s domestic oil supply but employs a little less than 3 percent of U.S. oil workers. (See Exhibit 10.) In 2012, Texas produced nearly four times more oil but its industry workforce was 17 times larger than Alaska’s. Oklahoma produced less than half Alaska’s oil in 2012 but its workforce was nearly four times larger.

Some of these states produce more natural gas than Alaska, which is reflected in the job numbers, but this doesn’t explain most of the difference.

## 9 Oil Jobs, Production, Firms by State

Select states, 2011 and 2012

	Oil and Gas Jobs, 2011	Oil Production (Thousands of Barrels), 2012	Gas Production (Mcf <sup>1</sup> ), 2011 <sup>4</sup>	2011 Establishments
Alaska <sup>1</sup>	12,981	204,738	356,325	117
Texas <sup>2</sup>	225,496	721,360	7,112,863	8,563
California <sup>1</sup>	20,928	213,645	250,177	479
North Dakota <sup>3</sup>	14,926	242,486	97,102	44
Louisiana <sup>1</sup>	48,947	477,283	3,029,206	1,788
Oklahoma	49,207	89,627	1,888,870	3,092
New Mexico	16,310	84,179	1,237,303	873
Wyoming	16,967	58,192	2,159,422	1,001
Total U.S.	499,507	2,380,824	24,036,352	24,008

<sup>1</sup>Includes federal offshore oil production, which is small in Alaska and California but significant in Louisiana

<sup>2</sup>Excludes federal offshore Gulf of Mexico oil production, which is significant but is not available

<sup>3</sup>Due to disclosure requirements, North Dakota’s job numbers exclude NAICS code 213111, drilling oil and gas wells.

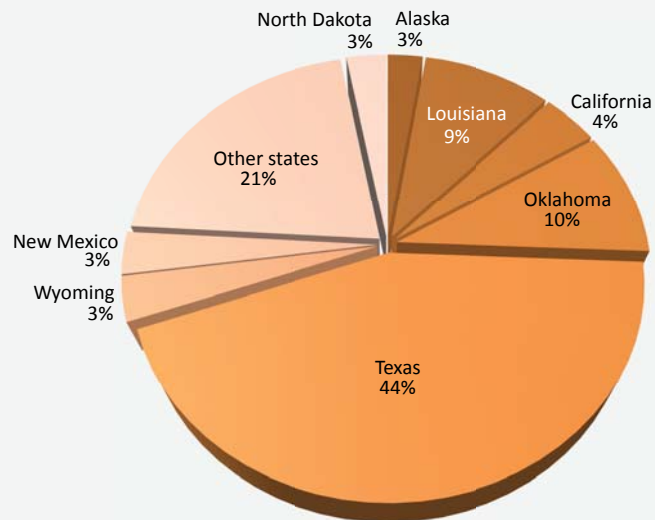
<sup>4</sup>Offshore federal outer continental shelf gas production data are excluded for Alaska (very small), Louisiana, and Texas, and are included in the California and U.S. numbers. This is a limitation of Energy Information Administration data.

\*Mcf = Thousand cubic feet

Sources: U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages; Energy Information Administration; Louisiana Department of Natural Resources; Alaska Department of Revenue

## 10 Oil Employment by State

As percentage of national oil jobs, 2011



Sources: U.S. Department of Labor, Bureau of Labor Statistics; and Alaska Department of Labor and Workforce Development, Research and Analysis Section

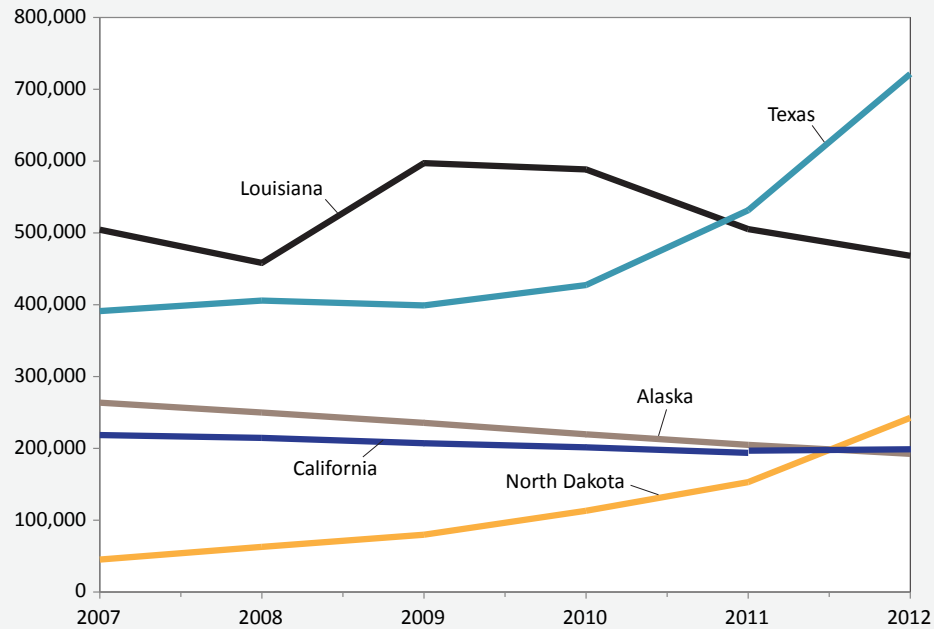
Alaska differs from most oil-producing states in a number of important ways.

- **Alaska’s large oil fields don’t require large workforces.** Prudhoe Bay, which produces 45

# 11

## Oil Production Trends Since 2007

Select energy-producing states, 2007 to 2012



Source: Energy Information Administration

percent of the state's oil, is the largest in the nation but has relatively few workers. Ten out of the nation's 50 largest oil fields are on the North Slope.

- **Most other oil-producing states have a variety of small, medium, and large fields.** For example, the nation has 394,000 marginal fields or stripper wells, which produce 10 barrels of oil or less per day, and Alaska has none.
- **Other oil-producing states have thousands of small oil and gas establishments.** For example, in 2011, Alaska had 117 oil and gas establishments versus 1,788 in Louisiana and 3,092 in Oklahoma. If Alaska's oil fields were not as remote, employment would be considerably higher. Oil fields considered marginal or not economically feasible would be economic if they were less remote.
- **Alaska is less likely to be home to an oil industry headquarters or regional center.** The majority of Alaska's oil workforce exists solely to produce oil and gas in the state

and not to provide services to the rest of the nation or world. Other functions such as management, research, and sometimes exploration take place elsewhere.

- **Alaska has smaller transportation infrastructure and fewer downstream operations, such as refineries.** Though the state has an 800-mile pipeline and a number of smaller ones, they don't compare to the thousands of miles of pipeline snaking through other states. Alaska's refineries typically serve local demand, which is relatively small. In 2012, Louisiana had 19 operating refineries and refined 3.2 million barrels of oil a day compared to Alaska's six refineries, refining 385,000 barrels of oil a day.

### Slower job growth in Alaska

Although Alaska has a record number of oil and gas industry workers and is one of the fastest-growing industries in the state, its employment is growing slower than in many oil-producing states. Over the past decade, the nation's oil and gas employment grew by 62 percent versus Alaska's

37 percent. Growth in North Dakota was an eye-popping 557 percent. Alaska's job growth did outpace that of California and Louisiana, two other states whose production hasn't increased over the decade. (See Exhibit 11.)

## **The role of new technology**

Though U.S. oil production started a general decline in 1985, technological breakthroughs and high prices led to increased production starting in 2009. In 2012, U.S. oil production reached its highest level since 1992, with North Dakota and Texas as the major contributors to this jump.

In Alaska, oil and gas production has continued to decline. As the easy-to-extract oil runs out, greater effort and technology will be required to get at the deeper, harder-to-reach oil.

Horizontal drilling and hydraulic fracturing, or fracking, are playing major roles in other states, opening new areas to development. Fracking involves pumping pressurized liquid down into layers of rock to get at deeper trapped oil or gas. North Dakota produces 95 percent of its oil this way, and this new technology has also reinvigorated oil and gas production in Texas, where gas production has grown by 17 percent in the past five years. Gas production in Louisiana more than doubled during that period.

Fracking hasn't yet played a major role in Alaska, and the jury remains out on its widespread application in the state. Alaska also has yet to commercially develop its vast reserves of natural gas.