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CTSN CARBON TRANSPORT and STORAGE NEWSLETTER

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This newsletter was compiled by the National Energy Technology Laboratory to provide information on recent activities and publications related to carbon transport and storage. It covers domestic, international, and public and private sector news in the following areas:

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DOE/FECM/NETL HIGHLIGHTS



2024 FECM/NETL Carbon Management Research Project Review Meeting

Registration is open for the 2024 Office of Fossil Energy and Carbon Management (FECM)/National Energy Technology Laboratory (NETL) Carbon Management Research Project Review Meeting, to be held August 5–9, 2024, in Pittsburgh, Pennsylvania. This meeting will provide attendees a chance to share in the knowledge and insights gained by more than 150 U.S. Department of Energy (DOE)-sponsored research and development (R&D) projects from the following programs: Point Source Carbon Capture (PSCC), Carbon Dioxide Removal (CDR), Carbon Conversion, and Carbon Transport and Storage. A mixture of plenary, multi-topic breakout, and interactive poster sessions will be used to share research results and provide opportunities for discussion and collaboration on research efforts, both domestic and international. In addition to the project researchers, participants may include employees of other government agencies, electric utilities, research organizations, and industry. The full meeting is open to the public, including foreign national attendees, and will consist solely of publicly- available information. The meeting agenda is available [here](#).

ANNOUNCEMENTS



NETL Research Targets Degradation of Sorbents Used in DAC

NETL researchers are working on ways to reduce and prevent the degradation of sorbents used in DAC technologies, in which CO₂ is separated from ambient air and delivered in a compressed form for storage or reuse. The results could lead to more efficient and cost-effective use of DAC to attain a carbon pollution-free power sector by 2035 and a greenhouse gas (GHG)-neutral “net-zero” economy by 2050.

From *NETL*. May 2024.

NOAA, DOE Sign Agreement to Advance mCDR

DOE and the National Oceanic and Atmospheric Administration (NOAA) signed a memorandum of agreement (MOA) on future collaborations regarding marine carbon dioxide removal (mCDR) R&D. The MOA will formalize collaboration between NOAA and DOE to share expertise on research and technology development as well as avoid duplicative work. Under the MOA, NOAA and DOE recognize four responsibilities: (1) coordination and collaboration; (2) acceleration of R&D infrastructure, including facilities, data management, and feasibility studies; (3) development of protocols for accountable and science-based marine CDR for ecosystem safety, social benefit, and economic viability; and (4) the potential for future additional collaboration between both agencies.

From *energy.gov*. June 2024.

Recording Available for FECM Webinar on CDR Purchase Pilot Prize Semifinalists



DOE-FECM hosted a webinar about the 24 semifinalists selected for *DOE's CDR Purchase Pilot Prize* that will create a just and sustainable framework for scalable carbon management and help develop a CO₂ purchasing market to encourage technology innovation. Funded by the Bipartisan Infrastructure Law, the CDR Purchase Pilot Prize allows companies to compete for the opportunity to deliver CDR credits directly to DOE.

From *YouTube*. May 2024.

MRCI Partners and Stakeholders Meeting

The DOE-funded Midwest Regional Carbon Initiative (MRCI) will be hosting their 2024 Stakeholders and Partnership Meeting September 23–24, 2024, in Columbus, Ohio. MRCI will share the work they have been doing to accelerate CCS acceptance and deployment in its 20-state region of the United States.

From *MRCI*. May 2024.



Comprehensive CCS Insurance Solution Launched

Aon—a British-American professional services and management consulting firm—launched a comprehensive CCS insurance solution for international transport and storage companies. According to the firm, the product will provide cover for key risks associated with CCS and is aimed at de-risking global CCS projects.

From *Reinsurance News*. May 2024.

NETL Chairing Carbon Transport and Storage Session at the 2024 AIChE Annual Meeting

NETL is chairing a session on carbon transport and storage at the 2024 American Institute of Chemical Engineers (AIChE) Annual Meeting (October 27–31, 2024, in San Diego, California). The session, titled “Engineering Geologic Carbon Dioxide Storage Systems,” will focus on carbon capture and storage (CCS) R&D for permanent, efficient, and cost-effective storage of CO₂.

2024 AIChE Annual Meeting

October 27, 2024 to October 31, 2024
San Diego Convention Center, Hilton San Diego Bayfront

Save the Date: DOE's Demonstrate Deploy Decarbonize 2024

DOE announced that *Demonstrate Deploy Decarbonize 2024 (Deploy24)* will take place in Washington, DC, December 4–5, 2024. Hosted by DOE, *Deploy24* is the second annual gathering of decision-makers from across the private and public sectors—including senior industry executives, capital allocators, community leaders, and others across the clean energy supply chain—all focused on accelerating the deployment of critical energy and decarbonization technologies and supply chains in the United States.

SAVE
THE
DATE

Report Assesses Technical Viability of Current CCS Technology

Bureau Veritas released a report that assesses the technical viability of current CCS technology within the marine market. The report, titled “*Onboard Carbon Capture: An Overview of Technologies to Capture CO₂*,” also details the challenges to the wider adoption and integration of CCS technologies.

From *Carbon Capture Journal*. May 2024.

Report Finds CCS Sector in Scotland Could Boost UK Economy

Research led by the Centre for Energy Policy at the University of Strathclyde found that the establishment of a CO₂ transport and storage sector in Scotland could support more than 3,000 full-time equivalent jobs for the United Kingdom's (UK) economy. The estimated figures, according to *A New Scottish CO₂ Transport and Storage Sector: Supporting Decarbonisation, Jobs and Value across the UK Economy*, are 300% higher than estimates for a scenario where no such action is taken. (The research assumes a Scottish CO₂ transport and storage sector that is fully operational by 2030.)

From *Carbon Capture Journal*. May 2024.

ANNOUNCEMENTS *(cont.)*



RGGI States Release CO₂ Emissions Dashboard



The states participating in the Regional Greenhouse Gas Initiative (RGGI) released an interactive emissions mapping tool that can be used to explore CO₂ emissions and other data from power-generating facilities subject to RGGI. According to

RGGI, the **RGGI CO₂ Emissions Dashboard** was developed in an effort to increase transparency regarding current and historical CO₂ emissions changes within the RGGI states at the local level.

From RGGI. May 2024.

CCS Europe Launches Action Plan for CCS

CCS Europe launched an **Action Plan for Carbon Capture**, identifying three central priorities for the European Union's (EU) goal of achieving net-zero carbon emissions by 2050. The priorities are securing political support for CCS deployment in Member States, strengthening the business case for CCS investment, and developing a regulatory framework to support CCS deployment.

From CCS Europe. May 2024.



APAC Region Emerging in CCS Sector

The Asia-Pacific (APAC) region is emerging as a key player in the CCS sector, as Asian countries are intensifying their decarbonization efforts. Rystad Energy's research highlights Australia, Malaysia, and Indonesia as emerging hubs in the APAC region, driven by the CO₂ storage potential in their depleted oil and gas reservoirs and supportive regulations that incentivize CO₂ storage initiatives.

From Rystad Energy. June 2024.

CCS Services Group Launched

Energear, an international hydrocarbon exploration and production company, launched EnEarth, a carbon storage and environmental services group. **EnEarth** will seek to create green hubs by identifying and exploring suitable geologic structures, including depleted oil and gas fields, that can be suitably repurposed into sustainable and efficient carbon storage fields.

From Energear. June 2024.



PROJECT AND BUSINESS DEVELOPMENTS



Texas Requesting Proposals for Carbon Storage Leases



Texas plans to put 1.13 million acres of state waters and bays along the Gulf of Mexico up for bid, targeting parties interested in CCS projects. A total of 13 zones will be opened for bidding as outlined in a **request for proposal (RFP)** from the Texas General Land Office and the School Land Board.

From Carbon Herald. June 2024.

EU CCUS Project Breaks Ground

Holcim broke ground on an EU-approved carbon capture, utilization and storage (CCUS) project in Obourg, Belgium. The **GO4ZERO** cement plant, engineered to produce approximately 2 million metric tons of cement per year by 2029, aims to store more than 1 million metric tons of CO₂ per year.

From Holcim Media Release. May 2024.



Geologic Feasibility of CCS Project Confirmed

Corn ethanol producer FS Agrisolutions reported that tests proved the geologic feasibility of its project to inject CO₂ into the soil in Lucas do Rio Verde. The tests showed that it is feasible for the company to inject all its current carbon emissions at the plant into the soil in a net form for 30 years, which would result in the storage of 12 million tons of CO₂, after which new tests will be needed to verify the feasibility of continuing with the activity. The studies identified a layer of sealing rock with characteristics compatible with the maintenance of the gas in the subsoil, as well as a lower layer of porous rock with characteristics suitable for storing carbon gas in liquid form. Other geologic characteristics, such as those related to soil salinity, were also verified accordingly.

From Globorural. June 2024.



PROJECT AND BUSINESS DEVELOPMENTS *(cont.)***Worley Selected to Support Bayou Bend CCS Project**

Worley will design and evaluate CO₂ gathering, handling, and storage facilities for the Bayou Bend CCS joint venture located along the Gulf Coast in Southeast Texas. Bayou Bend is a joint venture owned by Chevron, Equinor, and TotalEnergies. The Bayou Bend project includes a CO₂ storage footprint of nearly 140,000 acres of pore space.

From *Carbon Capture Journal*. May 2024.

ADNOC Delivers Bulk Shipment of CCS-Enabled Low-Carbon Ammonia to Japan

ADNOC delivered a certified bulk commercial shipment of low-carbon ammonia enabled by CCS to Mitsui & Co. Ltd. for use in clean-power generation in Japan. The shipment, produced by Fertiglobe, builds on previous demonstration cargos delivered by ADNOC to customers in Asia and Germany. The cargo, sourced from Fertil–Fertiglobe’s facility located in the Ruwais Industrial City, Abu Dhabi—will see the CO₂ captured and stored in a CO₂ injection well in a carbonate saline aquifer.



From *ADNOC News Release*. May 2024.

CCUS EPC Contract Awarded

Technip Energies and Turner Industries were awarded an engineering, procurement, and construction (EPC) contract by ExxonMobil Low Carbon Solutions Onshore Storage. The contract covers the delivery of a CCUS system that could condition, compress, and transport— for eventual storage—up to 800,000 metric tons of CO₂ per year from a manufacturing plant located in Louisiana and owned by Nucor Corporation. Technip Energies will oversee the engineering and procurement while Turner Industries will be responsible for construction.

From *Gasworld*. June 2024.

LEGISLATION AND POLICY**Minnesota Passes Energy Permitting Policy Reform**

The Minnesota State Legislature passed a bill that contains significant energy permitting policy reform, including addressing the issues related to CO₂ pipelines. Specifically, the Agriculture and Energy Omnibus Bill requires the Minnesota Public Utilities Commission to complete (1) an environmental impact statement under the Minnesota Environmental Policy Act for all CO₂ pipelines, and (2) a general study evaluating specific issues related to routing CO₂ pipelines.

From *Lexology*. May 2024.

**FEED Study Completed at Saudi Arabian CCS Hub**

Wood—an engineering and consulting company—completed the front-end engineering design (FEED) scope for the first phase of Aramco’s Accelerated Carbon Capture and Sequestration (ACCS) project in Saudi Arabia. The first phase of the ACCS project intends to capture carbon emissions from Aramco gas plant facilities near Jubail, on the east coast of Saudi Arabia, as well as from third-party emitters.

From *Offshore Energy Magazine*. June 2024.

Partnership to Equip CCS Solution on LCO₂ Carriers

ERMA FIRST, a Greek company specializing in ballast water treatment, entered into a letter of intent with ship management company Capital Gas and Babcock, an engineering company from the UK, to equip its CCS solution on four new liquified carbon dioxide (LCO₂) carriers. The ERMA FIRST CCS Solution will be placed on four LCO₂ carriers that are due for delivery by South Korean shipbuilder Hyundai Mipo Dockyard in 2026.



From *Carbon Herald*. June 2024.

Collaboration to Enable CCS Value Chains Across Southeast Asia

DNV and PETRONAS CCS Ventures signed a master price agreement for the certification of CO₂ storage sites and associated facilities for CCS projects in Malaysia. This agreement builds on a memorandum of understanding between DNV and PETRONAS in 2022, during which strategic working groups delved into topics relevant to CCS.

From *DNV News Release*. June 2024.

Report Examines Laws Governing International Transport of CO₂ for Storage

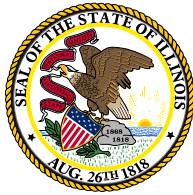
The Sabin Center at Columbia Law School published a report that examines the laws governing international transport of CO₂ for storage. The report, “*Legal Issues in Oceanic Transport of Carbon Dioxide for Sequestration*,” focuses specifically on the shipping of CO₂ captured in Europe and transported to the United States for storage. Much of the report would also be relevant to the shipping of CO₂ between other regions, though domestic laws at either end of the trip may also be relevant.



From *Carbon Capture Journal*. June 2024.

LEGISLATION AND POLICY *(cont.)*

Illinois to Enact CO₂ Storage and Transportation Regulations



The Illinois State Legislature passed a bill that outlines a series of CCS provisions for the state. The **SAFE CCS Act** addresses pore space ownership and severability, unitization, protections for nonconsenting landowners, and post-injection monitoring requirements. It also institutes a moratorium on CO₂ pipelines, creates an emergency planning and training fund for emergency services, and creates a long-term carbon storage trust fund. Under the bill, CO₂ pipelines cannot be developed until the **proposed CO₂ pipeline rulemaking** recently issued by the Pipeline and Hazardous Materials Safety Administration is finalized, or until July 1, 2026, whichever is sooner.

From *Global CCS Institute*. May 2024.

Norway, Switzerland to Cooperate on CCS and CDR

The governments of Norway and Switzerland signed a **Declaration of Intent** to strengthen cooperation on CCS and CDR between the two countries. The cooperation is aimed at enhancing climate action and facilitating net-zero GHG development in both countries.

From *Carbon Capture Journal*. Mat 2024.



Japan Passes CCS Bill

The parliament of Japan passed a law establishing a permit system for business operators to facilitate the implementation of CCS technology. The law mandates that the government will identify specific areas suitable for CO₂ storage and grant permits to businesses chosen through a public selection process. Businesses granted these permits will receive “prospective drilling rights” to assess the geologic suitability for CO₂ storage, as well as “storage rights” to store the captured CO₂. Additionally, the law requires business operators to monitor for potential CO₂ releases.

From *Carbon Herald*. May 2024.

EMISSIONS TRADING

Biden Administration Releases Joint Policy Statement and Principles on VCMs

DOE, the U.S. Department of the Treasury, the U.S. Department of Agriculture, and senior U.S. policy advisors **announced** the publication of a Joint Statement of Policy and new Principles for Responsible Participation in Voluntary Carbon Markets (VCMs). VCMs are markets in which carbon credits—each representing one metric ton of carbon reduced or removed from the atmosphere—are bought and sold by companies, nongovernmental organizations, governments, and others on a voluntary basis to offset their emissions. The **Statement and Principles** aims to advance responsible market practices that will help VCMs drive meaningful climate ambitions and generate economic opportunity at home and abroad.

From *energy.gov*. May 2024.

RGGI Reports Made Available

Potomac Economics, the independent market monitor for the RGGI CO₂ allowance market, released a pair of reports. The **Annual Report on the Market for RGGI CO₂ Allowances: 2023** evaluates activity in the market for RGGI CO₂ allowances in 2023, focusing on allowance prices, trading and acquisition of allowances in the auctions and the secondary market, participation in the market by individual firms, and market monitoring. The **Report on the Secondary Market for RGGI CO₂ Allowances: First Quarter 2024**, which covers the period from January through March 2024, contains information on the secondary market for RGGI CO₂ allowances, including futures prices, market activity, and allowance holdings.

From *RGGI*. May 2024.



RGGI CO₂ Allowance Auction Results Announced

The RGGI-participating states announced the results of their 64th auction of CO₂ allowances, which saw a total of 16,053,188 allowances sold at a clearing price of \$21.03 (with bids ranging from \$2.56 to \$40.00 per allowance). The auction generated \$337.6 million for states to reinvest in strategic programs, including energy efficiency, renewable energy, direct bill assistance, and GHG abatement programs. Additional details are available in the **Market Monitor Report for Auction 64**.

From *RGGI*. June 2024.

SCIENCE



DOE Study to Assess Shipping Carbon Emissions from Japan for Storage in Alaska

DOE is initiating a formal study of the possibility of capturing carbon emissions in Japan and storing them underground in Alaska, building on recently announced [cooperative agreements](#) between Japan and the United States. DOE's study will assess the technical and economic feasibility of shipping carbon emissions to Alaska for storage, and also explore potential synergies with Alaska's energy exports, such as hydrogen, to create a comprehensive energy value chain.

From *Carbon Herald*. May 2024.



Study to Focus on Low-Carbon Ammonia Facility With CCS

Hanwha and INEOS are collaborating on a study for a low-carbon ammonia facility with CCS. The two companies will explore the feasibility of a facility to meet the global demand for ammonia with low-carbon emissions. The final investment decision is planned for 2026, with planned commercial operation in 2030. The location of the plant has not yet been determined.

From *Carbon Capture Journal*. June 2024.

About DOE'S CARBON TRANSPORT and STORAGE PROGRAM

The **Carbon Transport and Storage Program** at the National Energy Technology Laboratory (NETL) is focused on developing and advancing technologies to enable safe, cost-effective, permanent geologic storage of CO₂, both onshore and offshore, in different geologic settings. The technologies being developed will benefit both industrial and power sector facilities that will need to mitigate future CO₂ emissions. The program also serves to increase the understanding of the effectiveness of advanced technologies in different geologic reservoirs appropriate for CO₂ storage—including saline formations, oil reservoirs, natural gas reservoirs, unmineable coal seams, basalt formations, and organic-rich shale formations—and to improve the understanding of how CO₂ behaves in the subsurface. These objectives are necessary to increasing public confidence in safe, effective, and permanent geologic CO₂ storage.

The [Carbon Transport and Storage Program Overview](#) webpage provides detailed information of the program's structure, as well as links to the webpages that summarize the program's key elements.

Carbon Transport and Storage Program Resources

Newsletters, program fact sheets, best practices manuals, roadmaps, educational resources, presentations, and more information related to the Carbon Transport and Storage Program is available on [DOE's Energy Data eXchange \(EDX\) website](#).

Get Social with Us

There are several ways to join the conversation and connect with NETL's Carbon Transport and Storage Program:

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About NETL'S CARBON TRANSPORT and STORAGE NEWSLETTER

Compiled by the National Energy Technology Laboratory, this newsletter is a monthly summary of public and private sector carbon transport and storage news from around the world. The article titles are links to the full text for those who would like to read more (note that all links were active at the time of publication).

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