

CO₂ SOURCE CHARACTERIZATION OF THE PCOR PARTNERSHIP REGION

Melanie D. Jensen, Energy & Environmental Research Center
Edward N. Steadman, Energy & Environmental Research Center
John A. Harju, Energy & Environmental Research Center

June 2005

EXECUTIVE SUMMARY

The Plains CO₂ Reduction (PCOR) Partnership region is expansive, covering the states of Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin, the Powder River Basin portion of Wyoming, the portion of Montana containing both the Williston and Powder River Basins, and the Canadian provinces of Alberta, Saskatchewan, and Manitoba. The upper Mississippi River Valley and the western shores of the Great Lakes are home to large coal-fired electrical generation plants that power the manufacturing plants and breweries of St. Louis, Minneapolis–St. Paul, and Milwaukee. Coal-fired power plants, natural gas-processing plants, ethanol plants, and refineries located in the prairies and badlands of the north-central United States and central and Western Canada further fuel the industrial and domestic needs of cities throughout North America. The PCOR Partnership region is also home to much of North America's most fertile agricultural lands.

The geographic and socioeconomic diversity of the region is reflected in the variable nature of the carbon dioxide (CO₂) sources found there. Nearly 1400 significant point sources were identified for the PCOR Partnership region using U.S. Environmental Protection Agency and Environment Canada databases (EPA, 2000; Environment Canada, 2000 a-c, 2004) (all references cited in the Executive

Summary are found in the reference section of the report). The CO₂ is emitted during electricity generation; energy exploration and production activities; agriculture; fuel, chemicals, and ethanol production; and various manufacturing and industrial activities. The majority of the region's emissions from stationary sources come from just a few source types. About two-thirds of the CO₂ is emitted during electricity generation, followed by the manufacture of paper and wood products, petroleum and natural gas processing, chemicals and fuels production, ethanol production, petroleum refining, and cement/clinker production.

In 2000, the PCOR Partnership region contributed approximately 13% of the total CO₂ emissions from the United States and Canada. The U.S. PCOR Partnership region contributed about 10% of the U.S. CO₂ emissions, while the Canadian portion of the PCOR Partnership region produced almost 40% of Canada's total (EPA, 2000; Environment Canada, 2000 a-c, 2004). The emissions profile (i.e., percentage of CO₂ emissions from various source types) for the Canadian portion of the PCOR Partnership is virtually identical to that of Canada as a whole. On the other hand, when compared to the total U.S. CO₂ emissions, the states in the PCOR Partnership region emit relatively more CO₂ from electric utilities and less from industries and transportation. This is undoubtedly because the region is made up largely of agricultural, energy-producing areas with relatively fewer

