



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

All times designated in Eastern Daylight Time

**Monday, August 23, 2021**

### Field Laboratories

**Moderator: Rob Vagnetti**

**10:30 AM**     **Marcellus Shale Energy and Environment Laboratory (MSEEL) (FE0024297)**  
Timothy Carr, West Virginia University

**11:00 AM**     **Hydraulic Fracturing Test Sites (HFTS) (FE0024292)**  
Jordan Ciezobka, Gas Technology Institute (GTI)

**11:30 AM**     **Hydraulic Fracture Test Site II (HFTS2) - Delaware Basin (FE0031577)**  
Jordan Ciezobka, Gas Technology Institute (GTI)

**12:00 PM**     **LUNCH**

**Moderator: Rob Vagnetti**

**12:30 PM**     **Field Laboratory for Emerging Stacked Unconventional Plays (ESUP) in Central Appalachia (FE0031576)**  
Nino Ripepi, Virginia Polytechnic Institute and State University

**12:50 PM**     **Tuscaloosa Marine Shale Laboratory (FE0031575)**  
Ning Liu and Boyun Guo, University of Louisiana at Lafayette

**1:10 PM**     **Engineered Water for Improved Oil Recovery from Carbonate Reservoirs (FE0031791)**  
Kishore Mohanty, University of Texas at Austin

**1:30 PM**     **The Austin Chalk/Eagle Ford Field Laboratory (FE0031579)**  
Dan Hill, Texas A&M University

**1:50 PM**     **BREAK**



U.S. DEPARTMENT OF  
**ENERGY**



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**Moderator: Scott Beautz**

- 2:05 PM Carbon Dioxide Enhanced Oil Recovery Improvement in Conventional Fields Using Rich Gas (FE0031789)**  
John Hamling and Steven Smith, University of North Dakota Energy and Environmental Research Center (UNDEERC)
- 2:25 PM Field Evaluation of the Caney Shale as an Emerging Unconventional Play, Southern Oklahoma (FE0031776)**  
Mileva Radonjic and Jim Puckette, Oklahoma State University
- 2:45 PM Field Pilot Test of Foam-Assisted Hydrocarbon Gas Injection in Bakken Formations (FE0031787)**  
Mohammad Piri, University of Wyoming and Nagi Nagarajan, Hess Corporation
- 3:05 PM Chemically Enabled Carbon Dioxide Enhanced Oil Recovery in Multi-Porosity, Hydrothermally Altered Carbonates in the Southern Michigan Basin (FE0031792)**  
Autumn Haagsma, Battelle Memorial Institute
- 3:25 PM BREAK**

**Moderator: Scott Beautz**

- 3:40 PM Improving Production in the Unconventional Paradox Play through Integrated Analysis of Natural Fractures and Geomechanics (FE0031775)**  
Brian McPherson, University of Utah
- 4:00 PM First Ever Field on Alaska's North Slope to Validate the Use of Polymer Floods for Heavy Oil Enhanced Oil Recovery (EOR) (FE0031606)**  
Abhijit Dandekar, University of Alaska Fairbanks and Samson Ning, Hilcorp Alaska LLC

### O&G SMART Initiative Tasks

- 4:20 PM SMART Task – Real-Time Forecasting: Pressure Management at Marcellus Shale Energy and Environment Laboratory (MSEEL)**  
Hari Viswanathan, Los Alamos National Laboratory (LANL)

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U.S. DEPARTMENT OF  
**ENERGY**



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- 4:40 PM**      **SMART Task 6 – Real Time Visualization Faults and Fracture Networks**  
Nicholas Azzolina, University of North Dakota Energy and Environmental Research Center (UNDEERC)
- 5:00 PM**      **ADJOURN**



U.S. DEPARTMENT OF  
**ENERGY**



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**Tuesday, August 24, 2021**

### Hydraulic Fracturing Technologies

**Moderator: Tony Zammerilli**

- 10:00 AM Fully Distributed Acoustic and Magnetic Field Monitoring Via a Single Fiber Line for Optimized Production of Unconventional Resource Plays (FE0031786)**  
Daniel Homa, Virginia Polytechnic Institute and State University
- 10:20 AM Large-Volume Stimulation of Rock for Greatly Enhanced Fluids Recovery Using Targeted Seismic-Assisted Hydraulic Fracturing (FE0031777)**  
Raman Singh, Oklahoma State University
- 10:40 AM Dynamic Binary Complexes (DBC) as Super-Adjustable Viscosity Modifiers for Hydraulic Fracturing Fluids (FE0031778)**  
Mustafa Akbulut, Texas A&M Engineering Experiment Station and Joseph Sang-II Kwon, Texas A&M University
- 11:00 AM BREAK**

**Moderator: Tony Zammerilli**

- 11:15 AM Using Natural Gas Liquids to Recover Unconventional Oil and Gas Resources (FE0031782)**  
Joel Sminchak, Battelle Memorial Institute
- 11:35 AM Monitoring Fracture Dynamics with Electromagnetic Geophysics (FE0031785)**  
Mohsen Ahmadi, University of Texas at Austin
- 11:55 AM LUNCH**



U.S. DEPARTMENT OF  
**ENERGY**



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Natural Gas Infrastructure (Quantification and Mitigation)

**Moderator: Kyle Clark**

- 12:25 PM Low-Cost Retrofit Kit for Integral Reciprocating Compressors to Reduce Emissions and Enhance Efficiency (FE0031863)**  
Pejman Kazempoor, University of Oklahoma
- 12:45 PM Solid State Mixed-Potential Electrochemical Sensors for Natural Gas Leak Detection and Quality Control (FE0031864)**  
Lou-Kun Tsui, University of New Mexico, Center for Micro-Engineered Materials
- 1:05 PM Methane Mitigator – Reducing Methane Emissions at Well Sites (FE0031865)**  
Derek Johnson and Robert Heltzel, West Virginia University
- 1:25 PM Methane Mitigation Using Linear Motor Leak Recovery Compressor (FE0031875)**  
Jason Stair, Gas Technology Institute (GTI)
- 1:45 PM BREAK**

**Moderator: Kyle Clark**

- 2:00 PM Predictive Self-Healing for Pneumatic Actuated Systems (FE0031876)**  
Michael Keller, University of Tulsa
- 2:20 PM Quantification of Methane Emissions from Marginal (Small Producing) Oil and Gas Wells (FE0031702)**  
Richard Bowers, GSI Environmental, Inc.
- 2:40 PM Smart Methane Emission Detection System Development (FE0029020)**  
Heath Spidle, Southwest Research Institute (SwRI)
- 3:00 PM Advancing Development of Emissions Detection (ADED) (FE0031873)**  
Daniel Zimmerle, Colorado State University and Clay Bell, Colorado State University
- 3:20 PM BREAK**



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

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**Moderator: Bruce Brown**

- 3:35 PM**      **Novel Signature for Deployed Transmission Infrastructure Sensors (FWP-72954)**  
Kayte Denslow and William S. Rosenthal, Pacific Northwest National Laboratory (PNNL)
- 3:55 PM**      **In-Situ Pipeline Coatings for Methane Emissions Mitigation and Quantification from Natural Gas Infrastructure (FE0029069)**  
Matthew Nakatsuka, Oceanit Laboratories, Inc.

### **Data Analytics/Machine Learning**

- 4:15 PM**      **Enabling Cost Effective High Quality Seismic Monitoring of Unconventional Reservoirs with Fiber Optics (FE0031780)**  
Caleb Christensen, MagiQ Technologies, Inc.
- 4:35 PM**      **A Novel 'Smart Microchip Proppants' Technology for Precision Diagnostics of Hydraulic Fracture Networks (FE0031784)**  
Amirmasoud Kalantari Dahaghi, University of Kansas Center for Research
- 4:55 PM**      **ADJOURN**



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

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**Wednesday, August 25, 2021**

### Fundamental Research

**Moderator: Steve Henry**

**10:00 AM      Role of Shale Geomechanical Changes in Affecting Gas and Fluid Flow (FWP-1022415 Task 2)**

Dustin Crandall, National Energy Technology Laboratory (NETL)

**10:20 AM      Geochemical Reactions Affecting Reservoir Porosity and Permeability (FWP-1022415 Task 3)**

Ale Hakala and Christina Lopano, National Energy Technology Laboratory (NETL)

**10:40 AM      BREAK**

**Moderator: Steve Henry**

**11:15 AM      Chemical Control of Hydraulic Fracture Sustainability in Shales (FWP-FP00008114)**

Seiji Nakagawa, Lawrence Berkeley National Laboratory (LBNL)

**11:35 AM      Numerical and Laboratory Investigations for Maximization of Production from Tight/Shale Oil Reservoirs (FWP-FP00008115)**

Matthew Reagan, Lawrence Berkeley National Laboratory (LBNL)

**11:55 AM      Improved Unconventional Reservoir Stimulation Through Understanding Controls on Fracturing Fluid Imbibition and Water Blocking (FWP-FP00008256)**

Omotayo Omosebi, Lawrence Berkeley National Laboratory (LBNL) and Tetsu K. Tokunaga, Lawrence Berkeley National Laboratory



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

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12:15 PM LUNCH

**Moderator: Bruce Brown**

12:45 PM **Fundamental Understanding of CH<sub>4</sub>-CO<sub>2</sub>-H<sub>2</sub>O Interactions in Shale Nanopores (FWP-14-017608)**  
Yifeng Wang, Sandia National Laboratories (SNL)

1:05 PM **An Integrated Multiscale Modeling Framework for Unconventional Stimulation and Production FWP FP00008049 (LBNL), FWP FEW0250 (LLNL), FWP 1022415 (NETL), FWP 100480 (SLAC)**  
Jens Birkholzer and Joe Morris, Lawrence Livermore National Laboratory (LLNL)

1:25 PM **Basin-Specific Geochemistry to Promote Unconventional Efficiency (FWP-100211)**  
Adam Douglas Jew, SLAC National Accelerator Laboratory

1:45 PM **Mechanistic Approach to Analyzing and Improving Unconventional Hydrocarbon Production (FWP-FE406-408-409)**  
Bill Carey, Los Alamos National Laboratory (LANL)

2:05 PM BREAK

### Gas Hydrates

**Moderator: Rick Baker**

2:20 PM **USGS Gas Hydrates Project-Core Interagency Agreement (89243320SFE000013)**  
Carolyn Ruppel, U.S. Geological Survey (USGS)

2:40 PM **Deepwater Methane Hydrate Characterization and Scientific Assessment (FE0023919)**  
Peter Flemings, University of Texas at Austin

3:00 PM **Alaska Natural Gas Hydrate Production Testing: Test Site Selection, Characterization and Testing Operation (FE0022898)**  
Tim Collett, U.S. Geological Survey (USGS)



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

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**3:20 PM**      **Natural Gas Hydrate Research at NETL RIC**  
Yongkoo Seol, National Energy Technology Laboratory (NETL)

**3:40 PM**      **BREAK**

**Moderator: Rick Baker**

**3:55 PM**      **Coupled THM Processes of Natural Gas Hydrate Production (FWP-72688)**  
Mark White, Pacific Northwest National Laboratory (PNNL)

**4:15 PM**      **Behavior of Sediments Containing Methane Hydrate, Water, and Gas Subjected to Gradients and Changing Conditions (FWP-FP00008137)**  
Timothy J. Kneafsey, Lawrence Berkeley National Laboratory (LBNL)

**4:35 PM**      **Numerical Studies for the Characterization of Recoverable Resources from Methane Hydrate Deposits (FWP-FP00008138)**  
George Moridis, Lawrence Berkeley National Laboratory (LBNL)

**4:55 PM**      **ADJOURN**



U.S. DEPARTMENT OF  
**ENERGY**



## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

All times designated in Eastern Daylight Time

**Thursday, August 26, 2021**

### Offshore

**Moderator: Bill Fincham**

- 11:00 AM**      **Advanced Multi-Dimensional Capacitance Sensors Based Mass Flow Meter to Measure and Monitor Enhanced Oil Recovery (FE0031858)**  
Qussai M. Marashdeh, Tech4Imaging
- 11:20 AM**      **In-Situ Applied Coatings for Mitigating Gas Hydrate Deposition and Environmental Hazards (FE0031578)**  
Carolyn Ann Koh, Colorado School of Mines
- 11:40 AM**      **Enhancing Offshore Recovery by Enabling Longer, Safer, and Cheaper Subsea Well Tiebacks (FE0031859)**  
James Chitwood and Art J. Schroeder, Jr., Subsea Shuttle, LLC
- 12:00 PM**      **LUNCH**

**Moderator: Barbara Kutchko**

- 12:30 PM**      **Hexagonal Boron Nitrate Reinforced Multifunctional Well Cement for Extreme Conditions (FE0031574)**  
Rouzbeh Shahsavari, C-Crete Technologies, LLC
- 12:50 PM**      **Geohazards & Subsurface Uncertainty Smart Modeling (FWP)**  
Mackenzie Mark-Moser, National Energy Technology Laboratory (NETL)
- 1:10 PM**      **Constraining Kick Signals through Advanced Multi-Phase Data (FWP)**  
Paulo Waltrich, Louisiana State University
- 1:30 PM**      **Infrastructure and Metocean Technology (FWP)**  
Rodrigo Duran and Mackenzie Mark-Moser, National Energy Technology Laboratory
- 1:50 PM**      **BREAK**

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## Carbon Management and Oil and Gas Research Project Review Meeting Oil and Gas Virtual Session Agenda

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**Moderator: Barbara Kutchko**

- 2:05 PM**      **Relative Permeability for Offshore EOR (FWP)**  
Jonathan Moore, National Energy Technology Laboratory (NETL)
- 2:25 PM**      **Assessing Current and Future Infrastructure Hazards (FWP)**  
Lucy Romeo, National Energy Technology Laboratory (NETL)
- 2:45 PM**      **CSEM for Geohazard Identification (FWP)**  
Adam Schultz, Oregon State University
- 3:05 PM**      **Thermodynamic Modeling of Mineral Scale at HPHT (FWP)**  
Isaac Gamwo, National Energy Technology Laboratory (NETL)
- 3:25 PM**      **BREAK**

**Moderator: Bill Fincham**

- 3:40 PM**      **Corrosion Resistant Aluminum Components for Improved Cost and Performance of Ultra-Deepwater Offshore Oil Production (FWP-072971)**  
Glenn Grant, Pacific Northwest National Laboratory (PNNL)
- 4:00 PM**      **Underwater Laser Telecommunications and Remote Access (FE0031857)**  
Ishan Mons, Oceanit Laboratories, Inc.
- 4:20 PM**      **ADJOURN**



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**ENERGY**



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**Friday, August 27, 2021**

### Natural Gas Infrastructure Upcycling

**Moderator: Eric Smistad**

- 10:00 AM**     **Process Intensification by a One-Step, Plasma-Assisted Synthesis of Liquid Chemicals from Light Hydrocarbons (FE0031862)**  
Jason Hicks, University of Notre Dame
- 10:20 AM**     **Microwave Catalysis for Process Intensified Modular Production of Carbon Nanomaterials from Natural Gas (FE0031866)**  
John Hu, West Virginia University
- 10:40 AM**     **Oxidative Aromatization Catalysts for Single Step Liquefaction of Distributed Shale Gas (FE0031869)**  
Fanxing Li, North Carolina State University

**11:00 AM**     **BREAK**

**Moderator: Eric Smistad**

- 11:15 AM**     **Modular Processing of Flare Gas for Carbon Nanoproducts (FE0031870)**  
Alan Weimer and Mija Hubler, University of Colorado Boulder
- 11:35 AM**     **Electrocatalytically Upgrading Methane to Benzene in a Highly Compacted Microchannel Protonic Ceramic Membrane Reactor (FE0031871)**  
Joshua Tong, Clemson University
- 11:55 AM**     **One-Step Non-Oxidative Methane Upgrading to Hydrogen and Value-Added Hydrocarbons (FE0031877)**  
Dongxia Liu, University of Maryland College Park
- 12:15 PM**     **LUNCH**

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**Moderator: Dave Cercone**

- 12:45 PM Methane Partial Oxidation Over Multifunctional 2-D Materials (FE0031878)**  
Andreas Heyden, University of South Carolina
- 1:05 PM Production of Hydrogen and Carbon from Catalytic Flare Gas Pyrolysis (FWP-1022467)**  
Ranjani Siriwardane, National Energy Technology Laboratory (NETL)
- 1:25 PM Commercialization Study of NETL Technology for Flare Gas to Olefins and Liquids (FWP-1022467)**  
Congiun Wang and Christopher Matranga, National Energy Technology Laboratory
- 1:45 PM Microwave Enhanced Flare Gas Conversion to Value-Added Chemicals (FWP-1022467)**  
Daniel Haynes, National Energy Technology Laboratory

**2:05 PM BREAK**

**Moderator: Dave Cercone**

### Natural Gas Infrastructure (Quantification and Mitigation)

- 2:20 PM Field-based Quantification of Methane Emissions from Natural Gas Infrastructure: Abandoned Wells, Gathering Pipelines, and M&R Stations (FWP-1022424)**  
Natalie Pekney, National Energy Technology Laboratory (NETL)
- 2:40 PM Advanced Sensor Technologies for Reliable and Resilient Natural Gas (FWP-1022424)**  
Ruishu Wright, National Energy Technology Laboratory (NETL)
- 3:00 PM Development and Demonstration of Corrosion Protective Liners and Coatings for Natural Gas Pipelines (FWP-1022424)**  
Zineb Belarbi, National Energy Technology Laboratory (NETL)

**3:20 PM BREAK**

**Moderator: Dave Cercone**



U.S. DEPARTMENT OF  
**ENERGY**



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### Produced Water

- 3:35 PM**      **Resource Recovery and Environmental Protection in Wyoming's Greater Green River Basin Using Selective Nanostructured Membranes (FE0031855)**  
Jonathan Brant, University of Wyoming
- 3:55 PM**      **Fouling-Resistant, Chlorine-Tolerant Zwitterionic Membranes for Treatment of Produced Water in the Permian Basin (FE0031851)**  
Christopher Drover, ZwitterCo, Inc.
- 4:15 PM**      **A New Membrane Based Treatment Process for Reclaiming and Reutilization of Produced Water (FE0031853)**  
Gokhan Alptekin and Freya Kugler, TDA Research, Inc.
- 4:35 PM**      **ADJOURN**