

TESTIMONY OF JERRY HOLLINDEN
ON BEHALF OF
THE NATIONAL COAL COUNCIL

SENATE ENERGY AND
NATURAL RESOURCES COMMITTEE HEARING

AUGUST 1, 2007

Good morning, Mr. Chairman. My name is Jerry Hollinden and today I am testifying on behalf of The National Coal Council. The Council is a federal advisory committee to the Secretary of Energy. Council membership is by personal appointment of the Secretary and includes representatives from across the broad spectrum of the coal and energy industry. Council members include senior executives from coal producers, shippers and users as well as consultants, conservation groups, Native Americans, university faculty members, state government officials, lawyers, boiler manufacturers, architect/engineers and large electricity consumers. All members volunteer their time and expertise to the Secretary on issues that he requests the Council to address.

By letter dated June 26, 2006 Secretary Samuel Bodman requested that the Council “conduct a study of technologies available to avoid, or capture and store, carbon dioxide emissions – especially those from coal-fired power plants.” Additionally, the Secretary requested that the Council recommend “a technology-based framework for mitigating greenhouse gas emissions from those plants.”

The Council accepted the Secretary’s request, formulated a working group of about 45 experts in the field, and on June 7, 2007 submitted their report to Secretary Bodman.

Today I will summarize the key findings and recommendations of that study, and I have attached a copy of the full report to my testimony for the record.

The report includes four major findings:

1. Coal must continue its vital and growing role in energy production in the United States, supplying more than 50 percent of the nation’s electricity.
2. Reducing carbon dioxide emissions presents a significant technological challenge, but the coal industry has a proven record of successfully meeting such challenges and stands ready to meet this one as well.
3. It is imperative that research, development and demonstration efforts move forward quickly on a portfolio of technologies to reduce or capture and store carbon dioxide emissions.
4. Public-private support for technologies to reduce or capture and store carbon dioxide is critical to the energy independence and security of the United States.

As indicated by today's hearing, the Council understands that Congress intends to address carbon management. In that context, it is imperative that the nation immediately accelerate deployment of technologically and economically favorable high-efficiency advanced coal combustion, coal liquefaction and gasification technologies. In addition, it is critical to accelerate development, demonstration and deployment of carbon dioxide reduction and carbon capture and storage technologies to control and sequester carbon dioxide emissions from these advanced coal-based technologies. These technologies will be implemented as they become available, affordable and deployable.

With this in mind the Council made the following recommendations to Secretary Bodman. The Department of Energy, acting in coordination with other federal agencies and states, should:

1. Work closely with other appropriate agencies within the federal government to streamline the long, costly and complicated permitting process for siting, building and operating power plants and associated carbon dioxide capture, transportation and storage facilities. Please note that the recommendation is to "streamline" this process, not eliminate it, as some have accused the Council of recommending. A cooperative approach by DOE and EPA on rules such as New Source Review, the Clean Air Interstate Rule and the Clean Air Mercury Rule, for example, would be extremely helpful.
2. Significantly increase funding across the full spectrum of carbon capture and storage technologies – including capture, compression, transportation, storage and monitoring – so as to ensure that the expectations for carbon dioxide capture and storage will be met on the local, state and national levels.
3. Create a team to lead an engineering program for testing multiple carbon management and storage technologies at power plant scale within the next five years.
4. Determine the legal liabilities associate with carbon capture and storage. This includes resolving ownership issues and responsibility for stored carbon dioxide in the event of leakage, and implementing long-term monitoring of storage facilities.
5. Increase funding of the Regional Carbon Sequestration Partnerships to adequately finance large-scale carbon dioxide storage projects in a number of different geologic formations, such as deep saline reservoirs and enhanced coal bed methane recovery. Current projects are focused strongly on enhanced oil recovery applications which enable lower total cost, but further work needs to be done to prove the viability of other kinds of projects so as to represent a spectrum of geology in areas where carbon dioxide is generated.
6. Support research projects that cover a wide variety of capture technologies, including those that capture less than 90 percent of the emissions because they are in the early stages of the technology maturation process. Carbon capture rates will increase as these technologies mature, and these technologies should not be abandoned today simply because they cannot immediately meet high capture expectations early in their development cycle.

7. Pursue a large scale demonstration project to spur development of ultra-supercritical pulverized coal technology for electricity generation. Extremely high temperatures and pressures (1400 degrees F; 5,000 psi) are required to achieve high plant efficiency, which require the development of new alloys and components.
8. Integrated Gasification Combined Cycle (IGCC) technology has not been completely and efficiently integrated into a large-scale power plant and carbon capture and storage system. Significantly more work will be required to do this. While this technology is considered commercially available in the chemical industry, the carbon dioxide capture process and acid gas clean up systems being designed for large scale deployment in power plants still constitutes a first-generation application.
9. Promote significant additional research and demonstration projects related to the transportation and safe storage of carbon dioxide. This would include:
 - a. Developing accepted performance standards or prescriptive design standards for the permanent geological storage of carbon dioxide.
 - b. Fostering the creation of uniform guidelines for site selection, operations, monitoring and closure of storage facilities.
 - c. Ensuring creation of a federal entity to take title to, and responsibility for, long-term post-closure monitoring of underground storage, liability and remediation at all carbon dioxide management sites.
 - d. Facilitating development of an economic, efficient and adequate infrastructure for transportation and storage of captured carbon dioxide.
 - e. Creating a legal framework to indemnify all entities that safely capture, transport and store carbon dioxide.
 - f. Creating clear transportation and storage rules that provide incentives to business models that will encourage the development of independent collection pipelines and storage facilities.
10. Consider undertaking several full scale field projects at a scale of about 1 million tons per year of carbon dioxide injection to understand the outstanding technical challenges and to demonstrate to the public that long-term carbon dioxide storage can be achieved safely and effectively.

As I stated earlier, the Secretary also asked the Council to recommend a framework for mitigating greenhouse gas emissions from coal-based generating plants. This framework is simple conceptually but difficult in terms of marshalling the requisite financial commitments, resolving legal and regulatory uncertainties, and instituting appropriate risk-sharing mechanisms. Necessary actions include:

Near Term: Efficiency improvements at existing plants should be expedited. This can be achieved both technically and economically, but regulatory barriers must be addressed including the New Source Review process. In such cases, New Source Review should not be required for plant efficiency improvements that reduce carbon dioxide emissions with no subsequent increase in sulfur dioxide or oxides of nitrogen emissions increases.

Mid Term: Advanced clean coal technologies such as IGCC and ultra-supercritical combustion must be given public policy support in the form of cost and permitting incentives and financial support for initial demonstrations so they can succeed in the marketplace. Legal questions about liability for long term storage must be addressed. Continued progress on FutureGen will be very important in these matters.

Long Term: Technology for carbon capture and storage, including storage sites and related infrastructure, must be developed and demonstrated over the next 10 years. Several major carbon capture and storage projects must be started as soon as possible in order to achieve commercialization within the next 15 years. Oxygen firing technologies are designed specifically for carbon capture and will not develop independently of storage and infrastructure.

Ideally, all of this will be done in the context of public-private partnerships to more quickly bring these technologies to a state of commercial deployment.

Within 15 years, a suite of carbon capture technologies and storage facilities must become commercially available and affordable. When that happens, the coal-based electricity generation industry will be able to build these technologies into new plants and retrofit them at existing plants, where appropriate. In the long run, when these technologies become available in the marketplace, other nations using coal can also access them at a more reasonable cost.

Thank you, Mr. Chairman. I will be happy to answer any questions you or other Committee members may have.