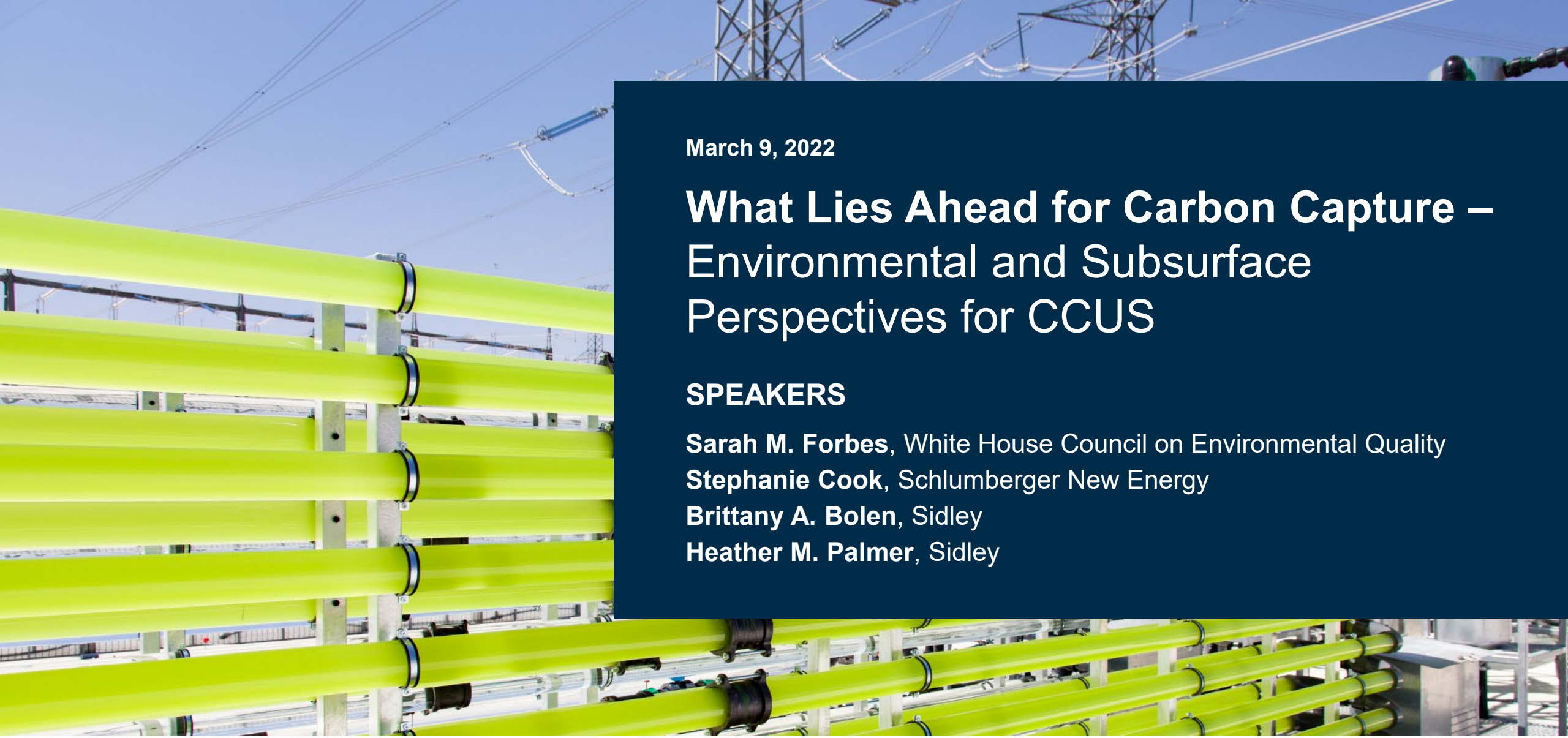

March 9, 2022

What Lies Ahead for Carbon Capture – Environmental and Subsurface Perspectives for CCUS

SPEAKERS

Sarah M. Forbes, White House Council on Environmental Quality
Stephanie Cook, Schlumberger New Energy
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Welcome and Introductions

Heather Palmer, Sidley Austin LLP

Presenters

Sarah M. Forbes
Director of Carbon Capture Utilization and Sequestration, White House Council on Environmental Quality
Sarah M. Forbes is currently the Director for Carbon Capture Utilization and Sequestration at the White House Council on Environmental Quality and the Director of the Minerals Sustainability Division at the United States Department of Energy (DOE). Sarah began her career at the National Energy Technology Laboratory, working on Carbon Capture and Storage (CCS) during the program's formative years. While at the World Resources Institute (WRI), a nonprofit environmental think tank, Sarah led all aspects of an expert stakeholder process resulting in two seminal guidelines documents for CCS and stakeholder engagement for CCS still in use. Building on this work, she created a bilateral project to interpret the Guidelines to a China-specific framework. Sarah's experience includes testifying for US congress on CCS, shale gas and clean energy. Sarah has authored numerous publications, including reports, technical and policy papers, and book chapters. She has been instrumental in the development of US, Canadian, and international standards for CCS. Sarah has provided regulatory and environmental expertise on CCS and clean energy technologies to the Asian Development Bank for China and the World Bank for South Africa. She has served on several advisory committees in areas such as international standards and regulatory development and is a former member of two Federal advisory groups to the DOE. She holds a B.S. from Wheaton College in Biology and a M.S. from Mississippi State University in the Biological Sciences.

Stephanie Cook
Senior Geologist, Schlumberger New Energy
Stephanie Cook is a senior geologist with Schlumberger New Energy, currently working with clients and partners to evaluate sites for the purpose of geologic CO2 sequestration. Stephanie has nearly 10 years of experience with Schlumberger and is a co-author of the first commercial EPA Class VI permit in the US. In recent years she has completed preliminary and detailed geologic storage assessments for over 50 potential CO2 storage sites across the US & Canada. Her expertise covers reservoir characterization workflows, geocellular modeling, and EPA Class VI permitting.

The Schlumberger New Energy organization includes early ventures for investing in businesses with the potential for new energy technology development; adjacent businesses for leveraging Schlumberger's expertise in subsurface characterization and drilling activities; and new energy deployments that focus on new domains and associated business opportunities.

Brittany A. Bolen
Senior Policy Advisor, Sidley
Brittany Bolen is a senior policy advisor in the firm's Environmental and Government Strategies practices. Her practice involves legal and strategic counseling as well as advocacy on environmental regulatory and policy matters. Brittany brings extensive, senior-level federal government experience with a deep understanding of the rulemaking and legislative processes. She joined Sidley from the U.S. Environmental Protection Agency (EPA) where she served as the Associate Administrator for Policy and Senior Counsel to the Administrator, overseeing agency-wide policymaking, regulatory development, and reviews under the National Environmental Policy Act (NEPA). Brittany's knowledge of the substance, staff, and inner workings of the legislative and executive branches helps clients develop compliance programs, navigate the federal policymaking process, and craft the most effective strategy to successfully shape environmental policy.

Heather M. Palmer
Partner, Sidley
Heather Palmer has extensive experience advising clients in the oil and gas, refining, chemicals, manufacturing, power and renewables sectors on environmental compliance and the allocation of environmental liabilities in mergers and acquisitions. Heather also leads the Sidley Environmental group's work in Environmental, Social and Governance (ESG) matters.

Heather's practice focuses on environmental law, counseling clients on regulatory requirements, assisting them in the evaluation and negotiation of corporate and real estate transactions, supporting them in the development of environmental management systems (EMS), and advising them on ESG issues and environmental disclosure requirements. Her energy industry experience includes onshore and offshore oil and gas regulation, permitting and operation of liquefied natural gas (LNG) facilities, hydraulic fracturing, solid and hazardous wastes, oil and gas wastes, environmental remediation, water quality, water rights, wetlands, endangered species and compliance with the National Environmental Policy Act (NEPA). She also advises clients on the environmental aspects of bankruptcy matters, including the transfer of assets through Section 363 sales.

Framing Administration Activities on CCUS, including CEQ Guidance & IIJA Provisions

Sarah M. Forbes, White House Council on Environmental Quality

Regulatory and Policy Considerations

Brittany Bolen, Sidley Austin LLP

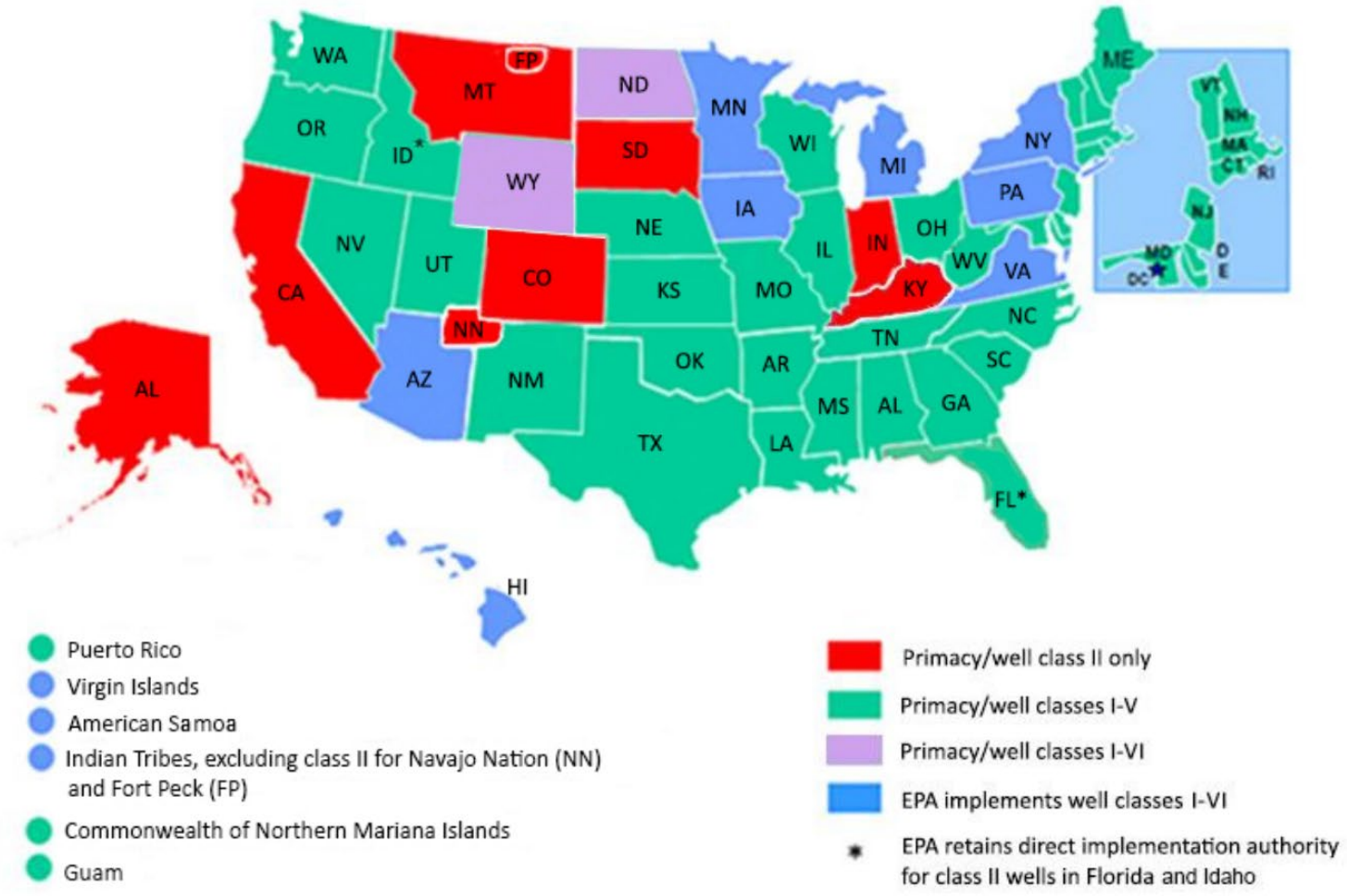
Environmental Programs to Consider for CCUS Projects

- NPDES Permit
- GHG Reporting
- NSR Preconstruction Permit
- CAA Title V Operating Permit
- UIC Class II or VI Well Permits
- Environmental Reviews under NEPA

EPA's Underground Injection Control (UIC) Program

- This presentation focuses on a key environmental regulatory requirement for CCUS projects: Underground Injection Control (UIC) Permits.
- Safe Drinking Water Act (SDWA) UIC provisions provide the U.S. Environmental Protection Agency (EPA) authority to regulate underground injection of fluids for storage and disposal, including for Enhanced Oil Recovery (EOR) and the geological sequestration of carbon dioxide (CO2).
  - UIC program designed to protect underground drinking water sources
  - EPA has established minimum federal requirements for six classes of wells under the UIC program
    - Two classes of wells are key for CCUS projects: Class II and Class VI
  - SDWA allows for primary enforcement (i.e., primacy) to states, territories, tribes to oversee UIC programs in lieu of the EPA
    - States seeking primacy must adopt and implement programs that meet federal requirements
    - EPA may grant primacy for all or part of the UIC program

Current Primacy Framework for UIC Well Classes



Source: U.S. EPA (March 2022)

Overview of Class II Wells

Class II Wells

- Used to inject fluids associated with oil and natural gas production; most prevalent in TX, CA, OK, KS
  - Three types:
    - 1. Disposal Wells – brine/hydraulic fracturing wastewater; estimated 20% of Class II Wells
    - 2. EOR Wells – injections (including CO2) to recover residual oil/natural gas; estimated up to 80% of Class II Wells
    - 3. Hydrocarbon Storage Wells – liquid hydrocarbons stored in underground formations; over 100 in U.S.
- Permitting largely administered by states, some involvement of EPA regional offices
  - 40 states granted primacy
  - AZ, WV, and PR in Pre-Application Activities phase
- Robust state application processes and activity
  - TX: ~1,000 active Disposal and Hydrocarbon Storage Wells as of January 2022
  - CA: 55,000 Class II Wells, 95% for EOR
  - ND: Department of Mineral Resources cites growing number active Class II Wells

Overview of Class VI Wells

Class VI Wells

- Established in 2010 for long-term geologic sequestration of CO2
- Permitting program largely administered by the respective EPA regional office
  - Only two wells have been permitted by EPA for injection
    - Both co-located at same facility in IL, administered by EPA Region 5
    - Took three years for final permit to drill and two-three years for final authorization to inject CO2
  - Seven permit applications currently pending, with projects in IN, OH, LA, and CA
- Two states granted primacy of the Class VI program
  - Primacy granted to ND in 2018 and WY in 2020
    - Two ND permits issued; one WY permit pending
  - Ten states in some phase of Class VI primacy
- Support from the Infrastructure Investment and Jobs Act (IIJA)
  - $50 million grant program for states with Class VI primacy for the period of FY22-26
  - $5 million in annual appropriations for FY2022-2026 for EPA to support the Class VI program

State Class VI Well Programs

NORTH DAKOTA
Received primacy on 4/24/2018
Regulated by ND Oil and Gas Division of ND Industrial Commission
Application Process: • Permit application (processing fee) • Public hearing before permit issuance • Consultation with ND Department of Environmental Quality • Issuance of certificate filed in county deed records
Priority given to storage operators who intend to store CO_2 produced in ND
Commission has 1 year from date application is deemed complete to issue final decision
As of 3/3/22 – 2 Class VI well permits issued

WYOMING
Received primacy on 9/3/2020
Regulated by WY Department of Environmental Quality
Application Process: • Pre-application meeting • Site characterization • Geological sequestration Class VI permit application ($5,000 application fee) • 60 day public comment period
Final determination for permit issuance • Within 60 days after completion of public comment period if no public hearing or • As soon as practicable after receipt of hearing transcript
As of 3/3/22 – no Class VI well permits issued

Status of Class VI Primacy Efforts

Louisiana

- Submitted drafts of primacy documents to EPA for review at end of 2020
- Primacy application submitted in Q2 2021; expedited consideration requested
- Public hearing on 6/6/2021; EPA lists LA in Phase II (Completeness Review and Determination) of IV
- Will be regulated by Louisiana Office of Conservation, Department of Natural Resources (DNR)

Texas

- On 6/9/2021, Gov. Abbott signed HB 1284 – granted sole jurisdiction over Class VI wells and carbon capture, utilization and storage activities to Railroad Commission of Texas (RRC)
- Stated purpose to more easily apply for and obtain primacy
- RRC currently preparing application documents, coordinating with ND, WY, LA; expected to apply Summer 2022.

West Virginia

- West Virginia Department of Environmental Protection in process of amending rules to establish Class VI permitting program
- Proposed rule issued on 6/23/2021; final agency-approved rule proposal filed with Legislative Rule-Making Review Committee on 7/30/2021
- Once approved, amended rules will be included as part of an “Application for Substantial Program Update” to be filed with EPA requesting Class VI primacy

Arizona

- EPA lists AZ in Phase I: Pre-Application Activities
- AZ Senate Bill 1494 passed AZ House in 4/2018, which requires AZ Department of Environmental Quality to adopt, by rule, the UIC program

Others

Overview of the Class VI Well Permitting Process

1. APPLICATION

- Based on EPA's template
- Filed via EPA's Geological Sequestration Data Tool (GSDT)
- Communications via GSDT build administrative record
- EPA will review application within 30 days of receipt, once EPA determines application complete it will provide a schedule with target dates for remaining steps

2. PERMIT TO DRILL

- EPA will issue public notice of draft permit and open docket for a period of no less than 30 days for public comments
- EPA may also schedule a public hearing if there is a "significant degree of public interest" in the draft permit, which could extend the public comment period
- Note: For Class VI wells, EPA must provide notice of draft permit to specific state and local government offices
- Following the review and response to public comments, EPA will issue a final permit to drill the well, which will become effective no sooner than 30 days after the notice is issued

3. WELL DRILLING COMPLETION REPORT

- Applicant will submit a well drilling completion report for EPA review
- EPA may request additional information on modeling or other changes that may trigger a major modification of the permit

4. PERMIT TO INJECT

- Based on a satisfactory well drilling completion report, EPA will prepare a draft authorization permit to inject
- This permit is subject to the same public notice, comment, and hearing requirements as the draft permit to drill
- Following the review and response to public comments, EPA will issue a final permit authorization to inject

Key Considerations for the Class VI Permitting Process

CCUS Site Selection Considerations and Permanence Challenges

Stephanie Cook, Schlumberger New Energy

Q&A Discussion

Heather Palmer, Sidley Austin LLP

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Boston

Brussels

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Chicago

Dallas

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