



Carbon Management Approaches *CCUS & Beyond*

CARBON MANAGEMENT TECHNOLOGY CONFERENCE

JULY 16, 2019 – HOUSTON, TEXAS

JANET GELLICI, CEO, NATIONAL COAL COUNCIL

A solid orange horizontal bar at the bottom of the slide.



Advisors to the U.S. Secretary of Energy

**NCC is a Federal Advisory Committee
Organized under Federal Advisory Committee Act (FACA)**

**The National Coal Council
provides advice and recommendations
to the Secretary of Energy
on general policy matters
relating to coal and the coal industry.**

Celebrating 35 years – 1984 | 2019

Members
Appointed by Secretary of Energy
Limited to 125-150 members representing a broad spectrum of coal interests



Body of Work

Reports

~ 40 reports prepared by NCC members at no cost to DOE
Extensive Range of Report Topics

Carbon Management
Clean Coal Technologies
Coal & Coal Technology Exports
Coal Conversion
Utility Deregulation
Climate & Clean Air Regulations
Building New Coal Plants
Industrial Coal Use

CCUS for EOR
Value of Existing Coal Fleet
Fossil Forward: CCS Technologies
Policy Parity for CCS
CO₂ Utilization
Advancing U.S. Coal Exports
Power Reset: Existing Coal Fleet
Coal in a New Carbon Age



NCC History Carbon Management

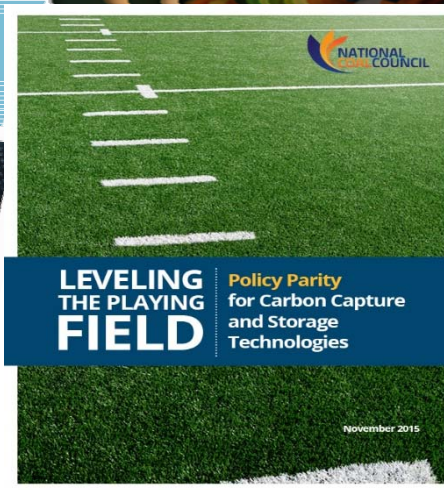
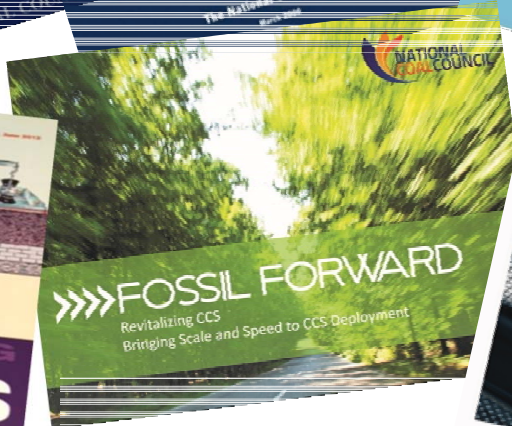
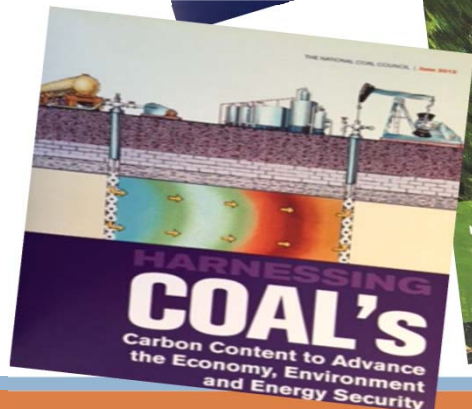
1998-2019

15 reports prepared by NCC addressing carbon management

- Enhance Efficiency
- New Source Review
- R&D Portfolio of Technology Options
- Portfolio of CO₂ Storage & Use Options
- DOE-Industry & International Partnerships
- Projects, Projects, Projects
- Financial Incentives
- CCUS Critical



A History of Engagement





Secretary Perry's Request

Formal request April 2018 charging National Coal Council to:

... assess "opportunities to optimize the existing U.S. coal-fueled power plant fleet to ensure a reliable and resilient electricity system."

Key question to address:

"What actions can be taken to optimize the U.S. coal-fueled power plant fleet so it can continue to provide reliable, resilient, affordable power as part of a diverse electric generation mix, and what unique benefits does coal provide?"



The Secretary of Energy
Washington, DC 20585

April 07, 2018

Mr. Greg Workman
Chairman, National Coal Council
Dominion Generation
120 Tredegar Street, DC3
Richmond, Virginia 23219

Dear Mr. Workman:

I am writing today to charge the National Coal Council (NCC) to develop a white paper assessing opportunities to optimize the existing U.S. coal-fueled power plant fleet to ensure a reliable and resilient electricity system.

The white paper should focus on drivers governing the evolution of the existing fleet and its attributes; outlooks on the future U.S. generation mix considering regional drivers, anticipated capacity additions, and retirements; characteristics of a reliable and resilient electricity system; and opportunities for the existing coal-fueled fleet to enhance the said characteristics. The white paper should examine policy, market, and technological aspects influencing the ability of coal-fueled plants to uniquely enable a reliable and resilient electricity system. The key questions for this white paper to address are *"What actions can be taken to optimize the U.S. coal-fueled power plant fleet so it can continue to provide reliable, resilient, affordable power as part of a diverse electric generation mix, and what unique benefits does coal provide?"*

I ask that the white paper be completed no later than September 30, 2018.

Upon receiving this request and establishing your internal working groups, please advise me of your schedule for completing the white paper. The Department looks forward to working with you on this effort.

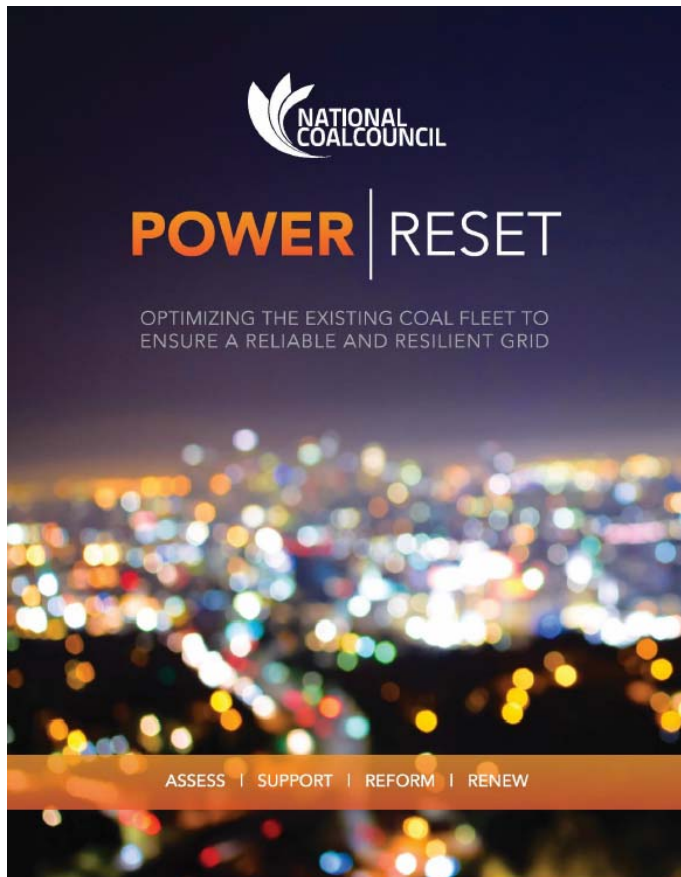
Sincerely,

A handwritten signature in black ink that reads "Rick Perry".

Rick Perry



Report Focus & Recommendations



- Coal's Unique Role in the U.S. Energy Portfolio
- Outlook for Coal Generation
- Measures to Optimize Diversity & Resiliency

ASSESS | SUPPORT | REFORM | RENEW



REFORM Tactics

ASSESS | SUPPORT | **REFORM** | RENEW

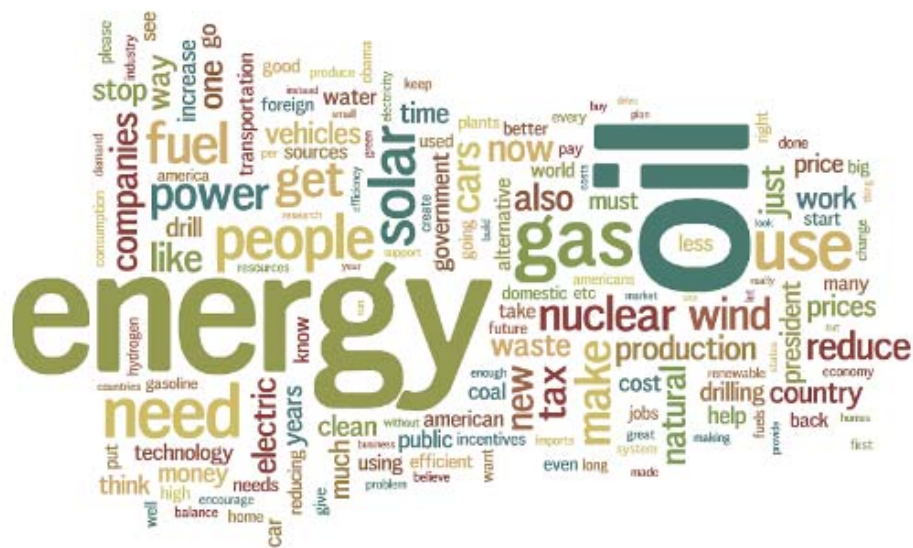
REFORM the regulatory environment.

- **Policy:** NSR, PURPA, CCR, ELG, CO2 storage on federal lands, engage on the Affordable Clean Energy plan
- **Market:** FERC capacity reform initiatives, ISO/RTO price formation, standards for essential reliability services, fuel security and resilience assessments
- **Taxes:** O&M expenses for coal plants, 45Q support, 48Q



Policy Reforms

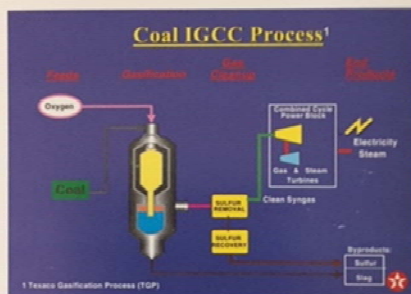
- New Source Review
- PURPA Reform
- Coal Combustion Residuals
- Effluent Limitation Guidelines
- Land Use Policies on CCUS
- Engage with EPA





NSR Reform

Increasing Electricity Availability From
Coal-Fired Generation in the Near-Term
May 2001



THE NATIONAL COAL COUNCIL

“... EPA’s new approach to its NSR rules presents a significant regulatory barrier to projects at existing sources that would otherwise be undertaken to improve availability and efficiency. This barrier can be expected not only to prevent significant gains in generating capacity at existing units, but also to actively reduce availability of these units by preventing needed maintenance ... this barrier also can be expected to inhibit development of more efficient generating technologies ...”

Increasing Electricity Availability From Coal-Fired Generation in the Near-Term – NCC May 2001



PURPA Reform

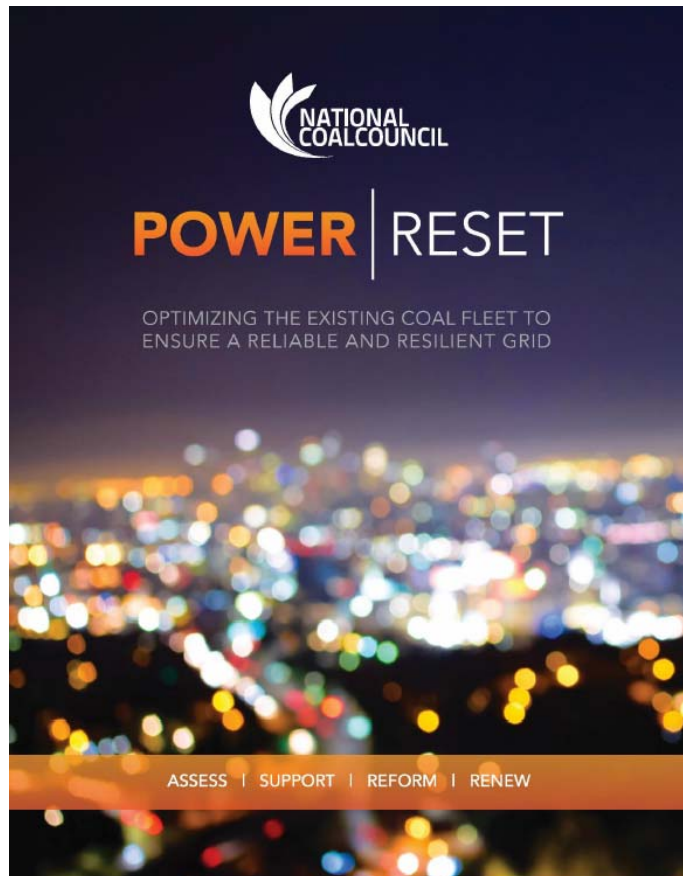


“Under PURPA enacted by Congress to address the energy shortage in the 70s, utilities are required to purchase power from ‘qualified facilities’ (QFs) ... [FERC] continues to grant QF status to all renewable QFs of 20 MW or less ... (and) allows large renewable QF projects, such as wind and solar, to be split up into 20 MW projects to be granted QF status requiring utilities to purchase the power produced whether needed or not at ... typically higher rates than market rates.”

Leveling the Playing Field – NCC November 2015



CCRs & ELGs



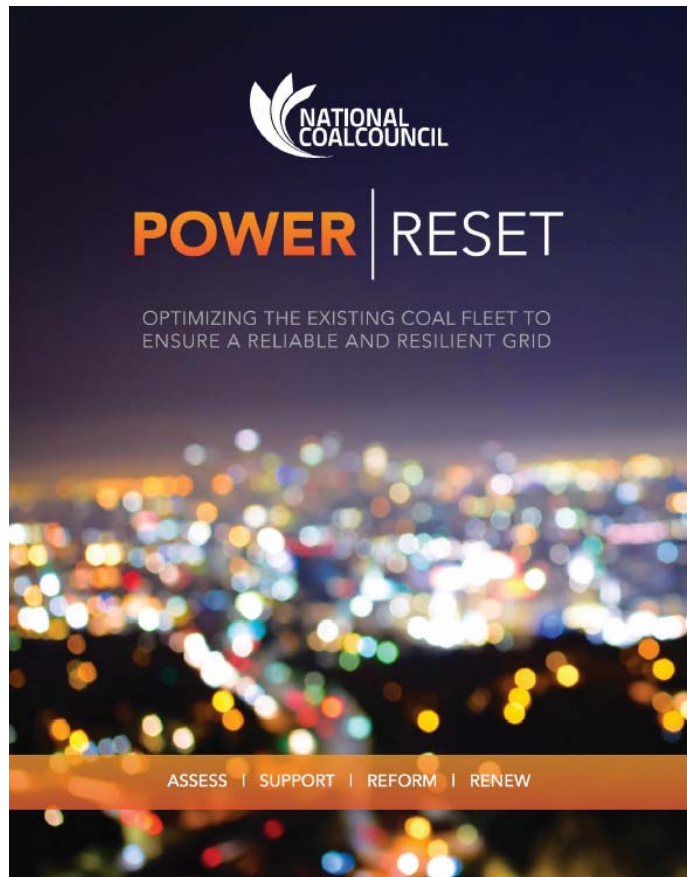
“The [EPA 2015 CCR] rules set standards for existing CCR impoundments and require closure of ash ponds ... The rule may drive units to retire as the compliance costs become prohibitive, adding to the cost of generation, or their disposal facility is forced to close, and the alternative are too expensive.”

“The Clean Water Act directs EPA to establish effluent limitation guidelines and standards (ELGs) to control discharges of pollutants to surface waters ... The ELGs add the possibility of adding a wastewater treatment module to the FGD discharge stream ...”

Power Reset – NCC October 2018



Land Use Policies for CCUS



“Several plants in the existing coal fleet are either located on federal and/or tribal lands, or have reasonable proximate access to the same ... the facilities could potentially benefit if the relevant authorities enacted CO₂ storage laws and regulations for these resources.”

Power Reset – NCC October 2018



Tax Reforms

Tax Credits

- O&M Tax Credit
- 45Q Implementation
- 48A Investment Tax Credit

**TAX
CREDITS**

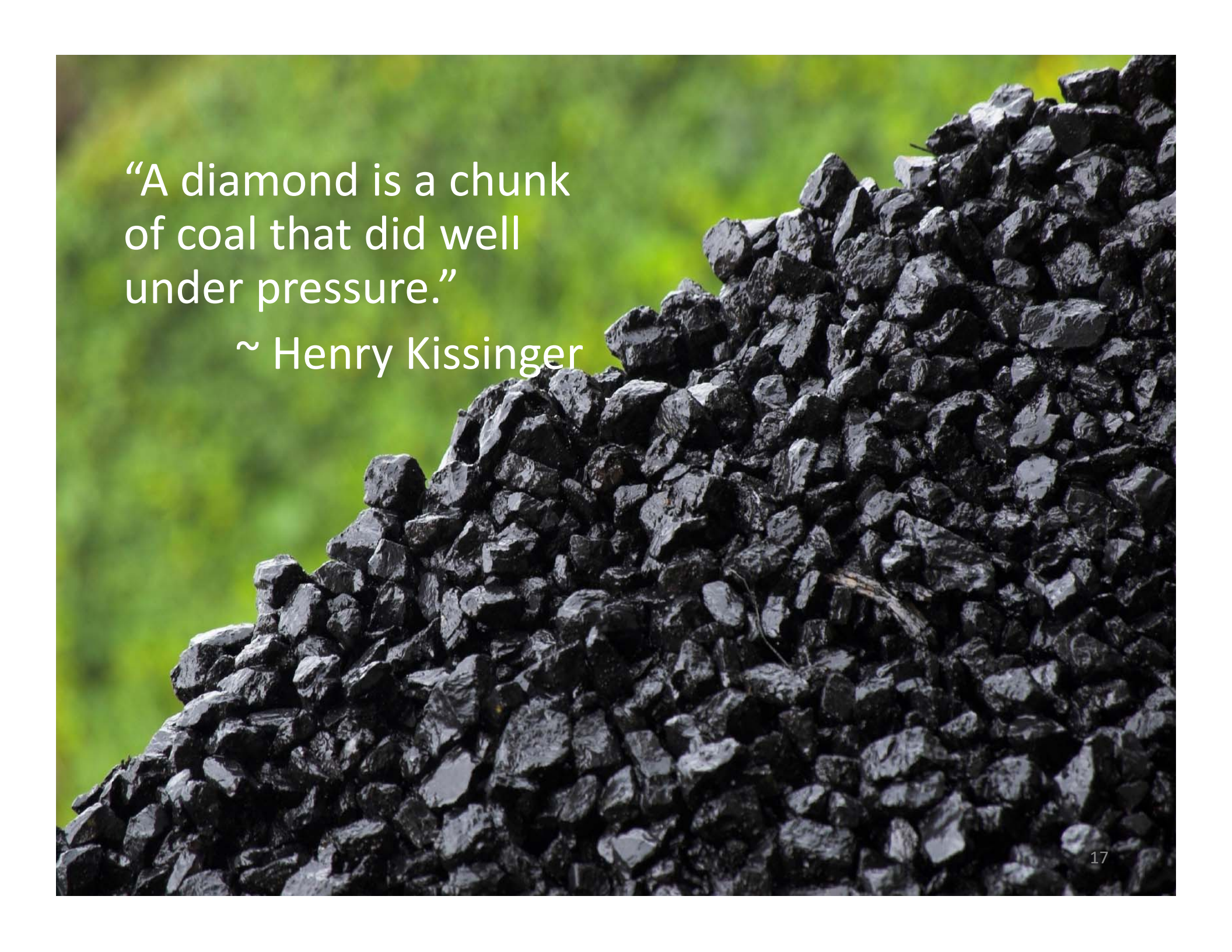


RENEW Technology RD&D

Project Name	Capital Cost	B/C Ratio	B/C Ratio Rank
Circulating Water Pump Refurbishment	Low	High	1
Sootblowing Steam Source	Low	High	2
Coal Mill Inerting Source	Low	High	3
Add Condensate Polishing	Medium	High	4
HP/IP/LP Turbine Upgrade	High	High	5
Coal Mills Replacement	High	High	6
Boller Feed Pump Refurbishment	Low	Moderate	7
Helper Cooling Tower Replacement & Pumps	Medium	Moderate	8
Replace Flame Scanners	Low	Moderate	9
VFD's for Forced Draft Fans	Medium	Low	11
Air Heater Overhaul	Medium	Low	10
Replace Air Preheat Coils	Low	Low	12
VFD's for Induced Draft Fans	Medium	Low	13
Alternate Air Heater Overhaul	Medium	Low	14
Alternate Air Preheat Coils Modification	Medium	Low	15

Coal Power Plant Efficiency Audit Results

ASSESS | SUPPORT | REFORM | RENEW

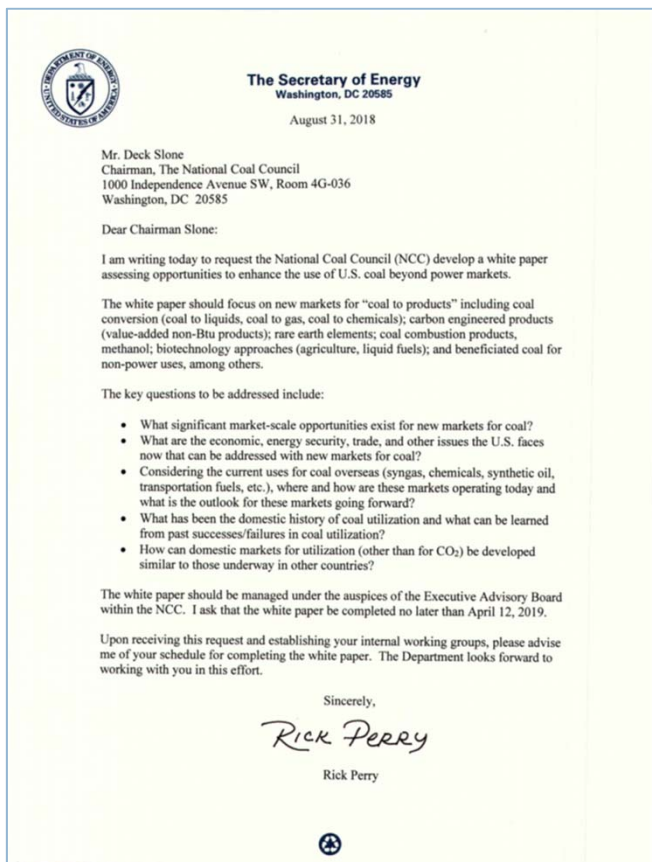
A large pile of dark, jagged coal chunks is shown against a blurred green background. The coal pieces are of various sizes and shapes, creating a textured, dark mass. The background is a soft, out-of-focus green, suggesting a natural setting like a forest or a field.

“A diamond is a chunk
of coal that did well
under pressure.”

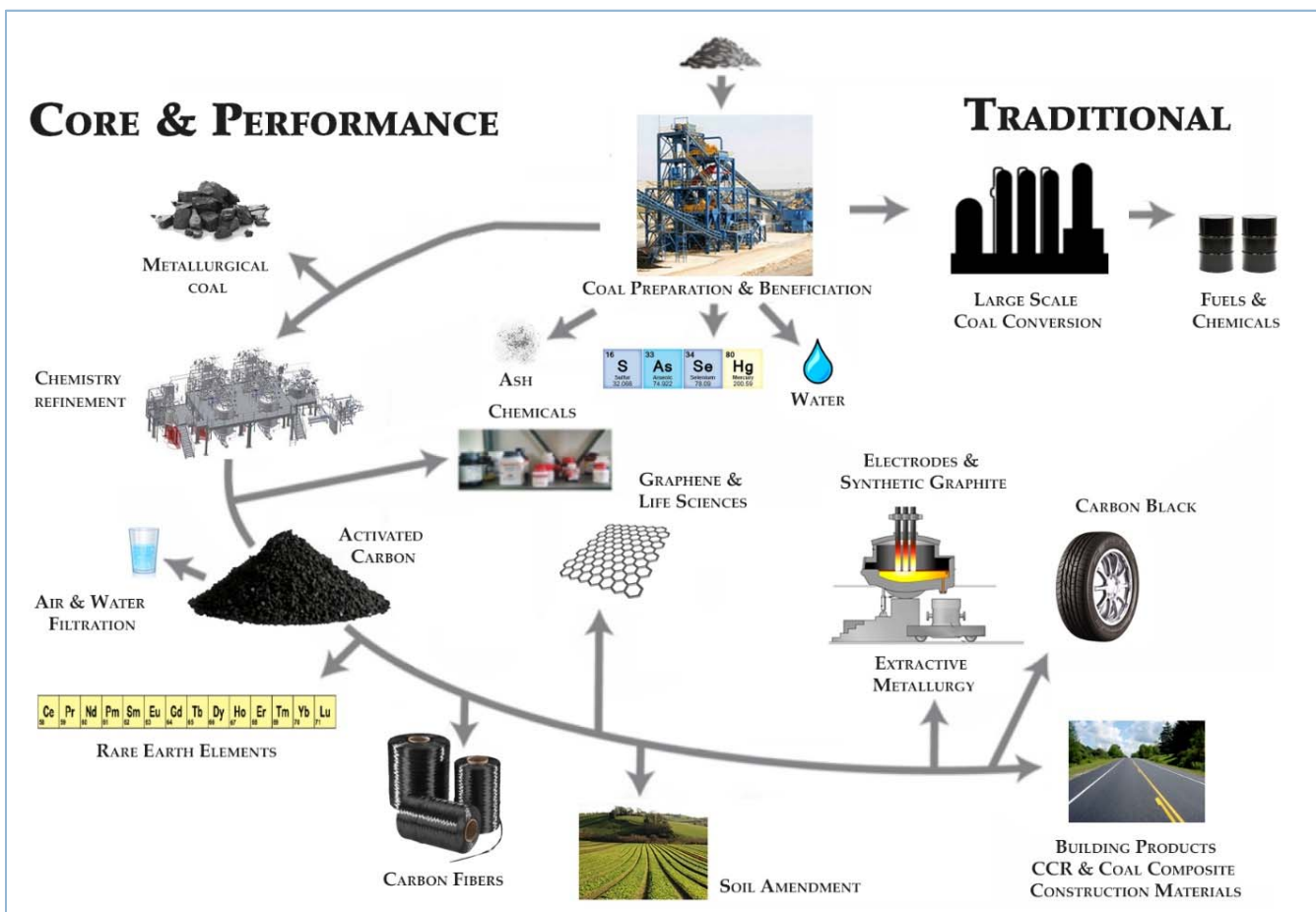
~ Henry Kissinger



Coal in a New Carbon Age



Coal-to-Products Market Sectors





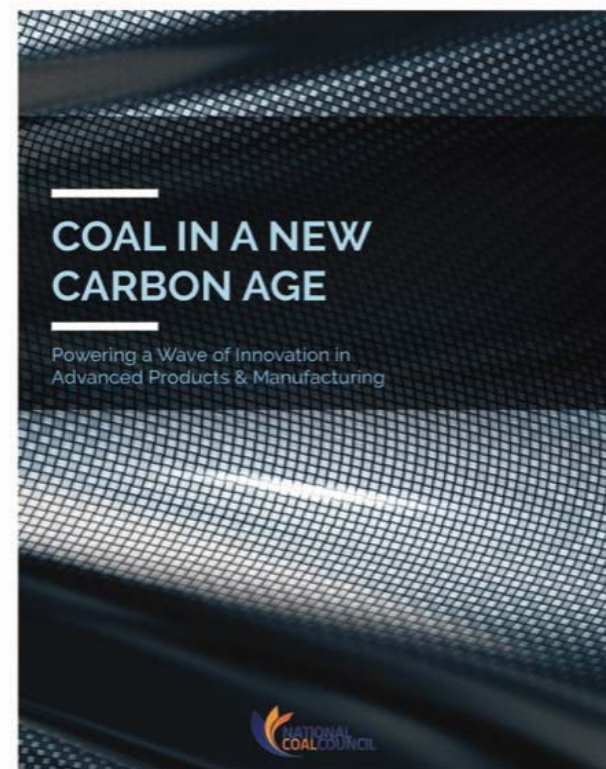
Environmental Benefits of Coal-to-Products





Coal-to-Products Report Recommendations

- Establish a focused R&D program on coal-to-products.
- Accelerate research-to-commercial deployment in coal-to-products market sectors.
- Incentivize private sector investment in coal-to-products production and manufacturing sectors.





CCUS is Critical

“Achieving global climate objectives will require a portfolio of approaches that balance economic realities, energy security and environmental aspirations. The most impactful action the U.S. can employ to reduce CO₂ emissions is to incentivize the rapid deployment of CCUS technologies.”

CO₂ Building Blocks: Assessing CO₂ Utilization Options –
NCC August 2016





“The Apollo project was a great achievement. It showed that this country could do what it wanted to do technologically if it devoted enough time and effort and resources to it. I think we could do lots of things today technologically if there were the political will, and there was political will to go to the moon.”

Mark Bloom



National Coal Council
www.NationalCoalCouncil.org
info@NCC1.org
202-756-4524

JANET GELLICI, CEO, NATIONAL COAL COUNCIL

A solid orange horizontal bar at the bottom of the slide.