

Economic Development In NW Colorado

By Jeremiah Riley, Joshua Riley, Nathan Perry

Competitive Advantage: Moffat

- ▶ Energy and Energy Infrastructure (Coal, Oil, and Gas):
 - ▶ Moffat County has two coal mines: Trapper Mine and Colowyo Mine (shared with Rio Blanco County).
 - ▶ The county also has a coal power station: Craig Station, that contains all the infrastructure necessary to connect to the electric grid. As the power stations shut down, opportunities to use the infrastructure for other power options, such as solar are possible.
 - ▶ Using the plants for light and advanced manufacturing facilities is another possibility.
 - ▶ Moffat County is also home to railroad lines which could be used to transport manufacturing products.

Agricultural Heritage

- ▶ According to the 2017 Census of Agriculture, Moffat County has 462 farms and 953,100 acres of farmland, for an average of 2,063 per farm.
- ▶ Eighty one percent of this land is pastureland, which supports cattle, sheep, and goats. The top crops are hay, grains, oilseeds, dry beans, and dry peas.
- ▶ The views are picturesque, and the small-town agricultural feel is attractive to those who desire the country life.
- ▶ For this and other reasons, it is appealing to certain retirees and younger workers that desire a hobby.

Outdoor Recreation

- ▶ Moffat County has 1.7 million acres of public land that supports activities like hunting, fishing, hiking, wildlife viewing, ATV riding, rafting, touring, camping, and golfing (see <https://www.visitmoffatcounty.com/>).
- ▶ Natural landscapes including the Yampa and Green Rivers, Dinosaur National Monument, and Desolation Canyon.
- ▶ There is ample opportunity for outdoor recreation tourism, as well as the recruitment of remote workers to live this lifestyle.

Rio Blanco Competitive Advantage

- ▶ Mining/Energy
- ▶ Outdoor Rec
- ▶ Agriculture Heritage
- ▶ Airport and Flight School
 - ▶ The CNCC aviation program provides opportunities for students who want to enter aviation. The program and facilities provide students with a competitive advantage for aviation training and access to connections on the front range with aviation and aerospace companies.

Routt Competitive Advantage

- ▶ **Tourism:** Routt County is anchored by Steamboat Springs, which is a high-end resort town.
 - ▶ Steamboat Springs offers access to skiing through the Steamboat Springs Ski Resort.
 - ▶ This resort community not only has access to skiing, it has a historic downtown and access to the other outdoor recreation activities available in Routt and Moffat Counties.
- ▶ **Professional Services:**
 - ▶ Routt County's education level and contribution of professional services is significantly higher than Moffat and Rio Blanco Counties.
 - ▶ This provides Routt County with an advantage to scale professional services throughout the western portion of the county.
- ▶ **Broadband:** In part because of project THOR, broadband is strong in Steamboat Springs.
 - ▶ This provides advantages for remote workers, technology companies, and professional services within the community.

Overview of Initial Results & Conclusions

- ▶ How do we take advantage of some of these competitive advantages to promote economic development in the region?

Coal to Products

- ▶ Coal materials have a lot of applications, can be impactful for coal transitioning economies.
- ▶ Not going to utilize as much coal as combustion, but good opportunity to create value added industry clusters.
- ▶ Political climate makes this type of investment challenging for the state and the region.
 - ▶ As the State moves away from coal, and as they continue to legislate around coal, it creates a riskier investment for private capital, which reduces the probability of private capital.
 - ▶ Foreign capital a possibility
- ▶ Currently at Laboratory level (bench scale level)
 - ▶ Will need investment to get it to industrial level.

Economics of Coal Products

- ▶ Advanced coal-carbon materials have advantages. One of these is a low weight-high strength ratio.
- ▶ Although advanced carbon materials can be produced from mined graphite, this material is typically imported from abroad. Currently the United States has no active graphite mines and imports about 70% of the resource from China. However, coal is widely abundant in the United States and is an effective feedstock for carbon products.
- ▶ In addition to domestic availability, carbon materials produced from coal are cost-effective. This is because coal only costs from \$12-\$54 per short ton, depending on grade. However, graphite (the traditional carbon feedstock) is much more costly, ranging from \$600 to \$1,700 per short ton, depending on grade. Furthermore, because the end materials are lighter and stronger than many traditional examples, less of it is needed by weight.
- ▶ Advanced coal-carbon materials are also environmentally friendly. Their inherent lightness reduces fuel consumption associated with transportation. Additionally, their strength and durability mean that they have longer duty cycles than many traditional materials, reducing waste associated with demolition and construction. Also, light weight insulation produced from these materials can increase the energy efficiency

Coal Innovation Center

- ▶ Create a coal innovation center where Craig is involved in the research of coal to products endeavors.
 - ▶ Partnership with Wyoming
 - ▶ Utilize current coal infrastructure, including parts of Craig Station facility.
 - ▶ Coal to technology products have synergy with defense and aerospace companies on the Front Range that could utilize the materials and have them shipped via rail connections.

Steps to Innovation Through Coal to Products

- ▶ Involvement of one or more foreign partners:
 - ▶ Policy challenges surrounding coal in Colorado will make it difficult to attract investment from domestic companies at the outset of a project.
 - ▶ This is because it will be easier and less risky to invest in programs in states with coal-friendly policies.
 - ▶ However, foreign countries that conduct research on advanced materials that have industries that could benefit from coal products could serve as potential partners.
 - ▶ As partners they, could bring investment and international recognition to the program.
 - ▶ The AGNC region should consider partnering with one or more foreign entities early in the project.
 - ▶ The region should reach out to the Colorado Office of Economic Development and International Trade and the federal International Trade Administration in Denver.

Collaboration with Colorado universities and out of state universities

- ▶ Due to the newness of coal-to-products, partnerships with academic institutions are essential.
- ▶ Program stakeholders should pursue a partnership with a Colorado University that has the resources and expertise to carry out coal materials research.
- ▶ They should also pursue one or more partnerships with universities in other coal producing states that could provide relevant resources and strategic alignment for funding.

Incorporate coal-to-products into a larger innovation program

- ▶ To increase the likelihood of funding, program competitiveness, and promote better economic diversity, coal-to-products should be a component of a broader innovation program.
- ▶ This program should focus on light manufacturing, workforce development, and remote work support. It should also utilize the innovation space during the early stages of the project.
- ▶ Additionally, it should be tied into programs that have broad appeal such as green energy, battery technology, critical materials, and similar areas.

Keep program goals in line with policy, funding, and infrastructure realities

- ▶ Although it may be tempting to envision a big program, goals should be in line with the direction Colorado is taking with coal, the likelihood of available funding, and the type of facilities that will be needed to produce a given material.
- ▶ For this reason, it is best to start small and develop a focus that has broad support, which is also suitable for local coal feedstock.

Invest in research and development prior to manufacturing

- ▶ Although it may be tempting to focus on building manufacturing infrastructure for coal products, investment in research and development should take place first.
- ▶ This is because many existing technologies are at the bench scale level of development and patented by other entities.
- ▶ This necessitates collaboration with patent holders and efforts to improve existing technologies or develop new ones altogether.
- ▶ Collaboration with existing patent holders can take place by engaging universities involved in material research.

Specific Opportunities for the Region

▶ Manufacturing/Aviation/Defense:

- ▶ The regions transition from energy provides an opportunity for light and advanced manufacturing.
- ▶ The coal and oil/gas skillset transfers well to this sector and the region has a competitive advantage with the Front Range in terms of cost of living and labor costs.
- ▶ This provides an opportunity for various types of manufacturing that could be relocated to the region such as metal fabrication and light manufacturing facilities.
- ▶ This could allow companies to reduce costs while still being close to corporate centers on the Front Range.
- ▶ Rail transportation also provides excellent access to shipping for finished, intermediate goods, or raw materials.
 - ▶ Incentives for green power technologies, not just solar power, but the production of solar panels, or parts of the production process.

Remote Workers/Shared Workspace/Innovation Center

- ▶ This region is ripe for a business development center that caters to the specific needs of the region.
- ▶ A coworking space component would also benefit remote workers and could potentially support the cybersecurity program at CNCC.
- ▶ An innovation center with a multifaceted purpose would spur entrepreneurship and the makerspace facilities it contains would help local businesses and innovation in the manufacturing sector.
- ▶ Leverage existing shared workspace facilities and create new makerspace facility and innovation center.
 - ▶ Implementation of broadband will help shared workspace interest.

Worker Retraining

- ▶ Nationally, there is a deficit in trade-workers. This includes welders, electricians, plumbers, etc.
- ▶ Worker retraining that fits the needs of the region and support for trade business development may help the region overcome this deficit and provide job creation opportunities.
- ▶ This could come in the form of funding for worker retraining from Just Transition or federal programs could fund worker retraining.

Natural Soda/Broadband Expansion

- ▶ Natural Soda (Rio Blanco): Natural Soda takes advantage of a very specific quarry of NaCO_2 in Rio Blanco County. It may be possible to provide incentives to connect Natural Soda by rail and encourage related businesses to expansion in the region.
- ▶ Broadband Expansion
 - ▶ Fits well with CNCC's Cybersecurity program and co-working.
 - ▶ General businesses desire broadband even for non-tech related business.
 - ▶ Coworking Space/Innovation Center
 - ▶ Money seems available from Build Back Better programs.