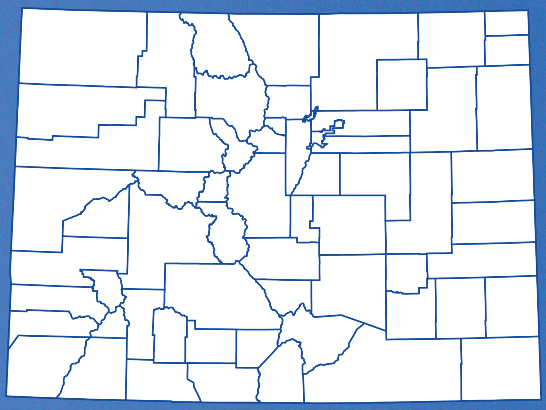
PROGRESS AND OPPORTUNITY

COLORADO NATURAL GAS AND OIL



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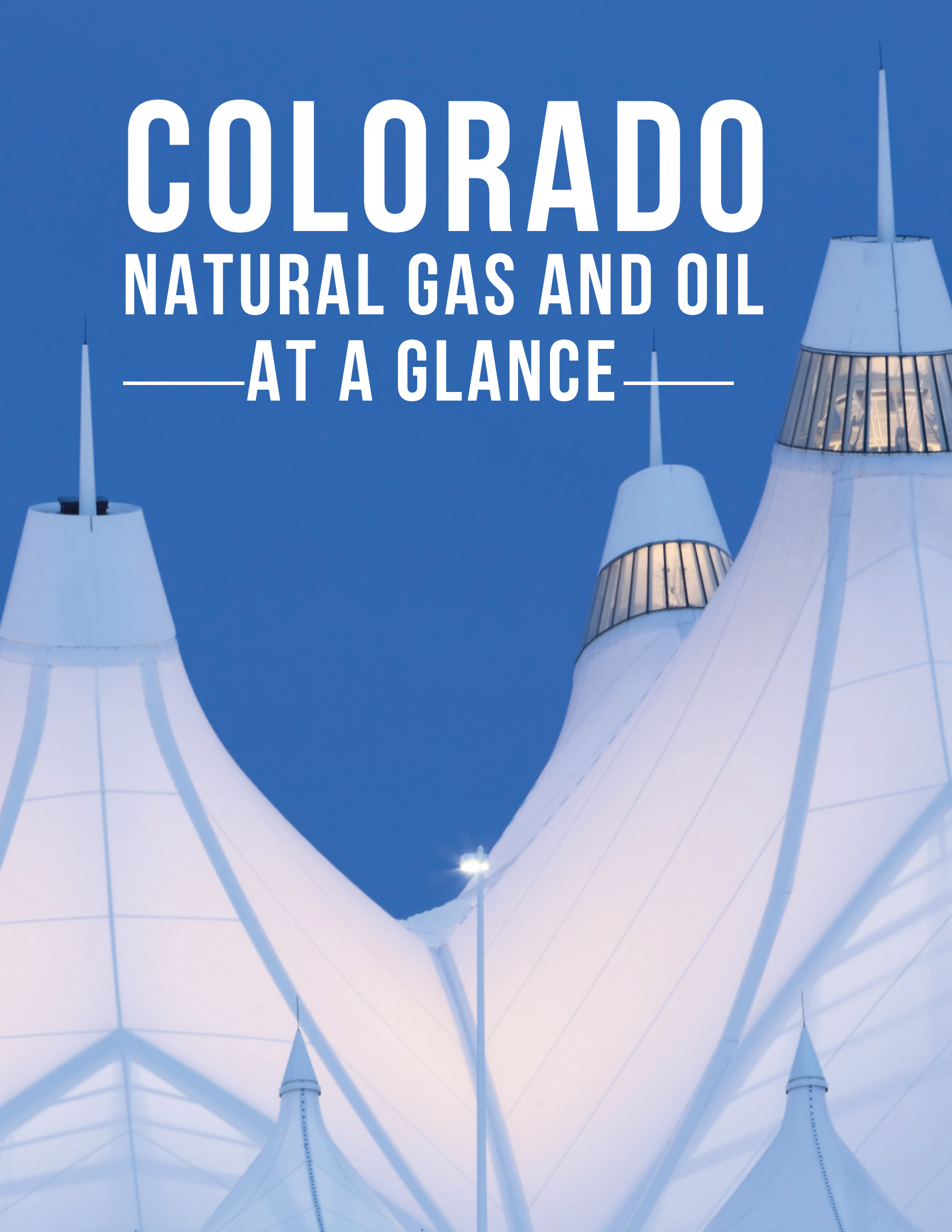
COLORADO

NATURAL GAS AND OIL AT A GLANCE



PRODUCES

- **7th largest** U.S. producer of oil (4% of the nation's total production)
- **5th largest** U.S. producer of natural gas

HOME TO

- **3** of the nation's largest oil fields
- **11** of the nation's largest natural gas fields
- **53,719** active wells

SUPPORTS

- **232,900** jobs
- **$330 million** in severance tax (2014)
- **Contributed $1.2 billion** in public revenue (2014)
- Economic impact: **$31.4 billion** (2015)

DESCRIBING THE NATURAL GAS AND OIL INDUSTRY

The natural gas and oil industry can be divided into three segments: Upstream, which refers to the activities surrounding natural gas and oil exploration and production; Midstream, refers to activities that move natural gas and oil produced from production fields to processing facilities and then on to final consumers via pipelines, barges/tankers, and rail; and Downstream, refers to refining and marketing activities.

OPPORTUNITY

INTRODUCTION

The natural gas and oil industry touches every aspect of Colorado life. Colorado is one of the major natural gas and oil producing states in the nation. In 2015, Colorado was the fifth largest state producer of natural gas (1.7 trillion cubic feet (TCF)), producing 6% of U.S. total, and the seventh largest producer of crude oil (8.3 million barrels), or almost 4% of U.S. total.[1] **Colorado has the third largest natural gas reserves of any state, and output has doubled since 2001, creating thousands of jobs and providing billions in income and taxes.** Though production is localized to a few counties, tax revenue flows into the state general fund and the outflow impacts every citizen through investment in education, transportation, and other local government projects.

In Colorado, the first commercially successful oil well was drilled in 1862 near the city of Cañon City, Colorado into the Cañon City-Florence Field near surface seeps of oil caused by fractures of the Pierre Shale. Colorado's rich history of oil has fathered the cultivation of renowned research and academic institutions. The Colorado School of Mines, Colorado State University, University of Colorado Boulder, and National Center for Atmospheric Research and National Oceanic and Atmospheric Administration labs in Boulder all have an interest in the natural gas and oil industry in the state, undertake extensive research on the industry, and, often, work in collaboration with the industry. The industry supports education, with almost $180 million from tax revenues supporting local universities and school districts.

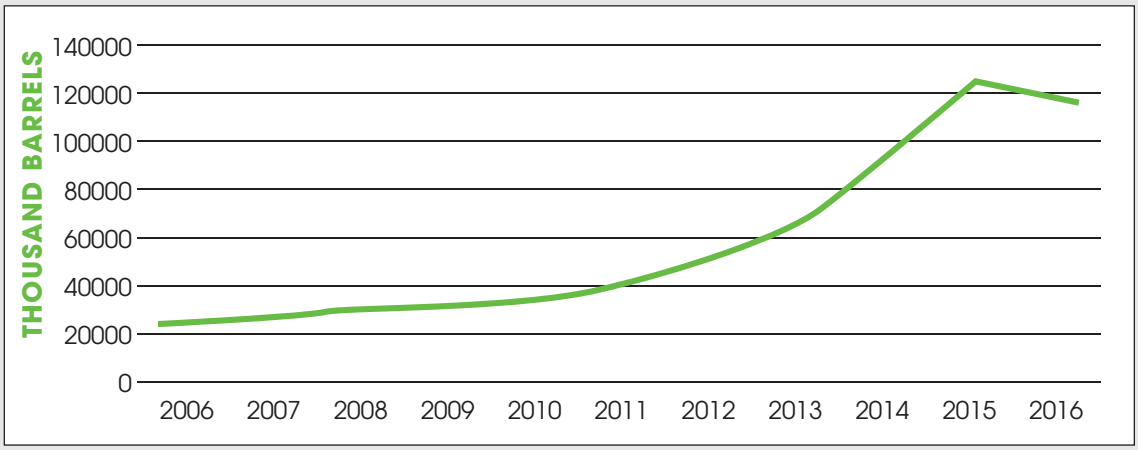
Natural gas and oil development in Colorado supports over 232,900 jobs, provides nearly $23.1 billion in wages and contributes nearly $31.4 billion to the state's economy.[2] While most of these jobs are concentrated in natural gas and oil development areas, nonproducing counties are part of the supply chain, offering goods, services, and a qualified workforce. Despite low production, Denver acts as both a state and a regional hub for natural gas and oil companies that operate in Colorado and the Rocky Mountains, supporting the most direct industry jobs in the state with nearly 13,000 paying over $161,000 dollars a year.[3]

Colorado has the most comprehensive natural gas and oil regulations in the country. On a state level, development is regulated by the Colorado Oil and Gas Conservation Commission (COGCC) and the Colorado Department of Public Health and Environment (CDPHE). Across the state, counties and municipalities manage local rules specific to land use planning, traffic control, and various codes such as those for construction, fire prevention, and emergency response. Managing responsible natural gas and oil development allows counties to enjoy significant economic benefits, while protecting public health safety, and the environment. Beyond the robust state programs, federal regulations provide a broad regulatory foundation for energy development in Colorado and the United States and include the Clean Air Act; Clean Water Act; Safe Drinking Water Act; National Environmental Policy Act; Resource Conservation and Recovery Act; Emergency Planning and Community Right to Know Act; Endangered Species Act; and the Occupational Health and Safety Act.

COLORADO CRUDE OIL FACTS

In a single decade, **from 2006 to 2016, production of crude oil in the state more than quadrupled due to the technological advances of directional drilling and hydraulic fracturing.** The state supplied more than 3 out of every 100 barrels of U.S. crude oil production in 2015. The exponential increase in production stems from the economic development of the Niobrara Shale formation in northeastern Colorado. **In five years, production quintupled in Weld County, generating 9 out of every 10 barrels of Colorado crude oil in 2015.** The proven reserves of the Wattenberg field in Weld County make it the fourth largest of U.S. oil fields. When combined with the reserve estimates for the Niobrara of approximately 2 billion barrels of oil, the two fields could fully supply Colorado's current petroleum consumption for over 20 years. In addition, this basin holds the world's largest crude oil resource in the Green River oil shale with technically recoverable estimated reserves of 1.5 trillion barrels, almost equal to the total world proven oil reserves.[4]

CRUDE OIL PRODUCTION

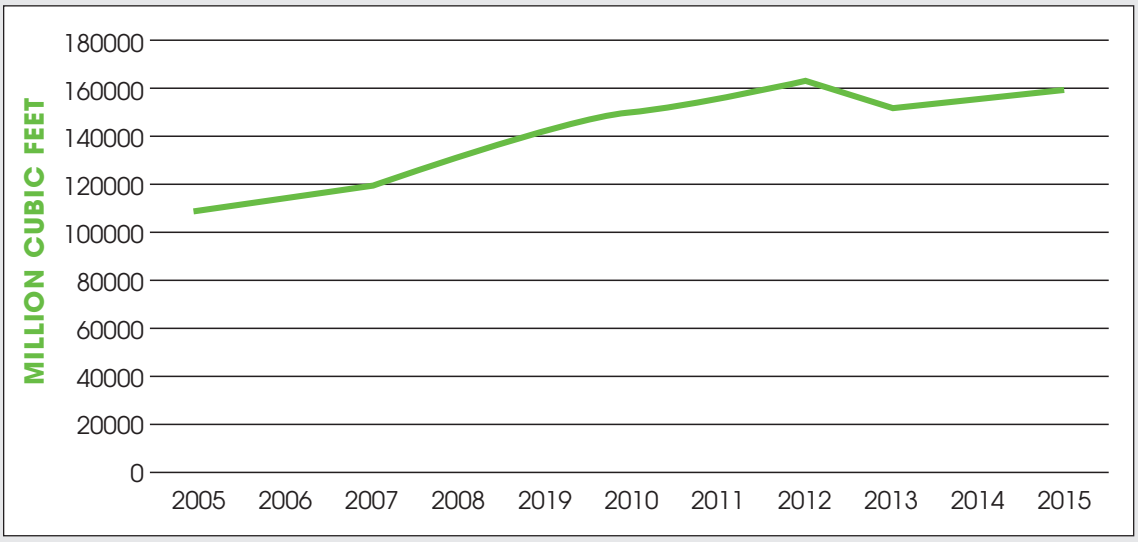


COLORADO NATURAL GAS FACTS

Colorado produces more natural gas than it consumes in all other energy sources combined. This excess of four times more natural gas produced than consumed each year allows for domestic exports to markets in the West and Midwest by pipeline.

From 2005 to 2015, natural gas production in Colorado rose 51%.[5] Though, historically, the San Juan Basin in the south was Colorado's largest producing region for natural gas, new technology has fostered production in the Denver-Julesberg and Piceance Basins. Still, the San Juan Basin natural gas production may be rejuvenated by the recent discovery of natural gas in the Mancos Shale by BP in late summer 2017. The state possesses substantial proven resources with 11 of the nation's 100 largest natural gas fields located partially or wholly in the state, producing almost 6% of the nation's natural gas.[6]

DRY NATURAL GAS PRODUCTION

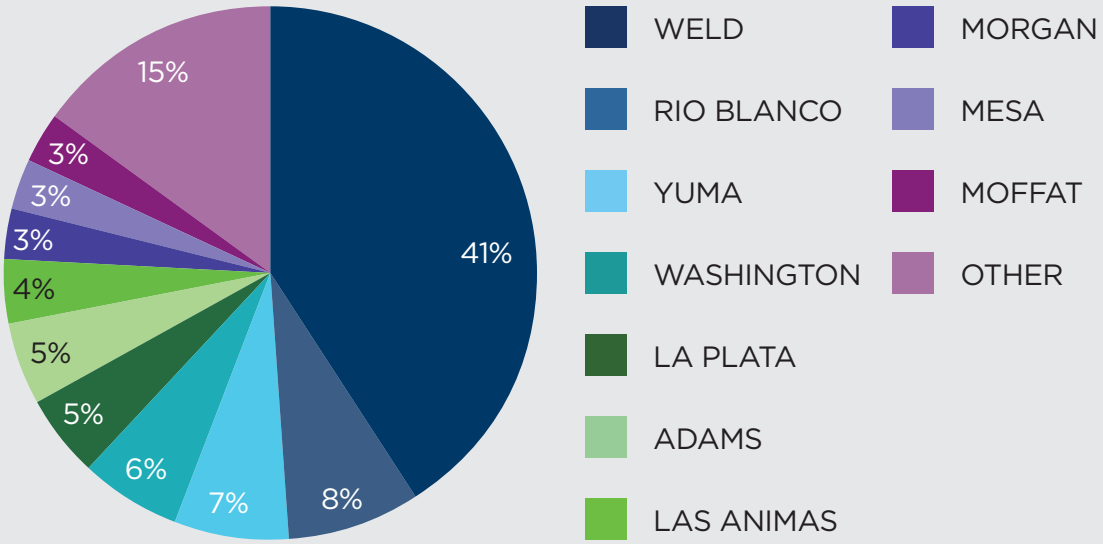


COLORADO ENERGY PRODUCTION OPPORTUNITY

UPSTREAM INFRASTRUCTURE

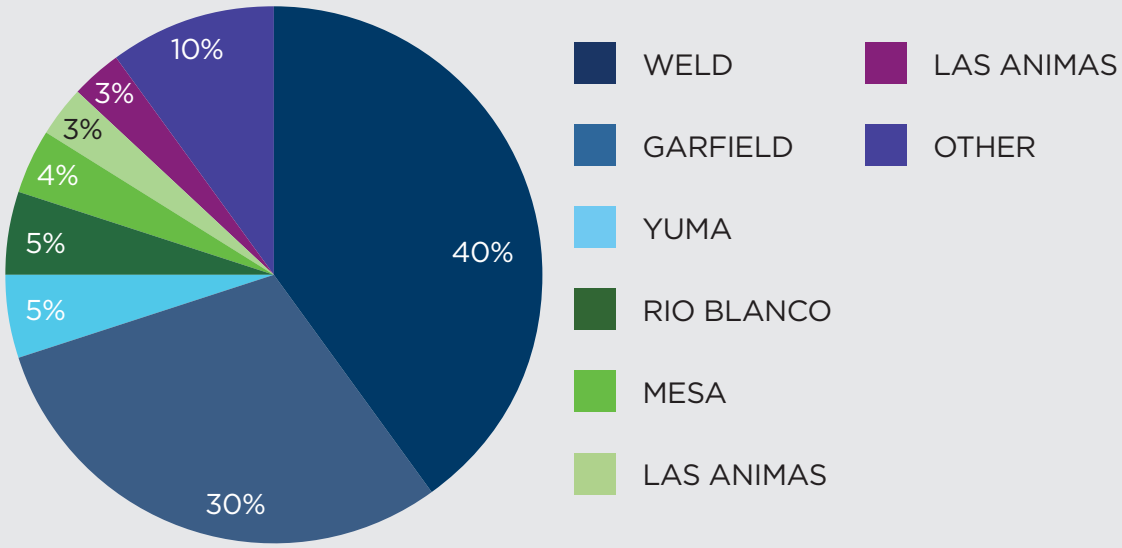
Over the last 15 years, the number of natural gas wells has increased by 125%, with a 116% increase in natural gas production.[7] The top producing counties for natural gas and oil in Colorado are spread throughout the state, extending the benefits from natural gas and oil development to all regions.[8] Weld County is the top producing county with 43.1% of production. More than two-thirds of active drilling rigs were found in Weld County in 2015. Following Weld is Garfield County on the Western Slope. Together, these two geographically disparate counties contain 80% of Colorado's rigs. La Plata, Mesa, Boulder, and Broomfield counties compromise 10.9% of natural gas and oil production in the state.

WELL COUNT BY COUNTY



Within the last five years, the number of applications for permit to drill (or APDs) submitted to the COGCC increased by 25%, with a 6.5% increase in permits within a year's time.

PERMIT APPLICATIONS PER COUNTY



UPSTREAM EMPLOYMENT

The natural gas and oil industry supports more than 232,900 jobs in Colorado; the industry also contributes more than $31.4 billion to the state's economy, almost 10% of Colorado's GSP.[9] [10] The natural gas and oil industry in Colorado supports 6.5% of all employment in the state. The average wage in these jobs is more than twice Colorado's average wage.[11]

The benefits from the industry reach well beyond natural gas and oil wells; even counties with minimal production gain from the natural gas and oil industry.[12] For example, though the City and County of Denver only produces small amounts of natural gas and oil, a significant number of jobs are supported and the area benefits from funds received from the Energy/Mineral Impact Assistance Fund (EIAF). The EIAF program uses funds from the state severance tax on energy to support municipalities, counties, school districts and special districts impacted by the development, processing or energy conversion of minerals and mineral fuels.[13] Denver, Weld, Mesa, Garfield, and Arapahoe counties account for 75% of upstream and midstream jobs, even though significant production occurs only in Weld and Garfield. Industry jobs were recorded in 50 of Colorado's 64 counties, and the total economic impact of the industry was $31.4 billion in 2015 across the state.

SEVERANCE TAXES

In Colorado, the industry is subject to a severance tax for the production of nonrenewable resources. The marginal rate ranges from 2 to 5%, which depends on the income from production. From this tax on producers, 50% goes to the state trust fund (see community section for more information) and 50% goes to the local impact fund.[14] State Trust funds are distributed to finance state and local projects, including loans for state water conservation projects. The local impact fund is allocated 70% to local government grants projects and 30% to local governments.[15] The funds from the severance tax are allocated to counties, municipalities, and school districts and help to fund infrastructure upgrades, community centers, schools, and other amenities that Coloradans value in their community. The Severance tax total was $330 million in 2014, as compared to $135 million in 2012.[16]

The City and County of Denver received $17.9 million from severance taxes related to natural gas and oil activity in 2012. Las Animas County is another great example. The counties annual budget was $19.8 million in 2012, and the county received $2.4 million from severance taxes, despite relatively little development.

COLORADO IS A KEY DISTRIBUTION HUB FOR THE WEST

The Front Range Urban Corridor, which runs from Cheyenne, Wyoming, to Pueblo, Colorado, and includes the Colorado cities of Denver, Colorado Springs, Fort Collins, Boulder, and Greeley, is the Rocky Mountain region's largest energy market. **Colorado acts as a key transporter with 17,760 miles of natural gas interstate pipeline and 16,320 miles of oil interstate pipelines, 4% of the nation's total.[17] In 2013, the state had 58,200 miles of intrastate gas pipelines, including natural gas distribution, gas transmission, and gas gathering lines.** These pipelines support not only Coloradans, but also the Rocky Mountain region and the West Coast.

CRUDE OIL AND REFINED FUEL PIPELINES

Increasing production in the Niobrara Shale basin has led to an increase in crude oil pipelines being built or repurposed. Since demand for refined petroleum products exceeds refining capacity, additional pipelines allow Colorado crude oil to be transported to refineries out of state. Six major interstate pipelines help supply refined fuels to the Colorado market.

Magellan's Chase Pipeline is the only pipeline system which transports refined fuels from Kansas refineries in the Midwest to its destination in the Rocky Mountain region. Denver also receives a refined fuel supply from three pipelines originating at Texas Panhandle refineries: Borger-Denver, Central West, and McKee-Denver. These pipelines move supply from the Rocky Mountain area to the West Coast. Both the Rocky Mountain System and Medicine Bow Pipeline receive refined fuels from Wyoming refineries before transporting the fuel to the Denver area. The Rocky Mountain System also receives fuels supplied from a Colorado refinery in Commerce City, transporting approximately 29,000 barrels per day from the Suncor Energy Refinery.

Crude Oil and Refined Product Pipelines

Interstate Pipeline	Origin	Destination	Dist. (mi.)	2015 Shipments (b/d)
Rocky Mountain	Casper, WY	Dupont, CO	262	66,000
	Denver, CO	Fountain, CO	90	-
	Casper, WY	Rapid City, SD	190	-
Magellan's Chase Pipeline	El Dorado, KS	Aurora, CO	458	N/A
	Aurora, CO	Denver Intl Airport	17	-
				Capacity (B/D)
Borger-Denver	Borger, TX	Denver, CO	405	38,000
McKee-Denver	McKee refinery (Sunray, TX)	Denver, CO	357	32,500
	Colorado Springs, CO	Colorado Springs Airport	2	20,000
Medicine Bow	Sinclair, WY	Denver, CO	204	27,600
NuStar Central West Refined Product Pipeline System	McKee, TX	Colorado Springs, CO and Denver, CO	357	32,500

NOTE: N/A - Not Applicable.

NATURAL GAS PIPELINES

As the 5th largest natural gas producer in the United States, natural gas pipeline networks in Colorado are a key piece of infrastructure in transporting this abundant resource. This network develops organically in response to the market conditions of the nation. With the recent increase in natural gas production, Colorado has seen an increase in the amount of natural gas pipeline capacity built within the state. Since pipelines are often buried, they represent an effective, virtually uninterruptable mode of transport for transporting natural gas to markets in and outside of the state.

Several intrastate pipelines cross Colorado and transport natural gas supply both in and out of Colorado. The TransColorado Gas Transmission Company, with the Rocky Mountain Natural Gas Company, moves natural gas production south and westward to New Mexico and California. Two pipelines allow producers in the Unita/Piceance Basin to transport natural gas eastward, through the Cheyenne Hub: The TransColorado Gas Transmission Company and the Rockies Express Pipeline. The Trailblazer Pipeline Company and the Cheyenne Plains Pipeline receive natural gas from the Colorado Interstate Gas Company at the Cheyenne Hub and transports the natural gas from the Rocky Mountains to Midwest markets.[18] **The 4,300-mile** Colorado Interstate Gas (CIG) pipeline system provides almost all the gas to the Public Service Company of Colorado (a subsidiary of Xcel Energy), the major distributor of natural gas in the state. New expansion will support the growing natural gas production and direct it towards the Cheyenne Hub in northeast Colorado.[19] These pipelines and many others bring a variety of benefits to the state, including supporting 12,000 jobs stemming from construction, operation, and maintenance of the pipelines.[20]

NATURAL GAS HUBS

Colorado is more than just a production region; Denver acts as a balancing point for the Mid and South West. The market balances supply from the Kansas and Texas Panhandle refineries and supply from the Denver area and Wyoming.[21] Natural gas hubs act as a transport between two or more pipelines providing pricing points and locations for spot markets transactions and natural gas trading. The Cheyenne Hub is located in Weld County and connects the Cheyenne Plains, Colorado Interstate Gas (CIG), Kinder Morgan Interstate Gas Transmission (KMIGT), Public Service of Colorado, Rockies Express, Southern Star, Trailblazer, and Wyoming Interstate Company (WIC).[22] The White River Hub is located in northwest Colorado and primarily handles production from the Piceance Basin; pipelines include Questar Pipeline, Rockies Express, TransColorado, CIG, Wyoming Interstate Company, Northwest Pipeline, and Williams Field Services' Parachute Lateral.[23] On average, natural gas prices at both of these hubs are below the national average.

NATURAL GAS PROCESSING PLANTS

With abundant natural gas produced in Colorado, natural gas processing plants are critical for the industry and end users, such as manufacturers and consumers. These plants remove water and other impurities in the gas at the plant inlet, and capture or fractionate natural gas liquids (NGLs) entrained in the gas, prior to allowing the natural gas treated to pipeline specifications to flow via pipeline and either storing or transporting the NGLs (i.e. ethane, propane, butane, and pentane, to other markets via tanker or dedicated pipeline.) Colorado has over 40 processing plants, usually located in areas of natural gas and oil development, supporting 4,600 jobs stemming from construction, operation, and maintenance of the plants.[24]

Natural Gas Processing Plants			
Plant Name	**Owner Company**	**Operator Company**	**County Name**
Baxter Compressor Station-Baxter Pass Co.	Xcel Energy	Xcel Energy	Garfield County
Bear River	Moffat Pipeline Corporation	Moffat Pipeline Corporation	Routt
Big Hole	HRM Resources II, LLC	HRM Resources II, LLC	Moffat
Bluestone		Markwest Liberty	
Buck Peak	Peakview	Custom Energy Construction	Moffat
Clyde Gasoline Plant	Prowers Gas Gathering Co. LLC	Prowers Gas Gathering Co. LLC	Prowers
Cutthroat B	QEP Energy Company	QEP Energy Company	Montezuma
Dragon Trail	Encana Oil and Gas USA	Encana Oil and Gas USA	Rio Blanco
Eaton	DCP Midstream	DCP Midstream	Weld
Ft. Lupton Plant	Kerr McGee Gathering, LLC	Kerr McGee Gathering LLC	Weld
Gilcrest Gas Processing Plant	AKA - Frontier Field Services	AKA - Frontier Field Services	Platteville
Grand Valley Gas Plant	Williams Mid Stream	Williams Midstream	Garfield
Greeley Plant	DCP Midstream	DCP Midstream	Weld
Hay Canyon Treating Facility	Encana Oil and Gas USA	Encana Oil and Gas USA	Garfield
Ignacio Gas Plant	Williams	Williams Midstream Srvcs, LLC	La Plata
La Veta Gas Plant	Tabula Rasa Energy LLC	Tabula Rasa Energy LLC	Huernfo
Ladder Creek	DCP Midstream	DCP Midstream	Cheyenne
Lancaster	Kerr McGee Gathering LLC	Kerr McGee Gathering LLC	Weld
Lilli Plant	Noble Energy Inc	Noble Midstream Services	Weld
Lucerne	DCP Midstream	DCP Midstream	Weld
Meeker Gas Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing LLC	Rio Blanco
Mewbourne	DCP Midstream	DCP Midstream	Weld
Mull Unit Sorrento Field	Mull Drilling Company, Inc.	Mull Drilling Company, Inc.	Cheyenne
North Douglas Plant	Red Rock Gathering Company, LLC	Red Rock Gathering Company, LLC	Rio Blanco

O`Connor	DCP Midstream	DCP Midstream	Weld
Piceance Creek Plant	Davis Gas Processing Inc	Davis Gas Processing Inc	Garfield
Parachute Creek Gas Plant	Williams Mid Stream	Williams Mid Stream	Garfield
Piceance Creek	Sourcegas Services LLC	Rocky Mountain Natural Gas, LLC	Rio Blanco
Plateau Creek Plant	Encana Oil and Gas	Encana Oil and Gas	Mesa
Platte Valley Gas Plant	Western Gas Partners LLC.	Anadarko Petroleum	Weld
Platteville	DCP Midstream	DCP Midstream	Weld
Premier DeBeque	Red Rock Gathering Company, LLC	Red Rock Gathering Company, LLC	Mesa County
Redtail Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	Weld
Rifle Gas Plant-Rifle Creek/CO	Xcel Energy	Xcel Energy	Garfield
Roggen	DCP Midstream	DCP Midstream	Weld
Skull Creek Dew Point/CO	Questar Pipeline Company	Questar Pipeline Company	Moffat
Spindle	DCP Midstream	DCP Midstream	Weld
Terrance Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	Weld
Wattenberg Gas Plant	Anadarko Petroleum Company	Anadarko Petroleum Company	Adams
Wiggins Gas Processing Plant	Western Operating Company	Western Operating Company	Morgan
Willow Creek	Williams	Williams Midstream Srvcs., LLC	Rio Blanco
Wilson Creek Gas Processing Plant	Chevron USA Inc.	Chevron USA Inc.	Rio Blanco
Yenter Gas Plant	Sterling Energy Investments LLC	Sterling Energy Investments LLC	Logan

Source: U.S. EIA Data 2014 - https://www.eia.gov/cfapps/ngqs/ngqs.cfm?f_report=RP9&f_sortby=&f_items=&f_year_start=&f_year_end=&f_show_compid=&f_fullscreen

NATURAL GAS STORAGE

Colorado has a relatively small amount of underground storage capacity, even though it has increased about 25% since 2010.[25] Recently, more storage has opened, mainly around the Cheyenne hub, to accommodate seasonal fluctuations in natural gas demand.[26]

RAIL

Colorado has four rail terminals in the northeast region of the state. Only a small amount of Coloradan oil travels west by rail, the majority is transported to local refineries or by pipeline to refineries in the Gulf Coast or abroad.[27] With a developed network across the nation, railroads can offer increased geographical flexibility and efficiency over pipelines.[28]

Rail Terminals	
Facility Name	**City**
Tampa Rail Facility	Tampa
Hudson Terminal Railroad	Hudson
Musket Terminal	Windsor
Niobrara Crude Terminal	Carr

COLORADO DOWNSTREAM OPPORTUNITY

REFINERIES

Owned and operated as a single complex, Colorado has two operating petroleum refineries. The combined Suncor refinery in Commerce City is the largest refinery in the Rocky Mountain Region. The refinery is a major supplier of Colorado's gasoline, diesel fuel, and the largest supplier of asphalt in Colorado. **Using crude oil produced in the Rocky Mountain region, including Colorado and imported via pipeline from Canada, the refinery produces 40% of Colorado's petroleum demand and supplies jet fuel to Denver International Airport.**

Colorado Refineries		
Owner	**Site**	**Operable capacity (b/d) c**
Suncor Energy	Commerce City	67,000
Suncor Energy	Commerce City	36,000
	Total	**103,000**

END USE

Natural gas and oil play an essential role in supporting the high quality of life in Colorado. **Over 60% of energy consumption in the state originates from natural gas and petroleum products. Consumption of both natural gas and refined products has risen, with a 30% increase in natural gas consumption and a 6% increase in refined products consumption since 2000.** Natural gas can be used in turbines to generate electricity, combusted for space and water heating, or used as a transportation fuel. Currently, 22.5% of electricity generation is fueled by natural gas. Overall, total consumption of natural gas has increased, with residential and electric power consumption increasing by 2.5% each year (2016 consumption yearly data). Since 2000, the number of residential consumers using natural gas has risen by 30%. Commercial consumers have risen by 14%, and the number of industrial consumers has risen by 62%.[29] Oil refined products are most often used in the transportation sector, compromising 80% of all crude oil consumed in Colorado; the remainder is used by the industrial sector. While most of the state uses conventional motor gasoline as a vehicular fuel, the Denver-Boulder and Fort Collins metropolitan areas are requiring the use of oxygenated motor gasoline to improve air quality.

Residential

The residential sector of Colorado is the largest consumer of natural gas in the state. **With nearly 75% of all residences using U.S. natural gas as their primary heating source, more homes in Colorado are heated by U.S. natural gas than by almost any other state.** In 2015, 1.712 million residential consumers relied on natural gas for energy. In the last 5 years, due to lower prices of natural gas, consumer consumption has increased.[30] Nearly 8,000 jobs in Colorado are linked to natural gas distribution, while end-use consumption of natural gas in the residential and commercial sectors support another 5,000 jobs.[31]

Utilities

Consumers around the state rely on natural gas for their energy. Eight utility companies in Colorado, mostly in smaller urban areas, provide natural gas to consumers. The two largest utility companies in Colorado, Xcel Energy and Black Hills Energy, service their customers through a combination of gas and electric power.

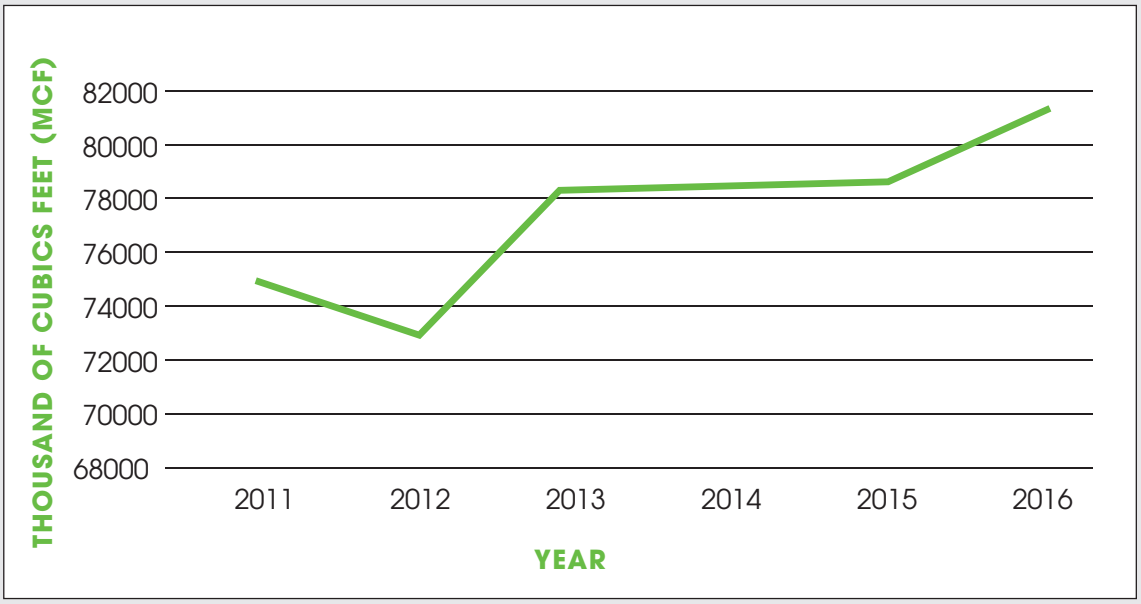
Utility Providers			
Utility Name	**Type**	**Service**	**Total Customers**
Black Hills Energy	IOU	Gas and Power	68,711
Xcel Energy	IOU	Gas and Power	1,297,861
Center Municipal Gas Light & Power	Municipal	Gas and Power	1,108
Colorado Springs Utilities	Municipal	Gas and Power	184,147
Fort Morgan Gas Department	Municipal	Gas and Power	4,519
Trinidad Gas Department	Municipal	Gas and Power	4,190
Atmos Energy Corporation	IOU	Gas	110,033
Colorado Natural Gas, Inc.	IOU	Gas	12,585
Eastern Colorado Utility Company	IOU	Gas	3,763
Rocky Mountain Natural Gas (subsidiary of SourceGas LLC)	IOU	Gas	87,285
City of Walsenburg	Municipal	Gas	1,445
Town of Ignacio	Municipal	Gas	441
Town of Rangely	Municipal	Gas	1,015
Town of Walden	Municipal	Gas	600

Industrial

Industrial consumption of natural gas has been steadily increasing within the last five years, while prices are the lowest in 10 years for industrial users. **Almost 7,000 jobs in Colorado's industrial sector are linked to natural gas.**[32]

Municipal

INDUSTRIAL NATURAL GAS CONSUMPTION



Combined Heat and Power

Throughout the last decade, consumption of natural gas for electricity generation has risen. The electric power sector is the second-largest natural-gas consuming sector. Combined Heat and Power (CHP) plants frequently use natural gas to generate electric power and thermal energy from a single source, through recovered thermal energy. CHP reduces energy costs and emissions through thermal efficiency, while increasing the reliability of electricity. The lower cost self-generated power provides an efficient way to generate power.[33] **On average CHP saves up to 60% in energy costs and reduces emissions by up to 50%.**

Of Colorado's 27 CHP facilities, 15 of them are natural gas powered, providing clean, efficient energy. Three of the facilities are located at universities, powering students, faculty, and researchers. The University of Colorado at Boulder states "the opportunity to produce clean energy for the campus is not only good for sustainability, but economically beneficial for campus." Its CHP plant has been online since 1992, but was reconfigured in 2015, providing reliability, cost-saving energy, and reducing carbon emissions by 16,400 metric tons per year.[34]

Another notable CHP lies at the world's largest single-site brewery, MillerCoors in Golden, Colorado. The brewery's CHP system has been operational since the 1930s. The system is responsible for producing 1.5 million gallons of beer per day. Though the CHP system once used coal, **MillerCoors has now fully converted to natural gas boilers, reducing their carbon emissions**. Other notable CHP sites include the Colorado Department of Labor and Employment building in Denver and Valmont Combustion Turbine Project powering Boulder.[35]

CHP Facilities

Organization Name	Facility name	Application	City
University of Colorado At Boulder	Restart of Mothballed System	Colleges / Univ.	Boulder
Colorado State University	Colorado State University	Colleges / Univ.	Fort Collins
Colorado Dept. of Labor and Employment	Colorado Dept of Labor and Employment	General Gov't.	Denver

County of Denver / Xcel Energy	District 4 Police Station	Justice / Public Order	Denver
Black Hills Colorado LLC	Valmont Combustion Turbine Project	Utilities	Boulder
Industrial Greenhouse	Industrial Greenhouse	Agriculture	Brighton
Kinder Morgan / Thermo Cogeneration Partnership, LP	Greenhouse at Montfort Packing Site	Agriculture	Fort Lupton
National Energy Systems, Inc.	Eagle Gypsum Products	Stone / Clay / Glass	Eagle
Anadarko Petroleum	Wattenberg Gas Processing Plant	Oil / Gas Extraction	Aurora
City of Arvada	George Meyers Pool	Amusement / Recreation	Arvada
Williams Companies / Williams Four Corners, LLC	Ignacio Gas Plant	Refining	Durango
Model of Colorado	Model of Longmont	Laundries	Longmont
Public Service Co of Colorado	Xcel Energy District Heating System	District Energy	Denver
Suez Energy North America - Colorado Golden Energy Corporation	MillerCoors Company Brewery	Food Processing	Golden
Thermo Companies-University of Northern Colorado	Thermo Companies/ University of Northern Colorado	Colleges / Univ.	Greeley

Agriculture

Farmers in Colorado get much more than energy from the natural gas and oil industry. Energy development is a critical part of Colorado's agriculture economy. **On average, agricultural activity received more than half their energy from natural gas and oil (17.8% natural gas, 26% Diesel, and 11.9% gasoline).**[36] However, these Coloradans may also receive additional income as mineral royalties from natural gas and oil development to supplement their income, which sometimes helps keep their small farms afloat. These ranches and farmland often sit on natural gas and oil resources, providing the perfect opportunity for the industry and agriculture to work together.[37]

Transportation

Airport

The FAA designated the Denver International Airport as a large hub for travel. Together with the Salt Lake City International Airport, these two represent 86% of the total Rocky Mountain jet fuel demand. The Denver International Airport receives its fuel from a 17-mile extension of the Chase Pipeline from Aurora. Colorado Springs Municipal Airport, a FAA designated small hub, receives its jet fuel from a spur off the McKee Denver line.

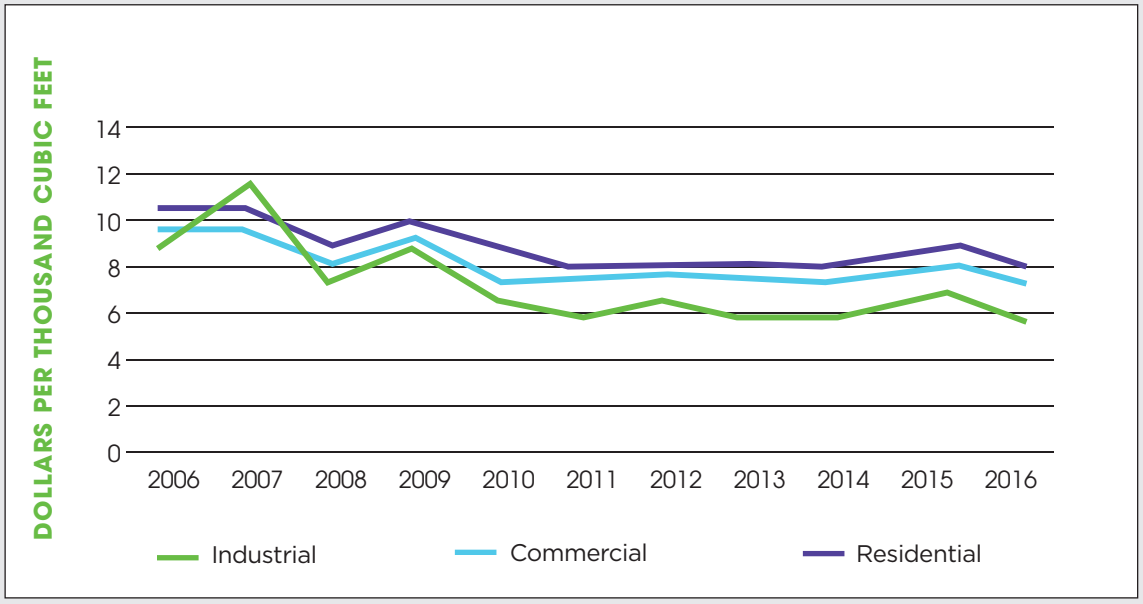
CNG

To adopt the cleanest-burning fossil fuel, Colorado has introduced Compressed National Gas (CNG) initiatives. Natural gas can be compressed or liquefied to fuel vehicles. CNG reduces greenhouse gases between 5-9%, while also reducing smog forming emissions between 20-45%.[38] Refuel Colorado, led by the Colorado Energy Office, encourages the adoption of cheaper, cleaner transport.[39] The program offers up to $6,000 for the purchase of a new light or medium duty natural gas vehicle (NGV), or the CNG conversions of an older vehicle to natural gas. With the conversion to CNG vehicles, Colorado recognized the void in infrastructure. The Alt Fuels Colorado grant program addresses the need for fueling stations, removing barriers to the adoption of CNG vehicles. According to MVista Strategies, a natural gas vehicle consulting group, Colorado is home to an estimated 4,000 medium- to heavy-duty CNG-fueled vehicles out of some 160,000 in the United States. Colorado has 22 public CNG fueling stations with locations from Grand Junction to Colorado Springs, from Eaton to Trinidad.[40] Businesses and fleets use 20 additional private stations within Colorado, according to the U.S. Department of Energy Alternative Fuels Data Center, with plans to bring more online before 2020.[41]

Energy companies also are working with the community to transition to CNG. Noble Energy, working with the state Regional Air Quality Control, is matching grants to fund CNG school buses for Colorado school districts. **These CNG buses not only reduce air pollutants like carbon monoxide and nitrogen oxides by 70% compared to diesel powered buses, but also provide a 25% cheaper alternative to diesel fuel.** Through the matching program, the school districts not only save $3500 on fuel per bus per year, but also provide the community with a cleaner, affordable and abundant source of transportation.[42]

Energy expenditures in Colorado were the 9th lowest in the nation in 2014. Prices for natural gas were one of the lowest in the nation in February 2017 behind North Dakota, Nevada, and Montana. (45th). Prices for residential, commercial, industrial, and electric power users have decreased in the last 10 years.

NATURAL GAS PRICE



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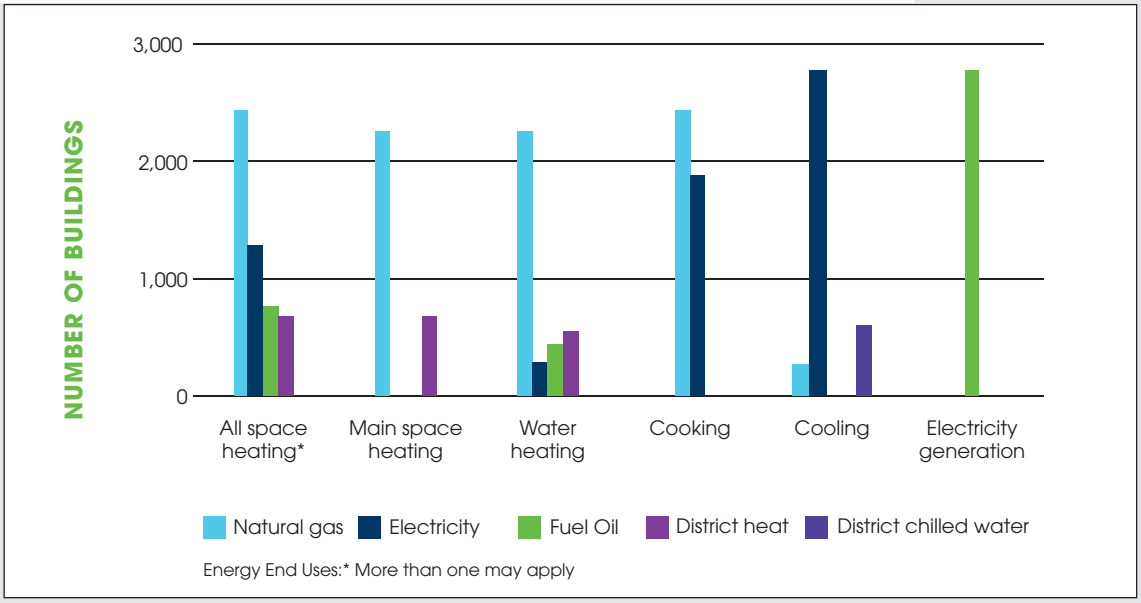
HELPING COLORADANS ACHIEVE THE BEST HEALTH POSSIBLE

In 2013, Colorado's Governor, John Hickenlooper, set an ambitious goal to become the healthiest state in the nation. The Governor's plan, titled The State of Health, set specific targets that measure the state's progress along four major focus areas:

- **Expanding** coverage, access and capacity;
- **Enhancing** value and strengthening sustainability;
- **Improving** quality and system integration; and
- **Promoting** prevention and wellness.

The overall purpose of the program is to develop a comprehensive and person-centered statewide system that addresses a broad range of health needs, delivers the best care at the best value, and help Coloradans achieve the best health possible.[43] To date, the state has achieved 11 of 15 goals—often going beyond the original target—and continually striving to become the healthiest state in the nation. A key component of improved health in the Colorado community is the expansion of available medical facilities – facilities which have come to rely on cleaner, more affordable natural gas to fuel the state's improving health.

FUELS AND ENERGY END USES IN LARGE HOSPITAL BUILDINGS (2007)



(EIA last data release for its Commercial Buildings Energy Consumption (CBECS) Survey was in 2007 – with a new release expected in 2018).

MANAGING PUBLIC HEALTH RISKS

Natural gas and oil operations are bound by state and federal industry safety standards to protect public health and the environment. The use of natural resources extracted from natural gas and oil development also offer a range of health benefits to society including: helping to reduce air pollutants and greenhouse gas emissions and, providing the energy needed to power health care institutions.

Environmental and health risks are managed successfully by:

(1) Fostering Innovation

Industry standards and best practices are updated on a regular basis. For example, the American Petroleum Institute developed a set of five hydraulic fracturing standards to serve as a benchmark to improve performance and mitigate risks to public health.[51] Standards, when properly implemented, minimize public health and community impacts.

(2) Collaborating with researchers

Industry scientists carefully review the body of literature that addresses the public health concerns and, to date, there has been no conclusive evidence that industry operations cause excessive health risks. Industry still actively seeks out opportunities to participate in collaborations and partnerships dedicated to responding to the concerns expressed by community members.

MAXIMIZE AIR QUALITY BENEFITS

The environment and communities throughout Colorado benefit from the development and use of natural gas for many purposes. The abundant source of energy helps to improve air quality and decrease pollution levels across the nation and state. According to the EIA, natural gas has been the prime driver in helping reduce U.S. emissions from electrical power generation to their lowest level in 30 years. **With 60% lower emissions than coal, natural gas catalyzed Colorado's decreasing CO_2 emissions within the last ten years. Emissions from the electric power sector are at their lowest point since 1990, despite rising demand.**

Continuing their distinction of ensuring comprehensive regulations, Colorado was the first state in the nation to develop regulations focused specifically on methane emissions from natural gas and oil production operations. **This regulation is estimated to reduce more than 60,000 tons of methane emissions per year, as well as reduce 92,000 tons of VOC emissions per year.** State and industry commitment to achieving lower methane emissions has led to the development of mitigation measures and investment in technology. Together, the natural gas and oil industry, along with the community, can sustain a cleaner environment, while enjoying the benefits of cleaner and affordable natural gas.

As an example of industry's leadership and commitment to improve environmental performance, many of the nation's largest natural gas and oil companies have committed to further accelerate reductions of methane and VOC emissions from U.S. operations as participants of a new voluntary program, The Environmental Partnership. Participants in the program, now more than 30 members and growing, commit to implement targeted programs to reduce emissions from some of the highest emitting sources and report their progress annually. Learn more about the program here: www.TheEnvironmentalPartnership.org.

RESPONSIBILITY

INTRODUCTION

The increase in U.S. natural gas and oil production over the past several years is directly linked to technological advances allowing production from tight sand and shale gas formations. These advances include technological innovations in the areas of horizontal drilling and hydraulic fracturing, which have transformed previously inaccessible natural gas resources into producing wells.

> **ACCORDING TO THE U.S. DEPARTMENT OF ENERGY,** MORE THAN 4 MILLION OIL AND GAS-RELATED WELLS HAVE BEEN DRILLED IN THE UNITED STATES SINCE DEVELOPMENT OF THESE ENERGY RESOURCES BEGAN NEARLY 150 YEARS AGO. AT LEAST 2 MILLION OF THESE HAVE BEEN HYDRAULICALLY FRACTURE-TREATED, AND UP TO **95% OF NEW WELLS DRILLED TODAY ARE HYDRAULICALLY FRACTURED,** ACCOUNTING FOR MORE THAN 43% OF TOTAL U.S. OIL PRODUCTION AND 67% OF NATURAL GAS PRODUCTION.

The powerful combination of continually-improving industry practices, advancing state programs, and federal environmental statutes all work together to provide an effective structure that allows for the essential development of the nation's natural gas and oil resources while protecting the environment.

COLORADO ENERGY AND COMMUNITIES

Colorado's extensive regulations serve to assure the community that the conduct of natural gas and oil operations must safeguard their health and safety.

For example, Garfield County, the third highest producer of natural gas and oil in the state, hosts Energy Advisory Board meetings almost every month where industry provides updates on its activities, offers presentations on specific topics, and allows citizens to ask representatives from the industry their questions. Communities want more access to the benefits of natural gas and oil development since it brings significant revenue that bolsters the local economy and offers job opportunities to its residents.

Colorado's Natural Gas and Oil Works Closely with COGCC

The mission of the Colorado Oil and Gas Conservation Commission (COGCC) is to foster the responsible development of Colorado's natural gas and oil resources that results in:

- The **efficient exploration** and production of oil and gas resources in a manner consistent with the protection of public health, safety and welfare.
- The **prevention** of waste.
- The **protection** of mineral owners' correlative rights.
- The **prevention and mitigation** of adverse environmental impacts.

The recent growth in both the industry and the urbanized areas of Colorado has resulted in strong debate on the pros and cons of natural gas and oil development and called upon operators, big and small, to engage as involved, transparent partners with the communities in the areas where they operate. Operators work closely with communities in planning and communicating their development activities, while applying best operating practices to mitigate potential adverse impacts.

The Colorado Petroleum Council is a division of API, which develops industry standards that help enhance safety, for our workers and the facilities where they do their jobs and for the surrounding community. Since 1924, API has developed nearly 700 standards covering all segments of the industry to continuously improve the safety of natural gas and oil development, refining and delivery systems. Implementing an organized, systematic approach to safe operations and worker safety is a big part of protecting our communities.

Our industry values good communities and works to make them stronger by being conscientious neighbors. Because these are our communities, too.

SERVICES SUPPORTED BY NATURAL GAS AND OIL PRODUCTION

The natural gas and oil industry supports the community through more than direct investment in development and employment; the industry provides billions in public revenue to the state. The industry pays ad valorem taxes three times higher than commercial property and over ten times higher than residential properties. In 2014, property taxes exceeded $400 million and state royalties, rents and bonuses were nearly $160 million. In total, in that year, through property, income, and severance taxes, and public land leases and royalties the industry contributed nearly $1.2 billion.[44/45]

These revenues are received by the state and local governments and go back to the community. **In 2014, a total of $434.7 million in property tax went to the counties, cities, and school districts. Over half of funds collected from property tax went directly to schools.** While non-producing counties have no property tax, they still receive corporate and personal sales tax, as well as federal mineral lease proceeds.

The revenue from tax on the natural gas and oil industry supports a wide range of services in the community. **The state received almost $52.7 million in state lease revenue and $105.4 million from state royalties, taxes on the use of mineral resources on state land based on production and sales.** Natural gas and oil revenue is placed in the city and county general funds, which is then used for public safety, general government, health and human services, and public works.[46] The general fund also finances public services such as parks, paramedic services, and urban redevelopment. In 2014, industry funding provided $37 million for public safety, $29 million for general government, about $26 million for health and human services, roughly $18 million for public works, and about $12 million for streets and highways.

Schools

School districts not only save money on locally-produced energy, but also receive funds from taxes on natural gas and oil. **A study by IHS Global Insight estimated energy savings of 8.6% on electricity and 13.3% on natural gas, amounting to over $11.4 million for school districts. These savings are enough to employ over 150 teachers.[47]**

The natural gas and oil industry directly funds schools in many ways. Over 30 school districts receive property tax from the industry. Through the state general fund, even school districts without direct property tax can benefit from the industry. A portion of the state general fund is distributed to schools throughout the state. Some of these funds come from federal mineral leases. In 2012, school districts received a total of $2.8 million in federal mineral lease distribution.[48]

The State Land Board Trust distributed almost $180 million to schools and universities in 2015. This board auctions leases to determine rents natural gas and oil companies pay, generating over $50 million in state lease revenue in 2014.[49] Natural gas and oil companies also pay a royalty rate of 16.67% on production volume and sales to the State Land Board for mineral resources on state land. In 2014, these royalties totaled nearly $105.4 million. Beneficiaries of the State Land Board's Trust are listed below. The largest beneficiaries from this trust include school districts and Colorado State University.[50]

COLORADO ENERGY AND PROPERTY VALUES

As the natural gas and oil industry has grown in Colorado, homeowners have questioned the effects the natural gas and oil industry may have on local property values. Natural gas and oil development brings many benefits to the community and property values. **The increased workforce brings increased demand for housing, driving prices up. The industry provides local revenue and income to the community in providing services and amenities to its residents.** Government revenue from development often goes toward improvements in the education system, another positive factor that influences home values. Although there is some concern with the possible impact of water quality and noise pollution issues on housing values, two recent studies have found little to no significant negative impacts.

Specifically, a 2014 study from Colorado State University observed the impact of hydraulic fracturing of natural gas and oil wells on housing values in Weld County.[52] Its findings indicate that though drilling activity within a half mile of a house offered for sale could reduce its price by 1%, these impacts were only short term and only for urban areas. Once the well is active, there was no statistically significant evidence of a negative effect on housing prices. While drilling had a minor, short term-negative impact, the county-wide effect on housing values would be positive due to an expectation of increases in natural gas and oil employment.

Complementing the Weld County study, a 2016 study examined property values and the distance to natural gas and oil development across seven Colorado counties: Garfield, Grand, La Plata, Larimer, Pitkin, Routt, and Weld.[53] The study found no definitive evidence that hydraulic fracturing significantly, positively or negatively, impacts home values. Within certain counties, some homes near natural gas and oil development maintained higher values and sale prices than those without such development. The study also found no evidence that hydraulic fracturing positively or negatively impacted home prices for those with private water wells.

COLORADO AND PUBLIC HEALTH

Industry is lowering emissions of criteria pollutants through cleaner burning natural gas and energy efficient systems

Job creation and greater economic stability is only half the story in Colorado. Residents can feel the increased community stability when they drive on new roads, send their children to state-of-the-art schools, and enjoy new community centers.

The natural gas and oil industry is innovating to protect public health and the safety of our neighbors and our workers.

Natural gas use is increasing, nationwide and globally, driven by the revolution in shale energy production. This industry is among the most innovative in our country. We are consistently working to develop cleaner and safer production processes, to reduce emissions, and protect the environment. This has led to lower emissions of criteria pollutants such as sulfur dioxide (SO_2), nitrogen oxides (NOx), and fine particulate matter (PM). Switching to cleaner burning natural gas and energy efficient systems has proven to reduces exposures to criteria air pollutants which can yield benefits that protect public health such as avoided illnesses, hospitalizations and missed work days due to sicknesses.

According to Department of Energy analyses, for every 10,000 homes that switch from coal power to natural gas power, annual emissions of NOx, SO_2 and particulates are reduced by 1,900, 3,900 and 5,200 tons, respectively. Natural gas offers an opportunity, almost unique among energy sources, of providing health benefits to the public while also saving consumers and businesses money.

EIA now estimates that greater U.S. natural gas use has led to drops in U.S. CO_2 emissions that are today at 25 year lows. Most importantly, the natural gas and oil industry is innovating to protect the health and safety of our neighbors and our workers. We will continue our efforts to expand production, stimulate economies, reduce environmental impact and drive additional safety improvements. These four components are just a part of the way we care for our communities because these are our communities too.


DISCARD AFTER USE
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2ml
2.5

COLORADO ENERGY AND REGULATIONS

Colorado is recognized as a leader in natural gas and oil regulation. The state's robust regulatory program is one of the most comprehensive in the nation, governing every facet of the industry from site selection, to drilling and completion operations, including hydraulic fracturing, groundwater sampling, spill containment and disaster preparedness, to site closure.[54] Below is a table of the major regulations passed since 2010.[55]

Major Regulations Since 2010

Name	Year	Description
Clean Air, Clean Jobs Act	2010	Roadmap to reduce emissions from older coal power plants through increased use of natural gas
Fracture Treatment Disclosure	2011	Requires comprehensive public disclosure of chemicals used in hydraulic fracturing treatments
Groundwater Sampling	2012	Most rigorous statewide mandatory groundwater sampling and monitoring rules in United States; required to take water samples prior to and post drilling
Setback-Notification-BMPs	2012	Setback 500 ft. statewide, applicable to rural and urban areas and 1000 ft. from high occupancy buildings including schools, nursing homes and hospitals; to mitigate perceived effects of drilling near buildings; viewed as toughest in the nation

Spill Reporting	2013	Requires operators investigate, clean-up and document impacts from spills to COGCC; defines reportable spills and reporting requirements
Wildlife Habitat Maps	2013	Update state wildlife maps containing the range, habitat, and known migration patterns; operators must minimize adverse impacts from proposed oil and gas development
Methane emissions (CDPHE)	2014	Fully adopt EPA's NSPS OOOO and added controls to reduce volatile organic compounds and hydrocarbon emissions; expanded ozone non-attainment area requirement
Penalties & Enforcement	2014	Increased the penalties for operators in violation of commission regulations; max penalty increased from $1000 to $15000 for violations
Oil and Gas Development in Floodplains	2015	Provided recommendations for oil and gas wells and production facilities located in flood impact zones
Governor's Oil and Gas Task Force Rulemaking	2016	Formation of oil and gas development task force; two recommendations required formal rulemaking; Recommendation 17: define and adopt a process for improved local government involvement during permitting process; Recommendation 20: operators required to register in the municipalities in which they have operations and provide information on their planned development and operations
Flowlines and Related Infrastructure Associated With Oil and Gas Development.	2018	Strengthened requirements for design, installation, maintenance, testing, tracking and abandoning flowlines. *Flowlines describe the kinds of pipelines that most typically move fluids around specific oil and gas development locations from wells to separators to storage tanks or to larger pipelines.*

Pipelines

Colorado's inclusive pipeline safety regulations are monitored and enforced by the Colorado Public Utilities Commission, Gas Pipeline Safety Section. The Colorado "811" underground utility notification and damage prevention program obligates operators of underground facilities, third-party excavators, and the public to submit a utility location request before excavation and take precautions to avoid damaging pipelines and other utilities.[56] The pipeline operators also inspect surface conditions on pipelines at regular intervals. In the community, pipeline operators must develop and implement a public education program on the industry. In February 2018, the COGCC finalized a rulemaking improving its flowline program by establishing additional requirements for their inspection, testing, and abandonment.

Hydraulic Fracturing

Colorado's hydraulic fracturing rules are among the strongest in the country. Operators must publicly disclose all hydraulically fractured treatments performed including chemicals, concentrations, and water used.[57] State regulations also require robust well integrity and design with all wellbores lined with three types of casing -- conductor casing, surface casing, and production casing, verified by a specialized well survey. The well construction is then tested at pressures higher than those during the fracturing treatment to ensure integrity. The COGCC also established requirements and guidance for operators to protect offset wells from being impacted by new wells subject to hydraulic fracturing.

Air Quality

The CDPHE regulates the in-depth air quality regulations for the natural gas and oil industry, which are among the most comprehensive in the nation. Colorado is a leader in regulating air quality–ozone, regional haze. Regulations

cover low permitting levels, emissions data and requirements for a variety of equipment and operating practices including phase out of high-bleed pneumatic controllers, direct emission controls for storage tanks, compressors, dehydrators and green completions (aka reduced emission completions). The Air Quality Control Commission is scheduled to conduct a rulemaking hearing, which will make Colorado the first state to incorporate EPA's Control Technique Guidelines to control VOC emissions from existing natural gas and oil sources and reduce ozone levels in non-attainment areas. Colorado's Regulation No. 7 rulemaking in 2014 set the standard for controlling storage tank emissions and implementing leak detection and repair (LDAR) programs, which was subsequently modeled by EPA for its federal New Source Performance Standards (NSPS). Colorado, through its 2014 Reg 7 rulemaking, became the first state in the nation to limit methane emissions from natural gas and oil operations separately from volatile organic compounds (VOCs).

In December 2017, America's natural gas and oil industry announced a landmark partnership to accelerate improvements to environmental performance in operations across the country. Focused initially on reducing methane and volatile organic compound (VOC) emissions, the Environmental Partnership includes more than 30 natural gas and oil producers and demonstrates the industry's leadership and commitment to responsibly developing America's energy resources while reducing emissions. Collectively, the participating companies represent operations in every major U.S. natural gas and oil basin. The Environmental Partnership is a historic agreement bringing together American natural gas and oil companies of all sizes to take action, learn and collaborate in an effort to further improve our environmental performance.

2018 Air Rulemaking

This Air Quality Control Commission rulemaking was focused on increasing/updating requirements on oil and gas operations to continue to reduce air pollution, specifically VOCs'. The new rule increases the frequency of routine

checks operators are required to conduct on their wells. This rule incorporates EPA's new Control Technique Guidelines for oil and gas emission sources and makes Colorado the first state to incorporate the CTGs into its rules and State Implementation Plan for the Ozone Non-Attainment area. This rule only applies to the "non-attainment zone", which was a win for industry as there was concern that the commission was going to push for a statewide measure. As part of the final rule, a pneumatics task force will study pneumatic controller emissions in the ozone non-attainment area, which industry supported. Also, a stakeholder process will be held to evaluate other opportunities to reduce VOC and hydrocarbon emissions from oil and gas sources statewide.

Water Protection[58]

Operators in Colorado established the best practice of baseline groundwater monitoring of private supply wells prior to the drilling of oil and gas wells to demonstrate that methane in groundwater was commonplace in many basins in the state. The Colorado Oil and Gas Conservation Commission (COGCC) later approved statewide mandatory groundwater monitoring that requires pre- and post-drilling sampling. These groundwater monitoring rules are the most stringent in the nation. An extensive database has been developed that demonstrates that natural gas and oil development has not resulted in widespread groundwater contamination. The EPA regulates the prevention of oil spills, while the COGCC regulates the reporting, cleanup and enforcement of spills of oil and produced water. The CDPHE has stringent regulations for stormwater management during construction activities, which are also applied to the natural gas and oil industry above those required by EPA.

The natural gas industry is among the most efficient in its use of fresh water. A 2010 study which compared energy sources via British Thermal Units (BTUs) as a unit of energy content, indicated that natural gas only uses 3 gallons of fresh

water for each million BTU as compared to coal at 41 gallons and biodiesel at around 14,000 gallons. **In Colorado, 0.13% of the states' fresh water resources is used for hydraulic fracturing, equaling 6.5 billion gallons each year. While this number seems large, public supply uses 315.4 billion gallons per year, while irrigation uses 4497.5 billion gallons per year for a total of 96% of the state's water usage.**

Colorado extensive water right/use regulations established by the Division of Water Resources state that the fresh water used for natural gas and oil operations must originate from municipal leases or purchases for industrial use, changed water rights, fully consumed water or effluent that is purchased, produced water, non-tributary with a landowner & operator agreement, or recycled produced water, which is why many of Colorado producers reuse all of their flowback water and most of their produced water for future operations, where feasible. New technologies allow the industry to reduce fresh water usage in the well completion phase. **Recent studies showed that horizontal drilling is a more water-efficient way of drilling – using 10% less water than vertical wells.**

Public Health

The Colorado Department of Public Health and the Environment (CDPHE), in response to health concerns related to oil and gas activities, created the Oil and Gas Health Information Response Program. The program acts as clearinghouse by collecting and disseminating information relevant to community health concerns. A recent report by CDPHE evaluated research, air monitoring data, and public health trends and concluded that oil and gas activities in Colorado were meeting the air quality standards that are considered protective of health.[59] A similar peer-reviewed study conducted by the Texas Commission on Environmental Quality (TCEQ) that looked at years of collected air quality measurements arrived at a similar conclusion: air quality in the Barnett Shale region is at levels that are protective of health despite ongoing oil and gas development activities.[60]

Through the combination of hydraulic fracturing and horizontal drilling, shale gas development has provided countless economic and environmental benefits to the United States. Our nation's new status as the world's leading producer of natural gas and oil is saving American families and businesses billions in energy costs. Also it has enhanced global security by diminishing the influence of less stable oil-producing regions. Competitive forces and industry innovation continue to drive technological advances and produce cleaner, more affordable natural gas, which has led to reducing carbon emissions from power generation to their lowest level in more than 20 years, making it clear that environmental progress and energy production are not mutually exclusive.

In fact, emissions from natural gas and oil development in Colorado were expected to drop by 33% by the end of 2017.

None of the benefits noted would be possible without hydraulic fracturing. Robust industry standards and a comprehensive set of state, local, and federal laws address nearly every aspect of exploration and production.

These include well design, water use, waste management and disposal, air emissions, surface impacts, health, safety, location, spacing, and operations. As early as 1999, the Department of Energy (DOE) recognized the environmental benefits provided by fracturing including: increased recovery, lower waste volumes, fewer wells drilled (more resource contacted and ability to drill multiple wells from a single well pad), protection of ground water resources and less surface disturbance. Today, operators are able to do even more with less, minimizing impacts on species and the landscapes they depend upon.

Hydraulic fracturing is a "well stimulation technique" in technical jargon, but practically speaking it is so much more. It is innovation and it is jobs. It is lower emissions and lower costs for consumers and businesses. It is energy and it is security. For Colorado, responsible hydraulic fracturing is opportunity.

—Tracee Bentley
Colorado Petroleum Council

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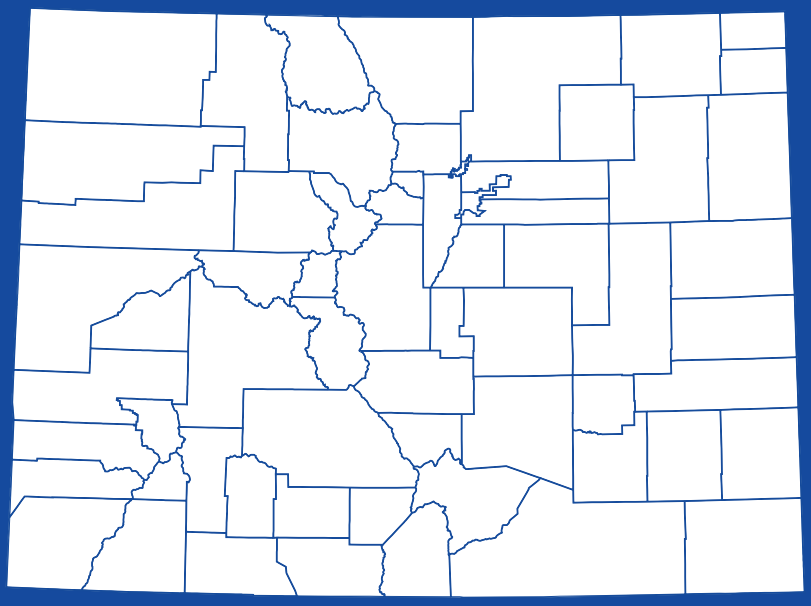

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