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CONSOL ENERGY, Inc.
On Behalf of
THE NATIONAL MINING ASSOCIATION
TO THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ON
SUSTAINABLE LOW EMISSION ELECTRICITY GENERATION
April 27, 2004

Mr. Chairman, my name is Frank Burke. I am Vice President of Research and Development for CONSOL Energy Inc. (CONSOL). I am appearing here on behalf of CONSOL and the National Mining Association (NMA) to testify on how technology can permit coal to provide the fuel to generate low emission electricity that our nation will need to meet our energy demands of the future.

I would like to commend you, Mr. Chairman, for holding these important hearings. Mr. Chairman, we agree with the statement in your letter of invitation to testify that "actions should be taken today to prepare the nation for a future time when oil and gas prices and availability limit their uses to areas other than electricity generation." As emphasized in the Energy Information Administration's (EIA) latest Annual Energy Outlook published in January of this year, the demand for electricity is expected to increase by nearly 50% by 2025 and we can only assume that this growth will continue beyond that time. Affordable and clean electric energy must be available to allow our nation to reach its full economic potential. Clean electric energy means economic growth and it means jobs. Coal, which is over 90% of our nation's domestic energy resource on a Btu basis, and now provides over 50% of the electricity we use, is - and must continue to be - the source for much of this electricity. Advanced clean coal technologies that are being developed under long-standing federal/private partnerships will assure that coal can continue to be used in a manner consistent with environmental needs.

CONSOL Energy Inc., founded in 1864, is the largest producer of high-Btu bituminous coal in the United States, is the largest producer of coal by underground mining methods, and is the largest exporter of U.S. coal. CONSOL has 19 bituminous coal mining complexes in seven states. We have a substantial technology research program focused on energy extraction technologies and techniques, coal utilization, emission management and byproduct utilization. CONSOL has been an active partner with DOE in the advancement of many technologies and in basic research. CONSOL is a publicly held company (NYSE:CNX) with over 6,000 employees.

The NMA represents producers of over 80 percent of the coal produced in the United States, the reliable, affordable, domestic fuel used to generate over 50 percent of the electricity that we use today. NMA's members also produce another form of fuel –

uranium – that is the source of just over 20 percent of our electricity supply. NMA also represents companies that produce metals and non-metals, companies that are amongst the nation's largest energy consumers. Additionally, NMA members include manufacturers of mining and processing equipment, machinery and mining supplies, and transporters, engineering, consulting and financial institutions serving the mining industry.

The Demand for Energy will Increase During the Next Two Decades and Beyond

Energy, whether it is from coal, oil, natural gas, uranium, or renewable sources, is the common denominator that is imperative to sustain economic growth, improve standards of living and simultaneously support an expanding population. The significant economic expansion that has occurred in the United States over the past two decades, and the global competitiveness of U.S. industry, was in no small measure due to reliable and affordable energy.

Our demand for energy will continue to increase. The 2004 Annual Energy Outlook issued by EIA in January of this year forecasts that total energy use in the United States will grow by 40% percent between 2002 and 2025. All sources of energy will be required to meet this increase in use. Over this period, continuing a trend that began over two decades ago, the nation will become even more dependent on electricity to meet final energy demands. The same EIA report predicts that electricity demand will increase by nearly 50% by 2025. Unlike the forecast of a year ago, EIA is now predicting that much of this increase will come from coal-fired power generation. The demand for coal for electricity is expected to grow from today's nearly 1 billion tons to 1.5 billion tons annually by 2025 when coal will produce approximately 52% of the electricity used by U. S. consumers.

New coal fired capacity will be needed to meet this growing demand for electricity. For first time in several years, EIA has increased its estimate of new coal fired capacity that will be built within their forecast timeframe. EIA is now forecasting that 112 GW of the 356 GW of capacity that will be built between now and 2025 will be coal fired, a forecast that is over 50% greater than a year ago. At the same time, we cannot overlook the importance of the existing coal fired generating fleet which will remain the source for 75% of future coal fired power. Very little of the 305 GW of coal-fired capacity that is in operation today will be retired over the next 20 years. The existing units will have to be operated at a higher capacity and with lower emissions. Considerable additional investment will be required to maintain these plants and to install pollution control equipment needed to meet new SO_2, NOx and mercury requirements.

The reason that coal demand is expected to grow more quickly than previously forecast is the expectation that the natural gas supply will be limited and much higher in price. Indeed we have seen a substitution of coal for natural gas in the past year as natural gas prices have hit, and remained at, near record highs. In 2003, generation from coal increased by more (29,856 million kWh) than the total increase in demand for electricity (12,491 million kWh). Conversely, generation from natural gas dropped by

more than 8% (or by 58,377 million kWh) to the lowest level since 2000. Use of coal-fired capacity has increased while use of natural gas capacity has declined despite the large number of new natural gas-fired units built over the last decade. Again, the reason is price. The use of natural gas for electricity generation increased by 75% between 1990 and 2002, while use of gas by industry declined by 2%, and total gas use increased by 20%. This resulted in concerns about supply and caused prices to escalate.

Clearly, the trends of the past are unsustainable in the future. Higher prices for natural gas mean higher prices for electricity and higher raw material costs for industries using gas as a feedstock. Considerable job losses have already occurred due to the higher gas prices brought about by over-reliance on gas for power generation. Both of these factors impair our overall economic growth and employment levels. Fuel diversity is a requirement for stability. We cannot - as we have done over the past decade - put all our eggs in the natural gas basket. Coal generation will have to increase at existing plants and new coal power plants must be brought on line. The challenge for coal is to build these plants with low emission technologies. This will require support from Congress in terms of public policy.

The fact that coal generation can increase while emissions decline has been demonstrated by history. In 2004, sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions will be 40% less than in 1980 while electricity from coal will be approximately 70% greater. Existing air pollution controls already have reduced mercury emissions by 40%, and emissions will continue to decrease as a result of current and future regulations and legislation. This history is a good indication of the trends that can be expected in the future – lower emissions as more coal is used for generation of electricity.

The United States is not unique in its dependence on coal, and it is vital to our national interest to promote the increased use of coal not only domestically, but worldwide as a key component of our energy and economic security. The most compelling evidence of this is China. This year, the Chinese will mine and consume 1.5 billion tons of coal. In 15 years, they will consume 2.5 billion tons; China's increase alone will equal our current consumption. They expect to double their coal-fueled electricity generating capacity to 600 GW by 2020. By 2040, the Chinese expect to use 4 billion tons of coal annually.

Throughout the world, economic growth and political stability are tied to electrification, and electricity is tied to coal. Therefore, the desire and, in fact, the necessity of the world to utilize its abundant coal resources will not be denied. Energy availability and energy quality are key to meeting all three aspects of sustainable development: economic, societal and environmental. The question is not whether we need or will use coal for human development, but how we will use it.

The Need for Clean Coal Technologies

One of the principal reasons for developing new coal-fired generating technologies is to ensure that electricity generation from coal does not compromise environmental quality. Because of its chemical composition, coal poses more

environmental concerns than other fossil fuels. On average, coal contains more sulfur and nitrogen, and more mineral matter, than oil or natural gas. Fortunately, the means are available to control the emission of these substances into the environment to levels that meet current regulatory limits with the wide range of technologies already deployed on many coal-fired power stations. These include particulate collection devices, such as electrostatic precipitators and fabric filters that control emissions of coal ash, flue gas desulfurization scrubbers of various designs that control emissions of sulfur dioxide (SO_2) and a variety of methods and devices for reducing nitrogen oxide (NOx) emissions. Many of these were developed under the DOE-industry partnerships of the Clean Coal Program. There are no technologies in widespread commercial use today to control emissions of mercury or carbon dioxide from coal-fired power plants, but as I will discuss, these are the subjects of active research programs.

Like others throughout the world, the United States faces the challenge of meeting our need for low cost energy while reducing the environmental impact of energy production and use. The EPA recently proposed new environmental regulations that will reduce SO_2, NOx, and mercury emissions from existing power plants to levels well below current regulatory limits. This will require the widespread deployment of improved technology that further reduces SO_2 and NOx emissions below current regulatory levels at an acceptable cost. Mercury will be substantially reduced as a co-benefit of increased SOx and NOx control, but, in the long run, it probably will be necessary to develop and deploy technology specific to mercury emissions. In addition, there are opportunities to improve the efficiency of existing generating units. Increasing efficiency can reduce emissions, because less fuel is required for each unit of electricity generated, and efficiency improvement is the only method currently available to reduce CO_2 emissions from power production.

These Clean Coal systems will need to be designed and integrated in a way that achieves the expected benefits of each, without creating any unintended consequences. For example, the use of combustion modifications to reduce NOx emissions can result in increased carbon in coal fly ash, making fly ash less valuable as a byproduct. Selective Catalytic Reduction, which is an effective means for NOx control, can cause deposition that impairs efficiency in the boiler system. On the other hand, the intelligent integration of technologies can have synergistic benefits. As noted earlier, emission control devices installed for other pollutants can remove a limited amount of mercury from some coals from the flue gas coming out of the plant's stack at no additional cost. As another example, the solid byproducts from coal combustion can be converted into salable materials such as wallboard gypsum and road aggregates. Research is underway to learn how to take full advantage of co-benefits such as these, and to incorporate them into the design of existing and new power plants.

In the future, we will need new coal-fired power plants to meet electricity demand growth and to replace existing facilities as they reach the end of their economic lives. Notable among these new technologies are supercritical pulverized coal combustion, advanced combustion, integrated gasification combined cycle (IGCC), and various hybrid power systems. These technologies hold the promise of high-energy efficiency and

minimal environmental impact if they are developed and successfully deployed at an acceptable cost. For example, IGCC technology is currently being demonstrated at several sites, but it must still be considered pre-commercial technology because of its relatively high capital cost. Nevertheless, IGCC systems can produce some of the cleanest power available from coal; emissions from these systems approach the levels generated by modern natural gas-fired power plants, and research is underway to reduce the capital cost through design improvements. As with all technologies, the full benefits of potential design optimization will not be gained until a sufficient number of full-scale commercial units have been built and operated.

The Clean Coal Technology Roadmap

The term "Clean Coal Technology" (CCT) is used to describe systems for the generation of electricity, and in some cases, fuels and chemicals from coal, while minimizing environmental emissions. This is accomplished through increased efficiency (i.e., electricity produced per unit of fuel [energy] input), equipment for reducing or capturing potential emissions, or a combination of the two. Various CCTs are commercially available, or have been demonstrated at full commercial scale, but need further commercial use for economic optimization. Other CCTs are in the research and development stage.

Currently available CCTs include the efficient pulverized-coal-fired boiler (supercritical type) equipped with a full complement of fully-developed, state-of-the-art pollution control technologies. An example of this would be a supercritical boiler equipped with selective catalytic reduction for NOx, high efficiency flue gas desulfurization for SO_2, and a particulate collection device. It is important to realize that many coal-fired generating units are currently equipped with these CCT systems, some of which were brought to the state of commercial readiness since 1986 in the Department of Energy's previous Clean Coal Technology program.

Clean Coal Technology also refers to high-performance technologies that are well along the development path, but not yet fully demonstrated to be commercially available because of either technical or economic risks. Examples of these are integrated gasification combined cycle (IGCC) and advanced combustion power plant technologies.

"Advanced" Clean Coal Technology refers to technology concepts that are in development for future use, such as advanced IGCC or ultrasupercritical boiler technology. In this context, the term "advanced" refers to improvements in costs, efficiency, and performance that are expected at some future date, assuming successful development.

Moving advanced clean coal technologies to full commercial operation will take a continuing commitment to research, development, demonstration and a strategy to ensure that the technologies, once developed, will be deployed commercially. To provide a means of planning future research needs, and to chart progress toward meeting them, the industry, largely through the efforts of the Coal Utilization Research Council, the EPRI,

and the Department of Energy, has devised a Clean Coal Technology roadmap that sets cost and performance targets and a timeline (See Tables, below) for new coal technology.

It must be clearly understood that these are merely research targets and are not intended to serve as a basis for regulatory requirements. Moreover, as noted later, progress along the roadmap will depend upon adequate funding. If the roadmap were followed, technology would be available in the near term to allow operators of existing coal-fueled power plants to meet increasingly stringent environmental regulations, such as those of the Clear Skies Act. Again, were the roadmap followed, it would be possible in 2015 to design a high efficiency power plant, capable of carbon capture, with near-zero emissions; by 2020, the first commercial plants of this design would be built.

DOE/CURC/EPRI CCT Roadmap I

Roadmap Performance Targets	**Reference Plant***	**2010**	**2020**
SOx, % Removal	98%	99%	>99%
NOx, lb/MMBtu	0.15	0.05	<0.01
Particulate Matter, lb/MMBtu	0.01	0.005	0.002
Mercury	"Co-benefits"	90%	95%
By-Product Utilization	30%	50%	~100%
*Reference plant has performance typical of today's technology. Improved performance achievable with cost/efficiency tradeoffs.			

DOE/CURC/EPRI CCT Roadmap II

Roadmap Performance Targets	**Reference Plant***	**2010**	**2020**
Plant Efficiency (%,HHV)	40	45-50	50-60
Availability, %	>80	>85	~90
Capital Cost, $/kW	1000-1300	900-1000	800-900
Cost of Electricity, $/MWh	35	30-32	<30
*Reference plant has performance typical of today's technology. Improved performance achievable with cost/efficiency tradeoffs. W/o carbon capture and sequestration.			

The roadmap contains considerable detail on the specific technological advances that are necessary to meet the roadmap coal. Some of these "critical technologies" are listed below.

Improvements for Existing Plants
- Mercury control
- Low-NO_X combustion at reduced costs
- Fine particle control
- By-product utilization

Advanced Combustion
- Ultra-supercritical steam
- Oxygen combustion
- Advanced concepts (e.g., oxygen "carriers")

Gasification Systems
- Gasifier advances and new designs (e.g., transport gasifier)
- Oxygen separation membrane
- Syngas purification (cleaning) and separation (e.g., hydrogen, CO_2)

Energy Conversion
- Advanced gas turbine technology using H_2-rich syngas
- Fuel cell systems using syngas
- Fuels and chemicals

Carbon Management
- CO_2 capture and sequestration
- <10% increase in cost of electricity for >90% removal of CO_2 (including sequestration)
- "Hydrogen economy"

Systems Integration
- Integrated power plant modeling and virtual simulation
- Sensors and smart-plant process control

Finally, the roadmap makes it possible to estimate the cost of the research, development and demonstration programs necessary to achieve the performance targets, as shown in the table below. These values represent the total cost of the research programs, including both federal funds and private sector cost shares.

Coal Technology Platforms	RD&D Spending Through 2020
IGCC/Gasification	$3.5 billion
Advanced Combustion Systems	$1.7
Innovations for Existing Plants	$1.4
Carbon Capture/Sequestration	$2.8 (?)
Coal Derived Fuels and Liquids	$1.2
Total	$10.6

The cost for carbon capture and sequestration research is shown with a question mark, to denote the relatively greater uncertainty in the estimate of the cost of research in this unprecedented area. It could be substantially higher, particularly because a number of large scale, long-term demonstrations will be needed to understand the technical, economic and environmental feasibility of carbon sequestration technology. This was one conclusion of a recent National Coal Council report, entitled "Coal-Related Greenhouse Gas Management Issues," which provides a detailed discussion of the opportunities and impediments to developing, demonstrating and implementing greenhouse gas management options related to coal production and use.

The Role of the Federal Government in Technology Development

The DOE Office of Fossil Energy, through its Coal and Environmental Systems program, expended about $198 million in 2004 to co-fund coal-related R&D, in addition to providing $170 million for the Clean Coal Power Initiative demonstration program. The DOE is supporting the development of new technology for mercury reduction and carbon management. The DOE coal program seeks to develop advanced, highly efficient, low-emitting energy complexes, for the production of electricity, fuels and chemicals. The federal government has had a significant role in the development of clean coal technology. The original Clean Coal Technology (CCT) program and the current Clean Coal Power Initiative support the first-of-a-kind demonstrations of new coal use technologies. These demonstrations encompass a wide range of technologies, including environmental controls, new power generating facilities and fuel processing. Forty projects were conducted in the original CCT program, with a total value of $5.4 billion, consisting of $1.8 billion in federal funds and $3.4 billion in non-federal funds (a 2/1 leverage on federal dollars).

In 2002, the Energy Department announced the selection of eight projects to receive $316 million in funding under Round 1 of the Clean Coal Power Initiative program, the first in a series of competitions to be run by the Energy Department to implement President Bush's 10-year, $2 billion commitment to clean coal technology. Private sector participants for these projects have offered to contribute over $1 billion, well in excess of the department's requirement for 50 percent private sector cost-sharing.

Three of the projects are directed at new ways to comply with the President's Clear Skies Initiative that calls for dramatic reductions in air pollutants from power plants over the next decade-and-a-half.

Three other projects are expected to contribute to President Bush's voluntary Climate Change initiative to reduce greenhouse gases. Two of the projects will reduce carbon dioxide by boosting the fuel use efficiency of power plants. The third project will demonstrate a potential alternative to conventional Portland cement manufacturing, a large emitter of carbon dioxide.

The remaining two projects will reduce air pollution through coal gasification and multi-pollutant control systems.

CONSOL has been an active participant in coal-use research since the 1940s. Our goals are closely aligned with those of the DOE coal program, and much of our research has been done in partnership with the DOE. We were a member of the project teams for two of the CCT projects, and we made both financial and technical contributions to these projects. We also were selected for award under the recent Power Plant Improvement Initiative program to demonstrate a multi-pollutant control technology, targeted at the smaller power plants that generate about one-fourth of our coal-based electricity.

Much of our research is directed at helping our utility customers deal with the consequences of environmental regulations. For example, we developed a new technology for the beneficial use of the solid byproduct of flue gas desulfurization, by converting it into aggregates for use in road and masonry construction. This technology, which we piloted in partnership with DOE, reduces the cost and the land-use consequences of solid waste disposal. It can provide a valuable source of construction materials in areas without good indigenous sources, such as Florida, and areas of high growth, such as the southwestern states. Projects like this, which are a win for the economy and a win for the environment, justify CONSOL's commitment to work in partnership with the DOE to develop technology that makes sense from both perspectives.

In some cases, research and demonstration projects, such as those conducted under the DOE Coal and CCT programs, have been sufficient to bring important technologies directly to the marketplace. For example, over $1 billion in Low-NOx burners have been installed at U. S. power plants since being demonstrated in the CCT program. However, other CCT program technologies, such as Integrated Gasification Combined Cycle systems, have not been widely commercialized at their current stage of development because of the technical and economic risks that remains despite these one-of-a-kind demonstrations. Nevertheless, large scale demonstrations are essential to understand the technical and economic performance of these new technologies and to provide potential owners and inventors with sufficient confidence to be able to attract financing.

The DOE has issued a second CCPI solicitation. We believe that these large-scale demonstration projects are essential to reduce the technical and economic risks of new advanced clean coal technology.

The government has a critical role to play in providing resources to follow the Clean Coal Technology roadmap, but unfortunately, current funding levels are not sufficient to meet the roadmap goals. The table below compares the funding levels required to follow the roadmap to the level in the Administration's FY 2005 budget.

Technology Program (all figures in $millions)	**Administration FY 2005 Request**	**CURC Roadmap Annual R&D Budget (a)**
IGCC/Gasification	34.5	106
Advanced Combustion	0.0	18
Advanced Turbines	12	17 (syngas from coal)
Existing Plants	18.1	43
Carbon Sequestration	49	79
Advanced Research		
Advanced Materials Only	4.65	4.0
Coal Derived Fuels & Liquids	16.0 (H_2 only)	13 (Fuels only)
Total R&D	**160**	**280**
Clean Coal Power Initiative	50	240.0
FutureGen	227	(b)

(a) This number is 80% of the total R&D amount required and represents the federal contribution

(b) The CURC roadmap does not explicitly include the FutureGen intiative.

Although it varies by program area, the overall R&D funding level is little more than half of that called for in the CURC roadmap. Unfortunately, this continues a pattern of past years of under funded clean coal research. Unless research and demonstration funds are increased, it is unlikely that technology will be developed on the roadmap schedule, if at all.

Similarly, the funding level for the CCPI falls well below the roadmap requirements. Furthermore, the progress of the CCPI program is hampered by the requirement for annual, as opposed to advance appropriations. Because of the size and cost of demonstration projects, it is necessary for the DOE to use money from both FY04

and FY05 appropriations to be able to fund the current solicitation. Future CCPI solicitations are likely to be delayed or limited in scope for the same reason. It is even possible that some necessary demonstrations will not be done because the available appropriations are insufficient. Given this situation, it may be appropriate for the Department to consider targeted solicitations focused on the roadmap objectives, or to utilize other approaches to match demonstration priorities with budgetary limitations.

Because it was proposed after much of the work on the Roadmap was completed, the FutureGen initiative is not explicitly included in the Roadmap or in the CURC funding recommendations. However, the goals of the FutureGen project are consistent with the Roadmap, and properly coordinated with the core R&D and demonstration programs, FutureGen can be an important element in meeting its objectives, as discussed below.

The FutureGen Project

In February of last year, the Department of Energy announced plans to build a prototype of a coal-based power plant of the future. Dubbed "FutureGen," this facility would be based around a 275MW IGCC system, but it would have the capability to convert synthesis gas into hydrogen and to capture and sequester up to one million tons per year of carbon dioxide. FutureGen would be designed to minimize emissions of criteria pollutants and mercury to "near zero" levels. Furthermore, the FutureGen facility would be designed to serve as a "research platform" capable of testing advanced components, such as air separation membranes or fuel cells, during the ten year duration of the project, and perhaps beyond. The Department issued a "Request For Information" soliciting responses last June from parties willing to undertake the FutureGen project. My company, CONSOL Energy Inc., is a member of a ten-company group of major U.S. coal producers and users, which submitted a response to the DOE RFI, offering to enter into negotiations to conduct the FutureGen project. In part, our submittal says that the FutureGen mission should have four key elements:

1) develop commercially competitive and affordable coal-based electricity and hydrogen production systems that have near-zero emissions;
2) develop large-scale CO_2 sequestration technologies that are technically and economically viable and publicly acceptable;
3) provide a large-scale research platform for the development and commercialization of advanced technology; and,
4) provide opportunity for stakeholder involvement and education.

The vision of FutureGen as a research platform is particularly significant because it means that the FutureGen facility can be used as a test site to bring promising technologies out of the core R&D program and to accelerate their testing at scales up to full commercial implementation without the need for separate stand-alone test facilities.

However, it is important to understand that FutureGen should not be viewed as a substitute for either the core R&D program or the CCPI demonstration program for at

least two reasons: First, the FutureGen facility will not be operating for at least five years. During that time we need to continue the research needed to bring new technologies to the state that they can be tested at FutureGen. Second, we need to continue R&D on technologies, such as combustion-based systems, that are not part of the FutureGen design. That said, as the FutureGen concept is further defined, industry and government should look for opportunities for efficiencies in the coordination of the R&D program, the CCPI, and FutureGen to produce the greatest benefits at the lowest possible cost. This coordination should be an integral part of the ongoing technology road-mapping process.

Finally, although the exact cost is not known, DOE originally estimated the project cost as $1 billion, with 80% provided by the federal government, and 20%, or $200 million, provided by the industrial alliance and its partners. Both an acceptable cost share ratio and the ability of the Government to commit its full cost share to the project before major costs are incurred are critical to the project's success.

Incentives for Clean Coal Technology Deployment

The foregoing discussion in this statement deals with the need for research, development and demonstration of advanced clean coal technology, and discusses technical and economic criteria that these new technologies will need to meet to achieve acceptance in the commercial marketplace. However, while the Clean Coal Power Initiative and the enhanced core Fossil Energy authorization that are included in the pending conference report of the energy bill, H.R. 6, are necessary for the continued development of coal technologies, they are not by themselves sufficient to ensure that these technologies will find their way into widespread commercial use. When they are initially introduced, they will need to be built with substantial engineering contingencies to assure their operability and reliability, which will increase capital and operating costs. Over time, as operating experience is gained, these costs will come down. Therefore, there is a need for financial incentives to offset the increased technical and financial risk inherent in the initial deployment of advanced clean coal technologies. These critical incentives are included in the conference report to H.R. 6, in the tax package that is part of the new "leaner" energy bill, S. 2095 and in the energy tax provisions that have been incorporated in S. 1637, the FSC/ETI bill. We strongly urge the Senate to act on these energy provisions on an expedited basis so that comprehensive energy legislation can be enacted this year.

Conclusions

Mr. Chairman, there is little doubt that coal will continue to be widely used in the United States and abroad as a principal fuel for electricity generation, and coal's use will grow over time. We appreciate your strong recognition of that fact. The interests of the economy, society, and the environment in coal can be reconciled if we invest now in the development and deployment of advanced clean coal technology which will allow coal to

be truly a low emission form of electricity. By working with industry to develop a coal technology development roadmap, the Department of Energy has and continues to align its program with a logical path forward to support the development of advanced clean coal technology. The coal industry remains committed to do our part to see that coal remains an abundant, affordable fuel for power generation, and to help to advance the technologies needed to meet the goals of societal, economic and environmental betterment.