INFRASTRUCTURE FOR CARBON CAPTURE: TECHNOLOGY, POLICY, AND ECONOMICS

CO2 EOR State Deployment Work Group
Presentation to
NARUC Webinar
May 15, 2017
Overview

• Background on State CO$_2$-EOR Deployment Work Group
• States’ Carbon Capture Incentive Recommendations
  o Federal Tax and Other Incentives
  o State Tax Policy Options
• States’ CO$_2$ Pipeline Infrastructure Recommendations
• Next Steps for the Work Group
Growing State Support for Carbon Capture & CO$_2$-EOR

Governors, legislators and utility commissioners across the U.S. have signaled growing support for federal and state policies to foster commercial deployment of carbon capture and CO$_2$-EOR.

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<th>Year</th>
<th>Organization</th>
<th>Resolution Highlights</th>
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<td>2015</td>
<td>Western Governor’s Association</td>
<td>Recognized economic and environmental benefits of carbon capture and CO$_2$-EOR; called on Congress to extend and strengthen the federal Sec. 45Q tax credit.</td>
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<td>2015</td>
<td>Southern States Energy Board</td>
<td>Emphasized need for federal incentives and state policy measures.</td>
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<td>2016</td>
<td>National Association of Regulatory Utility Commissioners</td>
<td>Highlighted economic, energy production and carbon mitigation benefits, and the importance of state and federal action.</td>
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Formation of State CO$_2$-EOR Deployment Work Group

- Co-convened by Governors Matt Mead (R-WY) and Steve Bullock (D-MT).
- Launched in 3Q 2015:
  - Officials from 14 states;*
  - Leading industry and NGO stakeholders; and
  - CO$_2$–EOR experts.
- Seven meetings to date to review modeling results, develop and agree on recommendations, and finalize reports, letters and other work products.
- Funding from the Hewlett Foundation.

*State participation varies and includes governors’ staff, cabinet secretaries, utility commissioners and agency and commission staff. Kansas and New Mexico are not currently represented in the Work Group.
State CO2-EOR Deployment Work Group Objectives

- Help policy-makers and stakeholders better understand states’ potential for CO$_2$-EOR, & evaluate which strategies and state and federal policies can best achieve that potential;
- Make recommendations to states and the federal government;
- Support state policy-makers in implementing strategies and policies developed through Work Group analysis and deliberations, including multi-state efforts; and
- Encourage enactment of federal policies that complement state priorities through coordinated efforts of governors, other state policy-makers and stakeholders.
The Case for Federal, State Support for CO2-EOR

- CO2-EOR offers extraordinary benefits for our nation
- Market forces, federal policies and some state policies are driving industry to reduce emissions
- Carbon capture with CO2-EOR compares cost-effectively with other forms of zero- or low-emission generation

CO2-EOR enhances our nation’s energy and economic security

- Increases US Oil Production
- Captures Carbon & Reduces Carbon Emissions
- Creates Jobs, Investment & Economic Activity
The Case for Federal, State Support for CO2-EOR

- Turns carbon dioxide from a liability into a valuable commodity
- US has the potential to produce an estimated 28 billion barrels of economically recoverable oil with today’s industry best practices
- Provides fiscal benefits at a time when the federal government and many states face budget challenges.
- Directly supports high-paying jobs across a range of sectors.
Putting the Puzzle Together: State & Federal Policy Drivers for Growing America’s Carbon Capture & CO₂-EOR Industry

- Major report released in December.
- Includes detailed modeling analyses, rationale and recommendations for carbon capture and EOR deployment as a national priority.
- Represents Work Group analysis and deliberations, including private sector stakeholders and CO₂-EOR experts.
Work Group Recommends a Package of Federal Incentives

- Project-level financial feasibility modeling shows that a package of federal incentives is needed to mitigate risk and uncertainty in commercial deployment of carbon capture projects.

- Based on priority and impact on project feasibility, the Work Group urges Congress and the Administration to:
  
  1. **Extend, reform and expand the existing Section 45Q Tax Credit** for Carbon Dioxide Sequestration to increase its value, make it financially certain and provide for greater eligibility and flexibility for project developers;

  2. **Establish federal price stabilization contracts, or contracts for differences,** for $CO_2$ sold from capture facilities to EOR operators to eliminate the risk of price volatility that deters private investment in carbon capture projects; and

  3. **Make carbon capture eligible for tax-exempt private activity bonds and master limited partnerships** to provide debt and equity, respectively, on favorable terms.
Work Group Recommends that States Optimize Tax Policies to Encourage Carbon Capture and EOR Deployment

■ In conjunction with improved federal incentives, states can positively affect project feasibility by optimizing taxes common to oil and gas-producing states.

■ The Work Group reviewed:
  o **Sales taxes on equipment purchased to build a carbon capture facility;**
  o **Property taxes on the carbon capture facility;**
  o **Sales taxes on equipment acquired to adapt an oilfield to CO\textsubscript{2}-EOR operations; and**
  o **Oil and gas taxes, such as production and severance taxes.**

■ Based on life-of-project modeling of carbon capture and EOR portions of integrated projects, **certain targeted reductions in state taxes can beneficially impact project economics equivalent to roughly an $8 per barrel increase in the price of oil**, which is significant compared to existing federal incentives.
Work Group Calls for a Balanced, Cost-Effective Approach to Carbon Emissions Reductions

- Carbon capture merits federal and state policy support to accelerate commercial deployment, as has been done successfully for other energy technologies.

- As policies and markets drive industry to reduce emissions, carbon capture deserves equivalent support as a critical component of a broader, cost-effective portfolio of carbon mitigation options.

- Based on cost per ton of CO\(_2\) emissions avoided, power plant capture with EOR already compares cost-effectively with other options, especially at higher reduction levels. Retrofitting an existing coal plant is in the middle of the cost curve for low- and zero-carbon generation options.
Work Group Expanding Focus to Include CO$_2$ Pipeline Infrastructure

  - Calls on Trump Administration and Congress to make CO$_2$ pipelines a priority component of a broader national infrastructure agenda (in addition to enacting federal carbon capture incentives);
  - Recommends federal role to supplement private capital in financing increased capacity for large-volume, long-distance trunk CO$_2$ pipelines (“super-sizing” trunk pipelines achieves enormous economies of scale and enables future carbon capture and EOR project deployment); and
  - Urges Congress and Administration, in consultation with states, tribal governments and stakeholders, to identify and foster development of priority pipelines, including planning, streamlined permitting, and financing.
Five Major CO₂ Pipeline Corridors Could Enable a National Energy Production and Carbon Management Infrastructure
Benefits of Proposed National CO$_2$ Pipeline Buildout

- Work Group recommends five major CO$_2$ pipeline corridors equivalent to scale and volume of Cortez pipeline, world’s largest (30” diameter = 30 million tpy).

- Such an expansion could create a national infrastructure and supply up to an additional 150 million tons of CO$_2$ annually for EOR and storage, resulting in:
  - Tripling of domestic EOR production, or 375 million barrels of oil per year;
  - $1/5^{th}$ reduction in U.S. oil imports from current levels, valued at $30 billion;
  - Capture of over four percent of current U.S. stationary source emissions from power plants and industrial facilities;
  - $75$ billion of capital investment in carbon capture, CO$_2$ pipeline construction, and EOR equipment; and
  - $30$ billion of annual economic activity.
State CO₂-EOR Deployment Work Group Next Steps

- Recommend a menu of federal CO₂ pipeline financing options to help inform federal infrastructure legislation in Congress.
- White paper on regional RTO/ISO wholesale market design and policies to ensure parity and equitable treatment for carbon capture facilities with other low and zero-carbon generation resources.
- Expand efforts to communicate Work Group priorities and recommendations to federal and state policymakers, stakeholders and the media nationally and in key states.
THANK YOU!

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