



2020

Energy Handbook

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INTRODUCTION

The Legislative Council Staff's Energy Handbook is intended to serve as a reference guide to Colorado's energy sector.

The book is divided into five sections. Section I covers the sources and uses of energy in Colorado. Section II explains how severance taxes and federal mineral lease moneys are calculated and distributed. Section III looks at energy-related greenhouse gas emissions. Section IV provides an overview of the state departments involved in energy issues. Section V highlights local governments' role in energy.

The handbook also includes two appendices. Appendix A summarizes recent energy-related legislation considered by the Colorado General Assembly. Appendix B provides a glossary of energy-related terms.

SECTION I: ENERGY SOURCES AND USES

Colorado has a rich, diverse mix of fossil fuel and renewable energy resources. This section discusses production and consumption trends for primary and renewable energy resources. It also includes a profile of Colorado's electricity generation and electric utilities.

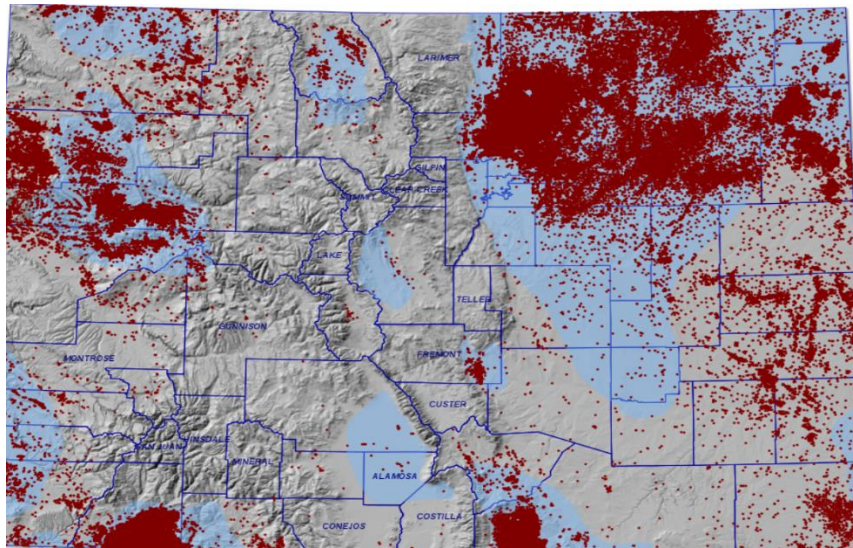
Primary Energy Production

Natural gas. Colorado is the sixth-largest natural gas-producing state. Due in part to advanced drilling technologies, production volumes have doubled since 2000, reaching nearly 2 trillion cubic feet in 2019. The two largest natural gas-producing regions are the Denver-Julesburg Basin in the northeast and Piceance Basin in the west. Natural gas is produced from conventional reservoirs, as well as from coalbed methane. Interstate pipelines transport natural gas throughout the Western states via two trading hubs: the Cheyenne hub in the Denver-Julesburg Basin and the White River Hub in the Piceance Basin. Nearly 90 percent of Colorado's natural gas is extracted in Weld, Garfield, and La Plata Counties.

Oil. Colorado ranks fourth in crude oil production, accounting for about 4 percent of total U.S. production. Production has grown nearly six-fold since 2009, reaching over 170 million barrels of crude oil in 2018. Colorado is home to one oil refinery, Suncor Energy, which is located in Commerce City and processes nearly 100,000 barrels of crude per day into motor gasoline, diesel fuel, and asphalt. Nearly 90 percent of Colorado's oil produced in 2019 came from Weld County.

According to the Colorado Oil and Gas Conservation Commission, Colorado currently has about 50,000 active natural gas and oil wells. Figure 1, shows all active well locations in the state.

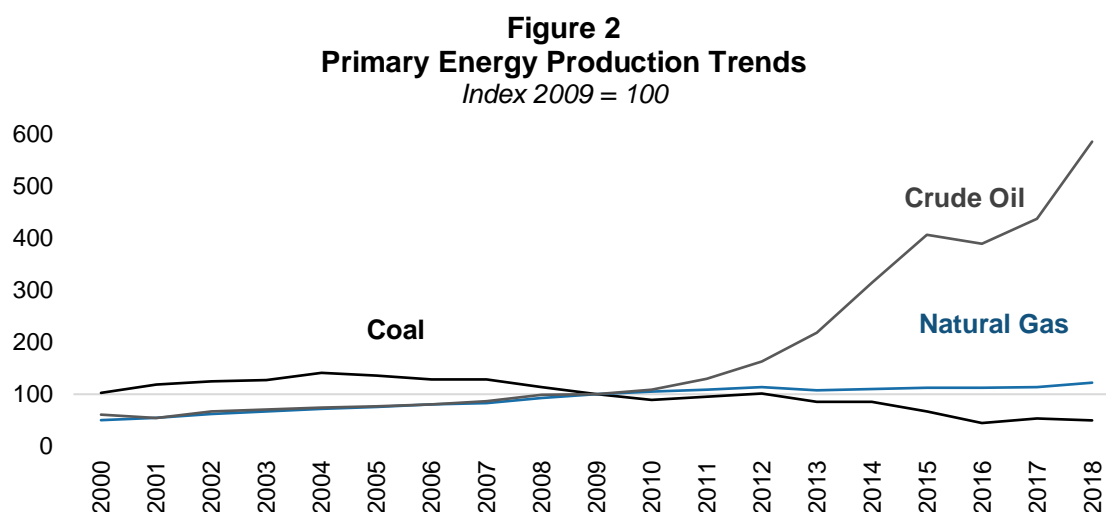
Figure 1
Current Active Oil and Gas Well Locations



Source: Colorado Oil and Gas Conservation Commission. Wells current as of July 30, 2020.

Coal. In 2018, Colorado ranked eleventh in coal production, producing around 14 million short tons of coal, down from nearly 40 million short tons in 2004. Declining production in recent years is due in large part to decreased coal demand across the United States. Three-quarters of Colorado’s coal is extracted from six underground mines, with the remainder coming from two surface mines. Coal-fired power plants provide nearly one-half of the state’s total electricity generation.

Figure 2 shows the primary energy production trends measured for natural gas, crude oil and coal production in the United States.



Source: U.S. Energy Information Administration.

Renewable Energy Production

In addition to these primary energy resources, Colorado has wind, solar, hydro, biomass, and geothermal energy resources. Nuclear energy has not been produced in Colorado since 1989.

Wind and solar. With about 2,200 turbines capable of generating more than 3,700 megawatts (MW) of electricity, Colorado ranks eighth in the country for installed wind capacity, and currently generates over one-fifth of its electricity from wind power.¹ Colorado ranks thirteenth for installed solar capacity, producing around 2 percent of the state’s electricity supply. Investments in utility-scale, community, and roof-top solar are growing, reaching an installed capacity of over 1,300 megawatts in 2019.²

Hydropower. There are about 60 hydropower facilities throughout Colorado, ranging from 5 to 300 megawatts in installed capacity. With a combined installed capacity of 1,150 MW, hydropower accounts for approximately 3 percent of electricity generated. The Colorado Department of Agriculture has identified additional capacity for hydropower development in agriculture-related infrastructure, including irrigation systems and existing dams.

Other sources of renewable energy. While wind and solar provide the bulk of renewable energy in Colorado, other sources also exist. One biomass facility in Gypsum, Colorado produces electricity from pine beetle infested waste wood removed by the U.S. Forest Service to mitigate wildfire risk. Colorado’s hot springs and other natural resources also provide geothermal resources for heating and cooling. The Colorado State Capitol is the first state capitol in the country to utilize geothermal power to heat and cool

¹American Wind Energy Association. Wind Energy in Colorado. Available at: <https://www.awea.org/Awea/media/Resources/StateFactSheets/Colorado.pdf>.

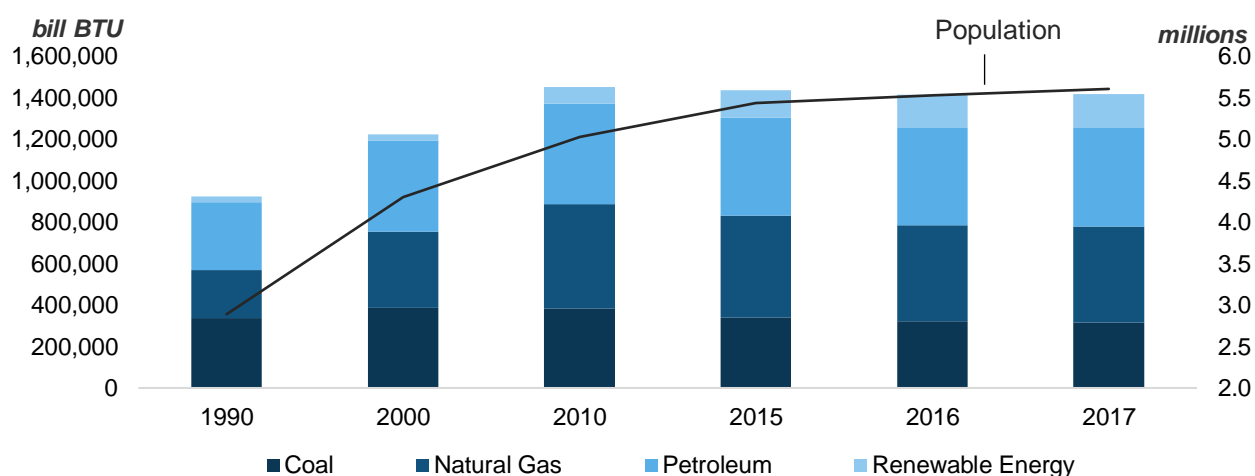
²Solar Energy Industries Association. Colorado Solar. Available at: <https://www.seia.org/state-solar-policy/colorado-solar>.

the building.³ Additionally, biogas, produced when organic materials break down, is used to produce onsite heat and electricity at some wastewater treatment facilities and landfills in the state, with one facility converting biogas to compressed renewable natural gas for use as a transportation fuel. Natural gas can also be recovered from coal mines, with one active project in Colorado.

Energy Consumption by Source

Colorado consumed over 1,400,000 billion BTU of energy in 2017, up from roughly 900,000 billion BTU in 1990. Historically, coal accounted for approximately one-third of the total energy consumed, but declined to nearly one-fifth by 2017, replaced by natural gas and renewable energy sources. Renewable energy, including wind and solar resources, accounted for just under 3 percent of total energy consumed in 1990, but grew to over 11 percent by 2017, largely driven by increases in wind power. Since 2010, Colorado's total energy consumption has remained steady despite population growth of around 12 percent over the same period. Figure 3 shows the composition of energy consumption by source from 1990 to 2017 along with statewide population.

Figure 3
Energy Consumption by Source and Statewide Population



Sources: U.S. Energy Information Administration and U.S. Census Bureau.

Energy Consumption by End-Use Sector

Colorado consumed 266 million BTU per person in 2018, which is 86 percent of the national average and 3.5 times higher than the worldwide average. The transportation sector makes up the largest share of state energy use (29 percent), followed by the industrial (28 percent), residential (24 percent), and commercial sectors (19 percent). Since 2000, per capita energy use for all sectors combined has dropped about 10 percent at both the state and national levels, though with significant variation between states and sectors. This section discusses the major determinants of energy consumption in these sectors.

³In addition, The Colorado State Capitol is the only state capitol to be LEED EBON (Existing Building Operations and Maintenance) Certified by the U.S. Green Building Council. See: <https://www.colorado.gov/capitol/geothermal>.

Transportation

While 12 percent below the national average per capita energy consumption, and 24 percent below the state's peak in the late 1970s, the transportation sector remains the largest energy-consuming sector in Colorado.

Driving patterns. The overall amount of driving varies widely across the country, ranging from a low of 6,300 vehicle-miles-traveled per person per year in New York State to 16,900 in Wyoming, with Colorado being near the U.S. average at 9,500. Within Colorado, drive patterns vary widely and correlate with land use and degree of urbanization. In Denver, daily commutes average 25 minutes, with 70 percent of workers driving alone and 30 percent getting to work by other means such as carpooling, riding public transit, biking, or working from home. In comparatively suburban Adams County, daily commutes average 30 minutes, with 78 percent of workers driving alone.

Fuel economy. Vehicle fuel economy – often expressed in miles per gallon – is the other major determinant of transportation energy use. Vehicles of all classes have become more efficient over time, though this effect is partially offset by larger vehicles, such as SUVs, gaining market share relative to smaller vehicles. For passenger cars, average fuel economy has increased from 24 mpg for model year 1980 vehicles to 39 mpg for model year 2017.⁴ Colorado is among the states that have adopted fuel economy standards more stringent than the federal minimum standards set by the U.S. Department of Transportation.

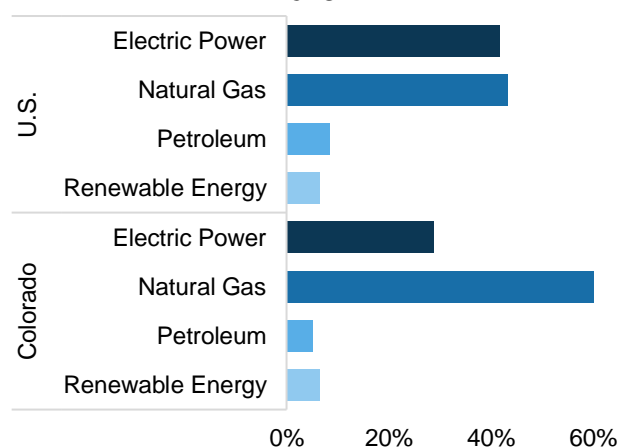
Electric vehicles. Electric vehicles (EVs) are more efficient than gasoline-powered or hybrid vehicles; today's EVs can exceed 100 miles per gallon equivalent (a quantity of fuel with the same energy content as a gallon of gasoline). EVs make up a small but rapidly growing market share in Colorado, estimated at 24,000 registered vehicles in 2019. House Bill 19-1159 extended Colorado's state income tax credit for electric vehicles to 2025.⁵

Residential

The residential sector includes energy used for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and operating other appliances in private households. Energy used to power Colorado's homes has increased by 21 percent since 2000, but per capita energy consumption has declined by 9 percent since 2010, and today is just below the U.S. average, as shown in Figure 4.

Fuel sources. Colorado homes are more reliant on natural gas compared to the U.S. average, accounting for 60 percent of the total energy consumed by the residential sector. Electric power accounts for 29 percent of household energy consumption compared to a U.S. average of 42 percent. This difference is due, in large part, to the colder climate, as natural gas is the primary energy source used for space heating.

Figure 4
Residential Energy Consumption by Fuel Type
2018



Source: U.S. Energy Information Administration.

⁴Bureau of Transportation Statistics

⁵Sections 39-22-516.7 and 29-22-516.8, C.R.S.

Construction trends. Colorado's population growth is driving new residential construction and home energy consumption. According to the U.S. Census Bureau's Building Permits Survey, Colorado's annual new residential permits have grown 233 percent since 2010, with nearly 40,000 new permits issued in 2019. Permits for single-family homes accounted for 64 percent of total residential permits, slightly above the U.S. average of 62 percent. Single-family homes consume nearly double the energy per household member than multi-family homes.

Building regulation. In Colorado, building regulation, including adopting and enforcing building energy codes, is a function of local governments. State law requires local governments to adopt and enforce one of the three most recent versions of the International Energy Conservation Code (IECC) upon updating any other building code. The IECC codes establish baselines for energy efficiency by setting performance standards for building and energy systems in homes and commercial businesses. According to the Colorado Energy Office, about 76 percent of Colorado's population now lives in jurisdictions that have adopted one of the most recent versions of the IECC.

Residential energy savings. As required by statute, the Colorado Public Utilities Commission requires investor-owned utilities to invest in demand-side management to achieve energy savings and peak demand-reduction goals.⁶ Public utilities offer a variety of programs to their customers, such as energy audits, peak pricing, and rebates for more energy efficient appliances.

Commercial and Industrial

Commercial end users. The commercial end use sector includes energy consumed by businesses, governments, private and public organizations, institutional living quarters, sewage treatment facilities, and generators that supply energy to support commercial establishments. Commercial end users account for the largest share of electricity consumption in Colorado, accounting for nearly 40 percent of the total electricity consumed in the state.

Commercial energy consumption per capita has been declining since around 2000, and is currently 9 percent below the national average. Public utilities offer many of the same energy saving incentives to commercial customers as they do for residential customers.

Industrial end users. The industrial end use sector includes energy consumed by facilities and equipment used for manufacturing, agriculture, mining, oil and gas extraction, and construction. Colorado uses 26 percent less energy than the national average in this sector, which reflects a lesser presence of energy-intensive industries like petroleum refining, chemical manufacturing, and iron and steelmaking relative to other areas of the country.

Electricity Profile

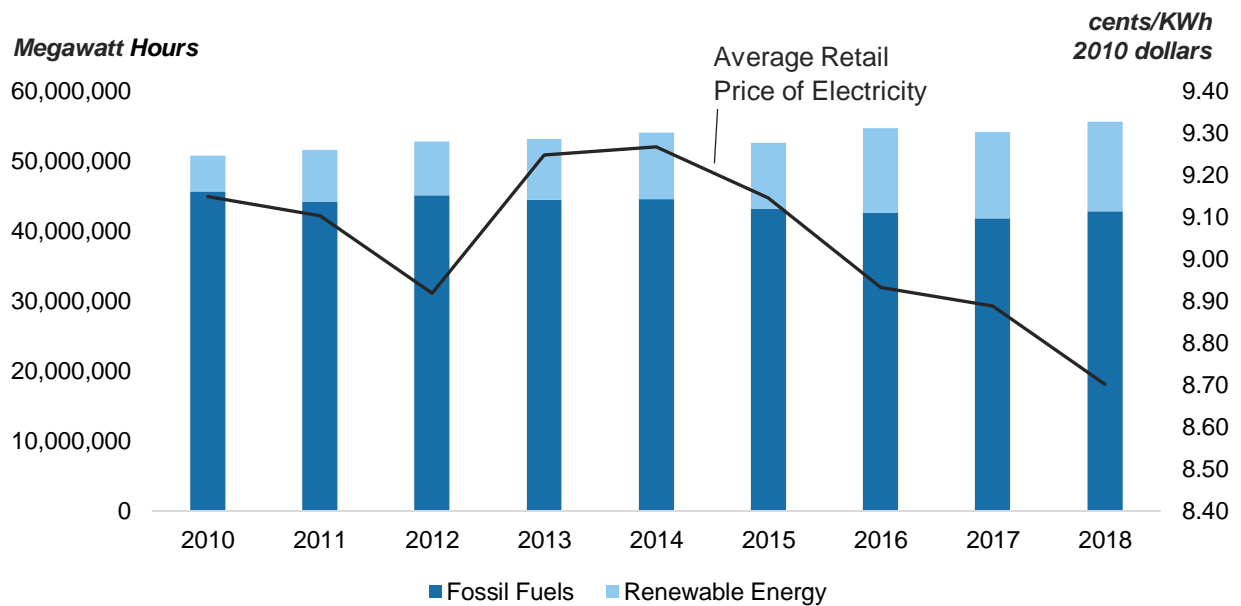
Electricity generation. Colorado's electric power industry generated over 55 million megawatt hours of electricity for residential, commercial, industrial, and transportation sectors in 2018. Nearly half of that electricity was generated from coal-fired power plants. Demand for electric power has grown slightly from 50.7 million megawatts in 2010, but electricity generated from renewable sources has more than doubled.

⁶Section. 40-3.2-104, C.R.S

Wind now accounts for 17 percent of Colorado’s total electric power generation, with a total installed capacity of 3.7 gigawatts in 2018, up from 1.3 gigawatts in 2010. Independent power producers (entities other than electric utilities) generate most of the wind power, but electric utilities have increased investments in wind generation, with capacity growing more than six fold between 2017 and 2018.

The average retail price for electricity has declined by nearly 4 percent since 2010, in 2010 dollars, as reflected in Figure 5.

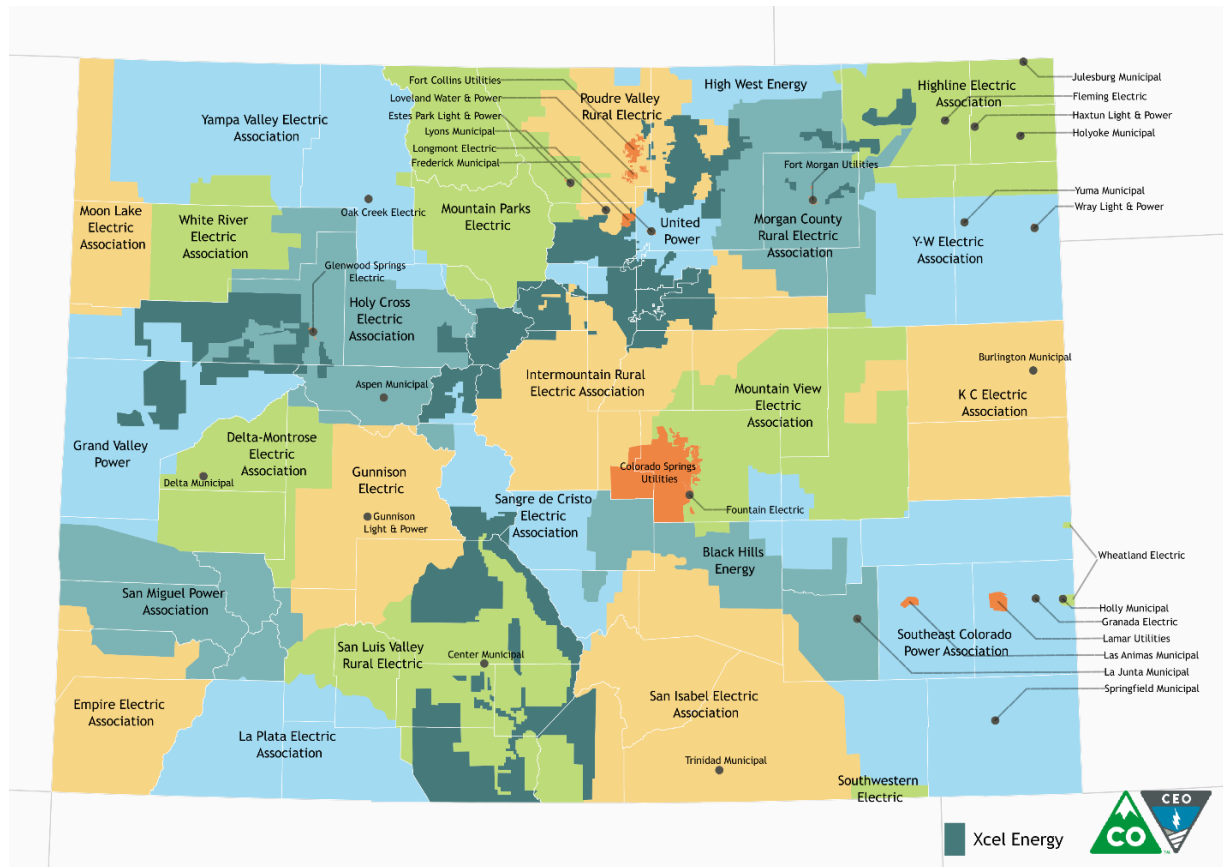
Figure 5
Electric Power Usage by Energy Source and Average Retail Price



Source: U.S. Energy Information Agency.

Electric utilities. Colorado’s retail and wholesale customers are served by electric utilities based on where they live. Two investor-owned private utilities, Public Service Company of Colorado, otherwise known as Xcel Energy, and Black Hills Energy, serve 1.5 million customers primarily along the Front-Range, and are regulated by Colorado’s Public Utilities Commission (PUC) within the Department of Regulatory Affairs. The remainder of Colorado is served by one of 29 municipal utilities or 22 rural electric cooperatives, which operate as nonprofit entities. Retail rural electric cooperatives source their electricity from wholesale electric cooperatives, currently Tri-State Generation and Transmission. The service territories of Colorado’s electric utilities are reflected in Figure 6 below.

Figure 6
Colorado Electric Utilities Service Territories



Source: Colorado Energy Office.

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SECTION II: ENERGY REVENUE

State revenue from the energy sector is generated primarily through severance taxes and federal mineral lease revenue dispersed from the U.S. Bureau of Land Management. Additional revenue is collected from oil and gas producers and utility companies in the form of property taxes, income taxes, and excise taxes; however, these taxes are not discussed in detail in this section.

Severance Taxes

Severance taxes are assessed by the state on natural resources extracted from the earth. The minerals subject to severance tax under current law include oil and gas, coal, metallic minerals, molybdenum, and oil shale. Most severance taxes are collected as estimated payments on a monthly or quarterly basis. Annual returns are filed in April by companies with less than \$5,000 in net severance tax liability or to true up any additional taxes or refunds owed to the taxpayer.

Severance taxes are assessed either on the producer's gross income from the value of production or on tonnage mined. Gross income is defined as the value of oil or natural gas when it is sold at the wellhead. If the oil and gas are sold at a point beyond the wellhead after transportation, manufacturing, and processing has occurred, those costs are deducted when calculating the gross income from the sale of oil and gas.

Exemptions are allowed up to a certain amount on initial production during a certain time frame for each mineral, and some credits are allowed on property taxes paid. Table 1 on page 8 provides information on tax rates, collection frequency, exemptions, and credits/deductions.

Ad Valorem Tax Credit

Colorado's oil and gas operators are allowed a tax credit equal to 87.5 percent of the property taxes paid on the prior year's oil or natural gas production as an offset to their current year's severance tax liability. The credit is only allowed for property taxes paid on the value of oil and natural gas produced and is not allowed for property taxes levied against personal property, like flow lines and pump jacks. This property tax credit is often referred to as the ad valorem credit and is available on all oil and gas wells that are not classified as stripper wells (wells producing fewer than 15 barrels of oil or 90,000 cubic feet of natural gas per day), which are exempt from severance tax.

Property taxes are based on the prior year's production and paid during the tax year after they are assessed. For example, oil and natural gas producers report 2018 production to county assessors for 2019 assessed values. Local governments determine their budgets and set their mills each fall. Mills for 2019 were certified by December 2019, and property tax bills were mailed in January 2020. This schedule causes a two-year lag between when the production occurs and when property taxes are paid as shown in Figure 7.

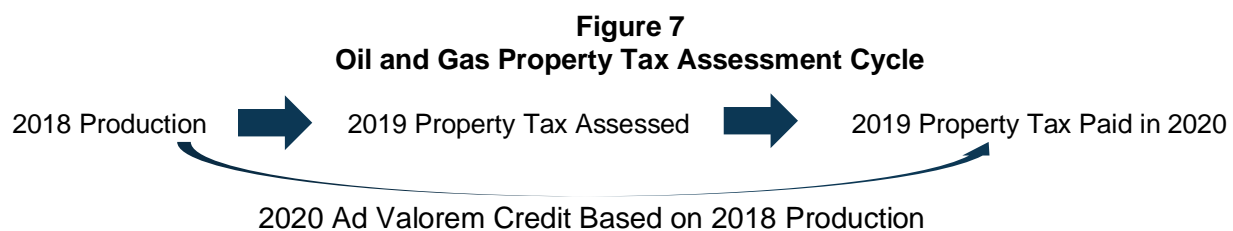


Table 1
Severance Tax Rates and Collection Information

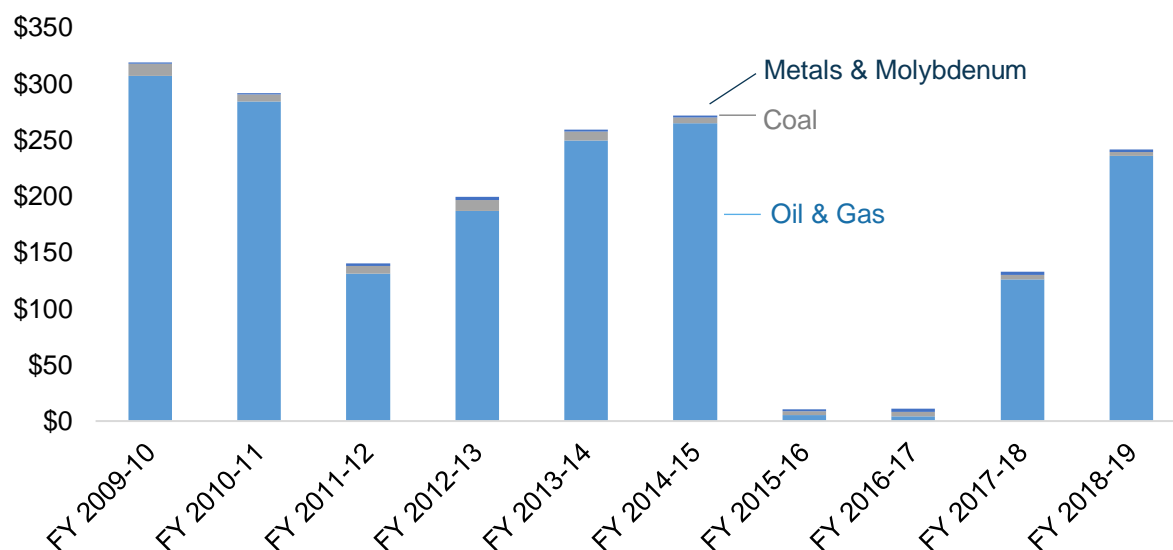
	Tax Rates	Tax Collection Frequency	Exemptions	Credits/Deductions
Oil and Gas	Gross income: <ul style="list-style-type: none"> • Under \$25,000 at 2% • \$25,000 to \$99,999 at 3% • \$100,000 to \$299,999 at 4% • Over \$300,000 at 5% 	<ul style="list-style-type: none"> • Monthly (over \$5,000 in net liability) • Annually (under \$5,000 in net liability and true-ups for monthly filers) 	Up to 15 barrels per day (oil) or 90,000 cubic feet per producing day (gas) are exempt (<i>known as the stripper well exemption</i>)	87.5% of all property taxes paid except those imposed on equipment and facilities used for production, transportation, and storage
Coal	Over 300,000 tons at \$0.84 per ton (<i>annual monthly average in 2020 through May</i>)	<ul style="list-style-type: none"> • Quarterly (over \$5,000 in net liability) • Annually (under \$5,000 in net liability and true-ups for quarterly filers) 	First 300,000 tons are exempt each quarter	50% of the severance tax liability for coal produced by underground mines and an additional 5% for lignitic coal
Metallic Minerals	2.25% of gross income	<ul style="list-style-type: none"> • Quarterly (over \$5,000 in net liability) • Annually (under \$5,000 in net liability and true-ups for quarterly filers) 	First \$19 million in gross income is exempt	Property taxes paid capped at 50% of the state severance tax liability
Molybdenum	\$0.05 per ton	<ul style="list-style-type: none"> • Quarterly (over \$5,000 in net liability) • Annually (under \$5,000 in net liability and true-ups for quarterly filers) 	First 625,000 tons are exempt	None
Oil Shale	Depends on year of commercial production: <ul style="list-style-type: none"> • 1st year at 1% • 2nd year at 2% • 3rd year at 3% • 4th year and beyond at 4% 	<ul style="list-style-type: none"> • Monthly (over \$5,000 in net liability) • Annually (under \$5,000 in net liability and true ups for monthly filers) 	The greater of the first 15,000 tons per day or the first 10,000 barrels per day are exempt	None

Prepared by Legislative Council Staff.

Severance Tax Collections

Severance tax collections vary significantly year-over-year due to the volatile nature of the energy industry in general, and oil and gas prices in particular. Additionally, the ad valorem credit that oil and gas producers are allowed to claim contributes to the volatility in severance tax collections since it is lagged by two years and local governments often vote to change their mill levies. Figure 8 includes severance tax collections for oil and gas, coal, and molybdenum and metallics, which are reported together in compliance with taxpayer confidentiality requirements, as Colorado has only one molybdenum mine.

Figure 8
Severance Tax Revenue by Mineral
Dollars in Millions



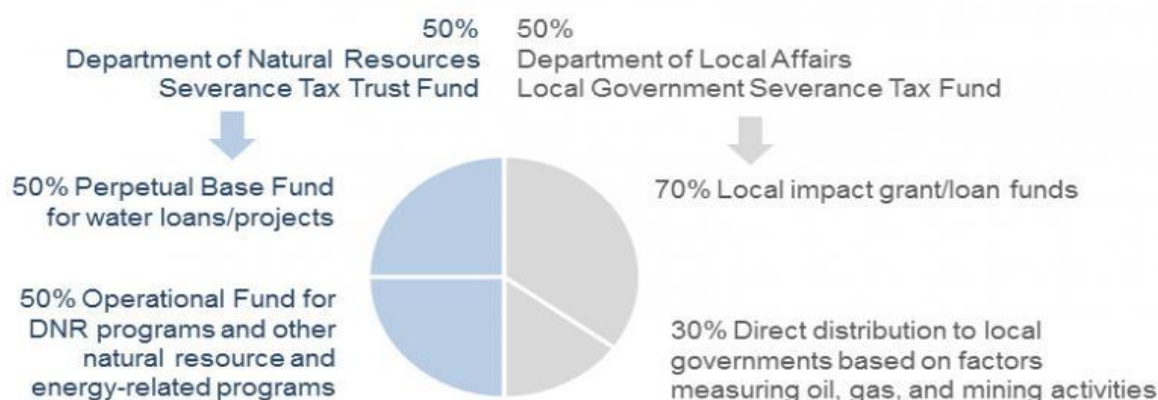
Source: Colorado Department of Revenue.

Severance Tax Distributions

Severance tax revenue is divided evenly between the Department of Natural Resources (DNR) and the Department of Local Affairs (DOLA). Figure 9 below provides a general illustration of how remaining severance tax revenue is allocated under current law.

DNR's half is deposited into the Severance Tax Trust Fund, and is then divided equally between the Severance Tax Perpetual Base Fund and the Severance Tax Operational Fund. The Perpetual Base Fund is used to finance loans for state water projects administered by the Colorado Water Conservation Board that construct or improve flood control, water supply, hydroelectric energy, and recreational facilities, excluding domestic water treatment and distribution systems. The Operational Fund is generally used for programs administered by DNR. The Operational Fund's "core" or "tier 1" programs include operating expenses for the Colorado Oil and Gas Commission; the Avalanche Information Center; the Colorado Geological Survey; the Division of Reclamation, Mining and Safety; the Colorado Water Conservation Board; and the Division of Parks and Wildlife. Natural resource and energy grant programs, or "tier 2" programs, receive funding if money remains in the Operational Fund after core departmental programs and a statutorily required reserve are funded; these programs include water and agriculture-related programs, soil conservation, wildlife conservation, invasive species control, and low-income energy assistance.

**Figure 9
Severance Tax Distributions**



DOLA's severance tax revenue is credited to the Local Government Severance Tax Fund and distributed to local governments. Seventy percent is available for discretionary loans and grants to local governments socially or economically impacted by the mineral extraction industry. Local governments apply to DOLA for the loans and grants at three different times during the year. DOLA is assisted by a 12-member Energy and Mineral Impact Assistance Advisory Committee in making funding decisions. The money must be used by local governments for the planning, construction, and maintenance of public facilities, and for providing public services. The remaining 30 percent of the money received each fiscal year is distributed directly to local governments by August 31 of the following fiscal year based on the geographic location of energy industry employees, mine and well permits, and overall mineral production.

Federal Mineral Lease Revenue

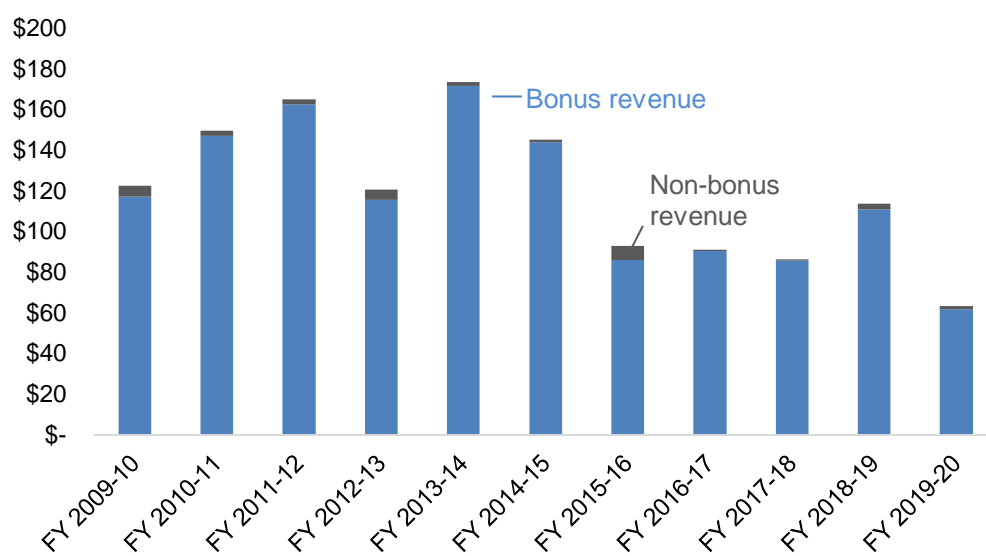
The Bureau of Land Management (BLM) leases federal land for oil and gas development on BLM land, U.S. Forest Service land, and other federally owned lands and federal mineral estates. The lands that may be leased are determined by the U.S. Department of the Interior and the U.S. Department of Agriculture's land use plans. Leases are required to be offered quarterly when lands are available, and can be no more than 2,560 acres per lease.

The Mineral Lease Act requires that the leases be awarded to the highest bidder. The minimum bid is \$2 per acre. Bonus bids are any amount over the required fees, such as the per acre rental charge and royalties on oil and gas produced. Leases are offered with a ten-year term, which may be extended by two years if drilling has begun before the ten years are up. The lessee must pay either rental fees on the land or royalties on the oil and gas produced. The rental rate is \$1.50 per acre per year for the first five years and \$2 per acre each year after. Royalties are set at 12.5 percent of the value of the oil and gas produced.

Federal Mineral Lease Collections

The federal government collects Federal Mineral Lease (FML) revenue from sales, bonuses, royalties, and rentals of minerals produced on federal land within the state. Colorado is entitled to 50 percent of all revenue collected. Royalty payments comprise the largest portion of FML revenue, and oil and gas production is the largest contributor to royalty payment, which fluctuate with the oil and gas market, as shown in Figure 10 below.

Figure 10
Colorado's Federal Mineral Lease Revenue
Dollars in Millions



Source: Colorado Department of Treasury.

Federal Mineral Lease Revenue Distributions

The state's share of FML revenue is primarily distributed to local governments and the State Public School Fund. Revenue distributions are divided between bonus payments and non-bonus payments as shown in Figure 11.

Bonus payments are distributed quarterly as follows:

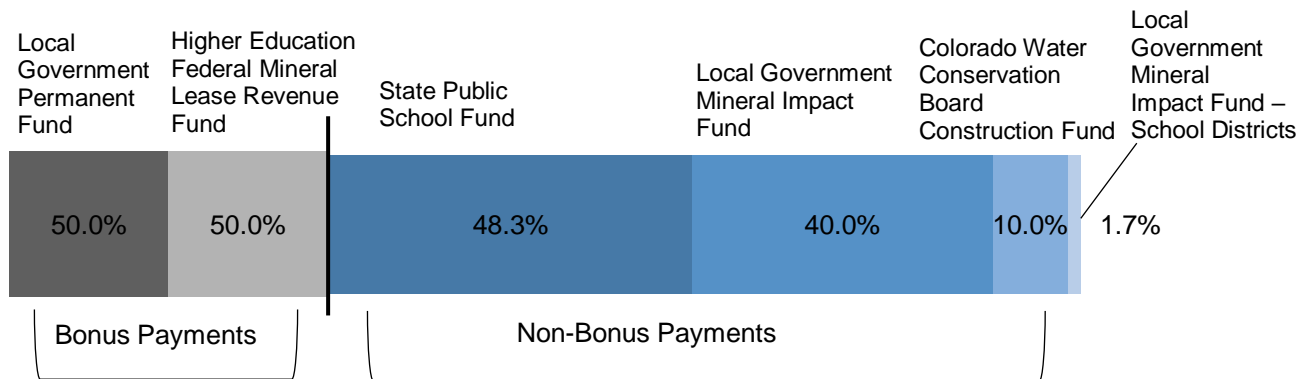
- 50 percent of the revenue goes to the Local Government Permanent Fund to be invested by the board of trustees of the Public Employees' Retirement Fund, unless the amount of revenue decreases by at least 10 percent, in which case it may be appropriated to DOLA; and
- 50 percent is distributed to the Higher Education Federal Mineral Lease Revenue Fund, which goes to fund capital construction projects at state-supported higher-education institutions.

All non-bonus payments credited to the Mineral Leasing Fund are also distributed quarterly in the proportions as follows:

- 48.3 percent goes to the State Public School Fund, to be used for the support of the public schools of the state;
- 40 percent goes to the Local Government Mineral Impact Fund and is divided in the following way:
 - 50 percent goes to the Executive Director of DOLA for planning, analyses, public engagement, and coordination and collaboration with federal land managers and stakeholders or for similar or related local government processes; and
 - 50 percent goes to the Local Government Mineral Impact Fund to be distributed to municipalities, counties, and federal mineral lease districts based on several factors discussed in Section 34-63-102 (5)(c), C. R. S.
- 10 percent goes to the Colorado Water Conservation Board's construction fund for water project grants and loans as prioritized by the General Assembly; and

- 1.7 percent goes to the Local Government Mineral Impact Fund to be distributed to school districts in the counties that receive funding out of the 40 percent distribution bucket.

Figure 11
Colorado Federal Mineral Lease Revenue Distributions



SECTION III: ENERGY-RELATED GREENHOUSE GAS EMISSIONS

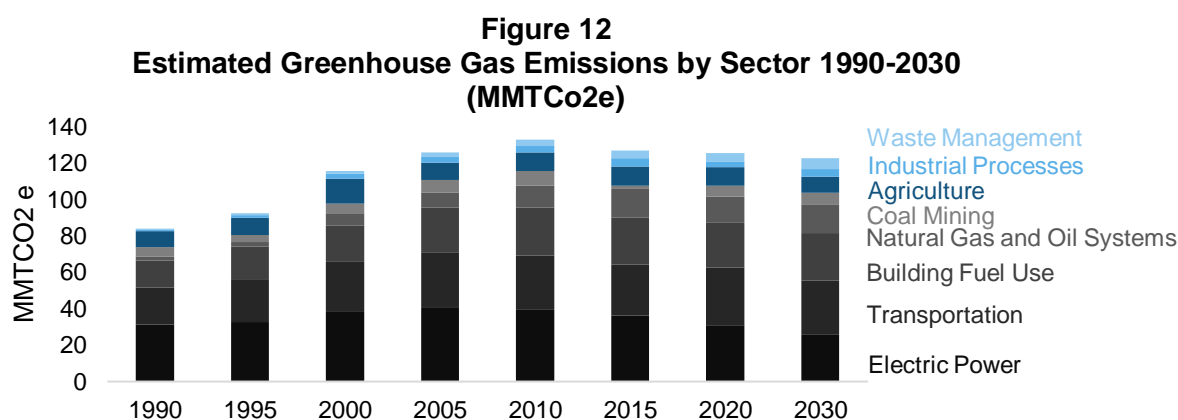
Colorado's energy-related emissions sectors, including electricity generation, transportation, building fuel use, and oil and gas operations, account for roughly 85 percent of statewide greenhouse gas emissions. This section discusses Colorado's climate- and energy-related goals and provides a greenhouse gas emissions profile for the state.

Greenhouse Gas Emissions Profile

Colorado's GHG emissions profile draws on data from the 2019 Colorado GHG Inventory Report, which can be accessed [here](#). The GHG emissions inventory was developed using the U.S. Environmental Protection Agency's (EPA) State Inventory Tool (SIT), which provides default input data and emission factors.⁷ The GHG emissions profile is discussed in more detail below.

Energy-related historic emissions. CDPHE has produced two statewide greenhouse gas inventories in 2014 and 2019 that estimate historic and projected greenhouse gas emissions by sector. In 2015, Colorado is estimated to have emitted just over 126 MMT CO₂e, and is projected to emit just over 122 MMT CO₂e in the year 2030. Energy-related sectors, including electric power, transportation, building fuel use, natural gas and oil systems, and coal mines, account for 85 percent of Colorado's total greenhouse gas emissions. The remainder of emissions come from the agriculture, waste management, and industrial processes sectors.

Energy-related emissions projections. Emissions are projected to decline modestly through the forecast horizon of 2030, largely driven by reductions in the electric power sector as fossil fuels are replaced with renewable resources. These emissions projections are based on historic and predicted activity data, and do not take into account recently enacted greenhouse gas emissions reduction targets and strategies. Figure 12 shows estimated greenhouse gas emissions by sector and projected emissions through 2030.



Source: Colorado Department of Public Health and the Environment. Grey shaded bars represent energy sector. Blue shaded bars represent non-energy sectors.

⁷The Colorado Greenhouse Gas Inventory, developed by the Colorado Department of Public Health and Environment, utilizes the U.S. Environmental Protection Agency's State Inventory Tool modules, developed for the individual emissions sectors. These emissions sectors align with the source categories defined in the IPCC Guidelines for National Greenhouse Gas Inventories. The emissions estimates developed using the national SIT data may not accurately reflect Colorado's actual greenhouse gas emissions and projections. For instance, emissions from the production of natural gas are estimated based on a regional emission factor applied on a per well basis, and do not account for differences in leak rates between different types of equipment. Emissions projections provided by the SIT also do not account for recently enacted GHG reduction strategies. As GHG reporting improves as a result of Senate Bill 19-096, a more accurate reflection of emissions projections may be possible.

Greenhouse gas reporting program. In 2009, the EPA promulgated rules requiring facilities that emit greenhouse gases above a certain threshold to report their emissions annually through the [Greenhouse Gas Reporting Program](#). To date, approximately 8,000 facilities report annual emissions, accounting for approximately 85 percent of total greenhouse gas emissions in the United States. In Colorado, 117 facilities reported greenhouse gas emissions in 2018, which accounted for 46 million metric tons of carbon dioxide. Table 2 provides details on the top 15 greenhouse gas emitting facilities in Colorado in 2018, which is the most recent year for which data are available.

Table 2
Colorado's Largest GHG Emitting Facilities
2018

Rank	Facility Name	Facility Type	County	GHG Emissions (Metric Tons CO ₂ e)
1	Comanche (470)	Power Plant	Pueblo	9,317,943
2	Craig	Power Plant	Moffat	7,637,522
3	Pawnee	Power Plant	Morgan	3,655,730
4	Hayden	Power Plant	Routt	2,488,170
5	Rawhide Energy Station	Power Plant	Larimer	1,752,534
6	Cherokee	Power Plant	Adams	1,744,827
7	Fort St. Vrain	Power Plant	Weld	1,518,841
8	Front Range Power Plant	Power Plant	El Paso	1,134,615
9	Martin Drake	Power Plant	El Paso	1,075,930
10	Rocky Mountain Energy Center	Power Plant	Weld	1,075,815
11	Ray D Nixon	Power Plant	El Paso	1,046,207
12	Holcim Inc. – Portland Plant	Cement Production	Fremont	964,048
13	Suncor Energy Refinery	Petroleum Refinery	Adams	927,256
14	Ignacio Gas Plant	NG Processing	La Plata	646,092
15	GCC Rio Grand Inc.	Cement Production	Pueblo	639,144

Source: U.S. Environmental Protection Agency. Greenhouse Gas Reporting Program: Facility Level Information on Greenhouse Gas Tool (FLIGHT). Available at: <https://www.epa.gov/ghgreporting/ghg-reporting-program-data-sets>

Climate- and Energy-Related Goals

Renewable Energy Standards. In 2004, Colorado voters enacted a renewable energy standard (RES), which required qualifying retail utilities to obtain a minimum percentage of their power from eligible renewable energy sources.⁸ Qualifying retail utilities are defined as utilities that provide retail electric service to at least 40,000 customers. Each qualifying utility is required to generate or procure electricity from eligible renewable energy resources, which include wind, solar, woody biomass, geothermal, landfill gas, anaerobic digestion, recycled energy, pyrolysis, and hydropower. Qualifying utilities demonstrate compliance with the RES through renewable energy credits (RECs), which are issued for each megawatt-hour (MWh) of renewable energy generated.

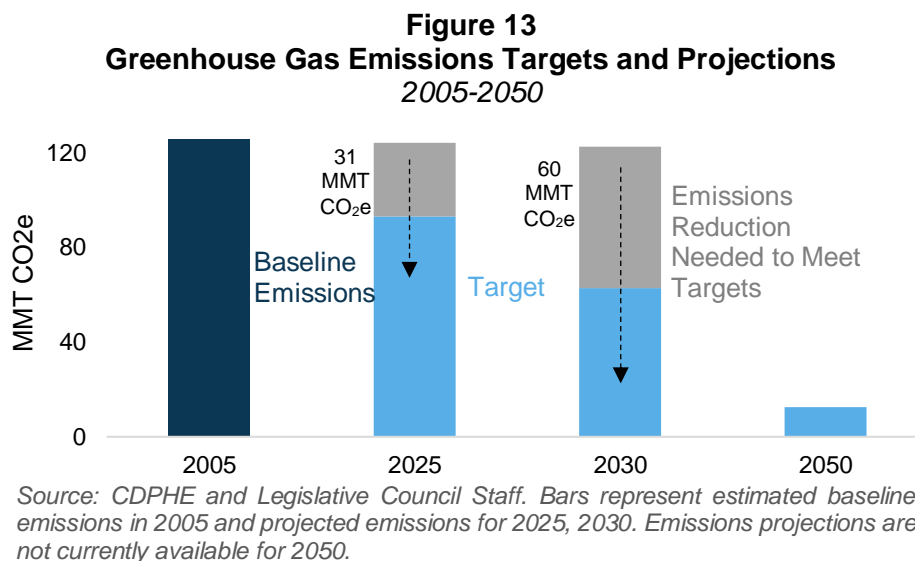
Since its enactment, the Colorado General Assembly has passed two additional bills to increase the state's RES for utilities. House Bill 10-1001 increased the RES for qualifying retail utilities to 30 percent renewable generation by 2020, and Senate Bill 13-252 requires qualifying cooperative utilities, which are customer-owned utilities, to generate 20 percent of their electricity from renewable energy sources.

⁸Section 40-2-124, C.R.S.

Clean Energy Plans. In 2019, Colorado enacted [Senate Bill 19-236](#), which supplements the existing RES by establishing targets for carbon dioxide emissions reductions from electricity generated by utilities serving more than 500,000 customers. Currently only Xcel Energy meets this criteria. A qualifying electric utilities must submit a clean energy plan to the PUC as part of its electric resource plan that outlines how the utility will reduce greenhouse gas emissions by 80 percent from 2005 levels by 2030 and by 100 percent by 2050. Other electric utilities may voluntarily submit clean energy plans to reduce their greenhouse gas emissions and retire coal-fired power plants. The Colorado Department of Public Health and Environment (CDPHE) is required to verify and report to the PUC the projected carbon dioxide emissions reductions as a result of the clean energy plan.

Climate Action Plan. [House Bill 19-1261](#), enacted in 2019, establishes statewide greenhouse gas emissions reduction goals aimed at limiting the increase in the global average temperature. The bill set statewide goals to reduce greenhouse gas emissions by at least 26 percent in 2025, by at least 50 percent in 2030, and by at least 90 percent in 2050 compared to 2005 levels. Also enacted in 2019, Senate Bill 19-096 supports the Climate Action Plan by requiring the AQCC to update the statewide inventory of greenhouse gas emissions and projections, by sector, at least every two years, and to recalculate Colorado's 2005 GHG emissions to serve as a baseline for measuring progress towards the GHG emissions reduction goals. The AQCC is authorized to promulgate rules and regulations to achieve these emissions reduction goals, taking into account the costs and benefits of compliance, equitable distribution of reductions, clean energy incentives, and climate resiliency in Colorado's communities.

The most recent statewide inventory of Colorado's GHG emissions, published by CDPHE in 2019, estimates that Colorado emitted 125.7 million metric tons of carbon dioxide equivalent (MMT CO₂e) in 2005. Under a baseline scenario, CDPHE estimates future greenhouse gas emissions to be 124 MMT CO₂e in 2025, and 122 MMT CO₂e in 2030, requiring further emissions reductions of 31 and 60 MMT CO₂e respectively in order to achieve the greenhouse gas emissions reduction targets, as shown in Figure 13.



GHG Pollution Reduction Roadmap. In 2019, several state agencies, including the Colorado Energy Office, Department of Public Health and Environment, Department of Natural Resources, Department of Transportation, and Department of Agriculture, began developing a GHG Pollution Reduction Roadmap (roadmap) of actions to achieve the emission reduction goals as defined in House Bill 19-1261. Recognizing the limitations of the statewide inventory estimates, which are based on historic data and trends through 2015 and do not reflect events and legislation that occurred between 2015 and 2019, the roadmap is establishing the 2005 GHG emissions baseline to refine the emissions reductions needed to meet the targets.

It is also estimating emissions reductions anticipated due to recent legislation passed in 2019. More information on roadmap development can be accessed [here](#).

Just Transition. [House Bill 19-1314](#), enacted in 2019, created the Just Transition Office within the Colorado Department of Labor and Employment. A utility that is accelerating the retirement of a coal-fuel generating facility is required to submit a workforce transition plan to the office and to the affected community. This plan must estimate the number of workers that are currently employed at the facility and how many jobs will be retired or eliminated.

This office assesses the impact of transitioning from coal-related industries on local communities and workers in Colorado. The office is also authorized to make recommendations to help affected communities, including education services, grant programs, and wage benefits. Additionally, the bill creates a Just Transition Advisory Committee, which is required to develop a just transition plan for coal-related industries and submit it to the General Assembly by December 31, 2020. More information on the Just Transition Advisory Committee can be found [here](#). The bill also creates the Just Transition Cash Fund to help pay for the office's costs.

SECTION IV: DEPARTMENTS INVOLVED IN ENERGY POLICY

Several state agencies are involved in the regulation of energy producers and providers in Colorado, as well as energy policy. These primarily include:

- the PUC in the Department of Regulatory Agencies;
- the Colorado Oil and Gas Conservation Commission; the Division of Reclamation, Mining, and Safety; the State Land Board; and Colorado Parks and Wildlife in the Department of Natural Resources;
- the Division of Oil and Public Safety in the Department of Labor and Employment;
- the Colorado Energy Office in the Governor's Office;
- the Division of Local Government in the Department of Local Affairs; and
- the Air Pollution Control Division in the Department of Public Health and Environment.

These agencies and their functions are detailed below.

Department of Regulatory Agencies

Public Utilities Commission. To ensure that Coloradans receive safe, reliable, and reasonably-priced services, the PUC regulates the state's public utilities, including natural gas, electric, water, and steam utilities; motor carriers and transportation network companies; rail and transit safety; gas pipeline safety; and telecommunications utilities. The PUC consists of three Governor-appointed commissioners who are confirmed by the Senate and serve four-year terms. The commissioners are responsible for promulgating rules and regulations, conducting investigations, and overseeing adjudicatory hearings. The PUC director is responsible for regulating the public utilities law, implementing policies and procedures decided by the PUC, and meeting all regulatory requirements outlined in state law. Online at: puc.colorado.gov.

PUC energy regulation. The energy section of the PUC regulates the rates and services of the state's two investor-owned electric utilities (Xcel Energy and Black Hills Energy) and, as of 2019, one wholesale electric cooperative (Tri-State Generation and Transmission Association)⁹, as well as providing limited oversight over municipal electric utilities and electric cooperative associations. The section also oversees natural gas, steam, and water tariff filings; conducts financial and engineering analyses; performs audits and investigations for the PUC related to operating authority, rates, quality of service, and resource planning; and conducts compliance and enforcement. Federal regulation of Colorado's power providers is the responsibility of the Federal Energy Regulatory Commission.

PUC gas pipeline safety. The PUC is required to adopt rules necessary to oversee and enforce the federal Natural Gas Pipeline Safety Act. This oversight applies to all public utilities and corporations transporting natural gas or providing natural gas service, operators of meter systems, and all operators of pipelines transporting gas throughout the state.

Department of Natural Resources

Colorado Oil and Gas Conservation Commission. The Colorado Oil and Gas Conservation Commission's (COGCC's) mission and composition was recently modified in Senate Bill 19-181. Prior to the passage of that bill, the COGCC was charged with *fostering* the responsible, balanced development, production, and

⁹For more information about the implementation of recent legislation affecting the PUC, see: https://puc.colorado.gov/puc_legislation_implementation.

utilization of natural resources of oil and gas in a manner that is consistent with public health, safety, and welfare, including protection of wildlife resources. With the bill's passage, the COGCC is charged with *regulating* the development of oil and gas in a manner that protects public health, safety, and welfare, including protection of wildlife resources.¹⁰ For more information about SB 19-181 and related rulemaking, visit: cogcc.state.co.us/sb19181.html#/overview.

The COGCC consists of seven voting members, five of whom are appointed by the Governor with the consent of the Senate and serve as full-time, salaried employees, and two ex officio nonvoting members. More information about current commissioners can be found on the COGCC website: cogcc.state.co.us/about.html#/commissioners.

Division of Reclamation, Mining and Safety. The Division of Reclamation, Mining and Safety regulates development and reclamation at active mining sites, reclaims abandoned mine sites, and provides safety training for mine operators and employees. The division also tracks data on coal production and general mining information for the state, available here: www.colorado.gov/pacific/drms/data-search.

The division houses two boards: the Coal Mine Board of Examiners and the Mined Land Reclamation Board. The Coal Mine Board of Examiners establishes the criteria and examination for all applicants for certified coal mining positions as required by federal law, as well as manages enforcement and discipline for these positions. The Mined Land Reclamation Board administers and adjudicates the state Surface Coal Mining Reclamation Act.

State Land Board. The State Board of Land Commissioners, more commonly referred to as the Colorado State Land Board, serves as the trustee for the lands granted to the state. It holds 2.8 million surface acres, a small portion of which are leased for renewable energy ventures, such as community solar gardens and wind farms. It also holds 4.0 million mineral estate acres, which are partially leased for oil and gas development and geothermal energy production. Lease proceeds are credited to the Building Excellent Schools Today (BEST) program. More information about the types of leases the State Land Board offers is available at: slb.colorado.gov/lease.

Colorado Parks and Wildlife. Colorado Parks and Wildlife's (CPW's) regional energy liaisons and land use staff provide guidance to energy companies, developers, and federal, state, and local government regulatory agencies, specifically identifying actions to avoid, minimize, and mitigate development impacts to Colorado's wildlife and habitats. However, the CPW has no regulatory authority over these processes.

For more information, visit: cpw.state.co.us/conservation/Pages/CON-Energy-Land.aspx.

¹⁰Section 34-60-101, *et. seq.*, C.R.S. (Oil and Gas Conservation Act).

Department of Labor and Employment

Division of Oil and Public Safety. The Division of Oil and Public Safety (OPS) in the Colorado Department of Labor and Employment enforces statutes and establishes and enforces rules and regulations regarding retail fueling facilities, liquefied petroleum gas, retail hydrogen fueling, and retail natural gas. Specific to retail fueling facilities, the division regulates petroleum storage facilities with underground storage tanks that hold 110 gallons or more and aboveground storage tanks that hold between 660 and 40,000 gallons. The division oversees the cleanup of petroleum spills and reimburses clean-up costs to qualifying storage tank owners and operators through its enterprise Petroleum Storage Tank Cash Fund.¹¹ The division also houses the Underground Damage Prevention Safety Commission, overseeing issues related to the 811 call-before-you-dig hotline. Finally, the division enforces National Fire Protection Association codes for aboveground storage tanks that hold between 60 and 660 gallons or 40,000+ gallons when they are installed for retail and non-retail fueling. Online at: ops.colorado.gov.

For data and mapping resources, visit: ops.colorado.gov/Petroleum/DataDocuments.

Colorado Energy Office

The Colorado Energy Office (CEO) is charged with promoting energy development in Colorado. The agency runs a variety of programs, including weatherization assistance, infrastructure build-out for electric vehicles, and clean energy grant programs for a variety of sectors. The agency also intervenes at the PUC on the state's behalf and prepares reporting on prospective energy issues. On the web at: energyoffice.colorado.gov. The office's annual and special reports are available at: energyoffice.colorado.gov/reports.

Department of Local Affairs

Division of Local Government. The Division of Local Government in the Department of Local Affairs (DOLA) administers the Local Government Energy and Mineral Impact Assistance Program, which is the direct distribution of state severance tax and federal mineral lease revenues generated from energy and mineral extraction. This revenue source is discussed in detail in Section II of this handbook. For more information on the direct distribution, visit: cdola.colorado.gov/funding-programs/direct-distribution-severance-tax-federal-mineral-lease. DOLA's most recent direct distribution report is available [here](#).

Department of Public Health and Environment

Air Pollution Control Division. The Air Pollution Control Division (APCD) and the AQCC in the CDPHE consult with the PUC in designing, implementing, and enforcing the state's clean energy plan. They are required to verify any clean energy plan at the PUC designed to achieve at least an 80 percent reduction in greenhouse gas emissions caused by the utility's Colorado retail electricity sales by 2030, relative to 2005 levels.

For more information, visit: <https://www.colorado.gov/pacific/cdphe/greenhouse-gas-reporting-and-hydrofluorocarbons-emission-reduction>.

¹¹Section 8-20.5-103, C.R.S.

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SECTION V: ENERGY AND LOCAL CONTROL

Land Use and Planning

Colorado sets a general statewide framework for land use and energy by providing for the oversight of investor-owned utilities, the use of geothermal resources for commercial purposes, and mineral resources. However, Colorado has no statewide land use plan, and energy producers must meet the planning guidelines set by local governments.

The Local Government Land Use Control Enabling Act¹² authorizes the regulation of land use:

- in hazardous areas;
- in areas where there may be an impact on the community or surrounding areas;
- to protect the environment in relation to oil and gas operations;
- to preserve wildlife habitat and endangered wildlife; and
- to preserve important historical and archaeological areas.

Local governments must consider the health, safety, and welfare of the community when making decisions related to land use. In addition, local governments determine activity zoning and building codes, and create master plans to direct development.

Energy efficiency codes. Colorado has required local governments with building codes to adopt energy efficiency codes for residential and commercial buildings since 1978. Over the years, Colorado required local governments to update these codes and to include specific standards. More recently, House Bill 19-1260 requires local jurisdictions making any changes to local building codes or adopting a building code on or after August 2, 2019, to adopt and enforce an energy efficiency code for commercial and residential structures. Jurisdictions must choose one of the three most recent International Energy Conservation Codes.

Local master plans. Master plans may ensure access to land to: develop solar, wind, or other alternative energy sources; develop commercial mineral deposits; or designate utility corridors to facilitate provision of utilities to all developments in the county or region. An example of a Colorado community with a master plan is Boulder County.

Boulder County. Boulder County's comprehensive plan incorporates a land use code for energy development, including solar, wind, and oil and gas. The county also has a BuildSmart green energy building code to guide residential and commercial development. In 2012, the county developed a sustainable energy plan with communities in the county and surrounding areas to address the effects of climate change by reducing GHG emissions and making the community climate smart. Strategies address the use of energy in homes, businesses, industries, government, and transportation. The sustainability plan was updated in 2018. In 2019, the county passed an ordinance placing a temporary moratorium on oil and gas development. The moratorium is effective through December 31, 2020, with several extensions after its original passage. During operation, the county's oil and gas program focuses on public health, including inspecting facilities for leaks and spills and addressing air quality issues. Information about Boulder County is on the county's planning websites, <https://www.bouldercounty.org/property-and-land/land-use/planning> and <https://www.bouldercounty.org/property-and-land/land-use/planning/oil-gas-development>.

¹²Section 29-20-101, *et. seq.*, C.R.S.

Energy Development

Colorado law defines the parameters and powers available to local governments for energy development, including alternative energy and clean energy programs, oil and gas regulation, and the creation of municipal utilities.

Alternative energy and clean energy programs. The use of landfill gas and solid waste to energy incineration, are alternative and clean energy programs available to local governments. When developing programs local governments can use condemnation to acquire land for facilities, as well as different financing to pay for projects. In addition, local governments may establish local improvement or special improvement districts to create energy efficiency and renewable or clean energy projects. Examples of projects include caulking and insulating to save energy or small wind, biomass, or geothermal systems.

For example, the Eagle Valley Clean Energy Biomass facility is a privately owned power plant in Gypsum. The zoning and land use process was complete in 2012 and the facility was finished in 2013. The power plant generates electricity from the combustion of waste wood and sells the electricity to Holy Cross Energy. The facility utilizes waste wood purchased from Eagle County and the U.S. Forest Service.

New Energy Assistance District. Created in 2013, the statewide New Energy Assistance District facilitates financing for commercial and multi-family property owners to install energy efficiency, water conservation, and other renewable energy improvements in existing and newly constructed properties. Business owners may apply for a loan to implement renewable energy improvements, such as solar power, through the Colorado Commercial Property Assessed Clean Energy (C-PACE) program. While C-PACE is a public-private partnership program established at the state level, local governments are required to opt in to participate in the program by passing an ordinance and creating an agreement with the state. Payment of the loan occurs through a voluntary assessment on the owner's property with the property tax bill. Since 2016, the program has offered \$78.8 million in financing in 29 counties throughout the state.

Oil and gas development. Local governments, in partnership with the state, have authority over oil and gas development. Local regulations may be more restrictive or protective than state regulations. Regulations provide the authority to inspect facilities and impose fines for leaks, spills, or emissions. In addition, communities determine where rigs and wells may be located and may develop or lease lands or real estate. Regulations must be reasonable and necessary to protect public health, safety, welfare, and the environment and wildlife. The technical review board at the COGCC may review local decisions, if requested. See Section IV of this handbook for more information about the role of the COGCC.

Several jurisdictions have temporarily paused oil and gas development in their communities, such as the town of Berthoud, while others, such as Weld County, have created guidelines for oil and gas development and operation. Weld County established an Oil and Gas Energy Department in 2019 to establish local control over mineral resources within the county. Department information is on the county website, https://www.weldgov.com/departments/oil_and_gas_energy. The county produces nine out of ten barrels of Colorado's crude oil and is the number one natural gas producer in the state.

The county exercises its authority in its comprehensive plan by focusing on private property rights; respect for agricultural traditions; fairness in land use change; recognition of county diversity; regulations for land use that protect the private property owner and the health, safety, and welfare of the community; and economic growth. Proposed changes and the current plan are on the county website, https://www.weldgov.com/departments/planning_and_zoning/long-range_planning. Local governments within the county have also pursued renewable energy, such as wind and solar farms, ethanol, and landfill to gas production.

Municipal utilities. Municipalities may form utilities or cooperative electric associations to produce energy for local residents and businesses. Utilities acquired or developed by municipalities include gas, electric, or a combination of gas and electric plants. Municipalities may use eminent domain powers to condemn property for public works or infrastructure. Section I of this handbook includes a discussion of municipal utilities and includes a map with locations of municipal utilities and cooperative electric associations.

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APPENDIX A: RECENT ENERGY-RELATED LEGISLATION

Bill Number and Title	Summary
2020	
House Bill 20-1155 Higher Efficiency New Construction Residence	This bill requires a home builder to offer a buyer of a new home one of the following: an electric vehicle charging system, prewiring for the future installation of such a system, or a plug-in receptacle in a place accessible to a vehicle parking area. The bill also requires a home builder to offer a buyer an electrical heating system.
House Bill 20-1225 Cooperative Electric Utilities Reasonable Rates Energy	This bill prohibits a wholesale electric cooperative from subjecting the installation, interconnection, or use of an energy storage system by a retail cooperative electric association to any unjust, unreasonable, discriminatory, or preferential charge, classification, contract, fare, fee, practice, rate, regulation, rule, schedule, service, or toll. The bill also makes the withdrawal of a retail cooperative electric association from membership in a wholesale electric cooperative a matter of statewide concern for which the Public Utilities Commission (PUC) has authority to adjudicate complaints.
Senate Bill 20-030 Consumer Protections for Utility Customers	This bill imposes various requirements on public utilities and the PUC in the Department of Regulatory Agencies related to information reporting, billing, and customer interactions.
Senate Bill 20-124 School Construction Guideline Utility Consultation	Under current law, the Building Excellent Schools Today (BEST) program uses established guidelines to consider when reviewing applications for grant funding from the Public School Capital Construction Assistance Fund. This bill adds consulting with the local electric utility on beneficial electrification and distributed generation opportunities to the guidelines.
Senate Bill 20-167 Electric Motor Vehicle Manufacturer and Dealer	This bill creates an exception under current law that allows a manufacturer that only manufactures electric vehicles and has no franchised dealers of the same line-make in Colorado to own, operate, or control a motor vehicle dealer.
2019	
House Bill 19-1003 Community Solar Gardens Modernization Act	This bill increases the maximum size of a community solar garden and allows the PUC to increase the size up to ten megawatts. The bill also modifies community solar garden requirements.
House Bill 19-1159 Modify Innovative Motor Vehicle Income Tax Credits	This bill extends the state income tax credit for purchases and leases of electric, plug-in hybrid electric, and hydrogen vehicles through 2025.
House Bill 19-1198 Electric Vehicle Grant Fund	This bill expands the use of the Electric Vehicle Grant Fund, which is administered by the CEO. Under the bill: the funds may be used for CEO program administration costs; CEO may prioritize grants based on criteria it defines; grants may cover operating costs of EV charging stations in addition to installation; and the fund is continuously appropriated to the CEO.
House Bill 19-1231 New Appliance Energy And Water Efficiency Standards	This bill adopts water and energy efficiency standards for certain consumer and commercial appliances and products, and requires the CDHPE to publish the standards
House Bill 19-1260 Building Energy Codes	This bill requires local jurisdictions to adopt one of the three most recent versions of the IECC upon updating any other building code.

APPENDIX A: RECENT ENERGY-RELATED LEGISLATION (CONT.)

Bill Number and Title	Summary
2019 (Cont.)	
House Bill 19-1261 Climate Action Plan to Reduce Pollution	This bill sets statewide greenhouse gas pollution reduction goals relative to 2005 statewide greenhouse gas pollution levels and requires the AQCC to adopt rules and regulations for statewide greenhouse gas pollution reduction.
House Bill 19-1314 Just Transition from Coal-based Electrical Energy Economy	This bill creates the Just Transition Office in the Colorado Department of Labor and Employment to oversee the creation of a just transition plan that will assist communities and workers whose coal-related industries and jobs are subject to significant economic transition.
Senate Bill 19-077 Electric Motor Vehicles Public Utility Services	This bill allows a public utility to apply to the PUC to provide electric vehicle charging services as regulated or unregulated services and allows utilities to recover costs of electric vehicle charging system investment.
Senate Bill 19-181 Protect Public Welfare Oil and Gas Operations	This bill reauthorizes the COGCC, changes the requirements for appointed members, and grants new authorities. The bill gives local governments the authority to regulate the surface impacts of oil and natural gas operations in a reasonable manner and to protect and minimize adverse impacts to public health, safety and welfare, and the environment.
Senate Bill 19-236 Sunset PUC	This bill continues the PUC through September 1, 2026; implements several recommendations from the sunset review; and makes changes to state energy policy.
2018	
House Bill 18-1098 Roll Over Year-end Balance Environmental Response Account	Under current law, the COGCC uses funds from the environmental response account of the Oil and Gas Conservation and Environmental Response Fund to mitigate the adverse environmental impacts of oil and gas operations. This bill specifies that the year-end balance of the account remains in the account and does not transfer to the fund.
House Bill 18-1270 PUC Evaluation of Energy Storage Systems	This bill directs the PUC to adopt rules establishing mechanisms for the procurement of energy storage systems by investor-owned utilities, based on an analysis of benefits and costs.
House Bill 18-1271 PUC Electric Utilities Economic Development Rates	This bill allows the PUC to approve, and IOUs to charge, a discounted economic development rate for commercial and industrial users who locate or expand their operations in Colorado and add at least three megawatts of new load at a single location.
Senate Bill 18-003 Colorado Energy Office	This bill reauthorizes the CEO, modifies fund requirements, repeals several inactive CEO programs, and creates new requirements.
Senate Bill 18-009 Allow Electric Utility Customers to Install Energy Storage Equipment	This bill directs the PUC to adopt rules regarding the use of distributed energy storage systems by customers of Colorado's IOUs.
Senate Bill 18-230 Modify Laws Drilling Units Pooling Orders	This bill permits the COGCC to authorize more than one drilling unit in a pooling order for oil and gas resources.

APPENDIX A: RECENT ENERGY-RELATED LEGISLATION (CONT.)

Bill Number and Title	Summary
2017	
House Bill 17-1116 Continue Low-income Household Energy Assistance	This bill extends authorization for the use of Severance Tax Operation Fund moneys for low-income energy assistance programs through FY 2023-24.
House Bill 17-1227 Electric Demand-side Management Program Extension	This bill extends the demand-side management programs established by the PUC in 2007 until 2028, and requires the PUC to set new goals for demand-side management programs implemented between 2019 and 2028 of a 5 percent reduction in peak demand and energy sales relative to 2018 levels.
Senate Bill 17-105 Consumer Right to Know Electric Utility Charges	This bill requires IOUs to provide comprehensive billing statements to their customers. The PUC must review all new billing statement formats.
Senate Bill 17-179 Fee Limits for Solar Energy Device Installations	This bill extends the fee limit amount that the state, counties, or municipalities can charge for permit, application review, and plan reviews on applications for the installation of a solar energy device or system to July 1, 2025.
Senate Bill 17-271 IOU Cost Recovery Transparency	This bill requires the PUC to evaluate IOUs' current service extension policies for serving new load applications through a non-adjudicatory proceeding. The PUC may promulgate rules related to the findings of this proceeding.
2016	
House Bill 16-1035 PUC Approval of Securities Only for Gas & Electric	This bill clarifies that only public electric and gas utilities are required to apply to the PUC for approval to issue or assume securities.
House Bill 16-1053 Retail Hydrogen Fuel Systems Regulation	This bill requires the Division of Oil and Public Safety in the Department of Labor and Employment to promulgate rules concerning the retail sale of hydrogen fuel for vehicles. The rules must establish minimum design, construction, location, installation, and operation standards, conforming to the minimum standards prescribed in the National Fire Protection Association's national fire code.
House Bill 16-1091 Change Due Dates for Electric Utility Transmission Plans	This bill changes the submission date of rate regulated electric utilities' plans, designations, and applications for certificates of public convenience and necessity to the PUC to on or before October 31 of each odd-numbered year.
Senate Bill 16-055 Rural Electric Cooperative Election Procedures	Under current law, cooperative electric associations (CEA) must contract with an independent third party to collect and county ballots for board elections. This bill allows ballots to be mailed directly to the third party and states that a mail ballot sent in a signed envelope without the security sleeve or inner envelope is valid and must be counted.
Senate Bill 16-166 Transportation Fuel Distributors' Tax Liens	This bill allows a fuel distributor to file a lien against a fuel retailer for any unreimbursed gasoline and special fuel taxes that the distributor pays to the Department of Revenue. It also establishes the priority for the lien and requirements for filing and enforcing the lien.

APPENDIX A: RECENT ENERGY-RELATED LEGISLATION (CONT.)

Bill Number and Title	Summary
2015	
House Bill 15-1012 Sales and Use Tax Exemption for Dyed Diesel	This bill expands the sales and use tax exemption for dyed diesel fuel. It also exempts dyed diesel from sales taxes levied by counties and cities.
House Bill 15-1121 Wind Energy Development Agreement	This bill modifies statute concerning wind energy agreements between surface estate owners and wind energy developers. This bill establishes that until an agreement is recorded with the office of the county clerk and recorder, the agreement is not binding on anyone other than the parties to the agreement and those with notice of the agreement.
House Bill 15-1219 EZ Investment Tax Credit for Renewable Energy	This bill allows a taxpayer who places a renewable energy project in an enterprise zone and receives certification to claim an Enterprise Zone Investment Tax Credit for the project an option to receive a refund of the credit. The bill also requires the Office of Economic Development to annually post on its website the level of renewable energy investment and other information resulting from the refund.
House Bill 15-1228 Special Fuel Tax on Liquefied Petroleum Gas	This bill makes several changes to the administration and collection of the special fuel excise tax on liquefied petroleum gas, beginning in calendar year 2016.
House Bill 15-1284 Expand Scope Shared Photovoltaic Facilities.	This bill eliminates population requirements for subscribers to join community solar gardens that are not in their county of residence.
House Bill 15-1364 Limited Scope Inspections Hydroelectric Projects	This bill clarifies that if a microhydro system, defined as a hydroelectric system that generates 100 kilowatts or less, uses an inverter for interconnection service, the inspector must deem the system's equipment compliant with the National Electric Code.
House Bill 15-1372 Raise the Public Utility Fee Cap	This bill raises the statutory limit on the rate of fixed utility fund assessments for electric and natural gas utilities to 0.25 percent of gross revenue.
House Bill 15-1377 Cooperative Electric Associations Obtaining Renewable Energy Credits	This bill allows the generation from shared generation facilities using other renewable energy technologies, including small wind, small hydroelectric, geothermal, and biomass, to count against the retail distribution requirements for a CEA's distributed generation requirement.
Senate Bill 15-046 Renewable Energy Standard Attainment Cost Reduction	This bill reduces the retail distributed generation requirement for CEAs by allowing them to first net out industrial retail sales from total retail sales, and allows CEAs to use generation purchase from community solar gardens to count as retail distributed generation.
Senate Bill 15-254 REA Renewable Energy STD New Solar Extend Date	This bill extends the deadline for municipally owned utilities to apply a three-times multiplier to each kilowatt-hour of electricity generated from solar electric generation technologies to December 31, 2016.
Senate Bill 15-261 Public Utility Public Notice	This bill eliminates the requirement that the PUC conduct a formal proceeding to approve alternative notice periods. Instead, the utility will file a motion within an existing proceeding.

APPENDIX B: GLOSSARY

Carbon dioxide equivalent (CO₂e). Carbon dioxide equivalent is the metric used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP, see below). The carbon dioxide equivalent is determined by multiplying the mass amount of emissions (e.g., tons per year) for each greenhouse gas by that gas's GWP, and summing the resultant values to determine CO₂e (e.g. tons per year). This allows for comparison of the global warming impacts of different gases.

Common source of supply. Synonymous with "pool."

Energy efficiency code. Minimum requirements or a subset of building codes governing the construction of new and renovated buildings, ensuring reductions in energy use and emissions over the life of the building. The codes help guarantee building durability and structural integrity, protect public health and safety through better moisture management to prevent mold, mildew, and rot; support airflow management; and establish protections for severe weather conditions. The goal is to make buildings more comfortable and cost-effective to operate, in conjunction with energy, economic and environmental benefits.

Emissions sectors. GHG emissions reports analyze the impacts on emissions across a number of sectors, as defined in the Colorado Greenhouse Gas Inventory. The Colorado Greenhouse Gas Inventory, developed by the Colorado Department of Public Health and Environment, utilizes the U.S. Environmental Protection Agency's State Inventory Tool modules, developed for the individual emissions sectors identified above. These emissions sectors align with the source categories defined in the IPCC Guidelines for National Greenhouse Gas Inventories. Each emissions sector is defined in the table below.

Emissions Sector	Description of GHG Emissions Sector
Electric Power	The electric power sector generates, transmits, and distributes electricity to residential, commercial, and industrial end users.
Transportation	The transportation sector includes combustion emissions from all motorized vehicles for on-highway and off-highway (e.g., boats, aircraft) use of transporting people and/or goods.
Residential, Commercial, and Industrial Fuel Use	Fuel use includes the combustion of fuels in residential, commercial, and industrial sectors for heating and various commercial purposes. Industrial fuel use also includes fossil fuels used for non-combustion purposes, such as in the production of lubricants, solvents, and as feedstocks for asphalt and road oil.
Natural Gas and Oil Systems	The natural gas and oil systems sector includes the extraction, processing, transportation, and distribution of natural gas and oil.
Coal Mining and Abandoned Mines	The mining sector includes active and abandoned surface and underground coal mines, as well as the processing, transportation, and storage of coal.
Agriculture	The agriculture sector includes emissions from livestock and crop production activities, including enteric fermentation, manure management, agricultural soil management, and agricultural residue burning.
Industrial Processes	Industrial processes include the manufacturing of products such as steel, cement, aluminum, lime, soda ash, and nitric acid. Greenhouse gases are emitted as byproducts of non-energy related industrial activities, or due to their use in manufacturing processes or by end-consumers.

APPENDIX B: GLOSSARY (CONT.)

Greenhouse gas. Greenhouse gases (GHG) are the aggregate group of the following six greenhouse gases: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Land use. Land use refers to the planning for and regulation of the activities on a surface area, not including water. Through the control of land use, local governments provide for a planned and orderly development within their jurisdictions, balancing the basic human needs of a changing population with legitimate environmental concerns.

Master plan. A master plan is a local advisory document to guide physical land development and decisions, including activities allowed. Usually adopted into land use planning policies and ordinances for regulatory and enforcement purposes.

Pool. Synonymous with "common source of supply," pool means an underground reservoir containing a common accumulation of oil or gas, or both.