

RECEIVED

JUN 09 2005

PUBLIC SERVICE
COMMISSION

Commonwealth of Kentucky

In the Matter of:

An Assessment of Kentucky's)
Electric Generation, Transmission,)
And Distribution Needs)

Administrative Case
No. 2005-00090

The Environmental and Public Protection Cabinet (EPPC) appreciates this opportunity to provide comments to the Public Service Commission regarding the assessment of Kentucky's electric generation, transmission, and distribution needs. Our comments herein focus on the issues facing the electric power industry from the perspective of environmental regulations and permitting programs that affect sources of air and water emissions, as well as natural resources extraction.

The air, water and waste permit programs administered by the cabinet's Department for Environmental Protection (DEP) facilitate the construction of new energy facilities and the expansion of existing energy facilities to the extent consistent with protection of the environment and compliance with federal regulatory requirements. DEP has received federal authorization to administer most of the major environmental permit programs and carries them out under mandate from the Kentucky General Assembly to impose permit terms and conditions no more stringent than would be imposed if administered by the federal government.

Electric generation, whether from coal, natural gas, or renewable sources, is imperative to sustain economic growth, improve standards of living and support an expanding population. The demand for electricity is growing and will continue to grow over the next 20-30 years. According to the U.S. Department of Energy, from 2003 to 2025, annual growth in electricity sales is projected to average 1.6 percent in the residential sector, 2.5 percent in the commercial sector, and 1.3 percent in the industrial sector. With growing electricity demand and the retirement of inefficient, older generating capacity, 281 gigawatts of new capacity is estimated to be needed by 2025. Kentucky is well situated to help meet these growing demands for energy, yet, as emphasized in the state's *Comprehensive Energy Strategy*, unveiled by Governor Fletcher in February of this year, we must do so in an environmentally responsible manner. The worldwide growth in demand for energy will present continuing environmental and human health challenges. Growing worldwide electricity demand will also present challenges to our state's historically low electricity rates, for reasons ranging from increasing costs for environmental compliance to the costs associated with creating new generation and transmission infrastructure.

According to a survey conducted last year by Price, Waterhouse, Coopers, "meeting projected demand will entail a cumulative gas and electricity investment of

some \$12.7 trillion in the period to 2030.” The report goes on to point out that utilities will have “to strive to make their sector attractive to investors while grappling with regulatory uncertainty and market volatility that creates an investment hurdle (*Under Pressure: Utilities Global Survey, 2005*, © 2005 PricewaterhouseCoopers).

The electric power industry will be challenged by the need to meet stricter environmental emissions requirements, as well as by siting decisions regarding the location of electric generation plants and transmission lines, resource extraction issues, and the quest for financing by reluctant investors. Kentucky’s electric power industry faces these challenges in particular because of our abundant coal resources combined with consumers’ expectations of continued low rates.

Kentucky is blessed with abundant energy resources, both non-renewable resources from fossil fuels such as coal and natural gas, and renewable resources such as biomass, solar, and hydro. Of these, Kentucky has historically relied primarily on coal for electricity generation. More than 90 percent of electricity generation in Kentucky comes from coal. The United States has more coal reserves than any other country, and Kentucky is the third leading coal-producing state, behind Wyoming and West Virginia, and provides slightly more than 11 percent of the nation’s production. Coal continues to be the least costly fuel for electricity generation. During the next twenty years, projections suggest that the cost of producing electricity from steam coal will be only 25 percent of the cost of producing electricity from other fuels, including natural gas. Already, the cost of natural gas to manufacturers is 98 percent higher today, causing many manufacturers to close U.S. operations in favor of moving to offshore locations with lower energy costs.

Although the cost of producing electricity from coal is lower than the cost from other sources, coal-generating plants are major sources of smog-producing nitrogen oxide (NO_x), acid rain-producing sulfur dioxide (SO₂), carbon monoxide, and mercury emissions. As with any combustion of fossil fuels, coal generation also contributes to emissions of carbon dioxide, a greenhouse gas.

Given that coal is a reliable, affordable domestic resource, efforts to improve the environmental performance of coal-generating units have been crucial. These efforts have provided significant benefits. According to U.S. EPA, since 1970, while the amount of coal used to generate electricity has grown by 75 percent, emissions from coal fueled power plants are more than 40 percent lower. Coal reserves comprise the greatest share of the nation's overall energy resource base. Demonstrated coal reserves are over 500 billion tons, with economically recoverable reserves of over 275 billion tons. These reserves are large enough to support coal demand for well over 200 years at the current rate of use.

While the environmental challenges of coal utilization cannot be overlooked, neither should the impressive reductions that coal fired-plants have made or the continuing environmental contribution expected from a suite of advanced clean coal technologies. Coal currently generates more than half of the nation’s electricity and is expected to generate one half or more of the 50 percent increase in electric power the

country is projected to need by 2025. Clean coal technologies are making coal a more environmentally responsive choice. Coal-fired electric generating are poised to reduce NO_x and SO₂ emissions by an additional 70 percent with the implementation of new federal air emissions standards later this year.

Nationwide, at the start of this year, plans have been announced to build at least 106 coal-fired plants totaling 65 GW, part of the nearly 100 GW of new coal-fired capacity expected to be built mostly after 2011. Other energy prices are higher, more volatile and offer little assurance to consumers and manufacturers that they will stabilize let alone fall back to the levels we once knew. Coal prices remain remarkably stable and are expected to remain so.

With utility companies facing massive capital investments in new plants and equipment, they need a clearer picture of what standards they will be expected to meet. Recognizing this need, in March of this year, the U.S. EPA issued the Clean Air Interstate Rule (CAIR), a rule that permanently caps emissions of SO₂ and NO_x in the eastern United States. When fully implemented, EPA projects that CAIR will reduce SO₂ emissions in these states by over 70 percent and NO_x emissions by over 60 percent from 2003 levels (Kentucky's estimated emissions reductions under CAIR are 49 percent for SO₂ and 58 percent for NO_x). Under CAIR, states have one of two compliance options: 1) meet the state's emission budget by requiring power plants to participate in an EPA-administered interstate-cap-and-trade system that caps emissions in two stages, or 2) meet an individual state emissions budget through measures of the state's choosing. EPA anticipates that states will achieve this primarily by reducing emissions from the power generation sector. EPA's stated goal with CAIR is to enable states to address air pollutants from power plants in a cost effective fashion without interfering with the steady flow of affordable energy.

Also in March, U.S. EPA released its Clean Air Mercury Rule. Together, the new mercury rule and CAIR will reduce electric utility mercury emissions by nearly 70 percent from 1999 levels when fully implemented. The rule, which marks the first time the United States has regulated mercury emissions from power plants, limits mercury emissions from new and existing coal-fired power plants. It also creates a market-based cap-and-trade program that will permanently cap utility mercury emissions in two phases. The cap-and-trade system creates incentives for continued development and testing of promising mercury control technologies that are efficient and effective.

Together, these federal cap and trade rules place strict limits on emissions that yield dramatic pollution reductions; contain regulatory certainty and flexibility for sources; offer incentives for early pollution reductions and innovations in control technology; are compatible with state and local programs; provide significant, widespread human health and environmental benefits; and make efficient use of government resources. CAIR alone will result in \$85 to \$100 billion in health benefits.

Cap-and-trade programs really work. The EPA's successful Acid Rain Program

has produced remarkable and demonstrable results, reducing SO₂ emissions faster and cheaper than anticipated, and resulting in wide-ranging environmental improvements. For example, without the Acid Rain Program, SO₂ would be 20 million tons in 2006. With the current Acid Rain Program, these emissions are estimated to be 10 million tons in 2006.

A new generation of commercially viable advanced clean coal power systems must be available to meet the growing demand. Work must begin now to ensure that the advanced coal technologies can establish a solid track record before large numbers of coal plant replacements become necessary. We see the need to get plants built and operating soon to gain experience with and reduce the cost of advanced coal plant technology.

Economic growth, greater efficiency and a move to meet/address higher electricity demands are expected to continue over the next two decades. Real economic growth is forecast to increase by an average of 3.1 percent per year through 2025. Reflecting greater efficiency, the use of energy will grow by a slower 1.4 percent per year on average or by a total of 35.5 percent. Consumption of all sources of energy will increase: petroleum by 39 percent, coal by 34 percent and renewable energy by 37 percent.

Today, nearly 20 percent of America's electricity comes from nuclear power, which translates into the consumption of about 45 million pounds of uranium each year. The collapse in uranium prices since 1980 has produced a sharp decline in the viability of the U.S. uranium mining industry. America's remaining uranium mines produce only about 3 million pounds, or just 6 percent of nuclear utilities' annual uranium requirements. The balance of the uranium comes from rapidly declining inventories in the hands of the utilities, the federal government and foreign entities (From comments before the House Committee on Energy and Commerce, February 15, 2005, by John E. Shelk, Senior Vice President, Government Affairs, National Mining Association).

Renewable resources (solar, wind, geothermal, hydroelectric, biomass and waste) currently provide nearly 12 percent of the nation's electricity supply. Almost 10 of this 12 percent is provided by hydroelectric resources alone. Nationwide, according to the U.S. Department of Energy (USDOE) electricity generation from renewable energy is projected to grow at a rate averaging 1.8 percent year through 2010. Through 2010 electricity generation using geothermal resources will grow at a rate averaging over 7 percent annually and landfill gas is expected to grow at a rate of over 9 percent. Wind powered electricity generation is projected to increase more than 10 percent annually.

Renewable resources are not likely to replace fossil fuels as the major contributors to electricity over the next decade. Therefore, existing and emerging clean coal technologies will make coal a more environmentally responsible choice. Clean-coal technology describes a new generation of energy processes that sharply reduces air emissions and other pollutants compared to older coal-burning systems. For example, according to USDOE, power plants utilizing Integrated Gasification Combined Cycle

(IGCC) generation “can significantly reduce air emissions, water consumption and solid waste production,” and offer “the potential of a technical pathway for cost effective separation and capture of carbon dioxide emissions and for co-production of hydrogen”. Investments in clean coal technology will allow for low-cost Kentucky coal to continue to be utilized as a primary energy resource in the United States while significantly reducing undesirable emissions. Market forces are playing an increasing role, with premiums being placed on environmental performance by not only requiring minimum standards, but by setting values on avoided pollutant and greenhouse gas emissions.

Issues surrounding solid waste and sewage sludge disposal are carrying increasingly severe economic penalties, placing value on their avoidance and thus use as a feedstock in electricity generation. IGCC is both feedstock and product flexible, produces almost no pollutant emissions and facilitates carbon dioxide removal. Combustion turbine/combined cycle conjoins highly efficient combustion turbines with steam turbines by using the gas turbine exhaust to generate steam, which produces the most efficient and economic electricity available today. The capability to co-produce electricity and a slate of fuels and chemicals makes the technology economically attractive to a broad range of industrial applications. Gasifier technology applications include integration into chemical plants and refineries.

With increasing regulatory constraints and growing attention to cleaner burning technologies, the costs for construction, generation and transmission will likely rise. The electric utility industry will be seeking more innovative funding mechanisms, such as federal loan guarantees, federal project financing, Energy Development Bonds, and federal grants. State and federal partnerships, and partnerships involving professionals in the technology-design sector, electric facility construction sector, utility operators, and finance sector will be key. Investors will be concerned about whether the return on their investments will be commensurate with the risk of sustainable development projects. Rate payers want to know what benefits they will receive in return for the costs of the technology for which they are paying. Bankers want to know the value of technologies before they invest billions of their dollars in their performance. Industry leaders must have a reliable regulatory roadmap to follow when allocating investment dollars. The public wants to know that the environment is being protected.

The industry will have to engage diverse interest groups so that critical decisions can be made in an atmosphere of cooperation. States will be called upon to assist or even become a partner in the development of creative financing programs.

The most significant environmental permit requirements for new or expanded energy facilities arise under the Clean Air Act. The Clean Air Act New Source Review program imposes a preconstruction permit requirement based upon an extensive evaluation of the environmental impacts of new and expanded energy facilities, compliance with air quality standards, and the application of best available control technology. Satisfaction of the Clean Air Act New Source Review requirement is the greatest environmental permitting challenge faced by new and expanding energy facilities.

USEPA has recognized the burdens imposed by the Clean Air Act New Source Review program and has attempted to reduce the procedural requirements while maintaining compliance with air quality standards. In late 2002 USEPA promulgated its New Source Review Reform regulation designed to achieve these purposes. Although many states have declined to follow USEPA's lead on its reform of the New Source Review regulations and a number have initiated litigation against USEPA, Kentucky has revised its New Source Review regulations to conform to the federal changes, thereby becoming the first state in the southeastern United States to do so. Kentucky's revisions to its Clean Air Act New Source Review regulations should allow Kentucky to accommodate the permitting of new and expanded energy facilities to the maximum extent consistent with protection of the environment.

Since the issuance of permits for new and expanded energy facilities must be consistent with achievement of air quality standards, the designation of areas as attainment or nonattainment for ambient air quality standards has a direct impact on the issuance of permits. USEPA completed its designation of nonattainment counties for the 8-hour ozone standard and included only eight Kentucky counties in the nonattainment category (the counties re Boone, Campbell, and Kenton counties in northern Kentucky; Boyd (Ashland), Bullitt, Christian County (Hopkinsville), Jefferson and Oldham counties..

Under the Clean Water Act the authority to issue wastewater discharge permits has been delegated to Kentucky where it is administered by DEP as the Kentucky Pollutant Discharge Elimination System (KPDES) permit program. This program operates under a statutory prohibition against the issuance of permits that are more stringent than would be issued under federal authority.

The Clean Water Act anti-degradation program has the greatest potential to limit the issuance of KPDES permits for discharges from new or expanded energy facilities. Kentucky has recently promulgated a revised Clean Water Act anti-degradation regulation which minimizes the regulatory burdens on new and expanded discharges while satisfying USEPA requirements and mandating compliance with water quality standards. USEPA recently gave approved Kentucky's new anti-degradation regulation.

In regard to waste disposal, Kentucky operates the hazardous waste permit program pursuant to program approval from U.S. EPA. Kentucky's program requirements are comparable to those imposed under the federal Resource Conservation and Recovery Act (RCRA). Under Kentucky law non-hazardous waste generated by energy facilities is generally categorized as special waste rather than solid waste in recognition of its high-volume, low-hazard characteristics. Kentucky's statutes provide for less-burdensome permit procedures for special waste disposal activities and this directive is reflected in DEP regulations applicable to waste generated by energy facilities.

A challenge to the processing of applications for environmental permits for new and expanded energy facilities is the multiplicity of approvals required for energy activities subject to the Clean Water Act Section 404 dredge and fill permit program. This impediment could be eliminated by delegation of the Clean Water Act Section 404 permit authority to Kentucky. With legislation passed during the 2005 session of the Kentucky General Assembly, the cabinet has been given the statutory authority to seek delegation of the Section 404 program from U.S. EPA. The cabinet will be working with stakeholders in the process to apply for delegation of the Section 404 permit authority and has received a federal grant to help perform some of this initial work.

Surface mining presents quality of life, aesthetic, and environmental challenges. A federal lawsuit filed to block general permits under the U.S. Army Corps of Engineers Nationwide Permit 21 for mining operations with valley fills places additional uncertainty on the industry. The administration is participating on an interagency task force (includes the U.S. Office of Surface Mining, EPA, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Resources, and EPPC) that is examining the effects of surface mining on our land, water and wildlife resources. The administration will continue to work with various groups to promote progressive policy that maintains the vitality of Kentucky's coal industry while addressing environmental issues. In February of this year, Governor Fletcher issued an Executive Order directing EPPC to identify opportunities for streamlining permitting activities and improving coordination among state and federal agencies.

Another challenge to the issuance of environmental permits for new and expanded energy facilities is the timing of authorization for water withdrawal. Recent legal interpretations have construed Kentucky's statutes to preclude the issuance of water withdrawal permits more than six months in advance of the commencement of water withdrawal. This limitation poses a significant problem for the financing of energy projects that necessitate a much longer lead-time for construction. The Department for Environmental Protection is pursuing regulatory changes to eliminate this impediment.

Additional challenges to Kentucky's electric generation industry may occur if the problems surrounding Kentucky's Bond Pool are not addressed. The Surface Mining Reclamation and Control Act (SMRA) requires coal operators to post a reclamation bond sufficient to reclaim the mine site in the event that operators do not meet their obligation to do so. A reclamation bond must be posted before a surface mining permit can be issued. In an effort to provide a viable bonding alternative for medium-to-small coal companies, the state legislature created the Kentucky Bond Pool Fund in 1986. The Kentucky Bond Pool is administered by a commission and is required to maintain a level of funding adequate to meet the bonding commitments of the member companies. On an industry-wide basis, bonds have become increasingly more difficult to obtain. The tightening of the bond market, coupled with a booming coal market, has placed an increased demand on the Kentucky Bond Pool.

Energy Efficiency

Although electricity demand is expected to grow, this growth rate would be much higher if it were not for innovations and investments made in improving the energy efficiency of our homes, business and industrial facilities, appliances and products. Efficiency can be considered one of our most cost-effective and environmentally beneficial supplies of energy. Efficiency improvements have had a significant impact on energy use in the United States. Energy efficiency refers to the use of advanced technologies to produce more output using less energy. Energy efficiency helps consumers reduce utility bills, provides for more comfort and convenience in homes and buildings, and protects the environment. In 2002, the United States used 45 percent less energy per unit of Gross Domestic Product than it did in 1973. Many of the large gains occurred in the years following the oil price shocks of the 1970s and early 1980s; however, concerted government and private sector involvement in energy efficiency programs during the last 15 years have continued those advances. The Electric Power Research Institute (EPRI) estimates that a \$4.2 billion annual investment in energy efficiency would reduce U.S. peak electricity demand by 6.4 percent, or 45,000 megawatts (MW). The cost of building the necessary generation to meet the same 45,000 MW would be an estimated \$8.5 billion annually.

Kentucky's historically low electricity rates have encouraged energy-intensive practices and processes. Such energy intensity has resulted in relatively higher bills. In fact, the average Kentucky industrial bill is 123 percent higher than the national average, and our schools spend 7 percent more per student on electricity than the national average. A concerted focus on improving energy efficiency presents enormous opportunities for Kentuckians and will help lessen the anticipated growth in demand for new electric generation.