

ESTIMATING THE COST TO CAPTURE, COMPRESS, AND TRANSPORT CO₂ FROM STATIONARY SOURCES IN THE PCOR PARTNERSHIP REGION

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ABSTRACT

The Plains CO₂ Reduction (PCOR) Partnership estimated the regional costs associated with implementing CO₂ capture, dehydration/compression, and transportation by pipeline. The costs were estimated using public domain software and were developed with funding from the U.S. Department of Energy's National Energy Technology Laboratory.

The earliest deployment of carbon capture and sequestration (CCS) in the PCOR Partnership region is likely to occur at sources producing fairly pure streams of CO₂: gas-processing plants and the fermentation step of ethanol plants. The cost to dry and compress this CO₂ would reduce the region's emissions from stationary sources by 7% at a cost of \$10–\$12/ton CO₂.

CO₂ capture at the electricity-generating facilities offers the greatest emission reduction, although capture from these sources would likely be limited to units at least 100 MW in size because of parasitic power issues. As wide deployment of CCS will probably require a pipeline network, pipeline transportation costs were included in the estimates for CCS from the ≥ 100 -MW power plants. Depending on capture level, emission reduction as large as 54% at an estimated cost as low as \$78/ton CO₂ avoided could be achieved from these plants.

If 90% of the CO₂ were captured from all three sources, the regional emissions from stationary sources would decrease 61% at an average cost (including pipeline transport) of \$71/ton CO₂ avoided.

Additional research for cost-effective capture and compression technologies and judicious pipeline siting are needed if CCS is to be implemented with minimal financial hardship on utilities, other industries, and consumers.