



NEWS RELEASE

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FOR IMMEDIATE RELEASE
October 12, 2021

National Coal Council Approves Report for U.S. Secretary of Energy *CARBON FORWARD* *Advanced Markets for Value-Added Products from Coal*

WASHINGTON, D.C. – Members of the National Coal Council (NCC) have approved a new report for the Secretary of Energy that provides an assessment of opportunities to enlist advanced manufacturing techniques to enhance use of U.S. coal in new and expanded carbon product markets. The report, completed at the request of the U.S. Secretary of Energy, emphasizes the value coal-to-carbon products provides in meeting top priorities of the Biden Administration, including job creation, economic revitalization, environmental stewardship, infrastructure improvement and supply chain resilience.

The report – “*CARBON FORWARD: Advanced Markets for Value-Added Products from Coal*” – highlights the various applications of carbon-based products for the aerospace, agricultural, automotive, consumer goods, construction, defense, energy, environmental and medical sectors. Compared with traditionally manufactured products used in these industry sectors, coal-derived products can provide benefits such as:

- **Improved Product Quality & Performance** – stronger, more durable, lighter weight, corrosion and fire resistant, greater energy storage capacity
- **Improved Economics** – reduced manufacturing complexity results in reduced costs, domestically abundant and affordable coal resource base, utilization of existing infrastructure
- **Enhanced Environmental Stewardship** – lighter weight products use less fuel, more energy efficient production, shorter supply chains reduce air emissions, carbon dioxide (CO₂) sequestration potential, reduced water consumption, hydrogen production potential
- **Enhanced National Security** – improved supply chain resilience through use of domestic resources and diversified feedstock sources, reduced dependence on imports of critical materials

The report was chaired by Rodney Andrews, Director of the Center for Applied Energy Research at the University of Kentucky. Andrews noted that “The many benefits associated with coal-derived carbon products requires reframing how we think about coal. As we learn more about its complex molecular composition, we come to appreciate the valuable role coal can play in meeting our economic, environmental and national security objectives.”

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Many of the products and materials that can be produced using coal will support our nation's efforts to revitalize manufacturing and deploy next-generation technologies. Advanced manufacturing, including pathways such as 3D printing, automation, digitization and artificial intelligence, will be a critical component in accelerating deployment of carbon products.

Successful commercialization of these products will require addressing the gap between basic laboratory research and development (R&D) and commercial demonstration. The major time delay and primary obstacle to technology commercialization is the gap in the availability of funding through the so-called "development death valley." Financing of demonstration projects is an impediment to commercial deployment.

Accelerated demonstration and deployment of coal-derived product technologies will yield benefits that support Biden Administration priorities:

Job Creation –

The U.S. Department of Energy's (DOE) own assessment indicates potential employment by 2050 of 280,000-480,000 manufacturing jobs associated with carbon product manufacturing. The Administration's American Jobs Plan calls for creating high-paying jobs in distressed communities impacted by the recent energy transition. Deploying coal-to-products industries in distressed coal communities can provide good jobs while making use of existing coal mining, transportation and power generation infrastructure.

Economic Revitalization –

The American Jobs Plan calls for investment in R&D and technologies of the future. Coal-derived carbon technologies will fuel next generation industries, utilizing coal as an inexpensive feedstock. An assessment by DOE's National Energy Technology Laboratory (NETL) indicates carbon products will have a global market value of over \$96 billion by 2023 and a compound annual growth rate of 9.2%.

Environmental Stewardship –

The Administration is pursuing numerous environmental initiatives to deliver clean drinking water, electrify the automotive industry, reduce energy consumption and emissions, and advance a hydrogen economy. Coal-derived products include those used for air and water purification, critical minerals used to produce electric vehicle and energy storage batteries, building materials that sequester CO₂ and products used in making solar panels and wind turbine blades. Light-weight carbon products reduce end-use energy consumption and emissions; some products require less energy and water to produce than more traditional products. Finally, coal-derived hydrogen can be produced for fertilizers, plastics and transportation fuels.

Infrastructure Improvement –

The Administration’s infrastructure improvement initiatives include plans for investing in construction and repair of roads, bridges, rail, ports, airports and buildings. Many of the basic commodities and construction materials needed to shore up the nation’s infrastructure can be produced from coal at less cost, with enhanced technical performance, extended use life and environmental advantages vis-à-vis more traditional materials.

Supply Chain Resilience –

President Biden’s Executive Order on America’s Supply Chains addresses our nation’s need to reduce supply chain risks and vulnerabilities, and decrease our dependence on foreign imports for critical materials. Coal and coal ash are vital sources for rare earth elements (REEs) and critical minerals (CMs) vital to the production of batteries, electronics, medical products, consumer goods and other strategic materials. Additionally, utilizing U.S. coal resources makes use of well-established domestic supply chains for coal production, transport and on-site storage.

“U.S. abundant coal resources are an economic and versatile asset that can be used as a raw material in the production of high-value products,” noted NCC CEO Janet Gellici. “Other countries are using coal-derived product to advance their strategic goals. We need a national strategic objective in support of coal-derived products to ensure that our nation can realize the full potential these products offer.”

Key recommendations in the NCC report are organized to align with Biden Administration priorities as follows. A detailed roadmap of specific policies and approaches to enhancing deployment of coal-derived products is included in the final chapter of the report.

Key Recommendations

Job Creation

High-value carbon product markets have significant employment and job creation potential.

- Locate coal-to-products development and advanced manufacturing facilities in regional hubs that can maximize workforce employment and infrastructure at existing coal supply, power generation and transportation sites.
- Next generation industries can provide good-paying jobs, especially for those in distressed communities impacted by the recent energy transition.

Economic Revitalization

High-value carbon products markets have significant economic growth and cost-savings potential.

- Ensure adequate investment in a full range of coal-derived carbon products, including supporting demonstration projects, managed by personnel experienced in administering large-scale projects, to bridge the gap between research and commercial deployment.
- Establish appropriate guidelines, standards, certifications and validations to foster enhanced Federal procurement of coal-derived products.
- Harness the abundant, low cost and inherent carbon content of domestic coal resources to reduce the current high costs associated with carbon-based materials and products.

Environmental Stewardship

High-value carbon products can provide environmental benefits, supporting efforts to electrify the transportation fleet, reduce air emissions, provide clean drinking water and decrease energy consumption.

- Acknowledge the energy-saving, emissions-reduction and other environmental benefits of coal-derived products and incentivize inclusion of these products as a component of U.S. initiatives to reduce greenhouse gas (GHG) emissions.
- Emphasize the distinction between "carbon" dioxide (CO₂) emissions and "carbon" used to produce value-added products.

Infrastructure Improvement

High-value carbon building and construction materials can be produced at less cost, with enhanced technical performance and environmental advantages vis-à-vis traditional products.

- Recognize the superior, high-performance benefits of coal-derived products and incentivize inclusion of these products as a component of U.S. initiatives to improve the nation's infrastructure.

Supply Chain Resilience

Domestically sourced and produced high-value carbon products can shore up vulnerable supply chains and reduce U.S. dependence on foreign sources for critical materials.

- Incentivize the use of low-cost, abundant U.S. coal resources to produce high-value carbon materials to enhance supply chain resilience, including run-of-mine coal, coal ash and coal tailings.

The NCC's CARBON FORWARD report can be accessed at

<https://www.nationalcoalcoalouncil.org/page-NCC-Studies.html>.

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