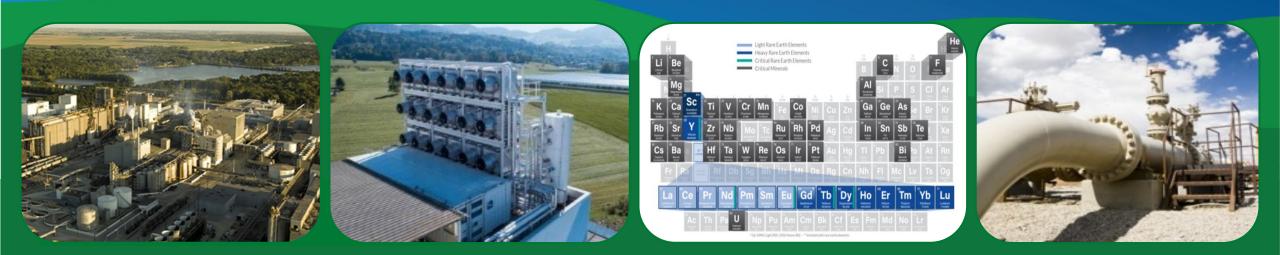


US-NORWAY Bilateral

The Larger Picture – CO₂ Storage

June 30, 2022





The Larger Picture – Carbon Storage



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Midwest Regional Carbon Initiative (MRCI)

(Battelle Memorial Institute)

Plains CO₂ Reduction Partnership (PCOR) (UND Energy & Environmental Research Center)

Carbon Utilization and Storage Partnership (CUSP) (New Mexico Institute of Mining and Technology)

> Southeast Carbon Sequestration Partnership (SECARB-USA) (Southern States Energy Board)

> > Carbon Capture Projects

CarbonSAFE Phase III Projects

- North Dakota CarbonSAFE Phase III: Site Characterization and Permitting (UNDEERC)
- Wyoming CarbonSAFE: Accelerating CCUS at Dry Fork Power Station (UoW)
- Illinois Storage Corridor (Univ. of Illinois)
- Establishing an Early CO2 Storage Complex in Kemper County, Mississippi: Project ECO2S (SSEB)
- San Juan Basin CarbonSAFE Phase III: Ensuring Safe Subsurface Storage of CO2 in Saline Reservoirs

FECM - **\$6.5 billion** in new carbon management funding over 5 years through the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law).

Carbon Dioxide Removal - Direct Air Capture Regional Direct Air Capture Hubs: \$3.5 billion DAC Technology Prize Competition: \$115 million Carbon Dioxide Utilization and Storage Carbon Storage Validation and Testing: \$2.5 billion Carbon Utilization Program: \$310 million

Front-End Engineering Design Studies Carbon Capture FEED Studies for Pipelines/Infrastructure: \$100 million

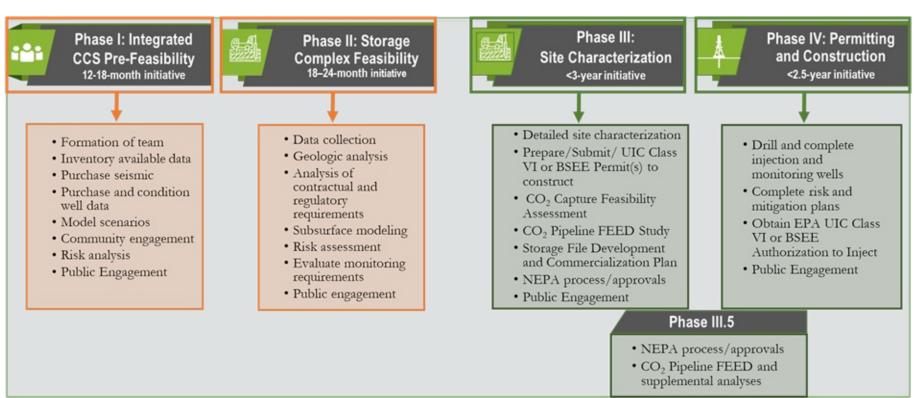
Critical Minerals and Materials

Rare Earth Element Demonstration: \$140 million Rare Earth Mineral Security: \$127 million



Carbon Storage Assurance Facility Enterprise (CarbonSAFE)

- \$2.5 billion
 authorized, \$500
 million per year
- New or Expanded large-scale commercialization carbon sequestration facilities
 - Open to hub development

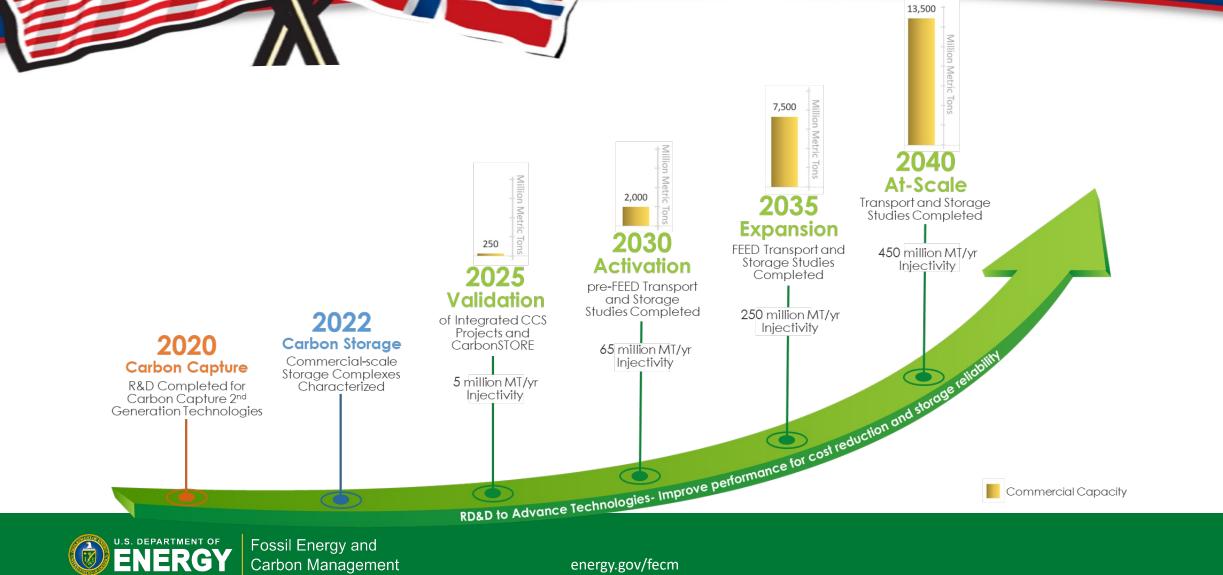


SRMS Classification Framework **STORED CarbonSAFE Phase IV:** COMMERCIAL CAPACITY **Injection Site Construction** STORAGE RESOURCES and Obtain Permit to Inject Commercial project, characterized and permitted for injection at required rates **TOTAL STORAGE RESOURCES** ER **CarbonSAFE Phase III: Site Characterization and UIC** CONTINGENT STORAGE RESOURCES COMMERCIAL **Class VI Permit to Construct** Characterized via a well but not yet commercial DISCOVERED due to technical/non-technical contingencies CarbonSAFE Phase II: (permitting, subsurface evaluation, etc) Feasibility SUB-INACCESSIBLE Storage resource not usable for technical/non-technical reason RESOURCES **CarbonSAFE Phase I:** UNDISCOVERED Prefeasibility **PROSPECTIVE STORAGE RESOURCES** Potentially accessible storage resource STORAGE USGS and NETL National Storage Assessment INACCESSIBLE Storage resource not usable for technical/non-technical reason

https://www.spe.org/en/industry/co2-storage-resources-management-system/



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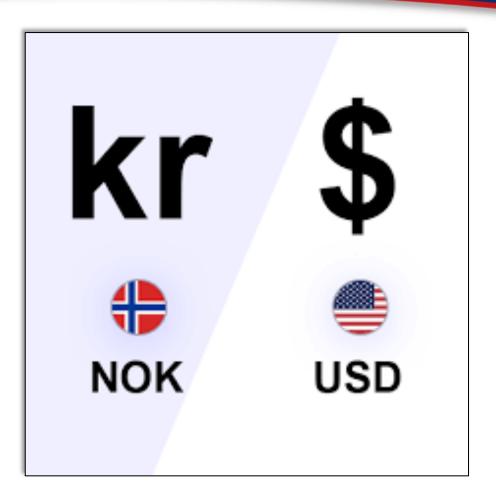




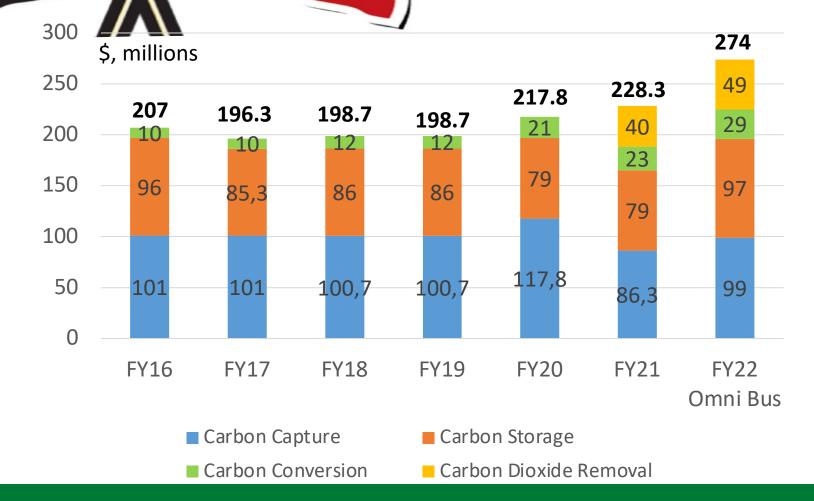
Storage Session US Activities Update



- Well Integrity Atlas (LLNL/Sintef)
- Modeling and Simulating Gt-Scale Injection (Norse/UT Austin)
- CO2CAPII (ISGS/Norsar)
- ACT Calls 2 and 3 10 US/Norway Projects
 - US Investment \$6.5M (65M NOK)
 - Norway investment 74M NOK (\$7.4M)
 - US Commitment to ACT Call 4 = \$5.6M
- CO₂ DataShare (FECM/Gassnova)









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Funding Opportunity Announcements

FOA2614 (Base Program) – Carbon Management; Area of Interest 4

- Resource assessments of natural materials and industrial wastes that could be used to store large amounts of CO₂ via mineralization. \$4M for up to 4 projects. Application deadline July 22, 2022.
- FOA2610 (Base Program) CarbonSAFE Phase II
 - Storage complex feasibility study. \$45M for up to 8 projects; Application deadline July 5, 2022
- FOA2711 (BIL) CarbonSAFE Phases III, III.5, IV
 - Storage complex development, permitting, and construction. Notice of Intent posted April 29, 2022
- Pipeline FEED Studies (BIL)
 - Will consider other modes of transport (rail, ship, etc.) in future years. \$100M over 5 years. FOA is under development



Base FECM Carbon Storage Program R&D Interests

- Repurposing of O&G infrastructure for dedicated CO₂ storage (including injection back into reservoirs of natural CO₂)
- Conversion of depleted O&G fields to dedicated CO₂ storage
- Basin-scale carbon storage resource management
- Expansion of storage characterization to fill data gaps
- Unprecedented opportunity to collect real-world data from commercial scale CCS operations – field labs?

CarbonSTORE (Carbon <u>Storage</u> <u>Technology</u> and <u>Operations</u> <u>RE</u>search Facility)

CarbonSTORE leverages DOE investments today to drive down the cost of CCS tomorrow

Will enable...

- \Rightarrow Enhanced data gathering for new tech development.
- \Rightarrow Fast tracking emerging technology validation.
- ⇒ Real-world performance feedback for operational improvements and optimization.

