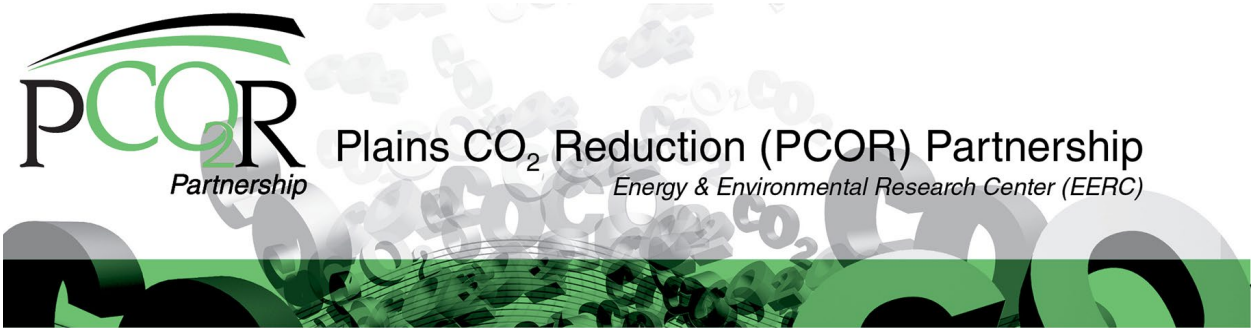

PCOR PARTNERSHIP INITIATIVE TO ACCELERATE CCUS DEPLOYMENT

Research Performance Progress Report (quarterly)

(for the period April 1 – June 30, 2023)

Prepared for:

AAD Document Control

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U.S. Department of Energy
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Project Period: October 1, 2019 – September 30, 2024
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July 27, 2023

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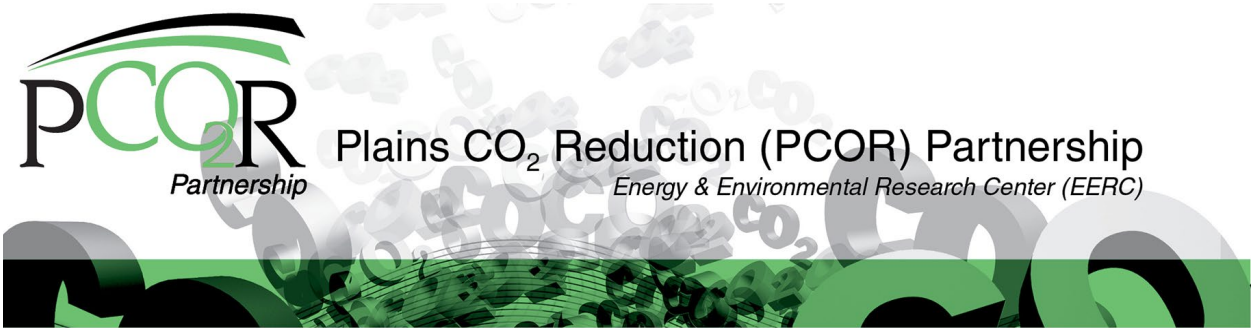


PCOR PARTNERSHIP INITIATIVE TO ACCELERATE CCUS DEPLOYMENT
Quarterly Progress Report
April 1 – June 30, 2023

EXECUTIVE SUMMARY

The Plains CO_2 Reduction (PCOR) Partnership, funded by the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL), the North Dakota Industrial Commission Oil and Gas Research Program and Lignite Research Program, and more than 240 public and private partners, is accelerating the deployment of carbon capture, utilization, and storage (CCUS) technology. The PCOR Partnership is focused on a region comprising ten U.S. states and four Canadian provinces in the upper Great Plains and northwestern regions of North America. It is led by the University of North Dakota Energy & Environmental Research Center (EERC), with support from the University of Wyoming (UW) and the University of Alaska Fairbanks (UAF).

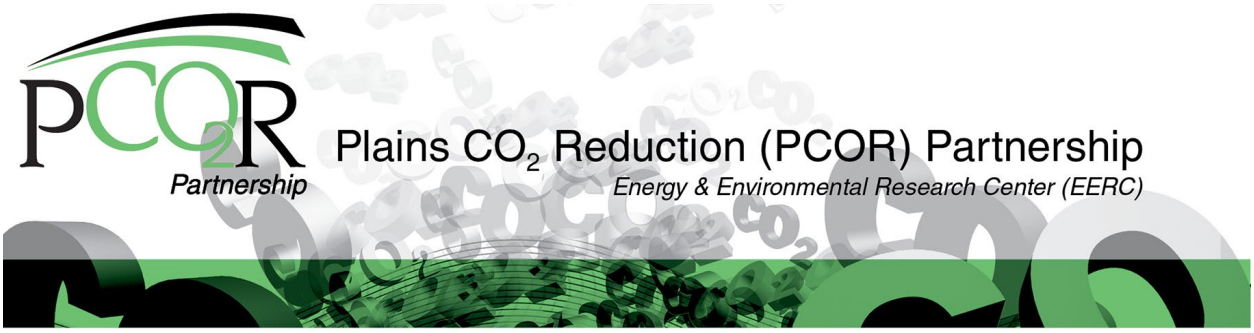
Federal appropriation for FY2022 funding directed DOE to make available no less than $20 million for the Regional Carbon Sequestration Partnership (RSCP) Program. In compliance with this, a letter proposal was submitted to the DOE project manager on April 26, 2022, requesting $5 million in FY2022 funding from DOE. The letter proposal also included value-added scope totaling $4 million, should additional funding from DOE be available beyond the $5 million FY2022 funding. On December 12, 2022, DOE published Funding Opportunity Announcement (FOA) No. DE-FOA-0002799, which states, “A difference between the ongoing work [of the Regional Initiatives, including the PCOR Partnership] and the work sought under this FOA is that Applicants under this FOA must focus their efforts within one or more specific, more narrowly-defined geographic area(s) rather than over a broad region of the U.S.” At the time of this quarterly report, the status of the letter proposal submitted April 26, 2022, is unknown.

The EERC received four requests for information on the PCOR Partnership through the public website. Presentations on the PCOR Partnership were given to four prospective partners. Four new members were welcomed to the PCOR Partnership this quarter, bringing the membership to 255: Avalon International, Rock Flow Dynamics, OLI Systems, and ConocoPhillips.

Work continued on the next three deliverables (D): D11 – Basement Faulting and Stress State, Induced Seismicity, D12 – Regional Socioeconomic Assessments, and D13 – Updated Regional Business Model Assessment.

The PCOR Partnership sent its second newsletter to project partners on May 3, 2023. The EERC expects to distribute the newsletter to all PCOR partners on a regular basis.

The PCOR Partnership presented at the 2023 Rocky Mountain Section American Association of Petroleum Geologists (AAPG) Annual Meeting held in Bismarck, North Dakota, June 4–6.



PCOR PARTNERSHIP INITIATIVE TO ACCELERATE CCUS DEPLOYMENT
Quarterly Progress Report
April 1 – June 30, 2023

INTRODUCTION

The Plains CO_2 Reduction (PCOR) Partnership, funded by the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL), the North Dakota Industrial Commission (NDIC) Oil and Gas Research Program and Lignite Research Program, and more than 240 public and private partners, is accelerating the deployment of carbon capture, utilization, and storage (CCUS) technology. The PCOR Partnership is focused on a region comprising ten U.S. states and four Canadian provinces in the upper Great Plains and northwestern regions of North America. It is led by the University of North Dakota Energy & Environmental Research Center (EERC), with support from the University of Wyoming (UW) and the University of Alaska Fairbanks (UAF).

The goal of the PCOR Partnership is to identify and address regional capture, transport, and storage challenges facing commercial deployment of CCUS in an expanded region, compared to past Regional Carbon Sequestration Partnership project phases. To achieve this goal, the PCOR Partnership will meet the following objectives:

1. Address key technical challenges by advancing critical knowledge and capabilities.

2. Facilitate data collection, sharing, analysis, and collaboration.

3. Evaluate regional infrastructure challenges/needs and promote infrastructure development.

4. Promote regional technology transfer.

The project goal and objectives will be accomplished through five tasks over two budget periods (BPs), corresponding to a 5-year period of performance. The EERC and project partners will collaborate to identify and address technical challenges facing deployment of CCUS in multiple categories, including stacked storage opportunities, CO_2 storage performance and monitoring, and risk assessment. The EERC will work with PCOR Partnership members and regional stakeholders to promote the development of infrastructure and large projects within the PCOR Partnership region. This development will then provide best practices throughout the United States for wide-scale deployment of CCUS technologies. Existing data sets and technologies will be analyzed and evaluated to highlight current challenges limiting commercial

adoption of CCUS as well as to identify potential solutions. The project team will support DOE's National Risk Assessment Partnership (NRAP) and machine learning (ML) initiatives by drawing on data sets and experience available through the team. Assessments of infrastructure, site readiness, techno-economics, and socioeconomics will provide an overview of the CCUS landscape within the defined PCOR Partnership region. Potential business case scenarios will be evaluated, accounting for current economic incentives to identify opportunities in CCUS project development. Technology transfer activities will inform and educate CCUS stakeholders of project learnings through annual membership meetings, regulatory roundup meetings, technical advisory board (TAB) meetings, webinars, reports, and conference presentations/papers. These activities will facilitate knowledge sharing and support DOE program goals.

ACCOMPLISHMENTS

Task 1.0 – Project Management and Planning

The objective of Task 1.0 is to manage and direct the project in accordance with a project management plan (PMP) to meet all technical, schedule, and budget objectives and requirements. Activities will be coordinated in order to effectively accomplish the work. The project manager (PM) will ensure that project plans, results, and decisions are appropriately documented and project reporting and briefing requirements are satisfied.

Significant accomplishments for Task 1.0 during the reporting period include the following:

- Held progress meetings with subrecipients UAF and UW.
- Held regular progress update meetings with the federal project manager (FPM).
- Held discussions with prospective members on a regular basis. The PCOR Partnership currently has 255 members. Welcomed new members Avalon International, Rock Flow Dynamics, OLI Systems, and ConocoPhillips.
- Held the TAB meeting on May 2 and 3, 2023, in Washington D.C.
- Continued planning for the 2023 Annual Membership Meeting to be held in Grand Forks, North Dakota, September 26–27, 2023.

Next steps to accomplish the goals under Task 1.0 include the following:

- Continue planning for the 2023 Annual Membership Meeting to be held in Grand Forks, North Dakota, September 26–27, 2023.
- Continue tracking progress on project deliverables (D) and milestones (M) (see Tables 1 and 2).

Table 1. Project Deliverables

Deliverable No. and Title	Planned Completion Date	Actual Completion Date	Verification Method	Comments
D1 – PMP	30 days after contract definitization	2/21/2020	PMP file submitted to DOE PM	
D2 – Report – Storage Optimization	4/30/2021	4/30/2021	Topical report submitted to DOE PM	Moved from 12/31/2020.
D3.A – Report – Stacked Storage Opportunity Assessment	8/31/2021	8/31/2021 (E.S.) 11/12/2021 (Full report)	Topical report submitted to DOE PM	Moved from 6/30/2021.
D3.B – Report – Stacked Storage Scenario Geomechanical Modeling	3/31/2022	3/31/2022	Topical report submitted to DOE PM	Created a second D3 report.
D4 – Report – Regional Business Case Assessment	12/31/2021	12/17/2021	Topical report submitted to DOE PM	Moved from 3/31/2021.
D5 – Report – Subsurface and Legacy Well Integrity	12/31/2021	12/30/2021	Topical report submitted to DOE PM	
D6 – Report – MVA Strategies	6/30/2022	6/30/2022	Topical report submitted to DOE PM	
D7 – Report – Evaluation of Risk Management	9/30/2022	9/30/2022	Topical report submitted to DOE PM	
D8 – Report – Regional Permitting Guidance	9/30/2022	9/30/2022	Topical report submitted to DOE PM	Two reports submitted for D8.
D9 – Report – Infrastructure, Scale-Up, and Techno-Economic Assessments	3/31/2023	3/31/2023	Topical report submitted to DOE PM	The revised PMP moving the due date to 3/31/23 was approved by DOE on 1/11/23.
D10 – Report – NRAP Testing and Validation	3/31/2023	12/17/2021 (Part 1) 3/31/2023 (Part 2)	Topical report submitted to DOE PM	To be provided in two parts.
D11 – Report – Basement Faulting and Stress State, Induced Seismicity	9/30/2023		Topical report submitted to DOE PM	
D12 – Report – Regional Socioeconomic Assessments	9/30/2023		Topical report submitted to DOE PM	
D13 – Report – Updated Regional Business Case Assessment	12/31/2023		Topical report submitted to DOE PM	
D14 – Report – Risk-Based Area of Review	1/31/2021	1/29/2021	Topical report submitted to DOE PM	Moved from 12/31/2020.
D15 – PCOR Partnership Atlas	6/30/2021 and 3/31/2024	6/30/2021	Atlas submitted to DOE PM	The revised PMP moving the due date to 3/31/24 was approved by DOE on 1/11/23.
D16 – Enabling Sustainable Monitoring for CCUS	6/30/2024		Topical report submitted to DOE PM	
D17 – PCOR Partnership Initiative Road Map	5/31/2024		Topical report submitted to DOE PM	

Table 2. Milestone Status Report

Milestone No. and Title	Planned Completion Date	Actual Completion Date	Verification Method	Comments
M1 – Regulatory Roundup Scheduled	2/29/2020	3/31/2020	Reported in subsequent quarterly report	
M2 – Initial Techno-Economic Framework Established	4/30/2020	4/28/2020	Reported in subsequent quarterly report	
M3 –Annual Meeting Scheduled	3/31/2021	3/29/2021	Reported in subsequent quarterly report	
M4 – Regulatory Roundup Scheduled	3/31/2021	3/29/2021	Reported in subsequent quarterly report	
M5 – Data Share with National Lab for NRAP Assessment	6/30/2021	6/30/2021	Reported in subsequent quarterly report	Files added to EDX.[1]
M6 – GHGT-16[2] Abstract Submitted	1/31/2022	1/14/2022	Reported in subsequent quarterly report	
M7 – BP1 EDX Submitted	3/31/2022	3/31/2022	Reported in subsequent quarterly report	
M8 – Draft Journal Article Completed	11/30/2022	9/30/2022	Reported in subsequent quarterly report	
M9 – Regulatory Roundup Scheduled	3/31/2023	3/31/2023	Reported in subsequent quarterly report	
M10 – GHGT-17 Abstract Submitted	1/31/2024		Reported in subsequent quarterly report	
M11 – Annual Meeting Scheduled	3/31/2024		Reported in subsequent quarterly report	
M12 – BP2 EDX Submitted	6/30/2024		Reported in subsequent quarterly report	

[1] Energy Data eXchange.
[2] 16th International Conference on Greenhouse Gas Control Technologies.

Task 2.0 – Technical Challenges

In Task 2.0, the project team will support regional deployment of CCUS programs by focusing on key technical challenges in the PCOR Partnership region related to stacked storage opportunities; storage performance; monitoring, verification, and accounting (MVA) technology; and subsurface integrity. The EERC will collaborate with PCOR Partnership members to identify knowledge gaps and address regional challenges through targeted webinars, workshops, reports, and papers.

Progress on Task 2.0 is as follows:

- Submitted a white paper on May 3, 2023, entitled "A Quantitative Approach for Demonstrating Plume Stabilization Under CCS Policy Frameworks."

- Continued the development of basement faulting and stress state, inducted seismicity report (D11).

- The EERC continued collaboration for the field effort at the Red Trail Energy (RTE) carbon capture and storage (CCS) site. Activities included the following:
  - The EERC team is operating a Mechatronics electric vibe (eVibe) for both active and static sourcing operations. The EERC is currently operating the eVibe as a remote source for the scalable, automated, sparse seismic array (SASSA) method for monitoring CO_2 plume extents. The eVibe is active on Friday, Saturday, and Sunday for 9 hours. The current eVibe rental operations end August 2023. Initial processing of the eVibe data shows seismic reflections at storage formation, indicating there is adequate energy to characterize the Broom Creek Formation. The EERC team completed two (2) harvesting trips in early April and late May for collection of SASSA data from Stryde and Zland nodes.
  - The EERC team continues the operation of the Instrumental Software Technologies, Inc. (ISTI) 6C seismic station for recording waveform data to complement the SASSA processing effort. The seismic station includes three-component (3C) rotational and 3C translational sensors. This real-time station will be included in the seismicity processing effort for RTE integrated with the five (5) other NETL stations installed at the site. The EERC geophysics team met with the NETL team to discuss a path forward with partially upgrading seismometer array to continuous real-time data transmission.
  - The EERC team began discussions with the NETL team to discuss options for potentially implementing an electromagnetic method at the RTE site.

  - The EERC geomechanics team completed modeling of surface deformation for this site, integrating pressure changes from numerical simulation applied to a 3D mechanical earth model (MEM). These modeling results have shown deformation estimates that are below the threshold of this interferometric synthetic aperture radar (inSAR) measurement technique. Further, even with installation of artificial reflectors, the expected changes in elevation will not be detectable with the inSAR technique at this site.

- UW continued work on draft documents to advance the PCOR Partnership knowledge in topics under Task 2.0, including the following:
  - Formation Outlines for Minnelusa, Hulett, and Lakota Formations and Associated Seals – The EERC provided feedback and comments to UW on November 21. UW is currently incorporating this feedback into updated versions of the formation outlines and expects to finalize by July 31, 2023.
  - Formation Outlines for Storage Reservoirs and Seals in the Rock Springs Uplift – UW is currently incorporating feedback from the EERC into formation outlines for the Rock Springs uplift and expects to finalize by July 31, 2023.

  - Basement Faulting and Stress State, Induced Seismicity – UW is currently working on a project analyzing paleostress and fractures in the eastern Bighorn Mountains and western Black Hills, which flank the Powder River Basin. UW is also building a database of existing fracture and fault data for all Wyoming basins. This work will eventually contribute to the EERC's D11. UW and the EERC continue to collaborate on this work.

Next steps to accomplish the goals under Task 2.0 in the coming quarter include the following:

- Continue RTE field activities: meet weekly with contractor SkyGeo to review InSAR data for historical analysis and modeling to inform decision-making for artificial reflector installation.

- Finalize white papers.

- Continue to work on the development of basement faulting and stress state, inducted seismicity report (D11).

Task 3.0 – Data Collection, Sharing, and Analysis

In Task 3.0, the project team will collaborate with other DOE Fossil Energy Carbon Management (FECM)-funded researchers to improve understanding of CO_2 injection and storage impacts. The project team will work with national laboratories to facilitate data sharing, support the development and validation of NRAP tools with site-specific data, and participate in development of ML-based tools/methods in a commercial setting.

Progress on Task 3.0 is as follows:

- Subtask 3.1 – Data Sharing
  - The EERC continues to identify and catalog data sets that will be generated through the PCOR Partnership and available for upload to EDX for M12 – BP2 EDX Submitted.

Next steps to accomplish the goals under Task 3.0 in the coming quarter include the following:

- Continue to explore the use of ML-based predictive modeling techniques to use geophysical well logs to classify aquifers located throughout the PCOR Partnership region.

Task 4.0 – Regional Infrastructure

The objective of Task 4.0 is to evaluate the regional needs, challenges, and potential economic impacts related to the development of safe and environmentally sound CO_2 transportation infrastructure to accelerate commercial CCUS project deployment. This evaluation will be accomplished by assessing existing infrastructure, scale-up challenges and needs, and techno-economic and socioeconomic impacts in the PCOR Partnership region and will be communicated through outreach activities.

Progress on Task 4.0 is as follows:

- The EERC continued internal reviews of the white papers on the PCOR Partnership hydrogen CCUS road map and CO_2 stream impurities.

- Began development of D15 – PCOR Partnership Atlas.

- Continued development of D12 – Regional Socioeconomic Assessments report.

- Stress Engineering Services, Inc., is working as a subcontractor to provide the PCOR Partnership with basic guidelines and white papers on considerations for selecting corrosion-resistant alloy material for use in CO_2 storage and utilization applications and use of carbon steel (CS) pipelines with CO_2 streams containing hydrogen sulfide (H_2S). The EERC is preparing these white papers and guideline documents for publication.

- The EERC is reviewing UAF's first draft of the CO_2 corrosion inhibitor literature review and included preliminary CO_2 corrosion inhibitor testing proof of concept.

- UW continued work on draft documents to advance the PCOR Partnership knowledge in topics under Task 4.0, including the following:
  - Infrastructure, Scale-Up, and Techno-Economic Assessments – UW's deliverable was submitted to the EERC on February 8, 2023.
  - Hydrogen Production with CCS Opportunities – UW submitted a revised draft based on EERC comments and changes on March 17, 2023. Additional comments and changes were provided by the EERC. UW submitted a revised draft to the EERC on July 17, 2023, and it is currently under EERC review.
  - Social License for Wyoming's Energy Future – UW presented its findings to the EERC in a presentation on June 22, 2023. A final report is expected to be completed by July 31, 2023.

Next steps to accomplish the goals under Task 4.0 in the coming quarter include the following:

- Continue to ship the PCOR Partnership Atlas (D15) to new PCOR Partnership members.

- Evaluate socioeconomic impacts (e.g., job creation and retention) of CCUS development in the PCOR Partnership region as part of D12.

Task 5.0 – Technology Transfer

Task 5.0 will inform and educate stakeholders about CCUS technologies. Nontechnical challenges to CCUS deployment in the PCOR Partnership region will be identified and assessed, with an emphasis on regulatory issues and solutions. Business case scenarios for CCUS projects will be identified, reviewed, and developed. Outcomes of this task will be transferred to stakeholders through meetings, presentations, and webinars. Developed materials will be shared with DOE to support its broader FECM program goals.

Progress on Task 5.0 is as follows:

- Distributed the second newsletter May 3, 2023. It is expected the newsletter will be distributed to all PCOR partners on a regular basis.

- Continued planning for the 2023 Regulatory Roundup Meeting for July 25–26, 2023, in Deadwood, South Dakota, including holding premeeting calls with multiple registered entities.

- Continued preparation of D13 – Report – Updated Regional Business Case Assessment, due December 31, 2023.

- Presented at the 2023 Rocky Mountain Section American Association of Petroleum Geologists (AAPG) Annual Meeting held in Bismarck, North Dakota, June 4–6.

- Continued reviews and development of white papers, focusing on lessons learned through PCOR Partnership efforts, including "North Dakota Reporting Requirements for CO_2 Storage Facilities."

- UW and the EERC continue to collaborate on efforts to draft several white papers focused on permitting CCUS on federal land and lessons learned from site characterization and permitting first-mover CCS projects in Wyoming.
  - Regional Permitting Guidance – A revised draft was submitted to the EERC in February 2023.
  - Federal Land Challenges for CCS – UW submitted an updated draft to the EERC in February 2023.
  - Regulation and Permitting of Interstate CO_2 Plumes – UW is working with the Wyoming Department of Environmental Quality (WDEQ) on this deliverable to explore issues related to geologic storage projects in which CO_2 plumes may cross state boundaries and how states will work together to permit, monitor, and assess these projects. A final version of the report is expected mid-July for circulation to EERC prior to the Regulatory Roundup on July 25–26, 2023. UW and WDEQ expect to lead a discussion on this topic at the Regulatory Roundup meeting and collect feedback. Upon receiving input from representatives from other states, WDEQ and UW expect to initiate an initial working group on this issue, and WDEQ will present a final report to the Wyoming Legislature Joint Minerals Committee in November 2023.

Next steps to accomplish the goals under Task 5.0 in the coming quarter include the following:

- Continue development of D13 – Report – Updated Regional Business Case Assessment.

- Distribute the third edition of the "PCOR Pioneer" newsletter.

- Continue planning for the 2023 Regulatory Roundup Meeting for July 25–26, 2023, in Deadwood, South Dakota, including holding premeeting calls with multiple registered entities.

CHANGES/PROBLEMS

No changes or problems at this time.

SPECIAL REPORTING REQUIREMENTS

None.

BUDGETARY INFORMATION

ENERGY & ENVIRONMENTAL RESEARCH CENTER

PLAINS CO_2 REDUCTION PARTNERSHIP INITIATIVE TO ACCELERATE CARBON CAPTURE, UTILIZATION, AND STORAGE DEPLOYMENT

DE-FE0031838

Project-to-Date Financial Report at June 30, 2023

($K)	Q4 Oct - Dec 2019	Q1 Jan - Mar 2020	Q2 Apr - Jun 2020	Q3 Jul - Sep 2020	Q4 Oct - Dec 2020	Q1 Jan - Mar 2021	Q2 Apr - Jun 2021	Q3 Jul - Sep 2021	Q4 Oct - Dec 2021	Q1 Jan - Mar 2022
Baseline Cost Plan										
Federal Share	63.8	81.4	213.9	239.7	296.8	376.4	1230.8	1402.3	814.6	1388.5
Nonfederal Share	0.0	6.5	49.7	40.6	83.0	81.9	179.0	82.8	488.5	495.0
Total Planned	63.8	87.9	263.6	280.3	379.8	458.3	1409.8	1485.1	1303.1	1883.5
Cumulative Federal	63.8	145.2	359.1	598.8	895.6	1272.0	2502.8	3905.1	4719.7	6108.2
Cumulative Nonfederal	0.0	6.5	56.2	96.8	179.8	261.7	440.7	523.5	1012.0	1507.0
Cumulative Baseline Costs	63.8	151.7	415.3	695.6	1075.4	1533.7	2943.5	4428.6	5731.7	7615.2
Actual Incurred Cost										
Federal Share	63.8	81.4	213.9	239.6	296.8	376.4	1230.8	1402.3	814.6	1388.5
Nonfederal Share	0.0	6.5	49.7	40.6	83.0	81.9	179.1	82.8	488.4	495.0
Total Incurred Costs	63.8	87.9	263.6	280.2	379.8	458.3	1409.9	1485.1	1303.1	1883.5
Cumulative Federal	63.8	145.2	359.2	598.8	895.6	1272.0	2502.8	3905.1	4719.7	6108.2
Cumulative Nonfederal	0.0	6.5	56.2	96.7	179.8	261.6	440.7	523.5	1011.9	1506.9
Cumulative Incurred Costs	63.8	151.7	415.4	695.5	1075.3	1533.6	2943.5	4428.6	5731.7	7615.2
Variance										
Federal Share	0.0	(0.0)	(0.0)	0.1	0.0	(0.0)	(0.0)	0.0	(0.0)	0.0
Nonfederal Share	0.0	0.0	0.0	0.0	(0.0)	0.0	(0.1)	0.0	0.1	(0.0)
Total Variance	0.0	(0.0)	(0.0)	0.1	0.0	0.0	(0.1)	0.0	0.0	0.0
Cumulative Federal	0.0	(0.0)	(0.1)	0.0	0.0	0.0	(0.0)	0.0	(0.0)	(0.0)
Cumulative Nonfederal	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1
Cumulative Variance	0.0	(0.0)	(0.1)	0.1	0.1	0.1	(0.0)	0.0	0.0	0.0

ENERGY & ENVIRONMENTAL RESEARCH CENTER

PLAINS CO_2 REDUCTION PARTNERSHIP INITIATIVE TO ACCELERATE CARBON CAPTURE, UTILIZATION, AND STORAGE DEPLOYMENT

DE-FE0031838

Project-to-Date Financial Report at June 30, 2023

($K)	Q2 Apr - Jun 2022	Q3 Jul - Sep 2022	Q4 Oct - Dec 2022	Q1 Jan - Mar 2023	Q2 Apr - Jun 2023	Q3 Jul - Sep 2023	Q4 Oct - Dec 2023	Q1 Jan - Mar 2024	Q2 Apr - Jun 2024	Q3 Jul - Sep 2024
Baseline Cost Plan										
Federal Share	889.2	889.2	889.2	889.2	889.2	889.2	889.2	889.2	889.1	889.1
Nonfederal Share	224.6	224.6	224.6	224.6	224.6	224.6	224.6	224.6	224.6	224.5
Total Planned	1113.8	1113.8	1113.8	1113.8	1113.8	1113.8	1113.8	1113.8	1113.7	1113.6
Cumulative Federal	6997.4	7886.6	8775.8	9665.0	10554.2	11443.4	12332.6	13221.8	14110.9	15000.0
Cumulative Nonfederal	1731.6	1956.2	2180.8	2405.4	2630.0	2854.6	3079.2	3303.8	3528.4	3752.9
Cumulative Baseline Costs	8729.0	9842.8	10956.6	12070.4	13184.2	14298.0	15411.8	16525.6	17639.3	18752.9
Actual Incurred Cost										
Federal Share	1823.3	1157.3	1223.0	979.6	1078.5					
Nonfederal Share	335.8	195.6	489.0	454.5	191.6					
Total Incurred Costs	2159.1	1352.9	1712.0	1434.1	1270.1					
Cumulative Federal	7931.5	9088.9	10311.9	11291.5	12370.0					
Cumulative Nonfederal	1842.7	2038.3	2527.3	2981.9	3173.5					
Cumulative Incurred Costs	9774.2	11127.1	12839.2	14273.3	15543.5					
Variance										
Federal Share	(934.1)	(268.1)	(333.8)	(90.4)	(189.3)					
Nonfederal Share	(111.2)	29.0	(264.4)	(229.9)	33.0					
Total Variance	(1045.3)	(239.1)	(598.2)	(320.3)	(156.3)					
Cumulative Federal	(934.1)	(1202.3)	(1536.1)	(1626.5)	(1815.8)					
Cumulative Nonfederal	(111.1)	(82.1)	(346.5)	(576.5)	(543.5)					
Cumulative Variance	(1045.2)	(1284.3)	(1882.6)	(2202.9)	(2359.3)					