

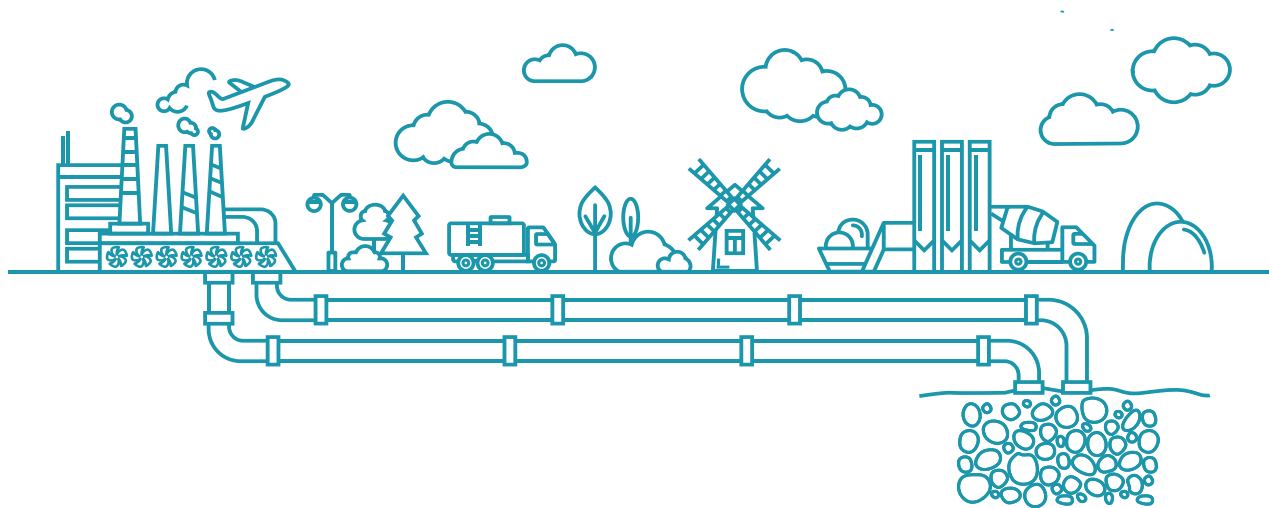
# Carbon Management, Organized Labor,

## And a Clean Energy Transition for All Workers

Addressing climate change and creating high-quality jobs can go hand in hand, and organized labor can pave the way for a future where economic development and climate action work together. Carbon management is one of many tools needed to quickly reduce carbon dioxide (CO<sub>2</sub>) emissions and meet midcentury climate goals. Skilled labor is essential for effectively building carbon management technology and infrastructure in the United States, and organized labor can fill such needs. Labor unions can provide the workforce needed to scale up carbon management, as union workers are some of the best-trained and most experienced in their trades. Additionally, with a long-standing dedication to racial and economic justice, the labor movement is vital in shaping a climate action agenda that is as equitable as it is ambitious. Collaborating with organized labor ensures access to a skilled workforce while upholding the movement's tradition of fighting for racial and economic justice.

### What is carbon management?

Carbon capture, removal, transport, reuse, and storage technologies, commonly referred to as carbon management, are a portfolio of safe, effective, and increasingly cost-effective technologies. [Carbon management](#) is used to manage, abate, and remove CO<sub>2</sub> emissions from industrial facilities, power plants, and directly from the air.



These technologies will play an important and complementary role with other emissions reduction strategies to decarbonize our industrial, energy, and transportation sectors. Carbon management is poised to play an essential role in key industries, including steel and cement, where opportunities for decarbonization in some processes would be limited or nonexistent without carbon capture.<sup>1</sup>

<sup>1</sup> Office of Fossil Energy and Carbon Management, "Scaling Carbon Capture for Hard-to-Abate Industries in the United States and Globally," US Department of Energy, February 26, 2024, <https://www.energy.gov/fecm/articles/scaling-carbon-capture-hard-abate-industries-united-states-and-globally>.

As of July 2023, 154 carbon management projects have been announced in the United States, encompassing early development, advanced development, construction, and operational stages.<sup>2</sup> These projects are varied and involve sectors like chemicals, power generation, natural gas, cement, and ethanol, showcasing a nationwide push toward comprehensive carbon management strategies.

## Workers and a clean energy transition

As we strive to decarbonize our economy and transition toward cleaner energy, we need affected communities and workers at the center of the transition strategy. Currently, 8.1 million workers are employed in the energy sector.<sup>3</sup> These workers provide affordable, reliable energy to power the US economy.

However, the urgency of the clean energy transition presents a critical challenge: the risk of job loss for workers and communities at the frontline of powering our society. This looming transition could disrupt employment and local and regional economies relying on traditional energy sources. By recognizing these challenges, it becomes clear that workforce prioritization is not only a moral imperative but also a strategic necessity.


Carbon management careers increasingly leverage the specialized skills honed within the oil and gas industry and the broader energy sector, facilitating a strategic transition to clean energy. This skill transfer can pave the way to career opportunities in the affected economies.

Organized labor is central to this transition—trade unions, in particular, can provide the essential skilled labor needed to build and install carbon management technology, as skilled tradespeople in unions undergo more comprehensive and costly training than their nonunion counterparts, warranting a higher compensation and benefits structure.<sup>4</sup>

## Putting workers first

The clean energy transition needs job preservation, creation, and policies that safeguard workers' rights. Climate policy solutions must consider preserving existing jobs when possible and creating new job opportunities equal to or better than those displaced. By centering efforts on the workforce during the shift to clean energy, we move toward our climate objectives while fostering an inclusive, equitable, and robust economic future.

*According to the Labor Energy Partnership (an AFL-CIO and Energy Futures Initiative effort), "successful social solutions to climate change must be based on an 'all-of-the-above' energy source strategy that is regionally focused, flexible, preserves optionality, and addresses the crisis of stranded workers."<sup>5</sup>*



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2 Global CCS Institute, The Global Status of CCS 2023 (Global CCS Institute, 2023), 77-92, <https://www.globalccsinstitute.com/wp-content/uploads/2024/01/Global-Status-of-CCS-Report-1.pdf>.

3 US Department of Energy Office of Energy Jobs, United States Energy & Employment Report 2023 (US Department of Energy, 2023), <https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20REPORT-v2.pdf>.

4 Cihan Bilginsoy et al., Diversity, Equity, and Inclusion Initiatives in the Construction Trades (North America's Building Trades Unions, March 2022), <https://nabtu.org/wp-content/uploads/2023/01/ICERES-Study-22Diversity-Equity-and-Inclusion-Initiatives-in-the-Construction-Trades22.pdf>.

5 AFL-CIO, Fact Sheet: Labor Energy Partnership (Labor Energy Partnership, April 2020), <https://laborenergy.org/fact-sheets/labor-energy-partnership-founding-document/>.

## Carbon management as a pathway for creating and sustaining jobs

Deploying carbon management technologies creates jobs across various segments of project development, including construction, operation, and maintenance. This provides a viable pathway for the decarbonization and continued operation of key industrial, manufacturing, and energy facilities, thus avoiding plant closures and offshoring jobs and livelihoods.

There are jobs associated with the equipment, materials, engineering, and labor required to install carbon management technology. There are also jobs dedicated to operating and maintaining a carbon capture facility. These can be referred to as project jobs<sup>6</sup> and operations jobs,<sup>7</sup> respectively.<sup>8</sup>

### Project Jobs:

A considerable workforce is required to construct large carbon management infrastructure. Several occupations are involved in constructing a carbon management project, and the scale of the workforce required depends on the facility type and construction stage. Employment opportunities are provided for skilled workers as the project is built and prepared for operation.

### Operations Jobs:

The daily operation of carbon management technologies requires long-lived jobs that typically last for the facility's operation. These types of jobs involve regular maintenance, production management, business operations, and more.

For more information, please refer to Section 3 of the Global CCS Institute report, [The Value of Carbon Capture and Storage \(CCS\)](#).

## Synergizing carbon management & organized labor in the era of the Inflation Reduction Act and Bipartisan Infrastructure Law

The recent passage of the Inflation Reduction Act (IRA) and the Bipartisan Infrastructure Law (BIL) presents unprecedented opportunities to reshape America's energy landscape. These legislative measures aim to reduce carbon emissions significantly and bolster the economy through robust job creation and investment in clean energy technologies. By offering financial incentives and strengthening infrastructure development, the IRA and BIL collectively promote sustainable practices and the use of a skilled labor force to support the nation's energy transition.

The strategic alignment of skilled labor with the energy sector's evolving needs is put to work through these packages of legislation. The IRA serves as a catalyst, elevating the value of clean energy investments while reinforcing the importance of strong labor standards. Adhering to labor standards, paying workers prevailing wages, and enlisting workers from registered apprenticeship programs are not only prerequisites but also essential steps to unlock the full value of IRA tax credits. When these requirements are met, producers increase the potential pool of investors and amplify the impact and benefits of the clean energy transition.

One of the specific tax credits where IRA labor provisions<sup>9</sup> apply is Section 45Q, a performance-based tax credit for carbon management projects that capture carbon oxides (carbon dioxide and its precursor, carbon monoxide) from eligible industry and power facilities, as well as directly from the atmosphere.<sup>10</sup> This expanded tax credit is part of the IRA's focus on supporting strategies to build

6 Alex Townsend, Nabeela Raji, and Alex Zapantis, The Value of Carbon Capture and Storage (CCS) (Global CCS Institute, May 13, 2020), 12, <https://www.globalccsinstitute.com/wp-content/uploads/2020/05/Thought-Leadership-The-Value-of-CCS-2.pdf>.

7 Townsend, Raji, and Zapantis, The Value of Carbon Capture and Storage (CCS).

8 Regional Carbon Capture Deployment Initiative, "Jobs and Economic Impact of Carbon Capture Deployment: Midcontinent Region" (Great Plains Institute, October 2020), [https://carboncaptureready.betterenergy.org/wp-content/uploads/2020/10/Midcontinent\\_Jobs.pdf](https://carboncaptureready.betterenergy.org/wp-content/uploads/2020/10/Midcontinent_Jobs.pdf).

9 US Department of the Treasury, "Fact Sheet: How the Inflation Reduction Act's Tax Incentives Are Ensuring All Americans Benefit from the Growth of the Clean Energy Economy," press release, October 20, 2023, <https://home.treasury.gov/news/press-releases/jy1830>.

10 Carbon Capture Coalition, Primer: 45Q Tax Credit for Carbon Capture Projects (September 2023), updated and adapted with permission from the Great Plains Institute, <https://carboncapturecoalition.org/wp-content/uploads/2023/11/45Q-primer-Carbon-Capture-Coalition.pdf>.

the infrastructure needed to meet midcentury climate goals, foster domestic energy and industrial production, and provide environmental and economic benefits to affected communities.

The BIL enhances the IRA's vision for a skilled labor force in the energy sector. Focused investments in carbon management under the BIL are set to generate a breadth of labor opportunities, from construction to maintenance, driving both environmental and economic progress.

The BIL's aim to create pivotal centers for industry is complemented by the IRA's push for labor standards and sustainable job growth. Together, these laws present a unified federal approach to climate action, illustrating a tangible commitment to labor development and the advancement of carbon management technologies.

**Organized labor is key to unlocking the IRA's full potential.** By supporting a skilled workforce through union apprenticeships and pre-apprenticeship programs, labor organizations contribute to the training and workforce development necessary for workers in the clean energy transition. This strategic engagement allows organized labor to not only fulfill the requirements (set in the IRA) of modern energy projects but also advocate for fair labor practices and enhanced worker benefits. Through their profound involvement, organized labor helps ensure that the economic benefits of the IRA are realized fully, thereby facilitating a win-win situation for the economy and the workforce alike.

Such involvement underscores organized labor's potential role in propelling America toward a resilient, clean energy future.

## The value of setting healthy labor standards

Healthy labor standards are vital for the well-being of workers, improve worker productivity, and enhance economic performance. The IRA incorporates certain labor standards that must be met to maximize tax credit benefits, underscoring IRA's dual vision of improving labor conditions while propelling forward clean energy projects.

Project labor agreements (PLAs) exemplify the practical implementation of healthy labor standards. PLAs, as a form of collective bargaining, enable organized labor to secure comprehensive benefits for all workers on a project. By setting standards for health, working conditions, and additional benefits, PLAs contribute to the foundation of a workforce that is both skilled and fairly treated.



## Rhodium Group Midcontinent & Mid-Atlantic region analyses

Regional analyses conducted by the Rhodium Group provide crucial insights into the employment potential of carbon management projects.

According to the 2023 Rhodium Group report, Carbon Capture and Storage Workforce Development: State-by-State, commissioned by the Great Plains Institute, retrofitting industrial and electric power facilities in the 21-state Midcontinent region has the potential to create an annual average of **88,320–129,300 total jobs** over the next 15 years.

The Rhodium Group's workforce development analysis on the Mid-Atlantic region, released in 2023, projected that the region would need **26,600–39,470 total jobs** related to carbon capture, storage, and transportation over the same 15-year period for economywide deployment of carbon capture.

**129,300**  
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Midcontinent

**39,470**  
total jobs in the  
Mid-Atlantic

## Combined impact:

These analyses underscore the considerable employment opportunities that carbon management can bring to both the Midcontinent and Mid-Atlantic regions, reinforcing the role of sustainable practices in driving economic growth. Together, these combined efforts in carbon management could bring **114,920–168,770 total jobs** across both regions.



For more information about this analysis, visit [Rhodium Group's website](#).

## Conclusion

Our collective journey toward a net-zero carbon future gains remarkable strength when organized labor is engaged. Additionally, deploying carbon management technologies, when underpinned by strong labor standards and the expertise of organized labor, paves the way for a future where economic development and climate action are mutually reinforcing.

As we move forward, it is crucial that policy makers, industry leaders, communities, labor organizations, and other stakeholders unite in commitment and action to transform our energy landscape into a resilient and inclusive one. Together, we can achieve a clean energy transition that benefits everyone and leaves no worker behind.

For more information and resources about carbon management, visit the Carbon Action Alliance website at [carbonactionalliance.org](https://carbonactionalliance.org) or scan this QR code:



## About the Carbon Action Alliance

The Carbon Action Alliance launched in October 2022 to provide the Great Plains Institute's core carbon management projects with a broader platform to engage with stakeholders across the country. It serves as an education and advocacy network at the federal, regional, and state levels, coordinates communications efforts, and aligns stakeholders and local communities to ensure carbon management projects and infrastructure are included as a part of an equitable approach to reducing emissions across energy and industrial sectors.

Contact [carbonactionalliance@gpisd.net](mailto:carbonactionalliance@gpisd.net) with any questions.