



THE JACKSON HOLE
CENTER FOR GLOBAL AFFAIRS



U.S. COAL REGIONS JUST TRANSITION STUDY

2022 - 2023

*PHASE II OF
U.S.-CHINA COAL REGIONS AND THE
ENERGY TRANSITION TRACK 2 DIALOGUES*

SUPPORTED BY



U.S. Coal Regions Just Transition Study

Final Report

Phase II of

U.S.-China Coal Regions and the Energy Transition Track 2 Dialogues

January 2024

Executive Summary: Towards the goal of hastening global climate change action and collaboration through the positive transformation of coal-producing regions in the U.S. and China, the Jackson Hole Center for Global Affairs (www.jhcga.org) conducted a Just Transition Study from August 2022 to December 2023. The second phase of work started in 2021 and built around Track II dialogues with leaders in U.S. and China coal-producing regions. The study aimed to work in parallel with the China Coal Society and was supported by the Energy Foundation China. JHCGA's component of the study focused on U.S. coal-producing regions, specifically Wyoming and West Virginia. The study in China engaged primarily with Shanxi, Shaanxi, and Inner Mongolia, China's largest coal-producing provinces. These efforts are intended as stand-alone U.S. and China reports, lending themselves also for use as companion pieces to better understand through research, interviews, conferences, and surveys at state and local level progress in implementing the just transition for communities and workers impacted by the decline of coal.

The goal of hastening joint U.S. and Chinese climate action will also be served by focusing on the opportunities and challenges to transform coal-producing regions beyond coal dependency. Additionally, the insights and inputs aim to contribute to the ongoing network efforts of "U.S.-China Energy Transition and Coal Regions Track II" dialogues. The study and dialogues also seek to contribute to national just transition policy-making efforts via subnational inputs and insights, and to add to the momentum of ongoing U.S. and Chinese efforts to build trust and collaboration on global climate action.

The transformation of energy markets, coupled with legislative advancements and technological breakthroughs in clean energy, presents a significant opportunity for revitalizing current and former energy-producing communities. Advances in technology, public policy, and international collaboration have converged to create an exciting and important opportunity for workers. As each community faces unique challenges, the solutions must also be locally-driven, based on place-based characteristics and goals.

Deliberately collective actions that incorporate all stakeholders show promising templates. The most successful initiatives have shown a holistic, forward-thinking approach driven from multiple angles—via overarching federal policy, state legislators, community leaders, NGOs, multinational corporations, research institutions, industrial leaders, and local businesses.

Collectively, these stakeholders are creating a new clean energy economy with the aim of meeting climate goals while spurring innovation through economically-viable technologies and businesses that employ former coal-industry workers.

For energy communities looking to navigate the transition, there is a challenge to connect skilled local employees with incoming businesses, emphasizing the importance of planning and preparations that can develop a trained workforce for new industries. Research from JHCGA's study showed that worker sentiment varies, with geographic location and age playing significant roles. West Virginia community members seem to demonstrate a strong connectivity to place, while older workers express a preference for staying in familiar fields. Retraining is deemed economically feasible only when training is paid, highlighting the role in furthering this objective of federal and state programs, nonprofits, and labor unions.

The timing of training opportunities relative to job availability is a crucial consideration. Collaboration between regions, industries, and workforce development agencies is advocated to synchronize supply and demand. Some innovative approaches, like temporary employment in mine land reclamation, aim to bridge the gap between industry closures and new development. For energy communities, community colleges are vital players in aligning curriculum and training programs with the needs of emerging industries. The shift towards shorter-term training and apprentice programs, tailored to planned regional industries, demonstrates adaptability. Community colleges act as connectors between state policies, regional workforce service centers, local governments, nonprofits, and community networks.

Beyond individual worker retraining, JHCGA's study identified an ongoing need for planning that focuses on enhancing the quality of life in entire communities as part of broader economic diversification strategies. Revitalizing downtown areas, supporting small businesses, addressing affordable housing challenges, and ensuring competitive wages contribute to making energy-producing communities more attractive. Policymakers stress the importance of engaging local leaders in creating place-based solutions, as exemplified by initiatives like the Building Resilient Economies in Coal Communities (BRECC) Initiative of the National Association of Counties. Successful case studies such as Form Energy, Western Wyoming Community College, and Coalfield Development highlight forward-looking models built with workers and communities prominently factored into decision making.

The Jackson Hole Center for Global Affairs

Founded in 2002, the Jackson Hole Center for Global Affairs is a non-partisan NGO that brings leaders and communities together in Jackson Hole to drive breakthroughs to global challenges.

JHCGA views climate change as the global crisis of our time. From the beginning we have had a niche focus on scaling climate solutions from within the globe's largest producers of coal, the most carbon intensive fossil fuel. Wyoming, our home state, is the U.S.'s largest producer of coal. We believe that the tipping point in achieving global climate action is through the positive win-win, job creating, clean energy scaling, climate solutions transformation of coal regions.

At the global level, in 2003, JHCGA launched our ongoing flagship project; the U.S. China Clean Energy Initiative. This ongoing initiative works to hasten climate solutions collaboration between Wyoming and Shanxi, China, the two largest coal-producing regions from the globe's two largest economies and carbon emitting nations: the USA and China. For the globe to act on climate, the U.S. and China must lead.

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List of Terms

ACT:	Appalachian Climate Technologies
BBBRC:	Build Back Better Regional Challenge
BIL:	Bipartisan Infrastructure Law
BRECC:	Building Resilient Economies in Coal Communities
CBP:	Community Benefit Plan
CCS:	Carbon Capture and Storage
CIF:	Climate Investment Funds
CIM:	Clean Investment Monitor
COP26:	26th Conference of Parties held in Glasgow
COP27:	27th Conference of Parties held in Sharm el-Sheikh
COP28:	28th Conference of Parties held in Dubai
CSIS:	Center for Strategic and International Studies
DOE:	Department of Energy
DWS:	Department of Workforce Services
EDA:	Economic Development Administration
ENDOW:	Economically Needed Diversity Options for Wyoming
IRA:	Inflation Reduction Act
IWG:	Interagency Working Group
ITC:	Investment Tax Credit
JTF:	Just Transition Fund
JTI:	Just Transition Institute
MMst:	Million Short Tons
NACO:	National Association of Counties
NDC:	Nationally Determined Contribution
PSC:	Public Service Commission
PTC:	Production Tax Credit
RESEA:	Reemployment Services and Eligibility Assessments
RMI:	Rocky Mountain Institute
RMP:	Rocky Mountain Power
RRT:	Rapid Response Team
UW:	University of Wyoming
WBC:	Wyoming Business Council
WYDOT:	Wyoming Department of Transportation
WEA:	Wyoming Energy Authority
WIP:	Wyoming Innovation Partnership

Background

The U.S. and China

As the globe's two largest economies, energy consumers, top two emitters, and major coal-producing nations, China and the U.S.'s role in the fight against climate change will be crucial for the success of the Paris Agreement to limit global temperature increase well below two degrees and striving for 1.5 degrees. Historically, successful Sino-U.S. climate collaboration paved the way for the Paris Agreement. Since COP26, major economies have all undertaken commitments to achieve carbon neutrality by 2050 or 2060. The implementation of these targets, notably the phasing out of coal, is a critical component that will play a disproportionate role in determining if global climate goals are reached.

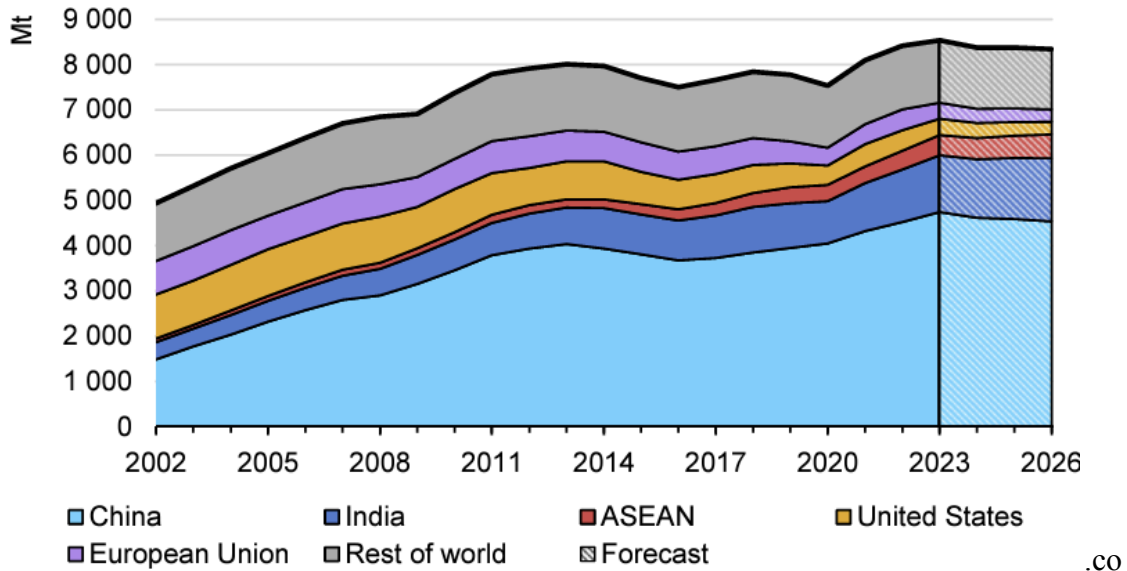
The state of the coal industry in China and the U.S. are at different stages of transition and subject to myriad factors relative to policymaking, regulations, energy security considerations, and market forces. Understanding these factors, the success stories, the roadblocks and providing recommendations for policymakers at the subnational and national level can provide new actionable insights to create new jobs, ensure coal communities are not left behind during the energy transition and contribute to new templates of climate change progress.

In November 2023, China and the U.S. jointly released the [Sunnylands Statement](#) to enhance bilateral climate cooperation by operationalizing a working group and furthering commitments made under the Paris Agreement. Furthermore, at COP28 in Dubai, both countries agreed to revisit and update their long-term strategies and climate action plans, including nationally determined contributions (NDCs), as part of the first global stocktake of Paris Agreement commitments.

Global Context

In their [Coal Report 2023](#), the International Energy Agency predicts that 2023 will surpass 2022's record high level of global coal consumption. While coal use is falling quickly in developed economies, total demand in 2023 is expected to increase over 2022 levels in China (up 4.9%), India (up 8%), and Indonesia (up 11%) to create a net increase in overall usage. However, the agency predicts that beginning in 2024, global coal demand will begin to decrease. Nearly 75% of global coal consumption is currently taking place in China, India, and ASEAN countries. With [95% of coal consumption](#) occurring in countries that have pledged to obtain net-zero emissions, national and international policy trends point to a transition away from coal. However, growing energy demand and national security concerns remain at the forefront of policy issues in developing nations.

Global coal consumption, 2002-2026



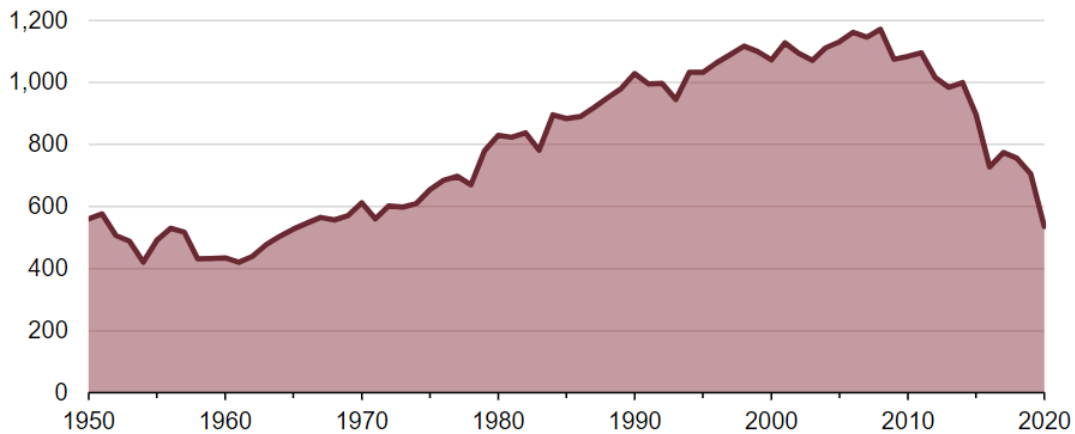
Source: International Energy Agency, [Coal 2023](#)

U.S. Coal Industry Description

The total annual tonnage of U.S. coal consumption peaked in 2007 at 1.1 billion short tons. Coal consumption declined in most years since then, mainly because of a decline in the use of coal for electricity generation. In 2021, the total productive capacity of U.S. coal mines continued to decline to 871 million short tons (MMst), a decrease of 6.6% from the 2020 level.

Annual U.S. coal production (1950–2020)

million short tons (MMst)



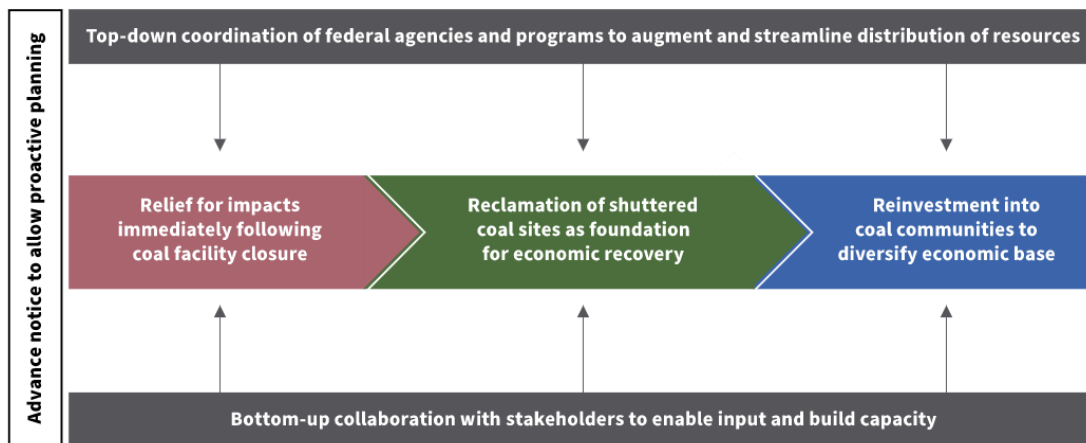
Source: U.S. Energy Information Administration, [Annual Coal Report](#)

Employment and Outlook: The number of coal miners peaked in 1923 with around 800,000 workers. In 2021, the average number of employees at U.S. coal mines decreased to 39,500 employees. The U.S. coal industry is forecasted to continue to decline. Most coal-fired power plants operating in the United States were built in the 1970s and 1980s. Nearly 23% of the

currently operating coal-fire capacity plans to retire by 2029. The last large coal-fired plant came online in 2013; no new coal-fired plants have been announced since then.

Policy Frameworks: As global markets and momentum shift, energy think tanks and advocacy organizations have created detailed roadmaps and toolkits to visualize a just transition away from a coal-based power industry. “[A Framework for Just Transitions](#),” by the Just Transition Initiative (JTI), outlines high-level thought processes and definitions including social equity, distributional impacts, systems change, and incremental reform. The JTI—a partnership between the Climate Investment Funds (CIF) and the Center for Strategic and International Studies (CSIS)—posits that just transition principles such as inclusive decision-making and the fair distribution of costs/benefits are necessary to achieve climate goals.

The [National Economic Transition](#) report, led by the Just Transition Fund (JTF) with the support of 80 coal industry leaders, created a platform that recommends seven pillars: local leadership, restorative economic development, workforce development/worker health, reclamation, infrastructure, bankruptcy, and coordination/access. The Rocky Mountain Institute (RMI) has also released multiple reports with detailed recommendations for financing the coal industry transition and assessing social outcomes of coal mine closures. Key components include bottom-up collaboration combined with top-down federal coordination to provide immediate relief, reclamation, and reinvestment in coal communities.



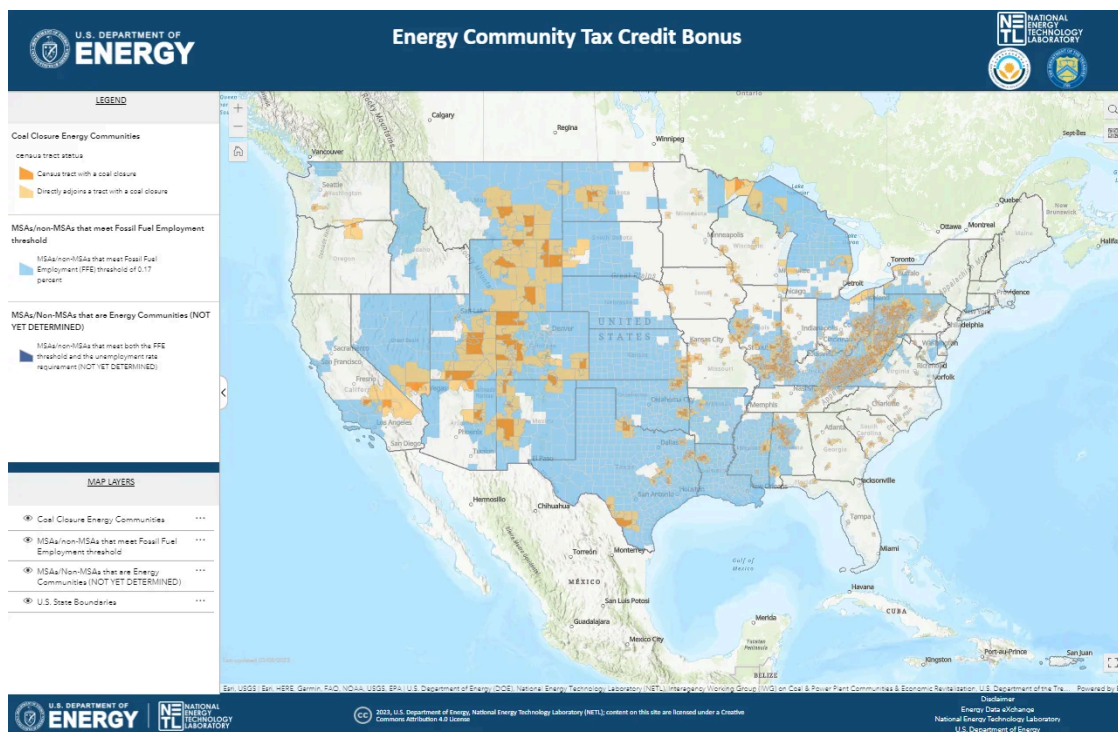
Source: Rocky Mountain Institute, [Fighting for a Just Transition for Coal Communities](#)

U.S Federal Policy – Inflation Reduction Act: In August of 2022, the United States Congress passed, and President Joe Biden signed into law, the Inflation Reduction Act (IRA) – the largest policy program that the U.S. has ever made to hasten the energy transition and act on climate change. President Biden has set ambitious goals of reaching 100% carbon pollution-free electricity by 2035; a 50-52% reduction from 2005 levels in economy-wide net greenhouse gas pollution in 2030; and net zero emissions economy-wide by no later than 2050.

The IRA makes historic investments to transform the industrial sector and expand clean energy through the extension and overhaul of the Investment Tax Credit (ITC) and Production Tax

Credit (PTC). Additional tax credits and incentives made available to energy-producing communities through the IRA include:

- *45Q Tax Credit for Carbon Capture* – authorizing tax credits for enhanced oil recovery and direct air capture.
- *48E Increase in Energy Credit for Solar and Wind Facilities Placed in Service in Connection with Low-Income Communities* – providing an additional credit for small-scale facilities in low-income communities.
- *Production Tax Credit for Electricity from Renewables* – providing a tax credit for production of electricity from renewable sources. Credit is increased by five times for projects meeting prevailing wage and registered apprenticeship requirements. Credit is increased by 10% if located in an energy community.
- *Energy Infrastructure Reinvestment Financing* – guaranteeing loans to projects that repurpose or replace energy infrastructure that has ceased operations or that enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or greenhouse gas emissions.
- *Energy Community Tax Credit Bonus* – applying a bonus for projects, facilities, and technologies located in energy communities including distressed former coal-producing areas.



Source: DOE, [Energy Tax Credit Bonus Mapping Tool](#)

Summary

The U.S. coal industry continues to decline in terms of production and employment. Rapidly changing energy markets, emerging technologies, and federal legislation have led to swift shifts in industrial investment. In accordance with published “just transition” frameworks, the Inflation Reduction Act (IRA) includes numerous provisions to spur clean energy investment in former

energy-producing communities with a focus on displaced workers. Across the U.S., energy communities that have traditionally produced the fossil fuels that have powered the nation are in transition. Whether it be West Virginia, Kentucky, Pennsylvania, southern Illinois, Utah, or Colorado, a similar story with similar challenges is underway. Fundamentally, the challenge for these states is to work with communities to launch new industries that can generate economic diversification, creating jobs and supporting communities in the process.

Insights on the Energy Transition in Progress

Overview

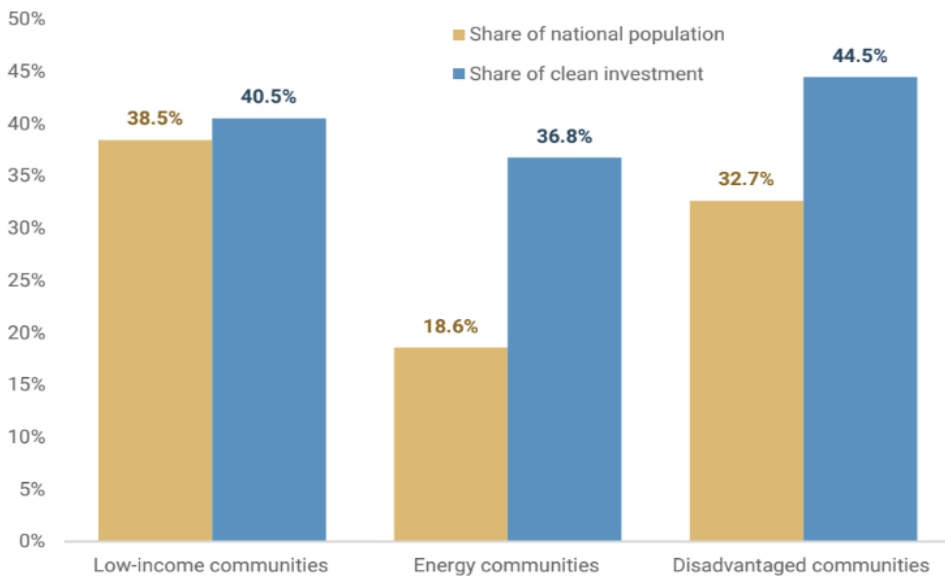
The impacts of the changing energy landscape on workers in energy-producing communities are influenced by multiple layers of national policies, federal funding, state actions, political dynamics, industrial developments, and local relationships. Communities and states are increasingly focused on economic diversification options, with community colleges playing an important role in worker training/retraining opportunities. Local community networks and individual leadership are critical to tying all the pieces together into successful scenarios.

IRA/Federal Policy Landscape

The introduction of the IRA legislation has played a catalytic role in driving momentum in and investment into clean energy technologies and into energy-producing communities. In West Virginia, the Rocky Mountain Institute (RMI), predicts that by 2030, the Inflation Reduction Act (IRA) could potentially offer investments amounting to \$9,100 per resident. This projection places West Virginia as the third-highest state in terms of IRA investments per citizen, trailing behind North Dakota and Wyoming.

Although the coal industry has been declining in the U.S. for several decades, the initiatives outlined in the 2022 legislation have kick-started an enormous interest in new industries and projects. The IRA's additional incentives for energy-producing communities (through tax credits and grant priority) have created a strong interest in siting new projects in these locations. The Clean Investment Monitor (CIM) found that the share of [clean investment occurring in energy communities](#) is nearly twice the share of the national population living in these communities (36.8% versus 18.6%), while the proportion of clean investment occurring in disadvantaged communities outpaces population by nearly 12% (44.5% versus 32.7%).

Percent of clean investment going to designated communities relative to percent of national population living in these communities
 Q3-2022 to Q2-2023. Criteria explicitly defined in the IRA.



Source: Clean Energy Monitor, [Clean Investment at the Community Level](#)

Further Biden Administration policy changes, such as the Department of Energy (DOE)’s requirement for intensive community benefit plans in grant applications, are showing strong impacts. Companies must specifically show community development, engagement, and partnership opportunities in order to win federal grants. This change to holistic community investment has wide-ranging impacts on energy-producing communities. State governments, including West Virginia, have also begun to require companies to commit to employing local workers in order to receive state incentives.

Although the large influx of federal money is increasing funding opportunities, the pace at which it is arriving has made it difficult for some entities to spend it effectively. Furthermore, smaller nonprofits, businesses, and government agencies may not be familiar with navigating the federal grant system or have enough staff resources to spend on lengthy applications. To address those challenges, the federal government formed the Energy Communities Interagency Working Group (IWG). The Energy Communities IWG has created online guides for planning, executing, and managing projects. They also developed a team of navigators to help applicants through the process. Successful states are working alongside energy-producing communities to enhance collaborative project applications.

State Actions, State Revenue and Politics

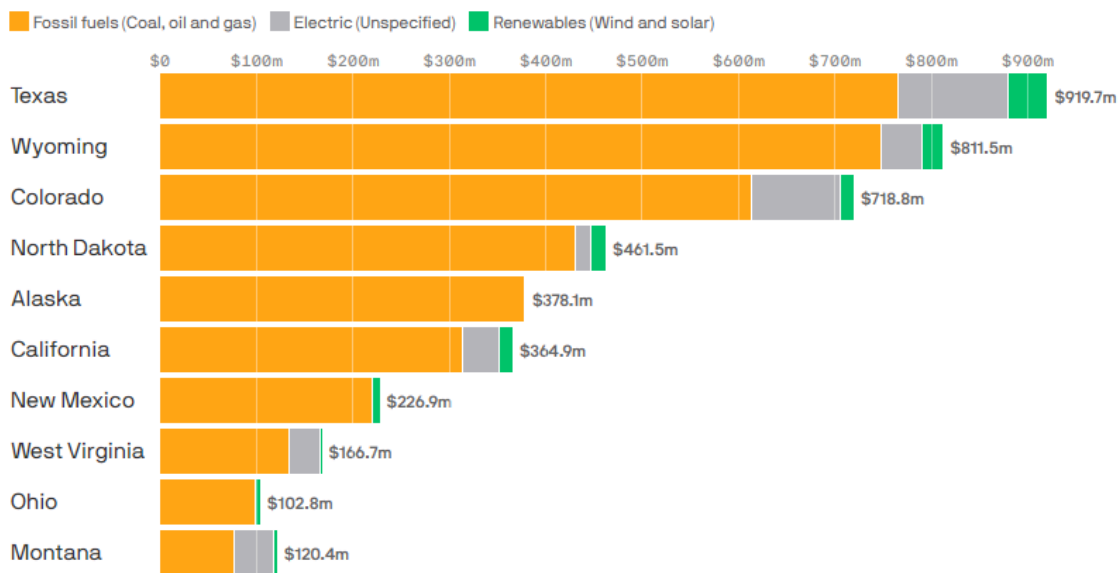
While the national landscape is changing rapidly, the ability to implement just transition principles should be considered practically within the political reality surrounding many energy-producing communities. State legislatures in Wyoming and West Virginia are steadily moving farther to the right end of the political spectrum, which tends to strengthen forces that protect traditional energy industries around energy security framing. In West Virginia, the coal industry lobby is very strong and politically connected. Voters in West Virginia voice significant

distrust of policymakers’ promises of new jobs. In Wyoming, relatively few workers are part of unions in a “right-to-work” state that has traditionally been viewed as unsupportive of union membership. Despite the challenges, several new initiatives have emerged.

Coal-producing states like Wyoming and West Virginia depend heavily on coal, not just for quality, high-paying jobs that support communities, but to generate public revenues. The energy transition promises new jobs in clean energy and renewable industries. However, the degree of dependence that some states have on revenue from fossil fuels cannot be overstated. Recent analysis from [Resources for the Future](#) outlined the challenge: while renewable energy growth is important for addressing climate change, it may not be sufficient to offset the local revenue loss in areas heavily dependent on fossil fuels. The study emphasizes that wind and solar, although increasingly contributing, may not be able to replace the substantial revenues generated by fossil fuels in certain regions, highlighting the need for state or federal support and new economic drivers in these areas undergoing deep decarbonization.

Direct local government revenue, 2021

By energy type in 79 select counties across 10 states



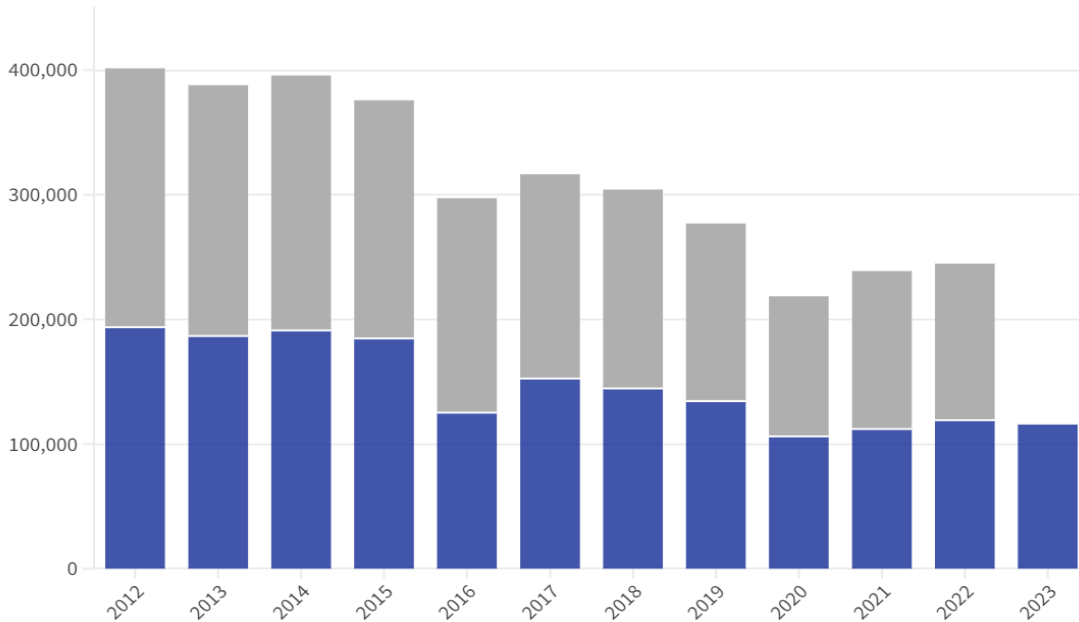
Adapted from an RFF report; Chart: Axios Visuals

Source: [Axios.com](#), [Axios Visuals](#)

Wyoming: Coal demand in Wyoming is in long-term decline. Wyoming’s total production has dropped from 401 million short tons in 2012 to under 245 million short tons in 2022.

Decline in Wyoming mining, 2012-2023 (year to date)

■ Coal production (thousand tons), January-June ■ Coal production (thousand tons), July-December



Source: Energy Information Administration, [Quarterly Coal Report](#)

Wyoming's communities and elected officials have long called for diversification of the state's economy to avoid budget crises during low periods for extractive industries. Proposed coal plant retirement in the next five years is expected to cost the state 1,600 jobs and \$77.5 million annually in tax revenue. However, action to address the decline of coal has been halting at times. Given the critical role that coal and other natural resources have played in generating income for the state, which levies no personal or corporate income tax, the state has attempted to protect existing markets. The result has been to delay coal plant shutdowns and focus on carbon capture and storage (CCS), coal products, and other usage of coal. Securitization of existing assets would be % difficult since the major utility serves six states, and Wyoming only accounts for 16% of the load.

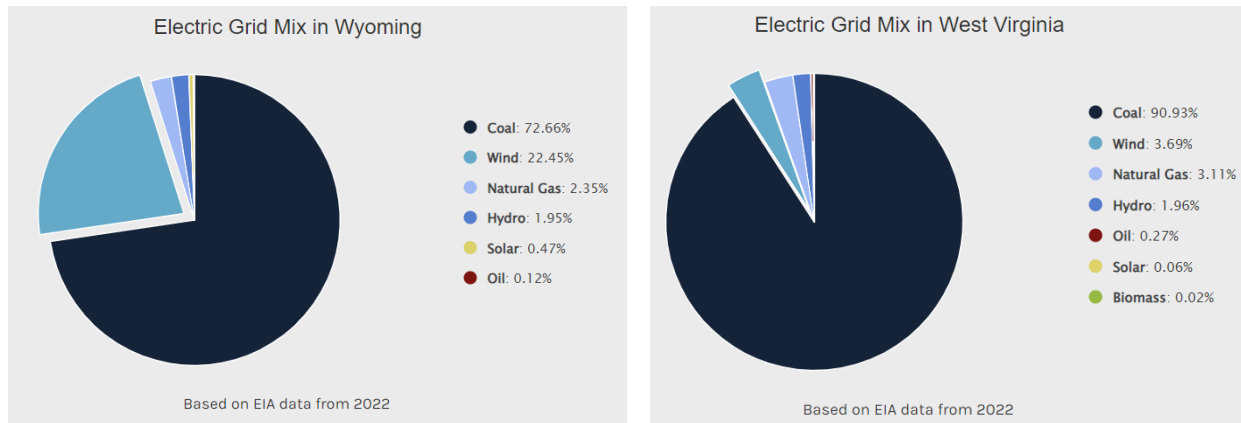
A Closer Look: Wyoming, Taxes, and Coal

Wyoming's economic reliance on coal and other natural resources is intricately connected to its unique tax structure, characterized by the absence of state income and corporate income taxes. The state's revenue model heavily depends on taxing industries involved in resource extraction, with coal, oil, and natural gas being major contributors. Wyoming's coal extraction is subject to a range of taxes, including sales tax, excise tax, and the prevailing severance tax rate of 6.5%. In the most recent available data, the state generated substantial income from these taxes on coal production, contributing over \$1 billion annually to state and local governments. This taxation strategy has attracted energy production companies to Wyoming, creating a favorable environment for resource extraction due to the lack of corporate income taxes. However, the recent decline in coal demand underscores the necessity for the state to reconsider its economic model, emphasizing the urgency of diversification and adaptation in response to evolving energy trends and global initiatives for cleaner alternatives. Wyoming's position as a coal-dependent economy necessitates strategic planning for a sustainable future amidst changing dynamics in the energy sector.

In 2019, the state passed a bill ([SF159](#)) that requires public utilities that want to retire a coal plant to first attempt to find another buyer. In 2020, the legislature passed a bill ([HB200](#)) to protect the fossil fuel industry by mandating that utility companies produce a portion of their electricity with low carbon sources—specifically coal plants with CCS—while passing the capital costs on to ratepayers. In 2021, the Wyoming legislature introduced two transition-related bills: one to provide economic support to areas affected by major industry closures and another to help affected stakeholders plan for and respond to extractive industry transition. Although the bills received some support, they ultimately did not pass.

***"Our work has really slowed down, and we have lost a lot of state funds for the community. A lot of state programs and school programs have been lost."
– 61-year-old male construction worker, Rock Springs, Wyoming***

Energy-producing states are also greatly affected by surrounding states' energy policies. In Wyoming, where the vast majority of power produced is exported, surrounding states are mandating clean energy purchases. The economic realities are beginning to spur more realism on both sides of the aisle to create opportunities in new energy sectors. The Wyoming Public Service Commission (PSC) now allows utilities to consider socio-economic externalities, viewsheds, and reliability (including economic and employment impacts) when determining power mix for new construction and retiring facilities. Public officials are increasingly acknowledging that a holistic, long-range view is required for the energy industry.

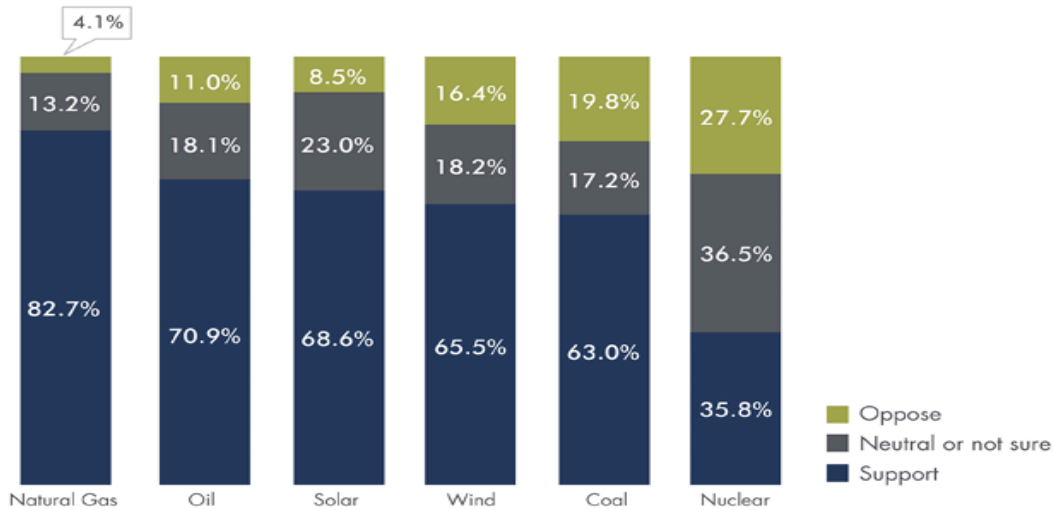


Source: [Energy.gov](https://www.energy.gov), [WINDExchange](https://www.windexchange.com)

States are also looking for opportunities to work more closely with federal partners. Wyoming has taken steps to take full advantage of federal policies. After being shut out of grant awards from the 2022 federal Build Back Better Regional Challenge ([BBBRC](#)) program, Wyoming worked with federal leaders to create the first Rapid Response Team ([RRT](#)) in partnership with the [Interagency Working Group on Coal and Power Point Communities and Economic Revitalization](#). The RRT works together with energy-producing communities across the state and state entities including the Wyoming Energy Authority (WEA), the Wyoming Department of Transportation (WYDOT), and the University of Wyoming (UW) to better coordinate resources and align on potential grant opportunities. The RRT meets every other week and supports local expertise by providing technical assistance such as identifying relevant funding opportunities, conducting market studies, site specific analysis, and grant logistics.

As one of the most conservative states in the nation, Wyoming has a strong tendency to support individual states' rights and push back against federal government priorities. However, at the same time, Wyoming's positioning as a leader in national energy production has meant that Governor Mark Gordon has carved out an "all of the above, net zero" energy policy, and aligned his chairmanship of the Western Governor's Association to prioritize a "[Decarbonizing the West](#)" platform. Further, Governor Gordon was recently profiled in a [special report on Wyoming from 60 Minutes](#) entitled "Wyoming, nation's top coal mining state, promotes climate-friendly plans." Research from the University of Wyoming has shown significant resident support for various types of energy production in the state.

Wyoming residents' support & opposition for types of energy production



Source: University of Wyoming, [Social License for Wyoming's Energy Future](#)

West Virginia: Perhaps no other state in the U.S. is as inextricably bound to coal as is West Virginia. West Virginia's coal played a key role in providing the power needed to power the nation for well over 100 years. This history, which is both an economic and a part of the West Virginian cultural identity, is captured in the hearts and minds of many West Virginians by the famous jingle "Coal is West Virginia." which is played at West Virginia University Mountaineers games, and on the radio.

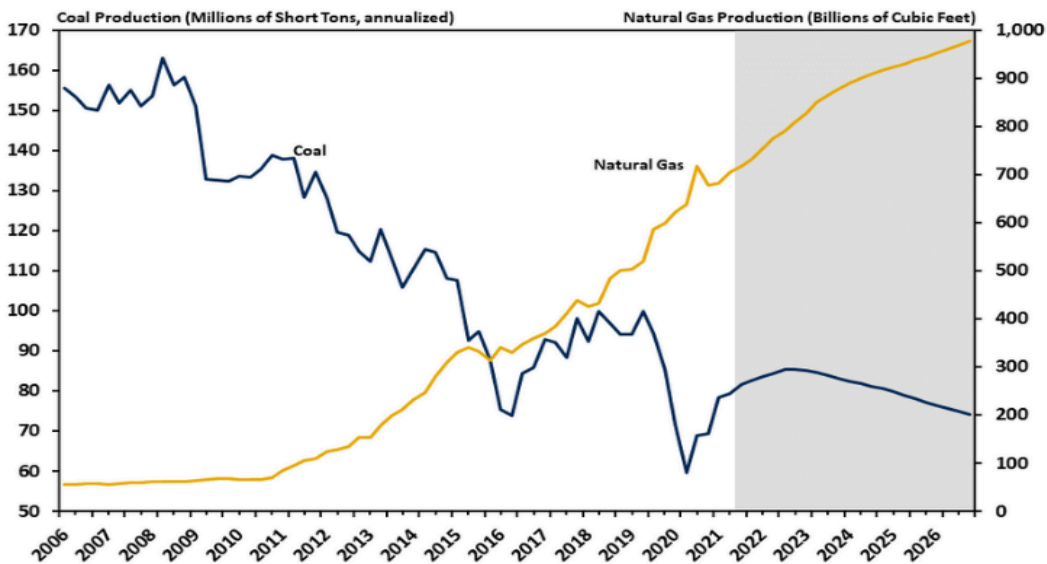
A Closer Look: West Virginia, Coal, and Jobs

West Virginia's deep-rooted history with coal, dating back to the early 19th century, positions it as the nation's fifth-largest energy producer, contributing 5% of the country's energy primarily from coal-fired power plants. In 2019, the state accounted for over one eighth of the nation's coal production, making it the largest producer of bituminous coal. However, recent years have witnessed a decline in coal consumption, dropping from 98% in 2001 to 89% in 2020 for energy production and resulting in a 54% decline in coal industry employment between 2005 and 2020. Despite these challenges, a study commissioned by the West Virginia Coal Association reveals that, in 2019, the coal mining industry and coal-fired power plants generated approximately \$14 billion in economic activity, supporting 17% of the state's total economic output and sustaining 33,000 jobs. The study predicts a further decline in domestic demand for coal in 2023 and gradual decreases through 2050.

West Virginia has made efforts to diversify its energy sources, including enacting a Renewable Portfolio Standard in 2009 (later repealed in 2015) and making progress in solar energy. The state faces ongoing challenges, such as rising unemployment, utility rates, and potential energy insecurity. The decline of coal presents an opportunity for West Virginia to transition to clean energy, fostering job creation in renewable sectors and mitigating the economic impact of coal's downturn. Ongoing regulatory reform, tax reduction, and investment incentives are deemed necessary to sustain the coal industry's contributions to West Virginia's economy and facilitate a balanced energy mix for grid stability and resilience.

Like Wyoming, West Virginia has seen systemic declines in coal production and coal mining employment, over the past decade. Coal's decline has been largely supplanted by natural gas.

Figure 3.1: West Virginia Coal and Natural Gas Output



Source: U.S. Energy Information Administration, [WVU BBER Econometric Model](#)

As seen in Wyoming, West Virginia’s legislatures have historically passed bills to attempt to preserve the state’s powerful coal industry. The state’s Public Service Commission approved a transfer of responsibility for major coal plants from the large public utility to the regulated ratepayers. The Commission also directed utilities to [run their coal plants](#) at least 69% of the time, while the legislature mandated power plants to maintain a 30-day supply of coal under contract. This adherence to coal, despite other energy forms being cheaper, has led to soaring energy prices for West Virginia residents. Customers’ rates have risen 180% over the past fifteen years – five times higher than the average U.S. ratepayer.

Policymakers have made some efforts to change the status quo. In 2020, the West Virginia House of Delegates unanimously passed a bill ([HB4574](#)) to create an Office of Coal and Timber Transition modeled on Colorado’s Office of Just Transition. A similar bill was introduced in 2021 ([HB3198](#)). However, both bills ultimately failed to pass.

In June 2021, West Virginia House of Delegates leaders created an informal workgroup focused on listening to and developing proposals to help West Virginia’s coal communities – a [Coal Communities Workgroup](#). Via a listening tour, the group has gone into communities, communicated with officials at all levels, and made determinations and recommendations to the West Virginia House of Delegates for legislative proposals in the 2022 session. The workgroup also aimed to connect communities with an unprecedented amount of funding allocated to their recovery and revitalization efforts. Participants included local government, economic development organizations, universities, school systems, private industry, labor unions, nonprofits, and community members. The identified needs are divided into six major goals with policy suggestions for achievement:

1. Address basic infrastructure
2. Diversify coal community economies
3. Expand recreation and tourism
4. Support local government efforts to access outside resources
5. Expand educational opportunities for a well-trained workforce
6. Help vulnerable populations

West Virginia may create their own RRT, just as Wyoming has. Additionally, creative partnerships among the legislative and executive branches of government are opening up new avenues. For example, the newly created state cabinet position of the President of the Department of Economic Development has been directly responsible for business outreach and incentives to national and international clean energy companies despite the legislature’s support for coal.

West Virginia Senator Joe Manchin played an integral role in passing the IRA, which in turn opened up clean energy business opportunities in West Virginia. For example, an unexpected partnership between Warren Buffett and state Republican lawmakers has led to the establishment of a \$500 million [manufacturing hub on the Ohio River](#), producing titanium for aircraft parts and powered by solar panels and rechargeable batteries. Despite the traditional dominance of the coal industry over energy matters in the state, the project has gained support both politically and publicly, promising 300 jobs and receiving approval through legislation bypassing pro-coal

regulations. West Virginia has recently allocated approximately \$400 million for renewable energy projects, benefitting from legislative changes promoting renewable energy and attracting federal subsidies. However, Senator Manchin also [heavily promoted](#) and won permits for his state's proposed Mountain Valley natural gas pipeline project.

Legislative adjustments in 2020 facilitated large-scale solar projects, marking a departure from historical pro-coal policies. The IRA further reduced costs for the Berkshire project, aiming to attract aerospace manufacturers to the region. Additional notable approvals include a [hydrogen factory](#) and Form Energy's plans to create a new battery manufacturing factory in Weirton.

Economic Diversification

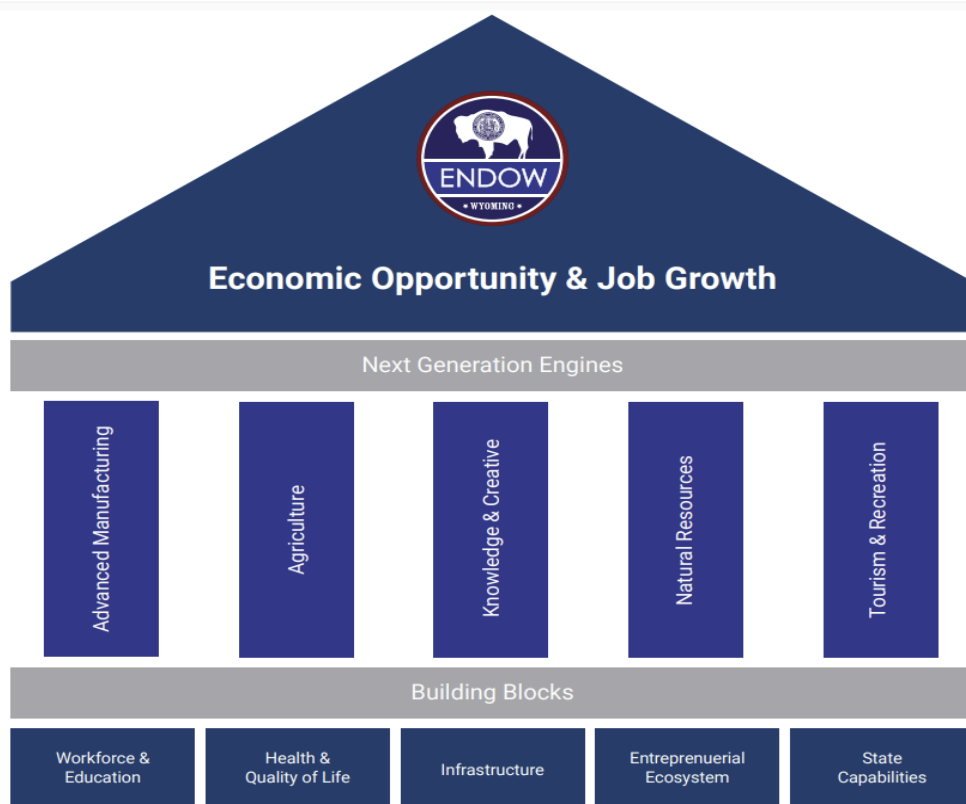
With declining coal markets and a reluctance to continue on a boom/bust economic cycle, energy communities are increasingly looking to reinvent themselves through new industries and regional economic diversification. Former coal communities are aiming to make use of existing assets such as transportation links (railways, waterways, ports, interstate highways), infrastructure (power lines, industrial water access), and natural resources (mineral-rich land, open space). Plans such as the "[Coal Industry Reuse Report Study](#)," prepared by Waypoints Wyoming for The Nature Conservancy, and the State of Pennsylvania's "[Coal-Fired Power Plant Redevelopment Playbooks](#)" outline specific options for each location.

Unique selling points vary within regions of each state. Strategies are underway to attract new industries in clean energy, but also including manufacturing, tourism, and cybersecurity based on workforce skills and preferences. An initiative named [Ascend West Virginia](#) is offering a financial incentive of \$12,000 to individuals who choose to relocate to four specific areas in the Mountain State: Morgantown, Greenbrier Valley, Eastern Panhandle, and Greater Elkins. This program is privately funded with a substantial \$25 million donation from Brad D. Smith, the former CEO of Intuit (TurboTax).

[West Virginia Forward](#), a collaboration between West Virginia University, the West Virginia Department of Commerce, and Marshall University, has evolved into a statewide initiative. With a dedicated emphasis on both short-term and long-term goals, the principal partners, in collaboration with key stakeholders and experts, are implementing innovative strategies to enhance workforce, business climate, education, community development, sector growth, cybersecurity, entrepreneurship, and infrastructure in West Virginia. Key focus areas from West Virginia Forward's report included analyzing the state's current economic status, proposing potential sectors for diversification, and assessing competitiveness based on economic enablers such as ease of doing business, innovation, human capital, and infrastructure. The document outlines findings and presents a blueprint for implementation, emphasizing short-term and long-term objectives. The goal is to revitalize the economy, create jobs, and position the state for success in the evolving economic and technological landscape.

In Wyoming, the boom and bust realities of energy markets have been recognized for decades and the need for economic diversification has been a longstanding area of common agreement. During the second term of Governor Mead's administration (2014-2018), the [ENDOW](#) (Economically Needed Diversity Options for Wyoming) Commission was launched as an effort to systematically map and plan for Wyoming's future. The ENDOW released a 20-year

economic diversification strategy to move beyond traditional boom-and-bust cycles, driven by input from thousands of engaged citizens, businesses, educational institutions, and community leaders. The report emphasizes private sector responsibility for diversifying Wyoming's economy, with government roles in fostering and accelerating through education, workforce training, infrastructure, and research and development support. The aspirations for 2038 include 100,000+ new jobs, 79% personal income growth, 82% GDP growth, and attracting 108,000 new residents.



Source: Endowyo.biz, [Transforming Wyoming](#)

The strategy focuses on embracing disruptive technologies, strengthening economic building blocks, fueling next-generation engines in natural resources, tourism, agriculture, advanced manufacturing, and knowledge sectors, and enhancing state alignment for economic prosperity. Key highlights include establishing the University of Wyoming as a global energy research university, expanding wind energy generation, and creating programs for agriculture innovation and healthcare development. The report suggests appointing a Chief Innovation Officer, investing in infrastructure, and creating business development and innovation zones to attract capital. The plan envisions Wyoming's future as less reliant on traditional industries and more diversified, resilient, and prepared for the changing economic landscape.

Further, in Wyoming, the motivation to diversify the state's economy combined with the state's low energy costs, libertarian leanings, helped a couple of residents with relationships in the state legislature and University of Wyoming, champion state-supported legislation to make Wyoming one of the most [blockchain-friendly jurisdictions](#) in the U.S. The legislative changes have

attracted prominent companies like Kraken, Cardano, and Ripple Labs to relocate operations from tech hubs like San Francisco to Wyoming's capital, Cheyenne. The legislative reforms clarified the treatment of digital assets, facilitated the use of smart contracts, and introduced a unique legal framework enabling Wyoming banks to serve as custodians of digital assets. Wyoming's proactive stance on blockchain is prompting federal regulators to address the regulatory framework for the crypto industry, positioning the state as a potential hub for crypto-related businesses in the years to come.

*"Progress cannot be stopped but we have to learn how to adapt."
– 60-year-old female construction worker, Cheyenne, Wyoming*

Meanwhile, large companies are driving a push for renewables in new projects. For example, in Wyoming in 2016, Microsoft's Cheyenne data center was set up to be [entirely powered by wind energy](#). The company contracted with Black Hills Energy to buy 59 megawatts worth of renewable energy credits from the Happy Jack and Silver Sage wind projects. In March of 2023, West Virginia state leaders, along with executives from three companies, marked the beginning of a groundbreaking project aimed at advancing American manufacturing through clean energy initiatives in Ravenswood. The initiative led by BHE Renewables, a Berkshire Hathaway Energy business, will transform a 2,000 acre site into an innovative [solar energy microgrid-powered industrial facility](#). Precision Castparts Corp. (PCC), a Berkshire Hathaway Inc. subsidiary, will be the pioneering tenant, operating a cutting-edge titanium melt facility utilizing 100% renewable energy, thereby driving a significant shift towards sustainable practices in West Virginia's manufacturing landscape.

In both Wyoming and West Virginia, new investment opportunities and recent technological advances are rapidly expanding in the clean energy sector with opportunities in rare earths, carbon capture and storage, coal to products, and more. For example, in 2023, Ramaco Resources made a major [discovery of rare earth elements](#), estimated to be worth \$37 billion, in the Brook Coal Mine near Sheridan, Wyoming. Initially intended for coal production, the mine's transformation into a rare earth elements source positions it as a valuable asset for contributing to the domestic supply chain of critical materials essential for [clean energy products](#), including neodymium, praseodymium, and dysprosium, vital components for technologies such as wind turbines and electric vehicles.

Climate tech startups are set to accelerate carbon capture efforts in Wyoming with [Project Bison](#), an initiative aiming to construct a facility capable of annually drawing down 5 million metric tons of carbon dioxide by 2030. Led by Los Angeles-based CarbonCapture, the direct air capture (DAC) plant will start with smaller operations, utilizing modular equipment to scale up over time. With Wyoming's unique geology enabling on-site storage in saline aquifers, Project Bison, the largest announced carbon capture project to date, aligns with Wyoming's goal to become "carbon negative," and the support opened up by the IRA's tax credits for carbon removal projects.

In West Virginia, the Appalachian Regional Clean Hydrogen Hub ([ARCH2](#)), part of the Biden-Harris Administration's plan, is set to create 21,000 jobs, with a focus on [transitioning](#)

[communities](#) historically reliant on the coal industry. Tokamak Energy, Inc., located in Bruceton Mills, West Virginia, has secured federal grant funding of \$46 million from the United States Department of Energy as part of the Milestone-Based Fusion Development Program. This significant investment aims to support the development of pilot [fusion energy power plants](#), specifically focusing on Tokamak Energy's expertise in the spherical tokamak technology, with the goal of achieving viable fusion reactors for commercial use by the mid-2030s.

Jobs/Worker Retraining

Incoming businesses need a trained workforce, and former energy-producing communities need jobs. Despite good intentions, connecting this supply and demand scenario with skilled local employees at the same time a company attempts to establish a new industry is difficult in practice.

Worker sentiment: Anecdotal evidence suggests that worker sentiment towards new job opportunities varies by geographical location and age. From a geographic perspective, JHCGA's research picked up on a stronger connectivity to place in West Virginia than in Wyoming, or other states where workers/stakeholders were engaged with. For example, the vast majority of West Virginia workers/stakeholders when asked, "Would you leave your community/town to find work somewhere else?" responded no, by an overwhelming margin, regardless of age or other demographics. For those asked in Wyoming, particularly among younger generations, there appeared to be greater willingness to leave the state in pursuit of better opportunities elsewhere. This may imply that West Virginia and Appalachia communities foster a deeper sense of place-connectivity than Wyoming.

The research also showed a connection between worker sentiment towards a particular form of energy production and the price of household and commercial energy bills as attributed to that form of production. If workers felt that a new form of energy production was driving up utility bills, then they were less likely to be drawn to work in that new industry. In other regions where market forces and new forms of energy production were leading to less expensive utility bills, the new industries garnered more anecdotal support.

***"Work has all but disappeared, and now I travel a lot for work."
– 25-year-old male labor foreman, Rock Springs, Wyoming***

Overall, workers report strong interest in retraining for new or related industries. Older workers tend to have more interest in staying in their communities in similar fields, whereas younger workers are more likely to follow high-paying jobs to different geographical regions. Some young workers are willing to wait for another boom cycle to make more money in their existing location. Remaining in the energy sector is preferred by many workers since they are already familiar with that industry. Workers also understandably are not very interested in being retrained in new jobs that pay less and may be more dangerous than their previous work. Some forward-thinking companies have pivoted internally to diversify projects so that workers are retrained in new fields yet remain tied to the company. This strategy ensures that companies are

engaging with new technologies and industries while simultaneously developing a trained local workforce.

Worker retraining: Although workers express a general interest in retraining, many report that it is not economically feasible unless the training is paid. The federal [Workforce Innovation and Opportunity Act](#), implemented by the Department of Workforce Services (DWS), helps connect job-seekers and employers through workforce development programs. Other programs, such as [Wagner Peyser Employer Services](#), are designed to assist businesses with recruiting, hiring, training, or upskilling their workforce.

*"I am a pipeliner and I work power plants, but work has really slowed down. Things are not looking good."
– 65-year-old laborer, Rock Springs, Wyoming*

In Wyoming, many programs exist within the DWS to help workers with retraining opportunities, grants, and family assistance including the Reemployment Services and Eligibility Assessments ([RESEA](#)) Program, [Rapid Response Fund](#) Program, the [Workforce Development Training Fund Grant](#), and the [National Dislocated Worker Grant](#). These initiatives aim to provide career guidance, training services, and support for dislocated workers, with specific attention to the energy sector. The DWS collaborates with local and state governments, nonprofits, labor unions, and energy industry companies to enhance opportunities for workers. Challenges include the timing of worker training opportunities aligning with available jobs. The DWS emphasizes the importance of additional funding for flexible service delivery and staff retention. Noteworthy is Wyoming's "earn while you learn" program, allowing students to gain real-world experience while covered under Workers' Compensation policies.

Timing: A critical issue that frequently arises in former energy-producing regions is the timing of training opportunities relative to job opportunities. It is possible for some trades to easily transfer skills to another trade (e.g. rare earths, gas, coal, hydraulics, tech, heavy equipment, and geotech), but specialized training is often required. Frequently described as a “which comes first—the chicken or the egg?” scenario, it is unproductive for workers to be retrained in a new industry unless jobs in that industry are readily available after the completion of training. However, businesses are often more interested in investing in a region that has readily available skilled workers. Ideally, regions can plan together with industries and workforce development agencies to develop supply and demand simultaneously. Some creative organizations, such as Workforce Development in West Virginia, have found a stopgap option, such as temporarily employing workers in mine land reclamation, to help bridge the time between an existing industry closure and new development. In Wyoming, community colleges have worked with state officials and businesses like TerraPower to develop local training programs in tandem with planned investment such that workers will be skilled and ready to work on the corresponding industry timeline.

Worker transition to other industries: More robust data is required to fully understand the labor market in energy-producing communities. The number of jobs in new industries are usually not

matched one-to-one with previous coal jobs due technological advances and the fact that renewable energy production typically requires fewer workers than extractive industries. Some communities are looking towards remote work jobs to maintain population despite tight local job markets.

***"I'm willing to do whatever I have to do to support my kids."
– 25-year-old foreman, Rock Springs, Wyoming***

Role of community colleges: Community colleges and universities play a vital role in developing curriculum and training programs in line with new industries. Community colleges have emerged as critical players to establish connections between state policies, regional workforce service centers, local governments, nonprofits, and diverse community networks.

Community colleges are adapting to address workforce needs in former energy-producing communities with many innovative programs. Whereas many community colleges previously developed two-year programs that may lead to four-year degrees, now they are pivoting to shorter-term training and apprentice programs that can quickly train and fill in workers in new industries. In some places, colleges are developing new cutting-edge programs specifically designed for planned regional industries, such as hydrogen and nuclear, to enable local workers to become trained in place-based workforce needs.

***"Community colleges can be the source that provides training for these jobs in the fields like hydrogen hubs. We are nimble enough to provide new advancements in curriculum faster than other means."
– Community college president, West Virginia***

Community Dynamics

Although significant efforts are expectedly focused on former energy industry workers, a common theme that has emerged from stakeholders is the importance of wide-ranging investment to enhance quality of life in whole communities. To attract new industries and retain workers, communities are finding success by revitalizing downtown regions through support of small local businesses. In West Virginia, the [Downtown Appalachia: Revitalizing Recreational Economies \(DARRE\)](#) program is a tailored initiative designed to catalyze downtown revitalization and economic diversification in participating West Virginia communities. With a focus on enhancing Main Streets and downtown neighborhoods, the program, led by key partners such as the WV Community Development Hub and Partner Community Capital, collaborates with eight eligible communities – Cowen, Elkins, Franklin, Marlinton, Parsons, Petersburg, Richwood, and White Sulphur Springs. DARRE employs proven strategies, including downtown building development, entrepreneur support, and long-term revitalization planning, customized to address the unique challenges of each community. Through active engagement with residents, the program facilitates property redevelopment, connects building owners with commercial tenants, and cultivates essential economic, financial, social, and relationship capital. DARRE

serves as a catalyst for positive momentum, making visible improvements and fostering economic resilience in these communities, even in rural and economically distressed areas.

In Wyoming, policymakers are also faced with addressing significant affordable housing challenges and ensuring wages are sufficient for high costs of living. For example, in Campbell County, the second most expensive real estate market in Wyoming following Jackson Hole, the primary challenge lies in the scarcity of available labor, largely due to the limited housing market. A recent study conducted by [Gruen Gruen and Associates](#) revealed a significant gap between the available housing and the projected employment figures. The city is facing a shortage of housing opportunities, leading to inflated prices well above the norm. Despite an improved employment outlook with 1,400 job openings as of June 2023, there are only 50 active listings in Gillette. The study recommended the need for the city to add approximately 156 homes per year or 1,567 homes over the next decade to meet the demand. The study warned that this housing shortage may hinder future economic development and the city's ability to attract labor. To address this, the study recommended various solutions, including assisting developers, exploring public finance options, decreasing minimum lot sizes, and providing incentives for affordable housing.

By making energy-producing communities more desirable and more easily-accessible places to live, stakeholders can more successfully retain local workers with a pride of place in diversified economies. Simultaneously, the regions become more attractive and competitive to larger companies interested in new industrial development.

Policymakers are increasingly emphasizing the importance of engaging local leaders in creating innovative place-based solutions. The Building Resilient Economies in Coal Communities ([BRECC](#)) initiative of the National Association of Counties ([NACo](#)) serves coal communities seeking to revitalize and diversify their economies. Supported by the U.S. Department of Commerce Economic Development Administration (EDA), BRECC provides peer learning, leadership opportunities, and technical assistance to support local leaders and build capacity in under-resourced communities.

*"Waiting on a promise is not a good outlook."
– Mike Whitten, West Virginia Citizens' Climate Lobby
(Source: Friends Committee on National Legislation)*

Summary

Changing energy markets, combined with the highly impactful Inflation Reduction Act (IRA) and technological advances in clean energy, have led to a period of substantial revitalization opportunity for current and former energy-producing communities. Collaboration has proven key to accessing potential funding and incentivizing new industrial development. Successful initiatives unite federal incentives, state policymakers, industry representatives, and local actors to create unique solutions based on local priorities and assets. Community colleges, local business development organizations, and nonprofits are important components of the holistic approach to enhancing and sustaining the workforce in energy-producing communities.

Case Studies on Energy Transition

Business: Form Energy – Weirton, West Virginia

Form Energy chose Weirton, West Virginia, from among 500 possible towns to manufacture its revolutionary long-duration batteries. [The business](#) provides a leading example of accessing policy incentives, reengaging with workers in former coal/steel communities, strengthening the bond between policymakers and business, and working together with colleges and nonprofits on a community-wide investment plan.

The startup company is one of many to take advantage of specific incentives in the landmark federal IRA legislation, including the first stand-alone credit for energy storage installations, and the added bonus for projects utilizing domestically-sourced materials. The factory will create 750 jobs at the site of a former steel plant and invest \$760 million in the community. West Virginia's Economic Development Authority authorized \$75 million to purchase 55 acres and build the facility. In addition to the state incentives, Weirton benefitted from existing assets such as transportation links (rail, highway, and rivers), its location near major cities and airports, and historical ties to the steel industry. Although the energy storage technology is poised to enhance the renewable energy sector rather than the state's longstanding ties to the coal and gas industries, the state government has embraced the positive impacts on workforce and enhancement of its reputation as an energy-producing state.

*"The government and industry can help by requiring more local hire on construction jobs. Hiring local residents should be a priority."
– 64-year-old laborer, Rock Springs, Wyoming*

The Weirton region ranks highly on the Energy Communities IWG's top 25 priority communities list. The Energy Communities IWG is leading an interagency group of federal agencies in direct partnership with energy communities to foster economic investment and revitalization and ensure the creation of good-paying jobs. Many of the 300 residents who attended the [first hiring fair](#) in January 2024 already had relevant job skills in fields such as manufacturing and maintenance. The IRA and DOE's specific policy requirements for community benefit investment plans have greatly impacted energy communities' revitalization. The Department of Energy (DOE) requires Community Benefits Plans ([CBPs](#)) as part of all Bipartisan Infrastructure Law (BIL) and IRA funding opportunities and loan applications.

Community Benefits Plans are centered on four policy priorities: investing in America's workforce; engaging communities and labor; advancing diversity, equity, inclusion, and accessibility; and implementing [Justice 40](#) (an executive order requiring 40% of benefits go to disadvantaged communities). Community Benefits Plans are then part of the contractual obligation of the funding recipient. A summary of the Community Benefits Plan will be available publicly to enhance transparency and accountability. Form Energy's plan is to revitalize the entire Weirton community, not just employ workers in the manufacturing plant.

"We're really looking forward to the job creation that it's going to create right here in the community, and then the halo effect of the economic impact."

– Charlotte Beard, Form Energy CFO

(Source: WTOV9.com)

Community Colleges: Western Wyoming Community College – Rock Springs, Wyoming

Community colleges have long played an important role in training the workforce across the energy industry. With the changing energy economy, many community colleges are pivoting to provide new educational options. Western Wyoming Community College (“[Western](#)”), located in the southwest Wyoming community of Rock Springs, is an innovative leader in working alongside industry, state government, and local partners to proactively address local needs. The robust and proactive partnerships aim to address the energy industry’s perennial challenge of successfully timing the arrival of new industries with the development of a skilled workforce.

New Industries: Coal production continues to decline in Southwest Wyoming, as the nearby Jim Bridger Power Plant converts from coal-fired to natural gas, and the Naughton Coal Plant is slated for early retirement since it has been deemed uneconomical to operate by owner PacificCorp. However, three major new industries are poised to grow in southeast Wyoming: Nuclear, at the [TerraPower](#) Natrium Reactor Demonstration Project, wind energy ([Chokecherry and Sierra Madre](#) Wind Energy Project), and [trona](#) (largest known deposits globally). Western has training programs in place that can easily pivot to each of these industries. Western’s traditional career programs related to extractive fuels (coal, oil, and gas), manufacturing, and tech programs are designed to easily transfer to a greener economy. Western focuses on “H3” jobs: high wage, high skill, high demand.

Western has been in close contact with TerraPower’s operations training manager regarding their planned modular nuclear reactor plant. The plant is seeking trained operators and expects that 70% of the workforce will be trained by a two year college. The early discussions with Western have enabled both parties to work together to create programs that will enhance and support the local workforce. Western is also aiming to create a nuclear tech program through a partnership with the University of Wyoming that would be located in the same community as the TerraPower plant. Ideally this program will begin in time for the opening of the plant (projected to be 2030). Discussions with TerraPower have led to a commitment by the company that former coal workers will receive first right to jobs at the new plant.

Government: Western has partnered with the State of Wyoming on multiple workforce initiatives. One program called “[Kickstart Wyoming’s Tomorrow](#)” provides funding specifically to enable adults (age 24 - 65) to receive training to rejoin the workforce in new industries. This popular initiative partners with the state’s Department of Workforce Services. Western also worked with the governor's office on the Wyoming Innovation Partnership ([WIP](#)). The WIP is a collaboration to align education and workforce development to stimulate diversified economic growth by linking community goals with the state’s economic strategy. Through the WIP, in 2021 Western created the first and only powerline technician program in Wyoming – a two-year degree program whose new graduates meet emerging industry needs by addressing critical shortages of line technicians.



WYOMING INNOVATION PARTNERSHIP

KEY METRICS

The WIP is focused on key metrics, data and outcomes. Data and metrics have been used to guide decisions that support solidifying transformational strategies to help Wyoming and our communities thrive long-term and realize a return on investment.



Source: Wyoming Innovation Partnership, [Phase I Achievements](#)

Business: Western has worked with the [NexGen Sector Partnership](#) model to engage industry leaders in creating workforce solutions. The Next Gen model brings together CEOs from a regional industry to address a range of issues including improving the workforce pipeline, aligning training with industry needs, improving infrastructure, addressing regulatory barriers or facilitating business-to-business networking.

Local community: The leadership at Western works closely with community leaders to integrate local concerns into the community college's priorities. Regional partner organizations include the Southwest Wyoming Manufacturing Partnership, the Sweetwater County Economic Development Coalition, and a working group created by State Senator Dan Dockstader to address challenges related to expected growth. The regional groups are working holistically with the understanding that in order to attract new industries, the community needs to address housing shortages and infrastructure concerns to become more attractive to potential workers. Additional focus has been directed towards revitalizing downtown and supporting small peripheral businesses outside of the energy industry to diversify the economy and create more livable

communities. Western has developed a two-year business degree with flexible scheduling options tailored to industrial business students.

Collaboration: Western helps connect state organizations, investment opportunities, and local communities. For example, the Wyoming Business Council (WBC) may field a call from a company who is interested in locating in Wyoming. The WBC then connects with Western who will show the businesses the robust training programs in place to provide a highly-skilled workforce and the well-coordinated partnerships at the state and local levels. The potential investors are connected with all layers of eventual partners at the state and local level.

*"The community college stands ready to partner with business and industry to prepare a skilled workforce for future emerging energy fields."
– Community college president, Pennsylvania*

Nonprofit/Community Organization: Coalfield Development – Huntington, West Virginia

West Virginia's coal production peaked in 1997 with 180 million tons. However, the number of coal mining jobs in West Virginia has dramatically decreased since its peak of around 130,000 workers in 1950 to under 15,000 employed in 2023. For several decades, many communities have struggled with significant economic, social, and environmental challenges. West Virginia ranks poorly in terms of educational attainment, poverty levels, substance abuse, and incarceration rates. Estimates have shown that the state needs to create around 100,000 jobs to re-engage potential workers.

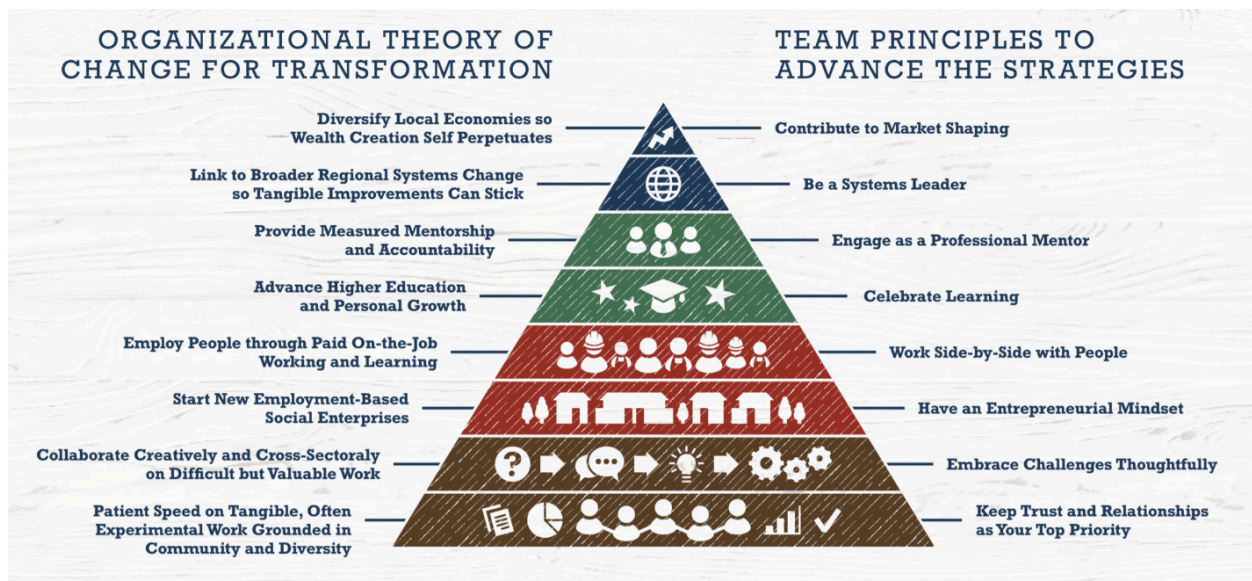
[Coalfield Development](#), based in Huntington, West Virginia, is a unique nonprofit organization that seeks to turn those challenges into meaningful opportunities for local community members. The organization's four main areas of work include: Designing and scaling new programs in emerging sustainable sectors, incubating social enterprises, facilitating opportunities for people facing barriers to employment, and advancing community-based revitalization projects. The nonprofit is funded by its community social enterprises, grants, and private donations. With an intimate understanding of the needs of former coal-producing communities, Coalfield Development has worked to attract over \$160 million in investment to the Appalachian region while creating 800 jobs, supporting the growth of 72 businesses, and training over 2,500 people.

Coalfield Development's success stems from its steadfast commitment to working collaboratively with over 100 local community implementation partners to develop projects and disburse funds from federal government programs. Through ongoing cooperation with community colleges and businesses, the organization directly addresses many of the pitfalls related to worker retraining in new industries. Coalfield Development worked with community colleges to develop two-year degree programs in renewable energy and installation partnered with social enterprises. Redevelopment projects are designed and eventually owned by communities and often rejuvenate former mine lands and or empty buildings into new community assets.

Through the [ACT \(Appalachian Climate Technologies\) Now Coalition](#), Coalfield Development brought together local governments, colleges, economic development organizations, and private

sector investors to stimulate economic growth in new key sectors. With a combination of private investment and federal funding from the federal Build Back Better Regional Challenge grants, the coalition expects to create 5,000 direct and 15,000 indirect jobs and 125 new businesses through the solar industry, technology businesses, building upgrades, redevelopment of industrial spaces and “brownfields” for manufacturing, and the transformation of abandoned mine lands. With a strong partner network and connection to local challenges, Coalfield Development is poised to help large business investors create robust community benefit plans as required by new federal grants.

Coalfield Development’s model is to invest deeply in its program participants – many of whom face significant barriers to employment. The organization created an innovative [“33-6-3” model](#) in which workers complete 33 hours of paid work, six hours of higher education coursework, and three hours of personal development mentorship each week. The program enables workers to gain certifications and degrees in new skills while obtaining practical paid work experience. The three weekly hours of direct mentorship have proven critical to reducing barriers to employment (such as obtaining a driver's license or developing personal financial systems) to ensure the success of each individual. Coalfield Development has also developed more streamlined one to six month programs to rapidly respond to workforce and industry needs.



Source: Coalfield Development, [Organizational Theory of Change for Development](#)

Coalfield Development works diligently to diversify employment options for local residents by developing industries’ supply and demand sides simultaneously. For example, they have worked to develop a small solar industry so workers could gain immediate field experience while they retrained in new skills. The smaller projects created a highly-trained workforce that enticed larger companies to invest in the region. Coalfield incubated the largest solar installation company in the region, [Solar Holler](#), that recruits and employs coal-impacted people to install solar arrays in coal communities. If the timing of the retraining and the industry investment (available jobs) are not perfectly aligned, Coalfield Development connects workers with meaningful temporary work in fields such as mine land reclamation to fill the time gap until other jobs are available.

In West Virginia, many workers are somewhat skeptical of potential new economic options due to past promises breaking down. Despite the economic challenges, many young people have a strong desire to stay and work in their hometowns. Policymakers and investors are also keen to build off of residents' pride in producing energy for the nation. Workers' attitudes towards new clean energy projects have begun to shift as the previous "war on coal" mantra has transitioned towards a focus on reinventing and reinvigorating West Virginia's leadership role in a changing energy economy. The combination of clean energy industrial investment, federal policy changes, and an enhanced focus on local workforce have helped Coalfield Development create a much-needed boost to employment opportunities for former coal industry workers in West Virginia.

Summary/Conclusion

The transformation of energy markets, coupled with legislative advancements and technological breakthroughs in clean energy, presents a significant opportunity for revitalizing current and former energy-producing communities. Advances in technology, public policy, and international collaboration have converged to create an exciting and important opportunity for workers involved with the global energy transition.

The most successful initiatives have shown a holistic, forward-thinking approach driven from multiple angles—via overarching federal policy, state legislators, community leaders, NGOs, multinational corporations, research institutions, industrial leaders, and local businesses. Collectively, these stakeholders are creating a new clean energy economy with the aim of meeting climate goals while employing former coal-industry workers in emerging industries. Although myriad challenges remain, abundant initiatives are underway by those seeking a successful just transition.

The ongoing challenge to connect skilled local employees with incoming businesses requires planning and preparations to develop a trained workforce concurrently with new industrial opportunities. Collaboration between regions, industries, and workforce development agencies is advocated to synchronize supply and demand while taking into account local workers' sentiment towards retraining. Some innovative approaches, like temporary employment in mine land reclamation, aim to bridge the gap between industry closures and new development.

Community colleges, local business development organizations, nonprofits, and innovative business models play crucial roles in this holistic approach that focuses on enhancing the quality of life in entire communities as part of broader economic diversification strategies. Revitalizing downtown areas, supporting small businesses, addressing affordable housing challenges, and ensuring competitive wages contribute to making energy-producing communities more attractive.

Numerous case studies have shown that a transition to clean energy is possible while maintaining economic growth, environmental protections, and a just social transition for workers and energy-producing communities. As each community faces unique challenges, the solutions must also be locally-driven based on unique place-based characteristics and goals. The examples of Form Energy in Weirton, West Virginia; Western Wyoming Community College in Rock

Springs, Wyoming; and Coalfield Development Corporation in Huntington, West Virginia, showcase successful models of accessing incentives, engaging with workers, and fostering collaboration. These case studies highlight forward-looking models built with workers and communities prominently factored into decision making. Each case presents a template that can be studied and replicated in energy communities on an ongoing basis.

In conclusion, the journey towards clean energy presents not only challenges but immense opportunities for economic revitalization and community development. The success stories outlined underscore the potential for replicable strategies that can accelerate clean energy investments, create new jobs, and foster sustainable growth in coal-producing regions. The key lies in continued collaboration, innovation, and a commitment to creating a diversified and resilient future for these communities.