PLAINS CO₂ REDUCTION PARTNERSHIP INITIATIVE TO ACCELERATE COMMERCIAL CCUS DEPLOYMENT

NDIC Oil and Gas Research Program
February 23, 2022

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2005–2008 – PCOR Partnership: Field Validation

2007–2019 – PCOR Partnership: Commercial Demonstration

2019–2024 – PCOR Partnership Initiative: Commercial Deployment
The PCOR Partnership Initiative is addressing regional capture, transport, use, and storage challenges facing commercial CCUS deployment. The Initiative is focusing on:

- Strengthening the technical foundation for geologic CO₂ storage and enhanced oil recovery.
- Advancing capture technology.
- Improving application of monitoring technologies.
- Promoting integration between capture, transportation, use, and storage industries and development of infrastructure and large projects.
- Facilitating regulatory frameworks.
- Providing scientific support to policy makers.
2021 AND 2022 HIGHLIGHTS

• PCOR Partnership annual meeting held in Jackson, Wyoming, with 106 participants
• 217 members; 34 new since 2019
• Regulatory Roundup held in Deadwood, South Dakota
• TAB meeting held in Jackson, Wyoming
• Field effort initiated at the Red Trail Energy (RTE) CCS site
• New PCOR Partnership public and partner websites
• Several products published
• Numerous white papers in development
PUBLISHED PRODUCTS

• Carbon Dioxide Storage Optimization
• Technical Approaches to Stacked Storage
• Strategies for Storage Permanence: Well Integrity and Legacy Well Evaluations
• Risk-Based Area of Review (AOR) Estimation to Support Injection Well Storage Facility Permit Requirements for CO₂ Storage Projects
PUBLISHED PRODUCTS (continued)

- PCOR Partnership Atlas, 6th Edition
- CCUS Business Models in the PCOR Partnership Region
- Matching Capture Technologies with Point Sources
- Journal Articles
  - Enhanced Oil Recovery Using CO₂ in Alaska (by UAF, in Geosciences)
  - Risk-Based Area of Review Estimation in Overpressured Reservoirs to Support Injection Well Storage Facility Permit Requirements for CO₂ Storage Projects (in Greenhouse Gases: Science and Technology)
WHITE PAPER TOPICS

• Class VI wellbore construction and design
• Pore space leasing considerations
• Pressure interference
• Pipeline cost and CO₂ transport considerations
• Use of carbon steel pipelines for various CO₂/H₂S services
• Lessons learned from coring, wireline logging, and seismic surveys
• Machine learning-assisted approach to cement bond log (CBL) interpretation
• Lessons learned from EOR in Wyoming
• Activity to spur interest in CO₂ EOR and associated storage of CO₂
EXPANDED AND NEW TASKS UNDER RECENT FUNDING

Technical Challenges
- Geologic Characterization
- Technology Validation
- MVA Strategies – NEW subtask: Enabling Sustainable Monitoring for CCUS
- Risk Management

Data Collection, Sharing, and Analysis
- NRAP Validation
- Machine Learning (ML)
- Risk-Based Area of Review (AOR)

Regional Infrastructure
- Techno-Economic Analysis
- Promotion of Infrastructure and Scale-Up for Large Projects – added CO₂ purity specifications in pipelines, reclaimer waste disposal options, and looking for large-scale project opportunities
- Socioeconomic Impacts
- Public and Industry Outreach

Nontechnical Challenges
- Policy and Regulatory Challenges
- Business Models
- Pathways to CCUS Commercial Scaling and Deployment – changed series of road maps to an evolving road map with scale-up challenges included
### PCOR PARTNERSHIP INITIATIVE FUNDING

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PCOR Partnership membership fees collected as of 2/8/2022: $570,000.
THE SEQUESTRATION TRIAD – POTENTIAL FOR GEOGRAPHIC CONCENTRATION

Oil and gas producing basins present multiple opportunities in close proximity

- Often stacked
- Deeper basement, thicker sediment-rich section for storage
- Usually have associated sealing caprock formations
- Monitoring and operational synergies
ACTIVITY TO SPUR INTEREST IN CO₂ EOR

• White paper being written to generate interest in CO₂ EOR with an emphasis on:
  – Relationship between EOR economics and oil price cycles
  – 45Q tax credits and impact of expanded credits
  – Reversing incentive for low net CO₂ utilization to incentivizing maximum storage
  – Advanced/innovative CO₂ flooding techniques to maximize oil recovery and storage
  – Non-GHG-related environmental advantages
    ♦ Institute more responsible wellbore management and abandonment and reduce public exposure to well plugging costs.
    ♦ Utilize surface lands that have already been disturbed rather than disturb new areas for the marginal oil production or marginal sequestration wells.
PCOR PARTNERSHIP INITIATIVE SUMMARY

Building on over 19 years of applied research in CCUS

Active region developing commercial CCUS projects

Engaged and motivated partners

Well-equipped project team

Catalyst for CCUS projects in the region
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THANK YOU

Critical Challenges. Practical Solutions.