BlueSource

A leading climate change portfolio

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Testimony

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Coal: A Clean Future
Response of the Market to Global Incentives and Mandates for Clean Coal

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Summary

Coal, an abundant and cost-effective energy source when used to generate power, is a major contributor of greenhouse gas emissions in the United States due to the release of carbon dioxide. It is forecasted that between 100 and 150 new coal plants may be built in the US over the next ten years in order to meet the growing electric power demand, thereby significantly increasing the release of greenhouse gases. Carbon dioxide emissions from these new coal-based plants could be reduced or eliminated by constructing power generation capable of producing higher-purity carbon dioxide emissions that can be separated and captured and made ready for transportation to geologic sequestration. Technology for retrofitting existing coal-based power generation to separate and capture carbon dioxide is being developed and tested. However, carbon dioxide separation, capture, and storage (CCS) technology for new and existing coal-based power generation is presently expensive and, in some cases, untested. While CCS in geologic sequestration appears to be a major part of the answer to managing US greenhouse gas emissions, bridging the gap between the present and expected emissions of carbon dioxide in power generation and the eventual development of a more cost-effective carbon dioxide separation and capture technology is a significant problem. Recent estimates of this gap suggest it may be as long as 40 years.

Our company does not see the gap to be as uneconomic as has often been suggested. Nor do we expect the gap to be as wide as many suggest, due to a combination of existing and expected CCS technology, existing and expected transportation and storage assets, and related economic drivers which support the current development of regional CCS infrastructure. However, legislated financial incentives and regulatory relief could hasten the bridging of the remaining gap and accelerate the carbon dioxide infrastructure needed to effectively manage the growth of carbon dioxide emissions in the next 20 years.

Testimony of William L. Townsend

CEO, the Blue Source Companies

Mr. Chairman and Members of the Committee, thank you for the opportunity to testify today on the subject of carbon capture and storage (CCS) as it relates to clean energy from coal and on the topic of potential incentives related to accelerating the development of a carbon dioxide infrastructure that supports CCS. My name is Bill Townsend. I am the Chief Executive Officer of the Blue Source companies (Blue Source or Company). I will offer some background on our companies that will describe our unique knowledge of CCS and carbon trading in the US and offer some commercial and structural observations that I hope will apply to the development of any incentive program Congress might consider for CCS and clean energy from coal.

Unique Experience in CCS Infrastructure Development and Carbon Trading

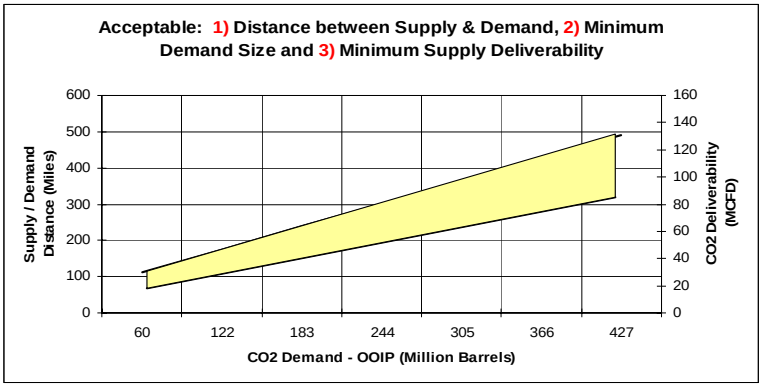
Blue Source operates at the intersection of the energy and climate change industries. Our companies have significant knowledge and experience in developing anthropogenic (man-made) carbon dioxide (CO2) pipeline systems for geologic sequestration. Blue Source and its management team are in the unique position of having developed, designed, constructed, operated, and/or owned in one form or another all of the commercially developed, anthropogenic CO2-sourced pipelines for enhanced oil recovery (EOR) in North America during the last 20 years. These pipeline systems include the Val Verde Pipeline in West Texas, the North Cross Pipeline in West Texas,

the Anadarko Pipeline in Wyoming, the La Veta Pipeline in Colorado, and the Dakota Gasification Pipeline in North Dakota. Collectively, these pipelines gather approximately 340 million cubic feet per day (MMCFD) (or 6.8 million tonnes [Mt] per year) of industrial vent stack-sourced CO2, and they deliver the CO2 for geologic sequestration in EOR operations in Canada, Wyoming, Texas, and New Mexico.

In addition to developing anthropogenic CO2 pipelines from industrial CO2 sources, Blue Source is the leading portfolio of greenhouse gas (ghg) emission reduction offsets in North America. The Company has on public registries throughout North America approximately 45 Mt of verified ghg emission reductions (ghg VERs) sourced from eleven different project types, which include, among others, transportation and logistics, fly ash substitution, geologic sequestration, methane avoidance and destruction, and energy conservation. In the case of geologic sequestration, Blue Source has led in the development of carbon market protocols and sold approximately 9 Mt of ghg VERs from its geologic sequestration projects to purchasers of the emission reduction offsets in both Canada and the US. The combination of our experience in developing anthropogenic CO2 CCS projects and marketing and selling ghg VERs from geologic sequestration, gives our company a unique view of the expected development of a US carbon dioxide infrastructure based on clean energy from coal.

Today, Blue Source is in various stages of evaluating and developing 13 different anthropogenic CO2 pipeline projects in North America, where the Company hopes to finance the separation, capture, transportation, and/or sequestration of approximately

1,400 MMCFD of CO2 (28 Mt per year), investing potentially $ 445 million over the next seven years. In order to finance this size construction potential, in late 2006 the Company partnered with a large private equity firm, First Reserve Corporation, to secure an investment pool dedicated to the carbon infrastructure development in the US. The chart in this text is one example of the Company's project screening tools which enables a quick analysis of a CO2 vent stack project's likely successful outcome. The chart is the practical representation of over 20 project feasibility variables, including gas and crude oil prices, steel and rights-of-way costs, construction cost rules-of-thumb, CO2 injection and reservoir characteristics, CO2 pipeline hydraulics, and other variables we have found to be significant determinants.



Over the past ten years, Blue Source and its affiliate companies have evaluated close to 100 vent stack-sourced CO2 projects in North America. The majority of these projects have had as their CO2 sources natural gas treating plants, fertilizer facilities, ethanol plants, and crude oil refineries. Only two IGCC power generation facilities and two coal-to-liquid facilities, all currently prospective projects, have been evaluated. While we are seeing more coal gasification projects on the horizon, we have not seen the necessary attention being given by the project developers (both public and private companies) to

developing the carbon dioxide transportation systems and geologic sequestration sinks for the projects to go forward to completion. The primary reason only 5% of the projects we have evaluated during the last ten years have gone to the construction phase is because, even with EOR economics (oil-related revenues), the projects typically still yield a lower-than-acceptable investment return, though higher crude oil prices in recent years have certainly helped. A case in point is our La Veta CO2 Pipeline, which, for the last five years, did not have sound economics for construction; but with the recent improvements in crude oil values, it was finally constructed in 2006 and is expected to begin flowing CO2 around June 1, 2007. (It has been venting CO2 to the atmosphere.) If Blue Source could have found additional financial incentives as small as $0.60 per MCF ($10/tonne of CO2), the Company would have probably constructed another fifteen projects with new carbon infrastructure of about 400 miles.

Carbon Dioxide Regulatory and Industry Observations

From our operating history and knowledge of CCS, we have a view of how to bridge the gap between 1) the current and expected CO2 capture and storage technology and 2) current and expected sources of vent stack CO2 from power generation and other industries. There are four areas on which to focus: CO2 sources, CO2 transportation, CO2 sinks, and the timing associated with their interplay. We believe the answer to managing the gap is a "step process":

Step 1 – Over the next five years, direct incentives and regulatory influence to accelerate the capture and storage of CO2 from non-power generation industries,

where CO2 capture costs are significantly lower (than power generation), which would:

a) accelerate the build-out of a carbon transportation and capture infrastructure today and for later use; and,

b) capture incremental vent stack sources, thus lowering our carbon footprint.

Step 2 – Over the next five to ten years, direct incentives and regulatory efforts toward the infrastructure build-out that would carry CO2 sourced from the power generation industries as the cost of separation and capture is reduced.

Step 3 – Immediately direct regulatory efforts at barriers to developing CCS infrastructure, including, but not limited to:

a) CCS approval as a qualified emission reduction activity for carbon trading (including CCS with EOR, which is the lowest-cost infrastructure build-out and which decreases energy imports), thereby creating an additional revenue source to build out infrastructure;

b) eliminating the risk that CO2 will be classified as a waste product by a government agency, which would inevitably cause a loss of interest in CCS by the energy industry and materially slow the infrastructure build-out; and,

c) emphasizing existing state regulations on underground CO2 management instead of adding potential new and burdensome federal regulations.

It is clear that the long-term geologic sequestration answer to single-point, industrial CO2 emissions capture and storage is in saline aquifers, not EOR projects. That being said, there is a very strong, cost-effective interim answer for the next ten years that employs

the oil-based revenues in EOR to subsidize the infrastructure build-out and prepare the foundation of a carbon highway for the next generation of cost-effective CCS in power generation.

Accelerating CCS Infrastructure for Non-Power Generation CO2 Sources

Today, there exist about 3500 miles of CO2 pipelines in North America that transport CO2 to EOR sinks that were built on the back of oil revenues. Today, these CO2 pipelines carry both underground and vent stack-sourced CO2. These same pipelines, when incentivized to carry additional volumes of anthropogenic CO2, will expand the backbone structure of a carbon highway in the US. Expanding these pipelines with assistance from oil-based revenue is the most cost-effective means for any infrastructure growth. Incentives should be aimed at anthropogenic CO2, regardless of processing source, allowing the marketplace to secure the most cost-effective source that adds new pipelines connects to new EOR sinks. We estimate that an additional 2000 miles of anthropogenic CO2 pipelines could be developed over the next five to seven years in the US by providing $10 per metric tonne (approximately $0.60 per MCF) incentives, so long as crude oil values stay above $50 per barrel.

Accelerating CCS Infrastructure for Power Generation CO2 Sources

There appear to be several opportunities for new construction with IGCC and super-amine type retrofits that would combine the resulting CO2 separation and capture with EOR projects. We estimate that incentives necessary to see these types of CCS projects develop are in the range of $20 per metric tonne (approximately $1.20 per MCF) and that

such projects would contribute materially to carbon infrastructure build-out. We estimate that these project types, when subsidized by oil-based revenue from EOR projects, would add about 2500 miles of CO2 infrastructure over a period of about ten years.

Accelerating Carbon Market Acceptance and Reducing Regulatory Barriers

Blue Source has sold approximately 9 million tonnes of ghg VERs from geologic sequestration in EOR projects during the last seven years. With the exception of one sale totaling 100,000 tonnes, we believe we have sold all the ghg VERs from EOR sequestration ever sold. During this time, we have heard just about every reason why CCS-based offsets should or should not be included in a carbon offset trading program. Without repeating each pro and con argument here, it appears, fortunately, that markets and regulators are very slowly moving toward an acceptance of these types of emission reductions (whether captured in EOR or in non-EOR projects) once appropriate verification and monitoring structures are in place. Accelerating the market acceptance of the fact that CCS is a valid ghg emission reduction is a direct benefit to the further development of CO2 infrastructure. Regardless of the existing lower carbon market values in the US and the lack of a formalized federal trading structure, the voluntary ghg trading markets that have been active for the last ten years do find value in US-based geologic sequestration of CO2 in EOR offsets. Congress's citing geologic sequestration (with or without EOR) as an official part of its plan to manage the country's carbon footprint would send clear signals to the voluntary and evolving state regulatory markets that value needs to be given to transactions of this type. In a pre-federal, pre-state

marketplace, this will not place value so much in the price of a CCS offset as much as it will encourage investors to place more risk capital into this particular project type.

There has been a great deal of discussion about whether or not CO2 should be viewed as a waste product, along with related management and control regulations, and whether it should be regulated at the state or federal level. To the energy industry, this translates into a completely different risk profile when injecting CO2 into EOR or saline aquifers. Today, approximately 2.5 billion cubic feet per day of CO2 is injected into the ground for EOR in this country in the Gulf Coast, the Southwest, and the Rockies. In the last 20 years, a total of approximately 11 TCF of CO2 have been injected into the ground for EOR. To our knowledge, not one single person has been killed as a result of the storage of CO2 in this manner, nor have there been material disruptions in geologic substructure economies. New significant regulatory oversight of an activity that has been conducted safely under existing state regulations for several years would present significant risks of cost increases, delays in capture and sequestration, and exits from the marketplace of qualified players who will elect not to deal in a waste management industry.

Conclusions

We agree that the best long-term answers for CCS in the US involve accessing saline aquifers, developing cost-effective separation and capture technologies for existing and new power generation facilities, and providing for regulatory and economic structures that aid the development of the first two items. The big issue is the time it takes to achieve the best long-term answer. The gap between 1) proven and cost-effective CO2

separation and CCS technology, and 2) the present and expected CO2 emissions, is estimated to be over 20 years. That being said, we believe there are very meaningful steps that can be taken today and over the next ten years that will bridge the gap significantly earlier than currently estimated – steps that materially lower the cost of CCS and that accelerate the benefits of reaching the very best long-term answers. The gap will be bridged in much the same manner as those 3500 miles of existing CO2 infrastructure were developed: by relying on oil-related revenues. But the process will be accelerated by applying regulatory incentives and forces.