

Chairman David Armstrong
Kentucky Public Service Commission
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Thank you, Commissioner Ziegner.

It is a pleasure to participate in such an aptly-titled and timely discussion. The regulatory framework for the next generation of clean coal technologies certainly is evolving, even as we gather here today,

With the recent decision by the US Environmental Protection Agency decision to add carbon dioxide to its list of regulated pollutants, we now must contemplate two parallel tracks for the imposition of carbon limits. While it is now possible that carbon constraints may be imposed by regulation OR legislation – or both – it is clear that constraints WILL be imposed.

It is also quite clear that states such as Kentucky, which rely on coal for a preponderance of their electric generation – 95 percent in our case – will be disproportionately affected by any constraints on carbon emissions. So, as you might expect, we have an intense interest in this topic.

In the brief time I have this morning, I would like to describe for you what is happening in Kentucky with respect to researching carbon capture and sequestration and then to describe the existing regulatory framework in Kentucky, especially for possible recovery by utilities of the cost of CCS or other measures to reduce carbon emissions.

Kentucky has two projects underway to gauge the potential for CCS. One is being conducted by the Kentucky Geological Survey, in partnership with several utilities and other private entities. Duke Energy is conducting the other effort.

According to our state geologists, Kentucky has substantial potential for carbon sequestration, both as pure storage or as beneficial re-use in enhanced recovery of oil and natural gas. The potential areas correspond, to a large extent, with the coalfields in Appalachia and the Illinois Basin, but also include saline aquifers in sandstone formations. Both the projects underway are testing the potential of the latter.

The first is Duke Energy's project at its East Bend Generating Station in Boone County in northern Kentucky. I should note that the nearest community is named Rabbit Hash, so, if nothing else, Kentucky leads the way in the best-named CCS project location.

The East Bend project is being conducted in cooperation with the Midwest Regional Carbon Sequestration Partnership, which is one of three National Energy Technology Laboratory partnerships in which the Kentucky Geologic Survey is a participant.

The East Bend project involves the injection of about 2,000 tons of supercritical CO₂ – about two or three tanker truck loads of liquid carbon dioxide – to a depth of 3,000 to 3,500 feet. The CO₂ is going into the Mount Simon sandstone saline stratum, one of the major potential carbon storage aquifers in the Midwest.

The EPA granted the experimental well permit for the project last month. Duke has told us they expect to begin drilling this month or next and to start injection shortly after the well is completed. Their permit requires tracking the process at every stage. Once the test is completed, Duke plans to evaluate the results and decide whether to cap the well permanently or maintain it for future injections.

The Kentucky Geologic Survey test is near the Ohio River in Hancock County in western Kentucky. It calls for injecting between 1,500 and 3,000 tons of CO₂. This well will be deeper – between 4,000 and 8,300 feet. Its target is the Knox dolomite saline stratum, which was chosen because the Mount Simon sandstone is both thinner and deeper in western Kentucky, making it a less attractive sequestration option.

The Hancock County project also received its EPA permit last month, and drilling is underway. Injection is expected to begin this summer. When the project is completed, we should know whether the Knox dolomite is a possible sequestration option in the western part of our state.

These are test projects, with relatively modest costs. The Kentucky Public Service Commission last year granted the participating utilities separate accounting treatment for their costs, with the expectation of future recovery through rates.

Any rate impacts from future cost recovery will be minimal, particularly when compared to the potential costs and rate impacts coming from any installation of full-scale CCS technology for coal-fired power plants in Kentucky.

As you might expect, clean coal technology and CCS enjoy strong support from the state legislature and from Governor Steve Beshear.

One of the governor's first initiatives upon taking office was to develop a comprehensive energy strategy, a key element of which is to control carbon dioxide emissions while continuing to use our state's abundant coal resources. Development and demonstration of CCS technologies are central to implementing that strategy.

The Kentucky General Assembly, in a special session in August 2007, enacted legislation which provides funds for CCS research and financial incentives for CCS-ready coal gasification plants. I see that support continuing as CCS technology moves toward deployment.

Before CCS can move beyond the experimental stage, we will need to address two regulatory questions: who owns the carbon and who pays the bills?

The first of those questions poses a real challenge for Kentucky. Long-term sequestration of carbon dioxide poses a whole new set of issues with respect to monitoring, mitigation and

liability, all of which may extend well beyond the lifespan of the plant that produced the carbon dioxide. Kentucky law has no ready framework for addressing those issues.

The Interstate Oil and Gas Compact Commission has recommended that states should take ultimate ownership of sequestered carbon after the originating operation has been closed. That is easier said than done in many states, including Kentucky.

It appears that in Kentucky, the state could not take ownership of the CO₂, or indemnify the original operator, without changes to the state constitution. Amending the constitution in Kentucky is not easy, requiring a two-thirds majority in a voter referendum. So this could be a significant hurdle for us.

Fortunately, the cost recovery issue is less complicated. That is because, in many ways, Kentucky has been through this before with coal.

I refer to, of course, the Clean Air Act Amendments of 1990, which set limits on emissions of sulfur dioxide and nitrogen oxides in order to control acid rain and smog, with a cap-and-trade mechanism as one of the implementation tools.

The initial effect of the federal legislation in Kentucky was to force many utilities to construct sulfur-dioxide scrubbers or purchase emission allowances. The costs were substantial, as was the associated regulatory burden. Addressing costs through the usual ratemaking process would have required more frequent rate cases – a burden on utilities and utility regulators alike – and would not have assured full cost recovery at the conclusion of potentially adversarial proceedings.

I should note here that Kentucky has maintained traditional cost-based rate regulation of vertically integrated electric utilities. It has served us quite well – our electric rates are among the lowest in the nation.

Recognizing the need to both streamline the ratemaking process as it applied to environmental compliance costs, and to bring a measure of regulatory certainty to it, the Kentucky General Assembly in 1992 enacted an environmental surcharge mechanism. This statute - KRS 278.183 – says, in essence, that costs imposed on utilities as a result of the Clean air act or federal, state or local measures to control coal combustion by-products are recoverable through a surcharge on electric rates. It applies to both capital and operating costs, including – significantly – the purchase of emission allowances.

Proposed surcharges must be reviewed and approved by the PSC, and utilities must also submit their compliance plans for approval. But the process is far less cumbersome than a full-blown rate case and has the added advantage of making clear to electric consumers the costs of environmental protection.

In the last 17 years, the environmental surcharge mechanism has been applied successfully to dozens of retrofit projects, most of them sulfur dioxide scrubbers, catalytic reduction systems for nitrogen oxides and low-NO_x burner conversions. It also has been used to recover that portion of construction costs for new power plants that is attributable to environmental compliance.

So, in nearly every respect, it would appear that the environmental surcharge mechanism would apply to costs associated with CCS, whether they come through the addition of controls to existing plants, the inclusion of CCS technology in new facilities or the purchase of carbon credits or other offsets under a cap-and-trade regime.

Of course, the applicability of the environmental surcharge mechanism to CCS is an untried legal concept, and could be subject to challenge. But our initial thinking is that Kentucky has in place a regulatory framework for dealing with the costs that carbon constraints would impose on our regulated utilities, particularly if CO₂ is eventually regulated under the Clean Air Act.

That will, I hope, give us a bit of a leg up as we begin what is sure to be the lengthy, difficult and expensive process of adapting our electric utility industry to realities of a carbon-constrained world.

Thank you very much.