

# 2023 FECM / NETL Carbon Management Research Project Review Meeting Agenda

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 [netl.doe.gov/events/23CM/web-agenda](https://netl.doe.gov/events/23CM/web-agenda)



This meeting will provide attendees with a chance to share in the knowledge and insights gained by more than 150 Department of Energy-sponsored research and development (R&D) projects from the following Office of Fossil Energy & Carbon Management R&D programs: Point Source Carbon Capture, Carbon Dioxide Removal, Carbon Conversion, and Carbon Transport & 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 the subject 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.

## Monday August 28, 2023

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**7:00 a.m. – 8:00 a.m. Meeting Registration & Continental Breakfast - Ballroom Foyer**

### General Plenary Session (All Program Areas) – Ballroom A

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Federal Initiatives and Crosscutting Activities in CCUS

Moderator - Sarah Forbes

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|---------------------------|---|
| 8:00 a.m. -<br>8:15 a.m.  | <b>Welcome and Opening Remarks</b><br>Sean Plasynski, Director (Acting), National Energy Technology Laboratory  |
| 8:15 a.m. -<br>8:40 a.m.  | <b>FECM Highlights and Initiatives</b><br>Noah Deich, Deputy Assistant Secretary for the Office of Carbon Management, U.S. Department of Energy                           |
| 8:40 a.m. -<br>9:05 a.m.  | <b>OCED Highlights and Initiatives</b><br>Todd Shrader, Director for Project Management, Office of Clean Energy Demonstrations, U.S. Department of Energy                 |
| 9:05 a.m. -<br>9:30 a.m.  | <b>PHMSA Highlights and Initiatives</b><br>Tristan Brown, Deputy Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation |
| 9:30 a.m. -<br>10:00 a.m. | <b>Moderated Q&amp;A</b>  |
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10:00 a.m. - BREAK - Ballroom Foyer  
10:30 a.m.

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**Point Source Carbon Capture Breakout Session – 403/404/405**

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Point Source Carbon Capture Overview (Panel Discussion)

Moderator - Ronald Munson, National Energy Technology Laboratory

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10:30 a.m. - 10:35 a.m. **Introduction**  
Ronald Munson, National Energy Technology Laboratory

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10:35 a.m. - 10:45 a.m. **FECM Activities**  
Dan Hancu, Office of Fossil Energy & Carbon Management

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10:45 a.m. - 10:55 a.m. **OCED Activities**  
Liz Moore, Office of Clean Energy Demonstrations

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10:55 a.m. - 11:05 a.m. **ARPA-E Activities**  
Jack Lewnard, Advanced Research Projects Agency-Energy

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11:05 a.m. - 11:20 a.m. **Q&A**

Capture from Power Generation (FEED)

Moderator: Michael Fasouletos

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11:20 a.m. - **Retrofittable Advanced Combined Cycle Integration for Flexible**  
11:45 a.m. **Decarbonized Generation (FE0032131)**  
John Sholes, General Electric Company

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11:45 a.m. - **Deer Park Energy Center - CCS Retrofit Feed (FE0032137)**  
12:10 p.m. Carl Herman, Calpine

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12:10 p.m. - LUNCH – Ballroom Foyer/Ballroom A  
1:10 p.m.

Capture from Power Generation (FEED)

Moderator: Nicole Shamitko-Klingensmith

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1:10 p.m. - **Front-End Engineering Design for a CO<sub>2</sub> Capture System at Calpine's**  
1:35 p.m. **Delta Energy Center (FE0032149)**  
Andrew Awtry, ION Clean Energy Inc.

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1:35 p.m. - **CO<sub>2</sub> Capture at Louisville Gas & Electric Cane Run Natural Gas**  
2:00 p.m. **Combined Cycle Power Plant (FE0032223)**  
Adam Berger, Electric Power Research Institute

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2:00 p.m. - **Polk Power Station Natural Gas Combined Cycle Carbon Capture  
Front-End Engineering and Design Study (FE0032224)**  
2:25 p.m. Nathan Kirkconnell and Nate Dilport, Tampa Electric Company

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2:25 p.m. - **Economic of Competing Plant CCS Plants**  
2:50 p.m. Kirk Labarbara, National Energy Technology Laboratory

Capture from Power Generation (Large Pilots)

Moderator: Mariah Young

2:50 **TCM: Last Step to Commercialization of Carbon Capture Technology**  
p.m. - Muhammad Ismail Shah, Technology Centre Mongstad  
3:15  
p.m.

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3:15 BREAK – Ballroom Foyer  
p.m. -  
3:45  
p.m.

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3:45 **Engineering Scale Testing of Transformational Non-Aqueous Solvent-  
Based Carbon Dioxide Capture Process at Technology Centre Mongstad  
(FE0031590)**  
p.m. - Marty Lail, RTI International  
4:10  
p.m.

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4:10 **Computational Guidance for RTI TCM Test Campaign**  
p.m. - Josh Morgan, National Energy Technology Laboratory  
4:35  
p.m.

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4:35 **Large Pilot Testing of Linde-BASF Advanced Post-Combustion Carbon  
Dioxide Capture Technology at a Coal-Fired Power Plant (FE0031581)**  
p.m. - Stephanie Brownstein, University of Illinois  
5:00  
p.m.

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5:00 **Large Pilot Testing of the MTR Membrane Post-Combustion CO<sub>2</sub> Capture  
Process (FE0031587)**  
p.m. - Brice Freeman, Membrane Technology and Research, Inc.  
5:25  
p.m.

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5:25 **Membrane-Sorbent Hybrid System for Post-Combustion Carbon Capture  
(FE0031603)**  
p.m. - Gokhan Alptekin, TDA Research, Inc.  
5:50  
p.m.

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### **Carbon Dioxide Removal Breakout Session – 301/302/303**

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Lab/Bench-Scale Research

Moderator: Elliot Roth

10:30 a.m. - 10:55 a.m. **Transformational Sorbent Materials for a Substantial Reduction in the Energy Requirement for Direct Air Capture (FE0031953)**  
Ravi Jain and Norberto Lemcoff, InnoSeptra LLC

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10:55 a.m. - 11:20 a.m. **Electrochemically-Driven Carbon Dioxide Separation (FE0031955)**  
James Buchen, University of Delaware

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11:20 a.m. - 11:45 a.m. **Direct Air Capture using Trapped Small Amines in Hierarchical Nanoporous Capsules on Porous Electrospun Fibers (FE0031969)**  
Miao Yu, University at Buffalo

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11:45 a.m. - 12:10 p.m. **Bench-Scale Testing of Monolithic PPI Structured Contactors for Direct Air Capture of CO<sub>2</sub> (FE0032094)**  
Christopher Bertole, Cormetech, Inc.

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12:10 p.m. - 1:10 p.m. LUNCH - Ballroom Foyer/Ballroom A

Bench-Scale Research  
Moderator: Mike Bergen

1:10 p.m. - 1:35 p.m. **Accelerated Life Cycle Testing of Advanced Structured Material Systems for Direct Air Capture (FE0032099)**  
Mustapha Soukri, RTI International

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1:35 p.m. - 2:00 p.m. **Bench Scale Development of a Novel Direct Air Capture Technology using High Capacity Structured Sorbents (FE0032118)**  
Raghubir P. Gupta and Andrew Tong, Susteon, Inc.

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2:00 p.m. - 2:25 p.m. **Electrochemically Regenerated Solvent for Direct Air Capture with Cogeneration of Hydrogen at Bench-Scale (FE0032125)**  
Kunlei Liu and Ayokunie Omosebi, University of Kentucky

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2:25 p.m. - 2:50 p.m. **AIRCO<sub>2</sub> Contactor: Advanced Integrated Reticular Sorbent-Coated System to CO<sub>2</sub> Using an Additively-Manufactured Contactor (FE0032126)**  
David Moore, GE Research

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2:50 p.m. - 3:15 p.m. **Energy-Efficient Direct Air Capture System for High Purity CO<sub>2</sub> Separation (FE0032128)**  
Joo-Youp Lee, University of Cincinnati

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3:15 p.m. - 3:45 p.m. BREAK - Ballroom Foyer

Bench-Scale Research  
Moderator: Greg Imler

- 3:45 p.m. - **Direct Air Capture with Fiber Sorbents: Module, Design and Fabrication (FE0032129)**  
4:10 p.m. Ryan Lively, Georgia Institute of technology
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- 4:10 p.m. - **Amine Infused ePTFE/SiO<sub>2</sub> Laminate Structured Sorbents as an Advanced Direct Air Capture System (FE0032278)**  
4:25 p.m. Matthew Realff, Georgia Institute of Technology
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- 4:25 p.m. - **Advancing a Low-Temperature, Low-Cost Direct Air Capture System Based on Organic Chemistry (FE0032269)**  
4:40 p.m. Anca Timofte, Holocene
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- 4:40 p.m. - **Advanced Engineered Structures for High Performance Direct Air Capture System (FE0032261)**  
4:55 p.m. Gokhan Alptekin, TDA Research, Inc
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- 4:55 p.m. - **Bench-Scale Development of Promoted High-Capacity Structured Sorbents (FE0032254)**  
5:10 p.m. James Zhou, Susteon, Inc.

### **Carbon Conversion Breakout Session – 319/320/321**

Carbon Conversion Overview

Moderator: Joseph Stoffa

- 10:30 a.m. - 10:55 a.m. **Carbon Conversion Program Overview**  
Joseph Stoffa, National Energy Technology Laboratory
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- 10:55 a.m. - 11:20 a.m. **Carbon Utilization Procurement Grants**  
Emily Connor, U.S. Department of Energy
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- 11:20 a.m. - 11:45 a.m. **NETL's In-House Carbon Conversion Research**  
Douglas Kauffman, National Energy Technology Laboratory
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- 11:45 a.m. - 12:10 p.m. **Overview of Carbon Conversion Life Cycle Analysis at NETL**  
Michelle Krynock, National Energy Technology Laboratory
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- 12:10 p.m. - 1:10 p.m. LUNCH - Ballroom Foyer/Ballroom A

Reactive Capture

Moderator: Lei Hong

- 1:10 p.m. - **Direct Air Reactive Capture and Conversion for Utility-Scale Energy Storage (FWP-FEW0277)**  
1:35 p.m. Simon Pang, Lawrence Livermore National Laboratory

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|-----------------------|--|
| 1:35 p.m. - 2:00 p.m. | <b>A Pressure-Swing Process for Reactive CO<sub>2</sub> Capture and Conversion to Methanol through Precise Control of Co-Located Active Sites in Dual Functional Materials (FWP-FY21-RCC-LAB-CALL)</b><br>Anh To, National Renewable Energy Laboratory |
| 2:00 p.m. - 2:25 p.m. | <b>Porous Catalytic Polymers for Simultaneous CO<sub>2</sub> Capture and Conversion to Value-added Chemicals (FWP-FEAA421-FY22)</b><br>Michelle K. Kidder, Oak Ridge National Laboratory   |
| 2:25 p.m. - 2:50 p.m. | <b>A Novel Molten Salt System for CO<sub>2</sub> Based Oxidative Dehydrogenation with Integrated Carbon Capture (FE0031918)</b><br>Fanxing Li, North Carolina State University   |
| 2:50 p.m. - 3:15 p.m. | <b>Integrated Capture and Conversion of CO<sub>2</sub> into Materials: Pathways for Producing CO<sub>2</sub>-Negative Building Composites (FWP-78606)</b><br>Satish K. Nune, Pacific Northwest National Laboratory                                     |
| 3:15 p.m. - 3:45 p.m. | BREAK - Ballroom Foyer   |
| 3:45 p.m. - 4:10 p.m. | <b>Integrated Capture and Conversion of CO<sub>2</sub> into Materials (IC<sub>3</sub>M): Expanding IC<sub>3</sub>M for C<sub>1</sub> and C<sub>2</sub> Production (FWP-80562)</b><br>Jothi Kothandaraman, Pacific Northwest National Laboratory        |

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#### Catalytic Conversion

Moderator: Naomi O'Neil

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| 4:10 p.m. - 4:35 p.m. | <b>High Efficiency Electrochemical Conversion of Carbon Dioxide to Ethylene – Electrode Development and Techno-economic Analysis (FE0031919)</b><br>Xiao-Dong Zhou, University of Louisiana at Lafayette and Yudong Wang, University of Connecticut |
| 4:35 p.m. - 5:00 p.m. | <b>Atmospheric Microwave Plasmas for CO<sub>2</sub> Reuse for Jet-fuel Synthesis (SC0019791)</b><br>Leslie Bromberg, MAAT Energy  |
| 5:00 p.m. - 5:25 p.m. | <b>High Efficiency Plasma-Assisted Methane Reforming (SC0019664)</b><br>Yue Xiao, Advanced Cooling Technologies, Inc.   |
| 5:25 p.m. - 5:50 p.m. | <b>Dehydration Membrane Reactor for Production of Valuable Chemicals for CO<sub>2</sub> and H<sub>2</sub> (FE0031909)</b><br>Shiguang Li, GTI Energy  |

## **Carbon Transport and Storage Breakout Session 1 – Ballroom B**

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### Regional Initiatives

Moderator: Dawn Deel

10:30 a.m. - **SECARB-USA: An Overview (FE0031830)**  
10:55 a.m. Ben Wernette, Southern States Energy Board

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10:55 a.m. - **Midwest Regional Carbon Initiative (MRCI) (FE0031836)**  
11:20 a.m. Neeraj Gupta, Battelle Memorial Institute and Christopher Korose,  
University of Illinois

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11:20 a.m. - **Carbon Utilization and Storage Partnership of the Western United States (FE0031837)**  
11:45 a.m. Robert Balch, New Mexico Tech

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11:45 a.m. - **Plains CO<sub>2</sub> Reduction Partnership Initiative to Accelerate Carbon Capture, Utilization, and Storage Deployment (FE0031838)**  
12:10 p.m. Kevin Connors, University of North Dakota Energy and Environmental Research Center

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12:10 p.m. - LUNCH - Ballroom Foyer/Ballroom A  
1:10 p.m.

### Carbon Transport & Storage Infrastructure (BIL)

Moderator: Matthew Kaminski

1:10 p.m. - **DOE Carbon Transport and Storage Infrastructure Projects and Opportunities via Bipartisan Infrastructure Law**  
1:20 p.m. Willam Aljoe, National Energy Technology Laboratory

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1:20 p.m. - **Lone Star Storage Hub Project (FE0032332)**  
1:35 p.m. Marco Guirola, BP Corporation North America, Inc.

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1:35 p.m. - **Bluebonnet Sequestration Project (FE00032338)**  
1:50 p.m. Angie Contreras, Bluebonnet Sequestration Hub, LLC

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1:50 p.m. - **Magnolia Sequestration Project (FE0032339)**  
2:05 p.m. Kelly Watson, Magnolia Sequestration Hub, LLC

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2:05 p.m. - **Gulf Coast Decarb (FE0032345)**  
2:20 p.m. Elena Subia Melchert, Energia Consulting LLC for Howard Midstream Energy Partners

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2:20 p.m. - **CarbonSAFE Eos: Developing Commercial Sequestration for Southern Colorado (FE0032342)**  
2:35 p.m. Manika Prasad, Jessica Smith, Colorado School of Mines, and Ashleigh Ross, Carbon America

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2:35 p.m. - **CarbonSAFE Phase III: Sweetwater Carbon Storage Hub, Southwest Wyoming (FE0032343)**  
2:50 p.m. Alicia Summers, Frontier Carbon Solutions, and Zunsheng (John) Jiao, University of Wyoming

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2:50 p.m. - **Time's Ticking: Embarking on the Wyoming Trails Carbon Hub (Project WyoTCH) (FE0032347)**  
3:05 p.m. Mikey Hannon, Carbon Solutions, LLC

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3:05 p.m. - BREAK - Ballroom Foyer  
3:45 p.m.

Carbon Transport & Storage Infrastructure (BIL)

Moderator: Andrea McNemar

3:45 p.m. - **Longleaf CCS Hub (FE0032341)**  
4:00 p.m. Ben Wernette, Southern States Energy Board and Dave Riestenberg, Advanced Resources International

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4:00 p.m. - **Coal Creek Carbon Capture: Site Characterization and Permitting (FE0032331)**  
4:15 p.m. Amanda Livers-Douglas, University of North Dakota

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4:15 p.m. - **SimCCS: An Open source Toolset for Regional CCS Infrastructure Decision Support (FWP-LANL-FE-1207-20-FY21)**  
4:40 p.m. Bailain Chen, Los Alamos National Laboratory

### **Carbon Transport and Storage Breakout Session 2 – 315/316**

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Cloud Enhanced EDX DisCO2ver

Moderator: Damara Strong

10:30 a.m. - 10:55 a.m. **EDX++, migrating EDX to the Cloud, Unlocking Next Generation Data Infrastructure and Advanced Computing for the CS Community (Overview)**  
Vic Baker and Timothy Jones, National Energy Technology Laboratory

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10:55 a.m. - 11:20 a.m. **Licensing and Virtualizing CS Models & Tools via EDX DisCO2ver**  
Dakota Zaengle, National Energy Technology Laboratory

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11:20 a.m. - 11:45 a.m. **EDX Cloud Optimization for CCS**  
Kelly Rose and Vic Baker, National Energy Technology Laboratory

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11:45 a.m. - 12:10 p.m. **EDX Utilization of Cloud Open Data Programs to Enhance Reuse of Large CS Datasets**  
Chad Rowan and Kelly Rose, National Energy Technology Laboratory

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12:10 p.m. LUNCH - Ballroom Foyer/Ballroom A  
- 1:10  
p.m.

Carbon Storage Data, EDX  
Moderator: Kelly Rose

1:10 p.m. - **Carbon Storage Technical Viability Approach**  
1:35 p.m. Mackenzie Mark-Moser and C. Gabe Creason, National Energy Technology Laboratory

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1:35 p.m. - **Developing a National Structural Complexity Database**  
2:00 p.m. Devin Justman, National Energy Technology Laboratory

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2:00 p.m. - **Environmental Justice and Social Justice Dynamic: Datasets for CS Systems and the Energy Transition Atlas Web Tool**  
2:25 p.m. Maneesh Sharma, National Energy Technology Laboratory

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2:25 p.m. - **Deploying a National Well Database to Support CS Reuse and Risk**  
2:50 p.m. Lucy Romeo, National Energy Technology Laboratory

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2:50 p.m. - **CS Program Data Curation, Transformation, and Reuse**  
3:15 p.m. Paige Morkner, National Energy Technology Laboratory

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3:15 p.m. - BREAK - Ballroom Foyer  
3:45 p.m.

Wellbore Integrity  
Moderator: Johnathan Moore

3:45 p.m. - **Casing Annulus Monitoring of CO<sub>2</sub> Injection Using Wireless Autonomous Distributed Sensor Networks (FE0031856)**  
4:10 p.m. David Chapman and Mohsen Ahmadian, University of Texas at Austin

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4:10 p.m. - **Data Driven Approaches to Understand Well Integrity (FWP-1022403)**  
4:35 p.m. Greg Lackey, National Energy Technology Laboratory

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4:35 p.m. - **Fiber Optic Vector Sensors and Underground Gas Storage (UGS)**  
5:00 p.m. Björn N.P. Paulsson, Michael T.V. Wylie, and Ruiqing He, Paulsson, Inc.

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5:00 p.m. - **Physics Guided Machine Learning for Detecting Small CO<sub>2</sub> Leakage (FWP-FE-1209-20-FY20)**  
5:25 p.m. Youzuo Lin, Los Alamos National Laboratory

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**Tuesday August 29, 2023**

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**7:00 a.m. – 8:00 a.m. Meeting Registration & Continental Breakfast - Ballroom Foyer**

**General Plenary Session (All Program Areas) – Ballroom A**

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## Transitioning to a Low Carbon Economy (Panel)

Moderator - Mark Ackiewicz

8:00 a.m. - 8:05 a.m. Mark Ackiewicz, Director, Office of Carbon Management Technologies, U.S. Department of Energy

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8:05 a.m. - 8:15 a.m. Katie Jereza, Vice President Corporate Affairs, Electric Power Research Institute

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8:15 a.m. - 8:25 a.m. Jack Andreasen, Manager, Carbon Management, U.S. Policy and Advocacy, Breakthrough Energy

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8:25 a.m. - 8:35 a.m. Michael Roos, Senior Vice President, Client Executive, Marsh McLennan and James Walsh, Senior Vice President, Client Executive, Marsh McLennan

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8:35 a.m. - 8:45 a.m. Jason Eisenberg, Associate, Hunton Andrews Kurth LLP

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8:45 a.m. - 9:00 a.m. Q&A

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## Decarbonizing Power and Heavy Industry (Panel)

Moderator - Dan Hancu

9:00 a.m. - 9:05 a.m. Dan Hancu, Division Director, Point Source Carbon Capture, U.S. Department of Energy

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9:05 a.m. - 9:15 a.m. Brenda Petrilena, Director, Global Decarbonization & Program Management, United States Steel Corporation

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9:15 a.m. - 9:25 a.m. Matt Guyette, Director of Advanced Research, GE Vernova

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9:25 a.m. - 9:35 a.m. Chris Ward, Chief Executive Officer, Heidelberg Materials

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9:35 a.m. - 10:00 a.m. Q&A

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10:00 a.m. - 10:30 a.m. BREAK - Ballroom Foyer

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**Point Source Carbon Capture Breakout Session – 403/404/405**

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Capture from Power Generation (Engineering/Small Pilot-Scale Research)

Moderator: Andrew O'Palko

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|----------------------------|---|
| 10:30 a.m. -<br>10:55 a.m. | <b>National Carbon Capture Center (FE0022596)</b><br>Tony Wu, Southern Company Services   |
| 10:55 a.m. -<br>11:20 a.m. | <b>Chevron Natural Gas Carbon Capture Technology Testing Project (FE0031944)</b><br>Scott McLemore, Chevron U.S.A. Inc.                       |
| 11:20 a.m. -<br>11:45 a.m. | <b>Engineering-Scale Demonstration of Transformational Solvent on NGCC Flue Gas (FE0031950)</b><br>Andrew Awtry, ION Clean Energy Inc.        |
| 11:45 a.m. -<br>12:10 p.m. | <b>Engineering-Scale Demonstration of the Mixed-Salt Process for CO<sub>2</sub> Capture (FE0031588)</b><br>Elisabeth Perea, SRI International |
| 12:10 p.m. -<br>1:10 p.m.  | LUNCH – Ballroom Foyer/Ballroom A   |

Capture from Power Generation (Engineering/Small Pilot-Scale Research)

Moderator: Dustin Brown

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|--------------------------|---|
| 1:10 p.m. -<br>1:35 p.m. | <b>Engineering-Scale Test of a Water-Lean Solvent for Post-Combustion Capture (FE0031945)</b><br>Joseph Swisher, Electric Power Research Institute  |
| 1:35 p.m. -<br>2:00 p.m. | <b>Computational Modeling and Optimization of EEMPA Solvent</b><br>Zhijie (Jay) Xu, Pacific Northwest National Laboratory   |
| 2:00 p.m. -<br>2:25 p.m. | <b>ROTA-CAP: An Intensified Carbon Capture System Using Rotating Packed Beds (FE0031630)</b><br>Osman Okpolat, GTI Energy   |
| 2:25 p.m. -<br>2:50 p.m. | <b>Safeguarding Amines from Oxidation by Enabling Technologies (FE0031861)</b><br>Fred Closmann, University of Texas at Austin  |
| 2:50 p.m. -<br>3:15 p.m. | <b>Engineering Scale Design and Testing of Transformational Membrane Technology for CO<sub>2</sub> Capture (FE0031946)</b><br>Shiguang Li, GTI Energy and Yang Han, The Ohio State University |
| 3:15 p.m. -<br>3:45 p.m. | BREAK – Ballroom Foyer  |

Capture from Power Generation (Lab/Bench - NG)

Moderator: Krista Hill

3:45 p.m. - 4:05 p.m. **Plastic Additive, Sorbent-Coated, Thermally Integrated Contactor for CO<sub>2</sub> Capture (PLASTIC4CO<sub>2</sub>) (FE0032132)**  
Albert Stella, GE Vernova Research

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4:05 p.m. - 4:25 p.m. **Dual-Loop Solution-Based Carbon Capture System for Net Negative Carbon Dioxide Emissions with Lower Costs (FE0032134)**  
Heather Nikolic, University of Kentucky

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4:25 p.m. - 4:45 p.m. **Highly Efficient Regeneration Module for Carbon Capture Systems in Natural Gas Combined Cycle (NGCC) Applications (FE0032135)**  
Indira Jayaweera, SRI International

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4:45 p.m. - 5:05 p.m. **Bench Scale Test of a Polyethyleneimine Monolith Carbon Capture Process for Natural Gas Combined Cycle Point Sources (FE0032138)**  
Christopher Bertole, Cormetech, Inc.

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5:05 p.m. - 5:25 p.m. **A New Thermal Swing Adsorption Process for Post-Combustion Carbon Capture from Natural Gas Plants (FE0032151)**  
Gokhan Alptekin, TDA Research, Inc.

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### **Carbon Dioxide Removal Breakout Session – 301/302/303**

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Bench-Scale Research

Moderator: Mike Bergen

10:30 a.m. - 10:55 a.m. **Demonstration of a Continuous-Motion Direct Air Capture (DAC) System (FE0031957)**  
Eric W. Ping and Stephanie Didas, Global Thermostat, LLC

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10:55 a.m. - 11:20 a.m. **Direct Air Capture Using Novel Structured Adsorbents (FE0031959)**  
Kathy Fagundo, Electricore, Inc. and Adelaide Calbry-Muzyka, Climeworks

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11:20 a.m. - 11:45 a.m. **DAC RECO<sub>2</sub>UP - Direct Air Capture Recovery of Energy for CCUS Partnership (FE0031961)**  
Joshua Miles, AirCapture, LLC

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11:45 a.m. - 12:10 p.m. **A Combined Atmospheric Water Extraction and CO<sub>2</sub> Direct Air Capture System (FE0031970)**  
Alexander Spiteri and Will Kain, IWVC, LLC

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12:10 p.m. - 1:10 p.m. LUNCH - Ballroom Foyer/Ballroom A

NETL Research & Innovation Center

Moderator: Jan Steckel

1:10 **Polymer Sorbents Fibers for Direct Air Capture**  
p.m. - Ali Sekizkardes, National Energy Technology Laboratory  
1:35  
p.m.

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1:35 **The Development of an NETL DAC Reactor: Optimization of Direct Air Capture (DAC) Reactor Configuration Using Artificial Intelligence (AI) Inverse Engineering Techniques**  
p.m. - Justin Weber and Ronald Breault, National Energy Technology Laboratory  
2:00  
p.m.

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2:00 **Systems Analysis for Carbon Dioxide Removal**  
p.m. - Timothy Fout, National Energy Technology Laboratory  
2:25  
p.m.

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2:25 **An Overview of CCSI<sup>2</sup> Capabilities for Accelerating Technology Commercialization**  
p.m. - Benjamin Omell, National Energy Technology Laboratory  
2:50  
p.m.

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2:50 **NETL Direct Air Capture Center**  
p.m. - Dave Luebke, National Energy Technology Laboratory  
3:15  
p.m.

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3:15 BREAK - Ballroom Foyer  
p.m. -  
3:45  
p.m.

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Direct Air Capture Technology Development - An Emerging Support Ecosystem (Panel Discussion)

Moderator: Dave Luebke

3:45 p.m. - 3:50 **Dave Luebke, National Energy Technology Laboratory**  
p.m.

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3:50 p.m. - 4:00 **Pamela Chu, National Institute of Standards and Technology**  
p.m.

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4:00 p.m. - 4:10 **Matthew Realff, Direct Air Capture Center (DirACC) at Georgia Tech**  
p.m.

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4:10 p.m. - 4:20 **David Sholl, Oak Ridge National Laboratory**  
p.m.

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4:20 p.m. - 4:30 **Frank Morton, National Carbon Capture Center**  
p.m.

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4:30 p.m. - 4:40 p.m.      **Michael Leitch, XPRIZE**

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4:40 p.m. - 5:25 p.m.      **Q&A**

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**Carbon Conversion Breakout Session – 319/320/321**

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Biological Uptake

Moderator: Kara Zabetakis

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10:30 a.m. - 10:55 a.m.      **NH<sub>4</sub>OH Looping with Membrane Absorber and Distributed Stripper for Enhanced Algae Growth (FE0031921)**  
Kunlei Liu, University of Kentucky

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10:55 a.m. - 11:20 a.m.      **A Highly Efficient Microalgae-Based Carbon Sequestration System to Reduce Carbon Dioxide Emission from Power Plant Flue Gases (FE0031914)**  
Yantao Li, University of Maryland Center for Environmental Science

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11:20 a.m. - 11:45 a.m.      **Continuous Algae-Based Carbon Capture and Utilization to Transform Economics and Environmental Impacts (FE0032108)**  
Susie Dai, Texas A&M University

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11:45 a.m. - 12:10 p.m.      **Carbon Capture and Utilization for Fatty Acids (FE0032104)**  
David Hazlebeck, Global Algae Innovations

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12:10 p.m. - 1:10 p.m.      LUNCH - Ballroom Foyer/Ballroom A

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Biological Uptake

Moderator: Kristy Hahn

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1:10 p.m. - 1:35 p.m.      **Improving the Cost-Effectiveness of Algal CO<sub>2</sub> Utilization by Synergistic Integration with Power Plant and Wastewater Treatment Operations (FE0032098)**  
Lance Schideman and Ryan Larimore, University of Illinois at Urbana-Champaign

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1:35 p.m. - 2:00 p.m.      **Engineering-Scale Validation of Novel Algae CO<sub>2</sub> Capture and Bioproducts Technology (FE0032103)**  
Fred Harrington, Helios-NRG, LLC

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2:00 p.m. - 2:25 p.m.      **Cultivation-Ready Improved Algae Strains (CRIAS) for Increased Carbon Utilization Efficiency (FE0032189)**  
John Benemann and Juergen Polle, MicroBio Engineering Inc.

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2:25 p.m. - 2:50 p.m.      **Photosynthesis-Driven Microalgal System to Mitigate Carbon Dioxide Emission from Power Plant Flue Gases (FE0032188)**  
Yantao Li, University of Maryland Center for Environmental Science

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2:50 p.m. - 3:15 p.m.      **An Experimental and Computational Approach to Investigating CO<sub>2</sub> Uptake of Cellulose-Producing Algae from Cellulosic Ethanol Product (FE0032207)**  
Wafa Maftuhin, University of California - Riverside

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3:15 p.m. - 3:45 p.m.      BREAK - Ballroom Foyer

#### Biological Uptake

Moderator: Akhil Sathish

3:45 p.m. - 4:10 p.m.      **Producing Algal Biomass from Wastewater as Cotton Plant Fertilizer to Reduce Carbon Footprint (FE0032203)**  
Venkatesh Balan, University of Houston and Ram Ray, Prairie View A&M University

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4:10 p.m. - 4:35 p.m.      **Algal Biorefinery Conversion of Utility CO<sub>2</sub> to High-Value Products (FE0032229)**  
Kenneth F. Reardon, Colorado State University

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4:35 p.m. - 5:00 p.m.      **Improved Microalgae Carbon Utilization Efficiency via Integrated CO<sub>2</sub> Electro-Conversion to Formate and Microalgal Sequestration (FE0032186)**  
Rich Masel, Dioxide Materials, Inc.

#### **Carbon Transport and Storage Breakout Session 1 – Ballroom B**

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##### CarbonSAFE Phase III

Moderator: Kyle Smith

10:30 a.m. - 10:55 a.m.      **North Dakota Carbonsafe Phase III: Site Characterization and Permitting (FE0031889)**  
Wes Peck, Energy & Environmental Research Center University of North Dakota

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10:55 a.m. - **Establishing an Early CO<sub>2</sub> Storage Complex in Kemper County, Mississippi (FE0031888)**  
11:20 a.m. Ben Roth, Advanced Resources International and Richard Esposito, Southern Company

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11:20 a.m. - **San Juan Basin Carbonsafe Phase III (FE0031890)**  
11:45 a.m. William Ampomah, New Mexico Institute of Mining and Technology and Kevin Bush, Tallgrass Energy

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11:45 a.m. - **San Juan Basin CarbonSAFE Phase III: Ensuring Safe Subsurface Storage of CO<sub>2</sub> in Saline Reservoirs (FWP-FE-1163-20-FY20)**  
12:10 p.m. Bailian Chen, Los Alamos National Laboratory

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12:10 p.m. - LUNCH - Ballroom Foyer/Ballroom A  
1:10 p.m.

### CarbonSAFE Phase III

Moderator: Josh Hull

1:10 **Illinois Storage Corridor Project Update (FE0031892)**  
p.m. - Roland Okwen, Illinois State Geological Survey, University of Illinois  
1:35  
p.m.

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1:35 **Wyoming Carbonsafe: Accelerating CCUS Commercialization and Deployment at Dry Fork Power Station and the Wyoming Integrated Test Center (FE0031891)**  
p.m. - 2:00  
p.m. Scott Quillinan and Fred McLaughlin, University of Wyoming, School of Energy Resources

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### Mineralization

Moderator: Paul Zandhuis

2:00 p.m. **Resource Assessment of Industrial Wastes for CO<sub>2</sub> Mineralization (FE0032244)**  
- 2:25  
p.m. Johannes van der Watt, University of North Dakota

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2:25 p.m. **Subsurface Mafic and Ultramafic Rock Mapping and Analysis for Carbon Mineralization in the United States (SubMAP-CO<sub>2</sub>) (FE0032249)**  
- 2:50  
p.m. Estibalitz Ukar, The University of Texas at Austin

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2:50 p.m. **Resource Assessment of Geological Formations and Mine Waste for Carbon Dioxide Mineralization in the US Mid-Atlantic (FE0032247)**  
- 3:15  
p.m. Nino Ripepi, Virginia Tech

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3:15 p.m. BREAK - Ballroom Foyer  
- 3:45  
p.m.



## Mineralization

Moderator: Johnathan Moore

3:45 p.m. - **Distributed Mafic Rock Resources for CO<sub>2</sub> Mineralization in Arizona (FE0032252)**

4:10 p.m. Lisa Thompson, University of Arizona

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4:10 p.m. - **Carbon Dioxide Storage via Accelerated Carbonation Reaction with Recycled Concrete Aggregates (RCA) (FE0032259)**

4:35 p.m. Seunghye Kim, University of Nebraska-Lincoln

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4:35 p.m. - **Subsurface Carbon Mineralization Resources in Hawaiian Basalt (FE0032245)**

5:00 p.m. Don DePaolo, Lawrence Berkeley National Laboratory

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5:00 p.m. - **Regional Resource Assessment for CO<sub>2</sub> Storage in New Mexico and Surrounding Areas: Identification, Characterization and Evaluation of In-Situ Mineralization Site/Complex (FE0032257)**

5:25 p.m. Sai Wang, Petroleum Recovery Research Center-New Mexico Tech

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## Carbon Transport and Storage Breakout Session 2 – 315/316

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### Plume Detection

Moderator: James Gardiner

10:30 a.m. - **CCSMR Task 3: Electromagnetic Measurements and Modeling for the Wyoming CarbonSAFE Site (FWP-ESD14095)**

10:55 a.m. David Alumbaugh, Lawrence Berkeley National Laboratory

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10:55 a.m. - **Task 2- 2nd Generation SOV-DAS (FWP-ESD14095)**

11:20 a.m. Julia Correa, Lawrence Berkeley National Laboratory

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11:20 a.m. - **Task 4- Optical Monitoring Technology for Deep CO<sub>2</sub> Injection (FWP-ESD14095)**

11:45 a.m. Stanislav Glubokovskikh, Lawrence Berkeley National Laboratory

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11:45 a.m. - **Task 5- Ambient Seismic Noise Reservoir Imaging for Monitoring (FWP-ESD14095)**

12:10 p.m. Nori Nakata, Lawrence Berkeley National Laboratory

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12:10 p.m. - LUNCH - Ballroom Foyer/Ballroom A  
1:10 p.m.

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### Secure Storage

Moderator: Nick Means

1:10 **CO<sub>2</sub> Sequestration in Basalt (FWP-73235)**  
p.m. - Todd Schaefer, Pacific Northwest National Laboratory  
1:35  
p.m.

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1:35 **Geochemical Alteration Impact on Trapping and Flow (FWP-1022403)**  
p.m. - Dustin Crandall, National Energy Technology Laboratory  
2:00  
p.m.

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2:00 **The Role of Chemical Alteration in Arkosic Reservoirs (FWP-FEW0271)**  
p.m. - Megan Smith, Lawrence Livermore National Laboratory  
2:25  
p.m.

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2:25 **High-Resolution Reservoir Seal Integrity Monitoring using Optimized Borehole Sources and Distributed Acoustic Sensing (FE0032058)**  
p.m. - Nori Nakata, Lawrence Berkeley National Laboratory  
2:50  
p.m.

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2:50 **Acoustic Emissions Sensing for Tracing Carbon Dioxide Movement in Caprock of a Carbon Capture Utilization and Storage System (CCUS) (FE0032062)**  
p.m. - Slawomir Winecki, Battelle Memorial Institute  
3:15  
p.m.

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3:15 BREAK - Ballroom Foyer  
p.m. -  
3:45  
p.m.

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EDX Tools

Moderator: Gabe Creason

3:45 p.m. - 4:10 **Development of a Carbon Storage Wellbore Materials Database**  
p.m. Scott Montross and Kelly Rose, National Energy Technology Laboratory

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4:10 p.m. - 4:35 **A Comprehensive Dashboard for CS Planning**  
p.m. Devin Justman, National Energy Technology Laboratory

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4:35 p.m. - 5:00 **Anonymizing Sensitive CS Data Tool**  
p.m. Paige Morkner, National Energy Technology Laboratory

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5:00 p.m. - 5:25 **3D Data Viewer and Preview Capability**  
p.m. Dakota Zaengle, National Energy Technology Laboratory

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**Reception/Poster and Demo Session – Ballroom Foyer/East and West Atriums**

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5:45 p.m. – 7:45 p.m. Reception/Poster and Demo Session

## **Point Source Carbon Capture Posters**

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### **Experimental Verification of Hollow Fiber Module Performance for Flue Gas Separation Using 3D Printing**

Victor Kusuma, National Energy Technology Laboratory

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### **Review of Sensors for in Situ Amine Degradation Monitoring in Post-Combustion Carbon Capture**

Ruishu Wright, National Energy Technology Laboratory

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### **CO<sub>2</sub>-Philic Block Copolymers with Intrinsic Microporosity (BCPIMs) for Post Combustion CO<sub>2</sub> Capture (SC0020730)**

Ravi Prasad and Haiqing Lin, Helios-NRG, LLC

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### **Low Temperature CO<sub>2</sub> Capture from an NGCC Flue Gas Using a Magnetically Stabilized, Inductively Heated Fluidized Bed Reactor (SC0022689)**

Andrew Tong, Susteon, Inc.

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### **Bench-scale Development of a Transformational Switchable-hydrophilicity Solvent-enabled Absorption Process for Energy-efficient CO<sub>2</sub> Capture and Fixation (SC0022734)**

Xiansen Li, ThermisoIn, LLC

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### **Retrofitting NGCC and PC Power Plants with Carbon Capture Technology (FWP-1022486)**

Gregory Hackett, National Energy Technology Laboratory

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### **Techno-economic Analysis of CO<sub>2</sub> Capture from Pulp/Paper Plants**

Hari Mantripragada, National Energy Technology Laboratory

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### **Optimization of Intensified Liquid-Gas Contactors for CO<sub>2</sub> Capture**

Debangsu Bhattacharyya, West Virginia University

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### **CFD Simulations for Post-Combustion Carbon Capture**

Grigorios Panagakos, Carnegie Mellon University and Yash Girish Shah, National Energy Technology Laboratory

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### **Characterization of Solvent/Packing Interaction for Pilot Test of Advanced Solvents**

Zhijie Xu, Pacific Northwest National Laboratory

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### **Polymer Blend Facilitated Transport Membranes for Post-Combustion Carbon Capture**

James Baker, National Energy Technology Laboratory

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## **Carbon Dioxide Removal Posters**

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### **Use of Artificial Intelligence (AI) Inverse Engineering Techniques to Optimize Direct Air Capture (DAC) Reactor Configuration**

Justin Weber and Ronald Breault, National Energy Technology Laboratory

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**Porous Polymeric Fiber Sorbents for Direct Air Capture**

Ali K. Sekizkardes, Victor Kusuma, Jeffrey T. Culp, Patrick Muldoon, James Hoffman, David Hopkinson and Janice A. Steckel, National Energy Technology Laboratory

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**Computational Evaluation of Flexible Metal-Organic Frameworks for Capture**

Jack Findley, National Energy Technology Laboratory

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**CO<sub>2</sub> Adsorption Enhancement of MOF-808 via Highly Efficient Amine Incorporation**

Patrick Muldoon, National Energy Technology Laboratory

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**Computational Screening & Design of Alkylamine-Functionalized Polymer Sorbents**

Surya Prakash Tiwari, National Energy Technology Laboratory

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**Computational Fluid Dynamics for DAC Reactor Design and Optimization**

Hossain Aziz, Bryan Hughes, Subhdeep Banerjee, Mehrdad Shahnam, National Energy Technology Laboratory

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**Process Modeling and Analysis of a Novel Sorbent Material for Direct Air Capture Applications**

Daison Yancy Caballero, National Energy Technology Laboratory

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**Direct Air Capture of CO<sub>2</sub> Using a Robust Synthesized Fibrous Amine-functionalized Matrix (FAM) Sorbent**

Qiuming Wang, National Energy Technology Laboratory

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**Modeling and Structural Optimization of Adsorption-Based Carbon Capture Systems**

Mayra Guadalupe Gonzalez Ramirez and Grigorios Panagakos, Carnegie Mellon University

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**Testbed Capability for Carbon Dioxide Removal Technology Evaluation and Demonstration**

Michael Dugas, Los Alamos National Laboratory

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**Techno Economic Analysis Development for Enhanced Weatherization and Marine Carbon Dioxide Removal**

Sarah Leptinsky, National Energy Technology Laboratory

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**An Effective Air-Liquid Contactor for CO<sub>2</sub> Direct Air Capture Using Aqueous Solvents**

Gyoung Gug Jang, Oak Ridge National Laboratory

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**Integrated Direct Air Capture and CO<sub>2</sub> Conversion with Cogeneration of Hydrogen and Light Olefins**

Ali Rownaghi, National Energy Technology Laboratory

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**Biomass Environmental Analysis in Bioenergy with Carbon Capture and Storage Modeling**

Roksana Mahmud and Jorge Izar-Tenorio, National Energy Technology Laboratory

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**Carbon Transport and Storage Posters**

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**ACT4: PERBAS - Feasibility of Large-Scale Storage in Offshore Basalts (FWP-FP-00015801)**

Stanislav Glubokovskikh, Lawrence Berkeley National Laboratory

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**The ACT 4 SPARSE (Sparse Passive-Active Reservoir Monitoring using Seismic, Electromagnetics, Gravity and Surface Deformation) Project (FWP-FP-00015750)**

David Alumbaugh, Lawrence Berkeley National Laboratory

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**Conceptualizing Data Availability and Technical Viability Methods within the Carbon Storage Technical Viability Approach (CS TVA)**

Julia Mulhern, Leidos Research Support Team

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**Linking Basin-scale Geologic Modeling, Well Integrity Characterization, and Dynamic Storage Simulation to NRAP's Quantitative Risk Assessment Framework**

Greg Lackey, Leidos Research Support Team

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**New Recommendations for Assessing Geomechanical Risk at GCS Sites (AA7060000-80151A)**

Delphine Appriou, Pacific Northwest National Laboratory

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**Application of NRAP Risk Assessment Tools in the Context of the Bowtie Risk Management Framework (AA7060000-80151A)**

Chris F. Brown, Pacific Northwest National Laboratory

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**Reservoir Characterization of Ironton and Galesville Sandstones, North-Central Illinois**

Zohren Askari, University of Illinois, Illinois State Geological Survey

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**Pipeline Infrastructure Modeling in the SECARB Region (DE-FE0031830)**

Bulbul Ahmmed, Los Alamos National Laboratory

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**CO<sub>2</sub>-Brine-Mineral Interactions and Implications for Geologic CO<sub>2</sub> Storage**

Lauren Beckingham, Auburn University

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**The Use of ML for Enhanced Fault and Fracture Imaging of the IBDP Passive Seismic Data**

Youzuo Lin and Hanchen Wang, Los Alamos National Laboratory

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**Advancing Subsurface Characterization: Machine Learning-Based Fracture and Baffle Identification in the Illinois Basin Decatur Project**

Tim Carr and Ebrahim Fathi, West Virginia University

---

**Generalization of ML-Based Surrogate Models to Dynamic Injection Schedules using transfer Learning**

Jared Schuetter, Battelle

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**Geologic Characterization of the San Juan Basin CarbonSAFE Well (DE-FE0031890)**

Dana S. Ulmer-Scholle, NMT/Petroleum Recovery Research Center

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**Rapid Forecasting of Pressure and Saturation for IBDP Site and Practical Implementation Issues**

Seyyed Hosseini, The University of Texas at Austin

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**Virtual Learning to Support Class VI Permitting**

Seyyed Hosseini, The University of Texas at Austin

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**Reduced Dimensional Representations of Subsurface Properties to Enable Computationally Efficient and Transferable Machine Learning Modeling**

Hongsheng Wang, The University of Texas at Austin

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**Rapid Forecasting of CO<sub>2</sub> Plume Migration in Varied Geological and Engineering Scenarios Utilizing Transfer Learning**

Siddharth Misra, Texas A&M University

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**Integrated Machine Learning Models of Event Detection and Source Location Identification for Fault Imaging using Raw Continuous IBDP Microseismic Data**

Daniel Lizama, Sandia National Laboratories

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**Improved Neural Operators for Fast and Accurate Pressure and Saturation Prediction at the IBDP Site**

Teeratom Kadeethum, Sandia National Laboratories

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**Progressive Learning to Transfer Between Dynamic Systems**

Hongkyu Yoon, Sandia National Laboratories

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**High-Fidelity Simulation of Induced Earthquakes Inform Operational Management Strategies**

Kayla Kroll, Lawrence Livermore National Laboratory

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**Class II to Class VI Operations - Insights from Simulation-Based Investigation of a CO<sub>2</sub>-EOR to Dedicated Storage Scenario**

Guoxiang (Gavin) Liu, National Energy Technology Laboratory

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**A Modular Multi-Segmented Model for Wellbore Leakage Assessment and Site-Specific Risk Evaluation in Geological Carbon Sequestration**

Seunghwan Baek, Pacific Northwest National Laboratory

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**Introducing Spatial Heterogeneity in Seismic Forecasts in ORION**

Gina-Maria Geffers, Lawrence Livermore National Laboratory

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**Reservoir Modeling and Simulation Study of Carbon Storage Strategies in San Juan Basin, New Mexico (DE-FE0031890)**

Jiawei (David) Tu, New Mexico Institute of Mining and Technology

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**U.S. State-by-State Stratigraphic Test Well Permitting Process for Carbon Storage Projects**

Morgan Sawyer, KeyLogic

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**Deep Learning Derived Seismic Event Catalog Using Surface Sensors for a Carbon Capture & Storage Site in Decatur, Illinois (DE-AC05-00OR22725)**

Chengping Chai, Oak Ridge National Laboratory

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**Materials Suitable for CO<sub>2</sub> Injection and Monitoring Wells: Assessing the Expansion of US Carbon Storage Infrastructure**

Jared Wink, KeyLogic

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**NETL's Techno-Economic Modeling Resources for Analyzing Decarbonization Strategies using CCUS (89243323CFE00007)**

Derek Vikara, KeyLogic

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**A Framework for Linking Quantitatively Assessed Risks and Costs for Geological Carbon Storage (GCS) to Consider Impact of Contingency Plans at a GCS Site (89243323CFE00007)**

Travis Warner, KeyLogic

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**Critical Mineral Recovery and Carbon Mineralization from Mafic-Ultramafic Formations**

Allie Nagurney, Pacific Northwest National Laboratory

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**Molecular Scale Mechanisms Behind Carbon Mineralization in Basalt Formations**

Emily Nienhuis, Pacific Northwest National Laboratory

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**Accelerating Carbon Storage Commercialization in Basalt via Reactive Transport Simulation and Stakeholder Engagement**

Ruoshi Cao, Pacific Northwest National Laboratory

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**Revealing the Structure and Composition of Anthropogenic Carbonates from a Geologic Carbon Storage Demonstration**

Nabajit Lahiri, Pacific Northwest National Laboratory

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**Metamaterial Contrast Agent Monitoring in Geological Carbon Storage Reservoirs**

Quin Miller, Pacific Northwest National Laboratory

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**Risk Assessment of Carbon Storage at Potential Midwest Regional Carbon Initiative (MRCI) Sites Using NRAP Open-IAM Component Models (FE0031836)**

Sanjay R. Mawalkar, Battelle

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**Texas-Louisiana Carbon Management Community (FE0032361)**

Susan Hovorka, Gulf Coast Carbon Center, Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas at Austin

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**Comparative Economic Analysis of Capture, Transport, and Storage from a CO<sub>2</sub> Source Perspective in the Central U.S. (89243323CFE000075)**

Alana Sheriff, KeyLogic

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**Developing CCS in the Midwest Regional Carbon Initiative with Research, Datasets, and Legacy Seismic (DE-FE0031836)**

Joel Sminchak, Battelle

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**Geologic Storage Assessment Review: Focus on Appalachia**

Ray Boswell, National Energy Technology Laboratory

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**Engineering Integrated Sensing, Power, Telemetry, and Data Processing Systems for Complex Subsurface Environments**

Xiaoqin Zang and Hyunjun Jung, Pacific Northwest National Laboratory

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**Seismic Characterization of the San Juan Basin CarbonSAFE Site**

George El-Kaseeh, New Mexico Tech

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**Advanced ML-Based Computational Approaches for Rapid Forecasting**

Alexandre Tartakovsky, University of Illinois Urbana Champaign

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**The San Juan Basin CarbonSAFE's Core and Natural Fracture Analysis Program in Support of the UIC-VI Permit Application (DE-FE0031890)**

Jason Heath, Sandia National Laboratories

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**Machine Learning Based Fracture Network Quantification at the IBDP CO<sub>2</sub> Sequestration Site**

Abhash Kumar, William Harbert, Guoxiang Liu and Evgeniy Myshaken, NETL Support Contractors

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**Regional Cost Analysis of Geological Carbon Sequestration in Permian Basin AGI Wells**

Jason Heath, Sandia National Laboratories

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**Managing Carbon Storage Data with a Living Database**

Michael Sabbatino, Leidos Research Support Team

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**3D Field-Scale Geomechanical Modeling of Geological CO<sub>2</sub> Storage in the Powder River Basin, Wyoming (DE-FE-0031891)**

Tao Bai, University of Wyoming

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**Laboratory Investigation of Pore Space Utilization with Foam for CO<sub>2</sub> Storage at the Wyoming CarbonSAFE Storage Site (De-FE-0031891)**

Ying Yu, Center for Economic Geology Research, School of Energy Resources, University of Wyoming

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**Williston Basin Associated CO<sub>2</sub> Storage Field Laboratory (FE0031694)**

Steve Smith, Energy & Environmental Research Center, University of North Dakota

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**Serving Carbon Storage Data and Modeling Needs: An Illinois Basin Geomodel**

Gabe Creason, National Energy Technology Laboratory

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**Developing a National Structural Complexity Database for US Saline Basins (FWP-1025007)**

Daniel Amrine, Leidos Research Support Team

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**Managing Carbon Storage Data with a Living Database**

Michael Sabbatino, Leidos Research Support Team

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**Gulf Coast's CO<sub>2</sub> Storage Window Societal Constrains (FE0031830/FE0031558)**

Ramon Gil-Egui and Jose Ubillus, Gulf Cost Carbon Center, The University of Texas at Austin

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**Advanced Foundational and Flexible Methods for Fast and High-Fidelity Fluid Flow Predictions**

Paul Holcomb, Leidos Research Support Team

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**Infrastructure Security for Carbon Capture, Utilization, and Storage (DE-FE0031836)**

Jared Hawkins, Battelle

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**Lessons Learned in Community Benefits Plans from the Midwest Regional Carbon Initiative (DE-FE0031836)**

Joy Frank-Collins and Jared Hawkins, Battelle

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**Simulated CO<sub>2</sub> Storage Efficiency in Sandstone and Carbonate Reservoirs: CO<sub>2</sub>-SCREEN Tool Upgrade**

Evgeniy Myshakin, Battelle Memorial Institute

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**Committee Machine Applications for Ensemble Predictions at the IBDP**

Chung Shih, Leidos Research Support Team

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**Qualitative Well Integrity Risk Assessment for Carbon Storage in the Gulf of Mexico Depleted Fields (DE-FE0031557)**

Brigitte Petras, Battelle Memorial Institute

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**Geologic CO<sub>2</sub> Storage Opportunities in the MRCI Region U.S.A. (DE-FE0031836)**

Mark Kelley, Battelle Memorial Institute

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**Southwest Regional Partnership Phase 1: Characterization (CCS Data Assembly - 2003 to 2005) (DE- FC26-05NT42591)**

Ting Xiao, University of Utah

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**Southwest Regional Partnership Phase 2: Validation (Four Sequestration Demonstration Projects - 2005 to 2013) (DE- FC26-05NT42591)**

Ting Xiao, University of Utah

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**Southwest Regional Partnership Phase 3: Development (Commercial-Scale CCUS - 2008 to 2023) (DE- FC26-05NT42591)**

Ting Xiao, University of Utah

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**Incorporating Feedback between Risk Assessment and Monitoring Strategies: Optimizing Monitoring and Minimizing Risk (NRAP)**

Bailian Chen, Los Alamos National Laboratory

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**Water-Rock Interactions and relative Permeability of Outcrop Analogs of the San Juan Basin CarbonSAFE Reservoir (DE-FOA-0001999)**

William Ampomah, New Mexico Tech

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**Mechanisms of Permeability and Friction Evolution in Faults Affecting Reservoir-caprock Systems: Towards the Development of an Earthquake Cycle ROM including Fluid Pressure and Flow**

Yves Guglielmi, Lawrence Berkeley National Laboratory

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**The Transition from Class II to Class VI Operations: Assessing CO<sub>2</sub> Storage and Risk**

Mohamed Mehana, Los Alamos National Laboratory

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**Decision Support for Aquifer Impact Remedial of CO<sub>2</sub> and Brine Leakage (NRAP)**

Pejman Rosouli, Pacific Northwest National Laboratory

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**Estimating the CO<sub>2</sub> Leakage Rate during Well Blowouts in Underground Carbon Storage**

Pramod Bhuvankar, Lawrence Berkely National Laboratory

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**Technology Demonstrations**

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**SimCCS: An Open-Source Toolset for Regional CCS Infrastructure Decision Support (FWP-LANL-FE-1207-20-FY21)**

Martin Ma, Los Alamos National Laboratory

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**EDX++ Multi-Cloud, Combining Data Management with Advanced Computing (EDX)**

Kelly Rose and Vic Baker, National Energy Technology Laboratory

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**The Carbon Storage Planning Framework Dashboard: A Platform for Rapid Insights into Carbon Storage Decision-Support Needs (EDX)**

Devin Justman, National Energy Technology Laboratory

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**Environmental Justice and Social Justice Dynamic Datasets for CS Systems and the Energy Transition Atlas Web Tool (EDX FWP-1025007)**

Maneesh Sharma, National Energy Technology Laboratory

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**CO<sub>2</sub>Locate - Class II Well Reuse and Regional Evaluation Tool (EDX)**

Lucy Romeo, National Energy Technology Laboratory

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**CO<sub>2</sub> Pipeline Routing Environmental Justice/Social Justice Smart Tool (EDX FWP-1025007)**

Catherine Schooley, National Energy Technology Laboratory

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**EDX DisCO<sub>2</sub>ver (EDX FWP-1022465)**

Chad Rowan, National Energy Technology Laboratory

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**3D Data Viewer and Preview Capability (EDX FWP-1025007)**

Philip McElroy and Daniel Tetteh, National Energy Technology Laboratory

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**RokBase, Virtualizing CS Rock Property Data through and Interactive Online Platform (EDX)**

Dustin Crandall, National Energy Technology Laboratory

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**AIIM Model, Assessing Infrastructure Reuse Potential for CCS (EDX FWP-1025007)**

Dakota Zaengle, National Energy Technology Laboratory

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**Class VI Mapping Inquiry Tool (C6 MapIt)( EDX FWP-1025007)**

Paige Morkner, National Energy Technology Laboratory

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**Offshore Carbon Capture and Storage Inventory and ArcGIS StoryMap (EDX FWP-1022465)**

Abigail Choisser, National Energy Technology Laboratory

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**Demonstration of the SMART-NRAP Engineering Economic Model (SMART)**

David Morgan, National Energy Technology Laboratory

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**Real-Time Forecasting and Operational Control Demo (SMART)**

Alexander Hanna, Pacific Northwest National Laboratory

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**Geologic Carbon Storage Virtual Learning with Application to Illinois Basin Decatur Project Utilizing the Unified Simulation and Data Module (SMART)**

Maruti Mudunuru, Pacific Northwest National Laboratory

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**Software Demo: ML-Based CO<sub>2</sub> Plume Visualization on IBDP Case (SMART)**

Masahiro Nagao, Texas A&M University

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**Model Explored Demo (SMART)**

Hari Viswanathan, Los Alamos National Laboratory

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**SMART Induced Seismicity Module (SMART)**

Kayla Kroll and Chris Sherman, Lawrence Livermore National Laboratory

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**NETL CO<sub>2</sub>U LCA Guidance Toolkit**

Michelle Krynock, National Energy Technology Laboratory

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**NETL Experimental Lab Capabilities**

Foad Haeri, National Energy Technology Laboratory

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**SoSAT Tool Demo (NRAP)**

Jeff Burghardt, Pacific Northwest National Laboratory

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**NRAP-Open-IAM: Open-Source Integrated Assessment Model (NRAP)**

Veronika Vasylykivska, National Energy Technology Laboratory

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**Risk-Based Adaptive Monitoring Plan (RAMP) Tool (NRAP)**

Xianjin Yang, Lawrence Livermore National Laboratory

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**Public Outreach Demos of CCS**

Susan Hovorka, Gulf Coast Carbon Center, Bureau of Economic Geology, The University of Texas at Austin

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**Cost of CO<sub>2</sub> Capture, Transport and Storage (CTS) Screening Tool (89243323CFE000075)**

Taylor Vactor, National Energy Technology Laboratory

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**Casing Annulus Monitoring Using Autonomous Wireless Sensors (FE0031856)**

David Chapman and Andrew Wright, The University of Texas at Austin

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**AEC Microsensor Technology for Subsurface Monitoring (FE0031856)**

Mohsen Ahmadian, The University of Texas at Austin

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**Web View of Seismic Data and Subsurface Fractures (FE0032063)**

Yingcai Zheng and Joe McNease, University of Houston

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**IBDP Forward ML Model and Transfer Learning**

Hongkyu Yoon, Sandia National Laboratories

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## **New Tools for Carbon Storage Site Assessment**

Richard Hammack, National Energy Technology Laboratory

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### **Wednesday August 30, 2023**

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**7:00 a.m. – 8:00 a.m. Meeting Registration & Continental Breakfast - Ballroom Foyer**

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### **General Plenary Session (All Program Areas) – Ballroom A**

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International CCUS Activities (Panel)

Moderator - Nicola Clarke

8:00 a.m. **Introductory Remarks**

- 8:05 a.m. Nicola Clarke, Senior Geologist, IEA Greenhouse Gas R&D Programme

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8:05 a.m. **Perspectives on Europe Developments and Plans**

- 8:15 a.m. Nicola Clarke, Senior Geologist, IEA Greenhouse Gas R&D Programme

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8:15 a.m. **Perspectives on Canada Developments and Plans**

- 8:25 a.m. Saviz Mortazavi, Deputy Portfolio Director, Office of Energy R&D, Natural Resources Canada

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8:25 a.m. **Perspectives on Japan Developments and Plans**

- 8:35 a.m. Yumiko HATA, Director, Carbon Management Division, Agency for Natural Resources and Energy, Ministry of Economy, Trade, and Industry, Japan

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8:35 a.m. **Perspectives on China Developments and Plans**

- 8:45 a.m. WANG Tao, Professor of School of Energy Engineering, Zhejiang University

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8:45 a.m. Q&A

- 9:00 a.m.

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Community Engagement (Panel)

Moderator - Brad Crabtree

9:00 a.m. - Brad Crabtree, Assistant Secretary for the Office of Fossil Energy and  
9:05 a.m. Carbon Management, U.S. Department of Energy

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9:05 a.m. - Barbara McBride, Senior Director of Strategic Origination and  
9:15 a.m. Development, Calpine

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9:15 a.m. - Erin Middleton, Director of Energy Equity, Carbon Solutions  
9:25 a.m.

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9:25 a.m. - Tracy Evans, Chief Executive Officer, CapturePoint Solutions  
9:35 a.m. Vernon Travis, Vernon Parish School Board Member, Vernon Parish School Board, Capturing Better Futures Initiative  
Lance Albin, United Association of Plumbers and Pipefitters, Capturing Better Futures Initiative

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9:35 a.m. - Q&A  
10:00 a.m.

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10:00 a.m. - BREAK - Ballroom Foyer  
10:30 a.m.

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### **Point Source Carbon Capture Breakout Session – 403/404/405**

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Capture from Power Generation (Lab/Bench - NG)

Moderator: Dylan Leary

10:30 a.m. - **Nano-Confined Ionic Liquid Membrane for Greater than or Equal to 97% CO<sub>2</sub> Capture from NGCC Flue Gas (FE0032215)**  
10:50 a.m. Shiguang Li, GTI Energy

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10:50 a.m. - **High Performance Solvent for Natural Gas Combined Cycle (NGCC) Flue Gas CO<sub>2</sub> Capture (FE0032216)**  
11:10 a.m. Aravind Rabindran, Susteon, Inc.

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11:10 a.m. - **Enhancement of Carbon Capture Reactor Performance (FE0032217)**  
11:30 a.m. Jesse Thompson, University of Kentucky

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11:30 a.m. - **GEN2NAS Solvents for CO<sub>2</sub> Capture from NGCC Plants (FE0032218)**  
11:50 a.m. Jak Tanthana, RTI International

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12:10 p.m. - LUNCH – Ballroom Foyer/Ballroom A  
1:10 p.m.

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Capture from Power Generation (Lab/Bench - Coal)

Moderator: Katharina Daniels

1:10 p.m. - **Mixed-Salt-Based Transformational Solvent Technology for CO<sub>2</sub> Capture (FE0031597)**  
- 1:30 p.m. Palitha Jayaweera, SRI International

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1:30 p.m. - **Bench-Scale Development of a Transformational Graphene Oxide-Based Membrane Process for Post-Combustion CO<sub>2</sub> Capture (FE0031598)**  
- 1:50 p.m. Shiguang Li, GTI Energy

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1:50 p.m. - **Transformational Sorbent-Based Process for a Substantial Reduction in the Cost of CO<sub>2</sub> Capture (FE0031722)**  
- 2:10 p.m. Ravi Jain and Norberto Lemcoff, InnoSeptra LLC

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2:10 p.m. **Transformational Molecular Layer Deposition Tailor-Made Size-Sieving Sorbents for Post-Combustion CO<sub>2</sub> Capture (FE0031730)**  
- 2:30 p.m. Miao Yu, University at Buffalo and James A. Ritter, University of South Carolina

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2:30 p.m. **Fog and Froth-Based Post Combustion CO<sub>2</sub> Capture in Fossil Fuel Power Plants (FE0031733)**  
- 2:50 p.m. Heather Nikolic, University of Kentucky

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2:50 p.m. **Transformational Sorbent System for Post-Combustion Carbon Capture (FE0031734)**  
- 3:10 p.m. Gokhan Alptekin, TDA Research, Inc.

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3:15 p.m. BREAK – Ballroom Foyer  
- 3:45 p.m.

Capture from Power Generation (Lab/Bench)  
Moderator: Carl Laird

3:45 p.m. **Rational Development of Novel Metal-Organic Polyhedra-Based Membranes for CO<sub>2</sub> Capture (FE0031736)**  
- 4:05 p.m. Haiqing Lin, University of Buffalo, SUNY

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4:05 p.m. **Intensified, Flexible, and Modular Carbon Capture Demonstration with Additively Manufactured Multi-Functional Device (FWP-FEAA384)**  
- 4:25 p.m. Costas Tsouris, Oak Ridge National Laboratory

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4:25 p.m. **Development of Transformational Membranes (FE0031596)**  
- 4:45 p.m. Hans Wijmans, Membrane Technology and Research, Inc.

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4:45 p.m. **Advanced Structured Adsorbent Architectures for Transformative Carbon Dioxide Capture Performance (FE0031732)**  
- 5:05 p.m. Kathy Fagundo, Electricore, Inc. and Pierre Hovington, Svante

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5:05 p.m. **Reducing the Degradation of Carbon Capture Solvents (FWP-77217)**  
- 5:25 p.m. Phillip Koech, Pacific Northwest National Laboratory

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### **Carbon Dioxide Removal Breakout Session – 301/302/303**

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Bench-Scale Research  
Moderator: Erika Coffey

10:30 a.m. **Integrated Bench-Scale Testing of a Structured Sorbent for Direct Air Capture (FE0032243)**  
- 10:45 a.m. Andrew Tong and Raghur P. Gupta, Susteon, Inc.

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10:45 a.m. **Aerogel Adsorbent Polymers for Direct Air CO<sub>2</sub> Capture (FE0032251)**  
- 11:00 a.m. Jonathan Bachman, Palo Alto Research Center, LLC

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11:00 a.m. - **An Integrated and Continuous Bench-Scale Passive Direct Air Capture (DAC) Demonstration (FE0032241)**  
11:15 a.m. Mustapha Soukri, RTI International

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11:15 a.m. - **Negative-Emissions Enabled Direct Air Capture with Coupled Electro-Production of Hydrogen at 5 kg-per-hour Scale (FE0032255)**  
11:30 a.m. Ayokunle Omosebi and Xin Gao, University of Kentucky

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11:30 a.m. - **3D Printed Engineered Structures for High Performance Direct Air Capture System (FE0032260)**  
11:45 a.m. Gokhan Alptekin, TDA Research, Inc.

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11:45 a.m. - **Transformational Sorbent-Based Process for Direct Air Capture (SC0020740)**  
12:10 p.m. Ravi Jain and Norberto Lemcoff, InnoSeptra, LLC

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12:10 p.m. LUNCH - Ballroom Foyer/Ballroom A  
- 1:10 p.m.

#### Lab/Bench-Scale Research

Moderator: Zach Roberts

1:10 p.m. - 1:35 **Dual Function Materials for Direct Air Capture of CO<sub>2</sub> (SC0020795)**  
p.m. Jonathan Peters, Susteon, Inc.

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1:35 p.m. - 2:00 **A Novel Contactor for Reducing the Cost of Direct Air Capture of CO<sub>2</sub> (SC0020860)**  
p.m. Mansour Masoudi, Emissol, LLC

#### FEED Studies

Moderator: Elliot Roth

2:00 **FEED Study of CarbonCapture Inc. DAC and CarbonCure Utilization Technologies using United States Steel's Gary Works Plant Waste Heat (FE0032154)**  
p.m. - 2:25  
p.m. Leslie M. Gioja, Illinois Sustainable Technology Center at the University of Illinois

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2:25 **ChemFADAC - Low Carbon Intensity Formic Acid Chemical Synthesis from Direct Air Captured CO<sub>2</sub> Utilizing Chemical Plant Waste Heat (ChemFADAC) (FE0032157)**  
p.m. - 2:50  
p.m. Andy Louwagie, AirCapture, LLC

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2:50  
p.m. -  
3:15  
p.m.

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3:15       BREAK - Ballroom Foyer  
p.m. -  
3:45  
p.m.

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DAC Technology Maturation Panel  
Moderator: Noah Deich

3:45 p.m. -       Noah Deich, Deputy Assistant Secretary for the Office of Carbon  
3:50 p.m.       Management, U.S. Department of Energy

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3:50 p.m. -       Scott Litzelman, Program Lead, Climate, Frontier  
4:00 p.m.

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4:00 p.m. -       Olivier Dubé, Head of Process Development, Climeworks  
4:10 p.m.

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4:10 p.m. -       Todd Wilke, Head of Technology, Carbon Engineering  
4:20 p.m.

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4:20 p.m. -       Eric Ping, Vice-President, Process & Operations, Global Thermostat  
4:30 p.m.

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4:30 p.m. -       Noah McQueen, Co-Founder and Head of Research, Heirloom  
4:40 p.m.

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4:40 p.m. -       Merritt Dailey, Senior Associate, Carbon Direct Capital  
4:50 p.m.

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4:50 p.m. -       Q&A/Discussion  
5:20 p.m.

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**Carbon Conversion Breakout Session – 319/320/321**

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Electrochemical Conversion and Mineralization  
Moderator: Akhil Sathish

10:30       **Electrochemical Production of Highly Valuable Carbon Nanotubes from**  
a.m. -       **Flue-Gas Sourced CO<sub>2</sub> (FE0031913)**  
10:55       Anna Douglas, SkyNano, LLC  
a.m.

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10:55 a.m. - **Achieving Unprecedented Carbon Dioxide Utilization in CO<sub>2</sub>Concrete: System Design, Product Development and Process Demonstration (FE0031915)**  
11:20 a.m. Dale P. Prentice and Gaurav Sant, University of California - Los Angeles

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### **Carbon Transport and Storage Breakout Session 1 – Ballroom B**

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Offshore Partnerships

Moderator: Natalie Iannacchione

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10:30 a.m. - **SECARB Offshore: An Overview (FE0031557)**  
10:55 a.m. Ben Wernette, Southern States Energy Board

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10:55 a.m. - **Offshore Gulf of Mexico Partnership for Carbon Storage - Resources and Technology Development (GOMCarb) (FE0031558)**  
11:20 a.m. Susan Hovorka, University of Texas at Austin

CarbonSAFE Phase II (offshore)

Moderator: Natalie Iannacchione

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11:20 a.m. - **Louisiana Offshore CO<sub>2</sub> Hub Repurposing Infrastructure to Decrease Greenhouse Emissions (Project Lochridge) (FE0032270)**  
11:45 a.m. Ben Wernette, Southern States Energy Board

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11:45 a.m. - **Coastal Bend Offshore CO<sub>2</sub> Storage Feasibility Study (FE0032271)**  
12:10 p.m. Tip Meckel, Gulf Coast Center - Bureau of Economic Geology and Jeffrey Pollack, Port of Corpus Christi Authority

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12:10 p.m. - LUNCH - Ballroom Foyer/Ballroom A  
1:10 p.m.

CarbonSAFE Phase II

Moderator: Kyle Smith

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1:10 p.m. - **Tulare County Carbon Storage Project (TCCSP) (FE0032264)**  
1:35 p.m. Manoj Kumar Valluri and Andrew Duguid. Advanced Resources International

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1:35 p.m. - **Optimizing Alabama's CO<sub>2</sub> Storage in Shelby County (Project OASIS) (FE0032267)**  
2:00 p.m. Ben Wernette, Southern States Energy Board and George Koperna, Advanced Resources International, Inc.

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2:00 p.m. - **Carbon Storage Complex Feasibility for Commercial Development in Southeastern Michigan- CarbonSAFE Phase II (FE0032312)**  
2:25 p.m. Joel Sminchak, Battelle Memorial Institute

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2:25 p.m. - **Mitchell CarbonSAFE (FE0032268)**  
2:50 p.m. Nate Grigsby, Illinois Geological Survey

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2:50 p.m. - **Coastal Bend Carbon Management Project: CarbonSAFE Phase II (FE0032265)**  
3:15 p.m. Thomas A. Blasingame, Texas A&M University and Jeffrey Pollack, Port of Corpus Christi Authority

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3:15 p.m. - BREAK - Ballroom Foyer  
3:45 p.m.

CarbonSAFE Phase II (central/west U.S.)

Moderator: Josh Hull

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3:45 p.m. - **HERO Basalt CarbonSAFE (FE0032279)**  
4:10 p.m. Fred McLaughlin, University of Wyoming and Todd Schaefer, Pacific Northwest National Laboratory

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4:10 p.m. - **Uinta Basin CarbonSAFE II (FE0032266)**  
4:35 p.m. Ting Xiao, University of Utah

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4:35 p.m. - **Roughrider Carbon Storage Hub (FE0032282)**  
5:00 p.m. Wes Peck, Energy & Environmental Research Center University of North Dakota

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5:00 p.m. - **Sutter Co. CO<sub>2</sub> Capture and Storage Project, Northern California (FE0032239)**  
5:25 p.m. Jordan Ciezobka, GTI Energy

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### **Carbon Transport and Storage Breakout Session 2 – 315/316**

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RIC

Moderator: Brian Strazisar

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10:30 a.m. - **Low-Risk Strategies for Geologic Carbon Storage (FWP-1022403)**  
10:55 a.m. Dustin Crandall and Wei Xiong, National Energy Technology Laboratory

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10:55 a.m. - **NETL RIC Efforts Supporting CarbonSAFE Projects (FWP-1022403)**  
11:20 a.m. Dustin Crandall, National Energy Technology Laboratory

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11:20 a.m. - **GEES as a Mechanism to Facilitate the Commercialization of Geologic Carbon Sequestration (GCS) (FWP-1022435)**  
11:45 a.m. Jeffrey Eppink and Austin Mathews, Enegis, LLC

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11:45 a.m. - **Experimental CO<sub>2</sub> Interactions of Fractured Calcite-Rich Shale Samples at Elevated Pressure (FWP-1022403)**  
12:10 p.m. Magdalena Gill, National Energy Technology Laboratory

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12:10 p.m. - LUNCH - Ballroom Foyer/Ballroom A  
1:10 p.m.

## Offshore Topics

Moderator: Mark McKoy

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- 1:10 p.m. - 1:35 p.m. **Field Validation of MVA Technology for Offshore CCS: Novel Ultra-High-Resolution 3D Marine Seismic Technology (P-Cable) (FE0028193)**  
Tip Meckel, Gulf Coast Carbon Center - University of Texas at Austin
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- 1:35 p.m. - 2:00 p.m. **Offshore Reservoir Properties and CO<sub>2</sub> Storage Resources in the Central Gulf of Mexico**  
Jack Pashin, Oklahoma State University
- 
- 2:00 p.m. - 2:25 p.m. **Review of Existing Oil & Gas Infrastructure for Offshore CO<sub>2</sub> Transportation**  
Matt Wallace, Advanced Resources International
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- 2:25 p.m. - 2:50 p.m. **Environmental Monitoring and Stakeholder Engagement in the GoM Region: Progress and Next Steps (GoMCarb)**  
Katherine Romanak, Bureau of Economic Geology, University of Texas at Austin
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- 2:50 p.m. - 3:15 p.m. **Subsurface Success in the Gulf of Mexico and Breakthrough Ideas for Industry (GoMCarb)**  
Alex Bump, Bureau of Economic Geology, University of Texas at Austin
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- 3:15 p.m. - 3:45 p.m. BREAK - Ballroom Foyer

## Offshore R&D

Moderator: MacKenzie Mark-Moser

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- 3:45 p.m. - 4:10 p.m. **Assessing Offshore Infrastructure Reuse Potential for CS, Award-Winning AI Model to Forecast Resiliency (AIIM Model)**  
Lucy Romeo, National Energy Technology Laboratory
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- 4:10 p.m. - 4:35 p.m. **Co-Saline Storage, Concept and AI-Informed Modeling Framework for Offshore CS Evaluation**  
Gabe Creason and Kelly Rose, National Energy Technology Laboratory
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- 4:35 p.m. - 5:00 p.m. **Data Science for International Offshore Carbon Capture and Storage**  
MacKenzie Mark-Moser and Abigail Choisser, National Energy Technology Laboratory
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- 5:00 p.m. - 5:25 p.m. **Recent Developments in Deployment of CCS Projects in the Offshore Gulf of Mexico (FWP-1022435)**  
Connie Zaremsky, National Energy Technology Laboratory

**Thursday August 31, 2023**

**7:00 a.m. – 8:00 a.m. Meeting Registration & Continental Breakfast - Ballroom Foyer**

## **Point Source Carbon Capture Breakout Session – 403/404/405**

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Capture from Power Generation (Lab/Bench)

Moderator: Dylan Leary

8:00 a.m. to 8:20 a.m.      **Membrane and Solvent Development for Pre-Combustion Carbon Capture**  
Nicholas Siefert, National Energy Technology Laboratory

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8:20 a.m. - 8:40 a.m.      **Highly Permeable Thin Film Composite Membranes of Rubbery Polymer Blends for CO<sub>2</sub> Capture**  
Lingxiang Zhu, National Energy Technology Laboratory

Carbon Capture Simulation for Industry Impact (CCSI<sup>2</sup>)

Moderator: Mariah Young

8:40 a.m. - 9:05 a.m.      **How to Engage with CCSI<sup>2</sup>**  
John Shinn and Keith Beattie, Lawrence Berkeley National Laboratory

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9:05 a.m. - 9:30 a.m.      **Solvent Model Validation Hierarchy**  
Charles Finney, Oak Ridge National Laboratory  
Phan Nguyen, Lawrence Livermore National Laboratory

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9:30 a.m. - 9:55 a.m.      **Technical Risk Reduction: Sequential Design of Experiments and Uncertainty Quantification**  
Abby Nachtsheim, Los Alamos National Laboratory

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10:05 a.m. - 10:35 a.m.      BREAK - Ballroom Foyer

Carbon Capture Simulation for Industry Impact (CCSI<sup>2</sup>)

Moderator: Carl Laird

10:35 a.m. - 11:00 a.m.      **Technical Risk Reduction: Model Based Design of Experiments and Robust Optimization**  
Chrysanthos Gounaris, Carnegie Mellon University and Alex Dowling, University of Notre Dame

Carbon Capture from Industrial Sources - DOE Crosscutting Activities (Panel Discussion)

Moderator: Mani Gavvalapalli

11:00 a.m. - 11:05 a.m.      **Introduction**  
Mani Gavvalapalli, Office of Fossil Energy & Carbon Management

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11:05 a.m. - 11:15 a.m.      **IEDO Activities**  
Isabelle Sgro Rojas, Energetics

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11:15 a.m. - 11:25 a.m.      **FECM Activities**  
Ronald Munson, National Energy Technology Laboratory

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11:25 a.m. - 11:35 a.m.      **OCED Activities**  
Jeremy Leong, Office of Clean Energy Demonstrations

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11:35 a.m. - 11:50 a.m.      **Q&A**

#### Carbon Capture from Industrial Sources

Moderator: Carl Laird

11:50 a.m. - 12:15 p.m.      **Industrial CO<sub>2</sub> Capture Studies**  
Eric Grol, National Energy Technology Laboratory

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12:15 p.m. - 1:15 p.m.      LUNCH – Ballroom Foyer/Ballroom A

#### Carbon Capture from Industrial Sources (FEED)

Moderator: Andrew O'Palko

1:15 p.m. - 1:40 p.m.      **Industrial Carbon Capture from a Cement Facility Using the Cryocap FG Process (FE0032136)**  
Hafiz Salih, University of Illinois at Urbana Champaign

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1:40 p.m. - 2:05 p.m.      **Carbon Capture Plant Front-End Engineering Design (FEED) Study for Cement Manufacturing (FE0032220)**  
Vijay Gupta, RTI International

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2:05 p.m. - 2:30 p.m.      **Mitchell Cement Plant Carbon Capture FEED (FE0032222)**  
Gregory Ronczka and Sathish Krishnamoorthy, Heidelberg Materials US, Inc.

#### Carbon Capture from Industrial Sources (FEED)

Moderator: Katharina Daniels

2:30 p.m. - 2:55 p.m.      **Carbon Capture on Air Liquide United States Gulf Coast Steam Methane Reformer Using the Cryocap™ Flue Gases Process (FE0032192)**  
Abhijit Sarkar, Dastur International Inc. and Vincent Gueret, Air Liquide

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2:55 p.m. - 3:20 p.m.      **Engineering Design of a Polaris Membrane CO<sub>2</sub> Capture System at a Cement Plant (FE0031949)**  
Tim Merkel, MTR

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3:20 p.m. - 3:50 p.m.      BREAK – Ballroom Foyer

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3:50 p.m. **Project Diamond Vault Carbon Capture FEED Study (FE0032165)**  
- 4:15 Mark Bordelon, Cleco Power  
p.m.

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### **Carbon Dioxide Removal Breakout Session – 301/302/303**

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FEED Studies

Moderator: Andy Aurelio

8:25 a.m. - 8:50 **Nuclear Direct Air Capture with Carbon Storage (NuDACCS)**  
a.m. **(FE0032160)**  
Brandon Webster, Battelle Memorial Institute

Pre-FEED Studies

Moderator: Andy Aurelio

8:50 a.m. - **Spatiotemporal Adaptive Passive Direct Air Capture (FE0032097)**  
9:15 a.m. J. Michael Austell, Carbon Collect, Inc. and Katherine Dombrowski,  
Trimeric Corporation

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9:15 a.m. - **Direct Air Capture-Based Carbon Dioxide Removal with United States**  
9:40 a.m. **Low-Carbon Energy and Sinks (FE0032100)**  
Jason Dietsch and Kevin O'Brien, University of Illinois Urbana-Champaign

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9:40 a.m. - **Scaleup and Site-Specific Engineering Design for Global Thermostat**  
10:05 a.m. **Direct Air Capture Technology (FE0032101)**  
Mark Steutermann, Black and Veatch Corporation and Eric Ping, Global  
Thermostat

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10:05 a.m. - BREAK - Ballroom Foyer  
10:35 a.m.

Pre-FEED Studies

Moderator: Zach Roberts

10:35 a.m. - 10:50 **Filer City BiCRS Net-Negative Study (FE0032262)**  
a.m. Timothy Gehring, NorthStar Clean Energy

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10:50 a.m. - 11:05 **Net-Zero Lime Kiln and Carbon Removal Facility (FE0032248)**  
a.m. Kathy Fagundo, Electricore, Inc. and Nick Papanicolaou,  
Carmeuse

Enhanced Mineralization Testing

Moderator: Zach Roberts

11:05 a.m. - **King City Asbestos Corporation (KCAC) Mine Carbon Mineralization Field Test (FWP-FEW0278)**  
11:30 a.m. Briana Mordick Schmidt, Lawrence Livermore National Laboratory

DAC Reactive Capture  
Moderator: Zach Roberts

11:30 a.m. - **Integrated Process for Direct Air Capture of CO<sub>2</sub> through Reactive Crystallization (TCF-20-20118)**  
11:55 a.m. Radu Custelcean, Oak Ridge National Laboratory

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12:10 p.m. - **LUNCH - Ballroom Foyer/Ballroom A**  
1:10 p.m.

Direct Air Capture Pre-Commercial EPIC Prize Roundtable  
Moderator: Eli Cain, National Renewable Energy Laboratory

1:15 p.m. - 1:25 p.m. **Unstructured Meet and Greet with Phase 1 Winners & DOE**

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1:25 p.m. - 2:30 p.m. **Phase 1 Winners Panel Presentations**

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2:30 p.m. - 3:05 p.m. **Phase I Winners Panel - Audience Q&A**

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3:05 p.m. - 3:20 p.m. **Unstructured Networking with Phase 1 Winners & Audience**

Carbon Negative Shot Mapping Breakout  
Moderators: Rory Jacobson and Sarah Forbes

3:50 p.m. - 4:00 p.m. **Introduction and Objectives**  
Rory Jacobson and Sarah Forbes, U.S. DOE and Andrew Jones, NETL

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4:00 p.m. - 4:10 p.m. **Overview of Brainstorm Exercise**

- Impactful DOE R&D
- Pilot Scale and Cost Gap

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4:10 p.m. - 5:10 p.m. **Independent Breakout Group Discussions**

- Future programming needed to meet the CNS
- Current approach: successes and learnings
- Most urgent private sector needs
- Testing infrastructure requirements

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5:10 p.m. - 5:30 p.m. **Breakout Groups Report Out**

**Carbon Transport and Storage Breakout Session 1 – Ballroom B**

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## Plenary Session Carbon Transport

Moderators: Robert Smith and Kevin Dooley

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| 8:00 a.m. -<br>8:10 a.m.   | <b>FECM Transport Program Strategic Vision &amp; Future Outlook</b><br>Robert Smith and Kevin Dooley, U.S. Department of Energy, Office of Fossil Energy & Carbon Management                                 |
| 8:10 a.m. -<br>8:25 a.m.   | <b>Summary of February 2023 Workshop on Applied Research for CO<sub>2</sub> Transport</b><br>Kevin Dooley, Carbon Transport Engineer, U.S. Department of Energy, Office of Fossil Energy & Carbon Management |
| 8:25 a.m. -<br>8:45 a.m.   | <b>American-Made Carbon Management Collegiate Competition</b><br>Kevin Dooley, Carbon Transport Engineer, U.S. Department of Energy, Office of Fossil Energy & Carbon Management                             |
| 8:45 a.m. -<br>9:00 a.m.   | <b>CO<sub>2</sub> Pipeline Safety: May 2023 Public Meeting Summary</b><br>Vincent Holohan, Engineer, U.S. Department of Transportation, PHMSA, Office of Pipeline Safety                                     |
| 9:00 a.m. -<br>9:15 a.m.   | <b>EPA Underground Injection Control Class VI Update</b><br>Bill Bates, P.G., Manager, Underground Injection Control Branch, EPA   |
| 9:15 a.m. -<br>9:25 a.m.   | <b>LPO Financing Opportunities for Carbon Transport</b><br>Harry Warren, U.S. Department of Energy, Loan Programs Office   |
| 9:25 a.m. -<br>9:40 a.m.   | <b>Labor and Workforce Planning Considerations</b><br>Jeremy Moddrell, Special Representative Pipeline and Gas Distribution, United Association  |
| 9:40 a.m. -<br>9:55 a.m.   | <b>Meaningful/Measurable Community Engagement</b><br>Sam Minifie, Policy Advisor, Midstream, American Petroleum Institute  |
| 9:55 a.m. -<br>10:05 a.m.  | <b>Panel/Audience Q&amp;A</b>  |
| 10:05 a.m. -<br>10:35 p.m. | BREAK - Ballroom Foyer   |

## Plume Detection

Moderator: Ashley Urosek

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| 10:35 a.m. -<br>11:00<br>a.m. | <b>New Imaging and CO<sub>2</sub> Storage Technologies for Unconventional Subsurface Reservoirs (FWP-70066)</b><br>Quin Miller, Pacific Northwest National Laboratory                      |
| 11:00 a.m. -<br>11:25<br>a.m. | <b>Engineering Integrated Sensing, Power, Telemetry, and Data Processing Systems for Complex Subsurface Environments (FWP-80754)</b><br>Daniel Deng, Pacific Northwest National Laboratory |



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11:25 a.m. **Demonstrating Near Real-Time Joint Inversion of ERT and Seismic Data  
- 11:50 for Actional Wellsite Intelligence (FWP-76310)**  
a.m. Piyooosh Jaysaval, Pacific Northwest National Laboratory

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11:50 a.m. **Update on Semi-Airborne, Controlled Source Electromagnetic Survey  
- 12:15 at a Potential Carbon Storage Site in Kemper County, Mississippi**  
p.m. Rick Hammack, National Energy Technology Laboratory

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12:15 p.m. LUNCH - Ballroom Foyer/Ballroom A  
- 1:15 p.m.

#### Subsurface Stress

Moderator: Mary Dailey

1:15 **Development of Thermal Breakout Technology for Determining In Situ  
p.m. - Stress (FE0031688)**  
1:40 Sam Voegeli, RESPEC Company, LLC  
p.m.

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1:40 **Seismic Elastic Double-Beam Characterization of Faults and Fractures for  
p.m. - CO<sub>2</sub> Storage Site Selection (FE0032063)**  
2:05 Yingcai Zheng, University of Houston  
p.m.

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2:05 **Advancing Characterization of Faults through Deployment of Novel  
p.m. - Geophysical, Geochemical and Geomechanical Technologies at the San  
2:30 Juan Basin CarbonSAFE Site (FE0032064)**  
p.m. William Ampomah, New Mexico Institute of Mining and Technology

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2:30 **Managing a Gigatonne CCS Future: A Framework for Basin-scale Storage  
p.m. - Optimization Based on Geomechanical Studies (FWP-FP00015629)**  
2:55 Jens Birkholzer, Lawrence Berkeley National Laboratory  
p.m.

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2:55 **Changes in Seal Integrity Induced by CO<sub>2</sub> Injection and Leakage in a  
p.m. - Hydromechanically Reactivated Fault Affecting a Caprock Analog (FWP-  
3:20 FP00013650)**  
p.m. Yves Guglielmi and Jens Birkholzer, Lawrence Berkeley National Laboratory

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3:20 BREAK - Ballroom Foyer  
p.m. -  
3:50  
p.m.

#### BEST/ROZ/Associated Storage

Moderator: Andrea McNemar

3:50 p.m. - 4:15 p.m. **Developing and Validating Pressure Management and Plume Control Strategies in the Williston Basin Through a Brine Extraction and Storage Test (BEST) (FE0026160)**  
John Hamling, University of North Dakota Energy and Environmental Research Center

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4:15 p.m. - 4:40 p.m. **Developing CO<sub>2</sub>-EOR and Associated Storage within the Residual Oil Zone Fairways of the Powder River Basin, Wyoming (FE0031738)**  
Eric Robertson, University of Wyoming - Enhanced Oil Recovery Institute

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4:40 p.m. - 5:05 p.m. **Williston Basin Associated CO<sub>2</sub> Storage Field Laboratory (FE0031694)**  
Steve Smith, Energy and Environmental Research Center, University of North Dakota

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### **Carbon Transport and Storage Breakout Session 2 – 315/316**

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NRAP

Moderator: Robert Dilmore

10:35 a.m. - 10:45 a.m. **NRAP Phase III Overview: Objectives and Progress**  
Robert Dilmore, National Energy Technology Laboratory

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10:45 a.m. - 11:00 a.m. **Task 2: Management of Site-Scale Leakage Risk**  
Mohamed Mehana, Los Alamos National Laboratory

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11:00 a.m. - 11:15 a.m. **Task 3: Induced Seismicity Risk Management**  
Kayla Kroll, Lawrence Livermore National Laboratory

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11:15 a.m. - 11:30 p.m. **Task 4: Adaptive, Risk-Based Monitoring of Geologic Carbon Storage**  
Erika Gasperikova, Lawrence Berkeley National Laboratory

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11:30 a.m. - 11:45 a.m. **Task 5: Developing a Tool to Quantify Liability of Geologic Carbon Storage**  
David Morgan, National Energy Technology Laboratory

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11:45 a.m. - 12:00 p.m. **Task 6: Assessing Risks of Rapid Commercial-Scale Deployment of Geologic Carbon Storage**  
Diana Bacon, Pacific Northwest National Laboratory

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12:00 a.m. - 12:15 p.m. **General Discussion/Q&A**

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12:15 p.m. - 1:15 p.m. LUNCH - Ballroom Foyer/Ballroom A

SMART

Moderator: Hema Siriwardane

1:15 **Overview of the SMART Initiative**  
p.m. - Hema Siriwardane, National Energy Technology Laboratory, and Srikanta  
1:40 Mishra, Battelle Memorial Institute  
p.m.

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1:40 **SMART - Advanced Machine Learning and Computational Methods**  
p.m. - Jared Schuetter, Battelle Memorial Institute, Alexandre Tartakovsky, University  
2:05 of Illinois, and Chung Shih, National Energy Technology Laboratory  
p.m.

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2:05 **SMART - Site Specific Data Organization and Imaging**  
p.m. - Joe Morris, Lawrence Livermore National Laboratory, David Alumbaugh,  
2:30 Lawrence Berkeley National Laboratory, and Youzuo Lin, Los Alamos National  
p.m. Laboratory

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2:30 **SMART - Site Specific Dynamic Storage Reservoir Modeling**  
p.m. - Joshua White, Lawrence Livermore National Laboratory, Hongkyu Yoon,  
2:55 Sandia National Laboratory, and Akhil Datta-Gupta, Texas A&M University  
p.m.

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2:55 **SMART - Site Specific Visualization and Decision Support**  
p.m. - Diana Bacon, Pacific Northwest National Laboratory, David Morgan, National  
3:20 Energy Technology Laboratory, and Maruti Mudunuru, Pacific Northwest  
p.m. National Laboratory

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3:20 BREAK - Ballroom Foyer  
p.m. -  
3:50  
p.m.

#### EDX Outreach & Stakeholder Engagement

Moderator: Paige Morkner

3:50 p.m. - **Outreach and BIL Stakeholder Engagements**  
4:15 p.m. Gillian Wanosky and Jessica Sinclair, National Energy Technology  
Laboratory

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4:15 p.m. - **Carbon Matchmaker Update**  
4:40 p.m. Maneesh Sharma, National Energy Technology Laboratory and Kevin  
Dooley, U.S. Department of Energy

#### Cloud Enhanced EDX DisCO2ver

Moderator: Paige Morkner

4:40 p.m. - **Understanding Federal Data Curation Requirements and EDX++ Tool**  
5:05 p.m. **to Serve CS Data Curation Needs**  
Chad Rowan and Jessica Sinclair, National Energy Technology Laboratory

**Friday September 1, 2023**

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**7:00 a.m. – 8:00 a.m. Meeting Registration & Continental Breakfast - Ballroom Foyer**

**Point Source Carbon Capture Breakout Session – 403/404/405**

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Capture from Industrial Sources (pre-FEED)

Moderator: Dustin Brown

8:00 a.m. to **Engineering Study of Svante's Solid Sorbent CO<sub>2</sub> Capture Technology**  
8:25 a.m. **at a Linde's SMR H<sub>2</sub> Plant (FE0032113)**  
Minish Shah, Linde Inc.

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8:25 a.m. - **The <sup>o</sup>RH<sub>2</sub> Process for Producing Clean Hydrogen (FE0032127)**  
8:50 a.m. Adam Goff, 8 Rivers Capital LLC

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8:50 a.m. - **Enabling Production of Low Carbon Emissions Steel through CO<sub>2</sub>**  
9:15 a.m. **Capture from Blast Furnace (BF) Gases (FE0031937)**  
Abhijit Sarkar, Dastur International Inc.

Capture from Industrial Sources (Small Pilot Research)

Moderator: Krista Hill

9:15 a.m. **Engineering-Scale Testing of the Biphasic Solvent Based CO<sub>2</sub>**  
- 9:40 **Absorption Capture Technology at a Covanta Waste-to-Energy Facility**  
a.m. **(FE0032219)**  
Yongqi Lu, University of Illinois at Urbana-Champaign

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9:40 a.m. **Cryogenic Carbon Capture from Cement Production (FE0032148)**  
- 10:05 Chris Hoeger, Sustainable Energy Solutions LLC  
a.m.

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10:05 BREAK - Ballroom Foyer  
a.m. -  
10:35  
a.m.

Capture from Industrial Sources (Small Pilot Research)

Moderator: Nicole Shamitko-Klingensmith

10:35 a.m. **Application of Transformational University of Kentucky 3 Tonne Per Day**  
- 11:00 **Carbon Dioxide Capture System at a Steel Process Plant (FE0032133)**  
a.m. Kunlei Liu and Heather Nikolic, University of Kentucky

Capture from Gasification-Based Poly-Generation Plants

Moderator: Nicole Shamitko-Klingensmith

11:00 **Critical Component/Technology Gap in 21st Century Power Plant**  
a.m. - **Gasification Based Poly-Generation: Advanced Ceramic**  
11:25 **Membranes/Modules for Ultra Efficient H<sub>2</sub> Production/CO<sub>2</sub> Capture for Coal-**  
a.m. **Based Polygeneration Plants (FE0031930)**  
Richard Ciora, Media and Process Technology, Inc.

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11:25 **A High Efficiency, Modular Pre-Combustion Capture System for 21st Century**  
a.m. - **Power Plant Poly-Generation Process (FE0031926)**  
11:50 Gohkan Alptekin, TDA Research, Inc.  
a.m.