

Coal's New Challenge

TECHNOLOGY IS CRUCIAL

BY BEN YAMAGATA



TECHNOLOGY HAS A PROVEN TRACK

record in addressing ways to minimize coal's impact on the environment while preserving coal's place as the premier provider of low-cost energy to the American consumer.

Coal's new challenge is to meet the nation's need for substantial increases in electricity and energy while decreasing and preventing CO₂ emissions. And again, technology is the key.

If we simply apply today's technology to improve the efficiency of our existing coal fleet and we also support the rapid development and adoption of more efficient power generation systems – both advanced combustion and IGCC – we will immediately decrease coal's CO₂ footprint. A 1 percent increase in efficiency yields about a 2.5 percent decrease in CO₂ molecules released.

Also, if we adopt and pursue an aggressive, well-funded and focused technology program, one designed to showcase the capture, compression, transport and sequestration of CO₂ – either for permanent storage into very deep saline reservoirs or other suitable geologic formations or for beneficial uses such as crude oil recovery – we will again ensure coal's important role in supplying clean and affordable energy.

What is the plan to develop and apply cost-competitive technologies capable of preventing the formation of CO₂ or cost-effectively capturing and then safely sequestering the CO₂ emitted during the power-generation cycle?

The Coal Utilization Research Council's members have developed and are advocating the adoption of a two-part plan.

Part one is focused on aggressively pursuing adoption of a long-term research, development and demonstration program described in a clean coal technology road map that has been drafted by council members in collaboration with the Electric Power Research Institute. The goals described in the road map are straightforward – next-generation power systems that provide the consumer with electricity at a cost no greater than 20 percent above today's cost while capturing and sequestering more than 90 percent of the CO₂. Total cost of this program through 2025 is approximately \$17 billion of which government must provide at least \$10.5 billion given the research

and development nature of the program in which risks are very high and there is little, if any, return on the private sector's investment.

Part two calls for using the technologies we have today and applying those technologies to reduce CO₂ emissions now. Specifically, we need to promote the use of currently available technologies to increase the efficiency of the current coal fleet. We project that application of cost-effective technologies to improve power plant efficiency could immediately reduce CO₂ emissions by more than 100 million tons annually.

We also need to encourage the construction and operation of first-of-a-kind IGCC plants and ultra-efficient pulverized coal plants. Both technology paths are needed for the future and each holds the key to greatly improved efficiency in power generation.

And finally, we need to facilitate and support the integration of electricity generation with carbon capture and storage systems, encourage new means to concentrate CO₂ emissions through new processes like oxycombustion, while also recognizing the need to address the regulatory regime required to transport and store CO₂. These near-term initiatives need to be undertaken now, so that by 2025, practical experience and research will have merged to give industry the tools and the confidence to move to broad deployment of the improved technology suite with minimal additional costs to the consumer. Total cost of the near-term program is about \$38 billion with a contribution from the public sector of about \$15 billion and \$23 billion from industry.

The public dollar commitment for this two-part plan is about \$26 billion or about \$2 billion annually for the next 13 years. This amount seems modest in a several trillion dollar a year economy in which we may be facing an environmental problem of enormous proportions.

As Congress begins the next round of debates about climate change and what to do, technology will be pulled front and center. The real test of commitment will not be the testimonials to the power of technology but whether the financial resources will be made available, whether we will be permitted sufficient time to develop, demonstrate and deploy that which we believe possible, and whether a national consensus can be developed that clears the opposition to coal use by enabling development of technologies – like those developed in the past – to produce affordable, clean energy from coal.

Ben Yamagata is executive director of the Coal Utilization Research Council.

The Coal Utilization Research Council identifies and promotes technology that enables coal to be used in a cost-competitive way while also complying with environmental regulations. Members include the nation's largest coal suppliers, utilities, manufacturers and suppliers of coal combustion and gasification-based systems, state coal development agencies and several major universities with coal-related expertise.

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