January 2020

The Role of the Oil & Gas Industry in Alaska's Economy

PREPARED FOR

Alaska Oil and Gas Association

AOGA

PREPARED BY

McDowell GROUP

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McDowell Group Anchorage Office
1400 W. Benson Blvd., Suite 510
Anchorage, Alaska 99503

McDowell Group Juneau Office
9360 Glacier Highway, Suite 201
Juneau, Alaska 99801

Website: www.mcdowellgroup.net

McDowell GROUP

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Industry Overview

Alaska's oil and gas industry started with the discovery of the Swanson River oil field on the Kenai Peninsula in 1959. That was followed by discovery of the Sterling gas field in 1961, the Beluga River gas field in 1962, and the Beaver Creek gas field in 1967. Prudhoe Bay, one of the largest oil fields in North America, was discovered on the North Slope in 1968. In 2017, Prudhoe Bay production and Trans-Alaska Pipeline System (TAPS) operations celebrated a 40-year anniversary. During that time, 17.8 billion barrels of oil have been transported through TAPS from the North Slope to the Valdez Marine Terminal on Prince William Sound.

Alaska's production of crude oil represented 4% of total U.S. production and 0.6% of total global production in 2018. The state's lowest average daily production year since TAPS began operations occurred in 2015, at 519,000 barrels. Since then, North Slope production has increased an average of 1.4% per year.

Alaska's oil and gas industry, which includes 17 "Primary Companies" that explore, produce, refine, and transport North Slope and Cook Inlet resources,[1] remains the single most important economic engine in the state.

Study Purpose and Scope

The Alaska Oil and Gas Association (AOGA) contracted with McDowell Group to assess the role of the oil and gas industry in Alaska's private and public sector economies. The study covers six geographic locations: Municipality of Anchorage, Fairbanks North Star Borough, Kenai Peninsula Borough, Matanuska-Susitna Borough, North Slope Borough, and the City of Valdez. The economic impact analysis was based on detailed 2018 employment, payroll, and spending data provided by 17 Primary Companies in Alaska's oil and gas industry. The economic impact of the Primary Companies occurs at three levels:

- **Direct** impacts, including the Primary Companies' own employment, payroll, and purchases.
- **Indirect** impacts, including jobs and income in businesses providing goods and services to the Primary Companies
- **Induced** impacts, including jobs and income created when Primary Company employees and their vendor employees spend their payroll dollars in the local economy

This analysis also captures the impact of Primary Company payments to the State of Alaska in the form of taxes, royalties, and other charges. These payments fund large portions of the State's operating and capital budgets. Finally, oil and gas revenue is disbursed directly to Alaska residents in the form of transfer payments, including the Permanent Fund Dividend. Key findings are summarized below.

[1] Primary Companies include Alaska Gasline Development Corporation, Alyeska Pipeline Service Company, BlueCrest Energy Inc., BP Exploration (Alaska) Inc., Brooks Range Petroleum Corporation, Chevron Corporation, ConocoPhillips Alaska Inc., Eni US Operating Co. Inc., ExxonMobil, Furie Operating Alaska LLC, Glacier Oil & Gas Corporation, Hilcorp Alaska LLC, Marathon Petroleum Company, Oil Search (Alaska), LLC, Petro Star Inc., Shell Exploration & Production Company, and Repsol SA.

Economic Context

It is important to consider the economic impact of the oil industry in Alaska today in the context of economic conditions in the state over the past several years. Oil prices started sliding in late 2014, bottoming in early 2016, falling from over $110 per barrel to $30 per barrel.

Oil revenues had long accounted for 80% or more of State of Alaska General Fund revenues, supporting a broad range of public services, programs, and projects. With the sharp drop in oil prices, annual unrestricted petroleum revenue to the State of Alaska declined from $4.8 billion to under $0.9 billion.

At the same time, and in response to the decline in oil process, annual oil industry spending on operations and capital projects dropped from $8.3 billion to $5.4 billion. In total, the state's economy experienced a $7 billion loss. Alaska lost 11,700 jobs between 2015 and 2018, including 4,800 oil & gas industry jobs, 2,600 jobs in the professional & business services sector, 1,900 construction jobs, 2,200 state government jobs, as well as jobs elsewhere in the support sector. In 2019, the Alaska economy showed the first signs of recovery. Oil industry spending is on the rise and the statewide job market has stabilized. Events of 2014 to 2018 clearly illustrate the critical role the oil and gas industry plays in Alaska's economy. History has proven that a strong oil and gas industry translates into a strong Alaska economy, and vice versa.

Meanwhile Alaska's position as an oil producer has changed. In 2008, Alaska's production represented 14% of U.S. oil production; by 2018, it dropped to 4%. In this same period, Alaska's contribution to global supply dropped from 0.9% to 0.6%.

The state's proven economic dependence on a strong and stable oil industry, coupled with its diminishing market position as a producer, highlights the importance of maintaining Alaska's place as an attractive and competitive investment climate.

Statewide Impacts

Oil and Gas Industry Related Jobs and Wages

- In 2018, the Primary Companies employed 4,111 Alaska residents earning $983 million in wages.
    - Those Alaska residents represent 84% of "Primary Company" total employment in Alaska (total: 4,906).
- Primary Companies spent $4.4 billion with approximately 1,000 Alaska vendors in 2018.
- Including all direct, indirect, and induced employment and wages, oil and gas industry spending in Alaska accounted for 41,800 jobs and $3.1 billion in total wages in Alaska in 2018. This included:
    - 5,800 Alaska resident jobs in the oil and gas support services sector.
    - 31,900 indirect and induced jobs in other private and public sectors.
- State and local government spending of taxes and royalties paid by the oil and gas industry directly creates jobs in Alaska's public sector and indirectly creates jobs and income throughout the private sector. Government spending of oil and gas tax and royalty income (including use of the oil-industry-funded Constitutional Budget Reserve) accounted for 35,800 jobs and $1.7 billion in wages (direct, indirect, and induced impacts) in Alaska's economy.

- Combined, the employment and wage impacts of Primary Company spending in the private sector together with taxes and royalties to Alaska's state and local governments totals:
    - 77,600 jobs in Alaska, or 24% of all wage and salary jobs in Alaska.
    - $4.8 billion in Alaska wages (including all multiplier impacts and jobs related to taxes and royalties).
    - For every Primary Company job, there are 8 more jobs supported by Primary Company activity in Alaska, and 7 more jobs supported by oil-related taxes and royalties.
    - For each dollar earned by employees of the Primary Companies, a total of $4 in additional indirect and induced wages are generated in Alaska.

Key Regional Impacts of Oil and Gas Industry Private Sector Spending

Six local areas — Municipality of Anchorage, Fairbanks North Star Borough, Kenai Peninsula Borough, Mat-Su Borough, North Slope Borough, and the City of Valdez — capture most of the employment and payroll impacts generated by the oil and gas industry in Alaska. The remaining "Unattributed" portion is associated with jobs not attributable to a specific area. The following table summarizes these local impacts from oil and gas operations. *(The table does not include jobs and wages related to state government spending of oil and gas industry taxes and royalties.)*

Table ES1. Alaska Resident Employment and Wages in the Oil and Gas Industry, By Region, 2018 (Excludes jobs & wages related to state government spending of oil & gas related taxes and royalties)

Category	Alaska	Municipality of Anchorage	Fairbanks North Star Borough	Kenai Peninsula Borough	Mat-Su Borough	North Slope Borough	Valdez	Unattributed
Employment								
Primary Companies	4,111	2,109	353	852	376	<5	302	119
Oil & Gas Support Services	5,819	1,872	640	1,382	1,584	16	112	213
Other Indirect & Induced	31,881	21,780	1,915	2,373	1,064	1,621	217	2,911
Total	**41,811**	**25,761**	**2,908**	**4,607**	**3,024**	**1,637**	**631**	**3,243**
Wages ($million)								
Primary Companies	$983	$556	$44	$206	$104	<$1	$43	$29
Oil & Gas Support Services	$458	$162	$49	$100	$126	$1	$9	$11
Other Indirect & Induced	$1,676	$1,161	$99	$99	$51	$95	$15	$157
Total	**$3,116**	**$1,879**	**$192**	**$405**	**$281**	**$96**	**$67**	**$197**

Note: Due to rounding some rows or columns may not add to total.
Source: Alaska Department of Labor and Workforce Development, Primary Companies' data, and McDowell Group estimates.

Economic Benefits Related to Oil and Gas Industry Payments of Taxes and Royalties

The oil and gas industry paid $3.1 billion in state and local taxes and royalties in State Fiscal Year (SFY) 2019, including $2.7 billion to state government and $449 million to local governments.

State Taxes and Royalties

- Alaska is the only state in the U.S. that does not have either a state sales tax or personal income tax. Instead, revenues from Alaska's oil and gas industry have largely funded state government for several decades.
- In SFY2019, the oil and gas industry paid $2.7 billion in taxes and royalties to state government.
    - $2.2 billion in Unrestricted General Fund (UGF) revenue, or 40% of all revenue available for appropriation by the state legislature, subject to a governor's veto.
    - $503 million in Restricted revenue, including:
        - $364 million deposited into the Alaska Permanent Fund
        - $125 million in the Constitutional Budget Reserve Fund
        - $7.2 million in royalties to the Public School Trust Fund
        - $7.2 million in National Petroleum Reserve-Alaska (NPR-A) royalties, rents, and bonuses.
- In SFY2018, $2.1 billion was transferred from the Constitutional Budget Reserve Fund (funded almost entirely by prior oil and gas activity) to help bridge the gap between State revenue and State spending ($9.6 billion in operating and $1.5 billion in capital spending).
- State government agency operations are highly dependent on funding from oil revenue. For example, 32% of all state government agency positions (7,252 out of a total 22,603 positions) can be directly and indirectly attributed to oil-revenue-related UGF in SFY2019. Several State departments were funded from revenue directly or indirectly (including transfers to the UGF from the CBRF and the Permanent Fund) attributable to oil and gas, including:
    - Alaska Court System (74%), the Legislature (74%), Office of the Governor (73%), and Departments of Corrections (67%), Public Safety (62%), and Education and Early Development (60%).

- Several statewide government programs were largely dependent on oil-related revenue in SFY2019. For example:
    - Alaska Permanent Fund Dividends paid to 670,759 Alaskans totaled $1.0 billion in 2019. Virtually all the Fund's principal comes from Alaska's oil and gas production royalties and settlements.
    - Of the $1.3 billion in UGF supporting Alaska Department of Education and Early Development's budget, an estimated 60% ($991 million) originated directly and indirectly from oil and gas revenue or $7,479 per student enrolled in K-12 public schools in Alaska.
        - Approximately $4,360 out of the $5,930 per-student Base Student Allocation was funded with oil- and gas-related revenue.
    - In 2018, 192,039 individuals received medical benefits under the Medicaid Program, or about 26% of Alaska's population.
        - 76% of Alaska's state match of federal dollars is related to oil and gas revenue ($504 million out of $661 million state match).
        - 22% spent on Medicaid in Alaska (both state and federal funds) is related to oil and gas revenue ($504 million out of $1.6 billion).
    - In SFY2019, $34 million was distributed to about 229 municipalities, boroughs, and unincorporated communities throughout Alaska through the Community Assistance Program.
        - Approximately $4 out of every $10 distributed from this program came from oil and gas revenue.

Local Oil and Gas Property Taxes

- As well as property taxes collected by the State of Alaska, local governments generate revenue from taxation of oil and gas property assets, providing unrestricted revenue to communities. In SFY2019, local governments received $449 million from taxation of oil and gas properties within their jurisdictions, approximately 25% of total municipal tax revenue ($1.8 billion) and 31% of total municipal property tax revenue ($1.5 billion).

In Summary

There is no study that directly compares the economic impact of Alaska's oil and gas industry to other important sectors, such as the visitor, seafood, and mining industries, in Alaska's economy. However, independent economic impact studies of other sectors make it apparent no other private sector comes close to generating more economic impact in Alaska than Alaska's oil and gas industry.

Table ES2. Economic Impact of the Oil and Gas Industry in Alaska, 2018

	Estimated Impacts
Primary Company employment in Alaska	4,906
Primary Company employment of Alaska residents	4,111
Primary Company wages paid to Alaska residents	$983 million
Primary Company spending with Alaska vendors	$4.4 billion
Number of Alaska vendors providing goods and services to Primary Companies	~1,000
Total jobs related to Primary Company spending*	41,800
Total wages related to Primary Company spending*	$3.1 billion
Total state taxes and royalties paid by the oil & gas industry (SFY2019)	$2.7 billion
Total local property taxes paid by the oil & gas industry (SFY2019)	$449 million
Oil and gas industry taxes and royalties as a % of total state revenue (SFY2019)	24%
Oil and gas industry taxes and royalties as a % of total Unrestricted General Funds (SFY2019)	40%
Jobs related to oil and gas industry taxes and royalties	35,800
Wages related to oil and gas industry taxes and royalties	$1.7 billion
Total jobs related to Alaska's oil and gas industry*	77,600
Percent of total Alaska wage and salary jobs	24%
Total wages related to Alaska's oil and gas industry*	$4.8 billion
Percent of total Alaska wages	27%

*Includes direct, indirect, and induced impacts.
Sources: Primary Company data, McDowell Group estimates, Alaska Department of Revenue, and Alaska Department of Labor and Workforce Development.

Purpose

The Alaska Oil and Gas Association (AOGA) contracted with McDowell Group to assess the role of the oil and gas industry in Alaska's economy and in the economies of the Municipality of Anchorage, the Kenai Peninsula Borough, the Matanuska-Susitna (Mat-Su)Borough, the Fairbanks North Star Borough, the City of Valdez, and the North Slope Borough.

Scope

McDowell Group's study team collected data from a variety of sources, including spending and payroll data from the 17 "Primary Companies" listed below. Most of these companies are AOGA members.

- Alaska Gasline Development Corporation
- Alyeska Pipeline Service Company
- BlueCrest Energy Inc.
- BP Exploration (Alaska) Inc.
- Brooks Range Petroleum Corporation
- Chevron
- ConocoPhillips Alaska, Inc.
- Eni
- ExxonMobil Production Company
- Furie Operating Alaska
- Glacier Oil & Gas
- Hilcorp Energy Company
- Marathon Petroleum Company
- Oil Search (Alaska)
- Petro Star Inc.
- Repsol Alaska
- Shell Exploration & Production Company

Methodology

Each of the companies listed above provided confidential data on spending in support of their Alaska operations, including payroll, purchases of goods and services from oilfield support and other types of firms, payments to local and state governments, and other information pertinent to spending in Alaska. Most companies provided data that aligned with either state fiscal year (SFY) 2019 or the most current 12-month period available.

In addition to the data collected directly from the Primary Companies, the study team collected data and information from a variety of published and unpublished sources. These include the Alaska Department of Labor and Workforce Development (ADOLWD); the Alaska Department of Revenue; the Alaska Department of Commerce, Community and Economic Development; the U.S. Bureau of Labor Statistics; the U.S. Bureau of Economic Analysis (BEA); and the U.S. Department of Energy's Energy Information Administration, among others.

To measure multiplier effects (secondary economic impacts) associated with the Primary Companies' spending with Alaska businesses and the wages they paid to Alaska residents, the study team used the IMPLAN™ input-output modeling system to build economic models for Alaska and each region studied. The purpose of the modeling was to quantify the jobs and payroll added to the Alaska economy statewide and regionally, as dollars spent by the Primary Companies were subsequently re-spent within the state.

State of Alaska budget data are provided for the state fiscal year (SFY) that runs from July 1, 2018 to June 30, 2019.

Inflation adjustments are based on the Anchorage Consumer Price Information data from the Bureau of Economic Analysis.

North American Industry Classification System (NAICS) codes from the State of Alaska Business License Database were used to identify and group vendors' business activities.

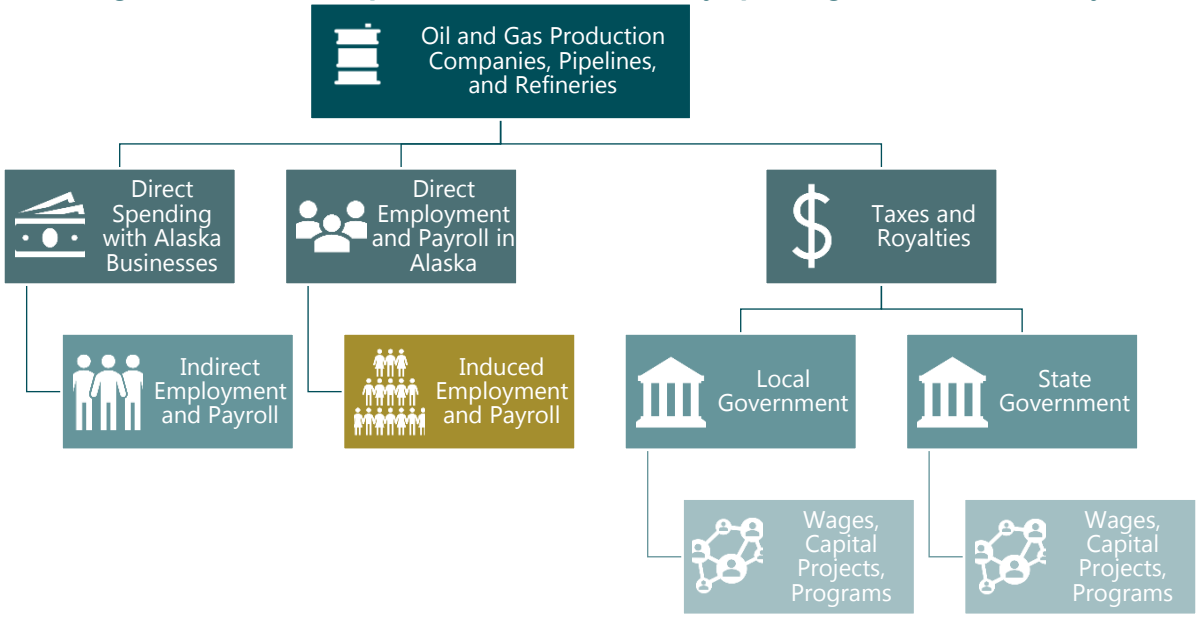
Chapter 1. Defining Alaska's Oil and Gas Industry and its Economic Impact

Multiple categories of government employment statistics are needed to capture the range of business activities that are integral to oil and gas development in Alaska. Oil and gas employment in Alaska includes jobs in companies classified in government employment data sets under "oil & gas extraction," "drilling oil and gas wells," and "support activities for oil and gas operations."[2] Missing from those categories, however, are approximately 800 Trans-Alaska Pipeline System (TAPS) jobs (classified as transportation and warehousing), and 360 refinery jobs (classified as manufacturing). Also excluded are several thousand construction, professional and business services; retail and wholesale trade; and other jobs directly connected to North Slope and Cook Inlet oil and gas production activity.

This chapter discusses the 17 primary investors in Alaska's oil and gas industry infrastructure, including production, transportation, and refining of oil and gas. These "Primary Companies" play a pivotal role in the development of Alaska's oil and gas resources. Their spending is termed a "direct impact" on Alaska's economy.

In addition to its direct impact, Primary Company spending filters through the state's economy in what is often labeled the "multiplier effect" or "indirect and induced impact." Oil dollars move through the economy in the form of spending on goods and services (indirect impact), payroll to Alaskan employees in companies that do business with the Primary Companies (induced impacts), taxes paid to local governments, and taxes and royalties paid to state government (indirect and induced impacts).

Figure 1. Economic Impact of Oil and Gas Industry Spending in Alaska's Economy



[2] Alaska Department of Labor and Workforce Development (ADOLWD) estimated an annual average of 12,939 jobs in Alaska's oil and gas sector in 2017, including employment in NAICS Sectors 211000 (oil and gas extraction), 213111 (drilling oil and gas wells), and 213112 (support activities for oil and gas operations).

The chapter also describes briefly the types of private sector firms affected by oil and gas spending, including oilfield support and other types of businesses actively engaged in Alaska's oil and gas industry.

Primary Companies in Alaska's Oil and Gas Industry

The 17 companies (in alphabetical order) defined as Primary Companies in Alaska's oil and gas industry for purposes of this analysis are listed below. They include 13 oil and gas production companies, one pipeline operator, one pipeline developer, and two refinery companies. All but three – Alaska Gasline Development Corporation, Brooks Range Petroleum Corporation, and Oil Search (Alaska) – are members of AOGA.

Alaska Gasline Development Corporation is an independent, public state corporation seeking the development of Alaska LNG, a proposed 800-mile natural gas pipeline capable of moving 3.5 billion cubic feet of gas per day from the North Slope to a liquefaction facility in Nikiski. While the future of the project is uncertain, AGDC is seeking authorization from federal regulators to proceed.

Alyeska Pipeline Service Company operates and maintains the 800-mile TAPS, including the pump stations and the Valdez Marine Terminal. All North Slope crude oil brought to market is transported through TAPS. The company, which celebrated 40 years of TAPS operations in 2017, is the largest employer and taxpayer in Valdez. It is owned by BP Pipelines (Alaska), Inc., ConocoPhillips Transportation Alaska, Inc., ExxonMobil Pipeline Co. and Unocal Pipeline Co.

BlueCrest Energy Inc. wholly owns the Cosmopolitan project, an offshore oil and gas development located in Cook Inlet close to Anchor Point. Oil production started in 2016. New targets call for up to seven years of future expansion drilling.

BP Alaska began working in Alaska in 1959, started drilling at the massive Prudhoe Bay oil field in 1968, and helped build TAPS in the mid-1970s. Its operations encompass the entire Greater Prudhoe Bay area, which consists of the Prudhoe Bay field and several smaller fields. In August 2019, BP announced the sale of its entire upstream and midstream business in Alaska, including BP Exploration (Alaska) Inc. to Hilcorp Energy Corporation. Subject to state and federal regulatory approval, the transaction is expected to be completed in 2020.

Brooks Range Petroleum Corporation controls about 100,000 acres adjacent to the Prudhoe Bay, Kuparuk, and Point Thomson fields. The Mustang project, adjacent to the southern portion of ConocoPhillips' Kuparuk River field, began producing in October 2019. Four new wells are scheduled to be drilled in 2020. Brooks Range also hold a 2% interest in the Badami Unit.

Chevron Corporation has ownership interests across the North Slope, including Endicott (11%), Kuparuk (5%), West Sak (5%), Tabasco (5%), Tarn (5%), Meltwater (5%), Greater Prudhoe Bay (1%), and Greater Point McIntyre (1%) fields, among others. The company holds a 1% interest in TAPS.

ConocoPhillips is the largest oil producer in Alaska with a net production rate of 186,000 barrels per day of oil in 2018. On the North Slope, the company owns and operates Kuparuk (95%) and Alpine (100%) in addition to its interest in Prudhoe Bay (36%). ConocoPhillips' expansion of the Alpine field made its drill site, CD5, the first commercial oil development on Alaska Native lands within the boundaries of the National Petroleum Reserve-Alaska (NPR-A). In 2016, the company drilled two exploration wells that encountered significant pay in the Bear Tooth Unit. This discovery, Willow, is in the northeast portion of the NPR-A. In 2018, the company appraised the greater Willow area and made discoveries in three additional prospects. Appraisal of the 2018 discoveries continued in 2019. This discovery, Willow, will require its own production facility and could produce in excess of 100,000 barrels of oil per day. Assuming timely permit approvals, Willow's first production is expected in 2025-2026. ConocoPhillips is a 29% owner of TAPS. The company owns and operates Polar Tankers, a five-vessel fleet that transports crude oil from the terminus of TAPS to domestic refineries.

Eni Petroleum in Alaska is 100% owner and operator of the Nikaitchuq and Oooguruk Units on the North Slope. Both development units are operated from offshore man-made gravel islands in state waters. Eni is operator and 50% owner of the Harrison Bay Block 6423 Unit in the Beaufort Sea and plans to resume exploration drilling of its ultra-extended reach well in 2020. Eni is 100% owner of over 350,000 acres of exploration lease interests in an area just west of the Badami Unit on the North Slope."

ExxonMobil has a 36% ownership stake in Prudhoe Bay Unit and has a small ownership stake of approximately 1% in the Kuparuk River Unit (operated by ConocoPhillips). It is the operator of the Point Thompson Unit with a 62% ownership stake. ExxonMobil also owns 21% of the TAPS pipeline and 62% of the Pt. Thomson Export Pipeline. The company's net production for 2019 averaged 86 thousand barrels of oil-equivalent per day.

Furie Operating Alaska, headquartered in Anchorage, is active in Cook Inlet. In 2011, the company brought the first jack-up rig (Spartan 151) to Cook Inlet in 20 years. It installed an offshore platform, pipeline, and onshore production facility in Nikiski that started producing gas in 2015. Furie continues its exploration in Cook Inlet, primarily in the Kitchen Lights Unit.

Glacier Oil & Gas Corporation owns and operates oil and gas assets in Cook Inlet and the North Slope. Cook Inlet assets include the Redoubt and West McArthur River Unit on the west side of the Cook Inlet as well as the Osprey Platform. It also owns gas assets at the North Fork Unit on the Kenai Peninsula. On the North Slope, Glacier owns the Badami Unit and Nutaaq Pipeline along with drilling, production, and transportation infrastructure associated with these fields.

Hilcorp Alaska operates the Endicott (88% ownership) and Northstar (100% ownership) units located on offshore gravel islands north of Prudhoe Bay. It is seeking permits for the offshore Liberty project (50% ownership) and operates the Milne Point unit (49% ownership). The company also operates 20 oil and gas fields in Cook Inlet, including 15 offshore platforms. In August 2019, Hilcorp announced its intent to purchase BP's upstream and midstream business in Alaska by 2020.

Marathon Petroleum Corporation is an integrated refining, transportation and marketing company that operates the refinery in Nikiski 60 miles southwest of Anchorage on the shore of Cook Inlet. The refinery can process 68,000 barrels of crude oil per day and refines it into fuel products for Alaska including jet fuel, diesel, gasoline, propane, asphalt, and heavy oils. Marathon transports refined products through pipeline, truck and rail to markets from Nikiski to North Pole.

Oil Search (Alaska) acquired the Nanushuk field in the Pikka Unit (51% ownership), satellite fields within the Nanushuk and Alpine Fairways, the Horseshoe discovery, and a portfolio of other oil assets on the North Slope in 2017. Development of the Nanushuk field, with (non-operating) partner, Repsol SA, is planned for 2020. The unit's production is expected to be about 120,000 barrels of oil per day.

Petro Star Inc. is an Alaskan-owned refining and fuel-marketing company. Its refineries in North Pole and Valdez draw crude supply from TAPS to produce off-road and marine diesel, commercial and military jet fuel, home heating oil and asphalt oil. The company also operates retail outlets across Alaska, including seven locations in the Fairbanks area, two locations in Kodiak, and one store in Dutch Harbor. (*Note: The retail outlets are not included in the direct impact analysis.*)

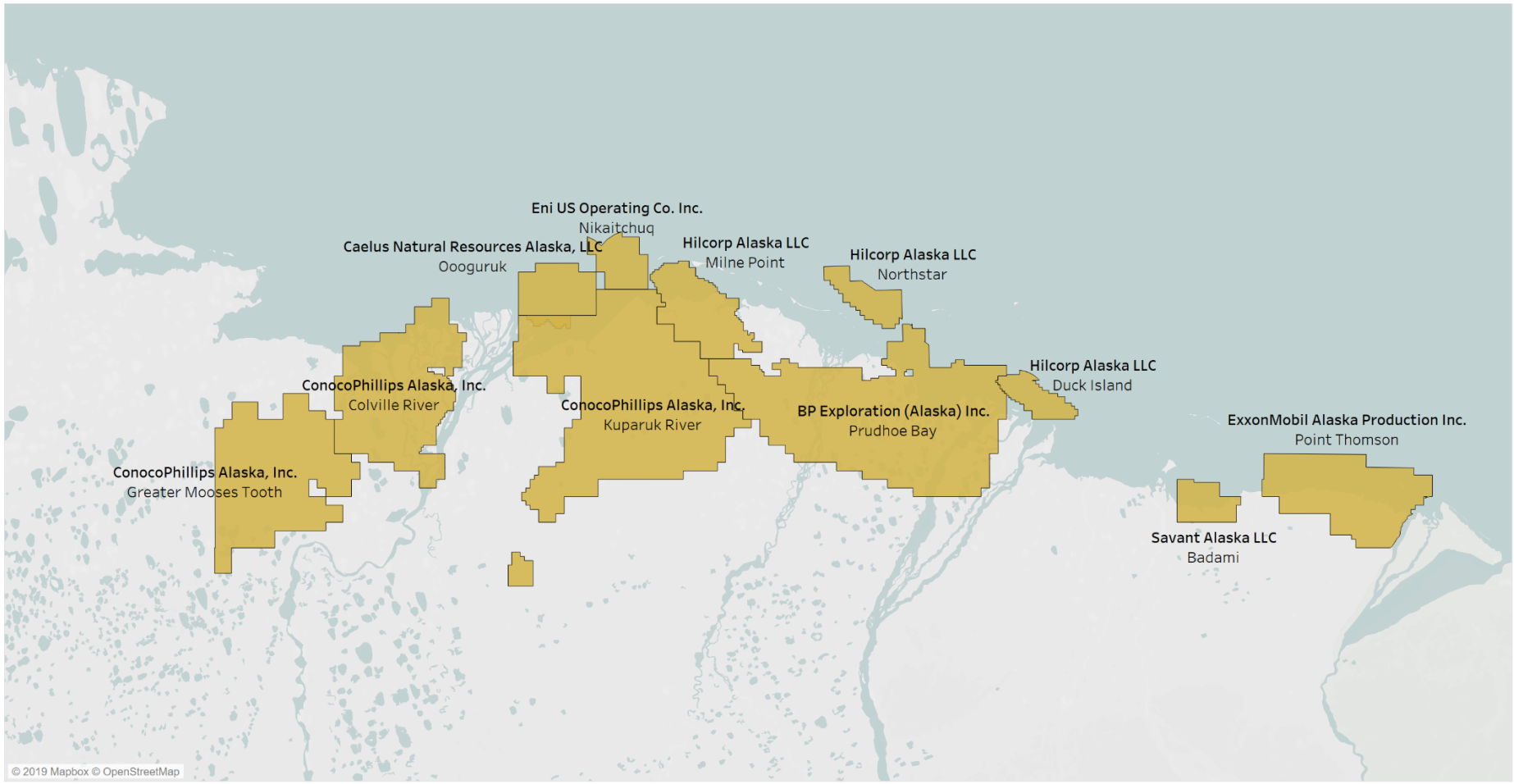
Repsol, which has been actively exploring in Alaska since 2008, is a global energy company with an interest in approximately 850,000 gross acres on the North Slope. The company holds a 49% working interest in the area including the Horseshoe discovery, the largest onshore oil discovery in the United States in 30 years. Notably, the Pikka Unit has secured permits and is currently under active development/construction for the next 3 years.

Shell Exploration & Production Company has a long history in Alaska's oil and gas industry, including oil production in Cook Inlet dating back to the 1960s. Although it ceased exploration efforts in the Chukchi Sea in 2015, the company maintains its membership in AOGA.

Oil and Gas Units

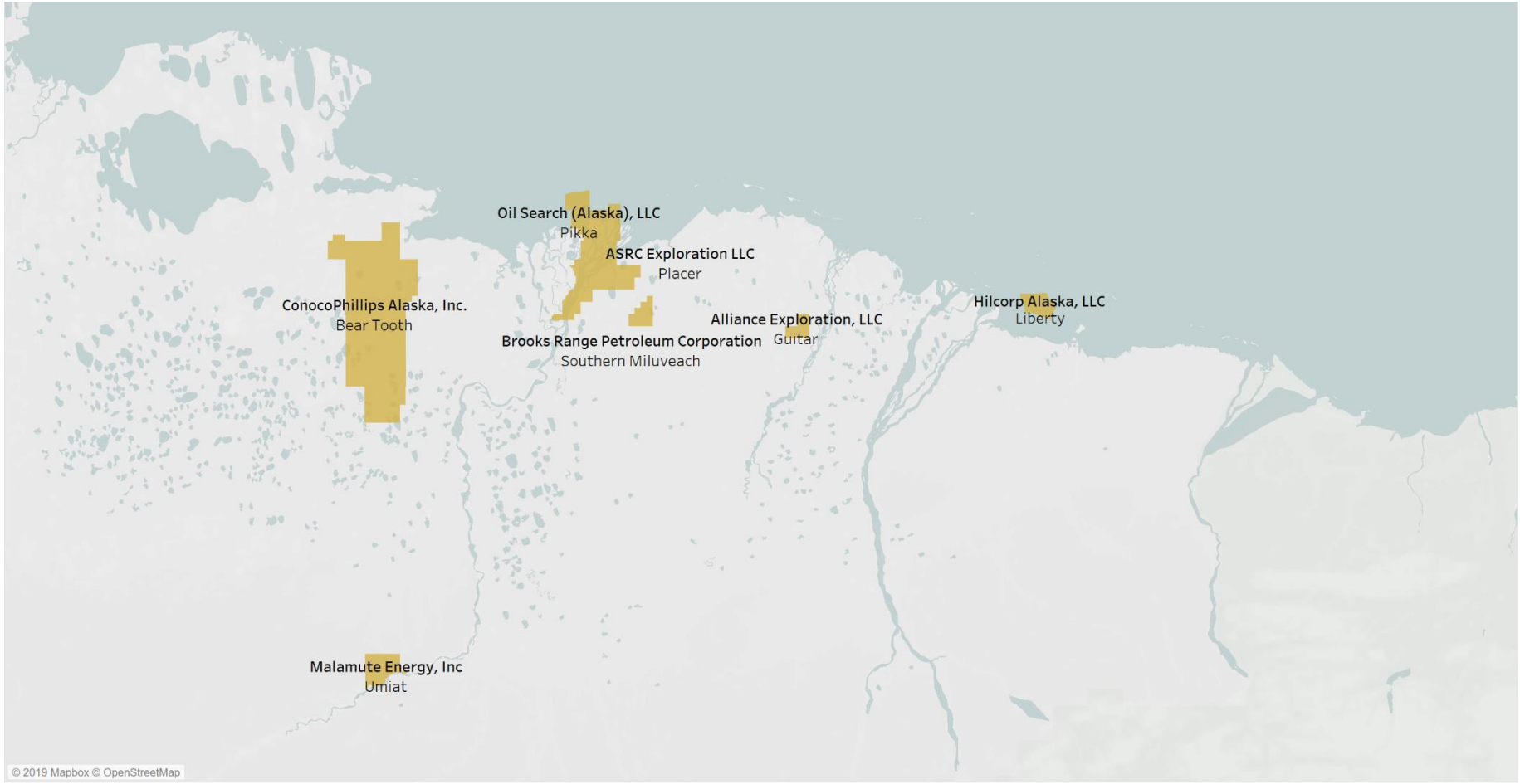
The maps below show production units and operators for the North Slope (production and exploration) and Cook Inlet.

Figure 2. North Slope Units in Production



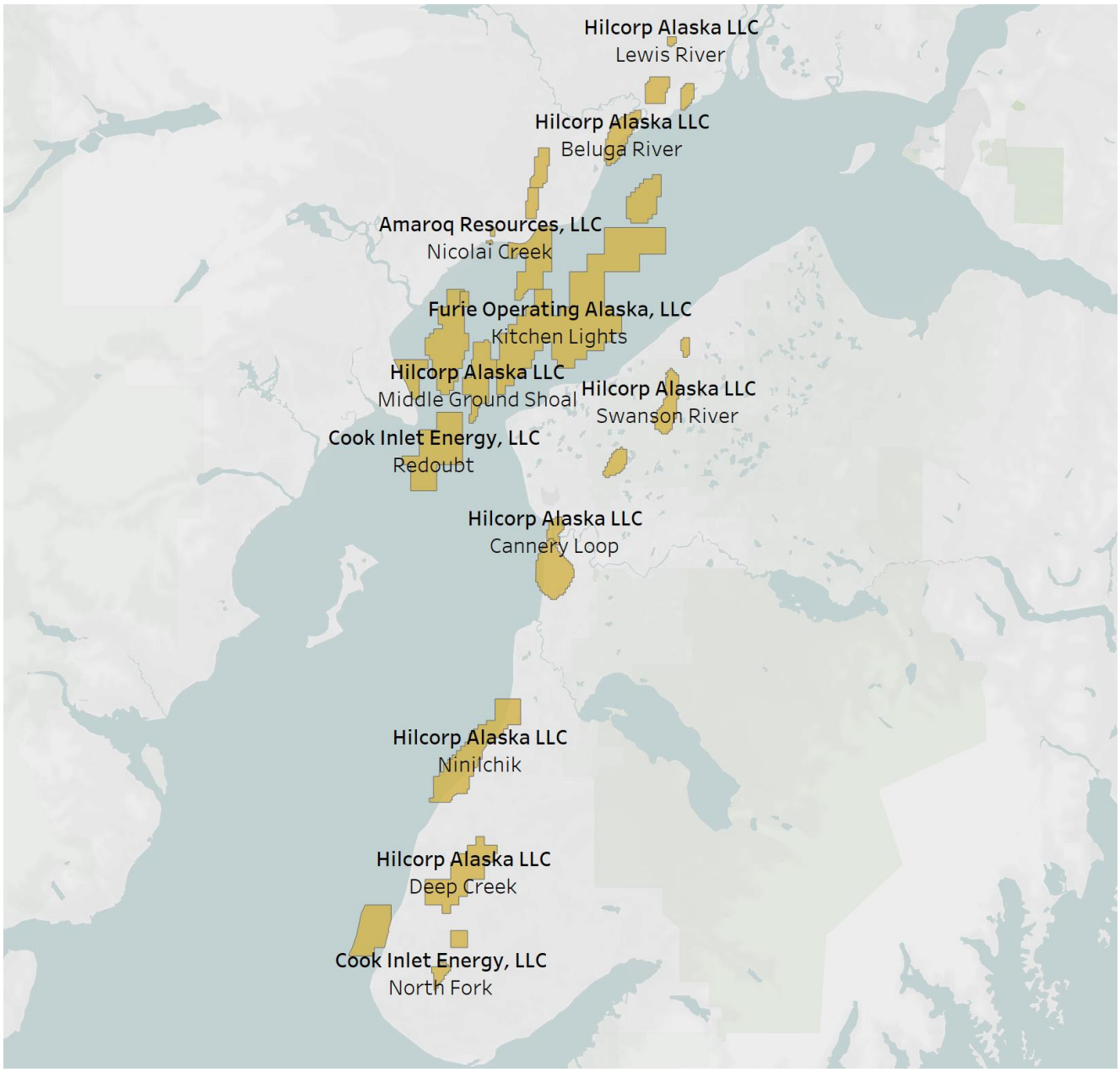
Source: Alaska Department of Natural Resources, Division of Oil and Gas (updated March 2019).

Figure 3. North Slope Units in Exploration



Source: Alaska Department of Natural Resources, Division of Oil and Gas (updated March 2019).

Figure 4. Cook Inlet Units



Source: Alaska Department of Natural Resources, Division of Oil and Gas (updated March 2019).

Spending by Primary Companies on Alaska Goods and Services

The Primary Companies reported approximately $4.4 billion in Alaska vendor spending in 2018 including operating and capital expenditures.

The $4.4 billion in direct spending went to more than 1,000 Alaska businesses that provide goods and services to the oil and gas sector. Alaska businesses are those that are either based in Alaska, with resident and nonresident employees, or based outside Alaska but with satellite offices and employees in the state.

Oil and Gas Support Service Companies

Slightly more than one-quarter (28%) of spending with Alaska vendors went to oil and gas-support service companies, for example: ASRC Energy Services Alaska, Doyon Drilling; Halliburton Energy Services; Nabors Alaska Drilling; Schlumberger Technology Corporation; Udelhoven Oilfield System Services, Weatherford U.S., Baker Hughes Oilfield Operations; Peak Oilfield Service Company; and many others.[3]

These oil and gas support-service companies offer a wide array of goods and services, including (but not limited to) regulatory, permitting and other technical support; engineering; construction; construction and project management; module fabrication and installation; infrastructure, facility, and pipeline maintenance; well logging; drilling; drilling engineering and exploration support; fleet services; operations support, oil spill response management and equipment; procurement; wireline; coil tubing; drilling fluids; rig moving; rig operation; and decommissioning services.

Construction Companies

Another quarter (24%) of Alaska vendor spending went to firms engaged in construction activity, primarily on the North Slope, Cook Inlet, and TAPS corridor. Those firms include: Kakivik Asset Management, CONAM Construction, Cruz Construction, Flowline Alaska Inc., ASRC Services, CH2M Hill Alaska, Ahtna Construction and Primary Products Company, Delta Constructors, Nanuq Inc., among many others.

Construction services required by the oil and gas industry include project management, industrial construction, pipeline construction, electrical contracting, welding and metal fabrication, road construction, bridge building, roofing, painting and coverage contracting, and plumbing, among others.

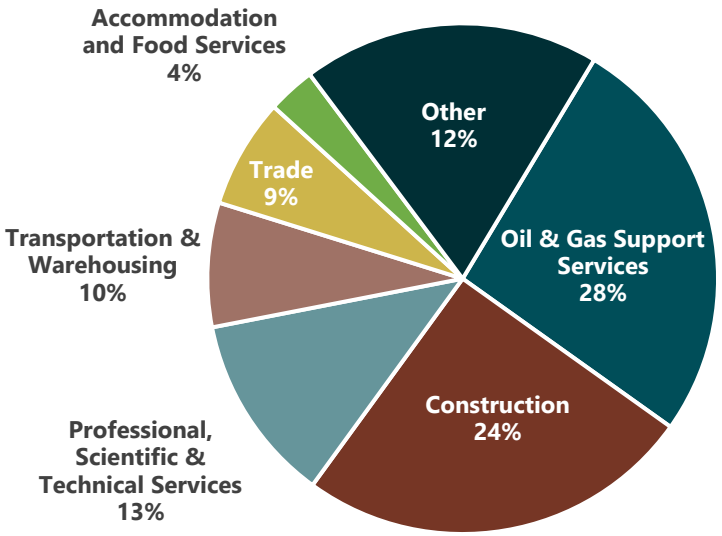
Other Suppliers of Goods and Services to the Oil and Gas Industry

The remaining approximately one-half of Alaska vendor spending goes to a wide variety of firms providing essential goods and services, including professional and technical services (13%), transportation (air, ground, and marine) and warehousing (10%), retail/wholesale trade (9%), accommodations and food service (4%), and all others including communications, insurance, fuel, utilities, computer and IT support, manufacturing, administration support, education services, etc. (12%).

[3] Note: Many companies are active in multiple sectors, such as construction services and oil and gas support services.

Figure 5. Primary Company Alaska Vendor Spending by Industry Sector, by Percent, 2018

Source: Primary Companies' data and McDowell Group Estimates.



Examples of larger firms (typically more than 50 employees) directly engaged in oil and gas activity in Alaska but not reported in government employment statistics as part of the oilfield support sector include:

- **Construction:** CONAM Construction Company, based in Anchorage, is a general construction contractor specializing in oil and gas facilities (NAICS 237000 "heavy construction"). ASRC Energy Services provides construction and project management, module fabrication and installation, infrastructure, facility, and pipeline maintenance, and other services (NAICS 236000 "construction of Buildings"). Cruz Construction, based in Palmer and Anchorage, provides heavy civil contractor and other services (NAICS 237000 "heavy construction"). Flowline Alaska, Inc., based in Fairbanks, provides corrosion coatings, insulation, and fabrication of pipe and structure items (NAICS 237000 "heavy construction").
- **Professional, Scientific, and Technical Services:** Dowland-Bach Corporation, based in Anchorage, performs engineering of wellhead control panels and chemical injection systems (NAICS 541490 "other specialized design services"). Fairweather LLC, based in Anchorage, provides occupational and remote medical support, drug & alcohol testing, Health Safety Environment (HSE) support, and other services (NAICS 541618 "other management consulting services"). Hawk Consultants LLC, based in Anchorage, provides project and construction management services, project controls, supply chain support, and dispute resolution (NAICS 541690 "other scientific and technical consulting").
- **Transportation and Warehousing:** Colville, Inc., based in Prudhoe Bay and Anchorage, provides fuel distribution, delivery, and bulk storage services (NAICS 484000 "specialized freight"). Advanced Supply Chain International, based in Anchorage, provides materials management services, purchasing administration, warehouse operations, supply chain management/supplier management, and e-commerce web tools. All the firm's business is with the oil and gas sector (NAICS 493 "warehousing and storage").

- **Trade:** Delta Western Petroleum, based in Anchorage, is a distributor of petroleum products and lubricants (NAICS 424000 "merchant wholesalers, nondurable goods"). Puget Sound Pipe & Supply supplies pipe and other products such as valves, fittings, flanges, and accessories (NAICS 423 "merchant wholesalers, durable goods").
- **Services:** GLM Corporation, based in Kenai, services and repairs gas turbines, compressors, pumps, gearboxes, generators, and other industry related machinery (NAICS 811000 "repair and maintenance"). Alaska Roteq Corporation, based in Wasilla, services and repairs rotating equipment (NAICS 811000 "repair and maintenance"). Team Industrial Services, based in Kenai, provides inspection services (NAICS 811000 "repair and maintenance").

Other businesses with substantial interest in Alaska's oil and gas industry include NANA Management Services and Doyon Universal Services (NAICS 561000), Ahtna Construction (NAICS 237000), Crowley Marine Services (NAICS 483), Alaska Interstate Construction (NAICS 237000), and various transportation firms, such as ERA Helicopters (NAICS 481000), and Lynden Transport (NAICS 484000). These firms are active in other sectors of the Alaska economy, but the revenue generated in the oil and gas industry is important, if not essential, to business sustainability.

Indirect and Induced Economic Linkages to the Oil and Gas Industry

The 1,000-plus businesses described above that provide goods and services to the Primary Companies also purchase goods and services in support of their own operations in Alaska. That spending creates additional jobs and wages that are part of the "indirect" impact of Primary Company activity in Alaska.

When the employees of the Primary Companies spend their wages in the Alaska economy, it creates still more jobs and wages. Those are termed "induced" economic impacts.

Indirect and induced impacts are often termed "multiplier effects" by economists because they increase the impact of a company's direct spending by factors that vary depending on the type and location of the spending. In Chapters 2 and 3 of this report the direct and multiplier effects of Primary Company spending are described from a statewide perspective and for several local areas.

Economic Effects of Taxes and Royalties Paid by the Oil and Gas Industry

The jobs and wages associated with vendor and employee spending are largely in the private sector, but oil and gas businesses also generate taxes and royalties paid to state government. Those payments fund a wide variety of public services, programs, and capital projects. Similarly, property taxes paid by the oil and gas industry to local governments help support local services, programs, and projects. The important role of oil and gas industry taxes and royalties in funding government in Alaska is described in Chapter 4.

Chapter 2. Statewide Impacts of the Oil and Gas Industry

This chapter provides an overview of Primary Company employment and wages in 2018, and the indirect and induced economic impacts of these employment and wages, and spending on oil and gas support services and other spending in Alaska. It does not include impacts from the expenditure of state and local oil-related taxes and royalties paid by the oil industry (*see Chapter 4*).

Primary Company Employment and Wages

The 17 Primary Companies directly employed 4,906 workers in Alaska in 2018, including 4,111 Alaska residents, or 84% of Primary Company employees. Total wages were $1.18 billion, of which Alaska residents received $983 million, or 83%.

Table 1. Primary Company Employment and Wages in Alaska's Oil and Gas Industry, 2018 (Total and Alaska Resident Employment and Wages)

Category	Average Annual Employment	Percent of Total	Total Wages ($millions)	Percent of Total
Alaska Resident Workers	4,111	84%	$982.5	83%
Non-Alaska-Resident Workers	795	16%	$200.4	17%
All Workers in Alaska	4,906	100%	$1,182.9	100%

Source: Alaska Department of Workforce Development and Labor, Primary Companies' data and McDowell Group estimates.

Indirect and Induced Employment and Income

As described earlier, the scope of the Alaska oil and gas industry is much broader than the 17 Primary Companies. Government employment statistics tell only part of that story. For example, ADOLWD statistics indicate that an average of 12,305 workers were employed in Alaska's oil and gas industry sector in 2018.[4] In fact, this figure accounts for only about one-quarter of all employment connected with the oil and gas industry in Alaska, and less still when including jobs created by oil and gas taxes and royalties. Not included in the published data are a variety of support services companies providing goods and services to the Primary Companies but classified in government statistics in several other sectors, such as transportation, construction, and professional and technical services.

Those support services companies create indirect impacts when they purchase goods and services in support of their business operations. And when Alaska resident employees of Primary Companies and support services companies spend their wages in-state, additional jobs and income are created in the form of induced impacts.

[4]Alaska Department of Workforce Development and Labor, QCEW, 2018.

Economic impact modeling for this study indicates these cycles of spending supported more than 30,000 indirect and induced jobs in Alaska. Combining direct, indirect, and induced impacts, the oil and gas industry in Alaska supported 41,800 jobs and $3.1 billion in annual payroll in 2018. This estimate does not include jobs and income in Alaska stemming from the expenditure of state and local oil-related taxes and royalties paid by the oil industry.

Table 2. Alaska Oil and Gas Industry Employment and Wages, 2018 (excluding non-resident oil production and oil field services workers)

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)	4,111	$982.5
Oil & Gas Support Services (Alaska residents only)*	5,819	$458.0
All Other Indirect and Induced	31,881	$1,675.6
Grand Total (Direct, Indirect, and Induced)	**41,811**	**$3,116.1**

*Includes ADOLWD Oil and Gas Support Services Sector 213111 and 213112.
Note: Excludes non-resident employment.
Source: Alaska Department of Labor and Workforce Development, McDowell Group Estimates, and Primary Companies' data.

According to Bureau of Economic Analysis (BEA) employment data (which includes people who are self-employed and active-duty military personnel), there were 459,178 jobs in the Alaska economy in 2018.[5] Based on that figure, oil industry direct, indirect, and induced employment of 41,800 workers accounts for about 1 in 11 jobs in Alaska, not including jobs associated with taxes and royalties paid by the oil industry to state and local governments.

In terms of private sector employment, Alaska had an average of 252,689 private sector wage and salary jobs in Alaska in 2018, accounting for $14.6 billion in total wages.[6] All told, the oil and gas industry accounted for 1 in 6 private sector jobs.

Based on ADOLWD wage and salary employment data (excluding the self-employed and active duty military personnel), the oil and gas industry accounts for 17% of all employment and 23% of all wages, not including jobs associated with state and local taxes and royalties paid by the oil industry.

[5] BEA
[6] Ibid.

Chapter 3. Local and Regional Impact Profiles

This chapter provides an overview of 2018 oil and gas industry employment and wage impacts in six geographic areas: Municipality of Anchorage, Fairbanks North Star Borough, Kenai Peninsula Borough, Matanuska-Susitna Borough, North Slope Borough, and City of Valdez.

Municipality of Anchorage

More than half the jobs (62%) created in Alaska as a direct or indirect result of oil industry activity contribute to the Anchorage economy. Anchorage is Alaska's service and supply hub. Many Alaska business, including oil producers, oil industry support services and supply businesses, and other businesses serving the oil and gas industry and its workforce are headquartered in Anchorage. As a result, much of the spending by Alaska's oil and gas industry funnels through the Anchorage economy, creating additional jobs and wages.

Direct Primary Company Impacts

- Approximately 2,100 employees of the 17 Primary Companies reside in Anchorage, accounting for $556 million in annual wages.

Oil and Gas Support Services Impacts

- In addition, an estimated 1,872 oil and gas support services employees reside in Anchorage, with annual wages of $162 million.

Other Indirect and Induced Impacts

- An additional 21,780 jobs in Anchorage are connected to the oil and gas industry in Alaska. This includes indirect jobs, such as those with professional and technical services firms, transportation providers, and a variety of other companies that provide services to oil and gas firms. Wages spent by employees supporting the oil and gas industry create even more jobs and income in Anchorage (induced impacts). In total, these indirect and induced jobs accounted for approximately $1.16 billion in annual wages in Anchorage.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average of 25,761 jobs and total annual wages of $1.88 billion in Anchorage.
- The oil and gas industry accounts for about 14% of Anchorage resident employment and 16% of resident wages.[7]

[7] McDowell Group estimates based on BEA and Alaska Department of Labor and Workforce Development data.

- In 2018, the oil and gas industry accounted for approximately 17% of all private sector jobs and 19% of private sector wages in Anchorage.[8]

Table 3. Oil and Gas Industry Employment and Wages in Anchorage, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	2,109	$556.5
Oil & Gas Support Services (Alaska residents only)*	1,872	$162.0
All Other Indirect and Induced	21,780	$1,160.6
Total Impacts (Direct, Indirect, and Induced)	25,761	$1,879.1

*Includes workers who are employed statewide but reside in Anchorage, as well as workers who live and work in Anchorage.
Source: Alaska Department of Labor and Workforce Development, Primary Companies' data, and McDowell Group estimates.

Fairbanks North Star Borough

The oil and gas industry in the Fairbanks North Star Borough (FNSB) includes Petro-Star refinery operations, TAPS operations, and oil industry support services-related activity. In addition, many North Slope workers live in the borough.

Direct Primary Company Impacts

- A total of 352 Primary Company employees reside in the FNSB, accounting for $44 million in annual wages and benefits.

Oil and Gas Support Services Impacts

- Another 640 oil and gas support services employees reside in the FNSB, with annual wages of $49 million.

Other Indirect and Induced Impacts

- An additional 1,915 jobs in the FNSB are connected to Primary Company spending in Alaska, including jobs with construction, trade, transportation, professional and technical services, and a variety of other companies, generating approximately $99 million in annual wages.

[8] Alaska Department of Labor and Workforce Development, QCEW, 2018.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average of 2,908 jobs and total annual wages of $192 million in the FNSB.
- The oil and gas industry (including all multiplier effects) accounts for approximately 6% of all resident employment and wages in the FNSB.[9]
- The oil and gas industry accounts for approximately 10% of all private sector jobs and 12% of private wages earned in the FNSB.[10]
- The oil and gas industry paid $10.9 million in property taxes to the FNSB in 2018, or 9% of total borough property tax revenue. The industry also paid $283,976 in property taxes to the City of Fairbanks.[11]
- Alyeska Pipeline Service Company is the single largest source of property tax revenues in the borough.[12]

Table 4. Oil and Gas Industry Employment and Wages in Fairbanks North Star Borough, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	353	$44.3
Oil & Gas Support Services (Alaska residents only)*	640	$48.8
All Other Indirect and Induced	1,915	$98.7
Total Impacts (Direct, Indirect, and Induced)	2,908	$191.7

*Includes workers who are employed statewide but reside in the FNSB, as well as workers who live and work in FNSB.
Source: Alaska Department of Labor and Workforce Development, Primary Companies' data, and McDowell Group estimates.

Kenai Peninsula Borough

The oil and gas industry has a substantial presence in the Kenai Peninsula Borough (KPB). Oil and gas production in Cook Inlet creates jobs and income for borough residents, as does Marathon's refinery operation. The region also enjoys economic benefits from wages spent in the local economy by North Slope workers who reside in the borough.

Direct Primary Company Impacts

- A total of 852 Primary Company employees reside in the KPB, accounting for $206 million in total annual wages.

[9] McDowell Group estimates based on BEA and AKDOWDL data.
[10] Alaska Department of Labor and Workforce Development, QCEW, 2018.
[11] Alaska Taxable 2018, Office of the State Assessor, https://www.commerce.alaska.gov/web/dcra/OfficeoftheStateAssessor/AlaskaTaxable-New.aspx
[12] Fairbanks North Star Borough, Comprehensive Annual Financial Report, For the Year Ended June 30, 2018, p. viii. http://co.fairbanks.ak.us/fs/Comprehensive%20Annual%20Financial%20Reports/06-30-18%20CAFR.pdf

Oil and Gas Support Services Impacts

- Another 1,382 oil and gas support services employees reside in the KPB, with total annual wages of just under $100 million.

Other Indirect and Induced Impacts

- An additional 2,373 jobs in the KPB are connected to Primary Company spending in Alaska, including jobs with the service sector, professional and technical services, trade, transportation, construction, and a variety of other companies, generating approximately $99 million in annual wages.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average of 4,607 jobs and total annual payroll of $405 million in the KPB.
- Economic activity related to the oil and gas industry accounts for approximately 19% of total KPB resident employment, and 23% of wages.[13]
- The oil and gas industry paid $14.1 million in property taxes to the KPB in 2018, or 14% of total property tax revenues for the Borough. The industry also paid $199,526 in property taxes to the City of Kenai.[14]
- Five of the top 10 property taxpayers in the KPB are oil and gas companies. In order of taxable assessed value, Hilcorp Alaska LLC is #1; followed by Furie Operating Alaska LLC (#2), Tesoro Alaska (now Marathon) (#3), Bluecrest Energy, Inc. (#4), and Alaska Pipeline (#8).[15] Together, these five companies account for 18% of KPB's total assessed value.

Table 5. Oil and Gas Industry Employment and Wages in Kenai Peninsula Borough, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	852	$206.4
Oil & Gas Support Services (Alaska residents only)*	1,382	$99.8
All Other Indirect and Induced	2,373	$98.7
Total Impacts (Direct, Indirect, and Induced)	4,607	$404.9

*Includes workers who are employed statewide but reside in the KPB, as well as workers who live and work in KPB.
Sources: Alaska Department of Labor and Workforce Development, data from Primary Companies, and McDowell Group estimates.

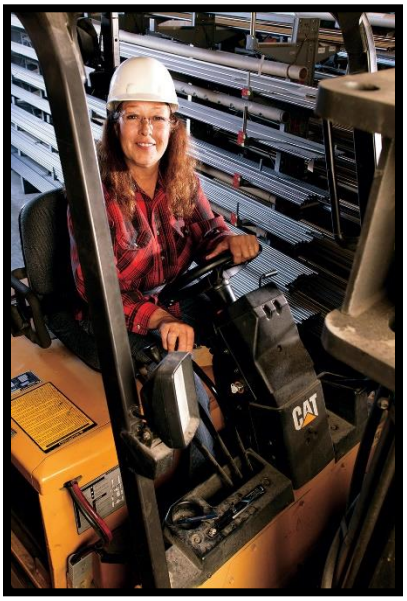
[13] McDowell Group estimates based on BEA and Alaska Department of Labor and Workforce Development data.
[14] Alaska Taxable 2018, Office of the State Assessor, https://www.commerce.alaska.gov/web/dcra/OfficeoftheStateAssessor/AlaskaTaxable-New.aspx
[15] Kenai Peninsula Borough, Comprehensive Annual Financial Report, FY18 https://www.kpb.us/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFj9FqwzAMRf9FP5A4hS5TnroVw2gZY3vqk3ETOTU4cbCdtTD277PjhD3ZutKR7pXIGP543CMoazpy0HjcVQh6kD354vTxUvC394LrUY4tiaNt54HG4NNcXERh9uQymSWEcmv1M_nwv_UJQYhFS1Wd0VEOlMoSIT37rOoOGo1lhhyZSYZbaleRWq1oacRXkIEWNwW_VCWr18VKG9oW76KRGELwC6tFTHI4vx74p1CzMUJZXCfudF3GEOgR1t_UqdUwPSbtyG9uWLQpQ5DtLV2F5rqoz5Fw9K3pnoPGEL21vYn3f_9cMBJ_b9M

Matanuska-Susitna Borough

The oil and gas industry's economic impact on the Matanuska-Susitna Borough (Mat-Su) primarily derives from oil and gas industry workers residing in the area and spending their wages in the local economy.

Direct Primary Company Impacts

- 376 Primary Company employees reside in Mat-Su, accounting for $104 million in annual wages.



Oil and Gas Support Services Impacts

- A total of 1,584 oil and gas support services employees reside in Mat-Su, with annual wages of $126 million.

Other Indirect and Induced Impacts

- An additional 1,064 jobs in Mat-Su are connected to Primary Company spending in Alaska, including jobs with construction, trade, professional and technical services, and others, generating just under $51 million in total annual wages.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average of 3,024 jobs in Mat-Su and total annual payroll of $281 million.
- While few oil and gas industry-related jobs are located in Mat-Su, many industry workers live in Mat-Su and commute to Anchorage or work on the North Slope or in Cook Inlet. As a result, oil and gas industry-related wages account for approximately 7% of employment and wages earned by local residents.[16]

Table 6. Oil and Gas Industry Employment and Wages in Matanuska-Susitna Borough, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	376	$103.7
Oil & Gas Support Services (Alaska residents only)*	1,584	$126.3
All Other Indirect and Induced	1,064	$50.7
Total Impacts (Direct, Indirect, and Induced)	3,024	$280.8

*Includes workers who are employed statewide but reside in the Mat-Su Borough, as well as workers who live and work in Mat-Su.
Sources: Alaska Department of Labor and Workforce Development, data from Primary Companies, and McDowell Group estimates.

[16] McDowell Group estimates based on BEA and Alaska Department of Labor and Workforce Development data.

North Slope Borough

Total reported employment for the North Slope Borough (NSB) in 2018 was 12,056 jobs. Approximately 70% of those jobs (8,389) were in the Prudhoe Bay area.[17] While many oil and gas industry jobs are based in the NSB, most of those workers reside outside the borough. This is because the North Slope oil industry infrastructure and work sites are self-contained and hundreds of miles away from most of the borough's resident population. The oil industry's greatest economic impact on NSB residents is through oil- and gas-related property tax revenues.

Direct Primary Company Impacts

- By place of work, Primary Companies in the NSB provided approximately 1,905 jobs and accounted for $507 million in annual wages.

Oil and Gas Support Services Impacts

- By place of work, oil and gas support services companies with operations in the NSB provided 4,252 jobs and accounted for $411 million in annual wages.[18] Alaska residents held an estimated 2 416 (57%) of these positions and earned $237 million (58%) in wages.
- By place of residence, Primary Companies and oil and gas support services companies supported employment for approximately 20 residents with about $1 million in wages.

Other Indirect and Induced Impacts

- An additional 1,621 jobs in the NSB are connected to oil and gas industry activity in Alaska, generating approximately $95 million in annual wages. These jobs and wages are linked to property taxes paid by the industry that support borough operations. It also includes high-level estimates of the economic impact of Arctic Slope Regional Corporation's (ASRC's) oil and gas-related activity.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average 1,637 jobs in the NSB and total annual wages of $96 million.

[17] Alaska Department of Labor and Workforce Development, QCEW data (Prudhoe Bay SSA), 2018.
[18] Alaska Department of Labor and Workforce Development, QCEW (Prudhoe Bay SSA) data, 2018.

- The oil and gas industry paid $376.7 million in property taxes to the NSB, or 95% of total Borough tax revenues.[19]
- Due to the significant number of individuals traveling to the region for work, the number of jobs outnumbers residents. BEA data indicates the area is home to approximately 9,900 residents and 12,000 wage and salary jobs.[20]

Table 7. Oil and Gas Industry Employment and Wages in North Slope Borough, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	<5	<$0.3
Oil & Gas Support Services (Alaska residents only)*	16	$0.7
All Other Indirect and Induced	1,621	$94.6
Total Impacts (Direct, Indirect, and Induced)	1,637	$95.6

Sources: Alaska Department of Labor and Workforce Development, data from Primary Companies, and McDowell Group estimates.

Valdez

Valdez is the home of the Alyeska marine terminal, terminus of the 800-mile TAPS. There oil is loaded for marine transport to market. Also located in Valdez is Petro Star's Valdez refinery and other TAPS pipeline facilities. Together, this infrastructure accounts for approximately 90% of local property tax revenues.

An additional source of revenue dates to the 1970s when TAPS owners paid the city $13.6 million in exchange for use of the city's bonding authority to issue tax-exempt bonds. That money was used to create the Valdez Permanent Fund, which held approximately $193 million at the end of 2018.[21]

Direct Primary Company Impacts

- 302 Primary Company employees reside in Valdez, accounting for $43 million in annual wages.

Oil and Gas Support Services Impacts

- Another 112 Oil and Gas Support Services company employees reside in Valdez, with annual wages of $9 million.

[19] Alaska Taxable 2018, Office of the State Assessor, https://www.commerce.alaska.gov/web/dcra/OfficeoftheStateAssessor/AlaskaTaxable-New.aspx
[20] Alaska Department of Labor and Workforce Development, QCEW and population estimates.
[21] City of Valdez, 2018 Audited Financial Statement 2018, https://www.valdezak.gov/DocumentCenter/View/7223/2018-City-of-Valdez-Audited-Financial-Statements-PDF?bidId=

Other Indirect and Induced Impacts

- An additional 217 jobs in Valdez are connected to Primary Company spending and employee spending in Valdez, accounting for approximately $15 million in annual wages.

Total Impacts

- Including all direct, indirect, and induced effects, the oil and gas industry accounted for an annual average of 631 jobs and total annual wages of $67 million in Valdez.
- The oil and gas industry paid $44.3 million in property taxes to the City of Valdez in 2018, or 87% of total city tax revenues.[22]

Table 8. Oil and Gas Industry Employment and Wages in Valdez, 2018

Category	Employment	Wages ($million)
Primary Companies (Alaska residents only)*	302	$42.8
Oil & Gas Support Services (Alaska residents only)*	112	$9.0
All Other Indirect and Induced	217	$15.0
Total Impacts (Direct, Indirect, and Induced)	631	$66.8

Sources: Alaska Department of Labor and Workforce Development, data from Primary Companies, and McDowell Group estimates.

Summary of Localized Impacts

The impacts for the six geographic areas described in this section capture most employment and payroll impacts generated by the oil and gas industry in Alaska. However, other regions of Alaska (such as Southeast, Southwest, and rural Interior) are home to North Slope workers. These workers spend their wages in their local economies.

Some economic activity related to oil and gas industry spending in Alaska is difficult to attribute to any specific community. For example, spending by the oil and gas industry and their workers in Fairbanks, Mat-Su, or Kenai Peninsula is likely to funnel eventually through service and supply hubs in Anchorage, creating indirect and induced impacts there. These impacts are captured in the statewide analysis. Local-level modeling conducted for this study does not capture this inter-regional effect and therefore understates local employment and payroll, especially in Anchorage.

The following table summarizes local-level employment and payroll impacts of the oil and gas industry. The "Unattributed" category accounts for jobs created outside the six locations considered in this study, including jobs created by inter-regional flow of oil and gas industry-related dollars.

(See table next page.)

[22] Alaska Taxable 2018, Office of the State Assessor, https://www.commerce.alaska.gov/web/dcra/OfficeoftheStateAssessor/AlaskaTaxable-New.aspx

Table 9. Alaska Resident Employment and Wages in the Oil and Gas Industry By Region, 2018

Category	Alaska	Municipality of Anchorage	Fairbanks North Star Borough	Kenai Peninsula Borough	Mat-Su Borough	North Slope Borough	Valdez	Unattributed
Employment								
Primary Companies	4,111	2,109	353	852	376	<5	302	119
Oil & Gas Support Services	5,819	1,872	640	1,382	1,584	16	112	213
Other Indirect & Induced	31,881	21,780	1,915	2,373	1,064	1,621	217	2,911
Total	**41,811**	**25,761**	**2,908**	**4,607**	**3,024**	**1,637**	**631**	**3,243**
Wages ($million)								
Primary Companies	$983	$556	$44	$206	$104	<$1	$43	$29
Oil & Gas Support Services	$458	$162	$49	$100	$126	$1	$9	$11
Other Indirect & Induced	$1,676	$1,161	$99	$99	$51	$95	$15	$157
Total	**$3,116**	**$1,879**	**$192**	**$405**	**$281**	**$96**	**$67**	**$197**

Note: Due to rounding some rows or columns may not add to total.
Sources: Alaska Department of Labor and Workforce Development, data from Primary Companies, and McDowell Group estimates.

Chapter 4. Oil Revenue Impacts on State and Local Governments

Alaska relies on revenue generated from various oil- and gas-related taxes and royalties to fund state operating and capital budgets. Municipal governments also depend on oil- and gas-related revenue directly or indirectly when they develop their budgets. Finally, oil and gas revenue is disbursed directly to Alaska residents in the form of transfer payments, including the Permanent Fund Dividend. Altogether, oil and gas industry payments to state and local governments totaled $3.15 billion in 2018. This chapter details the economic impact of this state and local government revenue.

Table 10. Summary of Oil-Related Payments to State and Local Governments in Alaska, SFY2019

	Amount
Local government payments (Oil and Gas Property Taxes)	$449.4 million
State government payments (Royalties, Production Tax, Oil and Gas Property Tax, and other payments)	$2.7 billion
Total oil- and gas-related revenue paid to local and state governments	**$3.15 billion**

Source: Alaska Department of Revenue.

Oil and Gas Impacts on State Government

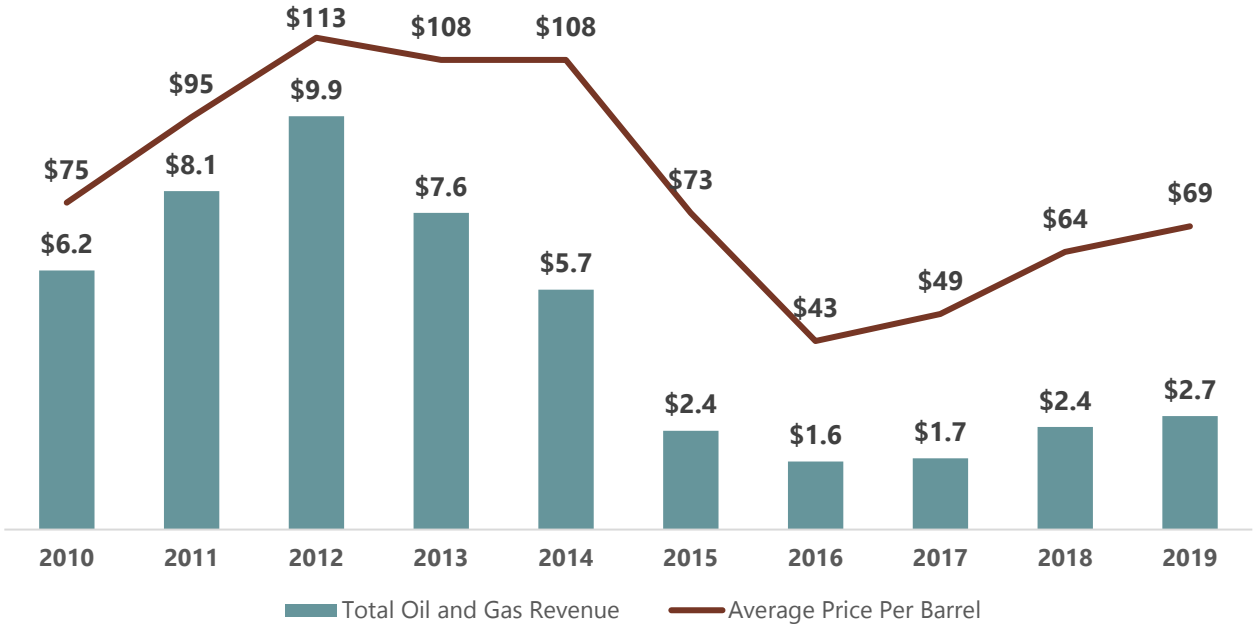
The State of Alaska receives revenue from the oil and gas industry through a variety of taxes, royalties, and other charges related to oil and gas development and production. There are two categories of State revenue, unrestricted and restricted funds. Unrestricted revenues are paid into the General Fund (GF) and may be appropriated by the legislature for any public purpose (subject to the Governor's veto). Restricted revenues are required by law to be allocated to a specific use, typically an ongoing trust or fund. The Alaska Permanent Fund is an example. Following is an overview of State oil and gas revenue trends for unrestricted and restricted funds. The overview is followed by more detailed descriptions of the types of oil and gas payments that fall into each category.[23]

Oil and Gas Revenue Trends

Oil- and gas-related revenue increased to $2.4 billion in State fiscal year (SFY) 2018 following three years of declining revenue associated primarily with declining oil prices. In SFY2019, preliminary revenue is estimated at $2.7 billion. The figure below shows the relationship between oil prices and oil and gas revenue to the State of Alaska.

[23] More detailed descriptions can be found in the Alaska Department of Revenue, *2018 Annual Report*. http://www.tax.alaska.gov/programs/programs/reports/AnnualReport.aspx?Year=2018

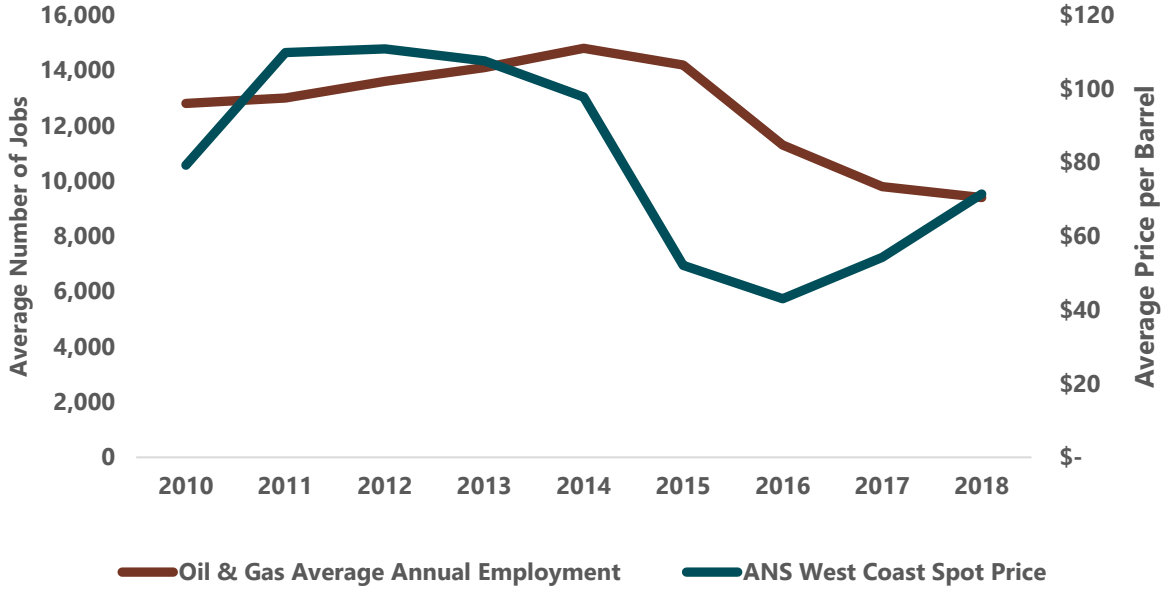
Figure 6. State of Alaska Oil- and Gas-Related Revenue ($billion) and Average Annual ANS Price per Barrel, SFY2010-SFY2018



Source: Alaska Department of Revenue.

A similar trend can be seen between oil prices and the lag effect on oil and gas employment in Alaska.

Figure 7. Alaska Oil and Gas Sector Employment (Annual Average) and Average Annual ANS Price per Barrel, 2010-2018



Source: Alaska Department of Revenue and Alaska Department of Labor and Workforce Development

The following table summarizes State oil and gas revenue and other State revenue from SFY2014 to SFY2019.

Table 11. State of Alaska Revenue Sources ($million), SFY2014-SFY2019

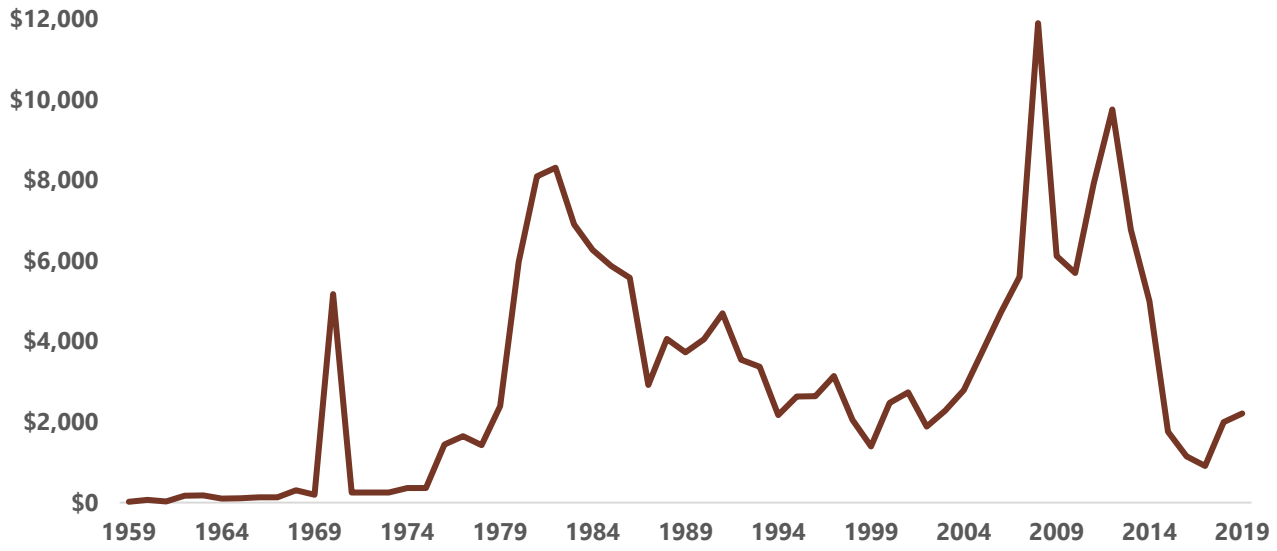
Category	SFY2014	SFY2015	SFY2016	SFY2017	SFY2018	SFY2019[1]
Unrestricted General Fund Revenue						
Oil & Gas Revenue	$4,762.8	$1,687.9	$1,109.5	$877.0	$1,941.7	$2,211.2
Non-Oil & Gas Revenue	497.1	520.5	400.7	460.4	466.1	488.5
Investment Revenue	130.2	47.9	22.5	17.3	16.3	2,795.4
Total Unrestricted Revenue	**$5,390.1**	**$2,256.3**	**$1,532.7**	**$1,354.7**	**$2,424.1**	**$5,495.1**
% from Oil & Gas	88%	75%	72%	65%	80%	40%
Restricted Revenue						
Oil & Gas Revenue	970.4	671.4	517.8	823.3	508.1	503.2
Non-Oil & Gas Revenue	10,897.2	5,612.5	3,855.6	10,727.5	9,413.2	5,420.7
Total Restricted Revenue	**$11,867.6**	**$6,283.9**	**$4,373.4**	**$11,550.8**	**$9,921.3**	**$5,923.9**
% from Oil & Gas	8%	11%	12%	7%	5%	8%
Combined Unrestricted & Unrestricted Revenue						
Oil & Gas Revenue	5,733.2	2,359.3	1,627.3	1,700.3	2,449.8	2,714.4
Non-Oil & Gas Revenue	11,524.5	6,180.9	4,278.8	11,205.2	9,895.6	8,704.6
Total Unrestricted and Restricted Revenue	**$17,257.7**	**$8,540.2**	**$5,906.1**	**$12,905.5**	**$12,345.4**	**$11,419.0**
% from Oil & Gas	33%	28%	28%	13%	20%	24%

[1] SFY2014-SFY2018 are actual revenue; SFY2019 is forecasted revenue.
Source: Alaska Department of Revenue – Revenue Sources Book.

Unrestricted Revenues

Most revenue generated from petroleum activity is unrestricted. Between statehood in 1959 and SFY2019, oil-related unrestricted revenues totaled $190 billion (in 2018 dollars), in addition to billions more in restricted revenue. In SFY2019, Alaska received $2.7 billion in total oil and gas revenue or 24% of all restricted and unrestricted state revenue ($11.4 billion).

Figure 8. Annual Unrestricted Petroleum Revenue ($2018), SFY1959-2019



Source: State of Alaska Department of Revenue; adjusted for inflation by McDowell Group.

In SFY2018, of the $2.4 billion in total petroleum revenue, $1.9 billion (or 79%) was unrestricted.

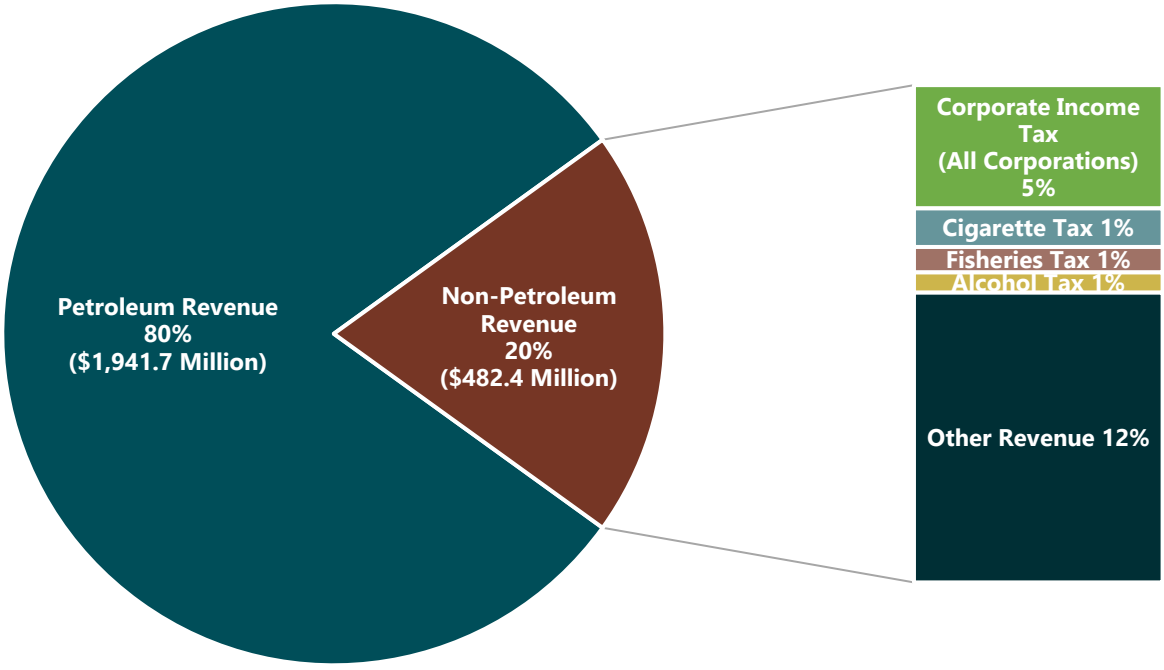
Table 12. State of Alaska Unrestricted Revenue Sources ($million), SFY2014-SFY2019

Category	SFY2014	SFY2015	SFY2016	SFY2017	SFY2018	SFY2019[1]
Oil & Gas Unrestricted Revenue	**$4,762.8**	**$1,687.9**	**$1,109.5**	**$877.0**	**$1,941.7**	**$2,211.2**
Oil & Gas Royalties	$1,685.0	$1,052.1	$840.3	$676.2	$977.8	$1,051.9
Production Tax	2,605.9	381.6	176.8	125.9	741.2	806.6
Property Tax	128.1	125.2	111.7	120.4	121.6	126.1
Petroleum Corporate Income Tax	307.6	94.8	-58.8	-59.4	67.9	195.0
Other Oil & Gas Revenue[2]	36.2	34.2	39.5	13.9	33.2	31.6
Other Unrestricted Revenue	**$627.3**	**$568.4**	**$423.2**	**$477.7**	**$482.4**	**$3,283.9**
Non-Oil & Gas Revenue	497.1	520.5	400.7	460.4	466.1	488.5
Investment Revenue	130.2	47.9	22.5	17.3	16.3	2,795.4
Total Unrestricted Revenue	**$5,390.1**	**$2,256.3**	**$1,532.7**	**$1,354.7**	**$2,424.1**	**$5,495.1**
% from Oil & Gas	88%	75%	72%	65%	80%	40%

[1] SFY2014-SFY2018 are actual revenue; SFY2019 is forecasted revenue.
[2] Includes hazardous release revenue.
Source: Alaska Department of Revenue – Revenue Sources Book.

Alaska's oil and gas industry revenue provided 80% of unrestricted revenue from all sources in SFY2018. Non-petroleum corporate income tax accounted for the second largest component at 5%.

Figure 9. Sources of State of Alaska Unrestricted General Funds, SFY2018



Source: Alaska Department of Revenue – Revenue Sources Book.

ROYALTIES – OIL AND GAS BONUSES, RENTS, AND INTEREST

Royalty agreements allow the state to share the risk of oil and gas development with the industry (*11 ACC 04.010-199*, *11 AAC 83.201-295*) in return for a portion of the profits. When a company purchases a lease from the state it pays various fees and commits to paying the state a portion of revenue (usually 12.5%, although some newer leases have a higher royalty rate) if and when the oil and gas are marketed. Royalty payments are based on the value and volume of the oil and gas removed from the state-leased land and the lease's royalty rate. Large lease-owners have agreements with the state about what expenses can be deducted from the sales value to calculate royalty due.[24]

In SFY2018, royalties – including bonuses, rents, and interest – on petroleum production totaled $977.8 million. This revenue represented:

- 50% of unrestricted oil- and gas-related revenue.
- 40% of all oil-related revenue (both restricted and unrestricted).
- 8% of all state revenue (including revenue from the federal government and other sources).

OIL AND GAS PRODUCTION TAX

Since January 1, 2014, the state has levied an annual tax on the value of oil and gas production in Alaska (*AS 43.55*) per Senate Bill 21. Oil and gas production is taxed at its "production tax value" (PTV) which is gross value at the point of production minus lease expenditures.

For North Slope producers, the base tax rate is 35%, with lower tax rates occurring when prices fall below $25 per barrel. An additional alternative minimum tax of between 0 and 4% is levied upon the gross value when the average annual ANS price is above $25 per barrel. A Per-Taxable-Barrel Credit is activated at $8 per barrel when prices are less than $80 per barrel and decreases to $0 per barrel as the price reaches $150 per barrel.

Cook Inlet producers operate under a tax structure similar to that of the North Slope, including the 35% tax rate on the production tax value of oil and gas. However, the effective rate cannot exceed $1 a barrel for oil and $0.177 per thousand cubic feet of natural gas.

In SFY2018, the production tax generated $741.2 million in state revenue, which represented:

- 38% of unrestricted oil- and gas-related revenue.
- 30% of all oil-related revenue (both restricted and unrestricted).
- 6% of all state revenue (including revenue from the federal government and other sources).

OIL AND GAS PROPERTY TAX

A total of $571.0 million in oil and gas property taxes was paid to both state ($121.6 million) and local governments ($449.4). Alaska levies an oil and gas property tax on the value of taxable exploration, production, and pipeline transportation property (*AS 43.56*) at a rate of 20 mills, or 2% of the assessed value. In SFY2018, oil and gas property taxes paid to the state represented:

[24] More detailed description can be found on the Alaska Department of Natural Resources' website: http://dog.dnr.alaska.gov/Royalty/Accounting.htm

- 6% of unrestricted oil- and gas-related revenue.
- 5% of all oil-related revenue (both restricted and unrestricted).
- 1% of all state revenue (including revenue from the federal government and other sources).

OIL CONSERVATION SURCHARGE

The Oil and Hazardous Substance Release Prevention and Response Fund (*AS43.55.201/300*) is maintained through a per-barrel tax to fund mitigation of oil spills or other hazardous releases. The fund is separated into two accounts: one supports response to a hazardous release and another supports prevention of hazardous releases (primarily funding a division at the Alaska Department of Environmental Conservation).

The surcharge can total up to $0.05 per barrel, with $0.04 per barrel allocated to the prevention account with no limit. However, when the response account totals more than $50 million, a $0.01 per barrel surcharge is suspended. As of September 2018, the response fund held $41 million. Commonly referred to as the "470 Fund", the Alaska oil and gas industry paid $8.7 million into the fund in in SFY2018. This surcharge is added to the Oil and Gas Production Tax.

PETROLEUM CORPORATE INCOME TAX

In SFY2018, the oil and gas industry generated $67.9 million in corporate income taxes.

Alaska levies a corporate income tax on Alaska businesses (*AS 43.20* that ranges from 0 to 9.4% spread across more than 10 tax brackets. Corporate income tax on oil production companies is based on a "modified apportionment formula" of property, sales, and extraction. The extraction factor is the production of oil and gas in Alaska divided by worldwide production. Credits, such as the Gas Exploration and Development Credit, Gas Storage Facility Tax Credit, and the LNG Storage Facility Tax Credit, apply.

Restricted Revenues

While most oil and gas revenue is unrestricted, a portion is designated for specific uses. In SFY2018, of the $2.4 billion generated from oil and gas activity, $508 million (or 21%) was restricted revenue. This component represented 4.1% of all state revenue. The revenue is designated to several funds described below.

Table 13. State of Alaska Restricted Revenue Sources ($million), SFY2014-SFY2019

Category	SFY2014	SFY2015	SFY2016	SFY2017	SFY2018	SFY2019[1]
Oil & Gas Restricted Revenue	**$970.4**	**$671.4**	**$517.8**	**$823.3**	**$508.1**	**$503.2**
Royalties to Permanent Fund	$773.7	$510.4	$390.5	$334.5	$356.1	$363.80
Tax Settlement to CBRF	177.4	149.9	119.1	481.9	121.3	125.0
Royalties to Public School Trust Fund	12.5	7.9	6.4	5.5	7.0	7.2
NPR-A Royalties, Rents, and Bonuses	6.8	3.2	1.8	1.4	23.7	7.2
Non-Oil & Gas Restricted Revenue	**$10,897.2**	**$5,612.5**	**$3,855.6**	**$10,727.5**	**$9,413.2**	**$5,420.7**
Total Restricted Revenue	**$11,867.6**	**$6,283.9**	**$4,373.4**	**$11,550.8**	**$9,921.3**	**$5,923.9**
% from Oil & Gas	8%	11%	12%	7%	5%	8%

[1] SFY2014-SFY2018 are actual revenue; SFY2019 is forecasted revenue.
Source: Alaska Department of Revenue – Revenue Sources Book.

ALASKA PERMANENT FUND

The Alaska Permanent Fund receives from 25% to 50% of oil and gas royalties, depending on the royalty agreement for the specific property. As of August 31, 2019, the fund held $63.6 billion.[25] A more detailed discussion of the Alaska Permanent Fund and its dividend is provided later in this report.

PUBLIC SCHOOL TRUST FUND

The Public School Trust Fund is funded by a 0.5% royalty on receipts from management of State of Alaska lands (AS 37.14.150), including revenue generated through royalties, mineral lease rentals, the sale of surface rights, and other activity. Revenues associated with oil and gas development and production fund most of the trust.

Income generated from the Public School Trust Fund can only be used to support the Alaska public school system. On September 30, 2019, the fund's market value was $685.9 million.[26] In SFY2018, $28.5 million was distributed to school districts throughout the state.[27]

CONSTITUTIONAL BUDGET RESERVE FUND

The Constitutional Budget Reserve Fund (CBRF) receives settlements associated with mineral-related disputes. At the discretion of the state legislature, GF revenue can also be added to the CBRF. Established in 1990, the CBRF is funded almost entirely by oil and gas activity; mining-related settlements contributed a small amount.

On September 30, 2019, the fund had a market value of $1.98 billion, down from a peak of $10.1 billion in 2015.[28] In SFY2018, $121.3 million was placed in the CBRF, and the fund generated $47.2 million from investment activities.[29] In the same year, $2.1 billion was transferred from the CBRF to the GF.[30]

NPR-A ROYALTIES, RENTS, AND BONUSES

The State of Alaska is entitled to 50% of bonuses, rents, and royalties associated with leasing of federal lands in the National Petroleum Reserve-Alaska (NPR-A). This restricted revenue goes first to municipalities in the form of grants to minimize impacts associated with NPR-A development. Any remaining funds are treated like other State of Alaska royalty revenue.

In SFY2018, $23.7 million was collected for activity on NPR-A lands, a significant increase from $1.4 million collected in SFY2017. State NPR-A collections support local government operations, youth programs, and infrastructure projects in the North Slope Borough, and the communities of Utqiaġvik, Wainwright, Anaktuvuk Pass, Nuiqsut, and Atqasuk.

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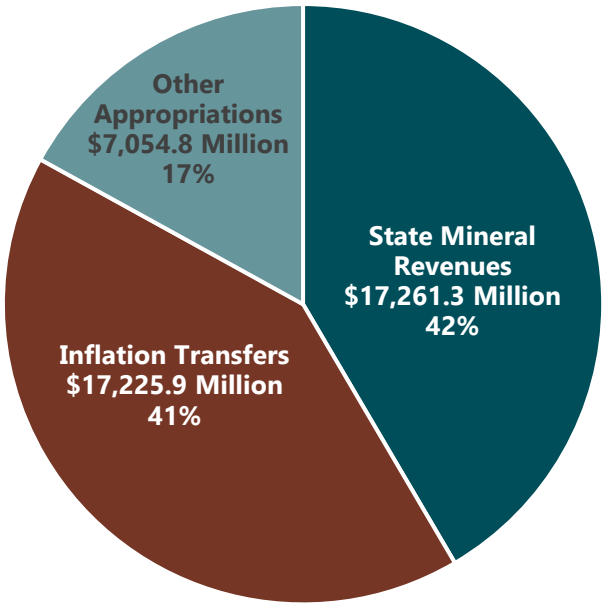
[25] Alaska Permanent Fund Corporation. *Our Performance*. https://apfc.org/our-performance/. Accessed October 16, 2019.
[26] Alaska Department of Revenue, Treasury Division. *Public School Trust Fund.* http://treasury.dor.alaska.gov/Investments/Public-School-Trust-Fund.aspx. Accessed October 16, 2019.
[27] Includes $23.7 million paid to K12 Aid to School Districts and $4.7 million to Mt. Edgecumbe.
[28] Alaska Department of Revenue, Treasury Division. *Constitutional Budget Reserve*. http://treasury.dor.alaska.gov/Investments/Constitutional-Budget-Reserve.aspx. Accessed October 16, 2019.
[29] Alaska Department of Revenue. *Revenues Sources Book Fall 2018*. Accessed October 15, 2019.
[30] Alaska Department of Revenue. *Fiscal Year 2019 Enacted Budget Summary*. https://omb.alaska.gov/ombfiles/19_budget/PDFs/Fiscal_Summary_6-13-18.pdf. Accessed October 15, 2019.

ALASKA PERMANENT FUND

In 1976, as TAPS neared completion, Alaska voters approved a constitutional amendment to establish the Alaska Permanent Fund. The Fund is an account to help cover future State needs in the event of volatility or decline in oil revenues. The principal of the fund represents at least 25% of all mineral lease rents, royalties, royalty sales proceeds, federal mineral revenue-sharing payments and bonuses. The principal of the Fund may only be spent through another constitutional amendment.

The fund's principal, $47.8 billion as of August 31, 2019, has been funded by a combination of state mineral revenues, inflation transfers, and other appropriations. State mineral revenues have accounted for the highest share of contributions to the principal since its creation, representing 42% of transfers into the fund.

Figure 10. Contributions to Permanent Fund Principal ($millions)



Note: Figure excludes principal from unrealized gain on investments. As of August 31, 2019.
Source: Alaska Permanent Fund Corporation.

Virtually all the state mineral revenue deposited in the fund has come from Alaska's oil and gas production royalty payments (a relatively small amount comes from mining activity). In SFY2019, $385.2 million in state mineral revenues went to the Alaska Permanent Fund.[31] As of August 31, 2019, the fund was valued at $63.6 billion, including principal, unrealized investment earnings, and the earnings reserve account.[32]

[31] Alaska Permanent Fund Corporation. *Our Performance*. https://apfc.org/our-performance/. Accessed October 16, 2019.
[32] Ibid.

PERCENT OF MARKET VALUE AND THE GENERAL FUND

Passed by the Alaska Legislature in 2018, Senate Bill (SB) 26 provides for annual appropriations from the Permanent Fund to the state's general fund based on a percent of the fund's average market value over a five-fiscal-year period. In SFY2019-SFY2021, the percent of market value (POMV) appropriated was set at 5.25%, decreasing to 5.0% in SFY2022 and beyond.[33] Appropriations from the fund may be used to fund government operations or the Permanent Fund Dividend program.

In SFY2019, $2.7 billion was appropriated from the Permanent Fund to the general fund, of which $1.7 billion was budgeted for state operations and $1.0 billion for the Permanent Fund Dividend.[34] In SFY2020, $2.9 billion will be appropriated from the Permanent Fund to the general fund.[35]

The regular appropriation of Permanent Fund earnings based on the POMV formula represents a new dynamic in state government funding. These investment earnings can be considered a result of oil and gas payments to the fund's principal, which generated the earnings.

Oil and Gas Revenue-Related Impacts on State Government Funding and Employment

As a critical source of unrestricted funding, the oil and gas industry supports thousands of state government jobs and millions of dollars in annual wages. The impact of oil and gas related-revenue on state government employment and payroll is greater than the UGF spending alone due to leveraging of additional federal dollars (for example, transportation projects and Medicaid funding). The following analysis focuses on the impacts of oil and gas revenue-related UGF on state department operations and programs.

In SFY2019, the state's combined operating ($9.4 billion) and capital ($1.5 billion) budget was $10.9 billion.[36] UGF accounted for 42% of spending ($4.6 billion). Federal funding accounted for 33% ($3.8 billion), and designated and other funds accounted for the remainder ($2.5 billion). (*See table on next page.)*

Based only on payments from Primary Companies, the proportion of state departmental budgets funded with oil and gas revenue from UGF ranged from 47% (for the Court System and Legislature) to 3% (Departments of Commerce, Community, and Economic Development and Revenue). In absolute terms, the Alaska Department of Education and Early Development received the most funding from direct payments to the UGF by the oil and gas industry ($629.2 million).

Including direct payments to the UGF, Constitutional Budget Reserve funds, and Permanent Funds by the oil and gas industry, the percentage of department budgets funded by oil- and gas-related revenue ranged from 5% to 74% in FY2019.

[33] Alaska Permanent Fund Corporation. *2019 Annual Report*.
[34] Alaska Office of Management and Budget. *Fiscal Year 2019 Enacted Fiscal Summary*. https://omb.alaska.gov/ombfiles/19_budget/PDFs/Fiscal_Summary_6-13-18.pdf. Accessed October 17, 2019.
[35] Alaska Permanent Fund Corporation. *2019 Annual Report*.
[36] Based on FY2019 enacted budget less vetoes and excluding Permanent Fund Dividend expenditures.

Table 14. State of Alaska Revenue Sources by Department ($millions), SFY2019

Department	Undesignated General Funds	All Other Funds	Total Funding	Directly Attributable to Oil & Gas Revenue		Directly & Indirectly Attributable to Oil & Gas Revenue[a]	
				UGF	% of Budget	UGF	% of Budget
Operating	**$4,385.1**	**$4,989.4**	**$9,374.5**	**$2,119.5**	**23%**	**$3,339.6**	**36%**
Administration	$72.1	$272.2	$344.2	$34.8	10%	$54.9	16%
Commerce, Community & Econ Development	10.1	158.0	168.1	4.9	3%	7.7	5%
Corrections	291.1	41.6	332.8	140.7	42%	221.7	67%
Education & Early Development	1,301.8	342.1	1,643.9	629.2	38%	991.4	60%
Environmental Conservation	15.4	65.9	81.3	7.4	9%	11.7	14%
Fish & Game	51.7	150.6	202.3	25.0	12%	39.4	19%
Governor's Office	25.0	1.1	26.1	12.1	46%	19.0	73%
Health & Social Services	1,120.6	2,102.0	3,222.6	541.6	17%	853.4	26%
Labor & Workforce Development	20.7	127.5	148.2	10.0	7%	15.8	11%
Law	50.4	35.8	86.2	24.4	28%	38.4	45%
Military & Veterans Affairs	17.0	41.3	58.3	8.2	14%	13.0	22%
Natural Resources	58.3	95.8	154.0	28.2	18%	44.4	29%
Public Safety	161.8	36.0	197.9	78.2	40%	123.2	62%
Revenue	25.3	373.4	398.7	12.2	3%	19.3	5%
Transportation & Public Facilities	180.1	413.4	593.5	87.1	15%	137.2	23%
University	327.0	561.5	888.5	158.1	18%	249.1	28%
Court System	105.4	3.7	109.1	51.0	47%	80.3	74%
Legislature	64.1	1.7	65.8	31.0	47%	48.8	74%
Statewide Appropriations[b]	487.0	166.0	653.0	235.4	36%	370.9	57%
Capital	**$189.5**	**$1,294.5**	**$1,484.0**	**$91.6**	**6%**	**$144.3**	**10%**
Total[c]	**$4,574.6**	**$6,283.9**	**$10,858.5**	**$2,211.1**	**20%**	**$3,483.9**	**32%**

Notes:
[a] Indirect revenue attributable to the oil and gas industry includes transfers to the Unrestricted General Fund from the CBRF and the Permanent Fund for use in the state budget.
[b] Statewide appropriations include debt service, state retirement payments, fund capitalization, and other branch-wide appropriations.
[c] Excludes transfers from the Permanent Fund for use in the Permanent Fund Dividend.
Sources: Alaska Governor's Office of Budget and Management, FY2019 enacted budget less vetoes, Alaska Legislative Finance Division, and McDowell Group estimates.

Direct revenue from oil and gas companies supported 4,603 state government positions in FY2019. Including indirect oil- and gas-related revenue to the state, the industry supported 7,252 positions. Depending on how much of their budget comes from UGF, some departments are more dependent upon oil- and gas-related revenue for operations. Agencies with the most jobs supported by oil and gas revenue included the Department of Corrections (800 jobs directly attributable to oil and gas revenue and 1,261 jobs directly and indirectly attributable), the University of Alaska (744 direct jobs and 1,172 direct and indirect jobs), and the Department of Health and Social Services (598 direct jobs and 942 direct and indirect jobs).

Table 15. State of Alaska Operating Department Employment, SFY2019

Department	Positions[a]	Directly Attributable to Oil & Gas Revenue		Directly and Indirectly Attributable to Oil & Gas Revenue	
		# of Positions	% of Positions	# of Positions	% of Positions
Administration	1,229	124	10%	196	16%
Commerce, Community, & Economic Development	509	15	3%	23	5%
Corrections	1,893	800	42%	1,261	67%
Education & Early Development	287	110	38%	173	60%
Environmental Conservation	486	45	9%	70	14%
Fish & Game	1,457	180	12%	284	19%
Governor's Office	157	73	46%	115	73%
Health & Social Services	3,559	598	17%	942	26%
Labor & Workforce Development	754	51	7%	80	11%
Law	501	142	28%	223	45%
Military & Veterans Affairs	278	39	14%	62	22%
Natural Resources	902	165	18%	260	29%
Public Safety	832	329	40%	518	62%
Revenue	882	27	3%	43	5%
Transportation & Public Facilities	3,379	496	15%	781	23%
University of Alaska	4,182	744	18%	1,172	28%
Court System	766	358	47%	564	74%
Legislature	550	259	47%	408	74%
Total	**22,603**	**4,603**	**20%**	**7,252**	**32%**

Note:
[a] Includes full-time, part-time, and temporary positions.
Sources: Alaska Governor's Office of Budget and Management, FY2019 enacted budget less vetoes, Alaska Legislative Finance Division, and McDowell Group estimates.

STATE OF ALASKA CAPITAL BUDGET

The economic impact of capital projects may be spread out over several years, as construction can take time to ramp up (and ramp down). State general funds, including oil- and gas-related general funding, appropriated to the capital budget provide critical match required to access federal infrastructure funding. For example, in SFY2020, state UGF appropriations leveraged over $690 million in federal funding for the standard federal surface transportation program (for a total capital budget of $1.5 billion). The average capital budget appropriated between SFY2015 and SFY2019 is $1.7 billion. A small sampling of recent capital projects includes:

SFY2019

- Bulk Fuel Storage Upgrades for Rural Communities, $5 million in UGF appropriations
- K-12 School Facility Major Maintenance throughout the state, $4.2 million
- Enhanced "9-1-1" Service Project, $3.5 million

SFY2020

- Village Safe Water and Wastewater Infrastructure Projects, $24.1 million in UGF appropriations
- Alaska Marine Highway System Vessel Overhaul, Annual Certification and Shoreside Facility rehabilitation, $13.5 million
- Anchorage Jewel Lake and Sand Lake Elementary School Safety Lighting, $480,000

Statewide Impacts of Oil-related Revenue on Select State Government Programs

Following are some key examples of programs funded by oil- and gas-related revenue in FY2019 that have far-reaching, statewide benefits:

- Alaska Permanent Fund Dividends (PFD) paid $1.0 billion to 670,759 Alaskans.
- Education funding supported132,560 K-12 and 27,825 University of Alaska students.
- Medicaid supported 238,398 enrollees of whom 192,039 used Medicaid services in 2018.
- Community Assistance Program benefited about 230 municipalities, boroughs, cities, and unincorporated communities throughout Alaska. (In SFY2020, no funding was allocated toward this program.)

PERMANENT FUND DIVIDEND

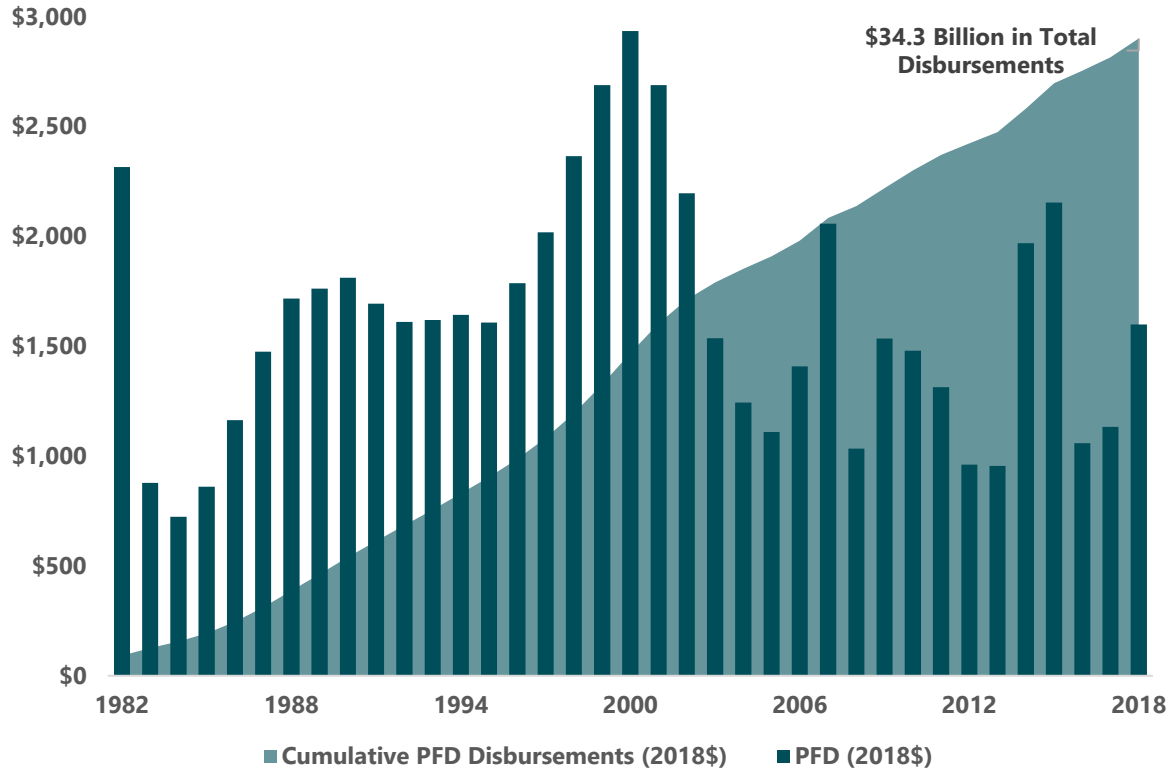
Perhaps the most recognizable impact the oil industry has on the average Alaska resident is the Permanent Fund Dividend (PFD), which is paid from the fund's investment earnings. Since 1982, every Alaska resident – adults and children alike – has received an annual amount that has ranged from about $400 to more than $2,000. Other programs associated with the Permanent Fund Dividend are *Pick. Click. Give* and *University of Alaska College Savings Plan*.

The first dividend, $1,000 per person, was distributed to Alaskans in 1982.

- An Alaska resident who has received an annual dividend since 1982 has received the equivalent of $60,127 (measured in 2018 dollars) in PFDs.
- The Alaska Permanent Fund has paid a cumulative $34.3 billion (in 2018 dollars) in PFDs since 1982.
- The PFD distribution in 2018 ($1.0 billion) represented more than 15% of all government transfer payments ($7.0 billion) to Alaska residents.[37]

[37] US Bureau of Economic Analysis, Regional GDP and Personal Income. Accessed October 15, 2019.

Figure 11. Annual PFD and Total Disbursed Amount ($2018), 1982-2018



Note: Does not include a $1,200 "energy rebate" payment that accompanied the 2008 PFD disbursement. Oil- and gas-related revenue funded more than 90% of this rebate payment.
Sources: Alaska Permanent Fund Corporation and McDowell Group calculations.

PFD payments serve an especially important role in rural Alaska where opportunities to earn cash income are often limited. To illustrate, the 2018 median family household income in Kusilvak Census Area was an estimated $36,230.[38] The average family household included five people. Assuming each member of the family received a $1,600 PFD in 2018 (totaling $8,000), PFD income would represent 22% of that family's total household income. In research conducted in 2016, Berman & Reamey estimated these annual payments lift between 15,000 and 25,000 Alaskans above the federal poverty line.[39]

A statewide survey conducted by McDowell Group in 2008 showed that 62% of Alaskans used a portion of their PFD to pay for household expenses (such as maintenance, rent, utility bills), 58% saved or invested a portion of their PFD, including college funds, 40% used it to pay debt (such as credit card debt, garnishment, child support payments), 33% used it for vacation, 31% donated a portion to a charity, and 19% used it to make a major purchase of more than $500 (such as snow machines, TVs, four-wheelers).[40] Like other income that enters Alaska's economy, the PFD supports additional jobs and income beyond the initial payment to recipients and has far-reaching impacts on many sectors in Alaska's economy.

[38] American Community Survey 2013-2017 Five-Year Estimates.
[39] Permanent Fund Dividends and Poverty in Alaska, Matthew Berman and Random Reamey, November 2016, http://www.iser.uaa.alaska.edu/Publications/2016_12-PFDandPoverty.pdf
[40] McDowell Group, *A Statewide Household Survey of Alaskan Giving*, prepared for The Alaska Giving Coalition, March 2008.

Pick. Click. Give.

The Pick. Click. Give. (PCG) program enables donations of a portion or all of an individual's PFD to a charitable organization. Since the program began in 2009, PCG has facilitated more than $23.7 million in donations.[41]

University of Alaska College Savings Plan

Eligible PFD applicants can place up to 50% of their PFD in a 529 college savings plan created by the state legislature in 1990. Since 1991, Alaska residents have contributed $193.2 million to this plan.[42]

PRE-K-12 SUPPORT

Aside from specific state program funding (such as federal grants), most support of Alaska's public Pre-K-12 school funding is determined using a "foundation formula" adopted in 1998. The formula calculates the amount of state aid to individual school districts each year based on student enrollment, defined as the "average daily membership" (ADM). ADM is adjusted for variations in school size, geographic cost differentials, special and intensive needs student populations, correspondence programs, federal aid, and the ability of communities to provide local contributions.

The adjusted ADM is then multiplied by the Base Student Allocation (BSA) to determine each district's level of state funding. In school year 2018-2019, the ADM was 132,554 and the BSA totaled $5,930 per student, with oil- and gas-related revenue accounting for $4,360 (including direct and indirect oil- and gas-related revenue).[43]

UNIVERSITY OF ALASKA SYSTEM

The University of Alaska includes three campuses—University of Alaska Fairbanks, University of Alaska Anchorage, University of Alaska Southeast—and serves approximately 26,600 full and part-time students annually. The university system had approximately 4,200 positions in SFY2019.

In SFY2019, the University of Alaska budget of $888.5 million included:

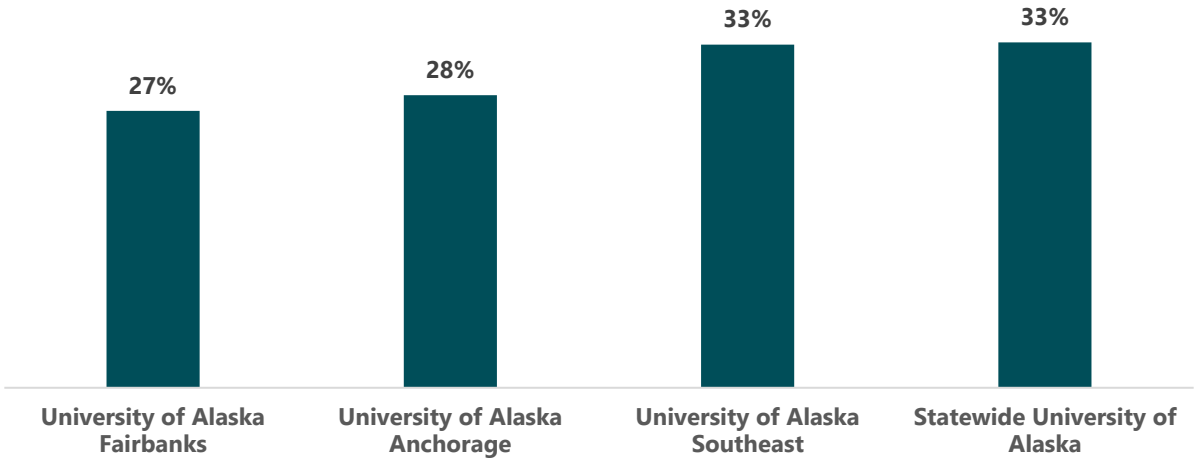
- 36.8% ($327.0 million) in UGF,
- 37.3% ($331.1 million) in DGF,
- 16.2% ($143.9 million) in federal funding, and
- 9.7% ($86.5 million) from other sources.

Based on UGF funding directly and indirectly attributable to oil and gas revenue, 28% of the University's budget was supported by oil- and gas-related revenue. Statewide services and the University of Alaska Southeast benefit most, with 33% of funding coming from oil- and gas-related revenue.[44]

[41] Personal Communication, Jessie Lavoie, Pick.Click.Give. Program Manager, 10/17/2019.
[42] State of Alaska Department of Revenue Permanent Fund Dividend Division, Annual Report 2018, https://pfd.alaska.gov/LinkClick.aspx?fileticket=WMEEdhRrPuk%3d&tabid=506&portalid=6&mid=6428. Accessed October 17, 2019.
[43] Alaska Department of Education and Early Development FY2019 Enrollment Totals.
[44] Statewide services include the Statewide Services, Office of Information Technology, University of Alaska Foundation, and Education Trust of Alaska component units.

The University of Alaska Anchorage and University of Alaska Fairbanks also benefit greatly, with 28% and 27% coming from oil- and gas-related funding, respectively. Oil- and gas-related revenue supports approximately 1,200 university positions.

Figure 12. Proportion of Budget Supported by Oil and Gas Revenue by University Component, SFY2019



Note: Based on UGF revenue directly and indirectly attributable to oil and gas revenue including direct industry payments, CBRF revenue, and Alaska Permanent Fund transfers to the GF.
Sources: Alaska Governor's Office of Budget and Management, FY2019 enacted budget less vetoes, and McDowell Group estimates.

MEDICAID PAYMENTS

Medicaid is the nation's major funding source for basic health and long-term-care services for low-income families and people with disabilities. As of July 2019, more than 220,000 Alaskans were enrolled in Medicaid, including 15,700 children enrolled through Denali KidCare, representing nearly 30% of the state population.[45]

Medicaid financing rules require states to spend their own funds to receive a federal financial match for Medicaid services.[46] In SFY2019, state UGF spending on Medicaid services of $661.2 million was used as a match resulting in $1.6 billion in federal Medicaid funding in Alaska.

A total of 76% of Alaska's state match was related to oil and gas revenue ($503.6 million of $661.2 million). In total, 22% of Medicaid funding (both state and federal) was related to oil and gas revenue.

COMMUNITY ASSISTANCE PROGRAM

The Community Assistance Program is one of the most important sources of non-locally generated operating revenue for many communities in Alaska (*AS 29.60.850-.879* and *3 AAC 180*). The program provides Alaska's boroughs, cities, and unincorporated communities funds vital to the delivery of basic public services. Payments received may be used at a community's discretion for any public purpose.[47] Municipalities and unincorporated communities may receive, upon application, a base payment, plus a per-capita payment.

[45] Federal Centers for Medicare and Medicaid Services. https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html. Accessed October 2019.
[46] There are no federal limits on program spending.
[47] http://www.commerce.alaska.gov/dnn/dcra/CommunityAidAccountability/CommunityRevenueSharing.aspx

This funding generates economic activity in the form of local government staffing, operating spending, or community projects. For some of Alaska's smaller communities, the Community Assistance Program is critical to sustain their operations.

The Community Assistance Program is established in the State's GF. One-third of the Fund's amount is distributed by the Alaska Department of Commerce, Community and Economic Development. If the fund balance falls below $60 million, no payments may be made from the fund. If available funding exceeds the amount needed to fund basic payments, the balance is distributed on a per-capita basis, excluding unincorporated communities located within organized boroughs.

The Legislature can also appropriate less than $60 million (including nothing at all); in SFY2019, $33.9 million was distributed. Approximately 40% (or $13.6 million) is directly attributed to oil and gas revenue.

Local Government Revenue

Local governments generate revenue from taxation of oil and gas property assets. While not examined in this study, local governments can also generate revenue through sales tax, bed tax or other taxes or fees related to oil and gas industry spending.

Oil and Gas Property Taxes

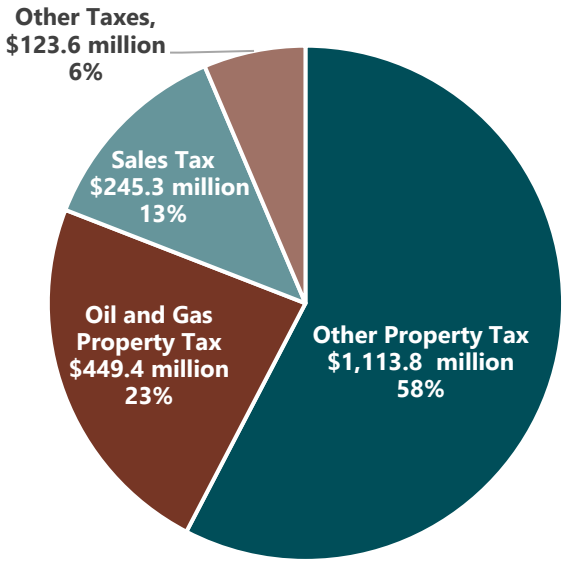
In addition to property taxes collected by the State of Alaska, local governments generate revenue from taxation of oil and gas property assets. As with the Community Assistance Program, property taxes provide unrestricted revenue to communities. Without oil-related revenue, many local governments, like the State, would need to provide fewer services and spend less on capital projects and/or raise more taxes from businesses and households.

Property holders can claim local oil and gas property taxes paid as credits toward state oil and gas property taxes.

In SFY2018, local governments generated $449.4 million from taxation of oil and gas properties, 23% of total tax revenue ($1.8 billion).[48] Other property tax revenue accounted for the largest portion (58% or $1.1 billion). The remainder ($368.9 million or 19%) was sales and other tax revenue.[49]

[48] Oil and gas property tax (commonly termed the 43.56 tax) does not include property taxes on refineries.
[49] Other taxes apply to motor fuel, raw fish, hotel beds, and alcohol and tobacco products, among others.

Figure 13. Local Government Tax Revenue by Category ($million), SFY2018



Source: Alaska Department of Commerce, Community, and Economic Development.

In SFY2018, oil and gas assets in Alaska were assessed at $28.6 billion, with 72% of total assessed value (or $20.7 billion) in the North Slope Borough. In contrast to the North Slope, where assets consist mainly of oil and gas production infrastructure, assets in the Fairbanks North Star Borough ($743 million) and Valdez ($2.2 billion) are mainly refineries, TAPS, and marine terminal facilities. Production facilities in Kenai Peninsula Borough were assessed at $1.5 billion. Assets in Mat-Su, Anchorage, Cordova, Whittier, and elsewhere make up the remaining $3.4 billion in oil and gas infrastructure assessed value.

Table 16. Oil & Gas Infrastructure Assessed Value ($million), SFY2014-2018

City, Borough, or Municipality	2014	2015	2016	2017	2018
North Slope	$18,602	$20,181	$20,267	$20,938	$20,715
Valdez	2,304	2,169	1,921	1,921	2,196
Kenai Peninsula Borough	1,140	1,225	1,415	1,469	1,519
City of Homer	-	-	-	4	1.3
City of Kenai	67	71	52	46	51
City of Seward	-	-	-	13	13
Fairbanks North Star Borough	870	833	678	735	743
City of Fairbanks	32	65	52	55	60
City of North Pole	9	10	--	--	--
Anchorage	331	429	283	171	161
Cordova	11	11	9	9	9
Mat-Su	7.	17	8	10	10
City of Wasilla	-	-	2	1	1
Whittier	2	2	2	2	1
Outside Taxing Jurisdictions (State and Fed)	4,121	3,754	3,022	3.104	3,100
Nominal State Oil & Gas Full Value Assessment	**$27,495**	**$28,765**	**$27,710**	**$25,374**	**$28,577**
Total Inflation-adjusted Oil & Gas Full Value Assessment ($2018)	**$29,736**	**$29,910**	**$28,692**	**$26,148**	**$28,577**

Note: Columns may not sum due to rounding.
Source: Alaska Department of Commerce, Community and Economic Development.

Table 17. Local Revenues from Oil & Gas Property Taxes ($million), SFY2014-2018

City, Borough, or Municipality	2014	2015	2016	2017	2018
North Slope	$344	$339	$373	$377	$377
Valdez	55	43	43	38	44
Fairbanks North Star Borough	13	12	12	10	11
City of Fairbanks	0.2	0.4	0.3	15	0.3
Kenai Peninsula Borough	9	10	12	14	14
City of Kenai	0.2	0.3	0.3	0.2	0.2
Anchorage	6	5	6	4	3
Mat-Su	0.2	0.4	0.2	0.1	0.1
All Other	0.3	0.1	0.1	0.1	0.1
Nominal Total Oil & Gas Property Tax Revenues	**$426**	**$411**	**$447**	**$459**	**$449**
Total Inflation-adjusted Oil & Gas Property Tax Revenues ($2018)	**$446**	**$427**	**$463**	**$473**	**$449**

Note: Columns may not sum due to rounding.
Source: Alaska Department of Commerce, Community and Economic Development.

Table 18. Comparison of Tax Revenue by Source, SFY2018

City, Borough, or Municipality	Oil & Gas Property Tax ($million)	Total Property Taxes ($million)	Total Taxes ($million)	% of Property Tax from O&G Property	% of All Taxes From O&G Property
North Slope	$376.7	395.9	$395.9	95%	95%
Valdez	43.9	43.9	44.3	100%	99%
Fairbanks North Star Borough	10.9	115.3	120.1	9%	9%
City of Fairbanks	0.3	15.4	15.4	2%	2%
Kenai Peninsula Borough	14.1	69.5	101.0	20%	14%
City of Kenai	0.2	3.8	10.7	5%	2%
Anchorage	2.7	559.7	624.5	<1%	<1%
Mat-Su	0.1	132.1	141.1	<1%	<1%
All Other	0.1	127.6	379.1	<1%	<1%
Total Oil & Gas Property Tax Revenues	**$449**	**1,463.2**	**$1,832.1**	**31%**	**25%**

Note: Columns may not sum due to rounding.
Source: Alaska Department of Commerce, Community and Economic Development.

Employment Impact of State and Local Oil Revenue

As oil-related tax and royalty revenues are spent by government agencies, thousands of jobs and millions of dollars in wages are generated across Alaska. Economic modeling conducted for this study provides estimates of total (direct, indirect, and induced) employment and wage impacts associated with government spending of oil-related revenue.

Table 19. Estimated Employment and Wages Related to Oil Industry Taxes and Royalties in Alaska, 2018

Category	Spending of Oil &Gas Taxes & Royalties ($billion)	Total Employment	Total Annual Wages ($billion)
State Agencies (Excluding K-12 Education and Medicaid)	$1.13	10,900	$0.63
State Programs (K-12 Education and Medicaid)	$1.08	12,500	$0.51
State Capital Projects (5-yr. Average)	$0.15	1,400	$0.08
Permanent Fund Dividend	$1.00	6,500	$0.26
Local Government Operations and Projects	$0.45	4,500	$0.26
Total	**$3.81**	**35,800**	**$1.74**

Sources: Alaska Legislative Finance Division and McDowell Group estimates.

Employment and wage impacts in 2018 included the following:

- *State Agency Operations:* $1.13 billion in unrestricted oil and gas revenues were used to fund state agency operations (including the University of Alaska). That spending funded a total of 10,900 jobs, including multiplier effects. These jobs accounted for a total of $630 million in annual wages.
- *Statewide Program Expenditures:* Approximately $1.08 billion in K-12 and Medicaid expenditures (of oil and gas derived revenues) supported approximately 12,500 jobs in schools, medical care facilities, and throughout the support sector.
- *Capital Spending*: Approximately $150 million of oil- and gas-related revenue was used to fund capital projects throughout Alaska. While this capital funding is often matched with funding from other sources (especially federal dollars), in general this level of construction spending would have direct, indirect, and induced effects of approximately 1,400 jobs and $80 million in wages.
- *PFD Distribution:* Assuming dividends are spent much like other household income, the $1 billion disbursed in 2018 supported an estimated 6,500 jobs with wages of $260 million.
- *Local Government:* An estimated 4,500 direct, indirect and induced jobs are connected to the $450 million paid to local governments by the oil and gas industry. An estimated $260 million in wages was supported by this revenue.

In summary, taxes and royalties paid by the oil and gas industry account for about 35,800 jobs in Alaska and $1.74 billion in annual wages.

Combined Economic Impact of Oil Industry Private Sector Spending and Public Sector Payments

Total quantifiable economic impacts of Alaska's oil and gas industry in 2018 is estimated at 77,600 jobs and $4.8 billion in wages. This includes approximately 41,800 Alaska jobs and $3.1 billion in Alaska wages from operations spending by the Primary Companies plus approximately 35,800 Alaska jobs and $1.7 billion in Alaska wages from taxes and royalties paid by the industry. The total impact represents 24% of all Alaska wage and salary employment and 27% of total wages paid.[50]

[50] In 2018, Alaska's total wage and salary employment was 326,924 jobs paying $18.0 billion in wages.

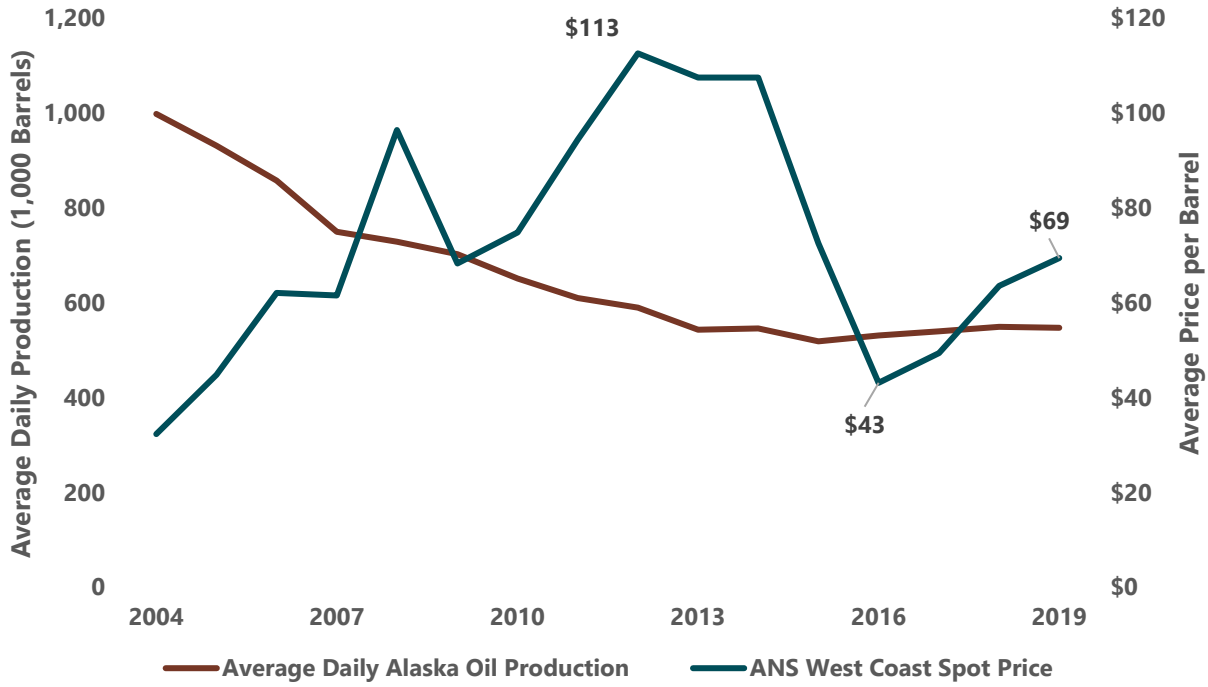
Chapter 5. Alaska's Production in the U.S. and World Market

This chapter briefly describes Alaska's current and historical oil and gas production and the state's role in national production of energy and refined oil products.

Alaska Oil Production and Prices

Oil and gas production started in the 1950s in Cook Inlet. North Slope oil production began in the early 1970s. Oil production on the North Slope has generally been in decline since peak production of two million barrels per day in 1988. Between SFY2004 and SFY2015, production fell an annual average of 5.7%. Through much of this time, the decline was substantially masked by strong oil prices which peaked in SFY2013 at $113 per barrel (ANS). Production hit a low of 519,000 barrels per day in 2015 and has since increased by 1.4% annually through SFY2019. Prices have been recovering since SFY2016, reaching $69 per barrel in SFY2019, still substantially below the 2013 peak.

Figure 14. Alaska Crude Oil Production* and Alaska North Slope Oil Price, SFY2004-SFY2019



* Include Cook Inlet and North Slope production, SFY2019 production is forecasted.
Source: Alaska Department of Revenue.

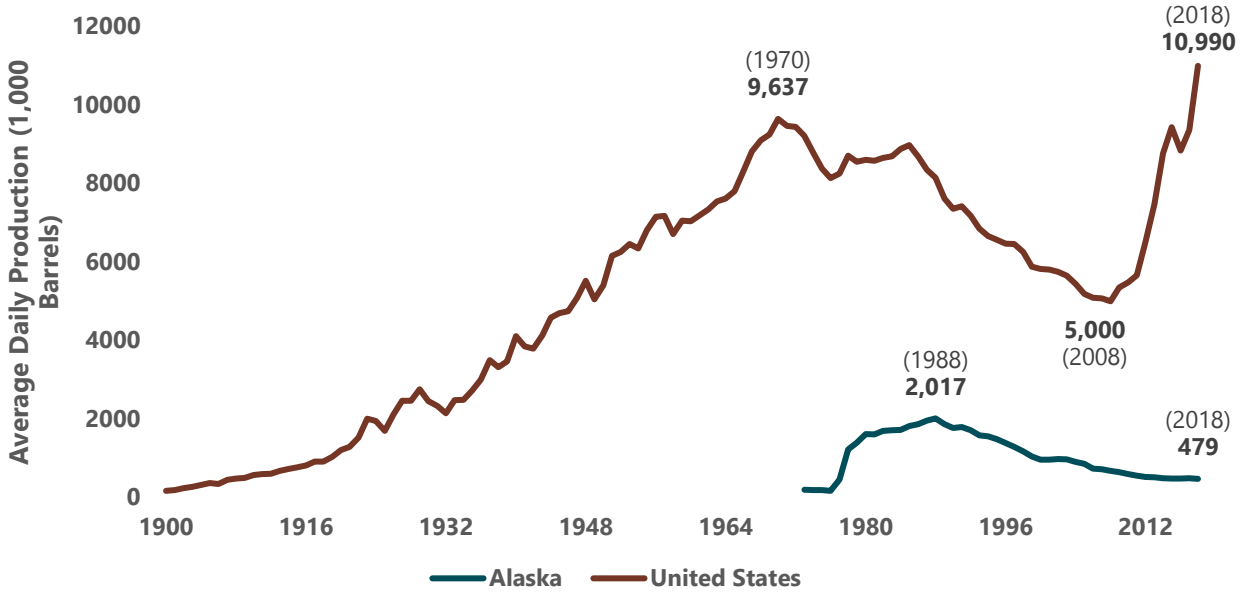
Alaska's three primary refineries – the Petro Star refineries in North Pole and Valdez, and Marathon's refinery in Nikiski – use Alaska crude oil to produce refined products such as diesel fuel, gasoline, and jet fuel.[51] However, most Alaska crude oil is transported to larger-scale refineries in Washington, California, and Hawaii.

[51] Two facilities on the North Slope provide refined products for local operations.

Alaska and the Domestic Petroleum Industry

After peaking at 9.6 million barrels per day in 1970, U.S. oil production declined annually by an average of 1.7% for nearly 40 years. Technological innovations, such as fracking and directional drilling, along with significant new investment encouraged by high oil prices, resulted in a more than double (120%) increase in national production between 2008 and 2018. By 2018, oil production set a new historical peak of 11.0 million barrels per day.

Figure 15. United States and Alaska Average Daily Oil Production (1,000 barrels), 1900-2018



Source: United States Energy Information Agency.

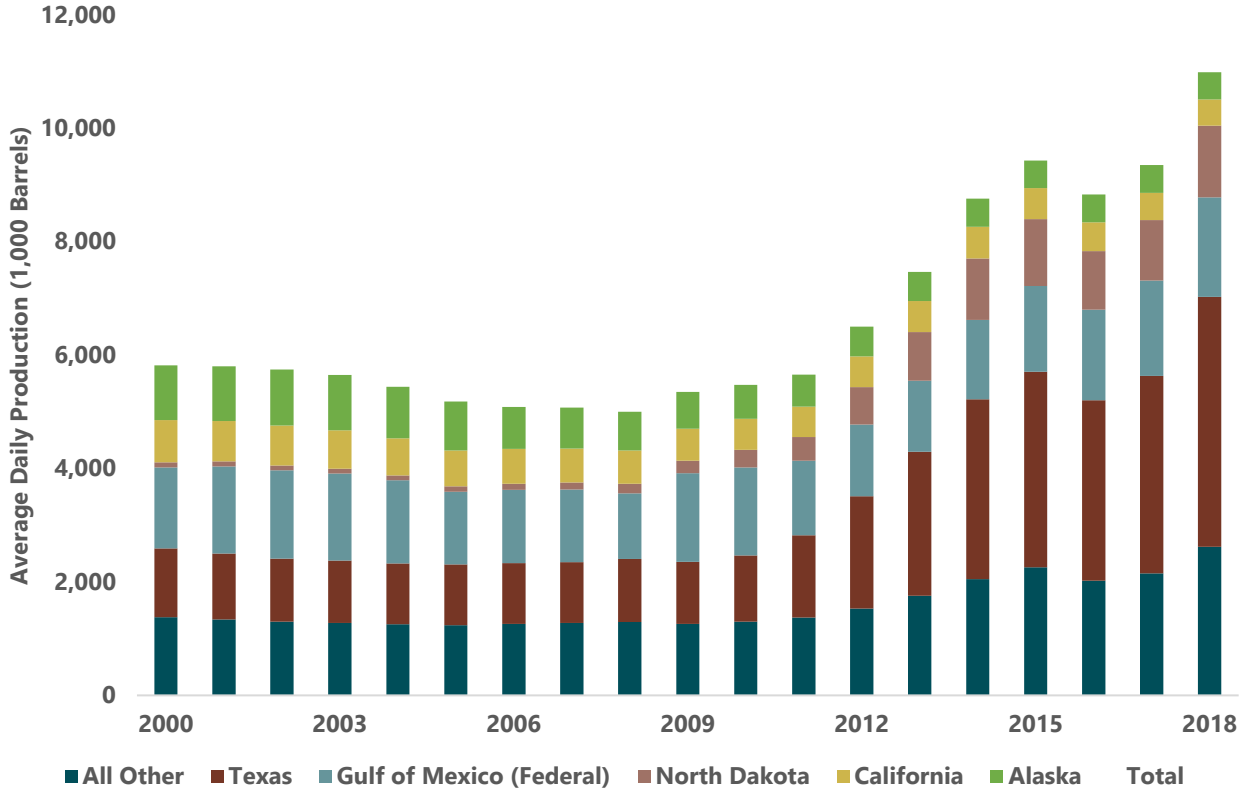
Between 2008 and 2018, production increased in Texas, North Dakota, New Mexico, Oklahoma, and Wyoming. Combined, these states have added 6.4 million barrels of new production since 2008, or more than 13 times Alaska's 2018 production.

Table 20. U.S. Oil Production Change, 2008-2018

Region	2008 Average Daily Production (1,000 barrels)	2018 Average Daily Production (1,000 barrels)	Percent Change	Percent of Total 2018 US Production
Texas	1,109	4,408	297%	40%
Gulf of Mexico (Federal)	1,157	1,758	52%	16%
North Dakota	170	1,264	644%	12%
New Mexico	164	682	316%	6%
Oklahoma	184	550	199%	5%
Colorado	82	487	494%	4%
Alaska	**683**	**479**	**-30%**	**4%**
California	586	463	-21%	4%
Wyoming	145	241	66%	2%
Other	720	658	-9%	6%
Total	**5,000**	**10,990**	**120%**	**100%**

Note: Annual daily average data from the EIA are based on a calendar year while data from the Alaska Department of Revenue are based on the state's fiscal year. Columns may not sum due to rounding.
Source: United States Energy Information Agency.

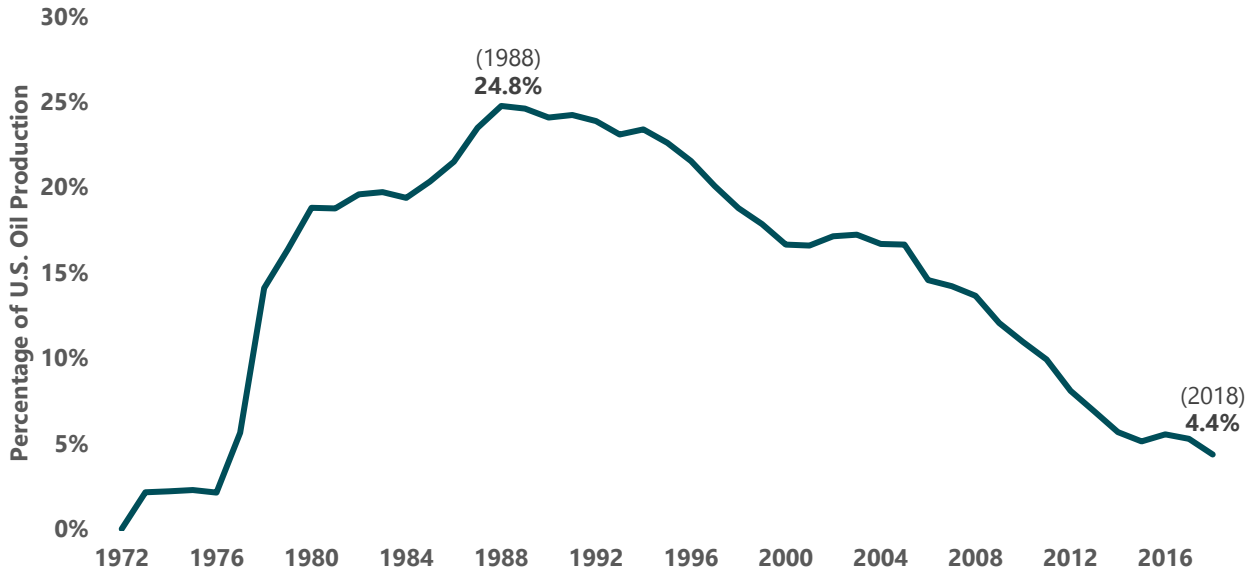
Figure 16. United States Oil Production by Key Production Regions, 2000-2018



Source: United States Energy Information Agency.

Alaska's 479 million barrels of crude oil produced in 2018 represented 4% of the nation's total production, down from a high of 25% in 1988, when more than two million barrels per day flowed through TAPS. As recently as 2011, Alaska contributed 10% to national production.

Figure 17. Alaska's Contribution to U.S. Oil Production, 1972-2018



Source: United States Energy Information Agency.

World Oil Production

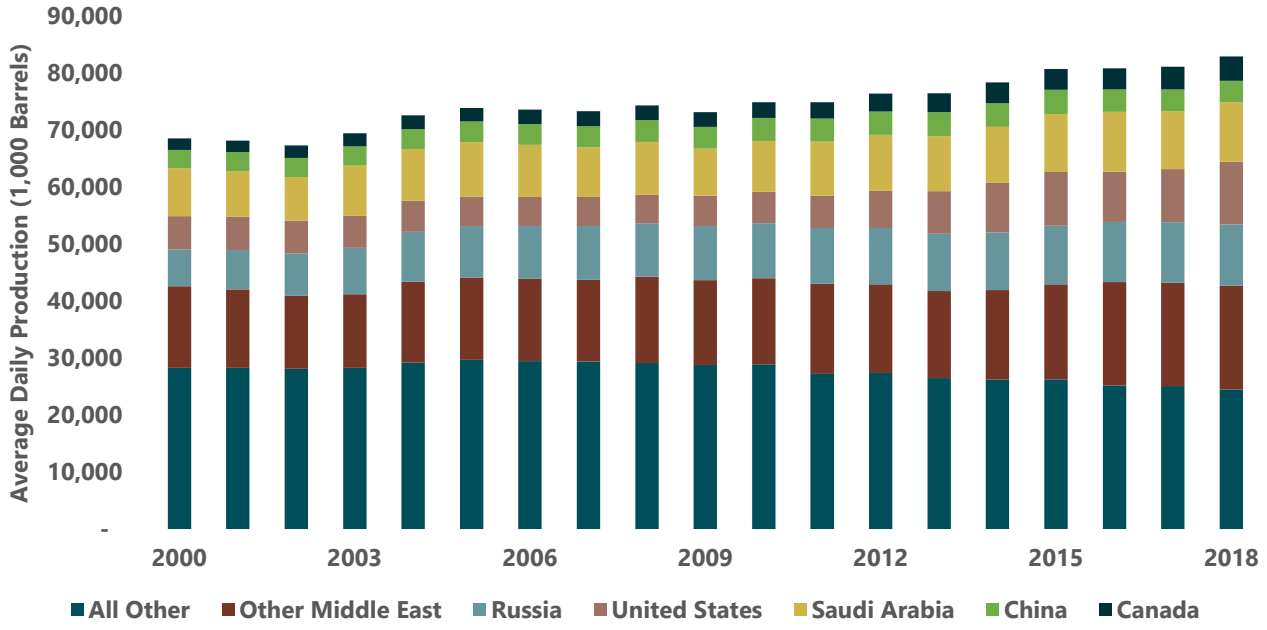
Alaska crude oil represented approximately 0.6% of total global production in 2018. Because of this relatively small contribution, changes in the state's production levels have nominal impact on international oil prices. Alaska's peak contribution to global supply was 3.5% in 1987, a level comparable to Kuwait's current contribution (3.4%). In 2018, Russia, United States, and Saudi Arabia were the top three global producers, representing 38% of total global oil production. Between 2000 and 2018, Russian production grew 66%, U.S. grew 89%, and Saudi Arabia 24%.

Table 21. Proportion of Global Crude Oil Supply, 2018

Country	Avg. Daily Production (1,000 barrels)	Percent of Global Supply
United States (exc. Alaska)	10,511	12.7%
Alaska	**479**	**0.6%**
Russia	10,759	13.0%
Saudi Arabia	10,425	12.6%
Iraq	4,613	5.6%
Canada	4,297	5.2%
Iran	4,251	5.1%
China	3,773	4.5%
United Arab Emirates	3,216	3.9%
Kuwait	2,807	3.4%
Brazil	2,587	3.1%
All Other	25,224	30.4%
Total	**82,941**	**100.0%**

Note: Data represents a calendar year instead of fiscal year used by the State of Alaska.
Source: United States Energy Information Agency.

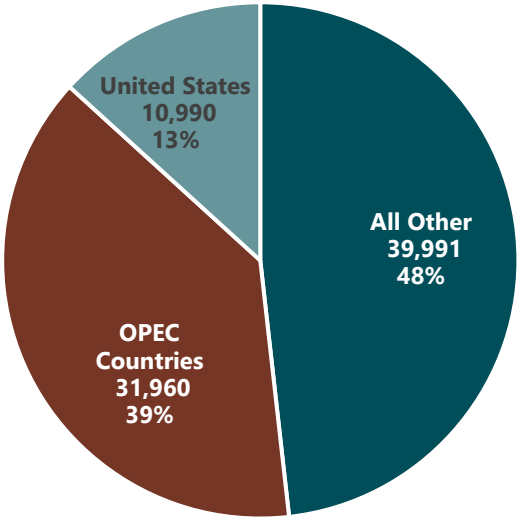
Figure 18. Global Oil Production by Region, 2000-2018



Source: United States Energy Information Agency.

OPEC countries represented 39% of global production, compared to 13% produced in the United States.

Figure 19. Global Oil Production by OPEC, United States, and All Others, 2018

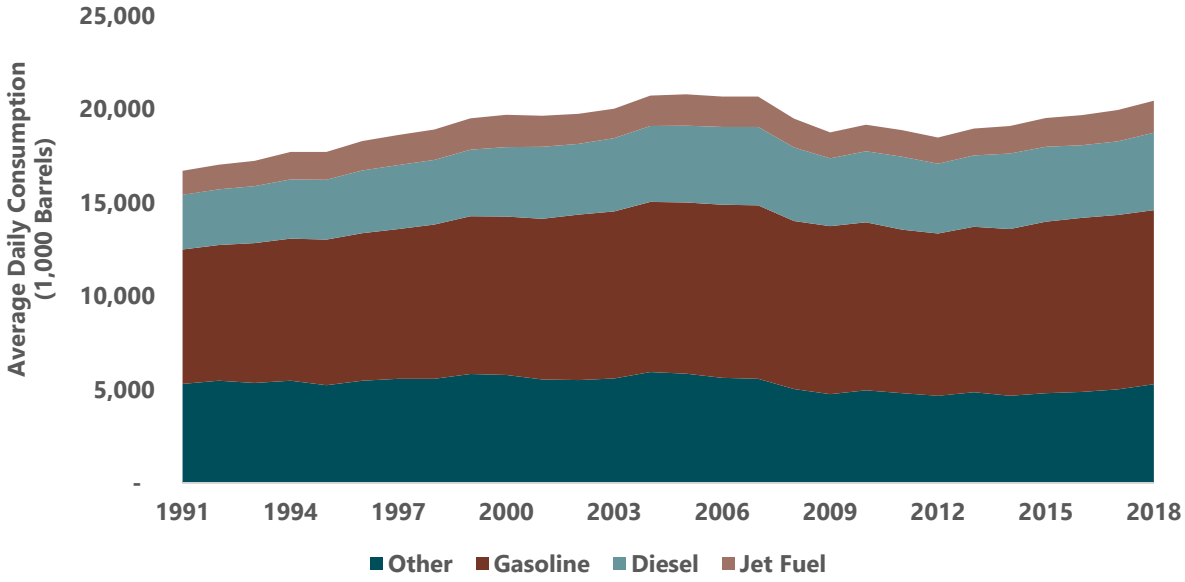


Source: United States Energy Information Agency.

U.S. Petroleum Consumption

Consumption of refined oil products in the U.S. averaged 20,450 barrels per day in 2018, most of which came from domestic refineries, according to the U.S. Energy Information Administration. Gasoline accounted for 46% of total consumption, followed by diesel products (20%), and jet fuel (8%). Other products such as propane, asphalt, heavy oil fuels, and naphtha accounted for 26%. Between 1991 and 2018, annual average consumption of refined oil products in the U.S. increased slightly (0.8%). After yearly declines after the 2008 recession, annual growth has occurred since 2013 and has now recovered to pre-2008 levels.

Figure 20. United States Refined Petroleum Consumption, 1991-2018



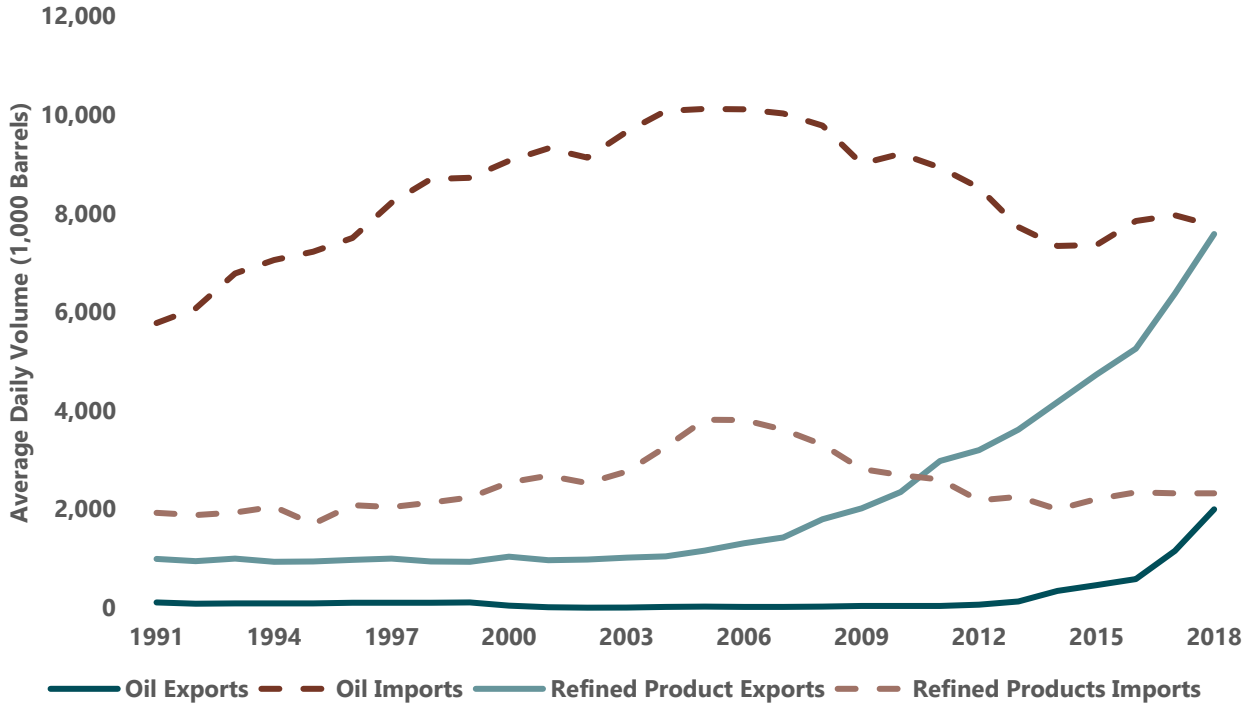
Source: United States Energy Information Agency.

Petroleum Imports and Exports

The U.S. is a net importer of oil and a net exporter of refined products in 2018. Overall, the U.S. imported 10.1 million barrels of oil per day (crude and refined imports combined) while exporting an average of 9.6 million barrels per day.

Small increases in oil exports occurred between 2002 and 2014, and after a 40-year-ban on U.S. crude oil exports was lifted in 2015, exports rose dramatically.[52] In 2018, Mexico was the largest export market for U.S. crude oil and products (average 1.2 million barrels per day), followed closely by Canada (average 1.0 million barrels per day).[53] The U.S.'s largest import market for crude oil and products was Canada (average 4.3 million barrels per day, or 43% of all imported crude oil and products).[54]

Figure 21. United States Imports/Exports of Oil and Refined Products, 1991-2018



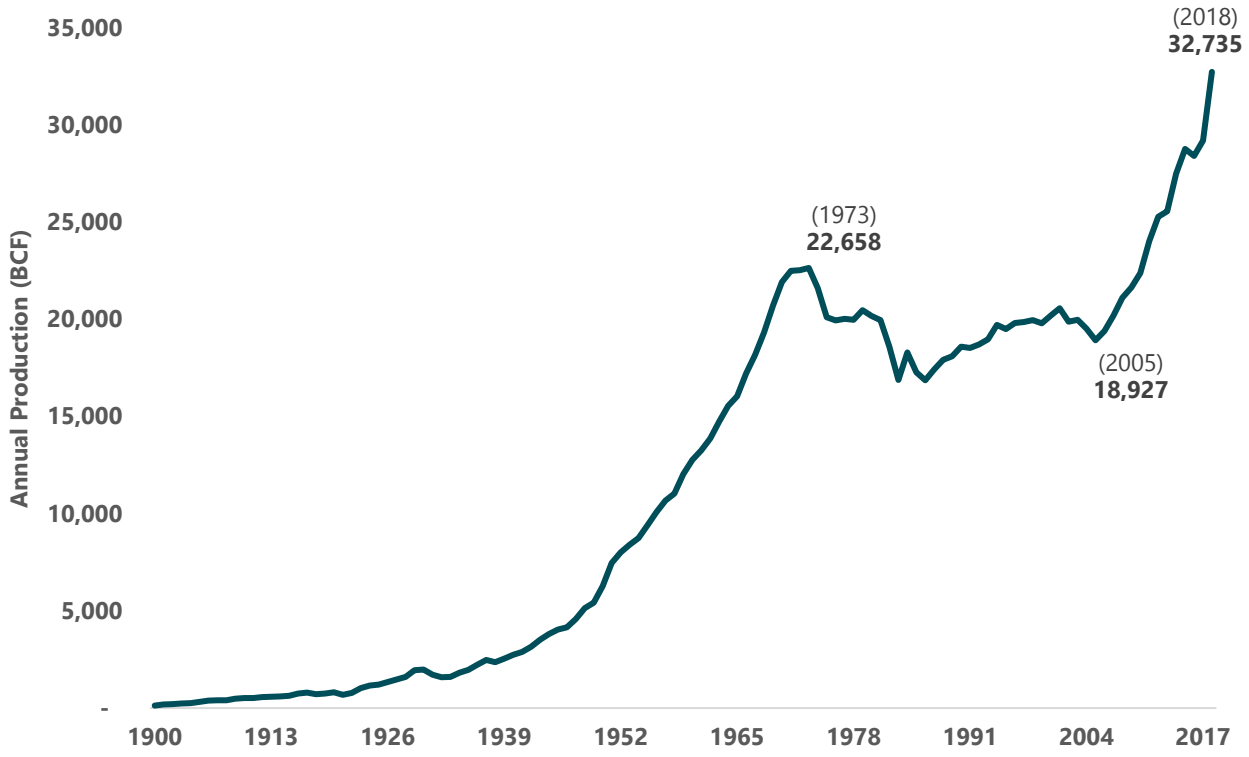
Source: United States Energy Information Agency.

U.S. Natural Gas Production

Primarily due to advances in technology, U.S. natural gas production has grown 73% between 2005 and 2018. Production in 2018 (32,7356 BCF) was 12% higher than 2017 levels (29,197 BCF); both years were the highest production levels on record.

[52] Exports of crude oil to Canada and small shipments from Alaska were allowed prior to 2015.
[53] https://www.eia.gov/dnav/pet/pet_move_expc_a_EP00_EEX_mbblpd_a.htm
[54] https://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbblpd_a.htm

Figure 22. United States Natural Gas Production, 1900-2018



Source: United States Energy Information Agency.

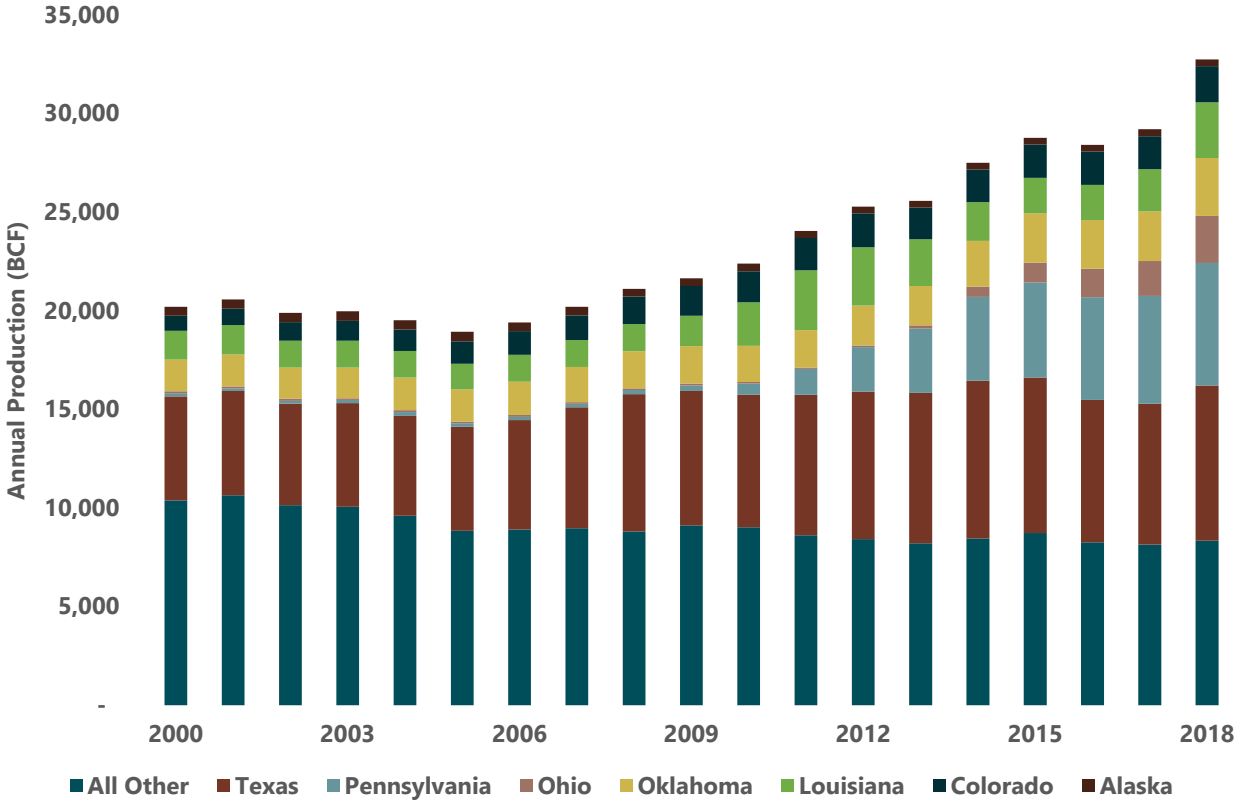
Between 2005 and 2018, most of the growth in domestic gas production has occurred in Pennsylvania (+6,038 BCF), Texas (+2,589 BCF), Ohio (+2,302 BCF), West Virginia (+1,578 BCF), and Louisiana (+1,522 BCF). During this period, Alaska's gas production fell from 487 BCF to 344 BCF (-146 BDF or -30%).

Table 22. United States Natural Gas Production by State, 2008-2016

State	2005 Annual Production (BCF)	2018 Annual Production (BCF)	Percent Change	Percent of Total 2018 Production
Texas	5,276	7,866	49%	24%
Pennsylvania	169	6,207	3,584%	19%
Oklahoma	1,639	2,946	80%	9%
Louisiana	1,296	2,818	117%	9%
Colorado	1,133	1,826	61%	6%
Wyoming	1,639	1,512	-8%	5%
Ohio	84	2,385	2,756%	7%
West Virginia	221	1,799	714%	5%
Alaska	487	341	-30%	1%
All Other	6,983	5,035	-28%	15%
Total	**18,927**	**32,735**	**73%**	**100%**

Source: United States Energy Information Agency.

Figure 23. United States Annual Natural Gas Production by Key Producing States, 2000-2018



Source: United States Energy Information Agency.

Chapter 6. Economic Impact Comparisons of Alaska's Other Key Sectors

This chapter provides data on the economic impact of Alaska's key sectors other than oil and gas. While each industry is a very important part of the Alaska economy, the analysis illustrates by comparison the critical and predominant role of the oil and gas industry.

Economic Impact Analyses

While there is not a single, comprehensive study that compares the economic impact of all sectors using the same methodology and same time period, there are recent economic impact studies of Alaska's seafood, visitor, and mining industries.

Seafood Industry

In 2019, McDowell Group conducted a statewide economic impact analysis of Alaska's seafood industry.[55] Key findings include:

- A total of 58,700 workers were engaged in Alaska's seafood industry, earning $1.7 billion in annual labor income. The industry employed 31,000 non-Alaska residents in Alaska during 2018.
- Including multiplier impacts, the seafood industry accounts for 37,700 full-time equivalent jobs (many jobs are temporary and seasonal), and $2.1 billion in total labor income in Alaska.
- A total of 29,200 fishermen earned income in Alaska's commercial fisheries, including skippers and crew; 16,300 Alaska resident commercial fishermen had a total gross (ex-vessel) income of $718 million in 2018.
- Alaska's 2018 seafood harvest of 5.4 billion pounds had a total ex-vessel value of $2.0 billion. Processors generated 2.6 billion pounds of Alaska seafood products in 2018 with a first wholesale value of $4.5 billion.
- Alaska's seafood processing employment, including on-shore and off-shore, included an estimated 26,000 workers in 2018. Shore-based processing employment in Alaska peaked at just under 19,600 jobs in 2018, with annual average employment of about 8,800. Processors paid a total of $445 million in wages in 2018.
- Businesses and individuals in Alaska's seafood industry contributed roughly $172 million in taxes, fees, and self-assessments, which help fund state, local, and federal government.

[55] McDowell Group, *The Economic Value of Alaska's Seafood Industry*, Prepared for Alaska Seafood Marketing Institute, 2019.

Visitor Industry

In 2018, McDowell Group conducted a statewide economic impact analysis of Alaska's visitor industry.[56] For the 12-month period between October 2016 and September 2017, the study reported:

- Total employment estimated at 43,300 full- and part-time jobs, and $1.5 billion in labor income, including multiplier impacts. This represented 10% of statewide employment and 5% of statewide labor income.
- A total of 2.2 million out-of-state visitors traveled to Alaska. Cruise ship passengers accounted for 49% of the annual total, followed closely by 47% who traveled to and from Alaska by air. Summer visitation represented 86% of annual visitors.
- Out-of-state visitors spent an estimated $2.2 billion in Alaska.
- The visitor industry accounts for:
    - Southeast: 23% of employment and 14% of labor income
    - Interior: 13% of employment and 6% of labor income
    - Southcentral: 7% of employment and 4% of income
    - Southwest: 5% of employment and 2% of income
    - Far North: 2% of employment and 1% of income
- Visitor-related tax revenues to local governments in 2016-2017 totaled $88.5 million.
- Visitor-related revenues to state government in 2016-2017 totaled $125.6 million.

Mining Industry

In 2019, McDowell Group prepared an updated summary of a statewide economic impact analysis of Alaska's mining industry.[57] For economic impacts in 2018, the summary reported:

- A total of 4,350 direct mining jobs in Alaska
- Including the multiplier impacts, 9,200 total jobs attributed to Alaska mining industry
- $715 million in total direct and indirect payroll
- Some of Alaska's highest-paying jobs with an estimated average annual wage of $102,100, almost twice the state average for all sectors
- Mostly year-round jobs for residents of more than 60 communities throughout Alaska, half of which are found in rural Alaska where few other jobs are available
- $358 million in payments to Alaska Native corporations
- $149 million in state government-related revenues through rents, royalties, user fees, other fees, and taxes
- $32 million in local government revenue through property taxes and payments in lieu of taxes

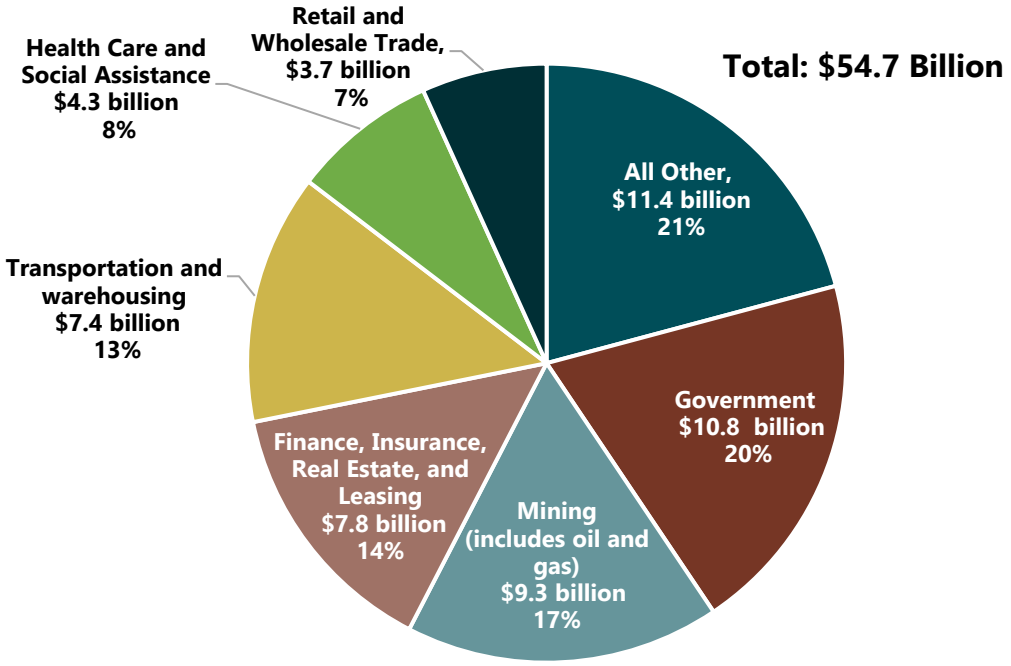
[56] McDowell Group, *Economic impact of Alaska's Visitor Industry 2017*, Prepared for Alaska Department of Commerce, Community, and Economic Development, https://www.commerce.alaska.gov/web/Portals/6/pub/TourismResearch/VisitorImpacts2016-17Report11_2_18.pdf?ver=2018-11-14-120855-690. Accessed November 2019

[57] http://www.alaskaminers.org/economic-benefits. Accessed November 2019.

Gross State Product

While Gross State Product (GSP) does not measure the full extent of an industry's economic impact, it does measure the market value of all final goods and services produced within a state.[58] In 2018, Alaska's GSP was $54.7 billion, ranking 46th in the U.S. Between 2017and 2018, Alaska's GSP grew by 5.7%. The largest industry in Alaska as measured by GSP was government ($10.8 billion), accounting for 20% of Alaska's 2018 GSP. Government's GSP value increased by 2.9% between 2017 and 2018. The second-largest industry in Alaska was mining ($9.3 billion) which includes oil and gas extraction, support activities for mining (including oil and gas), and mining.[59] Between 2017 and 2018, the mining sector contribution to GSP increased by 9.5%.[60]

Figure 24. Top Five Industries Contributors to Alaska's Gross State Product, 2018



Source: Bureau of Economic Analysis.

[58] An industry's GSP, referred to as its "value added," is equivalent to its gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (consumption of goods and services purchased from other U.S. industries or imported). GSP differs from national Gross Domestic Product; GSP excludes and national GDP includes the compensation of federal civilian and military personnel stationed abroad and government consumption of fixed capital for military structures located abroad and for military equipment, except office equipment.

[59] The term mining includes the extraction of minerals occurring naturally: solids, such as coal and ores; liquids, such as crude petroleum; and gases such as natural gas. It also includes quarrying, well operations, milling, and other preparation customarily done at the mine site, or as a part of mining activity. Exploration and development of mineral properties are included. Data on subsectors of mining (oil and gas extraction, mining, except oil and gas, and support activities for mining are not published.

[60] https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1 Accessed November 2019.

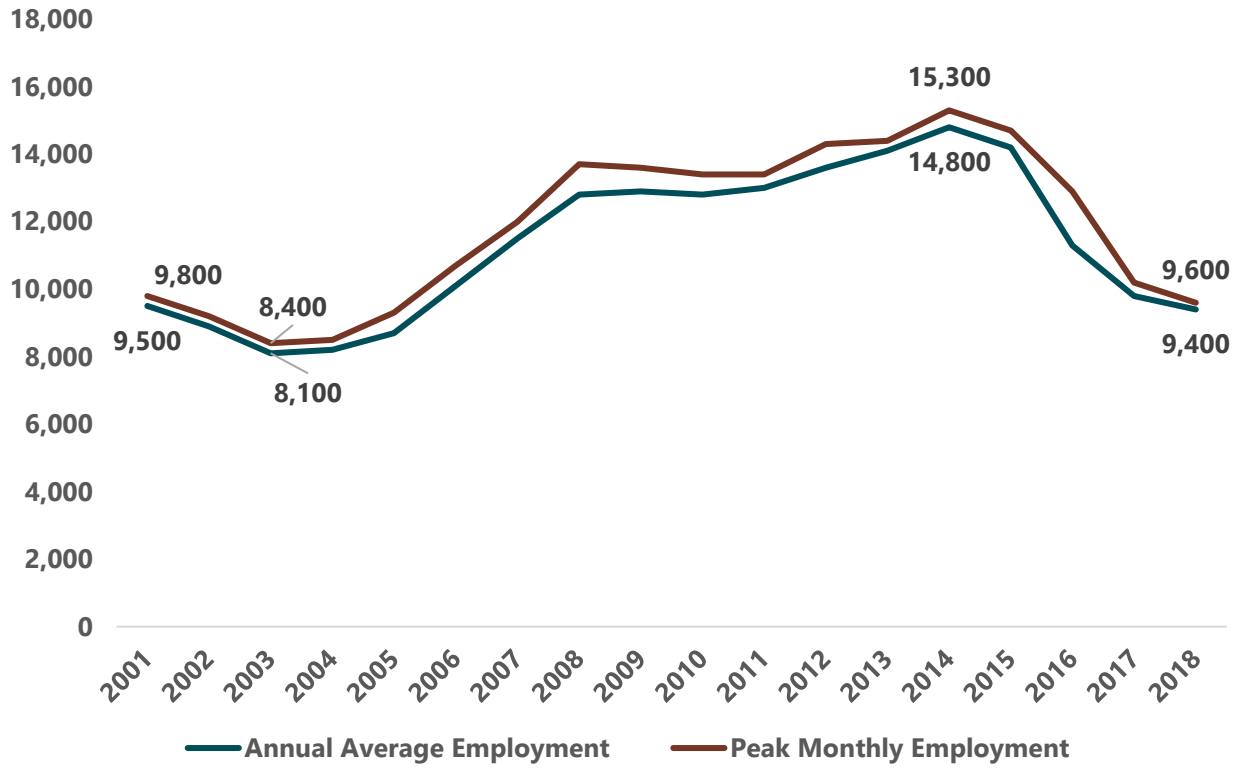
Appendix A. Published Trends in Alaska's Oil and Gas Industry

This appendix presents trends in the oil and gas industry as it is narrowly defined in ADOLWD statistics.

Employment

Since 2001, employment in Alaska's oil and gas industry (including oil and gas extraction, drilling oil and gas wells, and support activities for oil and gas operations) peaked in 2014 at 15,300 employees. That same year, the highest reported average annual employment was 14,800. Employment in 2018 peaked at 9,600; while low, still higher than the trough experienced in 2003 (peak of 8,400).

Figure 25. Alaska Oil & Gas Industry Employment, Published Data, 2001-2018



Note: Includes NAICS Sectors 211 (oil and gas extraction), 213111 (drilling oil and gas wells), and 213112 (support activities for oil and gas operations).
Source: Alaska Department of Labor and Workforce Development.

Table 23. Alaska Oil & Gas Industry Employment, Published Data, 2001-2018

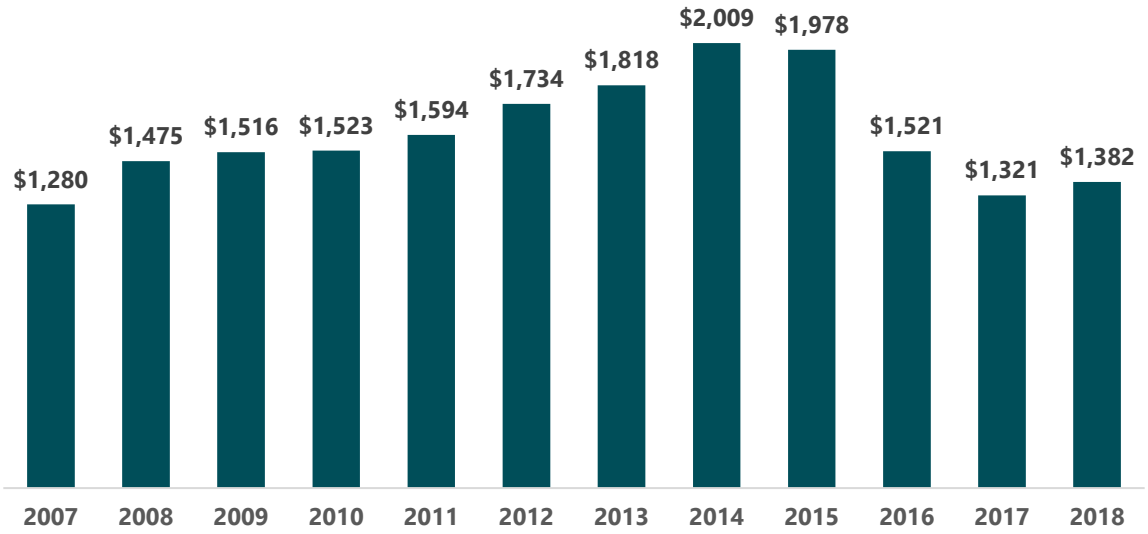
Year	Annual Average	Peak Month
2001	9,500	9,800
2002	8,900	9,200
2003	8,100	8,400
2004	8,200	8,500
2005	8,700	9,300
2006	10,100	10,700
2007	11,500	12,000
2008	12,800	13,700
2009	12,900	13,600
2010	12,800	13,400
2011	13,000	13,400
2012	13,600	14,300
2013	14,100	14,400
2014	14,800	15,300
2015	14,200	14,700
2016	11,300	12,900
2017	9,800	10,200
2018	9,400	9,600

Note: Includes NAICS Sectors 211 (oil and gas extraction), 2131111 (drilling oil and gas wells), and 213112 (support activities for oil and gas operations).
Source: Alaska Department of Labor and Workforce Development.

Wages

Total Oil and gas industry annual wages peaked in 2014 at $2.0 billion, falling to the lowest annual total in 2017 ($1.32 billion) since 2008. Total annual wages saw a slight uptick in 2018 ($1.38 billion).

Figure 26. Annual Oil and Gas Wages, ($ million), 2007-2018



Note: Includes NAICS Sectors 211 (oil and gas extraction), 213111 (drilling oil and gas wells), and 213112 (support activities for oil and gas operations).
Source: Alaska Department of Labor and Workforce Development.

Employee Residency

ADOLWD's methodology for calculating workforce residence is based on PFD applications and results in a conservative estimate of "resident" employment. For example, a new resident to Alaska must reside in Alaska for a full calendar year before they are eligible to apply for a PFD. A new Alaska resident who arrived in Alaska in February of 2019, for example, would not be eligible to apply for a PFD until the 2021 application period. As a result, this person would reside in Alaska for nearly two years before being classified as an Alaska resident by ADOLWD.

Nonresidents are often employed in seasonal industries, remote site locations (where workers work on a rotation schedule), or have specific job skills not readily available in Alaska. Some nonresidents may have moved to Alaska but are not yet classified as residents due to ADOLWD's methodology described above.

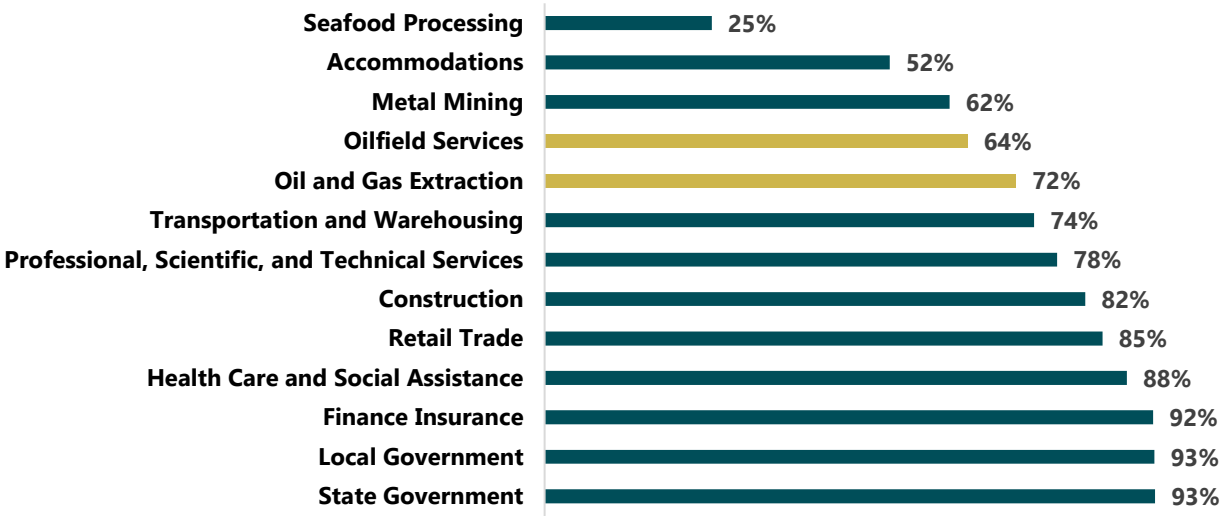
In 2017 (the most recent ADOLWD data available), 69% of the oil and gas industry workforce in Alaska were Alaska residents, ranging from 91% Alaska resident hire in Alaska's refineries and pipeline companies to 63% in the support services sector. The average Alaska resident hire for all industries in 2017 was 79%.

Table 24. Alaska Residents in the Oil & Gas Industry Workforce, 2017

	Resident Workers	Nonresident Workers	Resident % of Total Workers	Resident Wages	Nonresident Wages	Resident % of Total Wages
Oil & Gas Extraction	2,770	1,099	72%	$509 million	$196 million	72%
Drilling Oil & Gas wells	640	233	73%	$56 million	$18 million	76%
Support Services	5,182	3,015	63%	$402 million	$222 million	64%
Refineries & Pipelines	1,357	136	91%	$157 million	$13 million	93%
Total	**9,949**	**4,483**	**69%**	**$1,124 million**	**$448 million**	**71%**

Note: Includes NAICS codes 211, 213111, 213112, 324, and 486.
Source: Alaska Department of Labor and Workforce Development.

Figure 27. Percent of Positions Held by Residents, By Selected Sectors, 2017



Source: Alaska Department of Labor and Workforce Development.

Alaska Oil and Gas Association
121 W. Fireweed Lane, Suite 207
Anchorage, AK 99503
Phone: 907-272-1481 • Fax: 907-279-8114
info@aoga.org • www.aoga.org

AlaskaOilAndGas

@AOGA