

# DECEMBER 2024

# KEY TRENDS IN COLORADO'S ENERGY LANDSCAPE

AUTHORS: TRISHA CURTIS & ERIK GAMM

# **ABOUT THE AUTHORS**



### Trisha Curtis is the Common Sense Institute Energy Fellow

Trisha Curtis is the President and CEO of PetroNerds, LLC. She founded the company and began running it out of Denver, Colorado in 2016. She is a macroeconomist with extensive expertise in US shale, geopolitics, and China. She was formerly the Director of Research, Upstream and Midstream, at the Energy Policy Research Foundation, Inc. (EPRINC) in Washington, DC. Since 2010, she has led extensive research efforts and major consulting projects and authored several reports on the North American upstream and midstream markets for government agencies, global think tanks, and corporations.



### Erik Gamm – Senior Research Analyst

Erik Gamm is a Senior Research Analyst with Common Sense Institute. Erik joined CSI in 2020 after graduating from the University of Michigan with a BA in Economics.

# **ABOUT COMMON SENSE INSTITUTE**

**Common Sense Institute** is a non-partisan research organization dedicated to the protection and promotion of Colorado's economy. CSI is at the forefront of important discussions concerning the future of free enterprise and aims to have an impact on the issues that matter most to Coloradans. CSI's mission is to examine the fiscal impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI employs rigorous research techniques and dynamic modeling to evaluate the potential impact of these measures on the economy and individual opportunity.

# **TEAMS & FELLOWS STATEMENT**

CSI is committed to independent, in-depth research that examines the impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI's commitment to institutional independence is rooted in the individual independence of our researchers, economists, and fellows. At the core of CSI's mission is a belief in the power of the free enterprise system. Our work explores ideas that protect and promote jobs and the economy, and the CSI team and fellows take part in this pursuit with academic freedom. Our team's work is informed by data-driven research and evidence. The views and opinions of fellows do not reflect the institutional views of CSI. CSI operates independently of any political party and does not take positions.

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# INTRODUCTION

Colorado, like many states in the Rocky Mountains, is rich in natural resources. However, policies in Colorado focused on reducing CO2-emissions are increasingly dictating energy production, energy use, and energy prices.

Aggressive emissions-reduction requirements put in place by 2019 legislation require Colorado to reduce CO2 equivalent emissions by 80% in the power sector and 50% across all sectors against 2005 levels by 2030. The Administration has also released two policy "roadmap" reports on policies aimed at achieving these target reductions. The first was done during the height of the pandemic in 2021 and reflects the realities of the time. The second one was released in February 2024 and outlines aggressive policies to cut CO2 emissions but does not address grid and power reliability, major cost factors for aggressively reducing emissions, nor Colorado's role in global CO2 emissions. It also does not address Colorado's ability to compete with other states as the costs of heating and fueling homes, transportation, and manufacturing in Colorado are all underpinned by energy prices, access, and reliability.

This report outlines several of the biggest trends influencing the cost and availability of energy in the state:

- Colorado's greenhouse gas emissions in context of global CO2 emissions
- The recent and impending shifts in Colorado electricity fuel sources
- Colorado's production of traditional fuels

A great deal of policy attention is focused on CO2-emission reduction and removal of traditional fuels, such as coal and natural gas, from the electricity pool. Anti-hydrocarbon legislation limiting the permits of oil and gas drilling in Colorado has impacted oil and gas production volumes in the state and left Colorado in a less competitive position relative to other producing states in the country. This report is designed to explain the underlying data and how these current trends will impact Coloradans into the future.

# Three Key Trends

- Emissions Colorado's CO2 emissions have declined in recent years but this reduction has been met with rising electricity prices. The 118 million metric tons of CO2 emitted from Colorado annually is just 0.2% of the 40,000 million metric tons of global CO2 emissions. Therefore, even a 100% reduction in Colorado state emissions would have no discernible impact on global CO2 emission levels, nor US emission levels. In fact, as US states and other Western countries aggressively decommission coal-fired power generation, countries like China have kept adding more of it, more than offsetting the reductions taking place in Colorado, the US, Europe, and elsewhere.
- 2. Electricity Capacity, Generation and Prices Colorado electricity prices grew by 12%, from 9.15¢/kWh to 10.27¢/kWh, between 2010 and 2020. Colorado electricity prices grew by 15%, from 10.27¢/kWh to 11.8¢/kWh, between 2020 and 2023. One third of Colorado's power generation comes from coal, which is slated to be fully decommissioned within the next seven years. Since 2010, the share of electricity generated from coal has decreased from 68% to 33%, while wind and solar power generation combined has increased from 7% to 34%. From 2010 to 2023, electricity prices increased by 20.4%, from 9.8¢/kWh to 11.8¢/kWh. Since 2019, the share of electricity generated from coal has decreased from combined has increased from coal has decreased from 21% to 34% while prices rose from 10.2¢/kWh to 11.8¢/kWh. The period between 2021 and 2023 also experienced high inflation.
- 3. Oil and Gas Production While US production of oil and gas has grown to record highs in the past two years, 13.2 million barrels per day currently, Colorado production has been rangebound between 400,000 and 500,000 barrels per day. Colorado's production peaked in October of 2019 at 568,000 barrels per day. This peak corresponds with both oil prices and 2019 legislation, SB19-181, which severely limits the permitting of new oil and gas wells in Colorado. Oil production declined and bottomed out in March of 2021 to 387,000 barrels per day due to COVID-19–related price disruption. While production has returned to 477,000 barrels per day, it is not proportional to US production growth, nor is it in line with the capacity and quality of Colorado's geology and ability to produce.

# **COLORADO CO2 EMISSIONS**

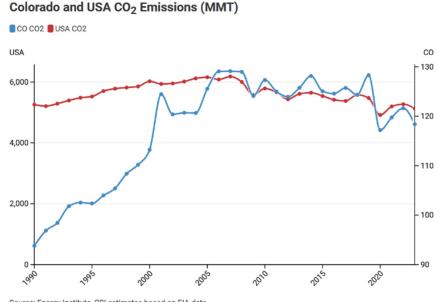
Colorado accounts for just .2% of global CO2 emissions and only 2.3% of US emissions. It is important to put Colorado's emissions in the context of the US and the world considering the aggressive policy focus in Colorado on CO2-emissions reduction, which is being prioritized above affordability, reliability, and energy security. Colorado emissions have declined, in line with the overall decline in the US, primarily on the back of natural gas additions to power generation and the removal of coal-fired power generation. Given how small Colorado's portion of US and global emissions is, however, Colorado emission reductions are not making a dent in global CO2 emissions and are negligible at best for aiding the reduction of US CO2 emissions.

As states like Colorado and countries in Europe reduce CO2 emissions, largely by decommissioning coal-fired power plants and local manufacturing, global emissions have increased as China and India continue to add considerable volumes of coal-fired power generation to maintain global competitiveness in manufacturing. Global coal consumption is now at record highs given its competitive cost and energy security advantages.

Global CO2 emissions are over 40,000 million metric tons (MMT) and rising; China accounts for nearly 13,000 MMT and is rising while the US emits just above 5,000 MMT—a level not seen since the 1990s and is declining. Colorado emits only 118 of the 40,000 MMT of CO2 emissions globally. Colorado CO2 emissions could decline to zero tomorrow with no impact on global emissions.

**Figure 1** shows historical Colorado CO2 emissions from 1990 compared to historical US emissions. Colorado's emissions

### **FIGURE 1**



Source: Energy Institute, CSI estimates based on EIA data

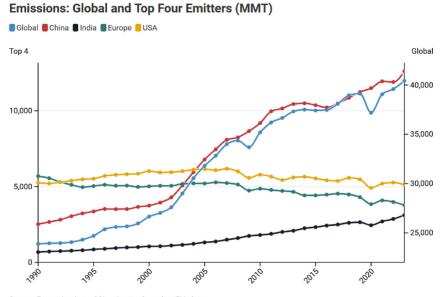
are measured on the right axis. The data clearly shows that current US CO2 emissions levels are below 1990 levels and both the US and Colorado emissions are below 2005 levels. Colorado needs to get from the current 118 MMT to under 75 MMT by 2030.

**Figure 2** shows historical global CO2 emissions on the left axis and the top four emitters, China, the US, Europe, and India, on the right-hand axis. China's CO2 emission level is rising aggressively while emissions from the US and Europe are declining. Of the 40,418 million metric tons of CO2 emissions, Chinese CO2 emissions are 12,604 MMT, Europe 3,776 MMT, the US5,130 MMT, and India 3,122 MMT.

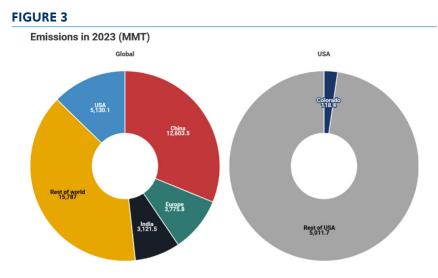
**Figure 3** shows the volume of global CO2 emissions in the world and each of the top four emitters alongside Colorado's share of US emissions in a pie chart form.

**Figure 4** shows the same data as Figure 3 converted to percentages.

### **FIGURE 2**

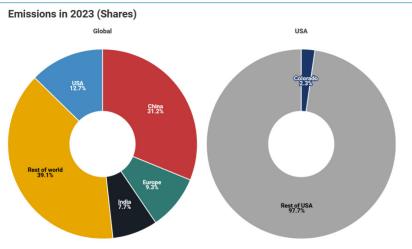


### Source: Energy Institute, CSI estimates based on EIA data



Sources: Energy Institute, CSI estimates based on EIA data

### **FIGURE 4**



Sources: Energy Institute, CSI estimates based on EIA data

# COLORADO CO2 EMISSIONS AND ELECTRICITY PRICES

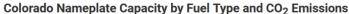
In Colorado, policy making and initial efforts to reduce CO2 emissions have focused extensively on electricity. Colorado's emission levels have only modestly declined despite the aggressive addition of wind into Colorado's grid evident in both historical nameplate capacity and power generation by fuel source.

**Figure 5** shows historical nameplate electricity capacity by fuel source and historical CO2 emissions dating back to 1990 (nameplate capacity is not use, which is measured by generation data). There was a steady rise in Colorado CO2 emissions through the late 1990s, which largely turned into a rangebound plateau between 2000 and 2019 even as the fuel sources of nameplate capacity began to shift.

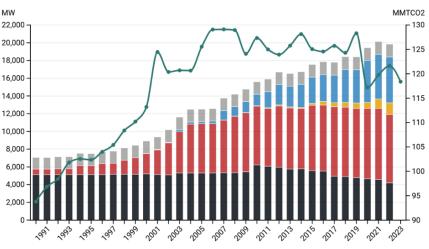
**Figure 6** below shows direct comparisons between Colorado's nameplate electrical power capacity by fuel source and electrical power generation by fuel source. Unfortunately, there is not a data set dating back to 1990 for power generation, as there is for nameplate capacity. In this comparison, it is easier to see that actual power generation by fuel source has shifted considerably in the past few years while

emissions have only recently declined. CO2 emissions fell significantly in 2020, due to COVID-19 policy measures, before climbing slightly through 2022 and decreasing again in 2023. The charts for nameplate capacity and actual power generation show the addition of wind and solar into the grid and the decline in coal-fired power generation. However, it seems that the decline in coal-fired generation has more to do with emissions reductions than the addition of wind and solar power.

### FIGURE 5







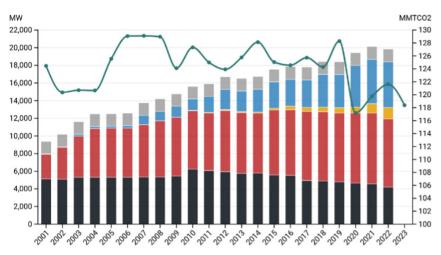
Sources: EIA, CSI estimates based on Energy Institute data • \* Hydroelectric, pumped storage, petroleum, and biomass

The modest reductions in Colorado CO2 emissions correspond with increases in electricity prices, indicating that the cost for reducing coal use and increasing wind and solar use contribute to rising electricity prices. Figure 7 shows Colorado CO2 emissions and Colorado electricity prices dating back to 1990. The recent decline in CO2 emissions is met with a significant uptick in electricity prices. Colorado emissions have declined from 128.3 MMT in 2019 to 118.4 MMT in 2023 while electricity prices have risen from 10.2¢/kWh in 2019 to 11.8 in 2023.

### FIGURE 6

### Colorado Nameplate Capacity by Fuel Type and CO<sub>2</sub> Emissions

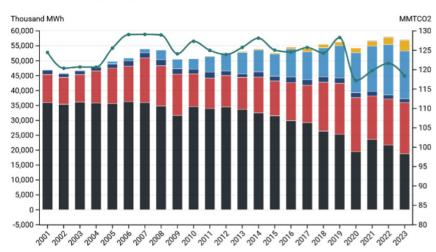
🛢 CO2 emissions 🛢 Coal 📒 Natural gas 📒 Solar 📒 Wind 📗 Other\*



Sources: EIA, CSI estimates based on Energy Institute data • \* Hydroelectric, pumped storage, petroleum, and biomass

### Colorado Electricity Generation by Fuel Type and CO<sub>2</sub> Emissions

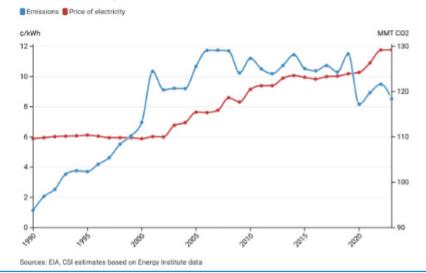




Sources: EIA, CSI estimates based on Energy Institute data \*\* Petroleum, pumped storage, biomass, and other gases

### **FIGURE 7**

### **Colorado Electricity Prices and CO2 Emissions**



# COLORADO ELECTRICAL POWER GENERATION AND ELECTRICITY PRICES

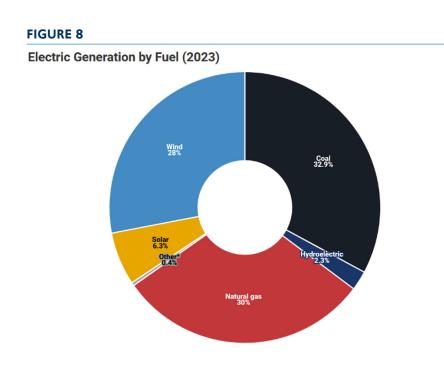
When discussing energy and power it is important to clarify what fuel sources are being used to generate electricity. As of 2023, coal accounted for 32.9% of Colorado power generation while natural gas accounted for 30%, wind accounted for 28%, and solar for 6.3%. This large chunk of coal-fired power generation is important to appreciate and address in the context of Colorado policy focused on CO2-emission reduction that plans to retire all coal generation between 2025 and 2031; this means that one third of Colorado's power generation is planned to be removed in the next few years, largely without concrete plans to replace it.

Figure 8 shows Colorado's percentage shares of power generation by fuel source in 2023.

The following map and table, **Figure 9**, shows all Colorado coal-fired power plants and their respective capacities and year of planned decommissioning. Each of these plants is slated for decommissioning in the next several years, beginning in 2025 with the Pawnee Station and its 505MW of capacity. In total, over 3,500MW are planned to be decommissioned by 2031.

Existing reductions in Colorado coal fired power generation along with additions of wind and solar power coincide with visible price increases, especially in the past four years.

Alongside Colorado, the whole of the US has experienced substantial electricity price increases—more than 30% since 2020, according to the Bureau of Labor Statistics, rising from 13 cents per kWh to 18 cents per kWh from 2020 to 2024. This price increase is significantly above the high inflation levels seen in the US

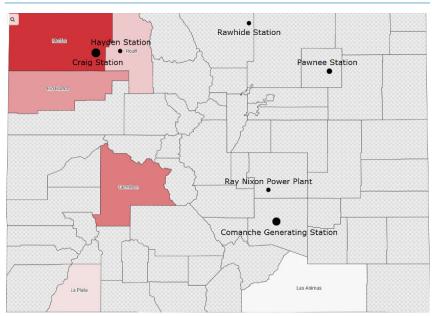


since 2021 and far above the Federal Reserve's 2% inflation target. US inflation peaked in June of 2022 at 9.1%, but electricity inflation peaked in August of 2022 at 15.8%. It declined to 2.1% in August of 2023 only to rise to 5.8% in May of 2024, well above overall inflation levels. In Colorado, the price of electricity rose from an annual average under 10¢/kWh between 2010 and 2020, with almost no inflation on electricity prices, to nearly 12¢/kWh in 2023, according to the EIA. The price of electricity in Denver, according to the Bureau of Labor Statistics, has risen from over 13¢/kWh in 2020 to 18 in 2024.1 The rise in Colorado electricity prices coincides with both a decline in inexpensive coal-fired baseload power generation and an increase in wind and solar power generation. This correlation is seen in US electricity prices and US power generation by fuel and in Europe where wind and solar penetration into the grid correlates to increased electricity prices.

**Figure 10** shows Colorado electricity generation by fuel source and electricity prices.

<sup>1</sup> A chart of historical US and Colorado electricity prices can be found in the appendix.

### **FIGURE 9**



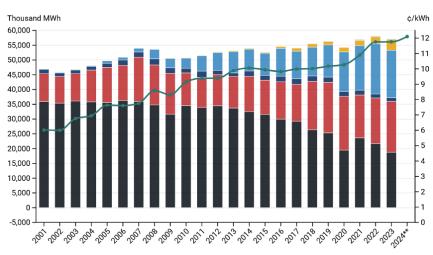
Sources: EIA, The Colorado Sun

Plant	Planned decommissioning year	Capacity (MW)
Craig Station	2030	1,285
Hayden Station	2028	233
Rawhide Station	2030	280
Pawnee Station	2025	505
Ray Nixon Power Plant	2030	207
Comanche Generating Station	2031	1,085
Total:		3,595

### **FIGURE 10**

### Colorado Electricity Price and Generation by Fuel Type

🛢 Price of electricity 🛢 Coal 🛢 Natural gas 🛢 Hydroelectric 🛢 Wind 📒 Solar 🛢 Other\*



Sources: EIA • \* Petroleum, pumped storage, biomass, and other gases \*\* September 12-month trailing average

The data for power generation by fuel source only dates to 2001. The chart clearly illustrates three simultaneous trends: a decline in coal-fired power generation in the past few years, from 25,321 MWh in 2019 to 18,788 MWh in 2023, gradual additions of wind and solar power generation, from 12,070 MWh in 2019 to 19,616 MWh in 2023, and an increase in price, from 10.2¢/kWh in to 2019 to 11.8 ¢/kWh in 2023.

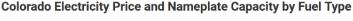
This same trend is more evident in a longer historical chart of Colorado electricity prices and Colorado nameplate power capacity by fuel type. **Figure 11** shows Colorado electricity prices on the right axis and Colorado nameplate power generation capacity by fuel type on the left axis. The capacity increase of wind and solar power along with the gradual decreases of nameplate coal capacity match a significant price spike in electricity prices from 2019 to 2023. Coal power generation capacity declined from 4,792 MW in 2019 to 4,199 MW in 2022 while wind and solar power generation capacity increased from 4,366 MW in 2019 to 6,480 MW in

2022.

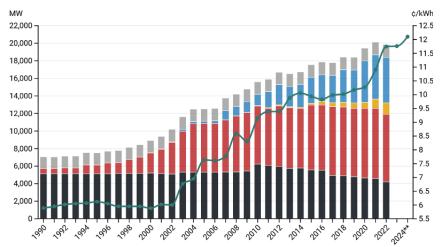
There are several reasons for the associated price increases when decreasing coal capacity and increasing wind and solar capacity. Investment in wind and solar requires redundancy and significant transmission costs. Coal is an inexpensive and dispatchable baseload power source. The increase of nameplate power capacity coming from intermittent and less reliable power sources like wind and solar inherently reduces grid reliability and increases costs as Colorado baseload power from coal is being replaced with less dispatchable and less reliable power sources.

Coal has been shunned by US and Western governments due to its CO2-emission profile in comparison to other fuels (in addition to other pollutants and air quality), but its price and its solid rock form make its role in electricity prices and energy security indispensable in both affordability and reliability. **Figure 12** is a chart of Colorado and US electricity prices and

### FIGURE 11





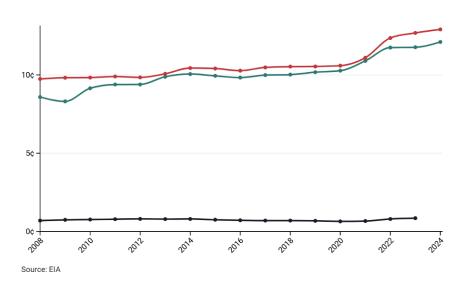


Source: EIA • \* Hydroelectric. pumped storage. petroleum. and biomass \*\* September 12-month trailing average

### FIGURE 12

### Electricity and Coal Prices in Colorado and the USA (¢/kWh)

Average price of electricity (CO)



the price of coal for electricity in the US.

Oddly, due to Colorado's emission reduction goals, natural gas, which is more energy-dense and cleaner than coal from a CO2 emission perspective, has a smaller share of actual power generation than coal. The role of natural gas in power generation and direct home use is critical in Colorado and the US, but aggressive CO2 emissions-reduction policies and the difficult policy landscape associated with natural gas and coal stymie the growth of natural gas usage in Colorado and, in turn, the state's ability to provide

a cleaner, more reliable, and cheaper power source than wind or solar. Policymakers and utility providers are reticent to invest and increase natural gas power generation capacity despite its availability, low cost, and power density in comparison to wind or solar.

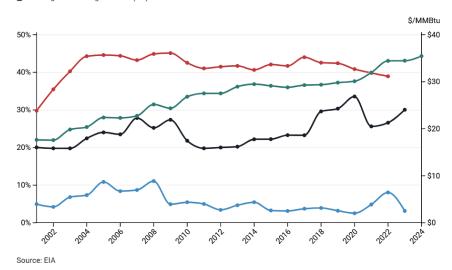
Natural gas' role in power generation and nameplate capacity is critical to discuss for a few reasons: natural gas, like coal, provides the US and Colorado with a reliable and dispatchable baseload power source. The US is the largest producer of natural gas in the world and has abundant production and reserves. Natural gas prices reached record lows in 2024 and natural gas powers half of the US grid, but the price of electricity rose, not fell, in 2024.

Shown in **Figure 13** is natural gas' share of Colorado's electrical power nameplate capacity, 39%, and its share of Colorado's power generation, 30%, on the left axis, and the prices of electricity in Colorado and the price of natural gas from the Henry Hub on the right axis. Despite the large role of natural gas in Colorado's nameplate





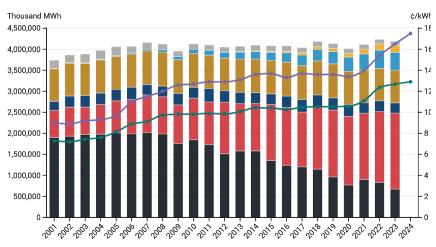




### **FIGURE 14**

### U.S. Electricity Price and Generation by Fuel Type





Sources: EIA. BLS • \* September 12-month trailing average \*\* Petroleum. pumped storage. biomass. and other

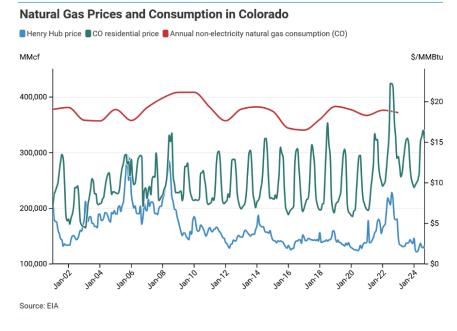
capacity and actual electrical power generation and the low prices of natural gas in the last couple of years, Colorado electricity prices have continued to rise. As described above, this is partly due to the addition of more intermittent sources of electricity like wind and solar, but clearly electric rate payers have not benefited from the low price of natural gas, not being passed along to the consumer via electricity prices. This is seen in the US more broadly given the dramatic escalation in electricity prices and the role of natural gas, which is roughly half of the US grid (**Figure 14**).

**Figure 15** shows Colorado's nonelectric consumption of natural gas and natural gas prices. The left axis shows Colorado's nonelectrical consumption of natural gas, the natural gas used directly by households and businesses through appliances, fireplaces, etc. The right axis shows both Henry Hub natural gas prices and Colorado residential natural gas prices charged to the consumer. This chart and these figures show a dramatic and growing disconnect between the underlying price of natural gas and what the consumer pays for natural gas directly. This disconnect began in 2008 when prices for natural gas dropped but prices charged to the consumer did not decline. More recently, in the past couple of years, as prices for natural gas declined, prices charged for residential natural gas to the consumer rose dramatically.

This is important because unlike crude oil, where consumers feel both inflation and price increases at the pump when oil prices rise, they also feel deflation and lower prices at the pump when oil prices decline. The dramatic decreases in natural gas pricing due to the abundance of natural gas being produced in the

US is not being passed along to the consumer, in Colorado or the US more broadly. Recent price spikes in residential natural gas prices are partly attributable to storms in Texas during 2021 and the beginning of the war in Ukraine in 2022; however, the decline in natural gas prices, below \$2 per MMBTU in 2024, has not been passed along to the consumer. In fact, residential prices for natural gas in both Colorado and the US have continued to rise in recent years, while Henry Hub prices have declined. This suggests that other factors, either regulatory or utility-driven, are sustaining

### FIGURE 15



higher consumer prices even as wholesale prices of natural gas have fallen.

# COLORADO'S PRODUCTION OF TRADITIONAL FUELS

Colorado oil, natural gas, and coal production are important revenue sources and offer meaningful energy security. As Colorado implements aggressive policies aimed at reducing CO2 emissions, coal production and oil and gas production are taking a hit. This is despite these traditional fuels making up over 80% of global primary energy consumption in 2023 (Energy Institute). Production of Colorado energy impacts Colorado residents' access to energy, their price of energy, and, in turn, Colorado's economic competitiveness, Colorado's energy security, and US energy security.

The following sections summarize the current state of Colorado oil, natural gas, and coal production.

Colorado produces nearly half a million barrels of oil per day and almost 5 billion cubic feet per day of natural gas. Despite the passage of SB19-181, which severely limits the ability to permit drilling for oil and gas wells in Colorado, the Colorado oil and gas production base remains one of the largest in the country and larger than those of some small OPEC producing countries like Gabon and the Republic of Congo.

Colorado's oil and gas production speaks to the incredible geology and resource base within the state, but the flat and rangebound production in Colorado despite the rise in oil prices since 2020 illustrates the harsh regulatory environment oil and gas operators face. Operators can get permits, but permitting is far more difficult and permitting has been dramatically reduced since the passing of SB19-181, limiting the ability of operators to do business and invest in Colorado. This is despite the failed passage of Proposition 112 in Colorado in 2018, which would have instituted extreme setback requirements and severely reduced oil and gas drilling.

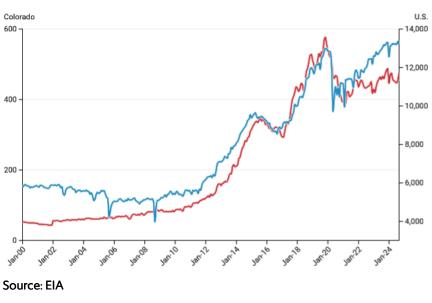
While US production of oil and gas has grown to record highs in the past two years, 13.2 million barrels per day currently, Colorado production has been stuck between 400,000 and 500,000 barrels per day. Colorado production peaked in October of 2019 at 568,000 barrels per day then bottomed out in March of 2021 at 387,000 barrels per day due to demand shocks in 2020. Although some production has returned, it is not in line with the growth in the US. This is due to permit approvals limitations in Colorado, reduced investment, and forced consolidation to access and acquire permits. Colorado oil and gas production is limited by a restrictive regulatory environment and access to permits, not by the resource potential of the rock.

The following chart, Figure 17, shows historical US and Colorado oil production. US oil production is on the right axis and Colorado production is on the left axis.

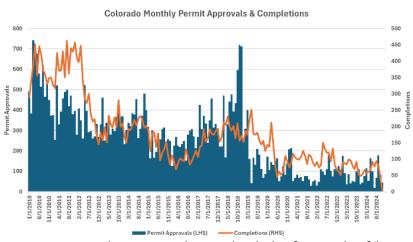
### **FIGURE 17**

### U.S. and Colorado Crude Oil Production (Mbbl/d)

🛢 U.S. 🛑 Colorado



### FIGURE 18



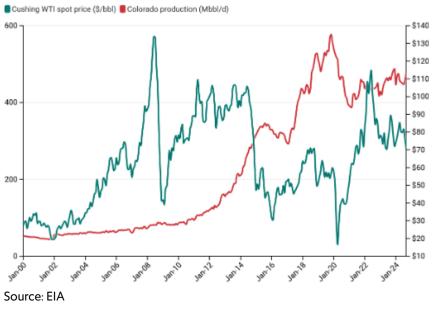
Source: Enverus raw data, PetroNerds. Note that the last few months of data are not fully complete due to lags.

**Figure 18** illustrates the dramatic decline in permit approvals in Colorado since the passage of SB19-181 and the subsequent impact on completions (wells being brought online and into production).

# **Figure 19** shows Colorado oil production and oil prices.

### FIGURE 19

### Colorado Oil Production and Crude Oil Price



### **FIGURE 20**

### **Detailed Colorado Oil Production and Crude Oil Price** Cushing WTI spot price (\$/bbl) Colorado production (Mbbl/d) Denver-Julesburg Basin production Weld County production 600,000 \$14C \$130 \$120 \$110 \$10C 400,000 \$80 \$70 \$60 200,000 \$50 \$40 \$30 \$20 \$10 anil ŝ Ŷ

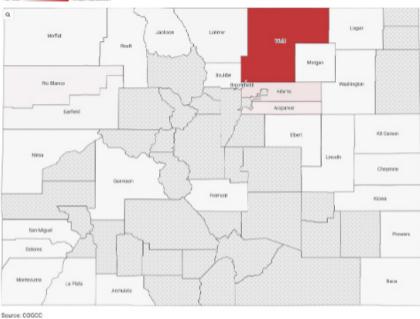
Source: Enverus and EIA

**Figure 20** shows Colorado oil production and the volume of Denver–Julesburg Basin production as well as the volume of oil production from Weld County. The Denver– Julesburg Basin is the state's largest basin contributor for oil-production and covers Weld County, northern Colorado, and portions of southeast Wyoming and eastern Nebraska. Weld County produces the most oil in Colorado. **Figure 21** is a heat map of Colorado oil production by county, illustrating the above chart in map form.

### FIGURE 21

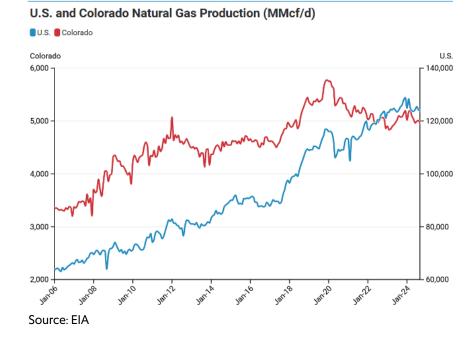
### Oil Production by County in 2023

121bbl 133,290,823bbl



**Figure 22** shows historical US and Colorado natural gas production. Like oil, as natural gas production has continued to increase in the US, natural gas production growth in Colorado has halted. Natural gas production growth in the US is largely the result of associated gas production which has continued to rise with oil production amid healthy oil prices.

### **FIGURE 22**

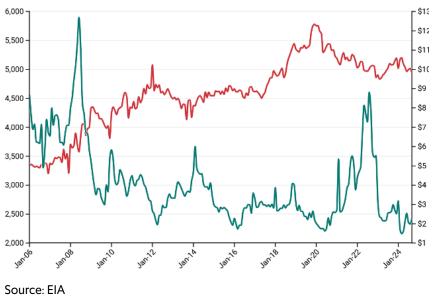


**Figure 23** shows Colorado natural gas production and natural gas prices.

### **FIGURE 23**

### **Colorado Natural Gas Production and Henry Hub Price**

Henry Hub price (\$/MMBtu) Colorado production (MMcf/d)



### FIGURE 24

### **Colorado Natural Gas Production**

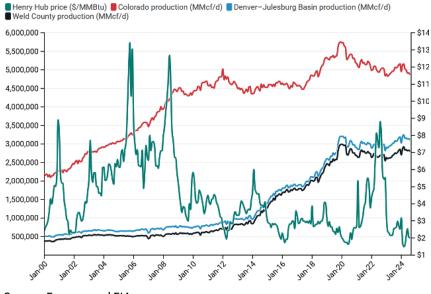


Figure 24 shows Colorado natural gas production, the volume of natural gas coming from the Denver-Julesburg Basin, and production from Weld County. Unlike oil, natural gas production is less concentrated in Weld County and produced throughout the state. While Weld County and the DJ Basin produce a great deal of Colorado's natural gas, Colorado is home to the prolific Piceance Basin in the west, North Park Basin in the north, and the San Juan Basin in the south.

Source: Enverus and EIA

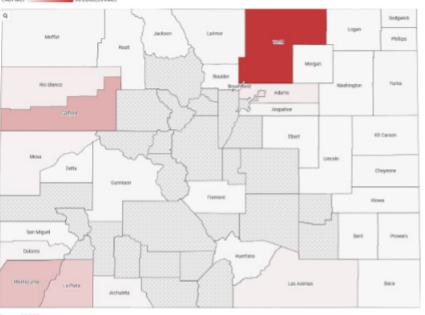
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### **Figure 25** is a heat map of Colorado natural gas production by county.

### FIGURE 25

### Natural Gas Production by County in 2023

1,487Mcf 989,060,399Mcf



Source: COGCC

# COLORADO COAL PRODUCTION

Colorado coal production has declined from 40 million short tons in 2004 to just 12 million short tons in 2023. This decline in production corresponds to the decline in coal prices in the US. Two main factors have impacted coal's production in Colorado and the US more broadly: the shale revolution, resulting in the rise in natural gas production and the decline in natural gas prices, competing with coal for power generation and the policy push for cleaner, lower CO2 emissions and less polluting power generation. While US air quality standards and regulations on pollutants, including NOX and SOX, are the most stringent in the world (meaning that US coal-fired power generation is typically cleaner from a pollution and particulate standpoint than that in the developing world, like China), natural gas offers an extremely abundant, cheap, and energy-dense fuel that is cleaner to burn from a pollutant standpoint and because it is so energy dense, it also inherently produces less CO2 than coal.

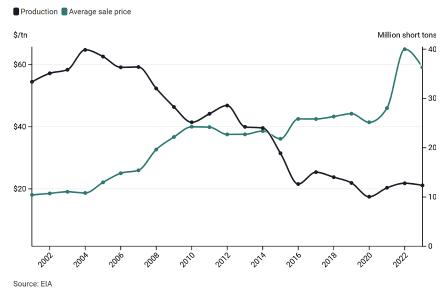
As the above sections on electrical power generation and electricity prices indicate, coal-fired power generation and coal production is still critical to Colorado's and the United States' electric grids. Unlike natural gas, coal is a solid rock that can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored and used whenever it is needed; because of this, it can be stored

help offset price variability in natural gas. The aggressive decommissioning of coal, beginning in Colorado in 2025 and culminating in 2031, has already begun in earnest across the US and is being met by price increases in electricity. Coal's stable, reliable and dispatchable baseload power source is being removed from the grid while wind and solar are being added.

The following chart, **Figure 26**, shows Colorado coal production and Colorado coal prices.

### FIGURE 26

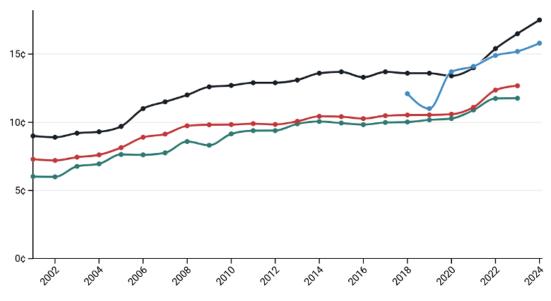
**Colorado Coal Production and Price** 



# APPENDIX: HISTORICAL US AND COLORADO ELECTRICITY PRICES

### Electricity Prices in Colorado and the USA (¢/kWh)

EIA price of electricity (CO)
EIA price of electricity (USA)
BLS May price of electricity (Denver MSA)



Source: EIA, BLS