

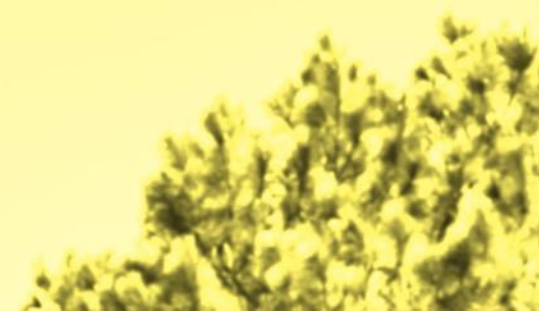


**LONGLEAF**  
**CCS HUB**

**Longleaf CCS Hub  
(DE-FE0032341)  
Initial A&V Meeting  
February 2, 2024**

Ben Wernette, Southern States  
Energy Board

Timberly Ross, Tenaska



# Overview

- Background
- Organization Chart and Roles and Responsibilities
- Project Objectives
- Project Tasks
- Task 9.0 – Community Benefits Plan
  - Community and Labor Engagement
  - Investing in Job Quality and a Skilled Workforce
  - Diversity, Equity, Inclusion, and Accessibility
  - Justice40 Initiative
  - Summary of CBP Activities
  - Challenges to Success
  - Monitoring and Next Steps



**LONGLEAF**  
**CCS HUB**

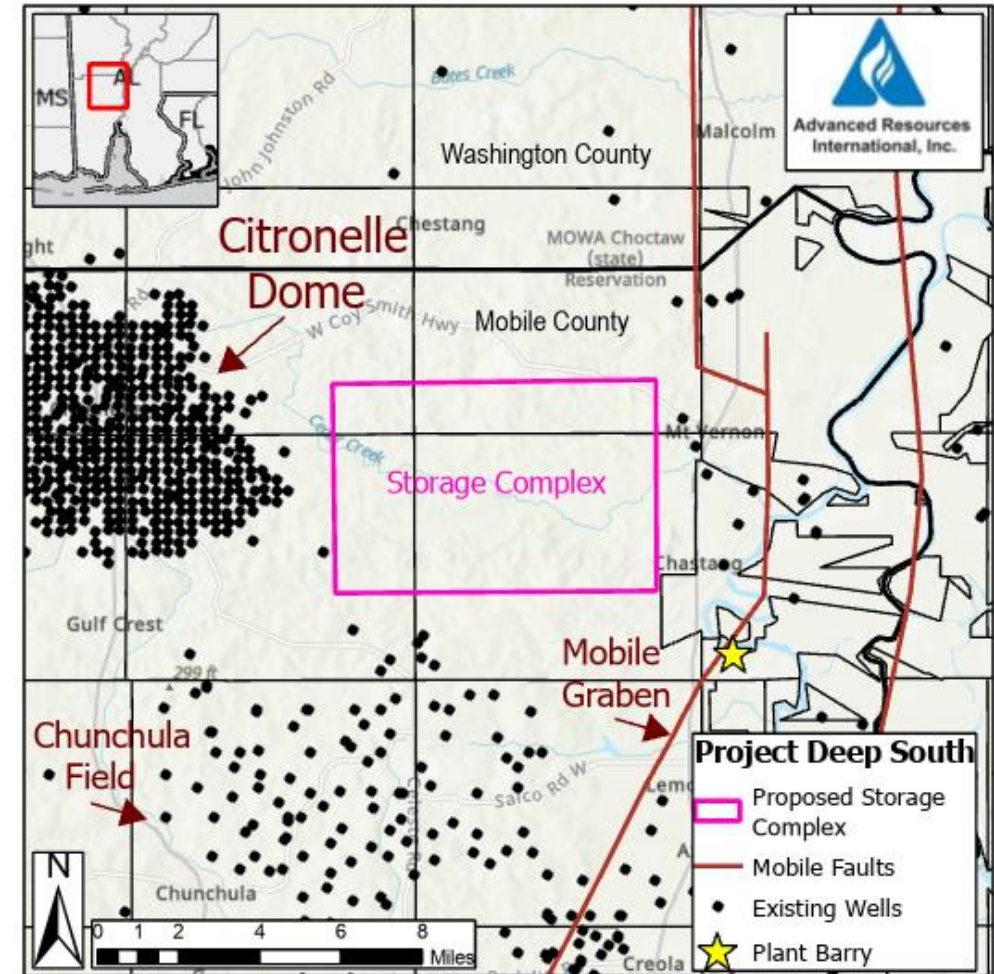


# Background

DOE Funding: \$17,015,534  
Non-DOE Funding: \$5,741,122  
Total Value: \$22,756,656



- The Longleaf CCS Hub seeks to develop a CO<sub>2</sub> storage facility near Bucks, Alabama
- Builds on the successful SECARB injection demonstration at the Anthropogenic Test Site, conducted at nearby Citronelle, Alabama
- Opportunity to decarbonize the many industrial facilities in Mobile County
- **Motivated project owner and developer in Tenaska**
- **36-month period of performance**



Map of the Longleaf CCS storage complex in northern Mobile County.

U.S. Department of Energy (DOE)  
National Energy Technology Laboratory (NETL)



**Task 2 Vendor**  
Environmental Resource  
Management (ERM)

**Southern States Energy Board (SSEB)**

Lead PI: Kenneth Nemeth

Co-PI/Project Coordinator: Kimberly Sams-Gray, Ben Wernette, PhD  
Key Team Member: Patricia Berry, Nicholas Kaylor, PhD

Tasks 1, 9

**Local Stakeholder  
Network**

Mobile Chamber of Commerce  
Southern Company Services  
Legislative Leaders  
Local Organizations

**Task 9 Cost-Share**  
Baker Hughes

**Advanced  
Resources  
International  
(ARI)**

Lead PI: Vello  
Kuuskraa  
Co-PI: George  
Koperna, Dave  
Riestenberg  
Key Team  
Member: Denise  
Hills  
Tasks 3, 4, 5, 6, 9

**Crescent  
Resource  
Innovation  
(CRI)**

Lead PI: Gerald  
Hill, PhD  
Co-PI: Brian Hill  
Tasks 1, 2, 5, 6, 8,  
9

**ENTECH  
Strategies,  
LLC  
(ENTECH)**

Lead PI: Pamela  
Tomski  
Task 9

**Geological  
Survey of  
Alabama  
(GSA)**

Lead PI: Marcella  
McIntyre-Redden  
Tasks 4, 9

**University of  
South  
Alabama  
(USA)**

Lead PI: Benjamin  
Linzmeier  
Key Team  
Members: Alex  
Beebe, David  
Allison  
Tasks 4, 9

**Tenaska**

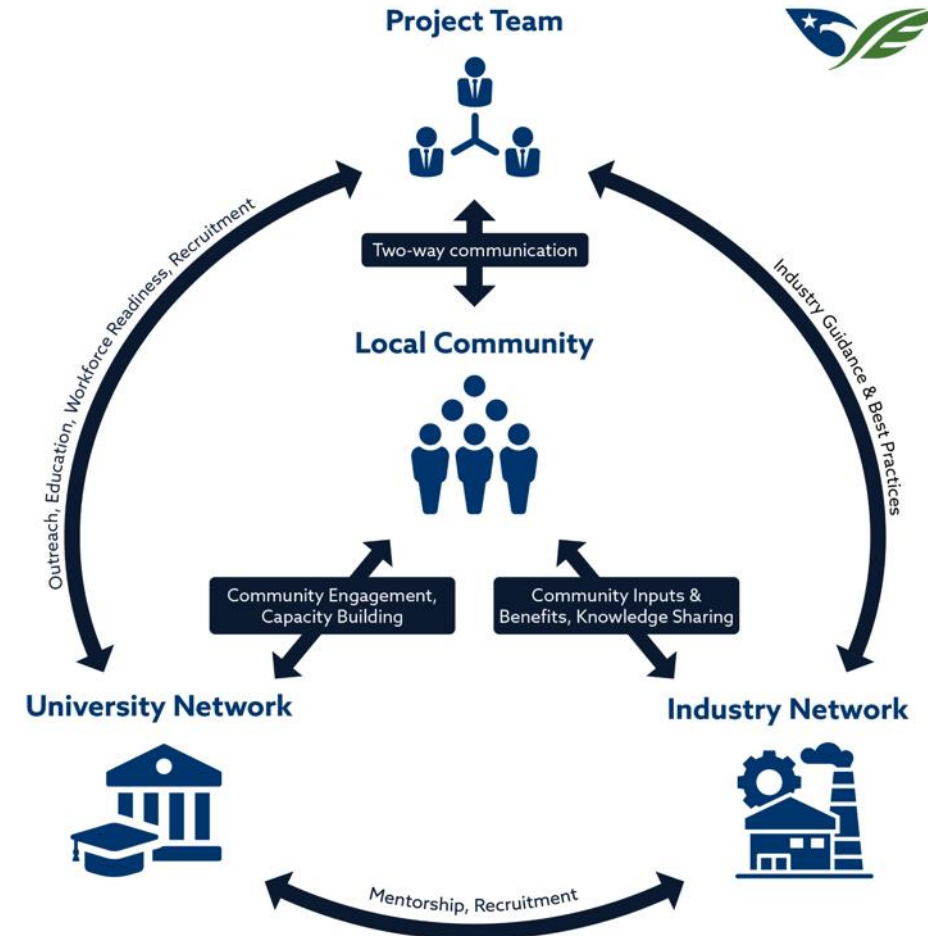
Lead PI: Bob  
Ramaekers  
Key Team  
Members: Ryan  
Choquette, Bryan  
Crabb, Brett Estep,  
Manuel Herraiz,  
Timberly Ross  
Tasks 1, 2, 3, 4, 5,  
6, 7, 8, 9

**Williams**

PI: Emma Owens  
Tasks 6, 7, 9

# Task 9 – Community Benefits Plan

- Establish necessary framework to support subsequent phases and commercialization
- High-level objectives
  - Community engagement and involvement in long-term decision making
  - Support educational and career opportunities by working with participating academic institutions
    - Training and capacity building
    - Networking
  - Engage with regional industry interested in decarbonization
  - Communicate project progress with regulators and other stakeholders



*Project Longleaf approach to community engagement.*



# Task 9 – Community and Labor Engagement

- Tenaska has been actively engaged with state legislative leaders, local officials, among others
- Project aligns with the Mobile Chamber's goals to support existing business and attract new industry to South Alabama
- Goals of CBP
  - Increase community involvement in project decision-making
  - Increasing access to educational and career opportunities for those from disadvantaged and/or minority communities
- Other partners involved in discussions with state legislative leaders, regulators, etc.



*Tenaska personnel engaging with community members in Mobile, Alabama.*

# Task 9 – Community and Labor Engagement

- Discussions with local stakeholders dating to 2022
  - Mobile County leaders, emergency management, water authority, school district, Mobile Baykeeper, Mobile Chamber and many others
  - Incorporation of local feedback into project plans
- Project website: <https://longleafccs.com/>
- Local representative added to team in Q3 2023
- Local project office opening in February 2024
- Planning underway for community engagement event – including news conference and media availability – in March 2024
- Economic impact study through University of South Alabama, with target completion in April 2024

## In the Community

January 18, 2024

The Longleaf CCS team attends the PEP (Partners for Environmental Progress) Breakfast on January 18, where Bryan Crabb was Guest Speaker and gave an informative presentation on CCS technology and the Longleaf CCS Hub project.



December 12, 2023

The 9th Annual Mobile Chamber's "State of the Economy" with Guest Speaker, Alabama Department of Commerce, Secretary Greg Canfield (also pictured: Jessica James, Longleaf CCS Local Representative).



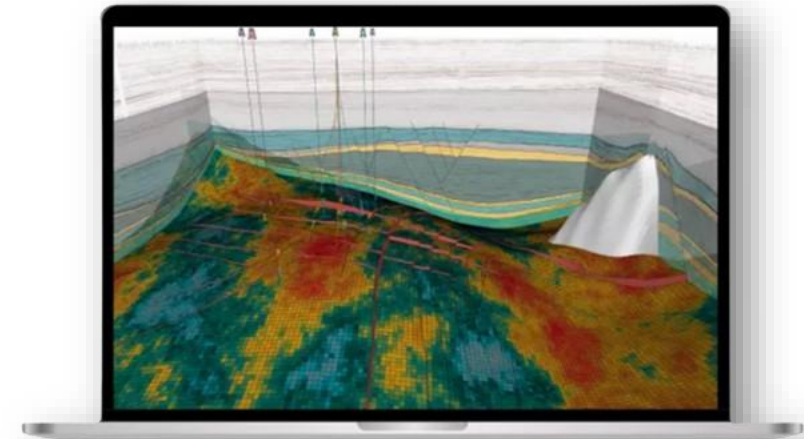
May 1, 2023

The Longleaf team presents details of the project at a reception organized by the Mobile Chamber. The Longleaf project aligns with the Chamber's goals to support existing business and attract new industry to South Alabama.



# Task 9 - Investing in Job Quality and A Skilled Workforce

- Building capacities in subsurface image processing and working with industry standard software
  - Partnering with University of South Alabama
  - Student outcomes to be reported
- Create student engagement opportunities with participating industry partners
  - Promote internships and career opportunities for students
  - Student field trips to field locations



*Example of the Baker Hughes JewelSuite software program. Image courtesy of Baker Hughes.*



# Task 9 – Diversity, Equity, Inclusion, Accessibility



Host project DEIA workshop and require participation in online DEIA credential program



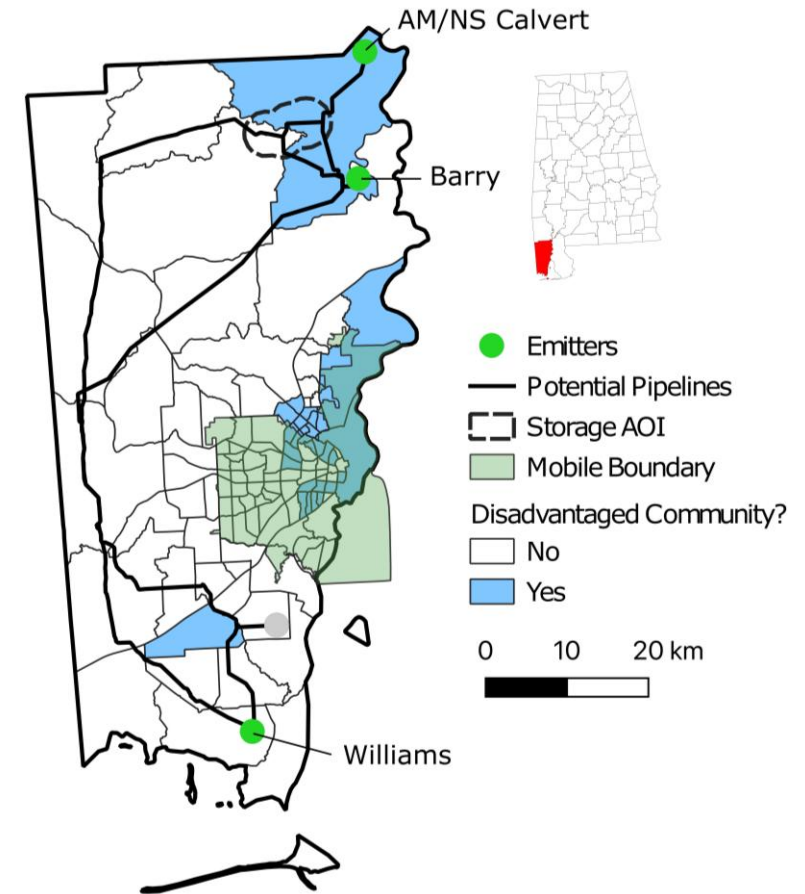
Establish relationship with no fewer than two Alabama Historically Black Colleges and Universities and formalize cooperation through a teaming letter



Identify HBCU students to participate in project activities with support of stipends to build capacity in the CCS field

# Task 9 – Justice40

- At this stage, primarily focused on other CBP activities
  - Access to timely information and input into project planning
  - Creating training and job opportunities for students from HBCUs
  - Establishing relationships with regional HBCUs
- Potential for decreases in local criteria pollutant emissions should project move forward
- Potential for creation of local skilled labor
  - Will fund an economic impact study to further define



*Illustration of Mobile County, Alabama and Disadvantaged Communities as reported by the U.S. Department of Energy. Also shown are supporting emitters, the storage area of interest, and two hypothetical pipeline routes.*

# Summary of CBP Activities



Category	Commitment	Budget Period 1 Milestone	Budget period 2 Milestone
<b>Community and Labor Engagement</b>			
Develop a diverse and comprehensive list of community, labor, and stakeholder contacts for project communications.	B4.1	Due within 3 months of project award.	N/A – To be updated as needed.
Host a community and stakeholder engagement event to include a public presentation on CBP work.	B4.2	Due within 6 months of project award.	N/A
<b>Investing in Job Quality and a Skilled Workforce</b>			
Coordinate with university subcontractor and host events to discuss career opportunities in the CCUS industry.	C3i.1	N/A – This will occur throughout the project performance period.	N/A – This will occur throughout the project performance period.
Identify at least one Historically Black College and University to discuss career opportunities during a career fair.	C3i.2	N/A – This will occur throughout the project performance period.	N/A – This will occur throughout the project performance period.
Actively engage with Alabama Department of Environmental Management and the Alabama Oil and Gas Board to stay informed of the regulatory framework for storage operations.	C3ii.1	N/A – This will occur throughout the project performance period.	N/A – This will occur throughout the project performance period.
<b>Diversity, Equity, Inclusion, and Accessibility</b>			
Host Project Team DEIA workshop.	D1	Due within 3 months of project award.	N/A
Establish relationship with no fewer than two Alabama Historically Black Colleges and Universities and formalize cooperation through a teaming letter.	D2	Due within 6 months of project award.	N/A – To be updated as needed.
Identify HBCU students to participate in project activities with support of stipends to build capacity in the CCS field.	D3	N/A – This will occur throughout the project performance period.	N/A – This will occur throughout the project performance period.
<b>Justice40 Initiative</b>			
Improvements in environmental conditions are anticipated to come from a reduction in CO <sub>2</sub> emissions, and potential reductions in associated SO <sub>x</sub> and NO <sub>x</sub> emissions, and particulate matter emissions (PM <sub>2.5</sub> ).	E1	N/A – Benefit expected in later project phases.	N/A – Benefit expected in later project phases.
Wide reaching educational and employment opportunities within Mobile County and throughout the state.	E2	N/A – This will occur throughout the project performance period.	N/A – This will occur throughout the project performance period.



# Challenges to Success

- Defining relevant stakeholders for this phase of the project
- Potential challenges engaging with local leaders and other stakeholders
- Lack of feedback from stakeholders
- Limited desire to participate from other academic institutions

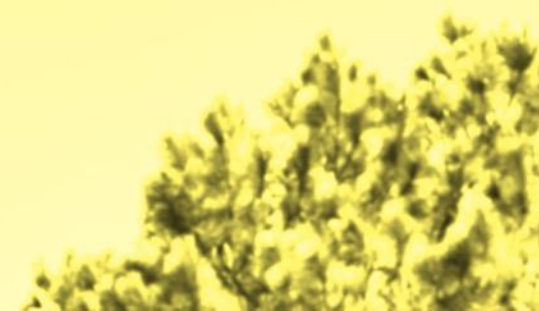
- | Description |  | Start    | End/Due Date | 2023 |    |    |    | 2024 |    |    |    | 2025 |    |    |    | 2026 |    |    |    |
|-------------|--|----------|--------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
|             |  |          |              | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 |
| 1           | Period of Performance  | 10/01/23 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 2           | Budget Period 1  | 10/01/23 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 3           | Budget Period 2  | 04/01/25 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 4           | 1.0: Project Management and Planning   | 10/31/23 | 05/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 5           | D1.0: Project Management Plan  | 10/31/23 | 10/31/23     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 6           | BIL Metrics Reporting (provided throughout)  |          |              |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 7           | M1.0: Participate in NETL Kickoff Meeting  | 12/31/23 | 12/31/23     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 8           | FARC II.G: Federal Subaward Reporting System (FSRS)  | 11/30/23 | 11/30/23     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 9           | FARC II.C: Financial Conflict of Interest Report (within 180 days of award & see FARC IIJ) | 03/29/24 | 03/29/24     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 10          | FARC I.H: Continuation Application (include CBP update)                                    | 01/01/25 | 01/01/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 11          | FARC II.G: Federal Subaward Reporting System (FSRS)  | 05/31/25 | 05/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 12          | 2.0: National Environmental Protection Act (NEPA)  | 10/01/23 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 13          | 2.1: Preparation and Submission of an EIV  | 10/01/23 | 02/08/24     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 14          | D2.1: Environmental Information Volume   | 06/30/24 | 06/30/24     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 15          | M2.1: Finalize and Submit NEPA EIV   | 06/30/24 | 06/30/24     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 16          | 2.2: Preparation and Submission of NEPA Documentation                                      | 09/01/24 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 17          | D2.2: NEPA Documentation (EA or EIS)   | 03/31/26 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 18          | 3.0: UIC Class VI Authorization fo Construct   | 10/01/23 | 09/30/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 19          | 3.1: Update Documents based Upon Characterization Results                                  | 10/01/23 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 20          | D3.1: Application for Underground Injection Control Class VI Permit to Construct           | 03/31/25 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 21          | 3.2: Public Outreach and Engagement  | 10/01/23 | 09/30/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 22          | 3.3: Address US EPA Comments on Class VI Permit Application                                | 10/01/23 | 09/30/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 23          | 4.0 - Detailed Site Characterization of a Commercial-Scale CO <sub>2</sub> Storage Site    | 10/01/23 | 09/30/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 24          | 4.1: Well Site Selection and Design  | 10/01/23 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 25          | 4.2: Well Drilling and Geologic Data Collection  | 01/01/25 | 09/30/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 26          | D4.2.a: Geologic Catalog of Materials  | 09/30/24 | 09/30/24     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 27          | D4.2.b: Geologic Catalog of Materials  | 09/30/25 | 09/30/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 28          | M4.2: Completion of Stratigraphic Test Well Drilling                                       | 09/30/25 | 09/30/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 29          | 4.3: Geologic Data Analysis  | 10/01/25 | 09/30/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 30          | 4.4: Seismic Methods   | 04/01/24 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 31          | M4.4: Completion of Seismic Acquisition  | 03/31/25 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 32          | 4.5: Necessary Landowner and Other Legal Requirements for Commercial Operations            | 04/01/24 | 03/31/25     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 33          | 5.0: Storage Field Development Plan  | 04/01/25 | 09/30/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 34          | 5.1: Storage Site Operations   | 04/01/25 | 03/31/26     |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |



**LONGLEAF**  
**CCS HUB**

**Longleaf CCS Hub**  
**(DE-FE0032341)**  
**Initial A&V Meeting**  
February 2, 2024

Summary and Actions





# Initial A&V Meeting Summary

- An initial Longleaf CBP A&V meeting was held to discuss CBP activities and to identify areas for improvement
- The Longleaf CBP is designed to establish the basis for future phases and emphasizes the following:
  - Community engagement and involvement in long-term decision making
  - Support educational and career opportunities by working with participating academic institutions
    - Training and capacity building via paid internships with students at participating HBCUs in the state
    - Networking
  - Engage with regional industry interested in decarbonization
  - Communicate project progress with regulators and other stakeholders
- **It was determined that the Longleaf CBP is responsive to the funding opportunity and appropriate for the early-stage nature of the project**

# Recommended Actions

- Several recommendations were made to improve the implementation of the CBP. Planned activities with provided recommendations are listed below. Progress will be reported throughout the duration of the project and as part of the interim A&V meeting.

Category	Commitment	Recommended Action
<b>Community and Labor Engagement</b>		
Host a community and stakeholder engagement event to include a public presentation on CBP work.	B4.2	Finalize plan for event implementation, reporting of results and metrics to assess event success, and how learnings will be applied to the project
<b>Investing in Job Quality and a Skilled Workforce</b>		
Identify at least one Historically Black College and University to discuss career opportunities during a career fair.	C3i.2	Evaluate career fair effectiveness by surveying students and holding a Project Team discussion of survey results.
<b>Diversity, Equity, Inclusion, and Accessibility</b>		
Identify HBCU students to participate in project activities with support of stipends to build capacity in the CCS field.	D3	Create a process to evaluate student intern outcomes and measure the impact of university engagement.
<b>Justice40 Initiative</b>		
Wide reaching educational and employment opportunities within Mobile County and throughout the state.	E2	Collaborate with university partners to develop an outreach approach to communicate job opportunities and create mechanisms to evaluate the creation of jobs and the number of students engaged.