

## Advanced Coal and Carbon Capture and Storage Fact Sheet

Carbon capture and storage technologies allow CO<sub>2</sub> emissions to be funneled into geological reservoirs — preventing them from escaping into the atmosphere. The Midwest is positioned to commercialize advanced coal technologies with carbon capture and storage in a region with a significant amount of geological reservoirs that are well-suited for long-term CO<sub>2</sub> storage, including saline aquifers and oil and gas reservoirs. Stored supplies of CO<sub>2</sub> injected into oil reservoirs also provide an opportunity for enhanced oil recovery (EOR).

### Measurable Goals

- **By 2010:** A regional regulatory framework for carbon capture and storage (CCS) will have been implemented that enables permanent geologic storage of CO<sub>2</sub>, provides regulators and industry clear direction with regards to CO<sub>2</sub> capture; injection, monitoring, verification and compliance; and addresses ultimate liability for stored CO<sub>2</sub>.
- **By 2012:** A multi-jurisdiction pipeline will have been sited and permitted to transport CO<sub>2</sub> captured from one or more new advanced coal plants and, potentially, biofuels plants to an appropriate reservoir for use in enhanced oil and gas recovery (EOR).
- **By 2012:** The region will have at least one operating, commercial-scale integrated gasification-combined cycle (IGCC) power plant, with CCS, that uses bituminous coal.
- **By 2015:** The region will have three or more commercial-scale IGCC plants, with CCS in operation, that use bituminous coals; at least two IGCC plants, with CCS and operating at a commercial-scale, that use sub-bituminous and lignite coals; commercial-scale post-combustion capture of CO<sub>2</sub> emissions at one or more pulverized coal plants.
- **By 2020:** All new coal gasification and coal combustion plants will capture and store CO<sub>2</sub> emissions.
- **By 2050:** The region's fleet of coal plants will have transitioned to CCS.

### Policy Options

- Establish a regional CCS infrastructure for the management of captured CO<sub>2</sub> through EOR and deep saline aquifer storage.
- Provide financial and regulatory incentives to build advanced coal generation projects with CCS, using bituminous, sub-bituminous and lignite coals.
- Develop incentives targeted at biorefineries that appropriately parallel those targeted at power plants.

### Objectives

- Support the development of a CO<sub>2</sub> management infrastructure as well as the demonstration and commercialization of large-scale geologic carbon storage projects that take advantage of our region's EOR potential.
- Support research, development, demonstration and deployment of carbon-capture technologies at existing plants and the re-powering of existing facilities, where appropriate, and at biorefineries to increase efficiency and reduce CO<sub>2</sub> emissions.
- Create a policy and a regulatory environment that advances new coal plants with CCS.
- Develop commercial manufacturing, technical and operation expertise in our region to operate and export these technologies globally.

### Current Initiatives

- Core Energy, LLC currently operates the only CO<sub>2</sub> enhanced oil recovery (EOR) operation in the Midwest, and is the only company that is currently engaged in the field demonstration of CO<sub>2</sub> sequestration activities. To date, over one million barrels of oil have been recovered in Michigan from EOR.
- Duke Energy, a North Carolina-based utility, is in the process of building a \$2.35 billion IGCC plant in Edwardsport, Ind., where vast underground geologic formations are being proposed as the future storage sites for liquefied carbon dioxide. Gov. Mitch Daniels of Indiana held a two-day summit with business, academic and environmental leaders to create a legal and associated regulatory framework to allow the state to take the lead in carbon capture and storage.
- Nearly 3 million tons of CO<sub>2</sub> are captured annually from Dakota Gasification-EnCana and piped from North Dakota to Saskatchewan for EOR. To date, storing this carbon underground instead of releasing it into the atmosphere has been the equivalent to taking 8 million cars off the road for a year.