REGIONAL CARBON CAPTURE DEPLOYMENT INITIATIVE

JOBS AND ECONOMIC IMPACT OF CARBON CAPTURE DEPLOYMENT Midcontinent Region

TOTAL JOBS POTENTIAL

Project
JobsOperations
JobsInfrastructure
Jobs59,83039,67216,600

The Midcontinent region can create an annual average of up to **76,430 project jobs** over a 15-year period and **39,672 ongoing operations jobs** through the deployment of carbon capture at 444 industrial and power facilities. The retrofit of equipment at these facilities would capture **642 million metric tons** of carbon dioxide (CO_2) per year. Along with the development of CO_2 transport infrastructure, this would generate up to **\$232.2 billion** in private investment.

1 bar represents 1 industry proportional to CO2 captured (Mt) \checkmark 1.000 2 000 3.000 5 Refineries Stee Cement Hydrogen Captured Industry õ Ethanol Petrochemicals Ammonia Gas **F**roject Jobs Processing **Operations Jobs**

Mt = million metric tons.

The figures above and to the right depict the low and high range of estimated annual average project jobs, transport infrastructure jobs, and ongoing operations jobs that could be created through carbon capture retrofits at industrial and power facilities in the Midcontinent region. The potential amount of CO₂ captured by each industry are shown on the right of each figure.

Phase I Study Region

Phase 1 Analytical Region. Phase 2 coming Fall 2020

CREATING JOBS & CAPTURING CARBON

Study Region

Carbon capture is essential to meeting mid-century emissions reduction goals while retaining and growing a domestic base of high-wage energy, industrial, and manufacturing jobs. Carbon capture retrofits require facilities to be outfitted with capture technologies such as amine scrubbers to remove CO_2 from exhaust gas and compressors to make the CO_2 transport-ready, that are dependent upon the type of industrial plant and vary across industries and facilities. There are jobs associated with the equipment, materials (e.g., cement and steel), engineering, and labor required to install the capture technology, as well as ongoing jobs to operate and maintain the retrofits. These are referred to as **project jobs** and **operations jobs**.

Rhodium Group performed an economic analysis based on the Regional Carbon Capture Deployment Initiative's nearand medium-term capture potential scenario.¹ The Rhodium analysis quantifies the economic impact and employment opportunities of carbon capture retrofit projects by deploying state-specific data in the IMPLAN economic model. The analytical results measure the impact of project investment and operation costs through expected annual jobs. Average annual project jobs were calculated assuming deployment of all projects within the 15-year period from 2021-2035. The jobs reported are in-state jobs, directly associated with carbon capture retrofits. They do not include other jobs at the facilities, nor indirect and induced jobs.



ANNUAL PROJECT AND OPERATIONS JOBS

REGIONAL CARBON CAPTURE DEPLOYMENT INITIATIVE

JOBS AND ECONOMIC IMPACT OF CARBON CAPTURE DEPLOYMENT Midcontinent Region

TOTAL JOBS POTENTIAL

Project Operations Infrastructure Jobs Jobs Jobs Jobs 59,830 39,672 16,600

CARBON CAPTURE JOBS AND ECONOMIC IMPACT SUMMARY

Industry	Number of Facilities	Total Capture Target Million Metric Tons	Private Investment Million Dollars	Annual Average Project Jobs 2021-2035	Annual Operations Jobs
Ammonia	6	9.9	\$325 - \$475	90 - 135	135 - 167
Cement	45	32.5	\$4,760 - \$7,150	1,500 - 2,240	1,360 - 1,870
Coal Power Plant	62	355	\$75,600 - \$112,400	21,820 - 32,730	13,890 - 20,780
Ethanol	150	44.3	\$2,291 - \$3,431	658 - 990	1,098 - 1,535
Gas Power Plant	67	113.8	\$35,600 - \$56,400	11,030 - 16,570	6,550 - 9,850
Gas Processing	20	4.7	\$276 - \$407	83 - 125	102 - 146
Hydrogen	39	22.5	\$2,375 - \$3,485	725 - 1,080	726 - 1,024
Petrochemicals	2	2	\$500 - \$700	150 - 220	110 - 160
Refineries	45	33.1	\$5,720 - \$8,570	2,275 - 3,430	1,450 - 2,040
Steel	8	24	\$4,890 - \$7,340	1,540 - 2,310	1,450 - 2,100
CO ₂ Transport Infrastructure	-	-	\$31,860	16,600	-

RESULTS

The Midcontinent region has immense opportunity to create jobs and reduce emissions in the industrial sector as well as at coal and gas power plants. Three hundred fifteen of the Midcontinent region's industrial facilities can create an annual average of up to 10,530 project jobs and 9,042 ongoing operations jobs while capturing 173 million metric tons of CO_2 per year. The Midcontinent region also has 129 power plants that, combined, can create an annual average of up to 49,300 project jobs and 30,630 ongoing operations jobs while capturing 468.8 million metric tons of CO_2 per year. The development of CO_2 transport infrastructure would create an annual average of 16,600 project jobs in the Midcontinent region.

ABOUT THE ANALYSIS

The first phase of economic and employment analysis conducted by Rhodium Group uses facilities within the Midcontinent region that were identified as near- and medium-term candidates for carbon capture retrofit in the recently published RDI white paper, *Transport Infrastructure for Carbon Capture and Storage: Regional Infrastructure for Midcentury Decarbonization*, and translates project investment and operation costs into employment potential on a state-by-state basis. Forthcoming analysis will explore theeconomic impacts of carbon capture in the rest of the US lower 48, as well as expanded deployment of carbon capture past 2035 to meet midcentury decarbonization targets nationwide.

The Regional Carbon Capture Deployment Initiative (RDI) brings together state officials with diverse industry, NGO, labor, and other stakeholders to promote broad scale deployment of infrastructure for carbon capture, CO_2 pipelines, enhanced oil recovery (EOR), other forms of geologic storage, and beneficial utilization of CO_2 in the Western and Midwest regions of the country. The Regional Carbon Capture Deployment Initiative is staffed by the Great Plains Institute (GPI), a nonpartisan, nonprofit organization working to transform the energy system to benefit the economy and environment.

For more information on this effort and to view a series of state fact sheets showcasing carbon capture opportunities and economic potential for job creation, go to www.carboncaptureready.org or contact Patrice Lahlum at plahlum@gpisd.net.