

**NCC 2016 FALL MEETING
Delivers an Upbeat Message on Coal's Future**

The NCC's 2016 Annual Fall Meeting, hosted October 4-5 in Milwaukee, Wisconsin, featured presentations focused on the theme of "**Value-Added Opportunities for Coal.**" Presenters delivered an encouraging outlook for new projects and technologies that represent future growth markets for coal and coal by-products.



More than 70 NCC members, pending members and associates participated in the meeting, including representatives from the Department of Energy's Office of Fossil Energy (FE) and the National Energy Technology Laboratory (NETL).

The meeting kicked off with a keynote address by **Dr. Darren Mollott**, FE Associate Deputy Assistant Secretary, who provided an overview of DOE's Carbon Capture Utilization and Storage program initiatives. Dr. Mollott referenced a DOE white paper published in August on "CCUS: Climate Change, Economic Competitiveness and Energy Security."

[DOE CCUS White Paper - August 2016](#)

The industry keynote presentation was delivered by **Tom Metcalfe, We Energies**, who provided an update on the air quality control systems deployed at the company's coal plants and discussed efforts to enhance the fleet's fuel flexibility. He also provided a preview of the afternoon's tour of We Energies' Oak Creek Supercritical Power Plant (see page 4).

Industry perspectives continued with presentations by:

Peter Kirk, Head Digital Coal Solutions, GE Power
Digital Power Plant Management:
Enhancing Coal Plant Environmental Compliance

William Sawyer, Manager Hibbard Renewable Energy Center
Minnesota Power/ALLETE
Carbon-eliminating Allam Cycle for Coal Power Plants

Danny Gray, Executive Vice President Government & Environmental Affairs
Charah, Inc.
Beneficial Uses of Coal and Coal Byproducts:
Coal Ash & Rare Earth Elements

Presentations and videos from the meeting are posted on the NCC website at <http://www.nationalcoalcouncil.org/page-Meeting-Presentations.html>.

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NCC Community News

NCC members are invited to submit news items regarding their companies and organizations to Janet Gellici at info@NCC1.org.

Brad Crabtree, Great Plains Institute
Ray Shepherd, Peabody Energy
Shannon Agielski, Coal Utilization Research Council
Jeff Erikson, Global CCS Institute

CCUS: American Energy Innovation Congressional Briefing

Brad Crabtree moderated and **Ray Shepherd** delivered a presentation at a Capitol Hill Congressional briefing in mid-September on Carbon Capture, Utilization & Storage. CURC and GCCSI co-hosted the event along with the National Enhanced Oil Recovery Initiative (NEORI). The hearing featured presentations on CCUS in relation to job opportunities, energy security, technical applications, CO₂-EOR and CO₂ emissions reduction potential, as well as a discussion on why federal incentives are key to commercial deployment. Crabtree referenced the recent NCC study on **CO₂ Building Blocks** in his opening remarks.

<http://www.nationalcoalcoal.org/page-NCC-Studies.html>

Steve Winberg, Battelle

Mid-Atlantic Region Energy Innovation Forum

Steve Winberg delivered a presentation at the DOE-hosted Energy Innovation Forum for the Mid-Atlantic Region in mid-September. His presentation, "The Future of Coal," provided an overview of the current status of the U.S. coal industry, an outlook for future coal supply and consumption, and a summary of next generation coal technologies with CCS. He called on the coal industry to partner with technology providers to advance pilot plants on mine property. The regional forums are part of DOE's efforts to advance its Mission Innovation objectives.

Tom Metcalfe, We Energies Congratulations

The NCC community extends its congratulations to **Tom Metcalfe** on recently becoming a citizen of the U.S. Lots of new horizons for Tom this year – he joined We Energies as Executive Vice President in April 2016 and he was appointed to the National Coal Council this summer. Well done!

NCC ASSOCIATES

Todd Cunningham

Freelance Editing, Writing & Publishing Services

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NCC would like to thank Todd Cunningham for his years of service writing the "Coal Currents" section of our newsletter, which was discontinued earlier this year. Todd is well versed in providing coverage of coal/energy and environmental issues and specializes in writing white papers, case studies and special reports. Please contact Todd directly if you are interested in securing his services. [Todd Cunningham LinkedIn](#)

NCC NEW OFFICE ADDRESS & FAX

Effective August 15th, the NCC office has relocated to a new executive suite in the same building. Please update your records to reflect new info:
 1101 Pennsylvania Ave., NW, **Suite 300**, Washington, DC 20004
 Phone ~ 202-756-4524, Fax ~ **202-688-2201**

COAL RESOURCES

U.S. Department of Energy
www.doe.gov
[Office of Fossil Energy](#)

National Energy
 Technology Laboratory
www.netl.doe.gov
[Coal & Power Systems](#)

EIA Coal Data Browser
[www.eia.gov/coal/data/b
 rowser](http://www.eia.gov/coal/data/browser)

ION Engineering Initiates
 CO₂ Capture Test
 Campaign at Technology
 Centre Mongstad
[PR Newswire 10-12-16](#)
 See ION Engineering
 presentation at NCC
 Spring 2016 Meeting
[ION NCC Spring 2016](#)

Coal Ash Recycling
 Reaches 52%
[American Coal Ash
 Association 10-12-16](#)
 See Danny Gray
 presentation on coal ash
 at NCC Fall 2016 Meeting
[Coal Ash NCC Fall 2016](#)

Scientists Call for Increased
 Govt Support for Clean
 Power Tech
[National Academy of
 Science Sept. 2016](#)

Selling Energy Storage
 When the Economics
 Don't Work
[GreenTechMedia 09-15-
 16](#)

Coal CEO: Drop Climate
 Debate, Focus on Coal's
 Role in Emissions Reduction
[Global CCS Institute 09-
 19-16](#)

Coal Enters a Post-
 Bankruptcy Market. What
 happens then?
[Trib Energy Journal 09-19-
 16](#)

The Clean Coal Moonshot
[Roanoke Times 10-9-16](#)

National Coal Council
NationalCoalCouncil.org

NCC Member Focus

Sharon Sjostrom was appointed to serve on the National Coal Council in early 2016. Sharon brings to the NCC 28 years of experience in developing and implementing air pollution control technologies for coal-based power plants. Thanks for your service, Sharon!

Sharon Sjostrom is the Chief Product Officer with Advanced Emissions Solutions, Inc. (ADES) where she is responsible for leading strategic product and business development for the corporation and its subsidiary, ADA-ES, Inc.

Sharon studied mechanical engineering in the 80s, obtaining degrees from Colorado State University and Caltech. She actively volunteered her time during these years serving economically disadvantaged populations. She directly experienced the impacts on health and welfare when reliable energy, especially basics like heating and cooling, is not affordable or readily available. She has dedicated her career to assuring that low-cost, safe and reliable energy is available, clean, and accessible.

Sharon began focusing on reducing mercury emissions from coal plants in 1990. Much of her early experience was hands-on at plants throughout the U.S. With the implementation of the Mercury and Air Toxics Standards (MATS), approximately 80% of the operating plants in the U.S. are currently using mercury measurement or control technologies that she helped to develop.

In 2007 ADA, under Sharon's leadership, began developing post-combustion CO₂ capture technologies. She received her MBA in 2008, which has broadened her perspective to both the business and technical challenges facing the industry. She has recently begun developing techniques to integrate grid-scale energy storage with fossil plants to increase the efficiency of existing plants and address increasingly stringent regulations.

Sharon has served on the Coal Utilization Research Council (CURC) and currently serves on the Board of the Institute of Clean Air Companies (ICAC). She has nearly 30 years of experience in advancing cleaner energy by developing technologies and commercializing products to reduce emissions from coal-based power generation to assure that coal, a critical national resource, remains a viable power source for future generations.



SHARON M. SJOSTROM, P.E.
CHIEF PRODUCT OFFICER
ADVANCED EMISSIONS
SOLUTIONS, INC.

Advanced Emissions Solutions, Inc. (NASDAQ: ADES) is a leader in developing and supplying emissions control solutions for the coal-fueled power plant industry. Our proprietary environmental technologies and specialty chemicals enable power plants to enhance existing air pollution control equipment, minimize mercury, acid gases and other emissions, maximize capacity, and improve operating efficiency to meet the challenges of existing and pending environmental regulations. Advanced Emissions Solutions, Inc. serves as the holding company for ADA-ES, Inc. and is an owner in Tinuum Group, LLC.

ADA-ES, Inc., is a trusted partner to America's top energy producers.

Sharon Sjostrom

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NCC FALL MEETING ~ WE ENERGIES' OAK CREEK TOUR



Amazing is an understatement to describe **We Energies' Oak Creek Expansion Units 1 & 2**. Attendees at the NCC's 2016 Fall Annual Meeting were treated to a tour of the facility on the shores of Lake Michigan. The supercritical Oak Creek 1 & 2 units, with a combined generating capacity of 1,230 MW, are among the cleanest and most efficient coal-fueled power plants in the U.S. https://www.we-energies.com/home/OCXP_FS_C.pdf



The construction of the \$2 billion Oak Creek expansion began in June 2005 and employed more than 3,000 workers at peak construction. The project including excavating 6 million cubic yards of earth to construct the units near lake level to increase operating efficiencies, thus lowering emissions and operating costs. Unit 1 achieved commercial operation in February 2010 and Unit 2 in January 2011.

An expanded coal handling system was built to serve both the existing and expanded units. The new facility includes a rotary car dumper and can accommodate up to 150 railcars.

The two new units use an advanced combustion technology that increases efficiency by operating at higher pressures and temperatures, resulting in fewer emissions. The air quality control system (AQCS) reduces NOx by more than 85% and captures more than 99% of particulate matter, 97% of SO₂ and more than 90% of mercury.

An innovative cooling water intake system was built to serve the new and existing units at the site. The system allows the units to use less coal to produce electricity and provides greater water conservation because there is virtually no evaporative water loss.



Many thanks to We Energies for providing us with such a wonderful tour of such an impressive plant.

NCC FALL MEETING ~ THANK YOU SPONSORS!

We couldn't have done it without you. The support of the following folks made it possible for NCC to host an exceptional reception and meeting in Milwaukee on October 4-5. Your support is greatly appreciated!





NCC ACTIVITIES & NEWS (continued)

NCC UPCOMING SPEAKING ENGAGEMENTS

NCC's CEO, Janet Gellici, will be presenting findings and recommendations from recent NCC reports at:
Power Plant Management & Generation Summit – October 24, 2016, Houston
Carbon Management Technology Conference – July 2017, Houston



WANTED: CHAIR'S ADVISORY COUNCIL MEMBERS 2017

The NCC's Chair's Advisory Council (CAC) works with NCC leadership to advance the strategic objectives of the Council. This special group of NCC members commits to enhancing their financial support to the NCC and to participating in special NCC activities.

In 2016, CAC members participated in a roundtable discussion with **David Mohler, Deputy Assistant Secretary for Clean Coal & Carbon Management**, engaged in preparation of NCC's comments submitted for the Quadrennial Energy Review 1.2, and joined in a DOE-Industry Roundtable Discussion addressing how best to advance recommendations from NCC's Policy Parity white paper. Thank you to 2016 CAC members: ADA-ES, ADA Carbon Solutions, Arch Coal, Black & Veatch, Clean Coal Solutions, Dominion, Great River Energy, Lignite Energy Council, Peabody Energy, Soap Creek Energy, Southern Company and Tri-State Generation & Transmission.

We are now welcoming memberships for the 2017 Chair's Advisory Council. If you are interested in participating or would like additional information, please contact Janet Gellici at jgellici@NCC1.org.



AMERICAN COAL FOUNDATION

Educational Resources

The American Coal Foundation has been busy developing new educational materials about coal's role in the world. These materials are free for teachers and include interactive digital features on the ACF website as well as many lessons to use in classroom settings.

Among the latest offerings is a new motion graphics video entitled "Lighting Up Our Lives: The Story of Coal-Powered Electricity" (<http://teachcoal.org/acf-motion-graphics-video>) and new standards-based classroom activities with lesson plans in the areas of science, math, language arts and STEM careers (<http://teachcoal.org/lesson-plans>). There's also two unique games to encourage students to explore and engage with the ACF website: Treasure Hunt (<http://acftreasurehunt.com/>) and Coal Fact Safari (<http://teachcoal.org/coal-fact-safari-quizzes>).

Plenty more available on the ACF website at <http://teachcoal.org/>.



AMERICAN
ENERGY
SOCIETY

AES is convening a summit on emerging energy technologies suitable to the Upper South/Mid-Appalachia region, with emphasis on potential business development and job creation. The summit will be hosted December 5-6 at the Southwest Virginia Higher Education Center in Abingdon, VA.
<https://www.energysociety.org/#/static/about>

ENERGY FUNDING & RESEARCH TESTING OPPORTUNITIES

DOE Announces More than \$10 Million for Advanced Combustion Systems Research

On September 19th, DOE announced the selection of 8 projects to develop enabling technologies for advanced combustion systems, including oxy-combustion and chemical looping-based power systems. The selected projects are in two areas: 1) Research to improve the performance of pressurized oxy-combustion systems and 2) research to improve performance of chemical looping combustion systems using coal-based solid fuels.

Award recipients include NCC member company EPRI, as well as numerous universities and a couple of technology development companies.

<http://energy.gov/fe/articles/doe-announces-more-10-million-advanced-combustion-systems-research>

DOE Announces \$107 Million in Solar Funding

On September 14th, DOE announced up to \$107 million in new projects and planned funding in order to support America's continued leadership in clean energy innovation through solar technology. Under the Office of Energy Efficiency & Renewable Energy's (EERE) SunShot Initiative, DOE will fund 40 projects with a total of \$42 million to improve PV performance, reliability and manufacturability, and to enable greater market penetration for solar technologies. DOE also intends to make up to \$65 million, subject to appropriation, in additional funding available for upcoming solar R&D projects to continue driving down the cost of solar energy and accelerating widespread national deployment.

One of SunShot's goals is to drive down the levelized cost of utility-scale electricity to \$0.06 per kilowatt-hour without incentives by 2020.

<http://energy.gov/eere/articles/energy-department-announces-107-million-innovative-projects-and-new-funding-advance>



Wyoming ITC Opens Application Process For Research Teams

On October 6th, Wyoming Governor Matt Mead announced the opening of the application

process for researchers and potential tenants at the Wyoming Integrated Test Center (ITC). The ITC is being built at NCC member **Basin Electric Power Cooperative's** Dry Fork Station near Gillette with the goal to advance CCUS technologies.

The ITC issued an RFP to identify candidates and select initial users of test bays. Interested parties may obtain and submit applications at www.wyomingitc.org.

SECRETARY MONIZ TESTIFIES AT HOUSE HEARING ON ENERGY SECURITY

[House Hearing on Energy Security - September 15, 2016](#)

The Energy & Power Subcommittee held a hearing in September examining DOE's role in advancing the national, economic and energy security of the U.S. Secretary Moniz testified, referencing a June 2014 G-7/EU leadership endorsement of 7 energy security principles that included diversifying energy fuels, sources and routes and encouraging use of indigenous sources of energy. These principles are guiding the work of the DOE, including the pending Quadrennial Energy Review (QER 1.2) which is focused on examining trends and issues confronting the nation's electricity system.



WHO KNEW?*

Clean Energy Investment Center

<http://energy.gov/technologytransitions/us-department-energys-clean-energy-investment-center>

In February 2015, the White House launched the Clean Energy Investment Initiative to catalyze expanded private sector investment in climate change solutions, including innovative technologies with breakthrough potential to reduce carbon pollution.

To support this initiative the Department of Energy has responded by establishing the **Clean Energy Investment Center**. The Center's mission is to advance private, mission-oriented investment in clean energy technologies that address the present gap in U.S. clean tech investment. It will also enhance the availability of the Department's resources to investors and the public.

Financing and partnerships are crucial components for the acceleration and success of the initiative; DOE is welcoming mission-driven investors – such as foundations, university endowments, and institutional investors.



CEIC Offerings

- **Single Point of Access for Information:** The Center will ensure information about DOE programs is more understandable and accessible. It will also serve as a one-stop for investors to locate subject matter experts, acquire the latest reports and data on clean energy technology, and find a listing of companies and projects funded by the Agency. This information will enable investors to make informed decisions based on DOE's research and analysis.
- **Technical Assistance:** The Center will share research and analysis produced by DOE and its 17 national laboratories on relevant developments in clean energy technology. Furthermore, the Center will offer a mechanism for identifying the need for new technology analysis from DOE.
- **Information on Early-Stage Projects and Companies:** DOE currently has programs including the Advanced Research Projects Agency-Energy (ARPA-E), Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR), and others that help to fund and accelerate emerging early-stage technology projects and companies. The Center will aggregate and make available public information on entities currently engaged in partnerships with DOE.
- **Connections to Additional Relevant U.S. Government Programs:** The Center will include information about energy and climate programs at other government agencies including the U.S. Department of Agriculture, U.S. Department of Housing and Urban Development, U.S. Department of Transportation, U.S. Department of Treasury, U.S. Environmental Protection Agency, U.S. Small Business Administration and the National Science Foundation.

The CEIC became operational in January 2016, organized within DOE's Office of Technology Transitions (OTT). Efforts are underway to engage with the philanthropic and private sector investment community on how DOE can re-catalyze private funds back into the energy sector. In October 2016, DOE's OTT released a Technology Transfer Execution Plan 2016-2018. <http://energy.gov/sites/prod/files/2016/10/f33/TTEP%20Final.pdf>

***A regularly featured column on industry, university and government initiatives in support of clean coal technology development & commercialization.**