



2022

Carbon Management Project Review Meeting

August 15–19, 2022



The Westin Pittsburgh

1000 Penn Ave
Pittsburgh, PA 15222



Dear friends,

I am thrilled to welcome members and researchers of the U.S. Department of Energy and National Energy Technology Laboratory to Pittsburgh. I want to thank you for choosing The Westin Pittsburgh and our city as your host for the 2022 Carbon Management Project Review Meeting.

As I reviewed the agenda, I was energized to see our nation's top minds converging on such important topics as carbon capture, storage and conversion. I think Pittsburgh is a fitting backdrop for these efforts, as our city has undergone a recent environmental renaissance that has positioned us as a world leader in the green building movement. While you're in town, I invite you to explore the first LEED® Financial Institution, Convention Center and Smithsonian Property all within walking distance of the hotel.

I encourage you to embrace Pittsburgh innovation as you experience our city. Find inspiration on Robotics Row, home to some of the world's biggest names in robotics, with companies on the cutting edge of self-driving cars, space travel and other verticals. See how we train our workforce, incubate businesses and support sustainable energy markets through collaboration at the Energy Innovation Center. This type of transformation starts with forward-thinking organizations like the U.S. Department of Energy and National Energy Technology Laboratory, which drive innovation and provide sustainable solutions for all Americans.

And, don't forget to take advantage of our many *Only in Pittsburgh* experiences and attractions. From the Andy Warhol Museum and the August Wilson African American Cultural Center to the Duquesne Incline, the Roberto Clemente Museum and more, discover why Pittsburgh is a must-see travel destination.

I wish you all the best during your stay in Pittsburgh.

Sincerely,

Jerad Bachar

VisitPITTSBURGH President & CEO

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MESSAGE FROM THE DIRECTOR



DR. BRIAN J. ANDERSON

DIRECTOR, NATIONAL ENERGY TECHNOLOGY LABORATORY

Greetings and welcome to Pittsburgh!

On behalf of the National Energy Technology Laboratory (NETL), I take great pride in welcoming you to the city of Pittsburgh and the 2022 Carbon Management Project Review Meeting.

For the first time in two years, we are meeting in person to discuss and share updates about the cutting-edge research projects being conducted by NETL and our research partners to advance carbon management technologies and ensure a sustainable clean energy future for our nation.

Pittsburgh is a great setting for our event. Throughout its history, Pittsburgh has demonstrated resiliency. When this city lost heavy manufacturing, it rebuilt as a center for innovation where higher education and medicine became the drivers for economic recovery. Several years later, when it was discovered that this region is situated in the Marcellus Shale, the largest and one of the deepest natural gas plays in the United States, Pittsburgh area leaders seized the initiative and took steps to begin developing this tremendous resource.

As a member of the carbon capture, utilization and storage research and development community, you have demonstrated your own remarkable brand of resiliency. Despite the many challenges created by the pandemic, you have remained dedicated to advancing significant projects that will enable our country to achieve a carbon-free power sector by 2035 and a net-zero carbon emissions economy by 2050 and deliver clean, affordable and abundant energy to drive American economic growth and prosperity.

During this week's sessions, I look forward to meeting you to express my gratitude for your perseverance and commitment that have seen us through these unprecedented times.

The 2022 Carbon Management Project Review Meeting brings together top research talent working to resolve some of our greatest energy challenges. For the next five days, scientists and researchers will discuss how their innovations will forge and enhance the nation's energy foundation and protect the environment for future generations.

At NETL, our mission is to drive innovation and deliver solutions for an environmentally sustainable and prosperous energy future. During your stay in Pittsburgh, I invite you to take full advantage of this exciting opportunity to learn about the groundbreaking research and collaborative projects underway to fulfill that mission.

Once again, welcome to Pittsburgh! I hope you enjoy your time with us in this remarkable city.

Sincerely,

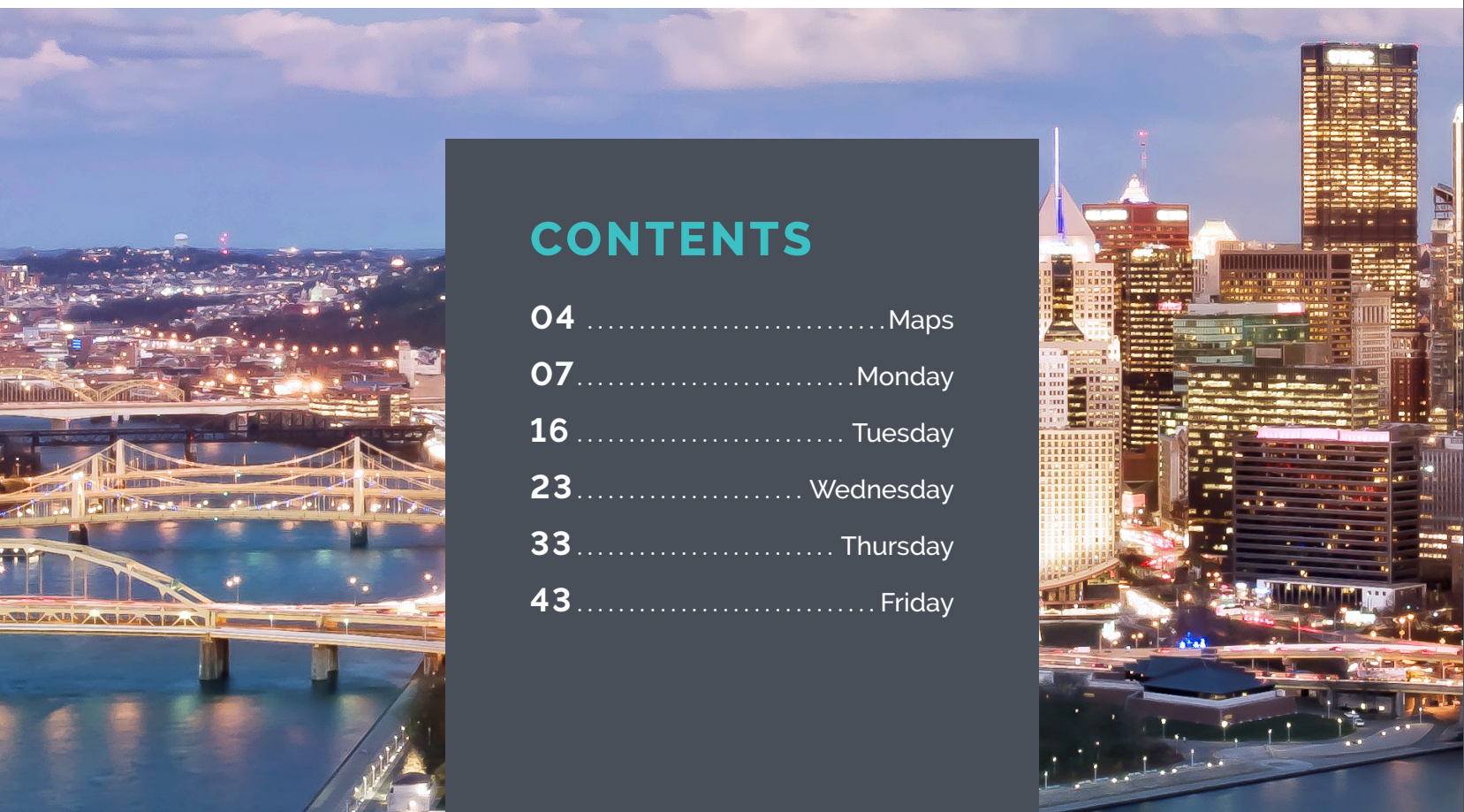
Dr. Brian J. Anderson, Ph.D.

Director

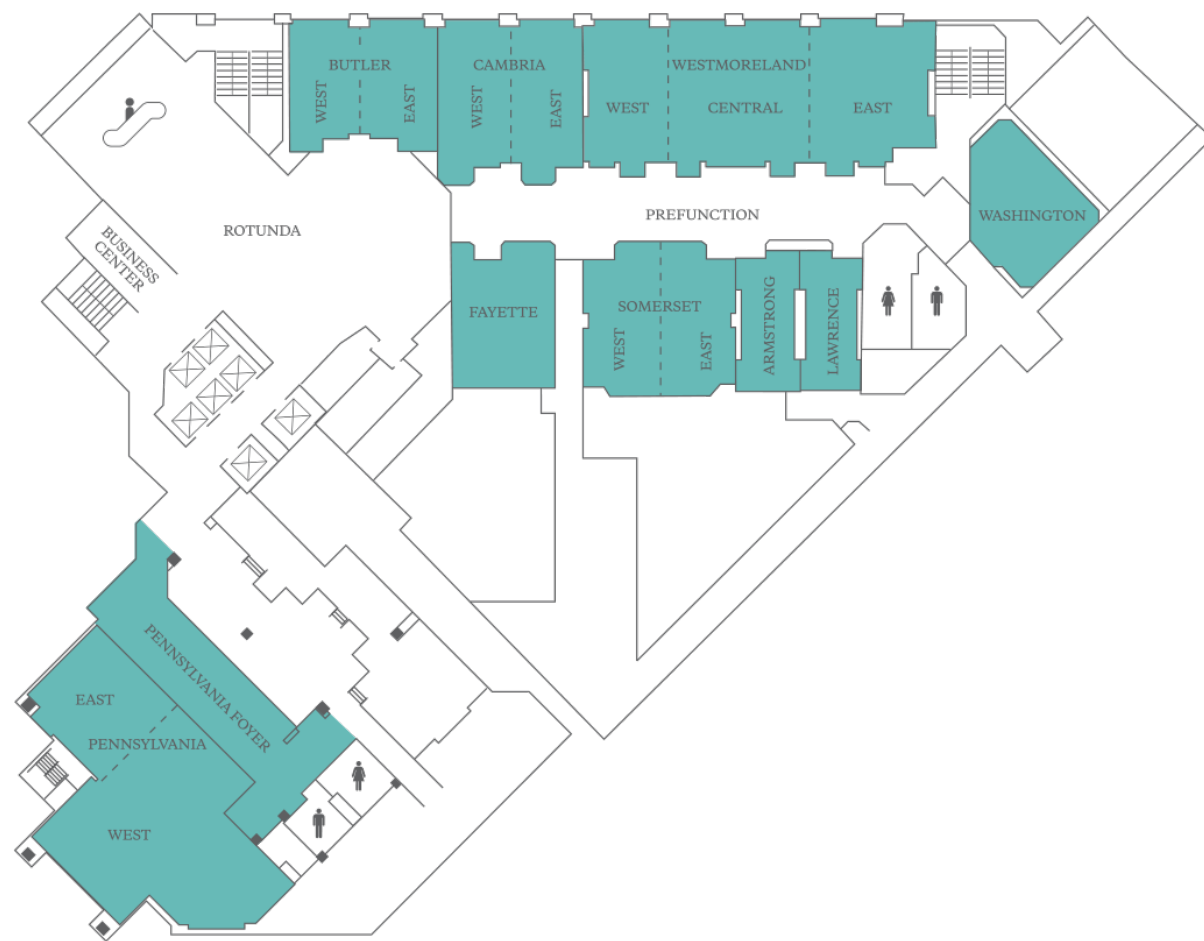
National Energy Technology Laboratory

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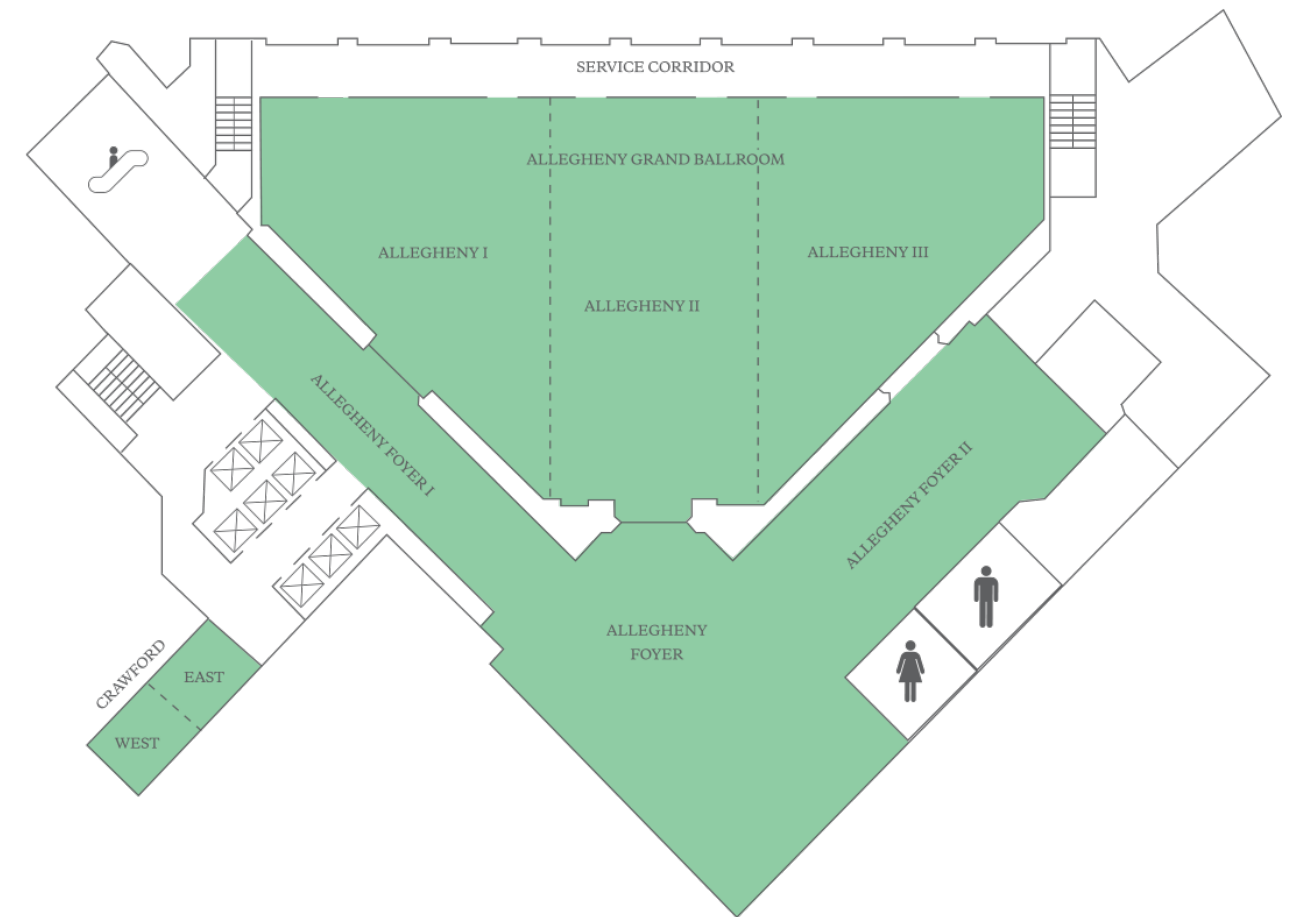
- 04 Maps
- 07 Monday
- 16 Tuesday
- 23 Wednesday
- 33 Thursday
- 43 Friday



SECOND FLOOR



THIRD FLOOR



MONDAY AUGUST 15TH 8AM – 10AM

GENERAL PLENARY SESSION (ALL PROGRAM AREAS):

ALLEGHENY ROOM (ALL PROGRAM AREAS):

Launching the CCUS Industry of the Future

The plenary session will focus on FECM's vision for a U.S. future with CCUS and ongoing support for R&D and infrastructure projects necessary to transition toward a net-zero carbon economy by 2050. The session will provide insight into the development of the CCUS industry from highly revered leaders in industry, professional associations, and other government stakeholders.

MONDAY
MORNING

ALLEGHENY ROOM FOYER

7:00 AM Meeting Registration/Continental Breakfast

ALLEGHENY ROOM MODERATOR: NOAH DEICH

DEPUTY ASSISTANT SECRETARY FOR THE OFFICE OF CARBON MANAGEMENT, OFFICE OF FOSSIL ENERGY AND CARBON MANAGEMENT, U.S. DEPARTMENT OF ENERGY DOE

- 8:00 AM **Welcome & Opening Remarks**
- Brian Anderson, Director, National Energy Technology Laboratory
- 8:15 AM **Fossil Energy and Carbon Management (FECM) Highlights**
- Brad Crabtree, Assistant Secretary for the Office of Fossil Energy and Carbon Management, U.S. DOE
- 8:35 AM **Office of Clean Energy Demonstrations (OCED) Overview**
- Douglas Schultz, Chief Operating Officer, Office of Clean Energy Demonstrations, U.S. DOE
- 8:55 AM **White House Perspectives**
- Sally Benson, Deputy Director for Energy and Chief Strategist for the Energy Transition, Office of Science and Technology Policy (OSTP)
- 9:15 AM **DOE Loan Programs Office**
- Guido DeHoratiis, General Engineer, Loan Programs Office, U.S. DOE
- 9:35 AM **International Energy Agency Greenhouse Gas (IEAGHG)**
- Tim Dixon, Director and General Manager, IEA Greenhouse Gas R&D Programme
- 10:00 AM **Break - Allegheny Foyer**

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM INDUSTRIAL SOURCES

WESTMORELAND ROOM

Moderator: Jose Figueroa

10:30 AM

Cryogenic Carbon Capture from Cement Production (FE0032148)

- Christopher Hoeger, Sustainable Energy Solutions, LLC

10:55 AM

Industrial Carbon Capture from a Cement Facility Using the Cryocap FG Process (FE0032136)

- Hafiz Salih, University of Illinois at Urbana, Champaign

11:20 AMEngineering Design of a Polaris Membrane CO₂ Capture System at a Cement Plant (FE0031949)

- Tim Merkel, Membrane Technology and Research, Inc.

11:45 AM

Carbon Capture & Hydrogen Production from a Blast Furnace Using a Novel Reforming Scheme (FE0031937)

- Atanu Mukherjee, Dastur International, Inc.

12:10 - 1:10 PM

Lunch - Allegheny Room

- *Lunchtime speaker: Societal Considerations and Impacts*, Holly Buck, Office of Fossil Energy and Carbon Management, Division of Strategic Engagement, U.S. DOE

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCH

CAMBRIA ROOM

Moderator: Lei Hong

10:30 AM

MIL-101 (CR)-Amine Sorbents Evaluation Under Realistic Direct Air Capture Conditions (FE0031952)

- Christopher Jones, Georgia Institute of Technology

10:55 AMTransformational Sorbent Materials for a Substantial Reduction in the Energy Requirement for Direct Air Capture of CO₂ (FE0031953)

- Ravi Jain, InnoSeptra, LLC

11:20 AM

Development Of Advanced Solid Sorbents For Direct Air Capture (FE0031954)

- Mustapha Soukri, RTI International

11:45 AMLow Regeneration Temperature Sorbents for Direct Air Capture of CO₂ (FE0031965)

- James Zhou, Susteon, Inc.

12:10 - 1:10 PM

Lunch - Allegheny Room

- *Lunchtime speaker: Societal Considerations and Impacts*, Holly Buck, Office of Fossil Energy and Carbon Management, Division of Strategic Engagement, U.S. DOE

BREAKOUT

CARBON CONVERSION

CARBON CONVERSION OVERVIEW

BUTLER ROOM

Moderator: Patricia Rawls

10:30 AM

Carbon Utilization Program Overview

- Joseph Stoffa, National Energy Technology Laboratory

10:50 AM

Carbon Conversion Program: Updates on Infrastructure Bill Impacts and International Collaborations

- Amishi Claros, Department of Energy Headquarters

11:10 AM

NCCC - Building a Successful Test Collaboration

- Frank Morton, Southern Company

11:30 AM

Overview of Carbon Utilization Life Cycle Analysis at NETL

- Michelle Krynock, National Energy Technology Laboratory

11:50 AMAchieving Unprecedented Carbon Dioxide Utilization in CO₂ Concrete™: System Design, Product Development and Process Demonstration (FE0031915)

- Dale Prentice, University of California - Los Angeles

12:10 - 1:10 PM

Lunch - Allegheny Room

- *Lunchtime speaker: Societal Considerations and Impacts*, Holly Buck, Office of Fossil Energy and Carbon Management, Division of Strategic Engagement, U.S. DOE

CARBON TRANSPORT AND STORAGE

REGIONAL INITIATIVES

PENNSYLVANIA ROOM

Moderator: William Aljoe

10:15 AM

Southeast Regional Carbon Utilization and Storage Partnership (SECARB-USA) (FE0031830)

- Ben Wernette, Southern States Energy Board

10:45 AM

Regional Initiative to Accelerate CCUS Deployment in Midwestern and Northeastern USA (FE0031836)

- Neeraj Gupta, Battelle Memorial Institute
- Sallie Greenberg, University of Illinois

11:15 AMPlains CO₂ Reduction Partnership Initiative to Accelerate Carbon Capture, Utilization, and Storage Deployment (FE0031838)

- Kevin Connors, University of North Dakota Energy and Environmental Research Center

11:45 AM

Carbon Utilization and Storage Partnership of the Western United States (FE0031837)

- Robert Balch, New Mexico Institute of Mining & Technology

12:10 - 1:10 PM

Lunch - Allegheny Room

- *Lunchtime speaker: Societal Considerations and Impacts*, Holly Buck, Office of Fossil Energy and Carbon Management, Division of Strategic Engagement, U.S. DOE

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM INDUSTRIAL SOURCES

WESTMORELAND ROOM

Moderator: Mariah Richardson

1:10 PM

Application of Transformational University of Kentucky 3 Tonne Per Day Carbon Dioxide Capture System at a Steel Process Plant (FE0032133)

- Kunlei Liu, University of Kentucky

1:35 PM

Engineering Design of a Linde-BASF Advanced Amine Technology for CO₂ Capture from H₂ Plant Flue Gas (FE0031943)

- Minish M. Shah, Linde, Inc.

2:00 PM

Engineering Study of Svante's Solid Sorbent Post-Combustion CO₂ Capture Technology at a Linde Steam Methane Reforming H₂ Plant (FE0032113)

- Nicki Stuckert, Linde, Inc.

2:25 PM

Initial Engineering and Design for CO₂ Capture from Ethanol Facilities (FE0031938)

- Jason Laumb, University of North Dakota Energy and Environmental Research Center

2:50 PM

Front End Engineering Design for Carbon Capture from Shell's Deer Park Chemical Complex (FE0032142)

- Brenda Clark and Rebecca Jones, Wood Environment & Infrastructure Solutions, Inc.

3:15 - 3:45 PM

Break - 2nd Floor Foyer and the Allegheny Foyer

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCH

CAMBRIA ROOM

Moderator: Elliot Roth

1:10 PM

High Capacity Polymer Aerogel Sorbents for Direct Air Capture (FE0031951)

- Mahati Chintapalli, PARC

1:35 PM

Gradient Amine Sorbents for Low Vacuum Swing Carbon Dioxide Capture at Ambient Temperature (FE0031958)

- Steven Chuang, University of Akron

2:00 PM

Next Generation Fiber-Encapsulated Nanoscale Hybrid Materials for Direct Air Capture with Selective Water Rejection (FE0031963)

- Ah-Hyung Park, Columbia University

2:25 PM

Direct Air Capture using Trapped Small Amines in Hierarchical Nanoporous Capsules on Porous Electrospun Fibers (FE0031969)

- Miao Yu, University at Buffalo, SUNY

2:50 PM

Membrane Adsorbents Comprising Self-Assembled Inorganic Nanocages (SINCs) for Super-Fast Direct Air Capture Enabled by Passive Cooling (FE0031960)

- Haiqing Lin, University at Buffalo, SUNY

3:15 - 3:45 PM

Break - 2nd Floor Foyer and the Allegheny Foyer

BREAKOUT

CARBON CONVERSION

BIOLOGICAL UPTAKE

BUTLER ROOM

Moderator: Andy Aurelio

1:10 PM

A Highly Efficient Microalgae-Based Carbon Sequestration System to Reduce Carbon Dioxide Emission From Power Plant Flue Gas (FE0031914)

- Feng Chen, University of Maryland, Center for Environmental Science

1:30 PM

Continuous Algae-Based Carbon Capture and Utilization to Transform Economics and Environmental Impacts (FE0032108)

- Susie Dai, Texas A&M Agrilife Research

1:50 PM

Carbon Capture and Utilization for Protein and Fatty Acids (FE0032104)

- David Hazlebeck, Global Algae Innovation, Inc.

2:10 PM

Novel Algae Technology to Utilize Carbon Dioxide for Value-Added Products (FE0031710)

- Fred Harrington, Helios-NRG, LLC

2:30 PM

NH₄OH Looping with Membrane Absorber and Distributed Stripper for Enhanced Algae Growth (FE0031921)

- Kunlei Liu, University of Kentucky

2:50 PM

Improving the Cost-Effectiveness of Algal CO₂ Utilization by Synergistic Integration with Power Plant and Wastewater Treatment Operations (FE0032098)

- Lance Schideman, University of Illinois, Illinois Sustainable Technology Center

3:10 PM

Engineering-Scale Validation of Novel Algae Carbon Dioxide (CO₂) Capture and Bioproducts (FE0032103)

- Fred Harrington, Helios-NRG, LLC

3:30 - 3:45 PM

Break - 2nd Floor Foyer and the Allegheny Foyer

CARBON TRANSPORT AND STORAGE

SUBSURFACE STRESS

PENNSYLVANIA ROOM

Moderator: Natalie Iannacchione

1:10 PM

Advancing Characterization of Faults through Deployment of Novel Geophysical, Geochemical and Geomechanical Technologies at the San Juan Basin CarbonSAFE Site (FE0032064)

- William Ampomah, New Mexico Tech

1:35 PM

Refined Principal Stress Estimates from Induced Seismicity in Southern Kansas and Oklahoma Based on Seismological Tools and Laboratory Experiments (FE0031687)

- Laura Chiamonte, Electric Power Research Institute

2:00 PM

Task 4: Critical Stress State (FWP-FE-112-19-FY19)

- Ting Chen, Los Alamos National Laboratory

2:25 PM

Development of Thermal Breakout Technology for Determining In Situ Stress (FE0031688)

- Sam Voegeli, RESPEC Company, LLC

2:50 PM

Monitoring of Geological CO₂ Sequestration Using Isotopes and PF Tracers (FWP-FEAA045)

- David Graham, Oak Ridge National Laboratory

3:15 - 3:45 PM

Break - 2nd Floor Foyer and the Allegheny Foyer

CARBON TRANSPORT AND STORAGE

STORAGE RESOURCES MANAGEMENT SYSTEM TRAINING SESSION 1

CRAWFORD ROOM

1:10 PM - 3:15 PM

Storage Resources Management System Training Session

(Limited number of attendees due to social distancing, prior registration required)

3:15 - 3:45 PM

Break - 2nd Floor Foyer and the Allegheny Foyer

BREAKOUT

POINT SOURCE CARBON CAPTURE CAPTURE FROM INDUSTRIAL SOURCES

WESTMORELAND ROOM

Moderator: Krista Hill

3:45 PM

Initial Engineering Design Study for Advanced CO₂ Capture from Hydrogen Production Unit at Phillips 66 Rodeo Refinery (FE0032109)

- Jeff Drese, Phillips 66 Company

4:10 PM

Blue Bison ATR Advanced CCUS System (FE0032114)

- Jeff Schaefer, Tallgrass MLP Operations, LLC

4:35 PM

The 8RH2 Process for Producing Clean Hydrogen with Autothermal Reforming and Carbon Capture (FE0032127)

- Adam Goff, 8 Rivers Capital, LLC

5:25 PM

End of Day

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCH

CAMBRIA ROOM

Moderator: Elliot Roth

3:45 PM

Doping and Redoping Effects on Hybrid Polymer Membranes for Direct Air Capture of CO₂ (FE0031968)

- Maksudaul Alam, Innosense, LLC

4:10 PM

Electrochemically-Driven Carbon Dioxide Separation (FE0031955)

- Brian Setzler, University of Delaware

4:35 PM

Alkalinity Concentration Swing for Direct Air Capture of Carbon Dioxide (FE0031964)

- Toly Rinberg, Harvard University

5:00 PM

Demonstration of DAC with Building Air Handling Equipment (FWP-FEAA156)

- Kashif Nawaz, Oak Ridge National Laboratory

5:25 PM

End of Day

BREAKOUT

CARBON CONVERSION

NOVEL CONVERSION SYSTEMS

BUTLER ROOM

Moderator: Andy Aurelio

3:45 PM

Inorganic Membrane-based Reactive Separation and Reactant Recycle for Direct Synthesis of Dimethyl Carbonate (SC0019556)

- Richard Ciora, Media and Process Technology Inc.

4:05 PM

Dehydration Membrane Reactor for Direct Production of Dimethyl Carbonate (DMC) from CO₂ and H₂ (FE0031909)

- Shiguang Li, GTI Energy

4:25 PM

Intensified Catalytic Conversion of Carbon Dioxide into High-Value Chemicals (FE0031920)

- Jesse Thompson, University of Kentucky

4:45 PM

Carbon Dioxide (CO₂) Mineralization and Utilization using Industrial Wastes (FE0031705)

- Bu Wang, University of Wisconsin - Madison

5:05 PM

A Novel Molten Salt System for CO₂ Based Oxidative Dehydrogenation with Integrated Carbon Capture (FE0031918)

- Fanxing Li, North Carolina State University

5:45 PM

End of Day

CARBON TRANSPORT AND STORAGE

PLUME DETECTION

PENNSYLVANIA ROOM

Moderator: Dawn Deel

3:45 PM

New Imaging and CO₂ Storage Technologies for Unconventional Subsurface Reservoirs (FWP-70066)

- Quin Miller, Pacific Northwest National Laboratory

4:10 PM

SOV/DAS Part 1 - Monitoring a CO₂ injection in real-time using permanent seismic sources and fiber-optics sensing (FWP-ESD14095)

- Julia Correa, Lawrence Berkeley National Laboratory

4:35 PM

CCSMR Task 2 : SOV/DAS Part 2 - High-precision seismicity tracking for augmenting the active CO₂ plume monitoring (FWP-ESD14095)

- Stanislav Glubokovskikh, Lawrence Berkeley National Laboratory

5:00 PM

CCSMR Task 3: Joint crosswell seismic and EM monitoring of a shallow subsurface CO₂ injection (FWP-ESD14095)

- David Alumbaugh, Lawrence Berkeley National Laboratory

5:25 PM

CCSMR Task 4: Resilient high-sensitivity seismometers - optical monitoring technology for deep CO₂ injections (FWP-ESD14095)

- Stanislav Glubokovskikh, Lawrence Berkeley National Laboratory

5:45 PM

End of Day

CARBON TRANSPORT AND STORAGE

STORAGE RESOURCES MANAGEMENT SYSTEM 2

CRAWFORD ROOM

3:45 - 5:45 PM

Storage Resources Management System Training Session

(Limited number of attendees due to social distancing, prior registration required)

TUESDAY AUGUST 16TH 8AM – 10AM

GENERAL PLENARY SESSION (ALL PROGRAM AREAS):

ALLEGHENY ROOM (ALL PROGRAM AREAS):

Transitioning Energy Infrastructure For Mid-Century Decarbonization

The plenary session will focus on a promising pathway to transition into a net-zero energy environment – co-located H₂ production and CCUS with transport to constitute “Hubs.” The session will provide a brief status update and an overview of select international CCUS hub projects and U.S. national-scale studies of infrastructure buildout. Presentations will describe hub concepts and development strategies, with focus on getting commitment among all the relevant parties in a timely manner, business strategy and financing. highly revered leaders in industry, professional associations, and other government stakeholders.

TUESDAY
MORNING

ALLEGHENY ROOM FOYER

7:00 AM Meeting Registration/Continental Breakfast

ALLEGHENY ROOM

MODERATOR: TIM DIXON

DIRECTOR AND GENERAL MANAGER, IEA GREENHOUSE GAS R&D PROGRAMME

- 8:00 AM **FECM Welcome**
- Mark Ackiewicz, Director, Office of Carbon Management Technologies, U.S. DOE
- 8:15 AM **Decarbonization in Action: Showcasing US Carbon and Hydrogen Hubs Potential**
- Patrice Lahlum, Interim Vice President, Great Plains Institute
- 8:30 AM **Transitioning Industrial Clusters towards Net Zero Initiative**
- Melissa Stark, Managing Director and Global Lead for Renewables and Energy Transition Services, Accenture
- 8:45 AM **UK: Building a CCS Industry through Industrial Clusters**
- Melissa Stark, Managing Director and Global Lead for Renewables and Energy Transition Services, Accenture
- 9:00 AM **CCS Deployment in Norway**
- Muhammad Ismail Shah, TCM Managing Director
- 9:15 AM **Charting Pennsylvania's Path for Leadership in Energy Transition**
- Adam Walters, Senior Energy Advisor, Pennsylvania Department of Community and Economic Development
- 9:30 AM **Questions and Answers Session**
- 10:00 AM **Break - Allegheny Foyer**

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER
GENERATION/PILOT-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Nicole Shamitko-Klingensmith

10:30 AM

A High Efficiency, Modular Pre-Combustion Capture System for 21st Century Power Plant Poly-Generation Process (FE0031926)

- Gokhan Alptekin, TDA Research, Inc.

10:55 AM

Critical Component/Technology Gap in 21st Century Power Plant Gasification Based Poly-Generation: Advanced Ceramic Membranes/Modules for Ultra Efficient H₂ Production/CO₂ Capture for Coal-Based Polygeneration Plants (FE0031930)

- Richard Ciora, Media and Process Technology, Inc.

11:20 AM

Pilot Testing of a Highly Effective Pre-Combustion Sorbent-Based Carbon Capture System (FE0013105)

- Gokhan Alptekin, TDA Research, Inc.

11:45 AM

Large Pilot Testing of Linde-BASF Advanced Post-Combustion Carbon Dioxide Capture Technology at a Coal-Fired Power Plant (FE0031581)

- Stephanie Brownstein, University of Illinois

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCH

CAMBRIA ROOM

Moderator: Zachary Roberts

10:30 AM

DAC Test Center Overview

- Ronald Breault, National Energy Technology Laboratory

10:55 AM

Processible Porous Polymeric Fiber Adsorbents for Low-Concentrated Carbon Dioxide Capture

- Ali Sekizkardes, National Energy Technology Laboratory

11:20 AM

Computational Screening of MOFs for Carbon Capture

- Samir Budhathoki, National Energy Technology Laboratory (LRST)

11:45 AM

Demonstration of a Continuous-Motion Direct Air Capture (DAC) System (FE0031957)

- Miles Sakwa-Novak, Glogbal Thermostat

12:10 - 1:10 PM

Lunch - Allegheny Room

- Lunchtime speaker: TCM - 10 Years Demonstrating Carbon Capture Technologies, Muhammad Ismail Shah, Managing Director, Technology Centre Mongstad

BREAKOUT

CARBON CONVERSION

REACTIVE CAPTURE

BUTLER ROOM

Moderator: Lei Hong

10:30 AM

Porous Catalytic Polymers for Simultaneous CO₂ Capture and Conversion to Value-Added Chemicals (FWP-FEAA421-FY22)

- Michelle Kidder, Oak Ridge National Laboratory

10:50 AM

Direct Air Reactive Capture and Conversion for Utility-Scale Energy Storage (FWP-FEW0277)

- Simon Pang, Lawrence Livermore National Laboratory

11:10 AM

A Pressure-Swing Process for Reactive CO₂ Capture and Conversion to Methanol (FWP-FY21-RCC-LAB-CALL)

- Daniel Ruddy, National Renewable Energy Laboratory

11:30 AM

Integrated Capture and Conversion of CO₂ to Materials: Pathways for Producing CO₂-Negative Building Composites (FWP-78606)

- David Heldebrant, Pacific Northwest National Laboratory

11:50 AM

Integrating CO₂-Selective Polymer Layers and Electrocatalytic Conversion (FWP-1022482)

- Douglas Kauffman, National Energy Technology Laboratory

12:10 - 1:10 PM

Lunch - Allegheny Room

- Lunchtime speaker: TCM - 10 Years Demonstrating Carbon Capture Technologies, Muhammad Ismail Shah, Managing Director, Technology Centre Mongstad

CARBON TRANSPORT AND STORAGE

CARBONSAFE PHASE III

PENNSYLVANIA ROOM

Moderator: Andrea McNemar

10:30 AM

Establishing an Early CO₂ Storage Complex in Kemper County, Mississippi: Project ECO2S (FE0031888)

- Patti Berry, Southern States Energy Board

11:00 AM

Illinois Storage Corridor (FE0031892)

- Steve Whittaker, Illinois State Geological Survey

11:30 AM

San Juan Basin CarbonSAFE Phase III: Ensuring Safe Subsurface Storage of Carbon Dioxide in Saline Reservoirs (FE0031890)

- William Ampomah, New Mexico Tech

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER
GENERATION/PILOT-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Carl Laird

1:10 PM

Large Pilot Testing of the MTR Membrane Post-Combustion CO₂ Capture Process (FE0031587)

- Brice Freeman, Membrane Technology and Research, Inc.

1:35 PM

National Carbon Capture Center (FE0022596)

- Tony Wu, Southern Company

2:00 PM

Engineering-Scale Demonstration of the Mixed-Salt Process for CO₂ Capture (FE0031588)

- Indira Jayaweera, SRI International

2:25 PM

Testing and Evaluation of Transformational Non-Aqueous Solvent (NAS)-Based CO₂ Capture Technology at Engineering Scale at TCM (FE0031590)

- Marty Lail, RTI International

2:50 PM

Membrane-Sorbent Hybrid System for Post-Combustion Carbon Capture (FE0031603)

- Gokhan Alptekin, TDA Research, Inc.

3:15 - 3:45 PM

Break - 2nd Floor Foyer and Allegheny Foyer

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCH

CAMBRIA ROOM

Moderator: Elliot Roth

1:10 PM

A Combined Water and CO₂ Direct Air Capture System (FE0031970)

- Will Kain, IWVC, LLC

1:35 PM

Direct Air Capture Using Novel Structured Adsorbents (FE0031959)

- Adelaide Calbry-Muzyka, Climeworks

2:00 PM

Direct Air Capture of Energy for Carbon Capture, Utilization, and Storage (CCUS) Partnership (DAC RECO₂UP) (FE0031961)

- Matthew Atwood, AirCapture

2:25 PM

Bench-Scale Testing of Monolithic Poly Propyleneimine Structured Contactors for Direct Air Capture of Carbon Dioxide (FE0032094)

- Christopher Bertole, Cormetech, Inc.

2:50 PM

Accelerated Life Cycle Testing of Advanced Structured Material Systems for Direct Air Capture (FE0032099)

- Mustapha Soukri, RTI International

3:15 - 3:45 PM

Break - 2nd Floor Foyer and Allegheny Foyer

CARBON CONVERSION

ELECTROCHEMICAL CONVERSION

BUTLER ROOM

Moderator: Kristina Vrouwenvelder

1:10 PM

An Overview of NETL's In-House CO₂ Conversion Efforts (FWP-1022426)

- Douglas Kauffman, National Energy Technology Laboratory

1:30 PM

Electrochemical Reduction of Flue Gas Carbon Dioxide to Commercially Viable C₂-C₄ Products (FE0031916)

- Joshua Spurgeon, University of Louisville

1:50 PM

Selective and Efficient Electrochemical Production of Neat Formic Acid from Carbon Dioxide Using Novel Platinum Group Metals-Free Catalysts (FE0031704)

- Syed Mubeen, University of Iowa

2:10 PM

Electrochemical Production of Highly Valuable Carbon Nanotubes from Flue-Gas Sourced CO₂ (FE0031913)

- Anna Douglas, SkyNano, LLC

2:30 PM

High-Efficiency Electrochemical Conversion of CO₂ to Ethylene (FE0031919)

- Jingjie Wu, University of Cincinnati

2:50 PM

Highly Efficient Electrocatalysts for Direct Conversion of CO₂ to Chemicals (TCF-21-24815)

- Di-Jia Liu, Argonne National Laboratory

3:10 PM

Unique Nanotechnology Converts Carbon Dioxide to Valuable Products (FE0031707)

- Bingyun Li, West Virginia University Research Corporation

3:30 - 3:45 PM

Break - 2nd Floor Foyer and Allegheny Foyer

BREAKOUT

CARBON TRANSPORT AND STORAGE

CARBONSAFE PHASE III
PENNSYLVANIA ROOM

Moderator: Natalie Iannacchione

1:10 PM

North Dakota CarbonSAFE Phase III: Site Characterization and Permitting (FE0031889)

- Wesley Peck, University of North Dakota Energy and Environmental Research Center

1:40 PM

Wyoming CarbonSAFE: Accelerating CCUS Commercialization and Deployment at Dry Fork Power Station and the Wyoming Integrated Test Center (FE0031891)

- J. Fred McLaughlin, University of Wyoming

INTELLIGENT MONITORING SYSTEMS

PENNSYLVANIA ROOM
Moderator: Ashley Urosek**2:10 PM**

Automated Data Collection and Compression System for CO₂ Monitoring Data (SC0019854)

- Hamed Soroush, Petrolern, LLC

2:35 PM

Interface and Workflow Design and Implementation for Geological Carbon Storage Modeling, Simulation, and Risk Management (SC0020734)

- Mark Brandyberry, Illinois Rocstar

3:30 - 3:45 PM

Break - 2nd Floor Foyer and Allegheny Foyer

CARBON TRANSPORT AND STORAGE

BEST/ROZ/ASSOCIATED STORAGE

CRAWFORD ROOM

Moderator: Joshua Hull

2:10 PM

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

2:35 PM

Phase II Field Demonstration at Plant Smith Generating Station Assessment of Opportunities for Optimal Reservoir Pressure Control, Plume Management and Produced Water Strategies (FE0026140)

- Robert Trautz, Electric Power Research Institute

3:30 - 3:45 PM

Break - 2nd Floor Foyer and Allegheny Foyer

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER
GENERATION/PILOT-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Mariah Richardson

3:45 PM

Scale Up and Testing of Polaris Capture Management at TCM (FE0031591)

- Tim Merkel, Membrane Technology and Research, Inc.

4:10 PM

ROTA-CAP: An Intensified Carbon Capture System Using Rotating Packed Beds (FE0031630)

- Osman Akpolat, Gas Technology Institute

4:35 PM

Safeguarding Amines from Oxidation by Enabling Technologies (FE0031861)

- Fred Closman, University of Texas at Austin

5:00 PM

Chevron Natural Gas Carbon Capture Technology Testing Project

- Scott McLemore, Chevron U.S.A., Inc.

5:45 PM

- Reception/Poster Session - Foyer - 2nd Floor
- CCUS Demo Session - Allegheny Room - 3rd Floor

7:45 PM

End of Day

CARBON DIOXIDE REMOVAL

CARBON DIOXIDE REMOVAL INNOVATION PANEL

CAMBRIA ROOM

Moderator: Phil Kim

3:45 PM

- Shashank Samala, Heirloom Carbon Technologies

4:00 PM

- Andrew Chang, Activate

4:15 PM

- Raghubir Gupta, Sustaera Inc.

4:30 PM

- Marcius Extavour, XPRIZE Foundation

4:45 - 5:15 PM

- Questions and Answers Session

5:45 PM

- Reception/Poster Session - Foyer - 2nd Floor
- CCUS Demo Session - Allegheny Room - 3rd Floor

7:45 PM

End of Day

BREAKOUT

CARBON
CONVERSION

CATALYTIC CONVERSION

BUTLER ROOM

Moderator: Kristina Vrouwenvelder

3:45 PM

Integrated Capture and Conversion of CO₂ to Methanol (ICCCM) Process Technology (TCF-19-17862)

- Robert Dagle, Pacific Northwest National Laboratory

4:05 PM

CO₂ to Methanol Using Plasma Catalysis at Atmospheric Pressure (SC0019939)

- Mahendra K. Sunkara, Advanced Energy Materials, LLC

4:25 PM

Atmospheric Microwave Plasmas for CO₂ Reuse for Jet-fuel Synthesis (SC0019791)

- Leslie Bromberg, MAAT Energy Company

4:45 PM

Plasma-Assisted Catalytic Conversion of Carbon Dioxide and Propane to Propylene and Carbon Monoxide (FE0031917)

- James Zhou, Susteon, Inc.

5:05 PM

Plasma-Assisted Methane Reforming and Catalyst Decoking (SC0019664)

- Yue Xiao, Advanced Cooling Technologies, Inc.

5:25 PM

A Tandem Electrolysis Process for Multi-Carbon Chemical Production from Carbon Dioxide (FE0031910)

- Feng Jiao, University of Delaware

5:45 PM

- Reception/Poster Session - Foyer - 2nd Floor
- CCUS Demo Session - Allegheny Room - 3rd Floor

7:45 PM

End of Day

CARBON TRANSPORT
AND STORAGE

WELLBORE INTEGRITY

PENNSYLVANIA ROOM

Moderator: Kyle Smith

3:45 PM

Casing Annulus Monitoring of CO₂ Injection Using Wireless Autonomous Distributed Sensor Networks (FE0031856)

- David Chapman, Bureau of Economic Geology, University of Texas at Austin

4:10 PM

Thermopile Energy Harvesting for Subsurface Well Bore Sensors (FWP-20-022728)

- Charles Bryan, National Technology and Engineering Solutions of Sandia, LLC

4:35 PM

Autonomous Monitoring of Wellbore Integrity Applying Time Reverse Nonlinear Elastic Wave Spectroscopy (TR NEWS) and Fiber Optic Sensing and Communication (FWP-FE-853-17-FY17)

- Carly Donahue, Los Alamos National Laboratory

5:00 PM

Wireless Microsensors System for Monitoring Deep Subsurface Operations (FE0031850)

- Joel Sminchak, Battelle Memorial Institute

5:45 PM

- Reception/Poster Session - Foyer - 2nd Floor
- CCUS Demo Session - Allegheny Room - 3rd Floor

7:45 PM

End of Day

CARBON TRANSPORT
AND STORAGETOWARD STORAGE
DEPLOYMENT

CRAWFORD ROOM

Moderator: Joshua Hull

3:45 PM

Regional Considerations for Accelerated Deployment in the Intermountain West (I-WEST)

- George Guthrie, Los Alamos National Laboratory

4:10 PM

REX-CO₂: Reusing Existing Oil & Gas Infrastructure for CO₂ Storage.

- Rajesh Pawar, Los Alamos National Laboratory

4:35 PM

SimCCS3.0: An Open-source Toolset for Regional CCS Infrastructure Decision Support

- Bailian Chen, Los Alamos National Laboratory

DATA RESOURCES

CRAWFORD ROOM

Moderator: Dawn Deel

5:00 PM

Updating NATCARB and Carbon Storage Geospatial Resource via EDX Cloud

- Paige Morkner, National Energy Technology Laboratory

5:45 PM

- Reception/Poster Session - Foyer - 2nd Floor
- CCUS Demo Session - Allegheny Room - 3rd Floor

7:45 PM

End of Day

WEDNESDAY AUGUST 17TH 8:00AM – 9:30AM

SPECIAL PANEL SESSION:

PENNSYLVANIA ROOM

Technical Challenges for Leasing and Regulating Government Lands (Offshore and Onshore) CO₂ Storage

The aim of this panel session is to identify the technical leasing and regulatory challenges associated with offshore CCS projects, especially the greatest technical challenges related to development of draft regulations and leasing rules. Focus will be given to repurposing infrastructure (pipelines, platforms, wells, fields), leasing block issues (size, shape, valuation, pressure interference), monitoring for brine and CO₂ leakage, maximizing use of pore space, and reservoir fluid pressure management.

WEDNESDAY

MORNING

ALLEGHENY ROOM FOYER

7:00 AM Meeting Registration/Continental Breakfast

PENNSYLVANIA ROOM

MODERATOR: WILLIAM ALJOE

- 8:00 AM **FECM Welcome**
- John Litynski, Director for Carbon Transport and Storage, Office of Fossil Energy and Carbon Management, U.S. DOE
- 8:05 AM **Reconciling Offshore Permitting in Light of Commercial, Regulatory, and Research Considerations**
- Mike Godec, Vice President, Advanced Resources International, Inc.
- 8:15 AM **Storage to Support Large Volume CO₂ Hubs: Tools for Assessing the Maximum Density of Injection Wells in an Area**
- Susan Hovorka, Senior Research Scientist, Gulf Coast Carbon Center
- 8:25 AM **Carbon Sequestration on the Outer Continental Shelf**
- Melissa Batum, Senior Program Analyst, Office of Renewable Energy Programs, Bureau of Ocean Energy Management, U.S. Department of the Interior
- 8:35 AM **BSEE Overview CO₂ Geological Sequestration – Overview of Technical Focus Areas**
- Lisa Grant, Enforcement Well Control/ Well Integrity Subject Matter Expert, U.S. Bureau of Safety and Environment Enforcement
- 8:45 AM **Carbon Storage Leasing Challenges**
- Thomas Ortiz, Senior Technical Advisor, Energy Issues, Texas General Land Office
- 8:55 AM **Carbon Management Rights-of-Ways on the Public Lands**
- Michael Hogan, Realty Specialist, Bureau of Land Management, U.S. Department of the Interior
- 9:05 AM **How Should We Monitor to Detect Leakage Offshore**
- Katherine Romanak, Research Scientist, Texas Bureau of Economic Geology
- 9:15 AM **Perspectives from Recently Permitted Onshore CCS Projects**
- John Hamling, Director for Subsurface Initiatives, University of North Dakota Energy and Environmental Research Center
- 9:25 AM **Questions and Answers Session - Technical Challenges in Leasing & Regulation**
- Mark Mckoy, Technology Manager of Advanced Carbon Storage, National Energy Technology Laboratory
- 10:05 AM **Break - Allegheny Foyer and the 2nd Floor Foyer**

POINT SOURCE CARBON CAPTURE**CAPTURE FROM POWER GENERATION/PILOT-SCALE RESEARCH****WESTMORELAND ROOM**

Moderator: Andrew O'Palko

8:00 AM

Engineering-Scale Test of a Water-Lean Solvent for Post-Combustion Capture (FE0031945)

- Abhoujit Bhowan, Electric Power Research Institute

8:25 AMEngineering Scale Design and Testing of Transformational Membrane Technology for CO₂ Capture (FE0031946)

- Shiguang Li, GTI Energy
- Yang Han, The Ohio State University

8:50 AM

Engineering-Scale Demonstration of Transformational Solvent on NGCC Flue Gas (FE0031950)

- Andrew Awtry, ION Clean Energy, Inc.

CAPTURE FROM POWER GENERATION/ENGINEERING DESIGN/FEED STUDIES**WESTMORELAND ROOM**

Moderator: Andrew O'Palko

9:15 AM

Large-Scale Commercial Carbon Capture Retrofit of the San Juan Generating Station (FE0031843)

- Cindy Crane, Enchant Energy, LLC

9:40 AM

Retrofittable Advanced Combined Cycle Integration for Flexible Decarbonized Generation (FE0032131)

- John Sholes, General Electric Company

10:05 -10:35 AM

Break - Allegheny Foyer and the 2nd Floor Foyer

CARBON DIOXIDE REMOVAL**LAB/BENCH-SCALE RESEARCH****CAMBRIA ROOM**

Moderator: Kristina Vrouwenvelder

8:00 AM

Bench Scale Development of a Novel Direct Air Capture Technology using High Capacity Structured Sorbents (FE0032118)

- Cory Sanderson, Susteon, Inc.

8:25 AMAdvanced Integrated Reticular Sorbent-Coated System to Capture Carbon Dioxide (CO₂) Using an Additively-Manufactured Contactor (AIR2CO₂ Contactor) (FE0032126)

- David Moore, GE Research

8:50 AM

Hybridizing Heat-Integrated 3D Printed Modules with Mass Manufacturable, Low Pressure Drop Fiber Sorbents (FE0032129)

- Ryan Lively, Georgia Institute of Technology

9:15 AM

King City Asbestos Corporation (KCAC) Mine Carbon Mineralization Field Test (FWP-FEW0278)

- Briana Mordick Schmidt, Lawrence Livermore National Laboratory

9:40 AMEnergy-Efficient Direct Air Capture System for High Purity CO₂ Separation

- Joo-Youp Lee, University of Cincinnati

10:05 -10:35 AM

Break - Allegheny Foyer and the 2nd Floor Foyer

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER GENERATION/
ENGINEERING DESIGN/FEED STUDIESWESTMORELAND ROOM

Moderator: Nicole Shamitko-Klingensmith

10:35 AM

Deer Park Energy Center Natural Gas Combined Cycle Carbon Capture System Front-End Engineering Design Study (FE0032137)

- Carl Herman, Calpine Texas CCUS Holdings, LLC

11:00 AM

Front-End Engineering and Design for a CO₂ Capture System at Calpine's Delta Energy Center (FE0032149)

- Andrew Awtry, ION Clean Energy, Inc.

11:25 AM

Piperazine Advanced Stripper Front End Engineering Design (FE0031844)

- Gary Rochelle, University of Texas at Austin

11:50 AM

A Comparison of FEED Results from Mustang Station and Panda Power

- Jorge L. Martorell, University of Texas at Austin

CARBON DIOXIDE REMOVAL

LAB/BENCH-SCALE RESEARCHCAMBRIA ROOM

Moderator: Kristina Vrouwenvelder

10:35 AM

Electrochemically Regenerated Solvent for Direct Air Capture with Cogeneration of Hydrogen at Bench-Scale (FE0032125)

- Kunlei Liu, University of Kentucky

ENGINEERING DESIGN/FEED STUDIESCAMBRIA ROOM

Moderator: Kristina Vrouwenvelder

11:00 AM

Spatiotemporal Adaptive Passive Direct Air Capture (FE0032097)

- Mike Austell, Carbon Collect, Inc.

11:25 AM

Direct Air Capture-Based Carbon Dioxide Removal with United States Low-Carbon Energy and Sinks (FE0032100)

- Jason Dietsch, University of Illinois

11:50 AM

Scaleup and Site-Specific Engineering Design for Global Thermostat Direct Air Capture Technology (FE0032101)

- Mark Steutermann, Black and Veatch Corporation
- Justin Federici, ExxonMobil
- Eric Ping and Miles Sakwa-Novak, Global Thermostat

12:15 - 1:15 PMLunch - Allegheny Room

- *Lunchtime Speaker - U.S. EPA Underground Injection Control (UIC) Class VI Update*, William Bates, Chief, Underground Injection Control Branch, Drinking Water Infrastructure Development Division, Office of Ground Water & Drinking Water, U.S. Environmental Protection Agency

CARBON TRANSPORT AND STORAGE

DATA RESOURCESPENNSYLVANIA ROOM

Moderator: Ashley Urosek

10:35 AM

SmartSearch, scalable data search and aggregation in the Cloud for CCS and beyond

- Vic Baker, National Energy Technology Laboratory

SUBSURFACE STRESSPENNSYLVANIA ROOM

Moderator: Ashley Urosek

11:00 AM

Seismic Elastic Double-Beam Characterization of Faults and Fractures for CO₂ Storage Site Selection (FE0032063)

- Yingcai Zheng, University of Houston

11:25 AM

Identification of Faults Susceptible to Induced Seismicity (FE0031685)

- Scott Frailey, University of Illinois Urbana-Champaign

11:50 AM

Improving Subsurface Stress Characterization for Carbon Dioxide Storage Projects by Incorporating Machine Learning Techniques (FE0031684)

- William Ampomah, New Mexico Tech

12:15 - 1:15 PMLunch - Allegheny Room

- *Lunchtime Speaker - U.S. EPA Underground Injection Control (UIC) Class VI Update*, William Bates, Chief, Underground Injection Control Branch, Drinking Water Infrastructure Development Division, Office of Ground Water & Drinking Water, U.S. Environmental Protection Agency

CARBON TRANSPORT AND STORAGE

PLUME DETECTIONCRAWFORD ROOM

Moderator: Kyle Smith

11:00 AM

Novel Geochemical Signal Methodologies (FWP-1022403)

- Burt Thomas, National Energy Technology Laboratory

11:25 AM

Task 2: Beating the Data Limit: Detecting Very Small CO₂ Signature in Low-Data Regime (FWP-FE-112-19-FY19)

- Youzou Lin, Los Alamos National Laboratory

11:50 AM

Field Validation of MVA Technology for Offshore CCS: Novel Ultra-High-Resolution 3D Marine Seismic Technology (P-Cable) (FE0028193)

- Tim Meckel, University of Texas at Austin

POINT SOURCE CARBON CAPTURE

SYSTEMS ANALYSISWESTMORELAND ROOM

Moderator: Katharina Daniels

1:15 PM

Recent Point Source Capture Techno-economic Analysis

- Sally Homsy, National Energy Technology Laboratory

1:40 PM

Overview of NETL Tools Available for Performing LCA

- Derrick Carlson, KeyLogic, Inc.

2:05 PM

Development of a Tool to Calculate the System Cost of Replacement Energy

- Amanda Harker Steele, National Energy Technology Laboratory

CARBON CAPTURE SIMULATION FOR INDUSTRY IMPACT (CCSI²)WESTMORELAND ROOM

Moderator: Katharina Daniels

2:30 PMCCSI² Process Modeling and Optimization Highlights

- Joshua Morgan, National Energy Technology Laboratory

2:55 PM

SDoE Capabilities, Progress, and Applications

- Abigail Nachtsheim, Los Alamos National Laboratory

3:20 - 3:50 PM

Break - Allegheny Foyer and the 2nd Floor Foyer

CARBON DIOXIDE REMOVAL

ENGINEERING DESIGN/FEED STUDIESCAMBRIA ROOM

Moderator: Zachary Roberts

1:15 PM

Nuclear Powered DAC project in Illinois (FE0032156)

- Sean Tanton, Constellation

1:35 PMLow Carbon Intensity Formic Acid Chemical Synthesis from Direct Air Captured CO₂ Utilizing Chemical Plant Waste Heat (ChemFADAC) (FE0032157)

- Matthew Atwood, AirCapture

1:55 PM

FEED Study for Climeworks Direct Air Capture at a California Geothermal Facility with Long-Term Storage (FE0032159)

- Kevin O'Brien, Illinois Sustainable Technology Center/ University of Illinois

2:15 PM

NuDACCS (Nuclear-powered Direct Air Carbon Capture Storage) (FE0032160)

- Brandon Webster, Battelle Memorial Institute

2:35 PM

FEED Study of Carbon Capture Inc DAC and CarbonCure Utilization Technologies Using United States Steel's Gary Works Plant Waste Heat (FE0032154)

- Kevin O'Brien, Illinois Sustainable Technology Center/ University of Illinois

BIOENERGY WITH CARBON CAPTURE AND STORAGE (BECCS)CAMBRIA ROOM

Moderator: Zachary Roberts

2:55 PM

Net Carbon Negative Capture Technology Evaluation of the Impact of Coal and Biomass Blends on Pre- and Post Combustion Carbon Capture Solvents

- Joshua Stanislawski, University of North Dakota Energy and Environmental Research Center

3:20 - 3:50 PM

Break - Allegheny Foyer and the 2nd Floor Foyer

CARBON TRANSPORT AND STORAGE

OFFSHOREPENNSYLVANIA ROOM

Moderator: Natalie Iannacchione

1:15 PM

Southeast Regional Carbon Storage Partnership: Offshore Gulf of Mexico (FE0031557)

- Ben Wernette, Southern States Energy Board

1:40 PM

GoMCARB Partnership 2021-22 Research Highlights (GOMCarb) (FE0031558)

- Ramon Trevino, University of Texas at Austin

2:05 PMSite Selection and Cost Estimation of Pilot-Scale CO₂ Saline Storage Study in the Gulf of Mexico

- Nur Wijaya, National Energy Technology Laboratory

2:30 PM

DOE Offshore Carbon Storage Saline Calculator Methodology and Tool

- Lucy Romeo and Andrew Bean, National Energy Technology Laboratory

2:55 PM

Offshore Risk Modeling (ORM) Suite and the DOE DOI Offshore CCS Coordination Efforts

- Kelly Rose and Jen Bauer, National Energy Technology Laboratory

3:20 - 3:50 PM

Break - Allegheny Foyer and the 2nd Floor Foyer

CARBON TRANSPORT AND STORAGE

SECURE STORAGECRAWFORD ROOM

Moderator: Ashley Urosek

1:15 PM

The Role of Chemical Alteration in Arkosic Reservoirs (FWP-FEW0271)

- Megan Smith, Lawrence Livermore National Laboratory

1:40 PM

Towards CASSM Measurements Using DAS for GCS (FE0032058)

- Jonathan Ajo-Franklin, Rice University

2:05 PMChanges in Seal Integrity Induced by CO₂ Injection and Leakage in a Hydromechanically Reactivated Fault (FWP-FP00013650)

- Jen Birkholzer, Lawrence Berkeley National Laboratory

2:30 PM

Acoustic Emissions Sensing for Tracing Carbon Dioxide Movement in Caprock of a Carbon Capture Utilization and Storage System (CCUS) (FE0032062)

- Amber Conner, Battelle Memorial Institute

2:55 PMNumerical Simulation of Commercial-Scale CO₂ Storage in a Saline Formation Evaluating Basin-Scale Pressure Interference and CO₂ Plume Commingling (FWP-1022464)

- Nur Wijaya, National Energy Technology Laboratory

3:20 - 3:50 PM

Break - Allegheny Foyer and the 2nd Floor Foyer

BREAKOUT

POINT SOURCE CARBON CAPTURE

CARBON CAPTURE SIMULATION FOR INDUSTRY IMPACT (CCSI²)WESTMORELAND ROOM

Moderator: Dustin Brown

3:50 PMML Based CFD Model Reduction for Rapid Computational Screening

- Phan Nguyen and Brian Bartoldson, Lawrence Livermore National Laboratory

4:15 PMComputational Design and Process Intensification of CO₂ Absorbers

- Charles Finney, Oak Ridge National Laboratory

4:40 PMSolvent Model Validation for Advanced Solvent and Contactor Design

- Zhijie Xu, Pacific Northwest National Laboratory

5:05 PMCCSI² FOQUS/Toolset Capabilities

- Anuja Deshpande, National Energy Technology Laboratory

5:30 PM

End of Day

CARBON DIOXIDE REMOVAL

CARBON DIOXIDE REMOVAL INDUSTRY ENGAGEMENT PANELCAMBRIA ROOM

Moderator: Andrew Jones

3:45 PM

- Noah Deich, Office of Fossil Energy and Carbon Management, U.S. DOE

4:15 PM

- Robert Zeller, Oxy Low Carbon Ventures LLC

4:30 PM

- Sarah Fitzgerald, Wyoming State Government

4:45 PM

- Frank Morton, National Carbon Capture Center

5:00 PM

Questions and Answers Session

5:30 PM

End of Day

BREAKOUT

CARBON TRANSPORT AND STORAGE

DATA RESOURCESPENNSYLVANIA ROOM

Moderator: Dawn Deel

3:50 PMThe DisCO₂ver Platform, Building a Virtual Carbon Storage Data Laboratory and Infrastructure for the Future

- Kelly Rose, National Energy Technology Laboratory

4:15 PMGeo-data science driven insights into CCS EJ/SJ opportunities in support of energy community transitions

- Jen Bauer, National Energy Technology Laboratory

4:40 PMAdvanced Data Extraction to Support a Living Database

- Michael Sabbatino, National Energy Technology Laboratory

5:05 PMAn Updated Carbon Storage Open Database - Geospatial Data Aggregation to Support Scaling up CCS

- Paige Morkner, National Energy Technology Laboratory

5:30 PM

End of Day

CARBON TRANSPORT AND STORAGE

BEST/ROZ/ASSOCIATED STORAGECRAWFORD ROOM

Moderator: Andrea McNemar

3:50 PMDeveloping CO₂-EOR and Associated Storage within the Residual Oil Zone Fairways of the Powder River Basin, Wyoming (FE0031738)

- George Koperna, Advanced Resources International

4:15 PMWilliston Basin Associated CO₂ Storage Field Laboratory (FE0031694)

- Steven Smith, University of North Dakota Energy and Environmental Research Center

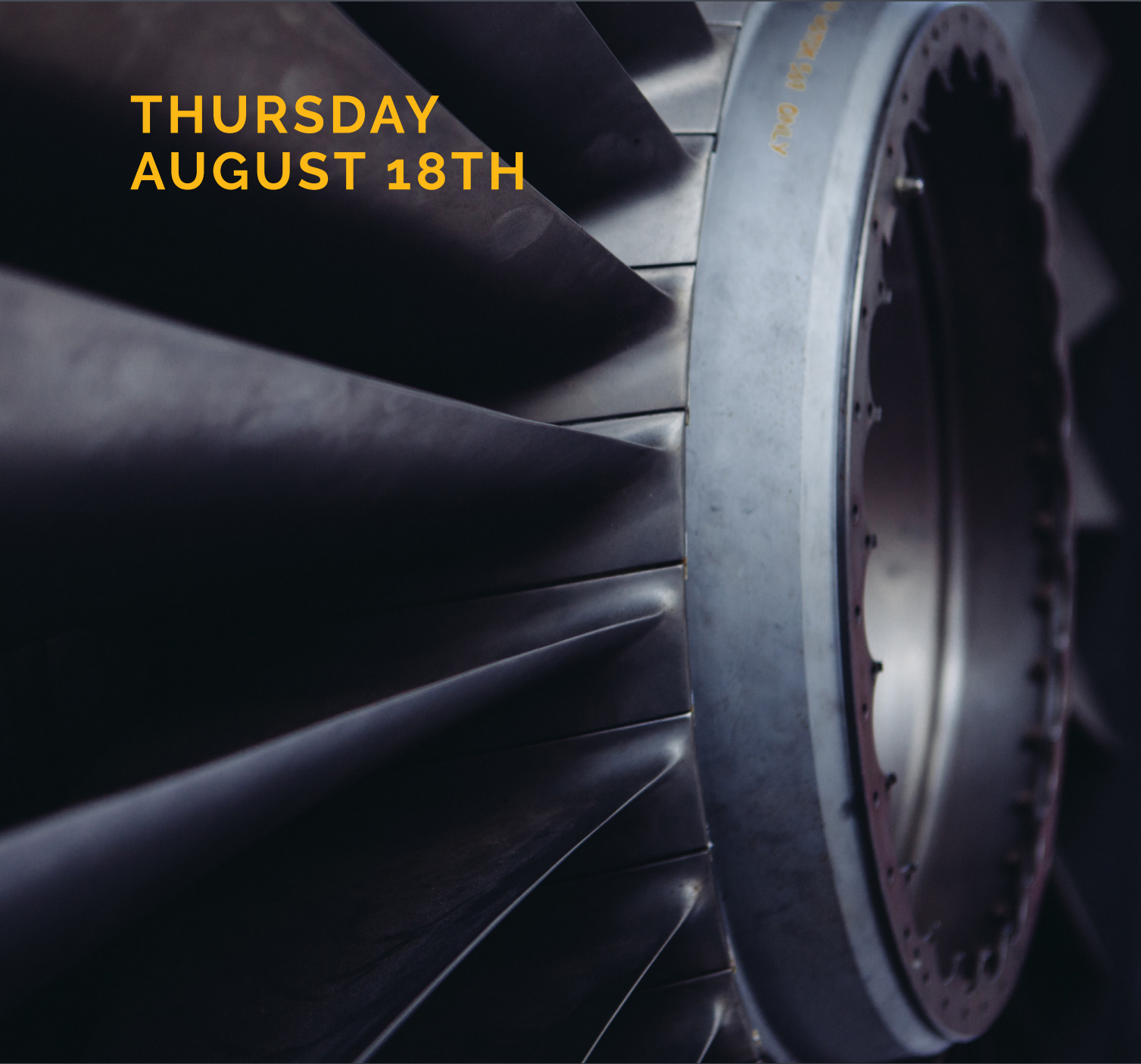
4:40 PMStacked Greenfield and Brownfield Roz Fairways in the Illinois Basin Geo-Laboratory: Co-Optimization of EOR and Associated CO₂ Storage (FE0031700)

- Nathan Webb, Illinois State Geological Survey

5:05 PM

End of Day

**THURSDAY
AUGUST 18TH**



**THURSDAY
MORNING**

ALLEGHENY ROOM FOYER

7:00 AM Meeting Registration/Continental Breakfast

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER GENERATION/LAB/
BENCH-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Andrew O'Palko

8:00 AM

Development of Transformational Membranes (FE0031596)

- Hans Wijmans, Membrane Technology and Research, Inc.

8:25 AMBench-Scale Development of a Transformational Graphene Oxide-Based Membrane Process for Post-Combustion CO₂ Capture (FE0031598)

- Shiquang Li, GTI Energy

8:50 AMHighly Permeable Thin Film Composite Membranes of Rubbery Polymer Blends for CO₂ Capture

- Lingxiang Zhu, National Energy Technology Laboratory

9:15 AMNovel Transformational Membranes and Process for CO₂ Capture from Flue Gas (FE0031731)

- Yang Han and Winston Ho, The Ohio State University

9:40 AMRational Development of Novel Metal-Organic Polyhedra-Based Membranes for CO₂ Capture (FE0031736)

- Haiqing Lin, University at Buffalo, SUNY

10:05 - 10:35 AM

Break - 2nd Floor Foyer

CARBON DIOXIDE REMOVAL

ENGINEERING DESIGN/FEED STUDIES

CAMBRIA ROOM

8:00 AM -10:05 AMDirect Air Capture Test Center
Workshop

CARBON TRANSPORT AND STORAGE

NATIONAL RISK ASSESSMENT PARTNERSHIP (NRAP)

PENNSYLVANIA ROOM

Moderator: Slava Romanov

8:00 AM

National Risk Assessment Partnership: Phase II Key Accomplishments and Phase III Introduction

- Robert Dilmore, National Energy Technology Laboratory

8:30 AM

National Risk Assessment Partnership: Tools and Recommended Practices for Induced Seismicity Risk Management

- Joshua White, Lawrence Livermore National Laboratory

8:55 AM

National Risk Assessment Partnership: Maturing Tools and Recommended Practices for Site- and Basin-Scale Risk Management

- Diana Bacon, Pacific Northwest National Laboratory

NETL RESEARCH & INNOVATION CENTER (RIC)

PENNSYLVANIA ROOM

Moderator: Slava Romanov

9:20 AM

NETL RIC CarbonSAFE Assistance (FWP-1022403)

- Dustin Crandall, National Energy Technology Laboratory

9:45 AMFlow-Through Experiments: A Look at Foamed and CO₂ Resistant Cements

- Richard Spaulding, National Energy Technology Laboratory

10:05 - 10:35 AM

Break - 2nd Floor Foyer

BREAKOUT

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER GENERATION/LAB/
BENCH-SCALE RESEARCHWESTMORELAND ROOM

Moderator: Dustin Brown

10:35 AMMixed-Salt-Based Transformational Solvent Technology for CO₂ Capture (FE0031597)

- Palitha Jayaweera, SRI International

11:00 AM

Development and Bench-Scale Testing of a Novel Biphasic Solvent-Enabled Absorption Process for Post-Combustion Carbon Capture (FE0031600)

- Yongqi Lu, University of Illinois

11:25 AMFog and Froth-Based Post Combustion CO₂ Capture in Fossil Fuel Power Plants (FE0031733)

- Heather Nikolic, University of Kentucky

11:50 AM

Highly Efficient Regeneration Module for Carbon Capture Systems in Natural Gas Combined Cycle (NGCC) Applications (FE0032135)

- Indira Jayaweera, SRI International

12:15 - 1:15 PM

Lunch - Allegheny Room

- *Lunchtime speaker -Update on Ongong FLECCS at ARPA-E Efforts*, Jack Lewnard, Program Director at the Advanced Research Projects Agency-Energy

CARBON DIOXIDE REMOVAL

ENGINEERING DESIGN/FEED STUDIESCAMBRIA ROOM10:35 AM - 12:15 PM**Direct Air Capture Test Center
Workshop**

CARBON TRANSPORT AND STORAGE

SCIENCE-INFORMED MACHINE LEARNING FOR ACCELERATING
REAL-TIME DECISIONS IN SUBSURFACE APPLICATIONS (SMART)PENNSYLVANIA ROOM

Moderator: Brian Dressel

10:35 AM

SMART: Overview of SMART Initiative - Phase I Accomplishments and Phase II Plans

- Grant Bromhal and Srikanta Mishra, National Energy Technology Laboratory/Battelle Memorial Institute

11:05 AM

Real Time Visualization of Rock and Fluid Properties

- David Alumbaugh, Lawrence Berkeley National Laboratory

11:30 AM

SMART Task 3: Pressure and Stress

- Josh White, Lawrence Livermore National Laboratory
- Sherilyn Williams-Stroud, Illinois State Geological Survey

12:15 - 1:15 PM

Lunch - Allegheny Room

- *Lunchtime speaker -Update on Ongong FLECCS at ARPA-E Efforts*, Jack Lewnard, Program Director at the Advanced Research Projects Agency-Energy

BREAKOUT

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER GENERATION/LAB/BENCH-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Carl Laird

1:15 PM

Dual-Loop Solution-Based Carbon Capture System for Net Negative Carbon Dioxide Emissions with Lower Costs (FE0032134)

- Heather Nikolic, University of Kentucky

1:40 PMParametric Testing of CO₂-Binding Organic Liquids (CO₂BOLs) (FWP-76270)

- David Heldebrant, Pacific Northwest National Laboratory

2:05 PM

Reducing the Degradation of Carbon Capture Solvents (FWP-77217)

- Philip Koech, Pacific Northwest National Laboratory

2:30 PMTransformational Sorbent-Based Process for a Substantial Reduction in the Cost of CO₂ Capture (FE0031722)

- Ravi Jain, InnoSeptra, LLC

2:55 PMTransformational Molecular Layer Deposition Tailor-Made Size-Sieving Sorbents for Post-Combustion CO₂ Capture (FE0031730)

- Maio Yu, University of Buffalo

3:20 - 3:50 PM

Break - 2nd Floor Foyer

BREAKOUT

CARBON TRANSPORT AND STORAGE

SCIENCE-INFORMED MACHINE LEARNING FOR ACCELERATING REAL-TIME DECISIONS IN SUBSURFACE APPLICATIONS (SMART)

PENNSYLVANIA ROOM

Moderator: Dustin Crandall

1:15 PMDevelopment of a software platform for machine learning-accelerated model calibration and decision support for CO₂ geological storage

- Alex Hanna, Pacific Northwest National Laboratory

1:40 PMVirtual Learning Environment for Subsurface CO₂ Injection Operations

- Rajesh Pawar, Los Alamos National Laboratory

2:05 PM

Carbon Storage: Engineering Application of Artificial Intelligence

- Shahab Mohaghegh, West Virginia University

NETL RESEARCH & INNOVATION CENTER (RIC)

PENNSYLVANIA ROOM

Moderator: Dustin Crandall

2:30 PM

Cost Impacts of Risk-Based Methods for Defining AoR and PISC Duration (FWP-1022464)

- Derek Vikara, National Energy Technology Laboratory

2:55 PMRefined Storage Efficiency Factors in Saline Systems (CO₂SCREEN)

- Angela Goodman, National Energy Technology Laboratory

3:20 - 3:50 PM

Break - 2nd Floor Foyer

THURSDAY

BREAKOUT

POINT SOURCE CARBON CAPTURE

CAPTURE FROM POWER GENERATION / LAB/BENCH-SCALE RESEARCH

WESTMORELAND ROOM

Moderator: Krista Hill

3:50 PM

Advanced Structured Adsorbent Architectures for Transformative Carbon Dioxide Capture Performance (FE0031732)

- Pierre Hovington, Electricore, Inc.

4:15 PM

Transformational Sorbent System for Post-Combustion Carbon Capture (FE0031734)

- Gokhan Alptekin, TDA Research, Inc.

4:40 PM

Plastic Additive, Sorbent-Coated, Thermally Integrated Contactor for CO₂ Capture (PLASTIC4CO₂) (FE0032132)

- Albert Stella, GE Global Research

5:05 PM

Bench Scale Test of a Polyethyleneimine Monolith Carbon Capture Process for Natural Gas Combined Cycle Point Sources (FE0032138)

- Christopher Bertole, Cormetech, Inc.

5:30 PM

End of Day

THURSDAY

BREAKOUT

CARBON TRANSPORT AND STORAGE

NETL RESEARCH & INNOVATION CENTER

PENNSYLVANIA ROOM

Moderator: Dustin Crandall

3:50 PM

Enhanced CO₂ Storage and Injectivity (FWP-1022403)

- Angela Goodman, National Energy Technology Laboratory

4:15 PM

Supply Chain Vulnerabilities of the Energy Transition with a Focus on Carbon Capture, Transportation, and Storage (FWP-1022464)

- Clint Noack, National Energy Technology Laboratory

4:40 PM

Update on new CO₂_T_COM and CO₂_S_COM Models (CO₂ Transport and Storage Costs) (FWP-1022464)

- Dave Morgan, National Energy Technology Laboratory

5:05 PM

Pathways to CO₂ Utilization and Storage for the Intermountain West Region

- Derek Vikara, National Energy Technology Laboratory

5:30 PM

End of Day

FRIDAY
AUGUST 19TH



FRIDAY
MORNING

ALLEGHENY ROOM FOYER

7:00 AM

Meeting Registration/Continental Breakfast

POINT SOURCE CARBON CAPTURE**CAPTURE FROM POWER GENERATION/LAB/BENCH-SCALE RESEARCH****WESTMORELAND ROOM**

Moderator: Mariah Richardson

8:00 AM

A New Thermal Swing Adsorption Process for Post-Combustion Carbon Capture from Natural Gas Plants (FE0032151)

- Gokhan Alptekin, TDA Research, Inc.

8:25 AMAdvancing Post Combustion CO₂ Capture through Increased Mass Transfer and Lower Degradation (FE0031661)

- Jesse Thompson, University of Kentucky

8:50 AMValidation of Transformational CO₂ Capture Solvent Technology with Revolutionary Stability (FE0031727)

- Erik Meuleman, ION Clean Energy

9:15 AM

Intensified, Flexible, and Modular Carbon Capture Demonstration with Additively Manufactured Multi-Functional Device (FWP-FEAA384)

- Costas Tsouris, Oak Ridge National Laboratory

9:40 AM

Membrane and Solvent Development for Pre-Combustion Carbon Capture

- Nicholas Siefert, National Energy Technology Laboratory

10:05 - 10:35 AM

Break - 2nd floor foyer

CAPTURE FROM POWER GENERATION/LAB/BENCH-SCALE RESEARCH**WESTMORELAND ROOM**

Moderator: Krista Hill

10:35 AMBench Scale Testing of a High Efficiency, Ultra-Compact Process for Pre-Combustion CO₂ Capture (FE0031737)

- Vasilios Manousiouthakis, University of California - Los Angeles

11:00 AM

High-Temperature Ceramic-Carbonate Dual-Phase Membrane Reactor for Pre-Combustion Carbon Dioxide Capture (FE0031634)

- Jerry Lin, Arizona State University

11:25 AMDevelopment and Testing of a High Temperature PBI Hollow-Fiber Membrane Technology for Pre-Combustion CO₂ Capture (FE0031633)

- Elisabeth Perea, SRI International

11:50 AM

End of Day

THANK YOU

FOR ATTENDING



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