

CARBON CAPTURE NEWSLETTER

U.S. DEPARTMENT OF ENERGY | OFFICE OF FOSSIL ENERGY | NATIONAL ENERGY TECHNOLOGY LABORATORY



National Carbon Capture Center (NCCC) located in Wilsonville, Alabama

HIGHLIGHTS

The newsletter is compiled by the National Energy Technology Laboratory to provide information on recent activities and publications related to carbon capture.

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Funding Awarded for Expansion of Operations at NCCC

The U.S. Department of Energy's (DOE) Office of Fossil Energy (FE) and National Energy Technology Laboratory (NETL) renewed its [partnership with Southern Company](#) to continue to manage and operate the [National Carbon Capture Center \(NCCC\)](#), expanding the offering for third-party technology evaluation of carbon capture technologies. A major addition at NCCC—located in Wilsonville, Alabama—will significantly broaden its testing and evaluation of carbon capture technologies for natural gas power generation. In addition, the scope of work will expand to include testing and evaluation of carbon dioxide (CO₂) utilization, and negative emission technologies (NET), including direct air capture (DAC). In the past decade, more than 110,000 hours of technology testing has been completed at NCCC for NETL partners and developers in the United States and from six other countries, successfully advancing a wide range of technologies toward commercial scale while improving their performance and reducing cost.

OCTOBER 2020



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Interagency News and Updates

Research and Development Challenges or Research Gaps Associated with the Application of Carbon Capture to Industrial Emissions

A Request for Information (RFI), entitled “Research and Development Challenges or Research Gaps Associated with the Application of Carbon Capture to Industrial Emissions,” was posted on November 30, 2020. The purpose of this RFI is to seek information about specific research challenges associated with carbon capture installed for industrial emissions that can be used as input to a U.S. Department of Energy (DOE) Fossil Energy research and development (R&D) program that may culminate in a Funding Opportunity Announcement (FOA) soliciting R&D. This is solely a request for information and is not an FOA. DOE is not accepting applications to this RFI. The full text and instructions for the RFI can be obtained at: <http://www.fedconnect.net/fedconnect/?doc=DE-FOA-0002444&agency=DOE>

Please be sure to go to FedConnect and read the entire RFI document. Responses to this RFI must be submitted electronically to DE-FOA-0002444@netl.doe.gov with the subject line “DE-FOA-0002444 - RFI” no later than 8:00 pm (ET) on December 24, 2020.

Two Lab Partnering Opportunities in the LPS

DOE’s Laboratory Partnering Service (LPS) is a suite of online applications enabling access to leading experts, innovations, and patents from across DOE and national laboratories. LPS enables fast discovery of expertise and serves as a conduit between the investor and the innovator by providing multi-faceted search capabilities across numerous technology areas and the national laboratories. Two lab partnering opportunities of interest to carbon capture are listed in LPS: [Moisture Removal from Flue Gas for Enhanced CO₂ Separation](#) and [Catalysts for Oxidation of Mercury in Flue Gas](#).

IDAES Earns Prestigious R&D 100 Award

NETL’s Institute for the Design of Advanced Energy Systems (IDAES) is the winner of the prestigious 2020 R&D 100 Award, which recognizes the developers of the 100 most technologically significant products introduced into the marketplace in the last year. IDAES—a center of excellence for the identification, synthesis, optimization, and analysis of innovations to meet the nation’s growing energy needs—received the recognition in the Software/Services category. IDAES is also used for integrated techno-economic modeling and modeling for optimization of capture systems and system components. OCTOBER 2020

NETL’s Carbon Storage Newsletter Available for Subscription

Published monthly, NETL’s Carbon Storage Newsletter provides information on recent activities and publications related to carbon storage. It covers domestic, international, public sector, and private sector news. Subscription information is [available online](#).



Business and Industry News

LafargeHolcim Expands Carbon Capture Projects

DOE/NETL announced that it will support the LafargeHolcim CO₂MENT Colorado project. LafargeHolcim has gathered a consortium of partners to complete a study to assess the viability and design of a commercial-scale carbon capture facility. The partnership, which includes Svante Inc, Oxy Low Carbon Ventures LLC, and Total, has committed to the next phase to evaluate the feasibility of the facility to capture up to 2 million tonnes of CO₂ a year from a LafargeHolcim cement plant and the natural gas-fired steam generator, which would be stored underground permanently by Occidental. *CEMNET*, OCTOBER 2020

University of Wyoming Professor Receives Two Grant Awards

A University of Wyoming (UW) faculty chair received two grants through DOE's FLExible Carbon Capture and Storage (FLECCS) Program and NETL. Haibo Zhai, the Roy and Caryl Cline Chair of Engineering, Environment, and Natural Resources and an associate professor in the Department of Civil and Architectural Engineering at UW, received the grants to research carbon capture and storage (CCS) and water savings at natural gas-fired power plants. Through the FLECCS Program, Zhai received a two-year Advanced Research Projects Agency-Energy (ARPA-E) grant. The other grant, awarded by NETL, will support a research project that will estimate the water savings from retrofitting dry cooling systems at existing natural gas-fired power plants. *RAWLINSTIMES*, OCTOBER 2020

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U.S. and International Events

2020 DOE CarbonX Summit

The DOE CarbonX Summit, held on October 21–22, 2020, was successfully organized by NETL. Speakers discussed a range of Carbon Capture, Utilization, and Storage (CCUS) topics and innovations. A list of the speakers is available [online](#), and proceedings are available for [Day 1](#) and [Day 2](#) talks.



CCUS 2020: Delivering Clean & Sustainable Growth

The Carbon Capture and Storage Association's CCUS 2020: Delivering Clean & Sustainable Growth event, to be held December 2–3, 2020, will provide delegates with the latest developments in CCUS. The event is free and registration is available [online](#).

SPE Virtual Symposium: CCUS and Contaminants Management

This Society of Petroleum Engineers (SPE) virtual symposium, to be held December 7–9, 2020, will focus on providing technical solutions that are critical to effectively develop assets with high contaminants and provide new ideas to meet the goals for the region.

GHGT-15 Conference

The Greenhouse Gas Control Technologies 15 (GHGT-15) conference will be held virtually on March 15-18, 2021, and will highlight international research on CO₂ capture and storage. See [GHGT website](#) for more information.

U.S. and International Events (continued)

Permanently Removing CO₂ from Our Emissions and Atmosphere

The Gordon Research Conference “Permanently Removing CO₂ from Our Emissions and Atmosphere” will be held May 30–June 4, 2021, in Waterville Valley, New Hampshire. The conference will be held in conjunction with the CCUS Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for both the conference and the seminar. More information is available [here](#) and on the [associated GRS program page](#).

Carbon Capture Technology Conference & Expo

The Carbon Capture Technology Conference & Expo will be held in Stuttgart Messe, Germany, on June 9–10, 2021, to discuss the increasing role of CCUS.

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Publications

NETL EDGE: A DOE/NETL Publication, VOLUME 2, ISSUE 2, 2020. Issue featuring:
“Carbon Cleanup: CCUS Technologies Making the Future of Fossil Fuels”

Could congressionally mandated incentives lead to deployment of large-scale CO₂ capture, facilities for enhanced oil recovery CO₂ markets and geologic CO₂ storage?

JAMES EDMONDS, CHRISTOPHER NICHOLS, MISHA ADAMANTIADES, JOHN BISTLINE, JONATHAN HUSTER, GOKUL IYER, NILS JOHNSON, PRALIT PATEL, SHARON SHOWALTER, NADJA VICTOR, STEPHANIE WALDHOFF, MARSHALL WISE, FRANCES WOOD, ENERGY POLICY, VOLUME 146, NOVEMBER 2020 (SUBSCRIPTION MAY BE REQUIRED.)

Global Status of CCS 2020

GLOBAL CCS INSTITUTE, 2020.

Process intensification of CO₂ absorption using a 3D printed intensified packing device

EDUARDO MIRAMONTES, ELLA A. JIANG, LONNIE J. LOVE, CANHAI LAI, XIN SUN, COSTAS TSOURIS, AIChE LETTER: SEPARATIONS: MATERIALS, DEVICES AND PROCESSES, MAY 30, 2020 (SUBSCRIPTION MAY BE REQUIRED.)

Molecular-Level Overhaul of γ -Aminopropyl Aminosilicone/Triethylene Glycol Post-Combustion CO₂-Capture Solvents

DAVID C. CANTU, DEEPIKA MALHOTRA, MANH THUONG NGUYEN, PHILLIP K. KOECH, DIFAN ZHANG, VASSILIKI ALEXANDRA GLEZAKOU, ROGER ROUSSEAU, JORDAN PAGE, RICHARD ZHENG, ROBERT J. PERRY, DAVID J. HELDEBRANT, CHEMSUSCHEM, VOLUME 13, ISSUE 13, JULY 7, 2020 (SUBSCRIPTION MAY BE REQUIRED.)

Highly selective electrocatalytic CO₂ reduction to ethanol by metallic clusters dynamically formed from atomically dispersed copper

HAIPING XU, DOMINIC REBOLLAR, HAIYING HE, LINA CHONG, YUZI LIU, CONG LIU, CHENG-JUN SUN, TAO LI, JOHN V. MUNTEAN, RANDALL E. WINANS, DI-JIA LIU, TAO XU, NATURE ENERGY, VOLUME 5, ISSUE 8, JULY 2020 (SUBSCRIPTION MAY BE REQUIRED.)

Review of Federal, State, and Regional Tax Strategies and Opportunities for CO₂-EOR-Storage and the CCUS Value Chain

PETER CONNORS, KEN DITZEL, JOSHUA EMMETT, FENGRONG LI, UNITED STATES DEPARTMENT OF ENERGY OFFICE OF FOSSIL ENERGY AND UNITED STATES ENERGY ASSOCIATION, SEPTEMBER 21, 2020

About DOE's Carbon Capture Program

NETL's Carbon Capture Program is developing the next generation of advanced carbon dioxide (CO₂) capture technologies. The U.S. Department of Energy's (DOE) Fossil Energy Program has adopted a comprehensive multi-pronged approach for the research and development of advanced CO₂ capture technologies that have the potential to provide step-change reductions in both cost and energy requirements as compared to currently available technologies. The success of this research will enable cost-effective implementation of carbon capture technologies that can be applied to the existing fleet of fossil fuel-fired plants, new plants, industrial facilities, and the removal of CO₂ from the atmosphere. Cost-competitive carbon capture technologies have the potential to support the fossil sector while advancing U.S. leadership in high efficiency, low-emission generation technologies.

Carbon Capture Reference Materials

- Carbon Capture Program Factsheet
- Carbon Capture Infographics
- Compendium of Carbon Capture Technology
- Carbon Dioxide Capture Handbook
- CCSI²
- Systems Analysis
- Conference Proceedings
- Accomplishments Posters
- Fossil Energy Techlines

Carbon Capture Infographics contain visual representations of the program and its associated technologies. These are designed to help convey program highlights in a compact and shareable form. [Check out the latest!](#)



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

CUSTOMER SERVICE: 1-800-553-7681

www.netl.doe.gov

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