

## Addressing the Challenges of Infrastructure Development for Carbon Capture, Utilization, and Storage

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**Background/Objectives.** One of the biggest challenges to engineering solutions for industrial and electric power greenhouse gas emissions (GHGs) to address climate change is the development of new infrastructure. The scale, timing, and placement of infrastructure must be coordinated carefully to effectively make the transition to zero- and low-carbon energy sources and industry. In addition, issues of policy, economics and financing, public acceptance, site readiness, jobs and training, and equity and environmental justice must also be addressed. The Midwest Regional Carbon Initiative (MRCI) will address these issues of infrastructure development for carbon capture, utilization, and storage (CCUS), an important technology to achieve deep cuts of GHGs from energy and industry, for a 20-state region that includes the Midwest-Northeastern quadrant of the United States.

**Approach/Activities.** The presentation will cover an overview of topics addressed by the Infrastructure Assessment Task of MRCI. The presentation will cover four topics:

1. Infrastructure readiness and development – This effort investigates the infrastructure needs required for CCUS, including CO<sub>2</sub> capture systems, CO<sub>2</sub> pipelines, and CO<sub>2</sub> storage resources.
2. Site or state readiness – This effort establishes a process for evaluating the conditions for CCUS development in a state or site. The process seeks help focus limited resources to address gaps in knowledge, infrastructure, or policy.
3. Jobs, economics, and social characteristics – This effort investigates the benefits, costs and potential revenue, and potential for public acceptance of implementing CCUS in the MRCI region. In addition, issues of environmental justice and sustainability are also researched under this effort.
4. Policy and permitting – Policy to support development and permitting of infrastructure are discussed under this effort.

**Results/Lessons Learned.** Preliminary results from technical efforts under MRCI for each of the four efforts described above:

1. Infrastructure readiness and development – An updated source assessment that includes future source and a source/sink-transport assessment to connect sources of with defined CO<sub>2</sub> reservoirs. In addition, emerging issues like hydrogen development, security, and direct air capture will also be discussed.
2. Site or state readiness – The process for evaluating readiness and examples of factsheets for communicating readiness with stakeholders will be presented.
3. Jobs, economics, and social characteristics – Initial work on jobs and benefits analyses, improvement of existing economics tools, and social characterization and environmental justice issues will be presented.
4. Policy and permitting – An accounting of the federal and state policies and important gaps that must be filled to support the development of CCUS in the MRCI region will be discussed.