

Measurement of Economic Activity for Coal Industry and Electrical Power Generation Industry in the Yampa-White River Region of Northwest Colorado

For

**Craig/Moffat Economic Development Partnership
Rio Blanco County
Steamboat Springs Economic Development Council**

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by Economic Development Council of Colorado
Prepared by Gary Horvath, Broomfield-based Economist**



About Economic Development Council of Colorado

EDCC is a trade association of economic development organizations committed to cooperative promotion of the state's economy. They have been fulfilling this mission since 1975. For further information go to www.edcconline.org

About CMEDP, RBC, SSED These three entities provide economic development services in Moffat, Rio Blanco, and Routt counties in Northwest Colorado. For further information go to the Appendix. In addition, they provided partial funding for the project.

Economic Impact Key Findings

*The analysis summarizes the impact of the coal mining industry in Moffat County, Rio Blanco County, Routt County and the Yampa-White River Region. **The coal mining industry in the region directly employs 4.6% of the total employees and accounts for 17.4% of the region's direct output.***

Impact of Coal Mining Industry in Colorado

Total Impact of Coal Mining Industry in the Yampa-White River Region

<u>Jobs</u> 8,467	<u>Labor Income</u> \$576.4 Million	<u>Jobs</u> 3,149	<u>Labor Income</u> \$214.4 Million
<u>Average Household Income</u> \$107,665	<u>Industry Output</u> \$1,838.0 Million	<u>Average Household Income</u> \$110,449	<u>Industry Output</u> \$700.9 Million

Why the Coal Mining Industry is Important to the Yampa-White River Region and Colorado

- There is a high concentration of coal mining employees in the Yampa-White River Region.
- The industry helps create diversity and in local employment.
- The industry provides a strong foundation of primary jobs based on the introduction of wealth from outside sources and strong output from the coal mining companies.
- Output per employee is much higher than other industries.
- The industry has wages that are significantly higher than average wages for the state. As a result household income for the region is greater than the state average.
- The coal mining industry provides coal for the Tri-State Generation and Transmission Station at Craig and the Xcel Energy Hayden Station. The total impact (direct, indirect, and induced) of the electrical power generation industry in the Yampa-White River Region is 1,233 employees and \$519.3 million in output. The electrical power generation industry and the coal mining industry have a significant impact in the Yampa-White River Region.

Project Overview

The project overview provides a brief outline of the information covered in this report.

Measurement of Economic Activity for Coal Industry in the Yampa-White River Region of Northwest Colorado

- Purpose
- Assumptions/methodological notes
- Coal production map Colorado
- The impact of coal mining in Colorado
- The impact of coal mining in the Northwest Colorado Yampa-White River Region
- The impact of coal mining in Moffat County
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Measurement of Economic Activity of Coal Industry in Yampa-White River Region of Northwest Colorado

Purpose of Project

The purpose of this study is to provide an unbiased third-party assessment of the economic impact of the coal mining industry in the Yampa-White River Region of Northwest Colorado and the state.

The primary focus of the study will include the two North American Industrial Classification System (NAICS) Sectors 211111 - Bituminous Coal Surface Mining and 212112 - Bituminous Coal Underground Mining.

This geographic area studied is the Yampa-White River Region - Moffat County, Rio Blanco County, and Routt County. For each county and the region the impact of the coal mining industry will be estimated for employment, labor income, total value added, and output. The most important calculations are the *impacts of employment and output in the state and the Yampa-White River Region*.

Assumptions/Methodological Notes

This analysis uses the IMPLAN 2012 model data as the basis for the report. The primary sources for the key IMPLAN data are the Bureau of Economic Analysis (BEA) and the U.S. Census Bureau. At the time of the study, this data set was the most current.

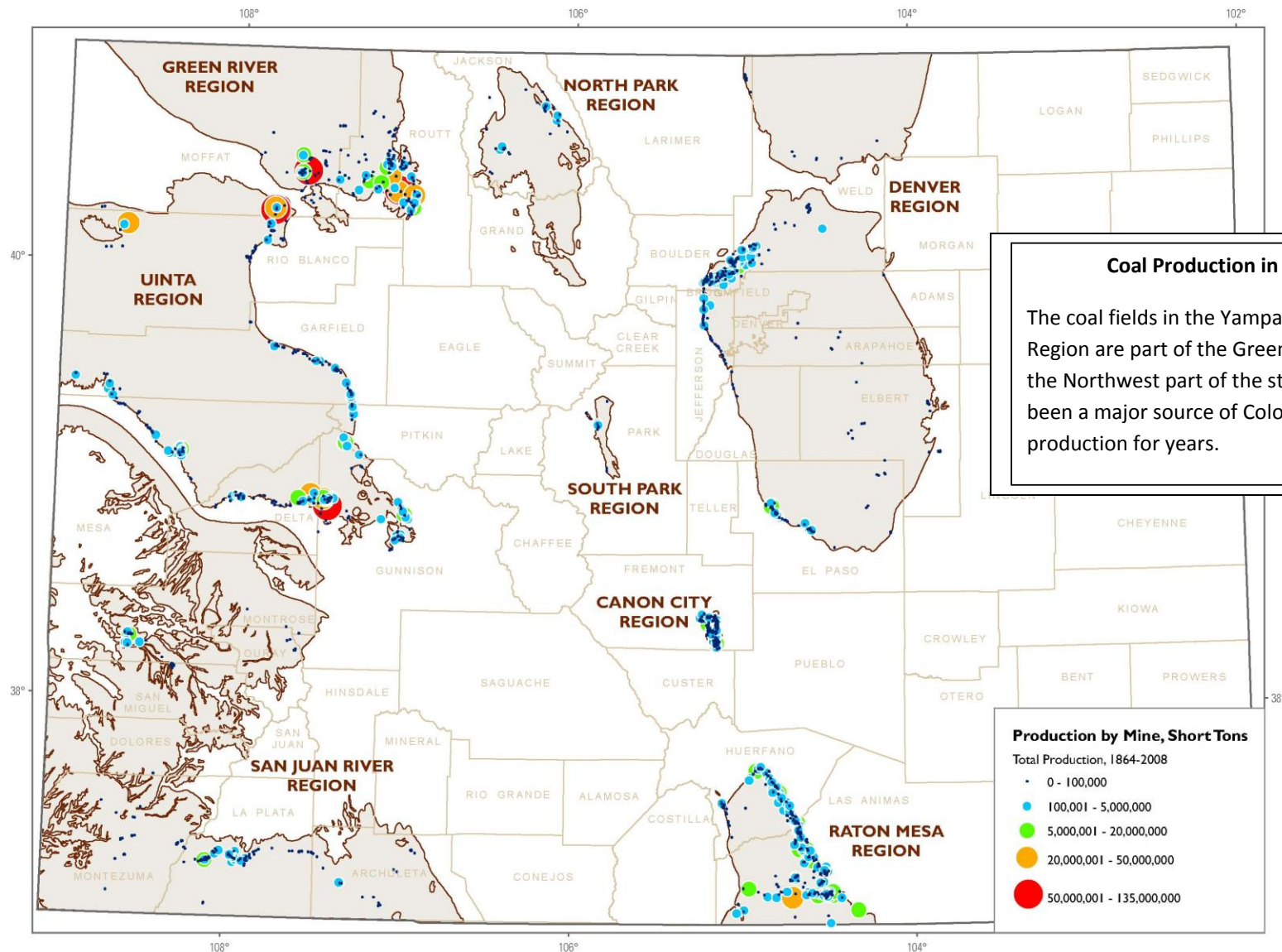
There are many definitions for employment. The data set used for this analysis is the IMPLAN data in the model.

First, IMPLAN employment is a combination of data from the Quarterly Covered Employment and Wages (QCEW by BLS) and County Business Patterns (CBP by Census). As well, the Regional Economic Analysis (REA) data is used for control totals (to incorporate proprietors and non-covered sectors.)

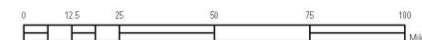
The IMPLAN staff has noted there may be as many as five proprietors or partnerships for each wage and salary person in some sectors of the extractive industries. In many cases, these individuals are not necessarily visible in the local community, but they contribute to the strength of the economy.

Second, county output is measured using input-output analysis. This is necessary because Gross Regional Products (GRP) is not formally calculated by the BEA at the county level.

The use of IMPLAN employment and the estimated county GRPs is an acceptable practice when preparing studies such as this one.



Cumulative Production, 1864-2008
 Colorado Historic Coal Mines, IS-64



The Impact of Coal Mining in Colorado

The state's coal mining sector contributes slightly less than \$1.1 billion to the direct Gross Regional Product, \$293 billion, for Colorado. There are 3,469 direct employees in the industry, with total direct wages of \$289 million.

The total impact of the coal mining industry in the state is 8,467 workers, \$576 million in wages and \$1.8 billion in output.

Impact of the Coal Mining Industry in Colorado		
Metric	Direct	Total
Employment	3,469	8,467
Labor/Income	\$288.5	\$576.4
Total Value Added	\$504.9	\$971.7
Output	\$1,052.1	\$1,838.0
Source: IMPLAN Model Output		
Dollars in millions		

State Metric	Value
State Direct Coal Employment IMPLAN	3,469
State Direct Coal Employment as % of State Employment IMPLAN	.11%
State Wage and Salary Coal as % of Direct Coal Employment	70.7%
Total Wage and Salary Coal Employment	2,454
Surface Mining Average Annual Wages w/o supplement	\$79,655
Underground Mining Average Annual Wages w/o supplement	\$84,413
State Coal Direct Output (GRP)	\$1,052,095,680
State Coal Direct Output (GRP) as % of State Output.	.36%

Source: IMPLAN, EMSI

State Metric	Value
GRP	\$293,324,385,295
Total Personal Income	\$234,142,300,000
Total Employment	3,235,493
Number of Industries	405
Land Area (Sq. Miles)	103,729
Population	5,187,582
Total Households	2,174,724
Average Household Income	\$107,665
Employee Compensation	\$155,381,233,191
Proprietor Income	\$26,212,925,023
Total Income	\$181,594,158,214

Source: IMPLAN

The Impact of Coal Mining in the Northwest Colorado Yampa-White River Region

The Yampa-White River Region's coal mining sector contributes slightly less than \$479 million to the direct Gross Regional Product, \$2,757 million for the Yampa-White River Region. There are 1,545 direct employees in the industry, with total direct wages of \$138 million. The total impact of the coal mining industry in the Yampa-White River Region is 3,149 workers, \$214 million in wages, and \$701 million in output.

Region Metric	Value
Region Direct Coal Employment IMPLAN	1,545
Region Direct Coal Employment as % of Region Employment IMPLAN	4.6%
Region Wage and Salary Coal Employment as % of Direct Coal Employment	73.0%
Total Wage and Salary Coal Employment	1,121
Average Wages w/o supplement	\$85,481
Region Coal Output (GRP)	\$478,579,264
Region Coal Output (GRP) as % of Region Output.	17.4%

Source: IMPLAN, EMSI

Impact of the Coal Mining Industry in the Yampa-White River Region		
Metric	Direct	Total
Employment	1,545	3,149
Labor/Income	\$138.5	\$214.4
Total Value Added	\$234.9	\$370.8
Output	\$478.6	\$700.9
Source: IMPLAN Model Output		
Dollars in millions		

Region Metric	Value
GRP	\$2,757,295,006
Total Personal Income	\$2,081,095,000
Total Employment	33,411
Number of Industries	169
Land Area (Sq. Miles)	10,324
Population	43,391
Total Households	18,842
Average Household Income	\$110,449
Employee Compensation	\$1,253,838,609
Proprietor Income	\$279,698,512
Total Income	\$1,533,537,121

Source: IMPLAN

The Impact of Coal Mining in Moffat County

Moffat County's coal mining sector contributes about \$229 million to the direct Gross Regional Product, \$742 million, for the county. There are 776 direct employees in the industry, with total direct wages of about \$61 million. The total impact of the coal mining industry in the county is 1,144 workers, \$75 million in wages and \$283 million in output.

Impact of the Coal Mining Industry in Moffat County		
Metric	Direct	Total
Employment	776	1,144
Labor/Income	\$61.1	\$75.3
Total Value Added	\$113.3	\$137.5
Output	\$229.4	\$278.0
Source: IMPLAN Model Output		
Dollars in millions		

County Metric	Value
County Direct Coal Employment IMPLAN	776
County Direct Coal Employment as % of County Employment IMPLAN	10.0%
County Wage and Salary Coal as % of Direct Coal Employment	59.3%
Total Wage and Salary Coal Employment	460
Average Annual Coal Wages w/o supplement	\$76,532
County Coal Output (GRP)	\$229,365,216.0
County Coal Output (GRP) as % of County Output.	30.9%

Source: IMPLAN, EMSI

County Metric	Value
GRP	\$741,528,250
Total Personal Income	\$546,343,400
Total Employment	7,731
Number of Industries	127
Land Area (Sq. Miles)	4,742
Population	13,200
Total Households	5,489
Average Household Income	\$99,534
Employee Compensation	\$298,577,095
Proprietor Income	\$71,175,561
Total Income	\$369,752,656

Source: IMPLAN

The Impact of Coal Mining in Rio Blanco County

Rio Blanco County's coal mining sector contributes slightly less than \$55 million to the direct Gross Regional Product, \$397 million, for the county. There are 183 direct employees in the industry, with total direct wages greater than \$14 million. The total impact of the coal mining industry in the county is 241 workers, \$16 million in wages and \$61 million in output.

Impact of the Coal Mining Industry in Rio Blanco County		
Metric	Direct	Total
Employment	183	241
Labor/Income	\$14.2	\$16.0
Total Value Added	\$25.6	\$29.5
Output	\$54.5	\$61.2
Source: IMPLAN Model Output		
Dollars in millions		

County Metric	Value
County Direct Coal Employment IMPLAN	183
County Direct Coal Employment as % of County Employment IMPLAN	3.8%
County Wage and Salary Coal as % of Direct Coal Employment	100.0%
Total Wage and Salary Coal Employment	183
Average Annual Coal Wages w/o supplement	\$90,132
County Coal Output (GRP)	54,542,596.0
County Coal Output (GRP) as % of County Output.	13.7%

Source: IMPLAN, EMSI

County Metric	Value
GRP	\$397,315,262
Total Personal Income	\$259,539,200
Total Employment	4,802
Number of Industries	98
Land Area (Sq. Miles)	3,221
Population	6,857
Total Households	2,945
Average Household Income	\$88,122
Employee Compensation	\$208,624,223
Proprietor Income	\$37,046,305
Total Income	\$245,670,528

Source: IMPLAN

The Impact of Coal Mining in Routt County

Routt County's coal mining sector contributes slightly more than \$191 million to the direct Gross Regional Product, \$1,618 million, for the county. There are 586 employees in the industry, with total wages of about \$62 million. The total impact of the coal mining industry in the county is 1,152 workers, slightly more than \$93 million in wages and almost \$278 million in output.

Impact of the Coal Mining Industry in Routt County		
Metric	Direct	Total
Employment	586	1,152
Labor/Income	\$62.4	\$93.3
Total Value Added	\$98.9	\$152.6
Output	\$191.3	\$277.6
Source: IMPLAN Model Output		
Dollars in millions		

County Metric	Value
County Direct Coal Employment IMPLAN	586
County Direct Coal Employment as % of County Employment IMPLAN	2.8%
County Wage and Salary Coal as % of Direct Coal Employment	80.7%
Total Wage and Salary Coal Employment	473
Average Annual Coal Wages w/o supplement	\$92,355
County Coal Output (GRP)	191,298,672
County Coal Output (GRP) as % of County Output.	11.8%

Source: IMPLAN, EMSI

County Metric	Value
GRP	\$1,618,451,500
Total Personal Income	\$1,275,213,000
Total Employment	20,878
Number of Industries	153
Land Area (Sq. Miles)	2,362
Population	23,334
Total Households	10,408
Average Household Income	\$122,523
Employee Compensation	\$746,637,307
Proprietor Income	\$171,476,644
Total Income	\$918,113,951

Source: IMPLAN

The Impact of Electrical Power Generation in Colorado and the Yampa-White River Region

At the state level, the electrical power generation industry is larger than the coal industry. It benefits greatly from being located in a coal-rich state and is impacted by policies and business practices that affect coal production.

The coal from the Yampa-White River region mines supplies the Tri-State Generation and Transmission Station at Craig and the Xcel Energy Hayden Station. The region benefits from the coal mining industry for multiple regions.

Impact of the Electrical Power Generation Industry in Colorado		
Metric	Direct	Total
Employment	6,651	21,720
Labor/Income	\$995.3	\$1,810.0
Total Value Added	\$3,739.5	\$4,983.6
Output	\$5,561.0	\$7,643.3
Source: IMPLAN Model Output		
Dollars in millions		

About 0.21% of the state's workers are directly employed in the electrical power generation industry and about 1.9% of the state's GRP can be directly attributed to this industry. Output per work is greater than many other industries.

About 1.7% of the Yampa-White River Region's workers are directly employed in the electrical power generation industry and about 16.0% of the region's GRP can be directly attributed to this industry. Output per work is greater than many other industries.

Impact of the Electrical Power Generation Industry in the Yampa-White River Region		
Metric	Direct	Total
Employment	571	1,233
Labor/Income	\$64.3	\$93.1
Total Value Added	\$291.0	\$338.2
Output	\$441.3	\$519.3
Source: IMPLAN Model Output		
Dollars in millions		

Approximately 42%, or 240, of the 571 workers are wage and salary employees.

The impact of the electrical power generation industry in the Yampa-White River Region has been calculated in such a way that it can be added to the impact of the coal mining industry for the region. In other words there is no double counting of the coal produced locally that is used to produce electricity.

Key Findings

This study was conducted using data from IMPLAN and EMSI. These are credible sources and the methodology for conducting the analysis is recommended by IMPLAN and is standard for the industry. The key employment findings of the report are:

- There are 1,545 direct employees in the Yampa-White River Region working in the coal mining industry. Overall there are 3,149 employees in the Yampa-White River Region working in the coal mining industry (direct, indirect, and induced).
- There are 3,469 direct employees in the state coal mining industry. Overall there are 8,467 employees working in the state coal mining industry (direct, indirect, and induced).

The key output findings of the report are:

- Direct output within the Yampa-White River Region associated with the coal industry is slightly less than \$478 million. Direct output within the region associated with the coal industry is slightly less than \$701 million (direct, indirect, and induced).
- Direct statewide output for the coal industry is slightly less than \$1,052.1million. Direct statewide output for the coal industry is \$1,838.0 million (direct, indirect, and induced).

To gain an appreciation for what these numbers mean and the impact of the coal mining industry, it is important to put them in perspective.

- At the state level, the coal mining industry is small. It is one of 405 industries, it accounts for .11% of total direct

employment and .37% of total direct output. The industry has a higher than average output for employee level than other industries.

- At the industry level, the Yampa-White River Region employs 44.5% of the direct employees in the state's coal mining industry. In addition, it accounts for 45.5% of the state's direct coal mining output.
- At the regional level, the coal mining industry accounts for 4.6% of the region's total direct employees, but it is responsible for 17.4% of the region's total direct output. Clearly, output per worker for the sector is greater than the average.
- There are 188 industries in the Yampa-White River Region compared to 405 for the state. The region is less diversified than the state, which accentuates the importance of dominant role the coal mining industry plays in the Yampa-White River economy.
- Average wages, without supplements, for the region are \$84,544 for surface mining and \$90,132 for underground mining. Average wages are well above the state average for all industries. About 73% of the direct workers in the region are wage and salary employees.

The key findings for the electrical power generation industry are:

- There are 1,233 total employees in the electrical power generation industry (direct, indirect, and induced).
- The total direct output is \$519.3 million.

Appendix

Measurement of Economic Activity

Economic impact analyses illustrate how industries contribute to the economy in different ways. While this evaluation focuses on one industry, it does not suggest that this industry is more important than others.

The simplistic model used for this economic impact analysis looks at the number of employees at a facility, their wages, and their initial, direct, indirect and induced impacts that industry has in the community. These impacts are derived by using multipliers, numbers calculated to define the input-output relationship between industries within a study area. Multipliers will be used to calculate the following:

- The *direct impact* measures the impact of the existing workers on the economy.
- The *indirect effect* measures the impact that changes in the number of workers in the industry have on related industries, such as businesses within the supply chain.
- The *induced impact* measures the change in household expenditures, resulting from changes in the company.

For simplicity sake, only the direct impact and the total impact (direct, indirect, and induced) are calculated.

It should be noted that there may be a slight distortion in data for sparsely populated geographic areas because a slight change in one data set may have a disproportionate change in other data. Also, the input-output relationship for a small geographic area is typically not as strong as for a larger area because the supply chain for many industries is located outside the local area.

This study is intended to provide a broad overview of the impact of an industry. Additional research may be appropriate if more in-depth information is desired. A more comprehensive analysis could look at the impact of major capital expenditures, intangible contributions, or policy changes. As well, a more in-depth analysis may be appropriate to gauge the fiscal benefits or net benefits of the industry or changes in the industry. For example, the former would look at the changes in tax receipts) while the latter might look at the net benefits of the industry (public revenues less public costs).

Other Definitions

Direct Employment - Direct employment refers to employment prior to the application of indirect and induced multipliers.

Direct Output - Direct output refers to output prior to the application of indirect and induced multipliers.

IMPLAN Employment - Employment as a combination of data from the Quarterly Census of Employment and Wages (QCEW by BLS) and County Business Patterns (CBP by Census). As well, the REA data is used for control totals (to incorporate proprietors and non-covered sectors.)

EMSI - Economic Modeling Specialists International is a private company that uses data compiled by federal agencies to produce a user friendly tool to analyzing various labor, workforce, and education data.

IMPLAN - IMPLAN is a private company that uses data produced by federal agencies to produce an economic impact modelling data set and tool.

Location Quotient (Concentration) - The LQ is the ratio that compares the concentration or percentage of a region to the concentration of a larger reference region. Quite often the larger region is the U.S. If the $LQ = 1.0$, then the concentrations are the same. If the $LQ < 1.0$, then the local region has a lower concentration of that industry. When the $LQ > 1.0$, then the local region has a higher concentration of that industry. For example, assume 12% of the local industry is employed in coal mining and the average for the reference region is 8%. Then the $LQ = 12\% / 8\%$ or 1.5. This means the local region has a higher concentration of the coal mining industry.

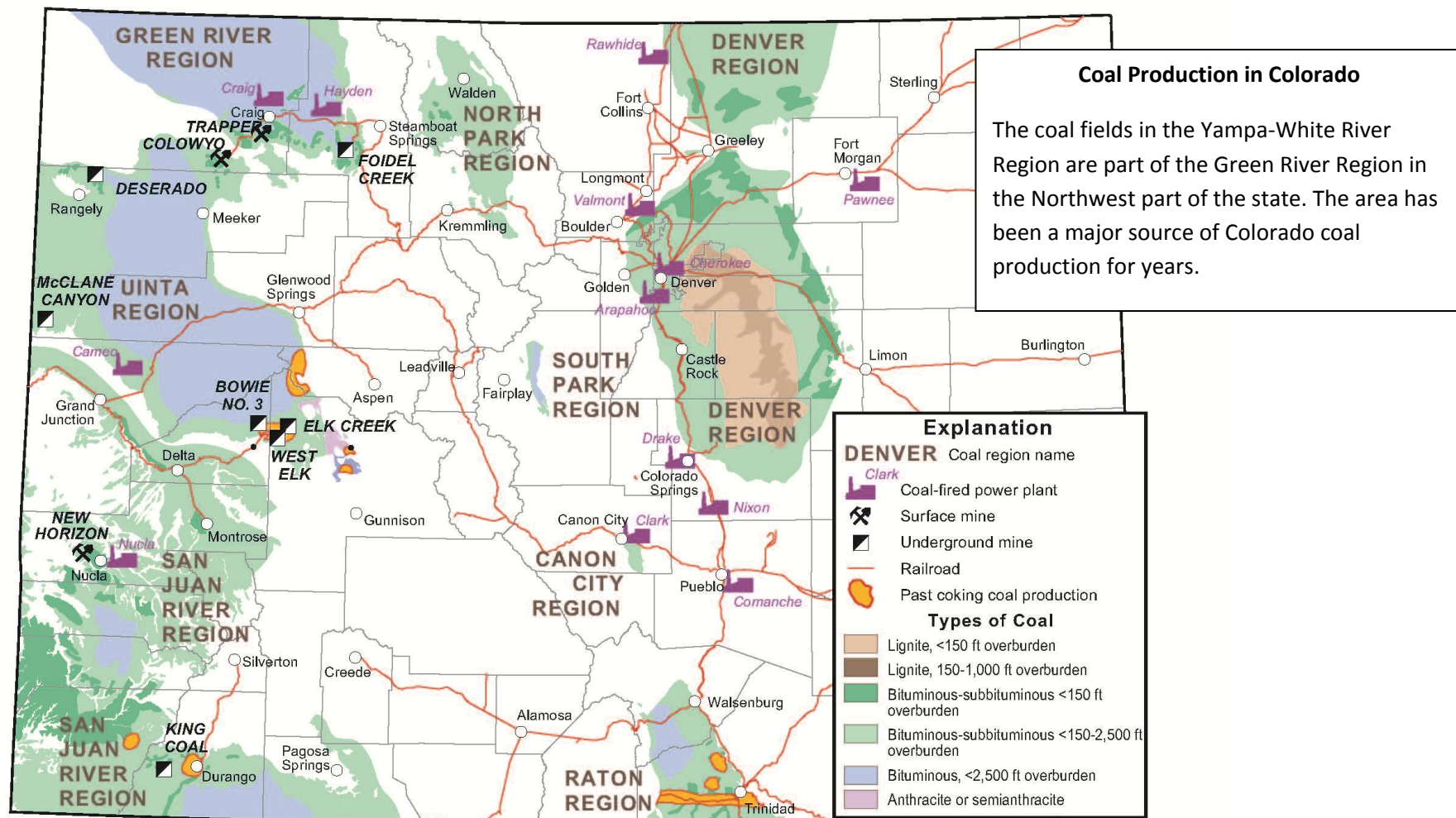


Figure 30. Locations of coal mines, power plants, railroads, and coal-bearing regions in Colorado, 2006.

About the Project Partners

Craig/Moffat Economic Development Partnership - The Craig/Moffat Economic Development Partnership is a public/private organization. The purpose is to support and guide entrepreneurs and business owners and to recruit, retain and grow businesses. The group provides business services, classes, SBDC counseling and referrals through the Marianna Raftopoulos Business Success Center at Craig in Moffat County. (<http://CraigBusiness.com/>)

Rio Blanco County - The mission of the Rio Blanco County Economic Development Committee is to diversify and sustain the economy in Rio Blanco County by partnering with public and private entities. This will be accomplished by building a business friendly environment, elevating the quality of life, leveraging competitive advantages to retain, grow and recruit business while cultivating and enhancing business opportunities throughout Rio Blanco County. (<http://rbc.us/>)

Steamboat Springs Economic Development Council - The mission of the Steamboat Springs Economic Development Council is to promote environmentally sound and long-term economic stability and diversification in Routt County. Coordinated by the Steamboat Springs Chamber Resort Association, the SSED

Acknowledgements

A special thank you goes to the staff at IMPLAN for their input regarding the methodology for conducting this analysis. As well, EDCC provided funding for the project, the Governor's Office of Economic Development and International Trade provided assistance gathering data and other organizational support. In addition, the Colorado Department of Labor and Employment provided financial support for the initiative to complement the LMI Gateway Data Project. Yampa Valley Partners assisted in the review of the project and will provide guidance in its use for economic development purposes

strives for a thorough understanding of the local and regional economy through the assistance of a volunteer council representing local business sectors including finance, technology, outdoor recreation, marketing, government, health care, nonprofit organizations, agriculture, education, construction, tourism and small business. (<http://www.steamboatbiz.com/>)

Yampa Valley Data Partners - Yampa Valley Data Partners is a nonprofit 501(c) 3 organization that provides unbiased, accurate, timely and relevant data to governments, businesses and nonprofits in the Northwest Colorado region. (yampavalleydatapartners.com)

Gary Horvath - Gary Horvath is a Broomfield-based economist who has conducted business, economic, and market research in Colorado for over 25 years. His research has focused on the Colorado economy and economic development. He also has worked in manufacturing, the hospitality industry, higher education, and the sports industries. For additional information go to <http://cber.co/about-cber-co/>.