PROGRESS CHALLENGES and OPPORTUNITIES

for research on upstream aspects of U.S. coal production

The National Academies of SCIENCES ENGINEERING MEDICINE

MEETING OF THE COMMITTEE ON EARTH RESOURCES

OCTOBER 25, 2018 | WASHINGTON, DC

Coal continues to play a vital role in the global energy mix, accounting for nearly 30% of the world's primary energy supply and approximately 40% of its electricity generation, as well as serving as an important feedstock for industries such as steel and cement production. While China and India are the world's largest consumers of coal, the U.S. holds the world's largest proven coal reserve base and continues to rely upon coal to fuel approximately 30% of its electricity supply. The National Research Council published a report in 2007 (titled "Coal: Research and Development to Support National Energy Policy") that focused on upstream aspects of the coal industry and made specific recommendations regarding coal resource/reserve assessments, mine productivity and resource optimization, environmental protection and reclamation, and mine worker health and safety. A key finding was that of more than $538 million spent by federal government agencies for coal-related research and technology deployment in 2005, less than 10% was directed toward these important upstream aspects of the coal fuel cycle. The intent of this meeting of the Committee on Earth Resources is to provide a forum to discuss progress made regarding the recommendations in the 2007 NRC report, to identify upstream coal issues still requiring attention, and to explore potential next steps and implications for the future utilization of our Nation's coal resources.

In recent years, the outlook for U.S. coal production and use has become less certain as a result of concerns about its environmental impacts and technological advances that have improved the cost-competitiveness of other energy sources such as natural gas and renewables. Against this backdrop, a substantial research and development effort has focused largely on controlling air, water, and waste emissions from coal-fired power plants and on improving the efficiency of coal-fired power generation. However, in addition to these downstream issues, the future utilization of our vast coal reserve base depends upon our ability to extract, transport, and beneficiate these reserves in a sustainable, efficient, and economically-competitive manner, and to approach reclamation practices for retired mine sites using best-available science. The cost of the coal feedstock is a major factor in determining the competitiveness of coal-fueled power generation and other coal-based processes, and the upstream portions of the supply chain factor prominently in coal's overall environmental, health, and safety profile. Our discussion will focus on progress, challenges, and opportunities in all of these areas.

PROGRESS CHALLENGES and OPPORTUNITIES
for research on upstream aspects of U.S. coal production

AGENDA

OCTOBER 25-26, 2018
COMMITTEE ON EARTH RESOURCES
2101 CONSTITUTION AVE NW | WASHINGTON, DC

OCTOBER 25, 2018 | CLOSED SESSION

National Academy of Sciences Building
NAS 120

8:00 AM	**Closed Breakfast Business Meeting** *(Committee and Staff Only)*	
OPEN SESSION		
9:00 AM	**Welcome and Introductions**	***Jim Slutz**, Chair*
KEYNOTE SESSION		*Moderator:* *Lani Boldt, Committee Member*
9:10 AM	**Keynote 1:** **Coal in the national and international energy portfolio**	***Greg Adams*** *Energy Information Administration*
	Keynote 2: **Domestic coal reserve base and types (metallurgical, surface, underground, etc.)**	***Brian Shaffer*** *Coal Project Chief* *U.S. Geological Survey*
10:30 AM	BREAK	
10:45 AM	**PANEL 1**: ***Advances and opportunities for new technology in coal mining and extraction*** • ***Dan Connell, Moderator,** Committee Member* • ***Michael Karmis**, Virginia Tech* • ***Hekkie Van Dyk**, Komatsu Mining Corporation* *(20 minutes each for presentation, 35 minute discussion)*	
12:00 PM	LUNCH	
1:00 PM	**PANEL 2**: ***Advances and opportunities for new technology in coal preparation and beneficiation for a range of applications*** • ***David Spears, Moderator,** Committee Member* • ***Barbara Arnold**, American Institute of Mining, Metallurgical, and Petroleum Engineers* • ***Angelos Kokkinos**, Department of Energy, Office of Fossil Energy* *(20 minutes each for presentation, 35 minute discussion)*	

2:15 PM	BREAK
2:30 PM	**PANEL 3**: ***Advances and opportunities for reclamation and environmental considerations*** • ***Carmen Agouridis, Moderator,*** *Committee Member* • ***Tim Ramsey****, North American Coal* • ***Richard Warner****, University of Kentucky* *(20 minutes each for presentation, 35 minute discussion)*
3:45 PM	**Break**
4:00 PM	**PANEL 4:** ***Worker health and safety: "Monitoring and Sampling Approaches to Assess Underground Coal Mine Dust Exposures" (NASEM, 2018)*** • ***Elizabeth Eide, Moderator,*** *National Academies staff* • ***Thure Cerling, Chair of study committee****, University of Utah* • ***Cecile Rose, Study committee member,*** *National Jewish Health* • ***Emily Sarver, Study committee member,*** *Virginia Polytechnic Institute and State University* • ***Ray Wassel****,* ***Study director****, National Academies staff*
4:45 PM	**Plenary discussion** • *Framing issues offered by committee and audience* • *General Discussion* • *Challenges, gaps, future collaborative efforts of projects (for Academies or others)*
5:15 PM	**Meeting adjourns**

END OF PUBLIC SESSION

OCTOBER 26, 2018 | CLOSED SESSION

National Academy of Sciences Building
NAS 120

8:00 AM	**Closed Breakfast Business Meeting** *(Committee and Staff Only)*

OPEN SESSION

9:30 AM	**Conversation with federal agency sponsors** — ***Jim Slutz****, Chair* • ***Joshua Mengers,*** *Department of Energy, Geothermal Technologies Office* • ***Margaret Schaus****, Department of Energy, Office of Fossil Energy*

PROGRESS CHALLENGES and OPPORTUNITIES
for research on upstream aspects of U.S. coal production

AGENDA

OCTOBER 25-26, 2018
COMMITTEE ON EARTH RESOURCES
2101 CONSTITUTION AVE NW | WASHINGTON, DC

10:45 AM	BREAK
11:00 AM	**Consensus report briefing**: ***Future Directions for the U.S. Geological Survey's Energy Resources Program (NASEM, 2018)*** • ***Rex Buchanan, Chair of study committee**, Kansas Geological Survey (emeritus)* • ***Lori Summa, Member of study committee**, ExxonMobil (retired)* • ***Sammantha Magsino, Study director**, National Academies staff* • ***Margo Corum,** U.S. Geological Survey*
12:00 PM	LUNCH
1:00 PM	**Closed Business Meeting (committee and staff only)**
2:30 PM	**End of meeting**