



U.S. DEPARTMENT OF
ENERGY



NATIONAL
ENERGY
TECHNOLOGY
LABORATORY

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

DOE Invests Funding to Lower Nation's Carbon Pollution

The U.S. Department of Energy (DOE) announced \$131 million for 33 research and development projects to advance the wide-scale deployment of carbon management technologies to reduce carbon dioxide (CO₂) pollution. The projects will address the technical challenges of capturing CO₂ from power plants and industrial facilities or directly from the atmosphere and assess potential CO₂ storage sites, increasing the number of sites progressing toward commercial operations. DOE is investing \$38 million in 22 projects awarded under the "Carbon Management" funding opportunity that will develop technologies to capture CO₂ from utility and industrial sources or directly from the atmosphere and transport it either for geologic storage or conversion into valuable products such as fuels and chemicals. DOE is investing \$93 million in 11 projects awarded under the "CarbonSAFE: Phase II - Storage Complex Feasibility" funding opportunity that will improve procedures to safely, efficiently, and affordably assess onshore and offshore CO₂ project sites within a storage complex at commercial scale. Projects were selected under DOE's Carbon Storage Assurance Facility Enterprise (CarbonSAFE) initiative, which focuses on developing commercial-scale geologic storage sites each with the potential to store 50 million metric tons or more of CO₂ over a 30-year period.

From netl.doe.gov. January 2023.





DOE/FECM/NETL HIGHLIGHTS *(cont.)*

DOE Invests Funding in CCS Technologies

DOE's Office of Fossil Energy and Carbon Management (FECM) is funding three CO₂ storage projects and two carbon conversion projects selected under the Accelerating Carbon Capture and Storage Technologies (ACT) initiative's fourth call for projects. The ACT is a multi-national program to facilitate international collaboration on research and development and technology innovation to accelerate the global deployment of carbon capture and storage (CCS) and carbon conversion technologies. The three selected CO₂ storage projects will explore options for geologic storage sites, and solutions for CO₂ transport, injection, and monitoring and include PERBAS, a team led by German-based GEOMAR, with DOE's Lawrence Berkeley National Laboratory (LBNL), the Colorado Schools of Mines, and other partners from Germany, India, and Norway; SPARSE, a team led by Norwegian-based SINTEF, with LBNL, and other partners from Norway and Canada; AMIGO, a team led by Canadian-based Repsol, with NETL and other partners from Canada and the United States.

From [energy.gov](#), February 2023.

NETL Project Partner Demonstrates CO₂ Capture from Ethanol Production and Its Deep Geologic Storage in Mount Simon Sandstone

Archer Daniels Midland (ADM), with support from NETL, demonstrated an integrated system of processing CO₂ and transporting it from an ethanol plant to the Mt. Simon Sandstone saline reservoir for geologic storage. This is the largest demonstration of its kind in the United States. The system, demonstrated by ADM at

the company's Agricultural Processing and Biofuels Plant in Decatur, Illinois, collected CO₂ produced as a byproduct of processing corn into fuel-grade ethanol. ADM CCS is the first geologic storage project to operate with the U.S. Environmental Protection Agency's (EPA) Class VI injection well permit. Under this Class VI permit, the cumulative amount of CO₂ injected into the Mt. Simon Sandstone saline reservoir was over 2.8 million metric tons.

From [netl.doe.gov](#), January 2023.

Funding Opportunities Issued for Carbon Capture Large-Scale Pilot Projects and Carbon Capture Demonstration Projects Program

DOE's Office of Clean Energy Demonstrations (OCED), in collaboration with FECM and NETL, will provide up to \$2.52 billion to fund two carbon capture programs needed to reduce carbon emissions from the electricity generation and industrial sectors. Funded by President Biden's Bi-partisan Infrastructure Law, the two programs—**Carbon Capture Large-Scale Pilots** and **Carbon Capture Demonstration Projects**—aim to significantly reduce CO₂ emissions from electricity generation and hard-to-abate industrial operations, an effort critical to addressing the climate crisis and meeting the President's goal of a net-zero emissions economy by 2050. Read the full Funding Opportunity Announcements [here](#) and [here](#).

From [energy.gov](#), February 2023.

ANNOUNCEMENTS



2023 AIChE Annual Meeting

The call for abstracts for the 2023 American Institute of Chemical Engineers (AIChE) Annual Meeting, which will be held Nov. 5–10, 2023, in Orlando, Florida, is open. NETL is chairing a session on carbon transport and storage titled "**Engineering Geologic Carbon Dioxide Storage Systems**." Abstracts are due on Apr. 3, 2023. [Click here](#) for more information regarding abstract criteria and submission.

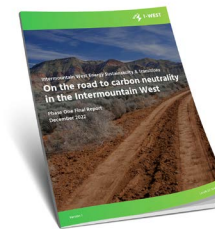


DOE Announces CDR Funding

DOE announced the launch of four programs (Direct Air Capture Commercial and Pre-Commercial Prize, Regional Direct Air Capture Hubs, Carbon Utilization Procurement Grant, and Carbon Utilization Procurement Grant) that will help build a commercially viable, just, and responsible Carbon Dioxide Removal (CDR) industry in the United States. The Bipartisan Infrastructure Law-funded programs will help accelerate private-sector investment, spur advancements in monitoring and reporting practices for carbon management technologies and provide grants to state and local governments to procure and use products developed from captured carbon emissions.

December 2022.

DOE Provided CCS Expertise to I-WEST Report



DOE's Strategic Systems Analysis and Engineering (SSAE) team contributed to the Phase I Final Report from the Intermountain West Energy Sustainability and Transition (I-WEST) Initiative. Funded by DOE and led by Los Alamos National Laboratory, the I-WEST Initiative targets the development of a regional, stakeholder-informed technology roadmap for transitioning the Intermountain West region into a carbon-neutral and economically sustainable energy system. The chapter on CO₂ storage and utilization leveraged discussions with regional stakeholders and subject matter experts. An opportunity case for carbon capture, utilization, and storage in the region was outlined using strengths, weaknesses, opportunities, and threats analysis as well as gap analysis.

December 2022.

DOE Tests Storage Evaluation System

At the recent CO₂ Conference in Midland, Texas, DOE's director of carbon transport and storage stated that DOE is interested in testing the CO₂ Storage Resources Management System (SRMS) developed by SPE International's CO₂ Storage Resources Committee. SRMS is competing for acceptance with other proposed systems for evaluating, planning, and classifying storage systems.

January 2023.

ANNOUNCEMENTS *(cont.)*

Report on CDR Released

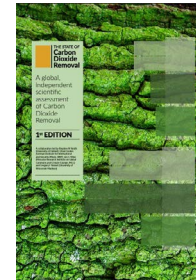
A new report, “The State of Carbon Dioxide Removal,” defines CDR as human efforts to capture CO₂ from the atmosphere and store it durably on land, in the seas, or in products. Examples include reforestation, bioenergy with carbon capture and storage, and direct air carbon capture and storage.

January 2023.

Voluntary Carbon Trades to Start in 2023

India’s carbon trading framework may be released, and the market for voluntary carbon trading will open during the year. The Bureau of Energy Efficiency (BEE) will assist the ministries of Power and Environment, which will separately generate notifications on the carbon market; an inter-ministerial body will take the final decision on the framework. The current Perform, Achieve, and Trade (PAT) scheme will be transitioned to the compliance market. PAT is a BEE program under the National Mission for Enhanced Energy Efficiency operated as a regulatory instrument to reduce energy consumption in energy-intensive industries.

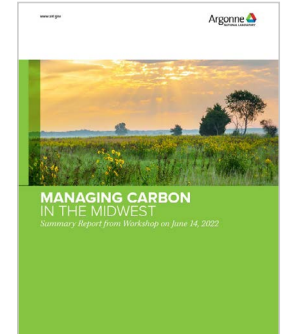
January 2023.



Managing Carbon in the Midwest Workshop Report

Argonne National Laboratory held a workshop on June 14, 2022 that convened key industrial, academic, and government stakeholders with bases in and near Illinois (USA) to share information on capabilities in carbon capture, utilization, and storage. The linked report summarizes the workshop discussion on the science and technology needed to unlock the potential of carbon management in a clean energy and industrial economy.

December 2022.



PROJECT AND BUSINESS DEVELOPMENTS

U.S. Department of State, Bezos Earth Fund, and Rockefeller Foundation Announce Next Steps on Energy Transition Accelerator

The U.S. Department of State, The Rockefeller Foundation, and the Bezos Earth Fund announced the next steps in developing the Energy Transition Accelerator (ETA), a joint initiative to catalyze private capital to accelerate the transition to clean power in developing countries. The three partners introduced the broad outlines of the ETA at the United Nations Climate Change Conference (COP) 27 in November 2022 in Sharm el-Sheikh, Egypt, intending to undertake an inclusive process to fully design the initiative in the lead-up to COP 28 this December in Dubai.

From *PR Newswire*. January 2023.

California Resources Corporation Announces Agreement for Carbon Storage Project

California Resources Corporation announced a Carbon Dioxide Management Agreement between Carbon TerraVault Holdings, LLC, and Grannus, LLC, to store 370,000 metric tons of CO₂ per year at CTV III from a new blue ammonia and hydrogen plant to be constructed in Northern California (USA). The Grannus Blue Ammonia and Hydrogen Project aims to be California’s first blue ammonia and hydrogen facility producing 150,000 metric tons per year of blue ammonia and 10,000 metric tons per year of blue hydrogen. The blue ammonia facility will use Grannus’ patented process.

From *Business Wire*. January 2023.



Fourth Developer Seeks to Capture and Store Carbon from Ethanol Plants in U.S. Midwest

A developer and an ethanol plant are seeking regulatory approval to store CO₂ in Randolph County, Indiana. The request was listed as “pending” on EPA’s website as of Jan. 25, 2023. At least three other developers are planning interstate pipeline networks in nearby states to off-take the CO₂ emissions of ethanol plants. Two of the companies plan to pipe the CO₂ to Illinois for underground storage. A third developer would pipe the emissions to North Dakota, one of the states with regulatory authority over Class VI wells.

From *S&P Global*. January 2023.

Altera Infrastructure Applies for CO₂ Storage License

Altera Infrastructure and partner Wintershall Dea have applied for a license to store CO₂ in the North Sea as part of the Havstjerne project. Altera’s Stella Maris CCS system will collect, transport, inject, and store 10 million metric tons of CO₂ per year using collection hubs and large CO₂ carriers for transport and offshore storage. The company is in discussions with large emitters and land-based industry clusters across Europe.

From *Riviera*. January 2023.



PROJECT AND BUSINESS DEVELOPMENTS *(cont.)*



Novel Monitoring Technology Undergoing Tests at Danish CO₂ Storage Project

Magseis Fairfield reported that it had mobilized its MASS III nodes and modular source for testing a new CO₂ monitoring technique developed by SpotLight. Monitoring is said to take place by placing seabed nodes at 16 selected points on the seabed. By comparing collected data with previous images of the sandstone reservoir, Project Greensand can uncover the location of the CO₂. The work is part of the project's pilot phase and is being carried out by Esvagt Innovator.

From *Offshore Energy*. December 2022.



LEGISLATION AND POLICY



Alaska Governor Outlines Carbon Management Bill Package

The Governor of Alaska outlined a Carbon Management Bill Package previewing legislation creating statutory and regulatory structures needed to capitalize on the carbon markets. The State of Alaska is proposing legislation for maximum flexibility to participate in the evolving industry. Under this legislation, the Department of Natural Resources would be authorized to promote and provide two main categories of carbon management: geologic and biologic storage.

From *State of Alaska*. January 2023.

Norway and France to Cooperate on CCS

Norway and France have signed a letter of intent to promote cooperation on the development and deployment of CCS to help prevent global warming. Norway plans to use CCS to store emissions from European industry and has designated geological formations deep beneath its seabed as reservoirs for CO₂.

From *Reuters*. December 2022.

TIER Amendments Provide Price Certainty and Incentivize CCS



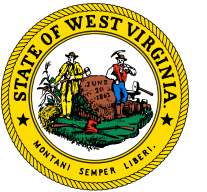
Amendments to Alberta, Canada's Technology, Innovation, and Emissions Reduction Regulation (TIER) went into effect on January 1, 2023. The amendments align TIER with the federal Greenhouse Gas Pollution Pricing Act, facilitate TIER participation by the proponents of CCS projects, provide price certainty, and seek to address a potential surplus of provincial carbon credits in the coming years.

From *Lexology*. January 2023.

West Virginia Passes Bills on Carbon Storage and Hydrogen Hubs

West Virginia (USA) passed two bills that are intended to attract CCS projects and hydrogen hubs, making it easier for such projects to either lease or buy state-owned land. In addition to bringing in investment, the bills will help West Virginia curb its CO₂ emissions.

From *Carbon Herald*. January 2023.



EMISSIONS TRADING



Preliminary Agreement to Include Shipping in the EU's ETS from 2024

The European Union's (EU) legislative bodies reached an agreement on including shipping in their Emission Trading System (ETS). Subject to final adoption, ships above 5,000 gigatons transporting cargo or passengers for commercial purposes in the EU will be required to acquire and surrender emission allowances for their CO₂ emissions from 2024. Offshore ships will be included from 2027.

From *Hellenic Shipping News Worldwide*. January 2023.

SCIENCE

Scientists Discover a New Pathway for the Movement of Carbon-Rich Materials from Productive Arctic Coastal Waters to the Deep Ocean

Every year, the transfer of carbon-rich particles across the shelf in the Barents and Kara Sea could trap as much as 3.6 million metric tons of CO₂ in the deep Arctic Ocean for thousands of years. According to researchers from the Alfred Wegener Institute and other institutions, this previously unknown transport route uses the biological carbon pump and ocean currents to absorb atmospheric CO₂ on a scale equivalent to Iceland's total annual emissions. The researchers recently published *their findings* in the journal *Nature Geoscience*.

Rogge, et. al., Nat. Geosci. (2022). [doi: 10.1038/s41561-022-01069-z](https://doi.org/10.1038/s41561-022-01069-z)

NASA Space Missions Pinpoint Sources of CO₂ Emissions on Earth

A recent case study involving Europe's largest coal-fired power plant shows space-based observations can be used to track CO₂ emissions at the source. A duo of Earth-observing missions enabled researchers to detect and track CO₂ emission changes from a single facility using the world's fifth-largest coal-fired power plant as

a test case. In the study, researchers used space-based measurements from the National Aeronautics and Space Administration's (NASA) Orbiting Carbon Observatory 2 and 3 missions to quantify the CO₂ discharged hundreds of miles below at Bełchatów Power Station in Poland.

Nassar et. al., Frontiers, (2022). <https://doi.org/10.3389/frsen.2022.1028240>

Scientists Unveil Carbon Capture System

Scientists at DOE's Pacific Northwest National Laboratory (PNNL) cleared a new milestone in their efforts to make carbon capture more affordable and widespread—creating a new system that captures CO₂ and converts it into one of the world's most widely used chemicals: methanol. As *described* in the journal *Advanced Energy Materials*, the new system is designed to fit into coal-, gas-, or biomass-fired power plants, as well as cement kilns and steel plants. Using a PNNL-developed capture solvent, the system seizes CO₂ molecules before they are emitted, then converts them into useful, sellable substances.

Jiang, et. al, J. of Cleaner Production (2023). <https://doi.org/10.1016/j.jclepro.2022.135696>.

PUBLICATIONS

Appalachian Hydrogen Infrastructure Analysis

The following is a description of this NETL product: "...This report highlights the potential for the Appalachian region to develop a hydrogen economy with fossil-derived hydrogen with CCS production (hydrogen from natural gas with carbon capture and storage). Specifically, the report provides hydrogen transport and storage infrastructure pathways in support of a broader hydrogen economy. These pathways are consistent with existing and potential technologies and regulations and provide valuable guidance for the investment and research and development potential for transportation and storage of hydrogen in Appalachia."

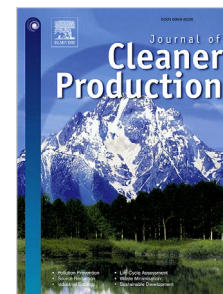
Hartej Singh, Luke Clahane, Amanda Harker Steele, Clare Callahan, Travis Warner, and Robert Wallace, March 2022.



The impact of policies on profit-maximizing rates of reliance on carbon capture for storage versus cleaner production

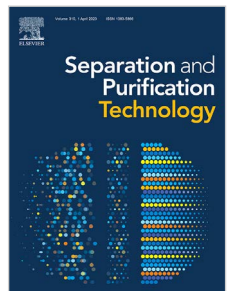
The following is from the abstract of this article: "Based on techno-economic analysis, previous studies compare the short and long-term average cost of [CCS] with cleaner production technologies such as renewable energy (RE) generation. This study proposes scenarios where power generators choose to invest in CCS, RE, or both based on profit-maximization goals in the presence of policy instruments such as carbon tax and subsidies. We characterize profit-maximizing rates of reliance on CCS and RE and examine the impact of policies on a power generator's optimal choice. The model, implemented on data obtained from 53 electric power companies, suggests that electric generators could adopt both CCS and RE profitably in the presence of policy incentives..."

Mahelet G. Fikru, *Journal of Cleaner Production*, December 2022. (Subscription may be required.)

Characteristics of CO₂ foam plugging and migration: Implications for geological carbon storage and utilization in fractured reservoirs

The following is from the abstract of this article: "Fractured reservoirs exhibit heterogeneity and high conductivity, posing challenges to the application of low-carbon and clean production technologies. In this study, the flow and plugging characteristics of CO₂ foam in fractured cores were analyzed in physical fracture cores and visual slab fracture models. The influence of surface roughness and fracture openings on foam flow and plugging efficiency were studied. Results show that polymer-enhanced foam displays a higher-pressure drop in a single core with a small fracture opening. With increasing fracture opening, the plugging capacity of the polymer-enhanced foam gradually decreases to that of ordinary foam. In parallel fractures of different openings, ordinary foam is better able to regulate the flow, whereas the conformance control of polymer-enhanced is more robust. Prolonged foam flow in the fractures leads to foam collapse, especially for small fracture openings and high roughness... Foam flow in the fracture is analyzed in terms of the forces acting on the foam. Understanding foam flow resistance is a key to preventing gas channeling, expanding sweep range and improving the oil washing efficiency."

Zhengxiao Xu, Zhaomin Li, Zhiliang Liu, Binfei Li, Qifeng Zhang, Lei Zheng, Yongjin Song, and Maen M. Husein, *Separation and Purification Technology*, August 2022. (Subscription may be required.)





PUBLICATIONS (cont.)

Environmental trade-offs of direct air capture technologies in climate change mitigation toward 2100

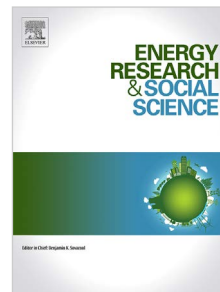
The following is from the abstract of this article: “Direct air capture (DAC) is critical for achieving stringent climate targets, yet the environmental implications of its large-scale deployment have not been evaluated in this context. Performing a prospective life cycle assessment for two promising technologies in a series of climate change mitigation scenarios, we find that electricity sector decarbonization and DAC technology improvements are both indispensable to avoid environmental problem-shifting. Decarbonizing the electricity sector improves the sequestration efficiency, but also increases the terrestrial ecotoxicity and metal depletion levels per metric ton of CO₂ sequestered via DAC. These increases can be reduced by improvements in DAC material and energy use efficiencies. DAC exhibits regional environmental impact variations, highlighting the importance of smart siting related to energy system planning and integration. DAC deployment aids the achievement of long-term climate targets, its environmental and climate performance however depend on sectoral mitigation actions, and thus should not suggest a relaxation of sectoral decarbonization targets.”

Yang Qiu, Patrick Lamers, Vassilis Daioglou, Noah McQueen, Harmen-Sytze De Boer, Mathijs Harmsen, Jennifer Wilcox, André Bardow, and Sangwon Suh, *Nature Communications*, June 2022.
 (Subscription may be required.)

Decarbonising the refinery sector: A socio-technical analysis of advanced biofuels, green hydrogen and carbon capture and storage developments in Sweden

The following is from the abstract of this article: “...This paper draws on expert interviews and combines the Technological Innovation Systems (TIS) and Multi-level Perspective (MLP) frameworks to examining the niche level development of three emerging technologies in the context of deep decarbonisation of refinery. This research finds that the development of the three decarbonisation technologies shares some of the challenges and opportunities and exhibits technology interdependency to some extent. Among the three TISs, advanced biofuel is the most mature in terms of knowledge base, actor-network, legislation framework and market function. Green hydrogen and CCS encounter stronger momentum than before and can benefit from possible synergies across various sectors. However, the analysis also reveals the lack of market formation, mainly due to the lack of policy instruments for niche markets. Here, policy recommendations for accelerating deep decarbonisation of the oil refinery industry are discussed. Finally, we contribute to the sustainability transitions literature by exploring the dynamics of emerging TISs for industrial decarbonisation.”

Anissa Nurdiawati and Frauke Urban, *Energy Research & Social Science*, February 2022.



Lessons Learned for Rapid Decarbonization of Power Sectors

The following is from the abstract of this article: “This report covers key lessons learned for the rapid decarbonization of power sectors, emphasizing best practices in planning, building, and operating electricity systems. Decarbonization covers all greenhouse gases, including CO₂ and methane. The intended audience of this report consists of energy ministers and other high-level energy sector decisionmakers.”

Prateek Joshi and Jeff Logan, September 2022.

Intermountain West Energy Sustainability & Transitions Initiative: CO₂ Transport and Geologic Storage Modeling Results

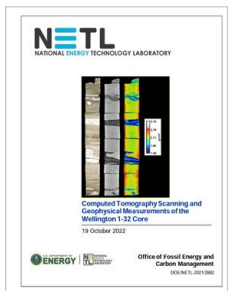
The following is from the introduction of this report: “Analysis was performed for the [I-WEST] initiative that utilized [DOE] models...to analyze various business cases given changes in technical and financial assumptions for the I-WEST region to see how these assumptions influence CO₂ transport and storage costs. Also, NETL-developed models were used to see the effect of changing oil prices on the viability of CO₂-EOR [enhanced oil recovery] and the mass of CO₂ stored via CO₂-EOR. This supplementary documentation provides a detailed overview on the models, assumptions, and parameters used in the modeling and example results.”

David Morgan, Allison Guinan, Travis Warner, Derek Vikara, and R. Taylor Vactor, October 2022.

Computed Tomography Scanning and Geophysical Measurements of the Wellington 1-32 Core

The following is from the abstract of this report: “The computed tomography (CT) facilities and the Multi-Sensor Core Logger (MSCL) at [NETL] in Morgantown, West Virginia were used to characterize core from the Wellington 1-32 well (API 15-191-22591), a small-scale field test site in the Wellington Field, in Sumner County, Kansas. Wellington 1-32 was drilled in association with the Kansas Geologic Survey’s (KGS) Phase I pre-feasibility study under the [CarbonSAFE] program, with the goal of utilizing the Arbuckle Group as a reservoir for CO₂ storage and the potential for stacked reservoir enhanced oil recovery from Mississippian reservoirs.”

T. Paronish, R. Schmitt, N. Mitchell, S. Brown, D. Crandall, J. Moore, F. Hasiuk, N. Potter, and Y.E.C. Holubnyak, October 2022.





PUBLICATIONS *(cont.)*

Application of unsupervised deep learning to image segmentation and in-situ contact angle measurements in a CO₂-water-rock system

The following is from the abstract of this article: “Rock surface wettability is a critical property that regulates multiphase flows in porous media, which can be quantified using the surface contact angle (CA). X-ray micro-computed tomography (μCT) provides an effective approach to in-situ measurements of surface CAs. However, the CA measurement accuracy depends significantly on the quality of CT image segmentation, which is the clustering of CT pixels into separate phases. Inspired by this, we developed a deep learning (DL)-based CA measurement workflow. Motivated by the recent tremendous progress in unsupervised learning techniques and aiming to avoid expensive manual data annotations, an unsupervised DL pipeline for CT image segmentation was proposed and implemented, which includes unsupervised model training and post-processing...The workflow has been proven an efficient tool for pore-scale wettability characterization, which has a wide range of applications in fundamental studies of multiphase flows in natural porous media, which have critical implications to geological carbon sequestration, hydrocarbon energy recovery, and contaminant transport in groundwater.”

Hongsheng Wang, Laura Dalton, Ruichang Guo, James McClure, Dustin Crandall, and Cheng Chen,
Advances in Water Resources, March 2023. (Subscription may be required.)

Pore Scale Modeling on Wettability Heterogeneity of Rocks

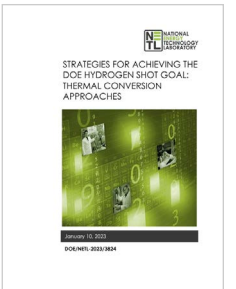
The following is from the introduction of this presentation: “Recent in-situ measurements of wettability on natural rocks suggest that wettability heterogeneity of a natural rock is at a sub-pore scale and wettability has a wide range. This work is to introduce a new model on heterogeneous wettability and the implications of pore-scale wettability heterogeneity on immiscible displacement in a sandstone.”

Laura E. Dalton, Hongsheng Wang, James McClure, Dustin Crandall, and Cheng Chen,
December 2022.

Strategies for Achieving the DOE Hydrogen Shot Goal Thermal Conversion Approaches

The following is from the introduction of this report: “In this initial screening, the current and target performance and cost of several...thermal conversion technologies are explored. For commercial technologies, cost reduction is heavily focused on factors outside of the scope of the plant such as feedstock price assumptions, by-product sales, etc. For advanced technologies, the cost reduction pathways are made up of a combination of technology developments and external factors that reduce cost.”

Shannon McNaul, Charles White, Robert Wallace, Travis Warner, H. Scott Matthews, Jinliang Ma, Massood Ramezan, and Eric Lewis, January 2023.



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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1450 Queen Avenue SW
Albany, OR 97321-2198
541-967-5892

3610 Collins Ferry Road
Morgantown, WV 26507-0880
304-285-4764

626 Cochran Mill Road
Pittsburgh, PA 15236-0940
412-386-4687

Program staff are also located in
Houston, Texas and **Anchorage, Alaska**.

CUSTOMER SERVICE: 1-800-553-7681

www.netl.doe.gov

CONTACTS

If you have questions, feedback, or suggestions for NETL's Carbon Transport and Storage Newsletter, please contact:

Carbon Transport and Storage Newsletter Support at CTSNFeedback@netl.doe.gov

Mark McKoy

Technology Manager
Advanced Carbon Storage R&D
304-285-4426

Mark.McKoy@netl.doe.gov

William Aljoe

Technology Manager
Carbon Storage Infrastructure
412-386-6569

William.Aljoe@netl.doe.gov