

# Wyoming's Changing Coal Mining Industry

Presented by Tony Glover, Manager, and Michael Moore, Editor, of  
the Research & Planning section of the Wyoming Department of  
Workforce Services to the Wyoming Workforce Development  
Council, September 12, 2019, Saratoga, WY



# Introduction

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To begin with, a little bit of information about us and why we're here.

## **Research & Planning**

<https://wyomingLMI.gov>

### **OUR ORGANIZATION:**

R&P is an exclusively statistical entity within DWS.

### **WHAT WE DO:**

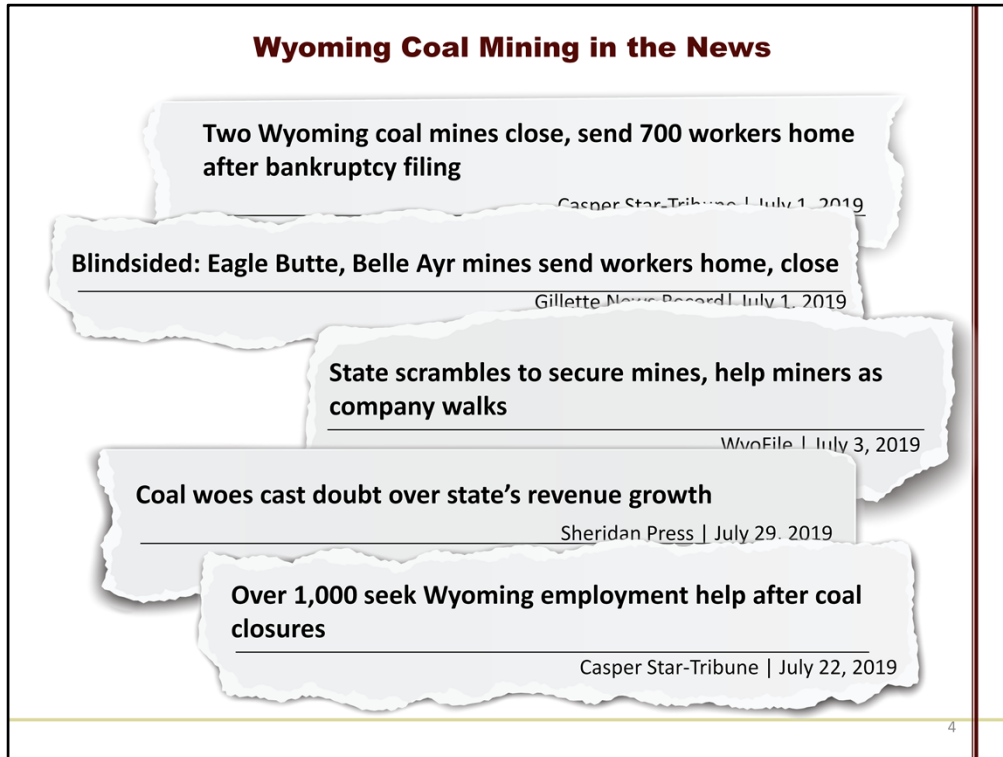
R&P collects, analyzes, and publishes timely and accurate labor market information (LMI) meeting established statistical standards.

### **OUR CUSTOMERS:**

LMI makes the labor market more efficient by providing the public and the public's representatives with the basis for informed decision making.



Research & Planning  
Wyoming DWS



As we all know, Wyoming's coal mining industry has been in the news quite a bit the last couple months.

Here are some headlines from July.

# **How Do We Define Coal Mining?**

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To begin, how do we define coal mining in Wyoming?

## How Do We Define Coal Mining?

### North American Industry Classification System (NAICS)

#### Mining, Including Oil & Gas (NAICS 21)

- Oil & Gas Extraction (211)
  
- Mining, Except Oil & Gas (212)
  - ▣ Coal Mining (2121)
  
- Support Activities for Mining (213)
  - Support Activities for Coal Mining (213113)

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Industries are identified using the North American Industry Classification System.

Each sector is given a 2-digit NAICS code. For example, Mining, Including Oil & Gas, is NAICS 21.

Within each sector are subsectors, industries, and detailed industries.

Subsectors are given a 3-digit NAICS code. Within mining, there are three subsectors:

Oil and gas extraction (211)

Mining, except oil and gas (212)

Support activities for mining (213)

Within those subsectors are industries and detailed industries.

Coal mining is a four-digit industry with the code 2121.

Support activities for coal mining is a 6-digit detailed industry with the code 213113.

For this presentation, coal mining consists of

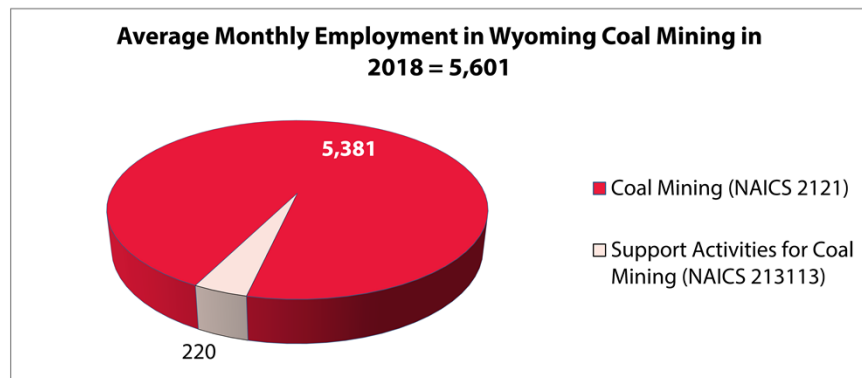
NAICS 2121 – Coal Mining

NAICS 213113 – Support Activities for Coal Mining

## How Do We Define Coal Mining?

### Wyoming Coal Mining:

- Coal Mining (NAICS 2121)
- Support Activities for Coal Mining (NAICS 213113)



We will talk more about coal mining employment later on, but just to give you an idea ...

NAICS 2121 makes up the majority of employment – 5,381 of the 5,601 jobs.

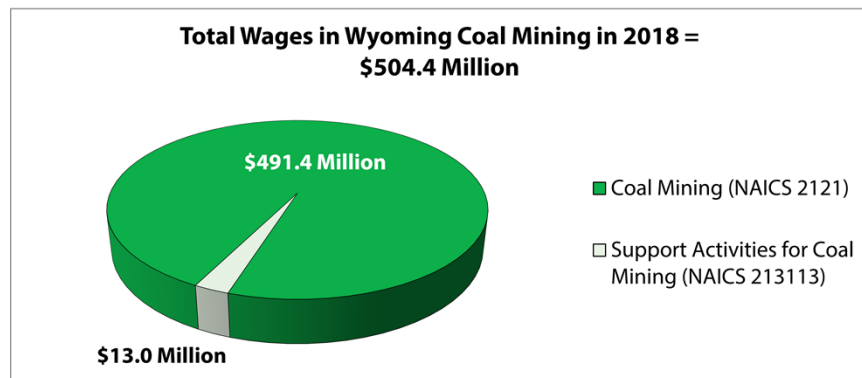
NAICS 213113 accounted for 220 jobs.



## How Do We Define Coal Mining?

### Wyoming Coal Mining:

- Coal Mining (NAICS 2121)
- Support Activities for Coal Mining (NAICS 213113)



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Wages are similar to employment, with NAICS 2121 accounting for \$491.4 million of the \$504.4 million total.

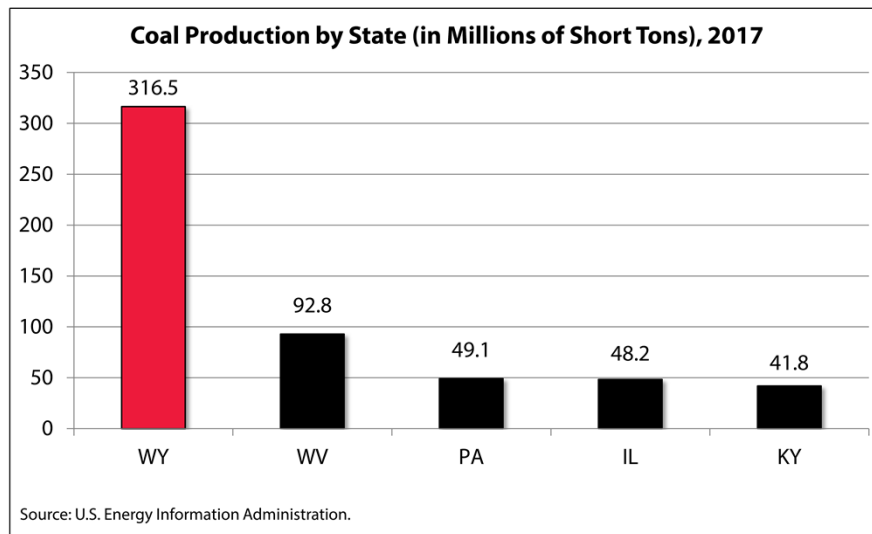
NAICS 213113 added \$13.0 million in total wages.

## **Coal Mining by the Numbers**

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This section looks at some coal mining statistics.

## Coal Production by State



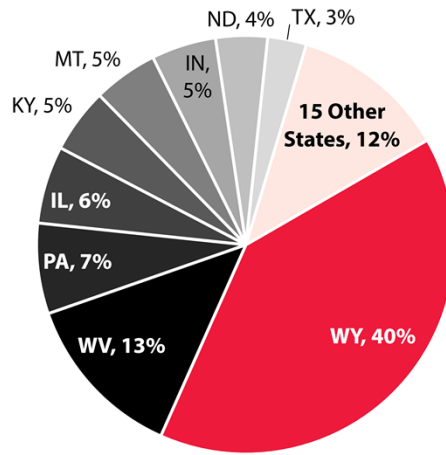
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In 2017, Wyoming produced 316.5 million short tons of coal.

The next closest state was West Virginia, with 92.8 million.

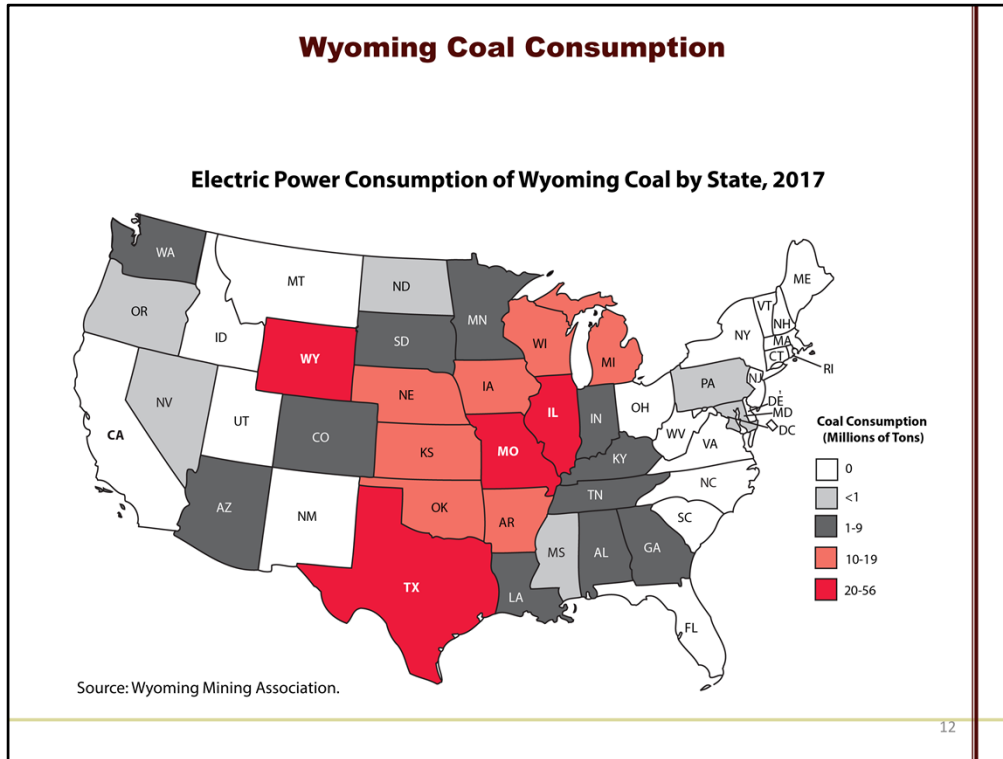
## Coal Production

Total U.S. Coal Production by State, 2017



Source: U.S. Energy Information Administration.

Wyoming's coal mines accounted for 40 percent of all U.S. coal used for electricity production



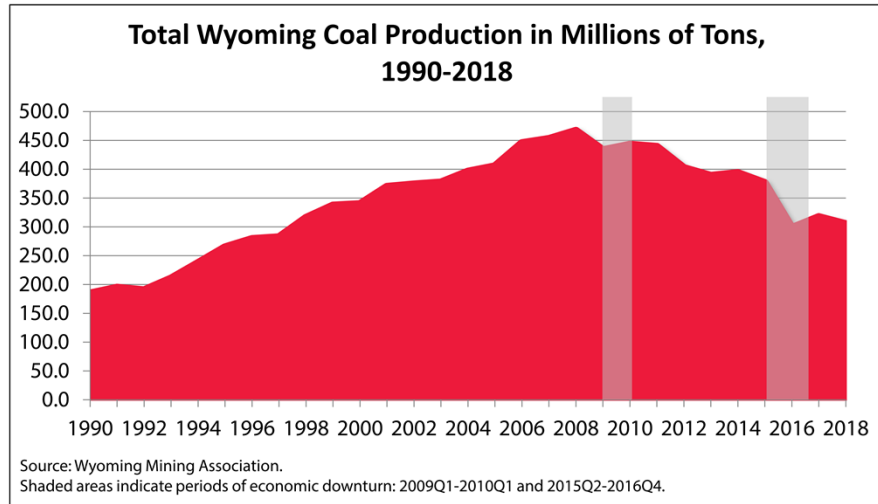
This figure shows just how many states consume Wyoming’s coal.

In all, 27 states consumed Wyoming coal in 2017.

Some of the top states were Texas with 56 million tons, Missouri with 37 Million Tons, Illinois with 30 million tons, and Wyoming with 25 million tons.

## Wyoming Coal Mining Production

2018: 304.2M Peak: 466.3M (2008) Low: 184.0M (1990)

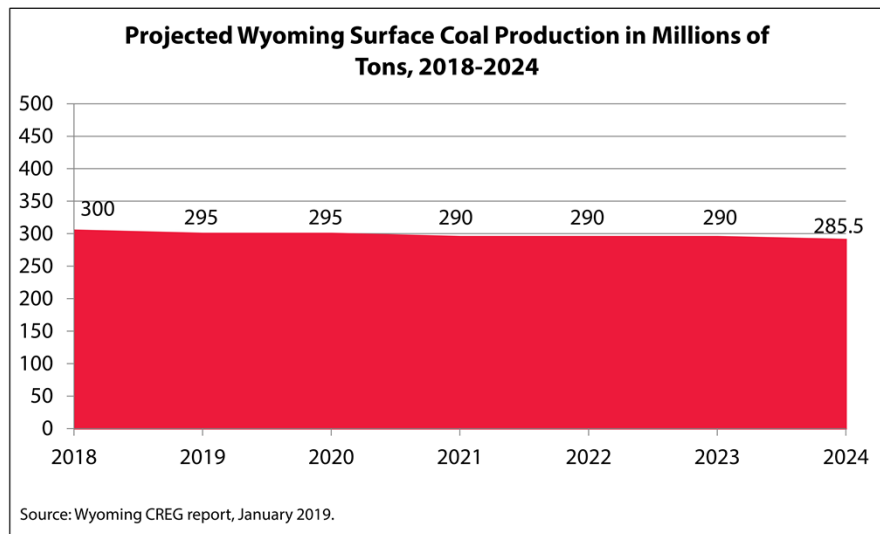


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Wyoming's coal production steadily increased before peaking in 2008, just prior to Wyoming's previous economic downturn.

The biggest drop in coal production can be seen during the most recent economic downturn in 2015-2016, when the price of and demand for coal decreased substantially.

## Wyoming Coal Mining Production

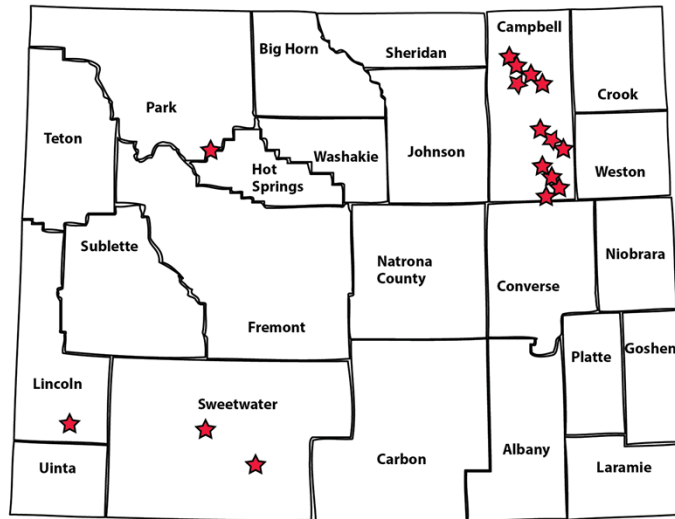


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The January 2019 Wyoming CREG report projects a slow, steady decrease in coal production, from 300.5 million tons in 2018 to 285.5 million tons in 2024.

## Active Coal Mines in Wyoming

★ Active Coal Mines in 2018



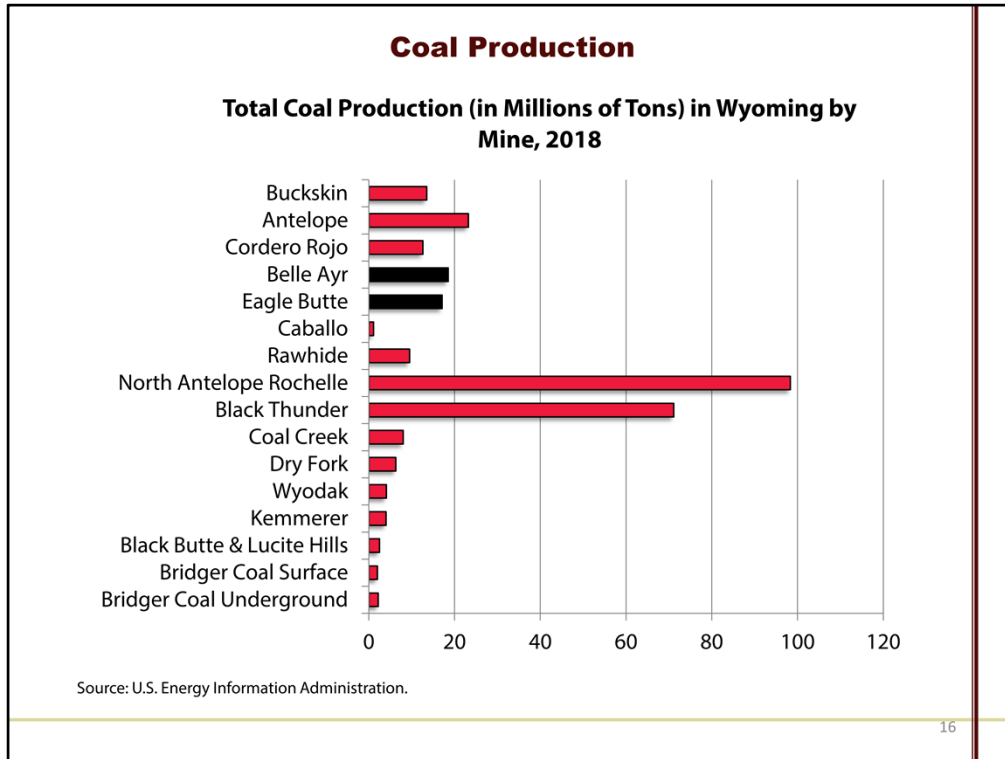
Source: Wyoming Mining Association.

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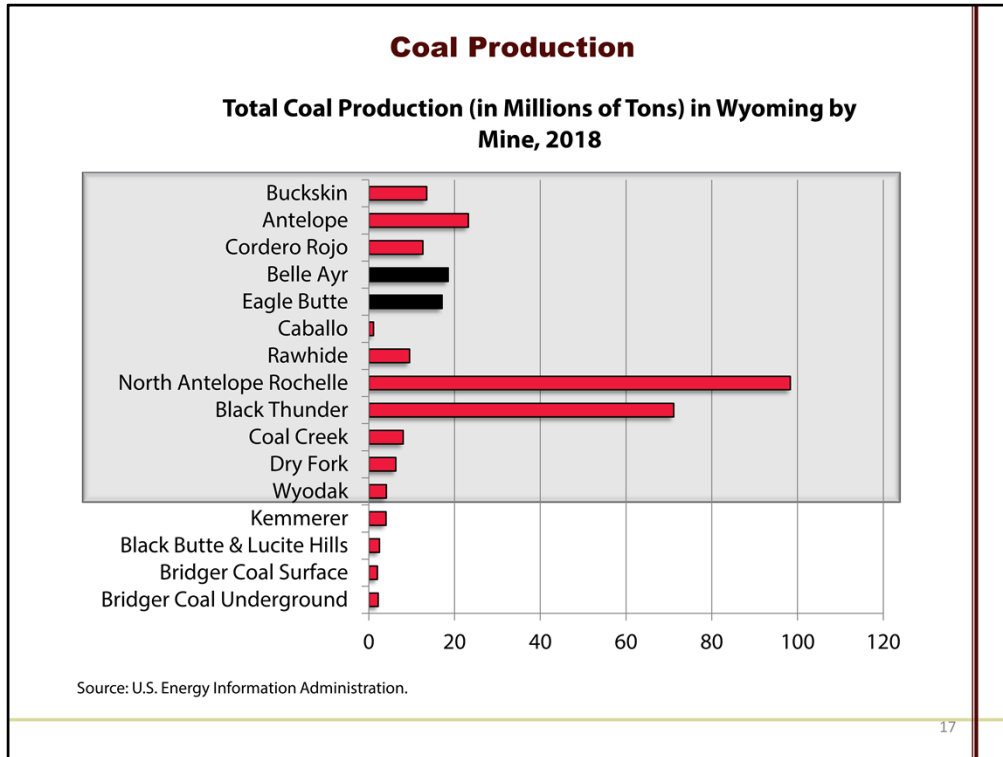
16 active mines in 2018

Most located in Campbell County, in the Powder River Basin





The North Antelope Rochelle and Black Thunder coal mines produced the most coal of the 16 active mines.



The mines highlighted are all located in Campbell County.

The 12 Campbell County mines produced 93.1% of the state's coal.

The two black bars represent the Belle Ayr and Eagle Butte mines that were closed by Blackjewel.

## **Coal Mining Changes and Challenges**

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This section looks at some of the changes and challenges that coal mining is facing and will continue to face in coming years.

## **Coal Mining Changes and Challenges**

- Reduced coal consumption
- Persistent low natural gas prices
- Renewable resources technology and affordability
  - Tax credits
  - Renewable electricity standards in other states
- Regulatory changes
- Power plant closures
- 6 coal companies filed for bankruptcy

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The previous section showed several downward trends and contraction for the coal mining industry.

There are several challenges facing Wyoming's coal mining industry, such as

Reduced coal consumption

Persistent low natural gas prices

New technologies make renewables more affordable

In additions, there are incentives to developing renewable energy, such as tax credits and renewable electricity standards

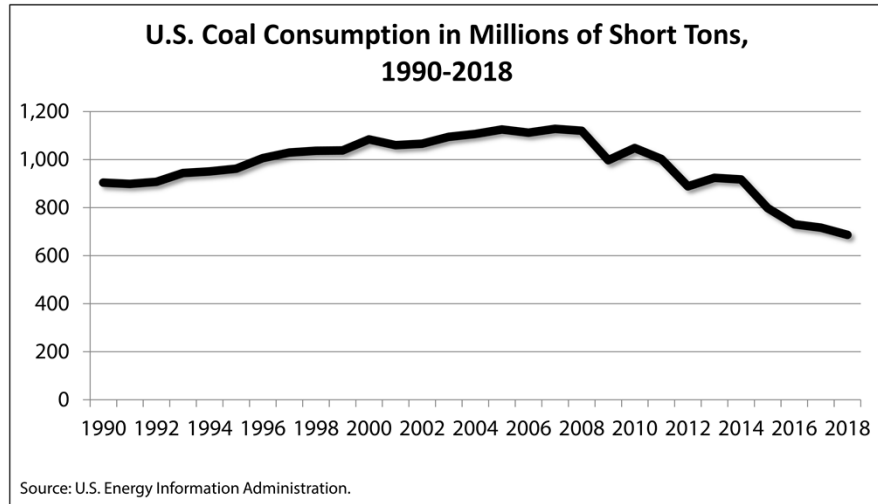
Regulatory changes

Coal-fired power plant closures

Six coal companies have filed for bankruptcy since 2016

## U.S. Coal Consumption

2018: 687.3 Peak: 1,128 (2007) Low: 687.3 (2018)

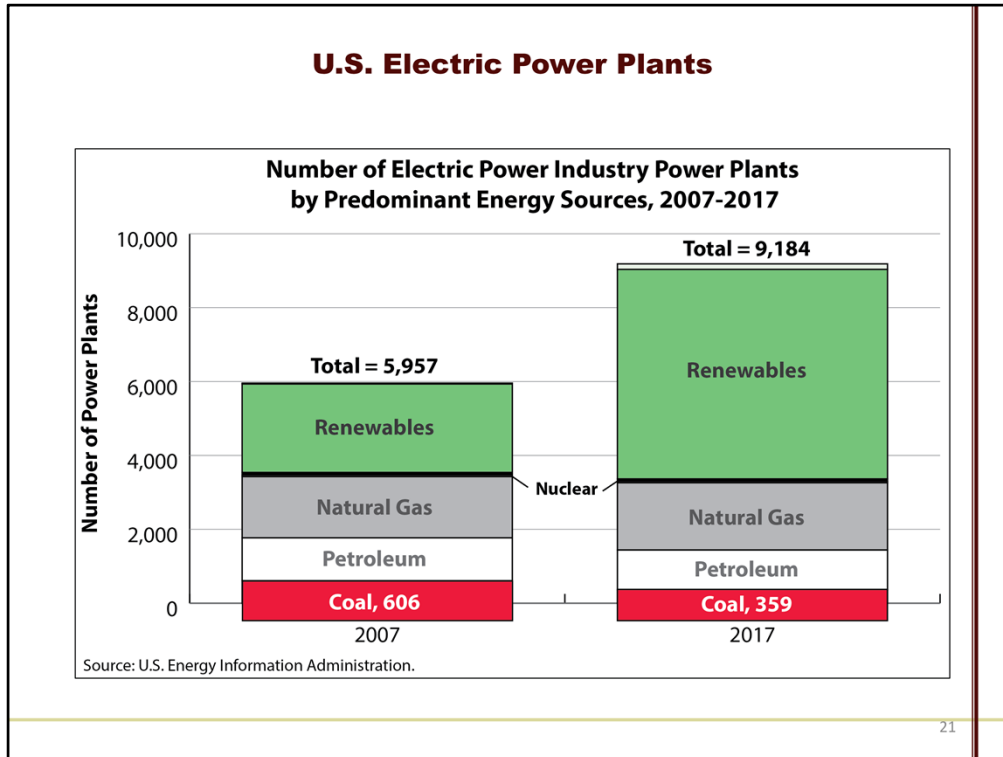


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Less demand.

The U.S. is consuming less coal.

After peaking in 2007, U.S. coal consumption has steadily declined. 2018 had the lowest consumption of coal since 1990 at 687.3 million short tons.



Natural gas and renewables.

The number of coal-fired power plants decreased from 606 in 2007 to 359 in 2017.

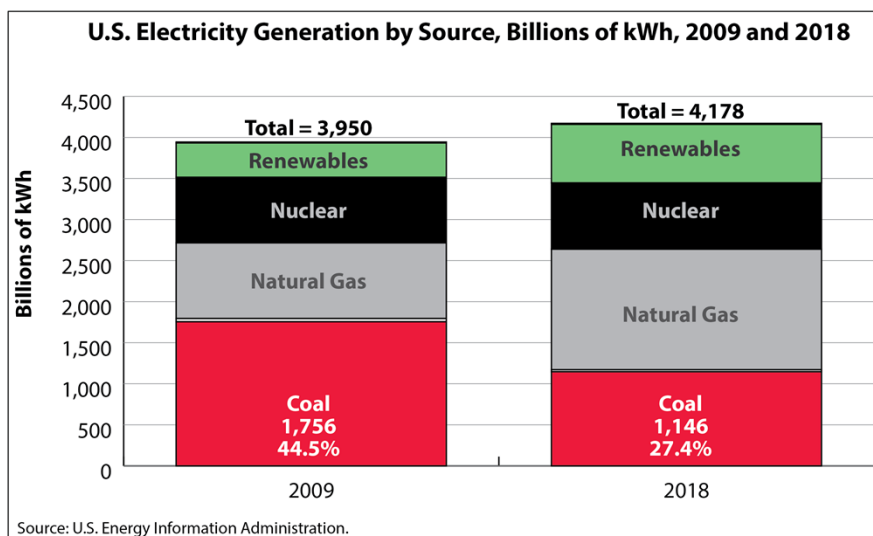
In terms of percentages, coal-fired plants made up 10.2% of the total in 2007 and just 3.9% of the total in 2017.

This was due to the closures of several coal-fired plants and new renewables-driven plants coming online.

Wind farms likely accounted for the noticeable growth in the renewables category.

The 2017 totals do not include what the EIA calls “small scale generation,” which are solar photovoltaic facilities.

## U.S. Electricity Generation



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Natural gas and renewable resources.

In 2009, coal was the source for 44.5% of all electricity generated in the U.S.

By 2018, it had declined to 27.4% as natural gas and renewables gained greater shares.

## **Wyoming Coal Mining Employment and Wages**

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This section discusses employment and wages in Wyoming's coal mining industry.



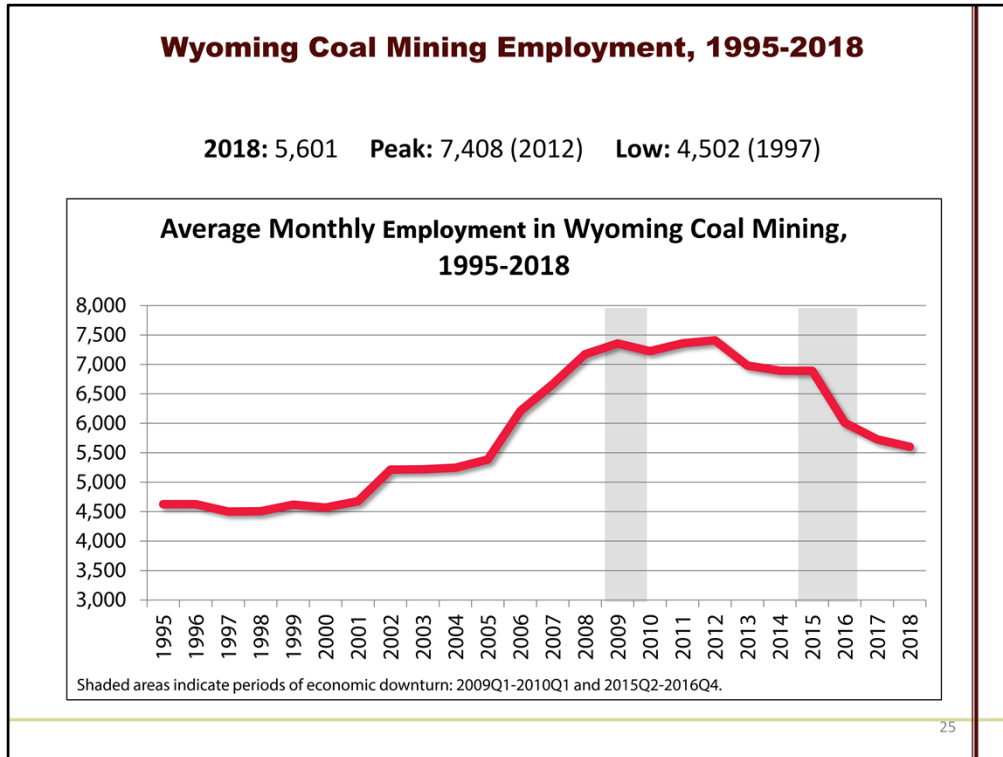
### **Wyoming Coal Mining Employment and Wages**

- 5,601 coal mining jobs in WY in 2018
  - 2.1% of total employment
- \$504.4M in total wages
  - 4.0% of WY total wages

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There were 5,601 coal mining jobs in WY in 2018  
2.1% of all jobs in the state

and \$504.4 million in total wages, 4.0% of all wages in the state



This chart illustrates the change in employment in coal mining from 1995 to 2018.

Coal mining experienced rapid growth from 2005 to 2009 and has been on a downward trend since 2013.

Employment peaked at 7,408 in 2012 and was lowest 4,502 in 1997.

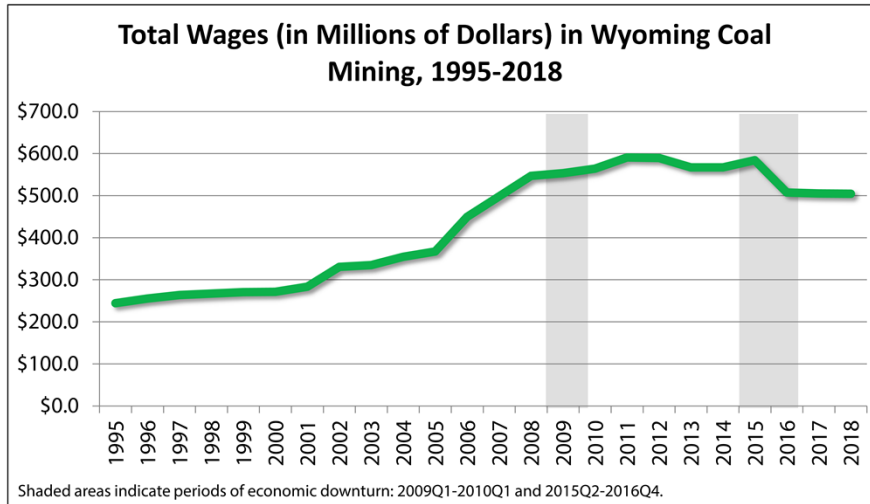
In 2018, there were 5,601 jobs in coal mining.

The shaded areas in this graph represent two periods of economic downturn, which is defined as over-the-year declines in employment and total wages for at least two consecutive quarters.

The previous economic downturn lasted 5 quarters from 2009Q1-2010Q1 and the most recent downturn lasted 7 quarters from 2015Q2 to 2016Q4.

### Wyoming Coal Mining Total Wages, 1995-2018

2018: \$504.4M    Peak: \$591.0M (2011)    Low: \$244.5M (1995)



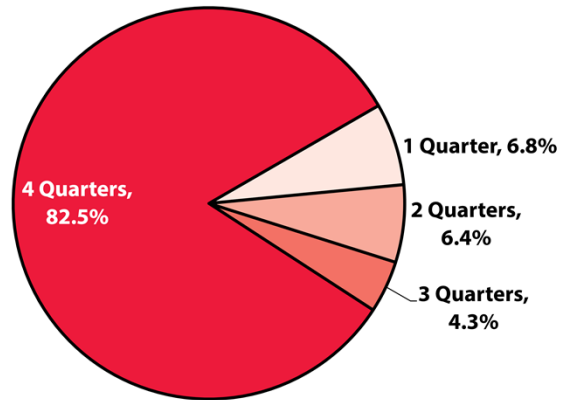
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Total wages in coal mining followed a similar trend, although total wages have been relatively flat the last two years while employment decreased.

## Demographics of WY Coal Mining Workforce

Persons Working in WY Coal Mining by Number of Quarters Worked, 2018

Total = 6,583



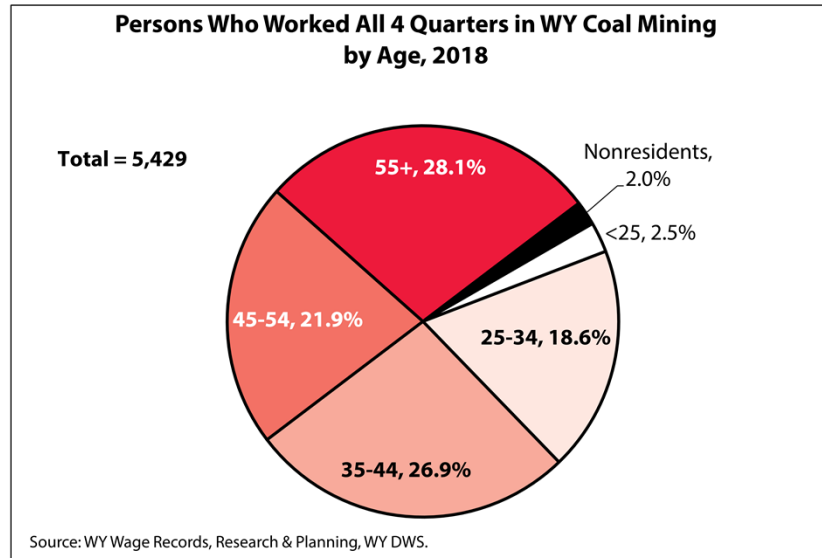
Source: WY Wage Records, Research & Planning, WY DWS.

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This figure shows attachment to the coal mining industry by looking at the number of persons working by the number of quarters worked.

In 2018, 82.5% of all persons working in coal mining worked all 4 quarters.

## Demographics of WY Coal Mining Workforce



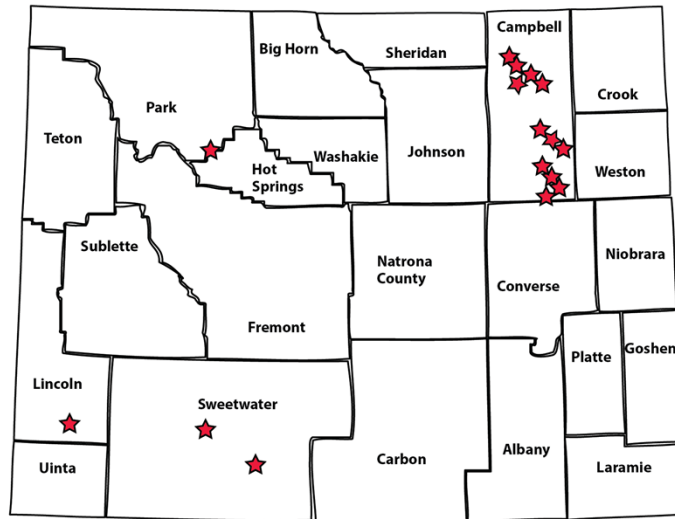
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Of the 5,249 persons working all 4 quarters in coal mining in 2018, 28.1% were age 55 and older.

These two pie charts show that the majority of people who work in coal mining tend to be older and employed in that industry for quite a while.

## Active Coal Mines in Wyoming

★ Active Coal Mines in 2018



Source: Wyoming Mining Association.

We talked earlier about how many coal mines were located in Campbell County

### **Coal Mining in Campbell County**

Approximately 4,100 coal mining jobs in Campbell County in 2018

- 16.8% of all employment in Campbell County

\$373.7 million in wages

- 26.1% of all wages in the county

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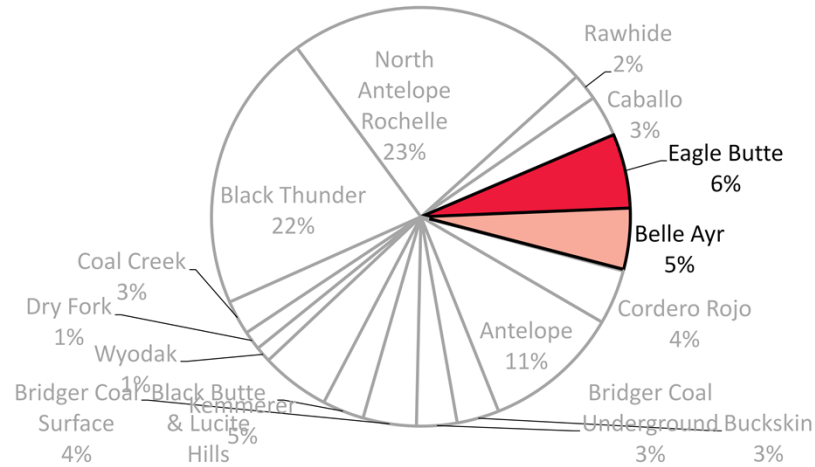
In 2018, there were approximately 4,100 coal mining jobs in Campbell County

16.8% of all employment in Campbell County

26.1% of all wages in the county

## Wyoming Coal Mining Employment

### Wyoming Coal Mining Employment by Mine, 2018



Source: Wyoming Mining Association.

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According to data from the Wyoming Mining Association, the Eagle Butte and Belle Ayr mines accounted for approximately 11% of Wyoming coal mining employment in 2018.

In addition these two mines produced about 12% of the state's coal.



# **Wyoming Coal Mining Occupations**

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This section looks at occupations within the coal mining industry.

## Wyoming Coal Mining Occupations

Occupations classified by SOC codes

87 different occupations in coal mining in 2018

- Many nondiscloseable due to confidentiality

Top 5 occupations with the largest employment in coal mining:

- Operating Engineers & Other Construction Equipment Operators (1,950)
- Excavating & Loading Machine & Dragline Operators (420)
- Mobile Heavy Equipment Mechanics, Except Engines (390)
- Electricians (240)
- First-Line Supervisors of Mechanics, Installers, & Repairers (130)

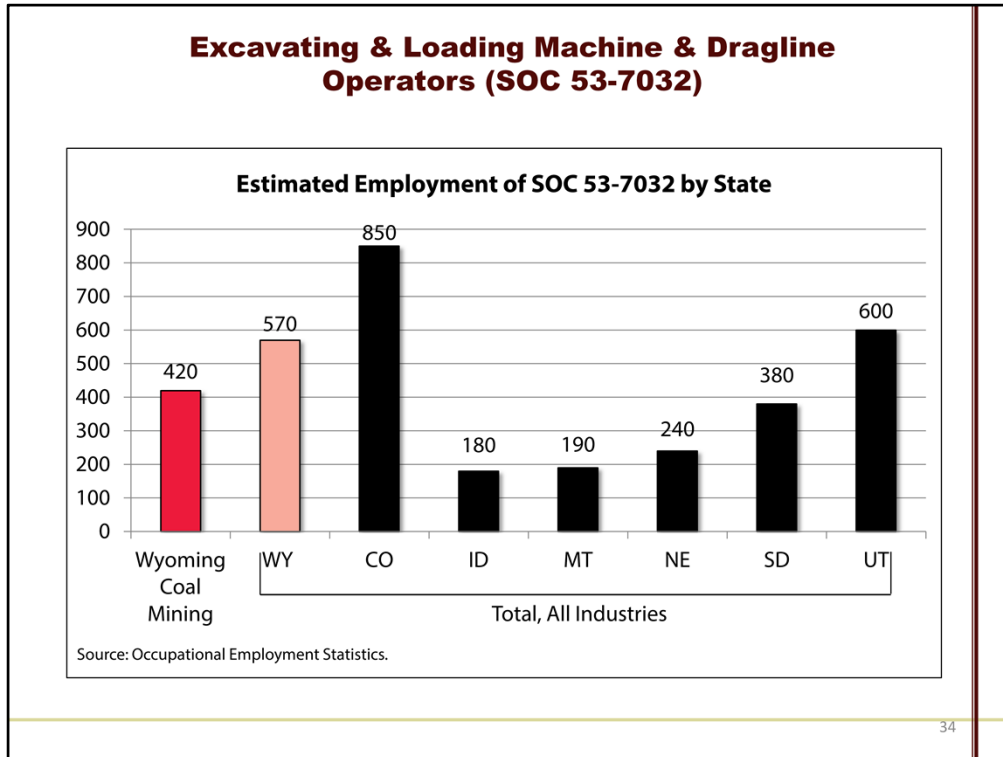
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Occupations are classified according to the Standard Occupational Classification system, or SOC. Each detailed occupation is given a 6-digit SOC code.

We were able to identify at least 87 different occupations with employment in Wyoming's coal mining industry.

Many of those were nondiscloseable due to confidentiality, which could be to a variety of reasons: the number was too low, or more than 80% of those occupations were found with one employer.

The five occupations with the greatest employment are shown on this slide; for example, Wyoming's coal mining sector had 1,950 operating engineers & other construction equipment operators.



Excavating & Loading Machine & Dragline Operators are given the SOC code 53-7032.

This chart shows the estimated employment for this job in Wyoming’s coal mining sector, statewide, and statewide in 6 neighboring states.

There were 570 in Wyoming, 420 of which were in coal mining.

The 420 in Wyoming’s coal mining industry was greater than the estimated employment for several states across all industries.

### **Wyoming Coal Mining Wages by Occupation**

Wages in coal mining often substantially higher than other industries

- 25 occupations with publishable wages in coal mining
- Coal mining wages higher than all other states in all but 3 occupations

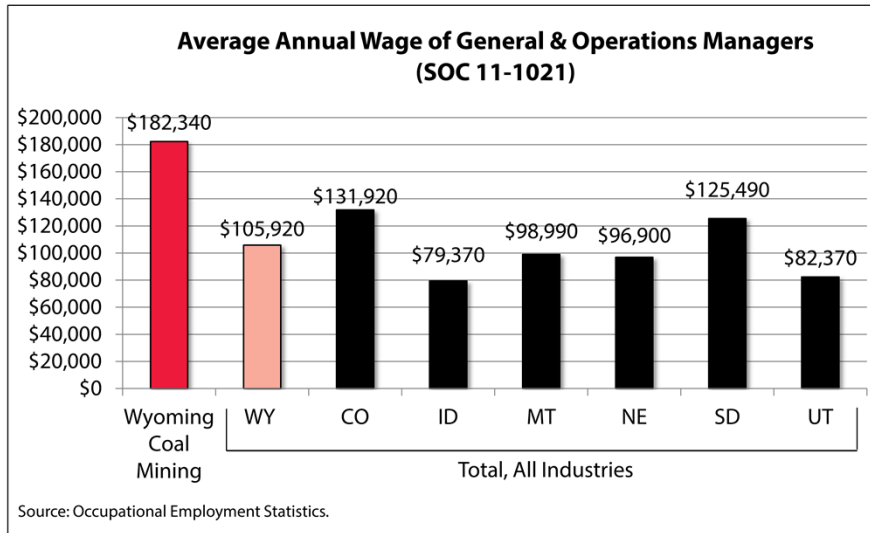
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Coal mining wages are often substantially higher than other industries.

Wyoming coal mining wages were available for 25 occupations.

The average Wyoming coal mining wage was higher than the statewide average for all but 3 occupations.

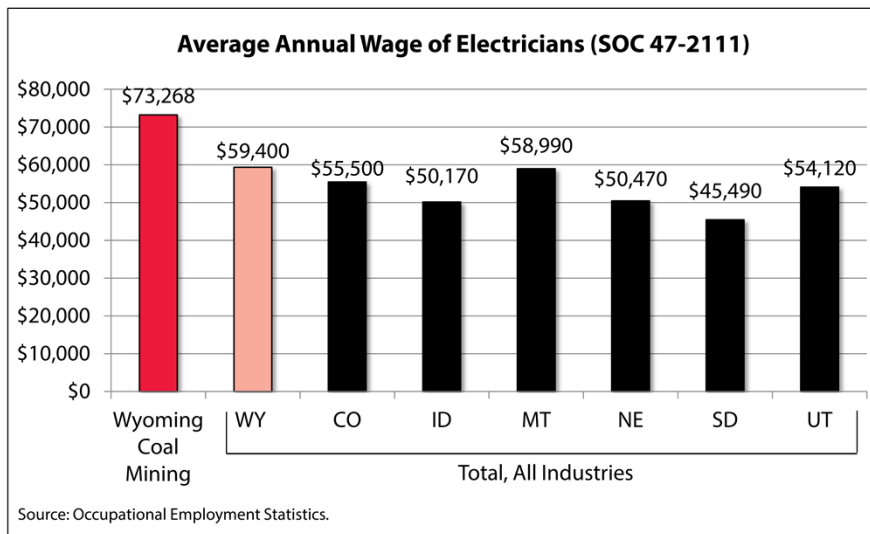
## Wyoming Coal Mining Wages by Occupation



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For example, general & operations managers in Wyoming coal mining had an average annual wage of \$182,340, noticeably higher than the statewide average for Wyoming and all 6 of the other surrounding states.

## Wyoming Coal Mining Wages by Occupation



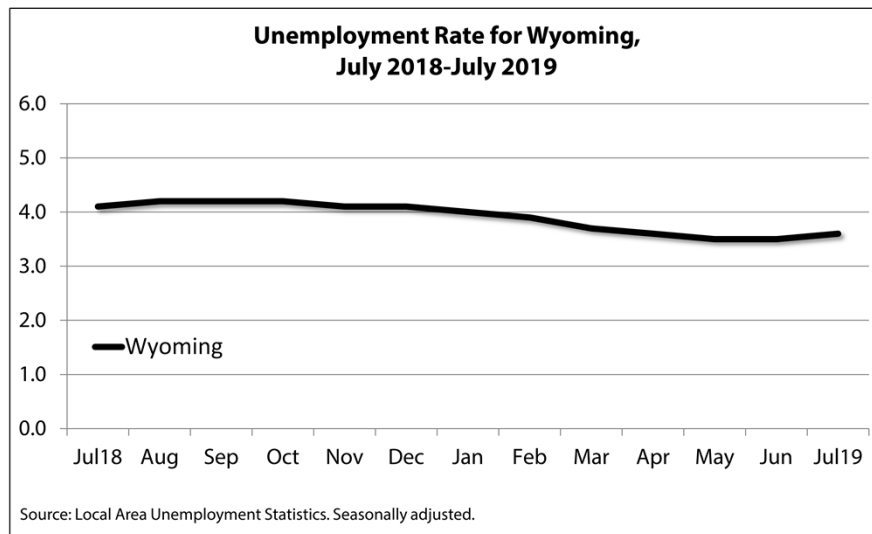
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This can also be seen among electricians, which had an average annual wage of \$73,268.

High coal mining wages potentially creates an issue if an electrician who makes \$73,268 in coal mining loses his job and has to find work in another industry.

# Unemployment

## Unemployment Rate in Wyoming

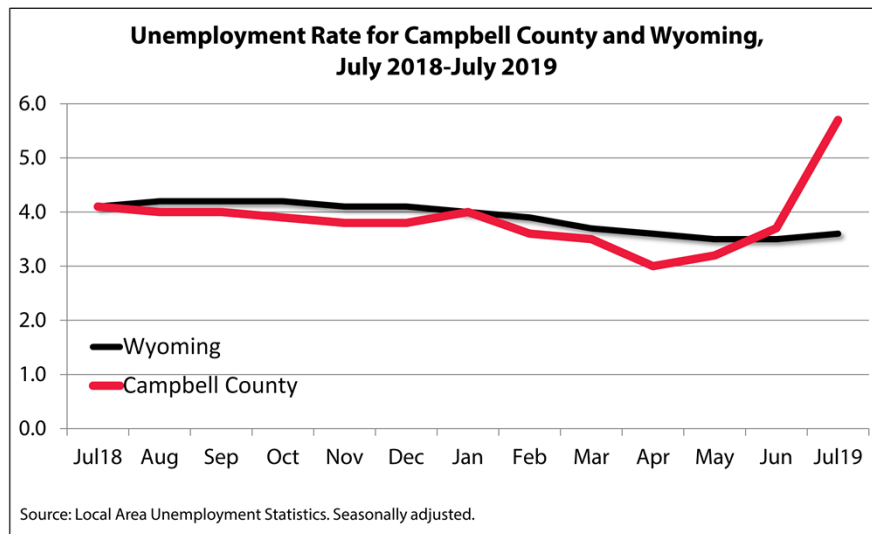


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Looking at the most recent employment data, the seasonally adjusted unemployment rate for Wyoming increased slightly from 3.5% in June to 3.6% in July.



## Unemployment Rate in Wyoming



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But looking at the data for Campbell County, we can see that the unemployment rate increased substantially from 3.7% in June to 5.7% in July.

## **Wyoming Unemployment Insurance Claims**

- UI claims data published monthly
- Often most current data
- Available online
  - Monthly UI claims reports
  - Initial and continued claims historical data

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Unemployment Insurance (UI) claims data are published monthly.

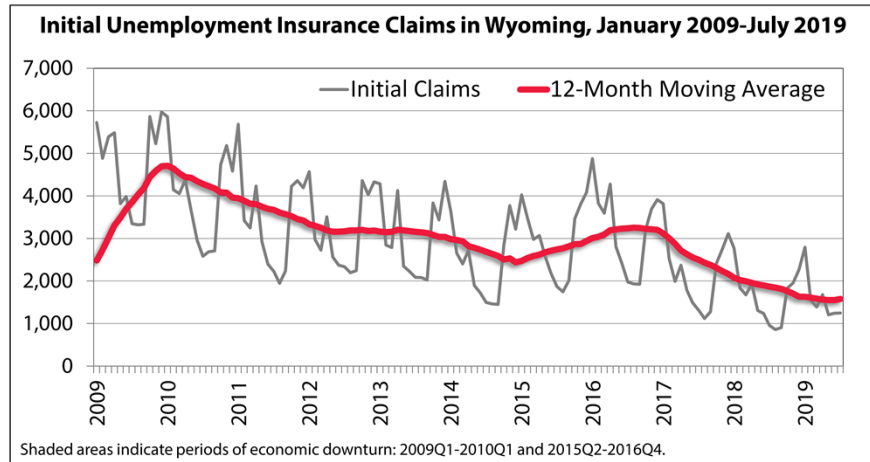
They are often the most current data we have.

Data are available online. We publish a monthly UI claims report and have historic data back to 1997.

If you are interested in receiving notifications when new reports are published, please see me.

## Wyoming Unemployment Insurance Claims

- UI claims data available for July
- Downward trend for 3+ years
- First data on mining job losses
- Over-the-year increases in July



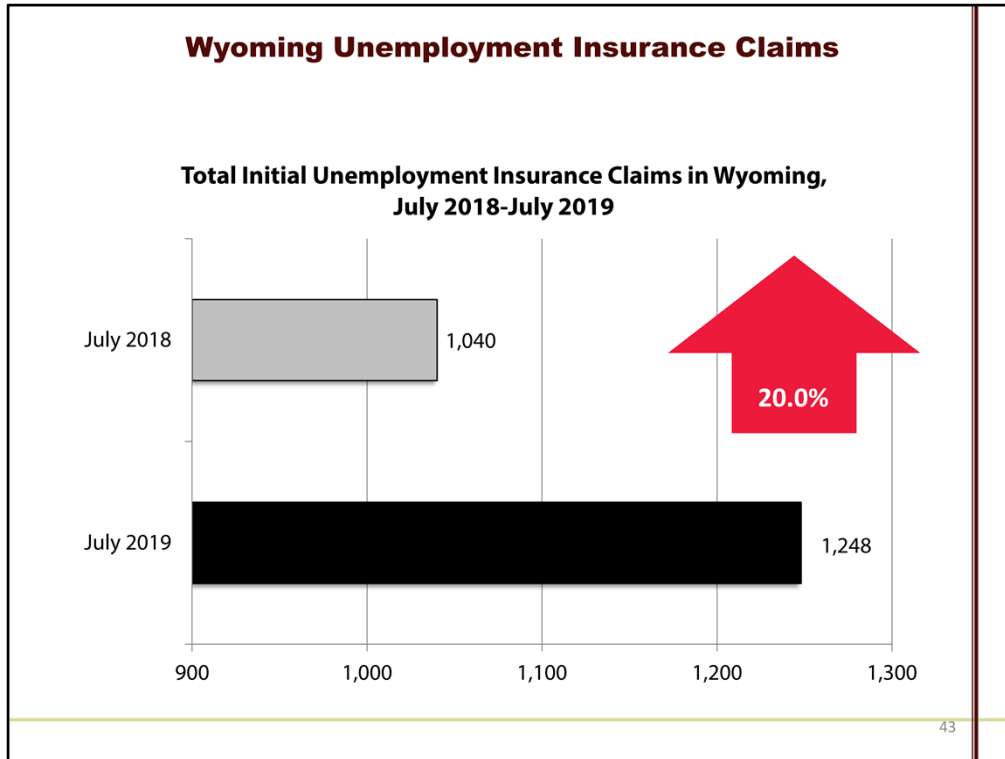
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We have UI claims data for July, and August will be available next week.

These were some of the first data we saw on mining job losses.

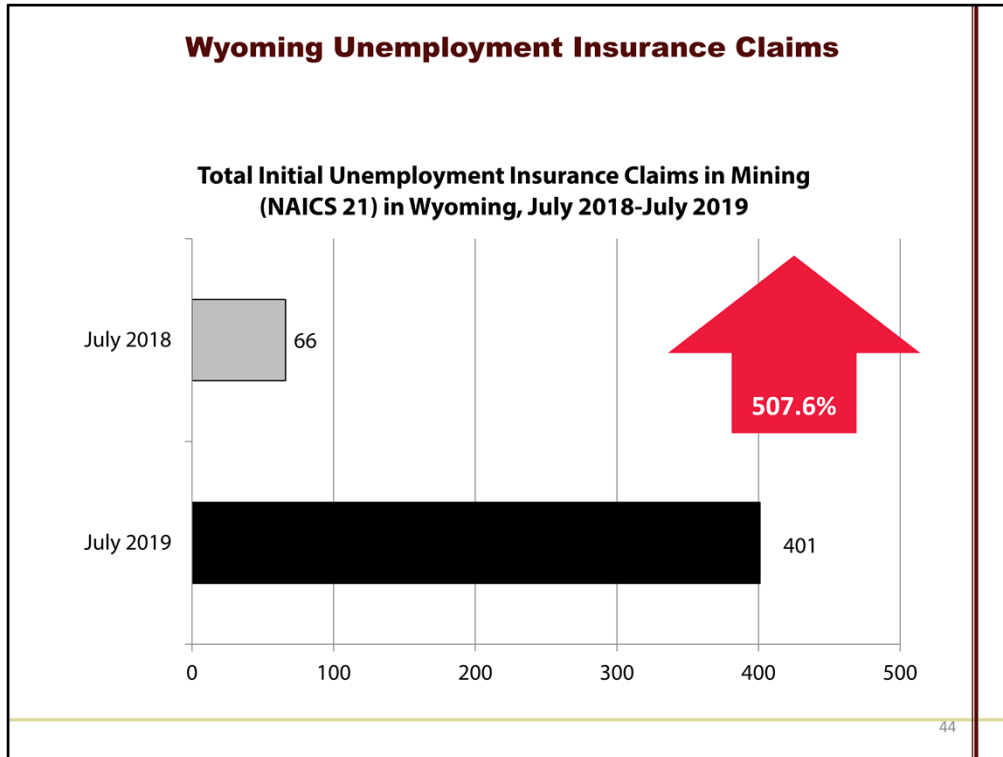
As you see in this chart, Wyoming had shown a downward trend in initial claims for 3+ years dating back to 2016.

However, we saw the first over-the-year increase in initial claims in July in more than 3 years.



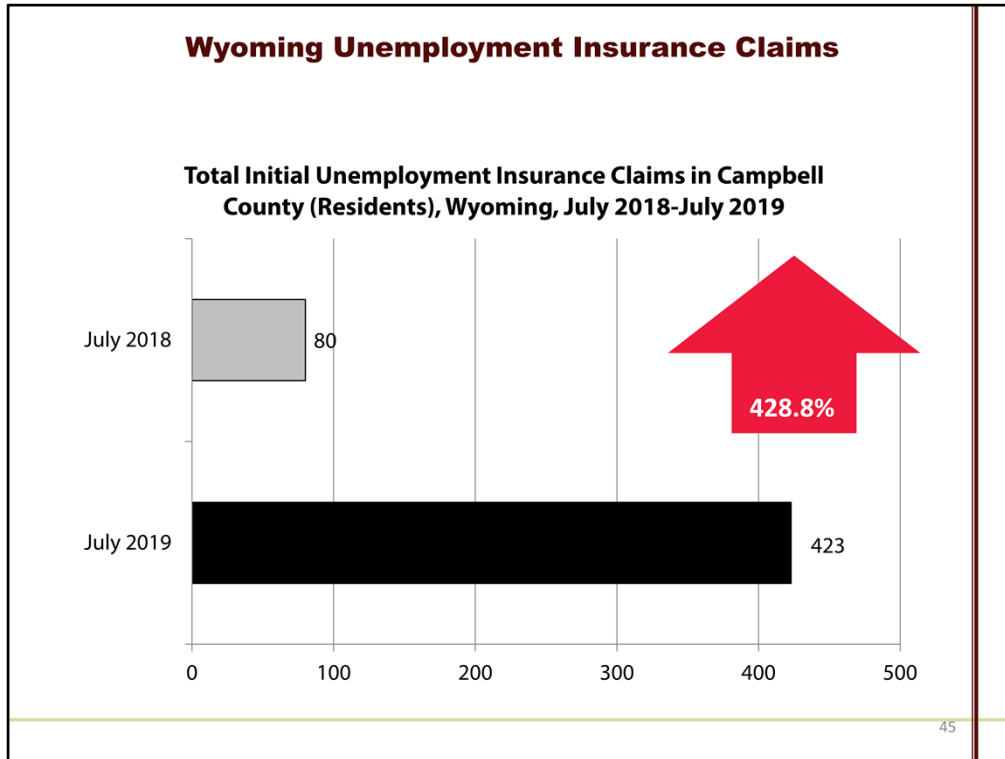
This chart shows how the number of total of initial claims increased from 1,040 in July 2018 to 1,248 in July 2019.

That was an increase of 20%.



The overall increase in initial claims was driven by a substantial increase in mining claims, up from 66 in July 2018 to 401 in July 2019.


This was an increase of more than 500%.




In Campbell County, initial UI claims increased from 80 to 423.

An increase of 428.8%.

# IMPLAN Study: The Impact of Coal Companies Ceasing Operations in Wyoming



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September 12, 2019

### The Impact of Coal Companies Ceasing Operations in Wyoming

by: Patrick Manning, Principal Economist

The fourth- and sixth-largest producing coal mines in the country located in Wyoming closed down on July 1, 2019 leaving approximately 700 workers without a job due to the closure of the parent (Blackhawk) LLC declaring bankruptcy, bringing the total number of Wyoming coal companies that have filed for bankruptcy to nine (Erickson, 2019a). Coal mining is extremely important to Campbell County and the state as a whole in terms of employment, labor income, and tax revenue. For example, at the time this report was published, Blackhawk owed Campbell County \$37 million in tax liability (Erickson, 2019b).

This research discussed which one or more of these mines shut down with 700 workers laid off, the reported number of workers who lost jobs due to the mine closures (Erickson, 2019a). This research assumes that these workers will not find work in-state within the year. If they do find employment in Wyoming during the year, damages would be less than the results indicate.

**Table 1: Economic Impact Summary of the Loss of 700 Coal Jobs in Wyoming**

| Impact Type         | Employment    | Income              | Total Taxes       | Output              |
|---------------------|---------------|---------------------|-------------------|---------------------|
| Direct Effect       | -700          | -\$2,471,897        | -\$248,120        | -\$2,610,017        |
| Indirect Effect     | -418          | -\$1,382,012        | -\$139,796        | -\$1,521,808        |
| Induced Effect      | -227          | -\$732,065          | -\$76,028         | -\$808,093          |
| <b>Total Effect</b> | <b>-1,345</b> | <b>-\$4,585,974</b> | <b>-\$463,944</b> | <b>-\$4,950,918</b> |

Prepared by P. Manning, Research & Planning, WY DOWS, August 15, 2019.

**Table 2: Top 10 Industries Impacted by Coal Mining Job Losses in Wyoming**

| Description  | Total Employment | Total Labor         | Total Taxes          | Total Output         |
|--|------------------|---------------------|----------------------|----------------------|
| Coal Mining  | 27               | \$2,071,149         | \$208,120            | \$2,279,269          |
| Support Activities for Oil & Gas Operations                | 270              | \$2,892,115         | \$281,647            | \$2,973,762          |
| Wholesale Trade  | 26               | \$645,751           | \$7,534,549          | \$1,023,724          |
| Maintenance & Repair Construction of Machinery & Equipment | 42               | \$1,427,034         | \$478,394            | \$1,348,256          |
| Other Financial Investment Activities                      | 21               | \$102,862           | \$48,138             | \$6,363,838          |
| Rail Road  | 48               | \$993,139           | \$1,281,244          | \$8,228,477          |
| Rail Transportation  | 40               | \$1,302,139         | \$2,081,140          | \$1,077,850          |
| Retail Trade   | 37               | \$792,295           | \$813,282            | \$1,887,883          |
| United States Government                                   | 25               | \$444,444           | \$422,479            | \$1,977,793          |
| Manufacturing, Engineering & Related                       | 25               | \$1,671,833         | \$1,678,384          | \$1,647,396          |
| <b>Total Effect</b>  | <b>2,248</b>     | <b>\$15,452,825</b> | <b>\$492,642,433</b> | <b>\$991,261,982</b> |

Prepared by P. Manning, Research & Planning, WY DOWS, August 15, 2019.

This section focuses on data from an analysis that is discussed in the handout you received.

## **IMPLAN Study**

### **About the Study:**

- IMPLAN modeling software was used
- Assumes 700 job losses
- Assumes workers will not find in-state work in the next year
- Direct, indirect, and induced effects

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To provide an understanding of just what the recent coal mining job losses could mean, one of our economists, Patrick Manning, prepared a scenario using IMPLAN modeling software in which 700 coal mining jobs were lost, assuming that those workers don't find work in Wyoming in the year. This IMPLAN analysis produces direct, indirect, and induced effects of these job losses.



## **IMPLAN Study**

### **Direct:**

- Hiring of a manager to oversee a coal mining project

### **Indirect:**

- Manager purchases supplies from a local business

### **Induced:**

- Manager takes family out to dinner

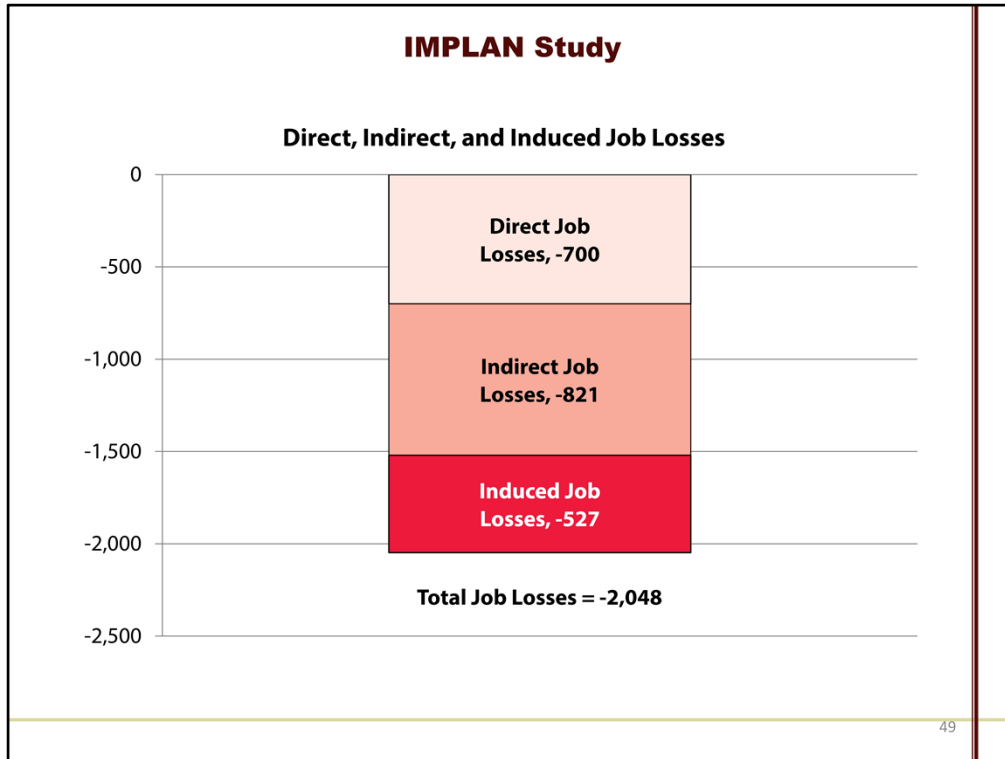
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## Examples

Direct: Hiring a manager to oversee a coal mining project

Indirect: That manager purchases supplies from a local business

Induced: That same manager takes his family out to dinner, spending money at a local restaurant



In this scenario, Wyoming lost 700 jobs in coal mining, which was the estimate reported in the news articles.

We don't yet have data to verify the number of jobs lost, so we've created this scenario using the 700.

700 direct job losses in coal mining would result in an additional 821 indirect job losses and 527 induced job losses

Bringing the total number of job losses to more than 2,000.

## **IMPLAN Study**

### **Total Effects:**

- -2,048 total job losses
- -\$155.5 million in labor income
- -\$492.7 million in total value added
- -\$900.2 million in total output
- -\$72.5 million tax on production and imports

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Some of the effects of the 700 job losses in coal mining are presented in this slide.

In addition to more than 2,000 total job losses, we're looking at

\$155 million less in labor income

Almost \$500 million less in total value added

\$900 million less in total output

And \$72.5 million less in taxes on production and imports, which would be damaging to local governments

# **What Does the Future Hold for Coal?**

As we all know, Wyoming's coal mining industry has been in the news quite a bit the last couple months.

Here are some headlines.

## **The Future of Coal**

### **Total Effects:**

- Decreased demand
- Decreased consumption
- Decreased production
- Power plants closing

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While coal mining isn't going away any time soon, it is shrinking.

Projections from different sources indicate a decrease in demand and production.

One of the big reasons is the planned closing of coal-fired power plants.

## The Future of Coal

**Rocky Mountain Power continues to work on plan that will likely include retiring four units**

Rock Springs Rocket-Miner | June 18, 2019

### Pacificorp Integrated Resource Plan

- July 2019
- Most coal units will close in next 20 years
- WY plants facing possible early retirement in 2022:
  - Naughton Units 1 and 2 (Lincoln County)
  - Jim Bridger Units 1 and 2 (Sweetwater County)

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This headline references Pacificorp's 2019 integrated resource plan.

In the plan Pacificorp noted that most of the company's coal plants will be closed within 20 years.

The company also talked about the potential early retirements of its Naughton and Jim Bridger plants in Wyoming

## **The Future of Coal**

“I think there is no question that the PRB has changed. The days of 400 million tons (of coal), they’re behind us now and ... you’re seeing an adjustment to a new normal. And the new normal is America’s coal fleet is shrinking and that is obviously having an impact on production.”

- Travis Deti, Wyoming Mining Association Executive Director

*Casper Star-Tribune, 8/26/19.*

Wyoming Mining Association Executive Director Travis Deti talked about a “new normal” in an article by the Casper Star-Tribune on August 26.

## Questions?

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