

KENTUCKY'S ENERGY ⚡ OPPORTUNITIES FOR OUR FUTURE



A COMPREHENSIVE ENERGY STRATEGY



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To the Citizens of Kentucky,

Kentucky is a land blessed with abundant natural resources, industrious people and great natural beauty. Our challenge today is to continue to grow our economy, utilize our resources in a sustainable manner and protect and maintain our commitment to environmental quality. To accomplish these objectives, Kentucky must have a comprehensive state energy strategy.

Kentucky's energy sector is currently well positioned but that position is not guaranteed. The Legislative Research Commission's Interim Special Subcommittee on Energy realized in 2003 that Kentucky must formulate a statewide energy policy. A resolution passed by the subcommittee recognized the "tremendous challenges and tremendous opportunities in the energy arena." I am committed to work with the legislature to develop and implement a comprehensive energy policy for the benefit of all Kentuckians.

When I announced the formation of the Commonwealth Energy Policy Task Force, I outlined three principles to guide policy development:

- Maintain Kentucky's low-cost energy
- Responsibly develop Kentucky's energy resources
- Preserve Kentucky's commitment to environmental quality

The work of the task force, articulated through this comprehensive energy strategy, is consistent with these principles.

I appreciate the hard work of the task force to produce this energy strategy. I thank the legislators who played such a vital role in its development.

Most important, I look forward to implementing the recommendations of this energy strategy to move Kentucky forward.

As Kentuckians unite to build a Commonwealth of opportunity, the competitive advantage Kentucky enjoys in low-cost energy is an important building block. We must act now to secure a low-cost energy future through the responsible development of Kentucky's energy resources and a sustained commitment to environmental quality.

All Kentuckians hope to leave the next generation with a more prosperous and more beautiful Kentucky. This strategy serves as a framework to get us there.

Sincerely,

Governor,
Commonwealth of Kentucky



Commonwealth Energy Policy Task Force Public Input

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| <p>East Kentucky Power Cooperative Cinergy Gas & Electric Kentucky Coal Association Kentucky Oil & Gas Association Columbia Gas Louisville Gas & Electric University of Kentucky University of Louisville Environmental Quality Commission Kentucky Public Service Commission Kentucky Attorney General's Office Kentucky Division of Energy Rocky Mountain Elk Foundation Kentucky Resources Council Kentucky Association for Community Action Kentucky Department for Environmental Protection Greater Louisville Inc. Northern Kentucky Chamber of Commerce Kentucky Chamber of Commerce Associated Industries of Kentucky Kentucky Farm Bureau Sierra Club Kentuckians for the Commonwealth Kentucky Geological Survey Kentucky Solar Partnership Midwest ISO College of Agriculture – University of Kentucky Kentucky Division of Oil & Gas American Electric Power</p> | <p>DTX Technologies Kentucky Coal Council Coal Operators & Associates Hazard Community College Kentucky Division of Mine Safety Appalachia Science in the Public Interest Kentucky Department for Natural Resources Kentucky Department for Fish and Wildlife EnviroPower National Energy Education Development Kentucky Association of Electric Cooperatives Kentucky Energy and Environmental Consortium Berea College—Sustainability and Environmental Studies Interstate Natural Gas Company Kentucky Clean Fuels Coalition Kentucky Corn Growers Association Kentucky Soybean Association Kentucky Industrial Utilities Customers Century Aluminum Alacan Sebree Aluminum SECAT, Inc. Center for Applied Energy Research Western Kentucky University Peabody Energy Tennessee Valley Authority Madisonville Community and Technical College Municipal Electric Power Association of Kentucky United Steel Workers Center for Technology Enterprise</p> |
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and
 Citizens of the Commonwealth of Kentucky

Executive Summary

Kentucky is a land blessed with abundant natural resources, industrious people and great natural beauty. Our challenge today is to continue to grow our economy, utilize our resources in a sustainable manner and protect and maintain our commitment to environmental quality. To accomplish

these objectives, Kentucky must have a comprehensive state energy strategy.

Kentucky's energy sector is currently well positioned but that position is not guaranteed. The Legislative Research Commission's Interim Special Subcommittee on Energy realized in 2003 that Kentucky must formulate a statewide energy policy. A resolution passed by the subcommittee recognized the "tremendous challenges and tremendous opportunities in the energy arena."

The resolution encouraged the incoming administration "to craft state policy and insure that developments in the energy field take place in a planned and thoughtful fashion." Governor Fletcher has committed to work with the legislature to develop and implement a comprehensive energy policy for the benefit of all Kentuckians.

Announcing the formation of the Commonwealth Energy Policy Task Force, Governor Fletcher outlined three principles that guided policy development:

- Maintain Kentucky's low-cost energy
- Responsibly develop Kentucky's energy resources
- Preserve Kentucky's commitment to environmental quality

The Commonwealth Energy Policy Task Force conducted three public meetings at locations across the state to ensure that development of an energy policy encompassed broad citizen and stakeholder input. The task force listened to testimony from energy producers, environmental organizations, the business community, educators and individual citizens.

The days of considering state energy policy within an isolated context are long over. State, national and international economies are interconnected. The transfer of goods and services continues to be liberalized. Like other commodities, energy supplies pursue markets—wherever they exist—that promise sufficient rates of return. Certain environmental issues know no borders.

An adequate supply of energy resources is a prerequisite to economic growth. Rapid economic growth in developing nations—particularly India and China—will play an increasingly important role in worldwide energy trends. The industrialized world is also expected to realize sustained growth over the long term. The United States economy is projected to grow by three percent annually for the next 20 years.

Evidence suggests that economic growth, increased energy demand and energy efficiency are not mutually exclusive. According to the United States Department of Energy (DOE), "energy intensity, as measured by energy use per dollar of GDP, is projected to decline at an average annual rate of



1.5 percent (over the next 20 years)... with efficiency gains and structural shifts in the economy offsetting growth in demand for energy services.” Growing energy demand is also expected to present environmental challenges. New federal rules targeting mercury emissions from power plants are forthcoming in 2005. Carbon gas emissions from burning fossil fuels could become targeted for reduction.

In 2002, Kentucky residents enjoyed the lowest cost residential electricity rates in the nation. Consider how Kentucky’s residential electricity rates compare with surrounding states:

- 9% lower than West Virginia residents.
- 12% lower than Tennessee residents.
- 18% lower than Indiana residents.
- 20% lower than Missouri residents.
- 27% lower than Virginia residents.
- 32% lower than Ohio residents.
- 33% lower than Illinois residents.
- 33% lower than the national average.

The three largest coal producing states—Wyoming, West Virginia and Kentucky—have the three lowest electricity costs in the nation. Projections indicate that states with significant coal-fired generation within their energy portfolio should, with the proper policy environment and attention to energy efficiency, continue to enjoy the benefits of low cost electricity.

While Kentucky’s economy has grown—although at a slower rate than our competitive states—indicators suggest that air quality, a significant environmental measure, has dramatically improved within the state .

These facts demonstrate that energy development, economic development and environmental quality are mutually inclusive goals.



Education Secretary Virginia Fox and Economic Development Secretary Gene Strong

Energy Efficiency: Saving Energy, Saving Money and Protecting the Environment

A sound energy policy requires balancing supply and demand forces in the market. On the demand side, efficient energy use and conservation can reduce overall energy costs and help address environmental issues. The United States has made impressive gains in energy efficiency. Since 1973, the U.S. economy has grown by 126 percent, while energy use has increased by only 30 percent.

Over the years, Kentucky’s low rates have encouraged energy-intensive practices, processes and procedures. This historic energy intensity provides a great opportunity for energy efficiency to help lower consumption, reduce energy bills and improve the environment.

To achieve greater energy efficiency in Kentucky, the comprehensive energy strategy proposes that state government “lead the way” and focus on energy efficiency education and outreach.

Renewable Energy: A Sustainable Commitment

The growth potential in renewable resources is especially strong in our transportation sector, where Kentucky is in an enviable position to take advantage of the emerging biodiesel and ethanol markets. A strong biofuels market offers a myriad of benefits—improved health through reduced emissions of harmful pollutants, improved air quality and economic growth, particularly in agriculture. The use of clean transportation fuels such as natural gas, ethanol, propane and biodiesel has increased in recent years throughout Kentucky in both public and private vehicle fleets.

In 2003, two million gallons of biodiesel were produced in Kentucky, with 300,000 gallons consumed in Kentucky. In 2003, 24 million gallons of ethanol were produced in Kentucky, and 12 million gallons were consumed in Kentucky. A lack of retail distribution has impeded consumption of cleaner fuels.

Biodiesel fuel specifications have been written by the Finance and Administration Cabinet, enabling fuel suppliers to bid on this fuel as they do standard diesel and gasoline.

The state diesel fuel use annually is roughly 2.4 million gallons. Ethanol production is an ideal market for Kentucky farmers, who produce 166 million bushels of corn per year.

The comprehensive energy strategy is focused on enhancing the renewable energy resource portion of Kentucky's energy portfolio by promoting its production, consumption and availability with in the state.

Kentucky's Low Cost Electric: Strategic Investment

Kentucky enjoys some of the lowest rates of electricity in the nation. This provides significant benefits to Kentucky's residential consumers and is a comparative advantage in recruiting and retaining industry. It is shortsighted, however, to think that these advantages are guaranteed. Kentucky must strategically develop its energy portfolio to ensure that the state continues to enjoy the benefits of low-cost electric.

The Kentucky Public Service Commission (PSC) collects some information related to the projected needs for new generation going forward. However, there is no comprehensive assessment of statewide needs that could serve as a blueprint for strategic investment.

According to the U.S. Department of Energy, renewable energy resources' contribution to electric generation will increase by 38 percent by 2025. New electricity generation technology is providing the opportunity for renewables—i.e. wood waste, landfill gases, biomass—to supplement primary resources in electric generation.

Kentucky's comprehensive energy strategy focuses on designing a 'strategic blueprint' to guide investment in Kentucky's electricity sector and promoting, without mandating, the utilization of

renewable energy resources as an energy resource for electric generation.



Coal: Energy at Kentucky's Feet

A thorough discussion of Kentucky's low-cost electric must include the role played by coal. Ninety percent of Kentucky's electricity is produced from coal-fired generation. According to the U.S. Department of Energy, Kentucky ranked third—behind Wyoming and West Virginia—in the United States in coal production in 2002. However, Kentucky's coal production has significantly declined over the last decade.

Environmental emission requirements present a significant challenge to the Kentucky coal industry. Kentucky's coal industry can realize benefits from the electricity generation industry investing in “clean coal technology.”

Companies are finding that it makes economic sense to construct generation capacity directly at coal sites to diminish transportation costs. One benefit of mine mouth generation is that it adds value to the energy resource through jobs in the mining industry and at the generation plants. Further, the proposed plants must conform to the environmental requirements of the state so environmental concerns are addressed before any construction begins.

In an effort to provide a viable bonding alternative for medium-to-small sized coal companies, the state legislature created the Kentucky Bond Pool Fund in 1986. The Kentucky Bond Pool is administered by the Bond Pool Commission and is required to maintain a level of funding adequate to meet the bonding commitments of the member companies. At current funding levels, the Kentucky Bond Pool faces limitations in its capacity to take on additional bond liability to keep pace with the increasing demand.

Other states are investing in the coal industry. For example, Illinois's Coal Infrastructure program provides grants that match private sector investment aimed at improving coal production, transportation and utilization systems. Additionally, the U.S. Department of Energy is promoting research and development into coal gasification as an alternative to conventional petroleum-based fuel. This research could provide new markets for Kentucky coal.

While Kentucky's coal industry continues to employ a significant number of people, employment has been on a downward trend since the 1970s. The recent uptick in coal demand has been complicated by the fact that the coal industry is facing a shortage of qualified miners due to retirements of the current generation and a lack of sufficient training in the next generation.

Even well-trained miners can face challenges on the job if they are wrestling with a substance-abuse problem. According to the federal Department of Labor, “the rate of fatal accidents has steadily been decreasing since 2000. The challenge now is dealing with preventable problems caused by people who are impaired by drugs or alcohol.”



Finance & Administration Secretary Robbie Rudolph, Representative Tanya Pullin, Environmental and Public Protection Secretary LaJuana Wilcher

There are opportunities to promote the responsible development of Kentucky's energy resources. The Department for Natural Resources has partnered with the University of Kentucky and the Environmental Quality Commission to promote the planting of high-value hardwood species on mined lands. The Starfire Mine site is the location where elk were reintroduced into eastern Kentucky.

The energy resources inherent to coal refuse can be harnessed while promoting the proper reclamation of abandoned mine sites. The state can initiate a dialogue between appropriate energy and environmental parties to discuss the issues surrounding area mining to determine if consensus can be built around potential policy solutions.

Kentucky's comprehensive energy strategy focuses on promoting new growth in Kentucky's coal industry through clean coal technology, targeted investment, workforce training, addressing the pervasive substance abuse problem and responsibly developing our energy resources through progressive policy.

Kentucky's Natural Gas: Untapped Potential

Kentucky has 1.9 billion cubic feet of proven natural gas reserves—or about one percent of the nation's proven reserves. In 2002, Kentucky produced over 86 million cubic feet of natural gas. If this gas were wholly consumed within the state (which it was not) Kentucky's production would have accounted for only 41 percent of the state's consumption. Consequently, Kentucky is a net importer of natural gas.

Forty-four percent of Kentucky's home-heating market is fueled by natural gas. Nationally, natural gas prices have risen sharply in recent years. Prices during the winter of 2003-2004 were 20 to



Commerce Secretary Jim Host and Senator Robert Stivers

40 percent higher than during the 2002-2003 heating season. Recent projections expect the trend to continue.

Recent complications have impeded the responsible development of Kentucky's natural gas reserves. Getting natural gas from the field to the interstate pipelines that cross the state has been made difficult due to significant infrastructure barriers. A robust natural gas infrastructure is essential to providing reliable and cost-effective service to Kentucky's consumers.

Coal-bed methane is a promising source of energy and economic development. Methane gas is also a byproduct of refuse decomposition. Methane is being leaked into the atmosphere at many of Kentucky's landfills. Capturing this resource would supplement the state's energy portfolio and diminish the environmental impact of landfills. Further, methane is a component part of multiple products, particularly plastics. The need for methane as an input into industrial processes provides an opportunity for Kentucky to leverage this inherent resource to grow value-added industry.

Kentucky's comprehensive energy strategy is focused on investment in natural gas infrastructure and the emerging opportunities associated with methane and natural gas.

Kentucky's Energy Future: A Perpetual Commitment

Kentucky does not have a high-level government organization dedicated to energy. This has not always been the case. During the energy shortages of the 1970s, Kentucky had an Energy Cabinet. Over the years, however, the dedication to energy issues has been diminished. In order to better ensure Kentucky's low-cost energy future, there must be a perpetual commitment.

Although Kentuckians enjoy the lowest electricity rates in the nation, low-income citizens, particularly those on fixed incomes, have a difficult time paying their energy bills, especially in the winter-time when natural gas and propane prices are generally higher. There are a number of programs in place to provide assistance to low income Kentuckians that need to be better promoted.

Billions of dollars for energy research and development are available through the federal government. Unfortunately, Kentucky has a very poor track record capturing these resources. This must change.

According to the U.S. Department of Homeland Security, "energy drives the foundation of many of the sophisticated processes at work in American society. It is essential to our economy, national defense and quality of life." Additionally, "it is important to remember that protection of our critical infrastructures and key assets is a shared responsibility. Accordingly, the success of our protective efforts will require close cooperation between government and the private sector at all levels." Kentucky, with its critical energy infrastructure being vital to the state and national economy, must be engaged in ensuring that this national security priority is fulfilled.

Kentucky's comprehensive energy strategy is focused on establishing a high level emphasis on energy policy within state government, developing Kentucky's energy workforce, promoting initiatives to help low income Kentuckians with energy bills, securing federal energy research and development resources and securing Kentucky's critical energy infrastructure.

Conclusion: Kentucky's Energy — Opportunities For Our Future

Kentucky's energy sector is currently well positioned but that position is not guaranteed. Our challenge today is to continue to grow our economy, utilize our resources in a sustainable manner and protect and maintain our commitment to environmental quality. To accomplish these objectives, Kentucky must have a comprehensive state energy strategy.

Governor Fletcher has committed to work in a bipartisan manner with the legislature to develop and implement a comprehensive energy strategy for the benefit of all Kentuckians. As Kentuckians unite to build a Commonwealth of opportunity, the competitive advantage Kentucky enjoys in low-cost energy is an important building block. We must act now to secure a low-cost energy future through the responsible development of Kentucky's energy resources and a sustained commitment to environmental quality.

All Kentuckians hope to leave the next generation with a more prosperous and more beautiful Kentucky. This strategy serves as a framework to get us there.

Energy Strategy Recommendations

Energy Efficiency: Saving Energy, Saving Money and Protecting the Environment

Recommendation 1:

The Commonwealth of Kentucky, through the Finance and Administration Cabinet, should dedicate staff toward implementing an aggressive and sensible utility savings initiative throughout state government and other state-funded institutions to improve energy efficiency.

Recommendation 2:

The Commonwealth of Kentucky should develop and implement procurement policies that encourage sustainable practices, products and energy efficiency.

Recommendation 3:

The Commonwealth of Kentucky should encourage high performance, energy-efficient design for new construction of state facilities.

Recommendation 4:

The Commonwealth of Kentucky should require interagency cooperation to promote energy efficiency initiatives.

Recommendation 5:

The Commonwealth of Kentucky should encourage the continued development of public-private partnerships dedicated to promoting energy efficiency through education and outreach.

Recommendation 6:

The Commonwealth of Kentucky should work with industries, businesses, schools, universities and communities to promote and give preference to energy-efficient products and practices.

Recommendation 7:

The Commonwealth of Kentucky should support energy assessment initiatives that will help our industries and businesses improve their profitability through energy efficiency and resource management.

Recommendation 8:

The Commonwealth of Kentucky should examine its building codes and specifications to determine if enhanced energy efficiency gains are possible through progressive policy.

Recommendation 9:

The Commonwealth of Kentucky should pursue funding opportunities to strengthen K-12 energy education.

Renewable Energy: A Sustainable Commitment

Recommendation 10:

The Commonwealth of Kentucky should require its state fleet to utilize a 10 percent blend of ethanol (E10) and gasoline and a two percent blend of biodiesel (B2) wherever these clean fuels are available, and encourage Kentucky's post-secondary institutions to adopt similar initiatives.

Recommendation 11:

The Commonwealth of Kentucky should design and implement policies to promote the production, consumption and availability of biodiesel and ethanol within Kentucky.

Recommendation 12:

The Commonwealth of Kentucky should design policies to promote the utilization of a 20 percent blend of biodiesel in the public school bus fleet.

Kentucky's Low Cost Electricity: Strategic Investment

Recommendation 13:

The Commonwealth of Kentucky should develop a comprehensive statewide assessment of Kentucky's electricity infrastructure—generation, transmission and distribution—which includes reasonable projections of future electricity requirements.

Recommendation 14:

The Commonwealth of Kentucky should periodically update the comprehensive statewide assessment to reflect changes in both electric infrastructure and future electricity requirements.

Recommendation 15:

The Commonwealth of Kentucky assessment should serve as a “strategic blueprint” for policy-makers to determine future investment requirements in Kentucky's electricity generation, transmission and distribution infrastructure.

Recommendation 16:

The Commonwealth of Kentucky should utilize the “strategic blueprint” to develop policies that promote sufficient investment in electricity infrastructure—generation, transmission and distribution—to sustain Kentucky's low cost electricity into the future.

Recommendation 17:

The Commonwealth of Kentucky should identify impediments to investment in electricity generation, transmission and distribution and develop policies to promote investment while ensuring that appropriate environmental protections are maintained and local voices are heard.

Recommendation 18:

The Commonwealth of Kentucky should design and implement policies that promote, but do not mandate, the use of renewable energy resources in Kentucky's electricity generation portfolio.

Coal: Energy at Kentucky's Feet

Recommendation 19:

The Commonwealth of Kentucky should examine its regulatory policies and traditional economic-development incentives to design and implement policies that promote investment in clean coal technology.

Recommendation 20:

The Commonwealth of Kentucky should develop policies to provide incentives for the purchase of Kentucky coal at clean-coal facilities.

Recommendation 21:

The Commonwealth of Kentucky should ensure that the Kentucky Bond Pool Fund is sufficiently enhanced to promote the growth and productivity of Kentucky's coal mining industry.

Recommendation 22:

The Commonwealth of Kentucky should examine its current mine permitting policies and identify streamlining opportunities.

Recommendation 23:

The Commonwealth of Kentucky should design and implement policies to promote electricity generation at Kentucky mine sites.

Recommendation 24:

The Commonwealth of Kentucky should design and implement policies to promote capital investment within the coal industry.

Recommendation 25:

The Commonwealth of Kentucky should support projects and initiatives intended to open new markets for Kentucky coal.

Recommendation 26:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to develop and invest in a program targeted at workforce development within the coal industry.

Recommendation 27:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to pursue federal resources to implement workforce development initiatives for the coal mining industry.

Recommendation 28:

The Commonwealth of Kentucky should partner with the Southern States Energy Board to develop a model workforce development initiative that can be replicated in other coal-producing states.

Recommendation 29:

The Commonwealth of Kentucky should partner with the federal government, the mining industry, employee organizations and with other coal producing states to study the extent of the drug and alcohol problems in the mines.

Recommendation 30:

The Commonwealth of Kentucky should partner with the mining industry and employee organizations to develop policies that promote drug screening and rehabilitation within the mining industry.

Recommendation 31:

The Commonwealth of Kentucky should pursue federal funding opportunities to promote drug screening and rehabilitation within the mining industry.

Recommendation 32:

The Commonwealth of Kentucky should continue to promote progressive reclamation practices through reforestation and the creation of wildlife habitats that support environmental restoration and enhanced economic development and tourism opportunities.

Recommendation 33:

The Commonwealth of Kentucky should design and implement policies that promote the recovery of the energy resources inherent to abandoned coal refuse and the proper reclamation of those properties.

Recommendation 34:

The Commonwealth of Kentucky should monitor the proposals of the Office of Surface Mining surrounding the issues of area mining and determine what appropriate changes should be made to the current state regulatory program to bring it in line with proposed federal rule changes.

Recommendation 35:

The Commonwealth of Kentucky should support dialogue between appropriate energy and environmental parties to determine the policy options related to area mining within the context of the proposed federal rule changes.

Recommendation 36:

The Commonwealth of Kentucky should design and implement policies to promote the transformation of waste into value-added products, particularly directed at opportunities to reduce the environmental impact of coal-fired emissions.

Kentucky's Natural Gas: Untapped Potential

Recommendation 37:

The Commonwealth of Kentucky should develop and implement policies that encourage investment in intrastate natural gas pipelines, gathering lines and distribution capacity.

Recommendation 38:

The Commonwealth of Kentucky should determine the opportunities for increased natural gas storage capacity and, if appropriate, promote its development.

Recommendation 39:

The Commonwealth of Kentucky should promote research to accurately determine the extent of coal bed methane and natural gas reserves in Kentucky and its prominent locations.

Recommendation 40:

The Commonwealth of Kentucky should design and implement policies to promote the recapture of methane from the state's landfills.

Recommendation 41:

The Commonwealth of Kentucky should identify the potential of coal bed methane value-added industries and, if feasible, design economic development strategies to grow those industries around the state's coal bed methane reserves.

Kentucky's Energy Future: A Perpetual Commitment

Recommendation 42:

The Commonwealth of Kentucky should place a high-level emphasis on energy policy to continue the vital work necessary to ensure Kentucky's low cost energy future, the responsible development

of Kentucky's energy resources and Kentucky's commitment to environmental quality.

Recommendation 43:

The Commonwealth of Kentucky should engage federal regulatory and energy agencies to ensure that the state has a "place at the table" while energy issues are being discussed.

Recommendation 44:

The Commonwealth of Kentucky should investigate the emerging impact of global and national policies and institutions on Kentucky's energy future.

Recommendation 45:

The Commonwealth of Kentucky should partner with post-secondary institutions, industry and the federal government to develop and invest in programs targeted at workforce development within the energy industry.

Recommendation 46:

The Commonwealth of Kentucky should partner with community-action agencies and the energy industry to provide energy assistance to Kentucky's neediest citizens.

Recommendation 47:

The Commonwealth of Kentucky should promote the awareness of utility check-off programs and encourage widespread participation.

Recommendation 48:

The Commonwealth of Kentucky should partner with the state's universities, private industry and non-profit organizations to aggressively pursue federal research and development resources that are dedicated—but not limited—to clean-coal technology, energy efficiency, hydrogen technology and renewable energies.

Recommendation 49:

The Commonwealth of Kentucky should initiate a full-scale effort to attract and site the federal FutureGen facility in Kentucky.

Recommendation 50:

The Commonwealth of Kentucky should encourage and assist the state's universities, private industry and non-profit organizations to leverage available federal energy research and development resources.

Recommendation 51:

The Commonwealth of Kentucky should promote greater collaboration between Kentucky's universities to synergize ongoing energy research efforts at individual institutions.

Recommendation 52:

The Commonwealth of Kentucky should partner with the federal government, local governments and private industry to promote enhanced security of Kentucky's critical energy infrastructure.

Recommendation 53:

The Commonwealth of Kentucky should partner with local governments and private industry to pursue federal funding opportunities that promote enhanced security of Kentucky's critical energy infrastructure.

Recommendation 54:

The Commonwealth of Kentucky should partner with the federal government to enhance the nation's energy security through research and development directed at transforming Kentucky's energy resources into the resources that fuel the nation.



The Need for a Comprehensive Energy Strategy

Kentucky is a land blessed with abundant natural resources, industrious people and great natural beauty. Our challenge today is to continue to grow our economy, utilize our resources in a sustainable manner and protect and maintain our commitment to environmental quality. To accomplish these objectives, Kentucky must have a comprehensive state energy plan.

Kentucky historically has relied primarily on coal to produce its electricity, and likely will do so in the future. Simply stated, without an adequate supply of coal, Kentuckians will not continue to enjoy the benefits of low-cost electricity rates. Nonetheless, we have opportunities to diversify our energy portfolio to help our citizens save money and protect the environment.

Recent trends also reveal opportunities to strengthen Kentucky's energy position. Although Kentucky enjoys the lowest electricity rates in the nation, we rank 23rd in residential energy consumption and are the seventh highest per capita primary energy-consuming state. The average monthly industrial electric bill in Kentucky is 123% higher than the national average. This indicates that our low electricity rates do not translate into low energy bills if we consume more energy than necessary in our homes and businesses.

Energy production and usage also affect the state's environment. Energy consumption, including the energy we use to light and heat our homes, contributes to carbon dioxide, sulfur dioxide, nitrogen and mercury emissions. Technological advances—such as clean coal technology, alternative fuels, hybrid vehicles and hydrogen fuel cells—

offer great promise to enhance environmental quality. State government can and should play a role in promoting cleaner fuels, but Kentuckians must also realize that individual choices are vital to a cleaner environmental future.

Kentucky's energy sector is currently well positioned but that position is not guaranteed. The Legislative Research Commission's Interim Special Subcommittee on Energy realized in 2003 that Kentucky must formulate a statewide energy policy. A resolution passed by the subcommittee recognized the "tremendous challenges and tremendous opportunities in the energy arena."

The resolution encouraged the incoming administration "to craft state policy and insure that developments in the energy field take place in a planned and thoughtful fashion." Governor Fletcher is committed to work with the legislature to develop and implement a comprehensive energy policy for the benefit of all Kentuckians.

During the announcement of the Commonwealth Energy Policy Task Force, Governor Fletcher stated, "I am optimistic that by including the co-chairs of the Legislative Research Commission (LRC) Special Subcommittee on Energy, we can build the necessary bi-partisan support on energy issues to move this state forward."



Commerce Secretary Jim Host, right and House Majority Floor Leader Rocky Adkins.

Governor Fletcher outlined three principles that guided policy development:

■ **Maintain Kentucky's low-cost energy**

The citizens and businesses of Kentucky currently enjoy some of the lowest energy rates in the United States. Kentucky's residential electricity rates are among the lowest in the nation while Kentucky's industrial electricity rate *is* the lowest in the nation. Unfortunately, low-cost energy for Kentuckians is not guaranteed. According to Governor Fletcher, "Kentucky must strategically plan to preserve the low-cost energy advantage that all its citizens enjoy."

■ **Responsibly develop Kentucky's energy resources**

Kentucky is blessed with abundant energy resources—our fossil-fuel resources are enviable, and include coal (Kentucky ranks third in the nation in coal production), oil, natural gas and coal bed methane. The Commonwealth is also in a strong position to take advantage of its renewable energy resources (including hydropower, solar energy, wind power, landfill gas and biofuels).

■ **Preserve Kentucky's commitment to environmental quality**

Energy exploration, production, generation and use have impacts on the environment. However, these impacts can be significantly minimized with a sound, forward-thinking energy policy that guides the state in determining its energy future.

As Governor Fletcher stated, "Responsible energy development and commitment to preserving our environment are not mutually exclusive of one another. We can find the proper balance."

The members of the Commonwealth Energy Policy Task Force are:

- **Jim Host**, Secretary of Commerce, Task Force Co-Chair
- **LaJuana Wilcher**, Secretary of Environmental and Public Protection, Task Force Co-Chair
- **Virginia Fox**, Secretary of Education
- **Robbie Rudolph**, Secretary of Finance and Administration
- **Gene Strong**, Secretary of Economic Development
- **Senator Robert Stivers**, LRC Special Subcommittee on Energy
- **Representative Tanya Pullin**, LRC Special Subcommittee on Energy

The Commonwealth Energy Policy Task Force conducted public forums in Lexington, Hazard and Hopkinsville to gather input from citizens and stakeholders. The task force listened to testimony from energy producers, environmental organizations, government officials, the business community, educators and individual citizens.

The speakers addressed a diverse range of subjects such as clean coal technology, funding for research and development, energy education for students and adults, alternative energy sources, reforestation of coal mine sites, transmission of natural gas resources and the need for skilled coal miners.

The diverse locations also allowed members of the Task Force an opportunity to witness firsthand Kentucky's wealth of energy resources. In eastern Kentucky, members toured a reclaimed coal-mine site that not only provides habitat for Kentucky's restocked and growing elk population, but that also showcases the economic potential of hardwood reforestation on progressively reclaimed mined properties. In western Kentucky, the panel toured the state's first ethanol production facility, designed to produce 20 million gallons of ethanol fuel per year.

The recommendations contained in the following report reflect the testimony from participants in the public meetings, information shared on the tour of energy sites, the broad experience of the Task Force members and research from executive staff.

Energy Trends: National and International

The days of considering state energy policy within an isolated context are long over. State, national and international economies are interconnected. The transfer of goods and services continues to be liberalized. Like other commodities, energy supplies pursue markets—wherever they exist—that promise sufficient rates of return. Certain environmental issues know no borders.

An adequate supply of energy resources is a prerequisite to economic growth. Rapid economic growth in developing nations—particularly India and China—will play an increasingly important role in worldwide energy trends. According to the *International Energy Outlook 2004*¹:

¹ U.S. Department of Energy, *International Energy Outlook 2004*. See www.eia.doe.gov

- Energy use in developing nations is projected to increase more rapidly than in other regions over the coming decades.
- Energy demand in the emerging economies of Asia, which include China and India, is projected to more than double over the next quarter century.
- Industrial energy consumption in developing countries was nearly 40 percent of the worldwide industrial sector total in 2001. Their share is projected to increase to almost one-half of all industrial sector energy consumption by 2025.
- In the face of these projections, it is reassuring to note that “global energy resources are thought to be adequate to support the growth expected through 2025.”²

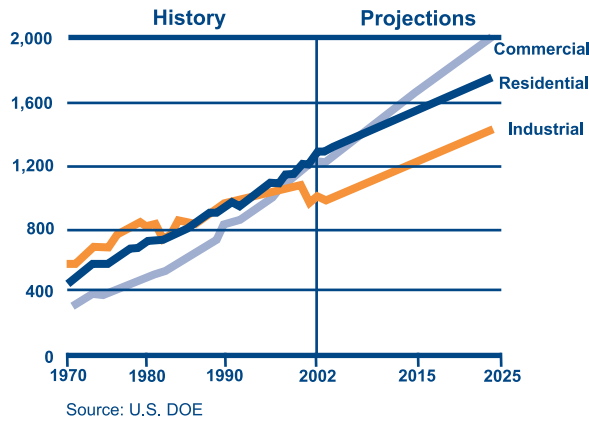
The industrialized world is also expected to realize sustainable growth over the long term. The United States economy is projected to grow by 3% annually for the next 20 years. Consequently by 2025³:

- U.S. energy consumption is expected to grow by 36%
- Petroleum consumption is expected to grow by 39%
- Natural gas consumption is expected to grow by 40%
- Coal consumption is expected to grow by 35%
- Renewable energy resources are expected to grow by 38%

² U.S. Department of Energy, *International Energy Outlook 2004*. See www.eia.doe.gov

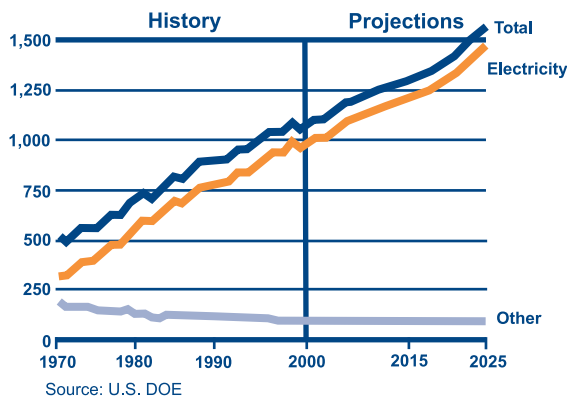
³ Growth measured in quadrillion British Thermal Units (BTUs). These projections are based on existing federal and state laws and regulations remaining unchanged throughout the forecast period. Changes in existing laws and regulations could alter these projections. U.S. Department of Energy. *Annual Energy Outlook 2005*.

**U.S. Annual Electricity Sales by Sector
1970 - 2025**
(billion kilowatt hours)



Coinciding with the nation’s economic growth, demand for electric generation in the United States is projected to increase. Investment in generating capacity is expected to meet short-term demand, however, “more capacity will be needed eventually, as electricity use grows and older, inefficient plants are retired.”⁴

**U.S. Electricity and Other
Coal Consumption
1970 - 2025**
(million short tons)



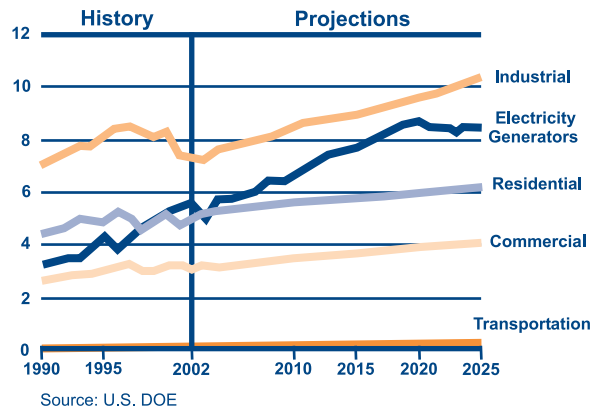
Natural gas is expected to become increasingly important in generating electricity. However, by

⁴ U.S. Department of Energy, *Annual Energy Outlook 2005*. See www.doe.gov

2025, only 31% end-use natural gas consumption will be dedicated to generation. On the other hand, the overwhelming majority of coal consumption will be dedicated to electric generation. According to the Energy Information Administration’s projections, by 2025 coal will comprise 53% of total electricity generation, with natural gas and renewable energy sources contributing 18% and 10% respectively.

Evidence suggests that economic growth, increased energy demand and energy efficiency are not mu-

**U.S. Natural Gas Consumption
by End-Use Sector
(trillion cubic feet)**

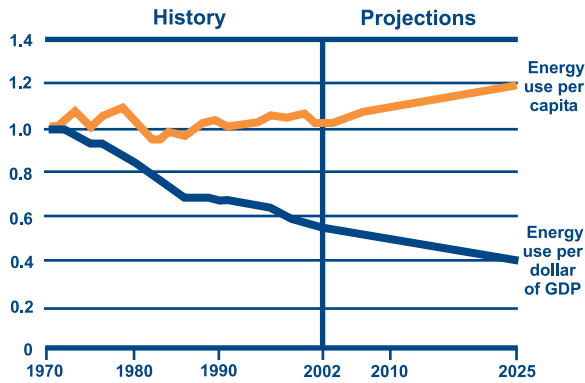


tually exclusive. According to the United States Department of Energy, “energy intensity, as measured by energy use per dollar of GDP, is projected to decline at an average annual rate of 1.5 percent (over the next twenty years)... with efficiency gains and structural shifts in the economy offsetting growth in demand for energy services.”⁵

Growing energy demand is also expected to present environmental challenges. New federal rules targeting mercury emissions from power plants are

⁵ U.S. Department of Energy, *Annual Energy Outlook 2004*. See www.doe.gov

U.S. Energy Intensity (Index 1970 = 1)



Source: U.S. DOE

forthcoming in 2005. Carbon emissions could become targeted for reduction.

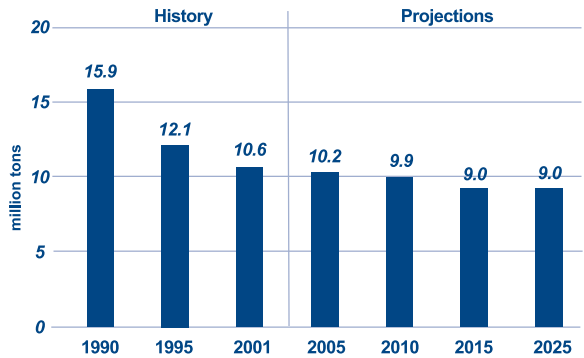
The United States has made significant strides in controlling other energy related pollutants, particularly those identified with coal-fired electricity generation. Nationwide, sulfur dioxide emissions have been reduced by 33% and nitrous oxide emissions have been reduced by 29% from 1990 levels. Both pollutants are projected to remain well below 1990 levels for the next 20 years.

Low Cost Energy: A Kentucky Asset

According to the Bureau of Labor Statistics' *Consumer Expenditure Survey*, during the period of 2000-2002, the average American family spent about \$2,500 annually on "utilities, fuels and public services."⁶ This accounted for about 5.5% of total family expenditures, exceeding the cost of health care each year by an average of \$450. The cost of energy and public services increased by 8.2% over the period.

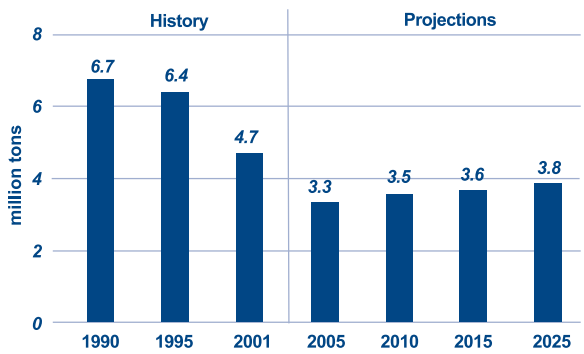
⁶ See the Consumer Expenditure Survey (2002). Bureau of Labor Statistics. www.bls.gov Note: Further disaggregation of category not available.

U.S. Sulfur Dioxide Emissions



Source: U.S. DOE

U.S. Nitrous Oxide Emissions



Source: U.S. DOE

In 2002, Kentucky residents on average enjoyed the lowest-cost residential electricity rates in the nation⁷. Consider how Kentucky's residential electricity rates compare with surrounding states:

- 9% lower than West Virginia residents.
- 12% lower than Tennessee residents.
- 18% lower than Indiana residents.
- 20% lower than Missouri residents.
- 27% lower than Virginia residents.
- 32% lower than Ohio residents.
- 33% lower than Illinois residents.
- 33% lower than the national average.

⁷ Calculations based upon "cents per kilowatt hour." U.S. Department of Energy, Energy Information Administration, "State Electricity Price, 2002." www.doe.gov

The three largest coal producing states—Wyoming, West Virginia and Kentucky—have the three lowest electricity costs in the nation. Projections indicate that states with significant coal fired generation within their energy portfolio should, with the proper policy environment and attention to energy efficiency, continue to enjoy the benefits of low cost electricity. By the year 2025, the cost of producing electricity from petroleum or natural gas is projected to be about four times more expensive than the cost of producing electricity from steam coal.⁸

“Kentucky’s abundant energy resources have placed the state in an enviable position. They offer us the opportunity to grow our economy and improve the lives of all Kentuckians. I can assure you that the Kentucky Public Service Commission will do everything in its power to help Kentucky seize that opportunity.”

Mark David Goss, Chairman of the Kentucky Public Service Commission.

“Kentucky enjoys a tremendous competitive advantage in the provision of energy, natural gas and water supply. The state’s large coal reserves and their resulting proximity to coal burning utility plants, its direct location on the interstate gas pipeline corridor... keep Kentucky’s utility costs among the very lowest in the nation. In turn, a large number of utility providers and oversight by the Kentucky Public Service Commission continue to ensure competitive rates for the consumer.”¹⁰

Although recent initiatives have focused on diversifying Kentucky’s economic portfolio, the

state remains firmly rooted in the industrial economy. According to the U.S. Bureau of Economic Analysis, in 2001—the most recent data available—25% of Kentucky’s economic output came from the manufacturing sector.¹¹ Large industrial sectors in Kentucky include:

| <u>Industry</u> | <u>Employees</u> | <u>Average Salary</u> |
|-----------------|------------------|-----------------------|
| Automotive | 53,000+ | \$50,000 |
| Aluminum | 15,000+ | \$50,000 |
| Plastics | 13,000+ | \$33,000 |

Furthermore, a number of Kentucky’s largest manufacturing industries are very energy intensive. Kentucky’s electric power cost in the industrial sector has ranked among the lowest in the nation for many years.

Mutually Inclusive Goals: Energy Development, Economic Development and Environmental Quality

According to researchers at Stanford University’s Center for Environmental Science and Policy, “energy development, broadly defined to mean increased provision and use of energy resources, is an integral part of enhanced economic development.”⁹

Kentucky’s reliable, low-cost energy is a competitive advantage for the state. According to the Cabinet for Economic Development:

⁸ Energy Information Administration, U.S. Department of Energy. www.doe.gov

⁹ Toman, Michael & Jemelkova, Barbora. “Energy and Economic Development: An Assessment of the State of Knowledge.” Center for Environmental Science and Policy/Program on Energy and Sustainable Development. Stanford University.

¹⁰Kentucky Cabinet for Economic Development. See www.thinkkentucky.com

¹¹For comparison: North Carolina 21%; Tennessee 18%; U.S. Average 14%. See www.bea.gov

Kentucky's Competitor States Energy Affordability Rankings

| | | | |
|----------------|---|----------------|----|
| Kentucky | 1 | Alabama | 8 |
| West Virginia | 2 | Arkansas | 9 |
| Tennessee | 3 | Georgia | 10 |
| Indiana | 4 | North Carolina | 11 |
| Virginia | 5 | Mississippi | 12 |
| Missouri | 6 | Ohio | 13 |
| South Carolina | 7 | Illinois | 14 |

Source: Kentucky Cabinet for Economic Development.¹²

Energy costs are also an important factor in agricultural production costs. According to the U.S. Department of Agriculture, the “difference in the production cost per acre between high and low cost (corn and soybean producers) stems mostly from four expenditure items” which include fuel and electricity.¹³ On average, energy costs account for:

- 15% of production costs for corn producers.
- 11% of production costs for soybean producers.
- 17% of production costs for wheat producers.

Livestock growers also face significant energy related costs. Kentucky’s livestock farmers realize some significant advantages in low cost energy. For example, where energy costs account for 5.2% of the average Kentucky dairy farm’s operating costs, those costs are 25% higher in Tennessee, 30% higher in Illinois and 46% higher in Wisconsin.¹⁴

¹²Derived from data provided by the *North American Business Cost Review*, 10th Edition, Prepared by Economy.com, Inc.

¹³U.S. Department of Agriculture, Economic Research Service. See www.usda.gov

¹⁴U.S. Department of Agriculture, Economic Research Service. See www.usda.gov

“The existing industrial base of Kentucky relies on low-cost electricity to maintain its regional, national and international economic competitiveness.”

Kentucky Industrial Utility Customers

According to David Beck, Executive Vice President of the Kentucky Farm Bureau, “electric rates are a major concern for our members, many of whom are farmers who, in most instances, will use more electricity than the average household. Kentucky enjoys the lowest electric rates in the United States. This is obviously a great benefit and we would like to see this remain the case.”¹⁵

While Kentucky’s economy has grown—although at a slower rate than our competitor states—indicators suggest that air quality, a significant envi-

“Kentucky has the lowest electric rates in the United States—a major plus for industrial development. Low utility rates attract jobs and investment to the Commonwealth.”

Kentucky Chamber of Commerce

¹⁵David S. Beck. *Letter from Kentucky Farm Bureau to the Commonwealth Energy Policy Task Force.*

ronmental measure, within the state has dramatically improved. Airborne pollutants—carbon monoxide, sulfur dioxide, nitrogen oxide, ozone and particulate matter—have significantly declined since 1980. According to Kentucky's Environmental and Public Protection Cabinet¹⁶:

- Statewide and regional sulfur dioxide levels have declining trends over the past 20 years due at least in part to successful efforts of power plants to curb emissions.
- Statewide and regional nitrogen dioxide levels show steady downward trends due to the use of pollution control devices on... power plants and industrial boilers.

Energy Efficiency: Saving Energy, Saving Money and Protecting the Environment

A sound energy policy requires balancing supply and demand forces in the market. On the demand side, efficient energy use and conservation can reduce overall energy costs and help address environmental issues.

Energy efficiency means using advanced and state-of-the-art technologies to provide better quality energy services with less energy or, in more practical terms, receiving the same (or improved) results from our appliances, office equipment, and buildings while using less energy. Energy efficiency

reduces utility bills, provides for more comfortable homes and buildings, increases profitability, and helps improve the quality of the environment.

The United States has made impressive gains in energy efficiency. For example, new refrigerators require just one-third the electricity as they did 30 years ago. Since 1973, the U.S. economy has grown

by 126 %, while energy use has increased by only 30%. In the 1990s alone, manufacturing output expanded by 41%, while industrial electricity consumption grew by only 11%.

Over the years, Kentucky's low electricity rates have encouraged energy-intensive prac-

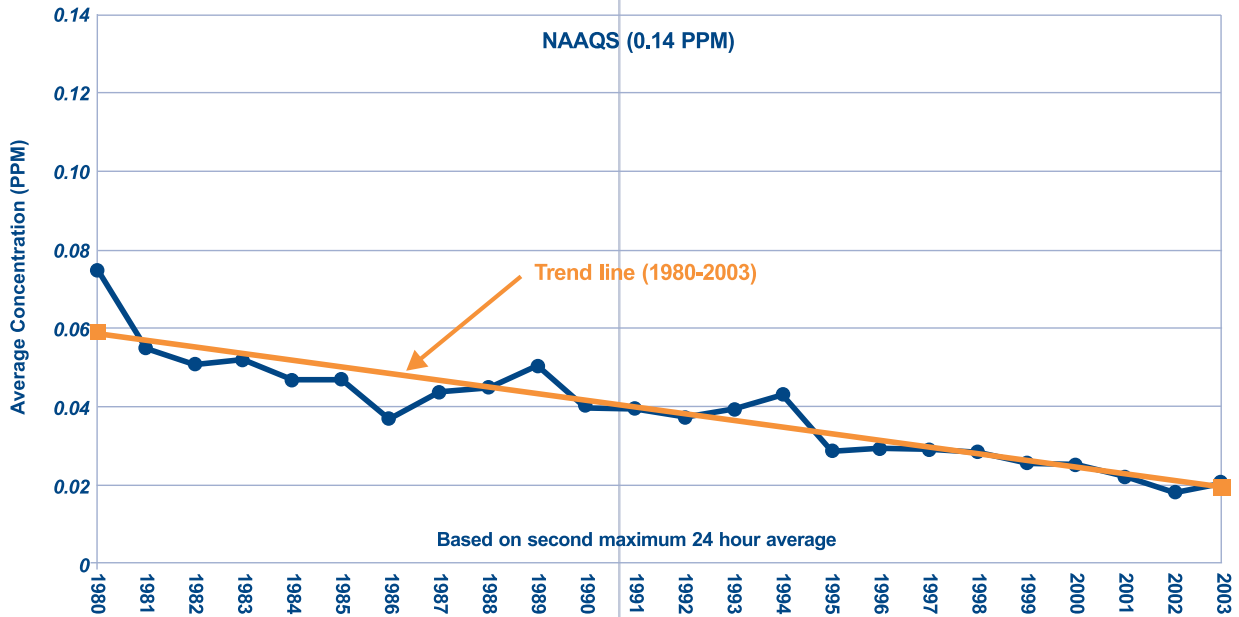
tices, processes and procedures. This historic energy intensity provides a great opportunity for energy efficiency to help lower consumption, reduce energy bills and improve the environment. Kentuckians should not only enjoy the lowest electricity rates in the nation but also the lowest electricity bills in the nation.

Kentucky Farm Bureau Policy States: "Steps should be taken to maintain Kentucky's favorable utility rates."

Since the passage of the Clean Air Act of 1970, the coal based electric industry has spent more than \$50 billion nationwide to comply with environmental regulations.

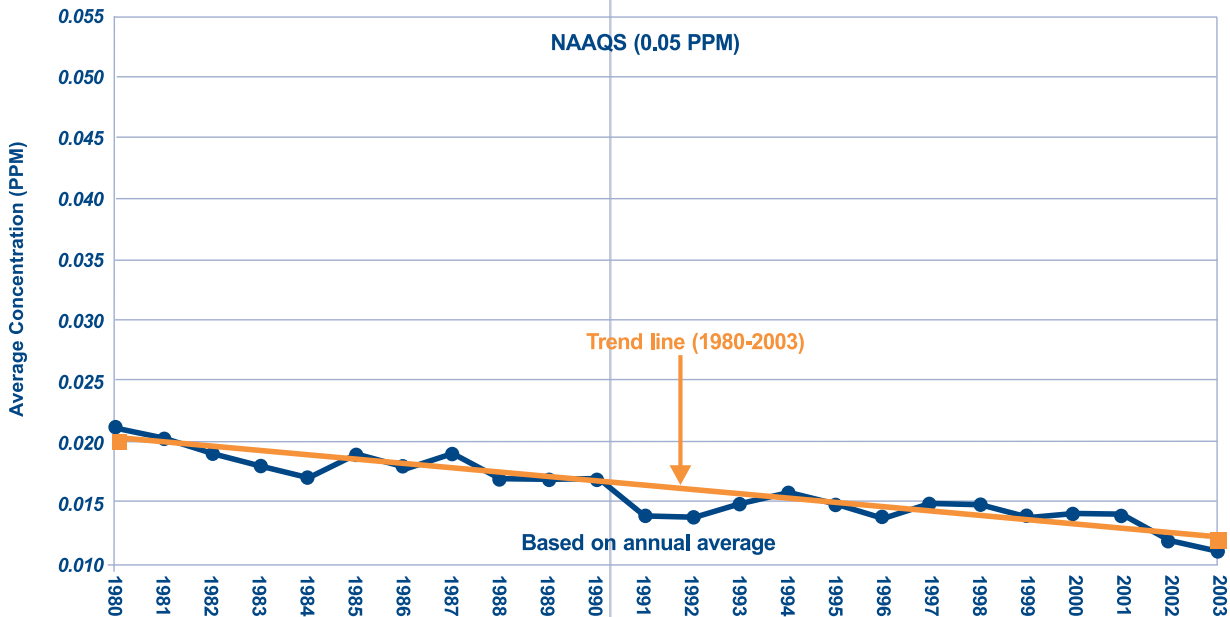
¹⁶Kentucky Air Quality Annual Report—2003. Cabinet for Environmental and Public Protection. www.environment.ky.gov

Statewide Averages for Sulfur Dioxide



Source: Kentucky Environmental and Public Protection Cabinet

Statewide Averages for Nitrogen Oxide



Source: Kentucky Environmental and Public Protection Cabinet

Kentuckians can gain from improved energy efficiency. Note that:

- Kentucky residents actually paid 1% more on their electric bills than West Virginia residents (even though our electricity rates are 9% lower).
- Although our electricity rates are 18% lower than Indiana's, our residents paid only 6% less on their electric bills.
- On an average monthly electric bill, Kentucky's schools spend 7% more per student than the national average
- The average Kentucky industrial bill is 123% higher than the national average.
- Kentucky's average residential electric rate is 33% less than the national average but the average residential bill is only 17% below the national average.

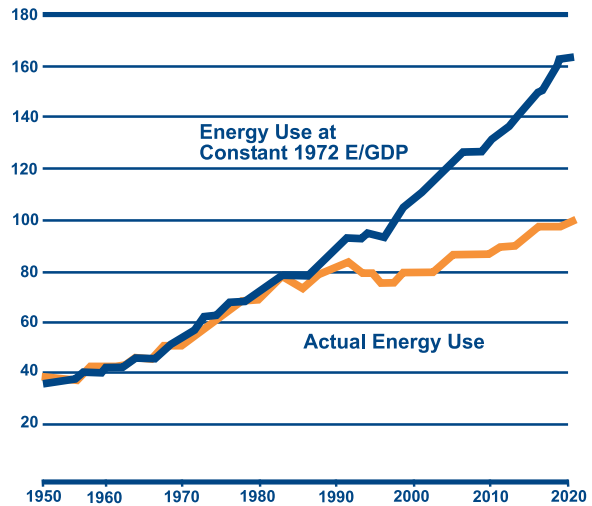
“Frequently overlooked, efficiency is usually our best form of ‘alternative energy.’ And quite often, the one most readily adaptable to every situation.”

James Dontje, Department of Sustainability and Environmental Studies, Berea College

the savings and environmental benefits associated with improved energy efficiency.

There are significant gains to be realized by increasing and promoting energy efficiency, especially in Kentucky's residential sector, which ranks eighth in the nation for electric intensity (kWh per customer). Even with its historically low electricity rates, Kentuckians have not fully realized

Energy Efficiency Gains in U.S. Economy



Note: If the intensity of U.S. Energy use had remained constant since 1972, consumption would have been about 74 percent higher in 1999 than it actually was.

State Government: Leading by Example

Energy costs for state government are escalating. In 2003, utility costs for state agencies were 12% higher than in the previous year. In 2004, state agencies used about 4% more energy than they did the same time the year before—with a cost increase of about \$1.7 million.

“Through energy efficiency Americans saved a significant amount of energy in 2003, about 110 billion kilowatt hours (kWh) and 20,000 megawatts (MW) of peak power, the amount of energy required to power about 20 million homes. They also prevented emissions equivalent to those from 18 million automobiles - while saving \$8 billion on their energy bills.”

U.S. Environmental Protection Agency

2003 State Utility Expenditures

| | |
|-----------------------------|----------------------|
| State Government Facilities | \$ 41 million |
| Post Secondary Schools | \$ 54 million |
| K-12 Schools | \$107 million |
| Judicial Branch | \$ 4 million |
| Total | \$206 million |

Source: Kentucky Division of Energy

These costs are manageable. Other states have demonstrated this. In Fiscal Year 2003, South Carolina public facilities saved \$4.4 million in energy costs compared to fiscal year 1998 as a result of improved energy efficiency. It is estimated that Kentucky's state government could reduce energy costs by 10%—up to \$20 million—with a comprehensive energy management program.

Recommendation 1:

The Commonwealth of Kentucky, through the Finance and Administration Cabinet, should dedicate staff toward implementing an aggressive and sensible utility savings initiative throughout state government and other state-funded institutions to improve energy efficiency.

Kentucky's residential customers consume 28% more electricity than the national average. Reducing our consumption to the national average would result in a 22% reduction in the average resident's bill or about \$14 per month.

Recommendation 2:

The Commonwealth of Kentucky should develop and implement procurement policies that encourage sustainable practices, products and energy efficiency.

Recommendation 3:

The Commonwealth of Kentucky should encourage high performance, energy-efficient design for new construction of state facilities.

Recommendation 4:

The Commonwealth of Kentucky should require interagency cooperation to promote energy efficiency initiatives.

Consumer Outreach and Awareness

The choices we make when purchasing products, operating homes, schools and businesses, driving cars, and designing buildings can have a tremendous impact on Kentuckians' budgets and the state's environment. Energy efficiency delivers improved energy savings and an improved quality of life.

The ENERGY STAR program is a voluntary partnership between U.S. EPA, U.S. Department of Energy (DOE), product manufacturers, local utilities, state and local government agencies and retailers. ENERGY STAR works to improve the energy efficiency of products, homes, and commercial buildings and schools. As the symbol for energy efficiency, the ENERGY STAR label identifies highly efficient products for homes and commercial buildings.

Recommendation 5:

The Commonwealth of Kentucky should encourage the continued development of public-private partnerships dedicated to promoting energy efficiency through education and outreach.

Recommendation 6:

The Commonwealth of Kentucky should work with industries, businesses, schools, universities, and communities to promote and give preference to energy-efficient products and practices.

Recommendation 7:

The Commonwealth of Kentucky should support energy assessment initiatives that will help our industries and businesses improve their profitability through energy efficiency and resource management.

Recommendation 8:

The Commonwealth of Kentucky should examine its building codes and specifications to determine if enhanced energy efficiency gains are possible through progressive policy.

Educating Kentucky's Youth

Youth education is important as energy issues take on greater importance. The energy choices and challenges will become increasingly complicated as the nation and the world balance the need for energy supply with the importance of increasing energy efficiency and conservation.

The non-profit National Energy Education Development (NEED) currently works within Kentucky's schools to educate our students on the energy issues facing the state and nation. The mission of NEED is "to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs."¹⁷

Parents and community leaders should teach sound energy policy to today's youth, the leaders of tomorrow.

Recommendation 9:

The Commonwealth of Kentucky should pursue funding opportunities to strengthen K-12 energy education.

¹⁷National Energy Education Development. www.need.org

Kentucky should develop "programming that will cultivate an awareness of energy and energy issues, a program that will be sustainable for years to come. A program that will not only provide an energy curriculum, but one that will promote an understanding of the importance of making wise energy decisions."

Karen Reagor,
Executive Director, Kentucky
NEED.

If all consumers, businesses and organizations in the United States made their product choices and building improvement decisions with ENERGY STAR over the next decade, the national annual energy bill would be reduced by about \$200 billion.

Renewable Energy: A Sustainable Commitment

During the 2004 regular session of the Kentucky General Assembly, the Fletcher Administration joined with utilities, environmental groups and other stakeholders in supporting landmark net-metering legislation for the state. Kentucky became one of 34 states that allow their utility customers to benefit from a home or business-based renewable energy generating system.

The Fletcher Administration has implemented an initiative to encourage state parks, wherever feasible, to utilize biodiesel in vehicle fleets and has purchased the first hybrid electric vehicles for use by executive branch agencies.

Many of the state's universities are committed to renewable energy research. The University of Louisville is investigating how to improve ethanol production from corn, soybeans and other carbon-based natural products. The University of Kentucky is exploring methods to convert biomass resources directly into liquid transportation fuels.

Our universities are also conducting cutting-edge research on fuel cells and hydrogen technologies “that have the potential to solve several major challenges facing America today: dependence on petroleum imports, poor air quality and greenhouse gas emissions.”¹⁸

The growth potential in renewable resources is especially strong in our transportation sector, where

¹⁸ Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy. www.eere.energy.gov

Kentucky is in an enviable position to take advantage of the emerging biodiesel and ethanol markets. A strong biofuels market offers myriad benefits—improved health through reduced emissions of harmful pollutants, improved air quality, and improved economic growth, particularly in agriculture. Throughout Kentucky, the use of

clean transportation fuels such as natural gas, ethanol, propane, and biodiesel has increased in recent years in both public and private vehicle fleets.

In 2004, the federal government passed legislation that contains incentives to promote the biodiesel and ethanol markets. According to the United States Department of Agriculture, the federal incentive could add almost \$1 billion to the bottom line of farm income.

Using biodiesel in a conventional diesel engine substantially reduces emissions of unburned hydrocarbons, carbon monoxide, sulfates, polycyclic aromatic hydrocarbons, nitrated polycyclic aromatic hydrocarbons and particulate matter.

Biodiesel fuel specifications have been written by the Finance and Administration Cabinet, enabling



Tom Fitzgerald, Kentucky Resources Council

A strong biofuels market offers myriad benefits—improved health through reduced emissions of harmful pollutants, improved air quality, and economic growth, particularly in agriculture.

fuel suppliers to bid on this fuel as they do standard diesel and gasoline. The state diesel fuel use annually is roughly 2.4 million gallons.

Ethanol is a clean-burning fuel that can be made from corn. Ethanol production is an ideal market for Kentucky farmers, who produce 166 million bushels of corn per year.

Ethanol improves combustion of petroleum fuels, reduces carbon monoxide (CO) emissions, reduces particulate matter (PM) emissions, reduces oxides of nitrogen (NOx) emissions, reduces smog-forming volatile organic compounds (VOC) and is highly biodegradable.

Ethanol is sold nationwide as a high-octane fuel that delivers improved vehicle performance while reducing emissions and improving air quality. By reducing foreign oil imports, ethanol creates American jobs and provides value-added markets to bolster agriculture and rural America.

Research by the U.S. Department of Energy and U.S. Department of Agriculture shows that, for every 100 BTUs of energy used to make ethanol, 135 BTUs of ethanol is produced. That is a positive net energy balance of 1:1.35.

All motor vehicles manufactured since the 1970s can run on E10, a blend of 10 percent ethanol. E10, which does not require engine modifications, also significantly lowers carbon monoxide levels. E10 is required in Louisville and Northern Kentucky near Cincinnati for clean air mandates.

Ethanol is sold nationwide as a high-octane fuel that delivers improved vehicle performance while reducing emissions and improving air quality. By reducing foreign oil imports, ethanol creates American jobs and provides value-added markets to bolster agriculture and rural America.

In 2003, two million gallons of biodiesel were produced in Kentucky, with 300,000 gallons consumed in Kentucky. In 2003, 24 million gallons of ethanol were produced in Kentucky, and 12 million gallons were consumed in Kentucky. A lack of retail distribution has impeded consumption of cleaner fuels.

Recommendation 10:

The Commonwealth of Kentucky should require its state fleet to utilize a 10% blend of

ethanol (E10) and gasoline and a 2% blend of biodiesel (B2) wherever these clean fuels are available, and encourage Kentucky's post-secondary institutions to adopt similar initiatives.

Recommendation 11:

The Commonwealth of Kentucky should design and implement policy to promote the production, consumption and availability of biodiesel and ethanol within Kentucky.

Children riding on a diesel-powered school bus are exposed to four times the level of diesel exhaust as someone standing or riding beside the bus. Research shows that diesel exhaust may exacerbate asthmatic conditions. Children comprise 25% of the population, but comprise over 40% of all asthma cases.

Recommendation 12:

The Commonwealth of Kentucky should design policy to promote the utilization of a 20% blend of biodiesel in the public school bus fleet.

"We owe our students a safe and healthy ride to and from school each day."

Melissa Howell, Executive Director of the Kentucky Clean Fuels Coalition.

Kentucky's Low Cost Electricity: Strategic Investment



Libby Marshall, Municipal Electric Power Association of Kentucky

Kentucky enjoys some of the lowest rates of electricity in the nation. This provides significant benefits to Kentucky's residential consumers and is a comparative advantage in recruiting and retaining industry.

It is shortsighted, however, to think that these advantages are guaranteed. Kentucky must strategically develop its energy portfolio to ensure

that the state continues to enjoy the benefits of low-cost electric.

The Strategic Blueprint

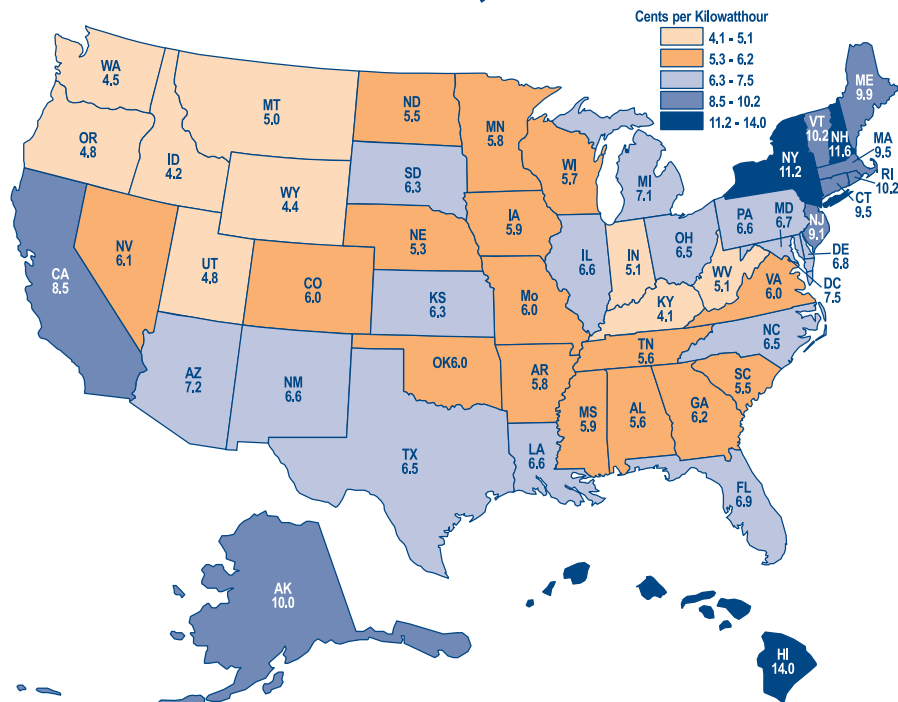
The Kentucky Public Service Commission (PSC) collects information related to the projected needs for future generations. However, there is no comprehensive assessment of statewide needs that could serve as a blueprint for strategic investment.

Recommendation 13:

The Commonwealth of Kentucky should develop a comprehensive statewide assessment of Kentucky's electricity infrastructure—generation, transmission and distribution—which includes reasonable projections of future electricity requirements.

Kentucky enjoys some of the lowest rates of electricity in the nation. This provides significant benefits to Kentucky's residential consumers and is an advantage in recruiting and retaining industry. It is shortsighted, however, to think that these advantages are guaranteed.

Figure 10: Kentucky's Low Cost Electric - A Comparison
Average Revenue from Electricity Sales for All Sectors, Year 2000



Source: Kentucky Public Service Commission

Recommendation 14:

The Commonwealth of Kentucky should periodically update the comprehensive state-wide assessment to reflect changes in both electric infrastructure and future electricity requirements.

Recommendation 15:

The Commonwealth of Kentucky assessment should serve as a “strategic blueprint” for policy-makers to determine future investment requirements in Kentucky’s electricity generation, transmission, and distribution infrastructure.

Recommendation 16:

The Commonwealth of Kentucky should utilize the “strategic blueprint” to develop policies that promote sufficient investment in electricity infrastructure—generation, transmission and distribution—to sustain Kentucky’s low cost electricity into the future.

Recommendation 17:

The Commonwealth of Kentucky should identify impediments to investment in electricity generation, transmission and distribution and develop policies to promote investment while ensuring that appropriate environmental protections are maintained and local voices are heard.

“A long history of legal decisions requires that... regulated utility companies must make a reasonable profit. Nonetheless, it is critical to make sure that those rates are as low as they reasonably can be without jeopardizing the health of the regulated companies.”

Dennis Howard, Assistant Attorney General, Office of the Kentucky Attorney General

“Renewable energy sources are already recognized for their potential to help develop our energy security, improve environmental conditions and public health, and control consumer energy costs. The possibility that, in addition to these indirect benefits, renewable energy sources could help spur economic development... provides an interesting and valuable option to state policy-makers.”

Council of State Governments

An Enhanced Renewable Portfolio

According to the U.S. Department of Energy, renewable energy resources’ contribution to electricity generation will increase by 38% by 2025. In 2002, renewables and hydro-electric generation contributed a combined total of 4.6% of Kentucky’s electric generation capacity. New electric-generation technology is providing the opportunity for renewables—i.e. wood waste, landfill gasses, biomass, solar and wind—to supplement primary resources in electricity generation. These advances make significant contributions to environmental concerns. Mixing renewables with primary resources helps lower emissions.

Recommendation 18:

The Commonwealth of Kentucky should design and implement policies that promote, but do not mandate, the use of renewable energy resources in Kentucky’s electricity generation portfolio.

Coal: Energy at Kentucky's Feet

A thorough discussion of Kentucky's low-cost electric must include the role played by coal. Ninety percent of Kentucky's electricity is produced from coal-fired generation.¹⁹ Historically, coal has proven to be the least costly fuel for electric generation. The U.S. Department of Energy (DOE) projects that this will remain the case over the next 20 years.

Electric Power Prices by Year and Energy Source. (2002 Dollars per million BTU)

| | 2002 | 2010 | 2015 | 2020 | 2025 |
|--------------------|--------|--------|--------|--------|--------|
| Petroleum | \$4.32 | \$4.21 | \$4.54 | \$4.67 | \$4.88 |
| Natural Gas | \$3.77 | \$4.04 | \$4.78 | \$4.85 | \$4.92 |
| Steam Coal | \$1.26 | \$1.22 | \$1.22 | \$1.20 | \$1.22 |

Source: U.S. Department of Energy, Energy Information Administration.

According to DOE, Kentucky ranked third in the United States—behind Wyoming and West Virginia—in coal production in 2002, providing 11.3% of the nation's aggregate production. Kentucky produced 131.4 million tons of bituminous coal in 2002, down from the record, of 179.4 million tons, set in 1990. Estimates indicate that there are 35.8 billion tons of remaining coal reserves in Western Kentucky and 52.3 billion tons in Eastern Kentucky.

Air quality emission requirements present a significant challenge to the Kentucky coal industry.

¹⁹ U.S. Department of Energy, Energy Information Administration- State Electricity Profiles 2002. See www.doe.gov

Electric power plants purchased 67.5% of Kentucky's coal in 2002. According to the Energy Information Administration, "The use of western (United States) coals can result in up to 85% lower sulfur dioxide emissions than the use of many types of higher sulfur eastern (United States) coals." From 2000 to 2002, Kentucky actually *imported* 2.5 million tons from Colorado and Wyoming.

Promoting Kentucky's Coal Industry through Clean Coal Technology

According to the Department of Energy, "As coal demand... grows new coal-fired generating capacity is required to use the best available control technology (scrubbers or advanced coal technologies), which can reduce sulfur emissions by 90% or more, providing market opportunities for higher sulfur coal."²⁰ Therefore, the Kentucky coal industry can realize benefits from the electricity generation industry investing in "clean coal technology."

"As coal demand grows, new coal-fired generating capacity is required to use the best available control technology (scrubbers or advanced coal technologies), which can reduce sulfur emissions by 90% or more, providing market opportunities for higher sulfur coal."

U.S. Department of Energy

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, 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 (CO²) emissions and for co-production of

²⁰ Energy Information Administration. U.S. DOE. www.doe.gov

hydrogen.”²¹ 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.

Recommendation 19:

The Commonwealth of Kentucky should examine its regulatory policies and traditional economic-development incentives to design and implement policies that promote investment in clean coal technology.

Recommendation 20:

The Commonwealth of Kentucky should develop policies to provide incentives for the purchase of Kentucky coal at clean-coal facilities.

Promoting New Growth in Kentucky's Coal Industry

The Surface Mining Reclamation and Control Act 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 the Bond Pool 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. At current funding levels, the Kentucky Bond Pool faces limitations in its capacity to take on additional bond liability to keep pace with the increasing demand.

Recommendation 21:

The Commonwealth of Kentucky should ensure that the Kentucky Bond Pool Fund is sufficiently enhanced to promote the growth and productivity of Kentucky's coal mining industry.

Recommendation 22:

The Commonwealth of Kentucky should examine its current mine permitting policies and identify streamlining opportunities.

Companies are finding that it makes economic sense to construct generation capacity directly at coal sites to diminish transportation costs. The coal is then utilized to generate electricity, which may then be used to serve Kentucky's native load requirements or sold to utilities in Kentucky or other states.

One benefit of siting generation at coal sites is that it adds value to the energy resource through jobs in the mining industry and at the generation plants. Further, the proposed plants must conform to the environmental requirements of the state so environmental concerns are addressed before any construction begins.

Recommendation 23:

The Commonwealth of Kentucky should design and implement policy to promote electricity generation at Kentucky mine sites.

²¹ Rosenberg et al. "Deploying IGCC in this Decade-Volume II." John F. Kennedy School of Government, Harvard University.

Other states are investing in the coal industry. For example, Illinois's Coal Infrastructure program provides grants that match private sector investment aimed at improving coal production, transportation and utilization systems. In 2003, \$17 million of state grants leveraged \$128 million in private investment from the industry.

Recommendation 24:

The Commonwealth of Kentucky should design policy to promote capital investment within the coal industry.

Additionally, the Department of Energy is promoting research and development into coal gasification as an alternative to conventional petroleum-based fuel. According to the Office of Fossil Energy, "Coal gasification offers one of the most versatile and cleanest ways to convert the energy content of coal into electricity, hydrogen, and other energy forms."²² This research could provide new markets for Kentucky coal.

Recommendation 25:

The Commonwealth of Kentucky should support projects and initiatives intended to open new markets for Kentucky coal.

Investing and Protecting Kentucky's Coal Workforce

In 2002, the coal industry directly employed over 15,500 people at an average wage of \$47,000 per year. According to a study by the University of

²² Office of Fossil Energy, U.S. Department of Energy. www.doe.gov

Kentucky, "the \$3.15 billion in receipts from coal produced and processed in Kentucky... generated additional economic activity totaling \$3.69 billion and 41,407 jobs. This additional economic activity, plus coal production and processing, yielded total economic activity in Kentucky of \$6.84 billion and 56,219 jobs."²³

While Kentucky's coal industry continues to employ a significant number of people, employment has been on a downward trend since the 1970s.

The recent uptick in coal demand has been complicated by the fact that the coal industry is facing a shortage of qualified miners due to retirements of the current generation and a lack of sufficient training in the next generation.

According to an article by the Associated Press, "America is looking for coal miners." It continued, "the labor shortage isn't just a problem today; the real crunch... will occur in five to seven years, when the industry faces a massive retirement wave." Additionally, "the

worker shortage is so pervasive, it has reached into the ranks of state and federal agencies... which need employees familiar with mine work."²⁴

U.S. Department of Labor officials have said that "Mining is experiencing a dramatic transforma-

U.S. Department of Labor officials have said that "Mining is experiencing a dramatic transformation as the industry takes advantage of advanced technology." The Department of Labor is looking at initiatives "to make sure that its workers have the education and training to take advantage of new job opportunities in the mining industry."

²³ Source: Updated from University of Kentucky Center for Business and Economic Research. [Economic Impact Analysis of Coal in Kentucky, \(1995\) for 2000](#) by Haywood and Baldwin. See *Kentucky Coal Facts 2003-2004*.

²⁴ Sheehan, Charles. "Coal Industry Battles Worker Shortage." Associated Press, Oct. 21, 2004.

tion as the industry takes advantage of advanced technology... The Department of Labor is looking at initiatives “to make sure that their workers have the education and training to take advantage of new job opportunities in the mining industry.”²⁵

Recommendation 26:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to develop and invest in a program targeted at workforce development within the coal industry.

Recommendation 27:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to pursue federal resources to implement workforce development initiatives for the coal mining industry.

Recommendation 28:

The Commonwealth of Kentucky should partner with the Southern States Energy Board to develop a model workforce development initiative that can be replicated in other coal-producing states.

Even well-trained miners can face challenges on the job if they are wrestling with a substance-abuse problem. According to the federal Department of Labor, “the rate of fatal accidents has steadily been decreasing since 2000. The challenge now is dealing with preventable problems caused by people who are impaired by drugs or alcohol.”²⁶

According to the federal Department of Labor, “the rate of fatal accidents has steadily been decreasing since 2000. The challenge now is dealing with preventable problems caused by people who are impaired by drugs or alcohol.”

Recommendation 29:

The Commonwealth of Kentucky should partner with the federal government, the mining industry, employee organizations and with other coal producing states to study the extent of the drug and alcohol problems in the mines.

Recommendation 30:

The Commonwealth of Kentucky should partner with the mining industry and employee organizations to develop policies that promote drug screening and rehabilitation within the mining industry.

Recommendation 31:

The Commonwealth of Kentucky should pursue federal funding opportunities to promote drug screening and rehabilitation within the mining industry.

Responsible Development of Kentucky's Energy Resources

The Department for Natural Resources has partnered with the University of Kentucky and the Environmental Quality Commission to promote “the planting of high-value hardwood species on mined lands.”²⁷ As a result:

“There has been a growing interest in reforestation within the mining industry... the Department (for Natural Resources) has worked closely with UK on the development and construction of approximately 50 acres of reforestation test plots on the Starfire Mine in Breathitt County. The emphasis has been on the establishment and growth of desirable hardwood species (white oak, red oak,

²⁵ Employment and Training Administration, U.S. Department of Labor. www.dol.gov

²⁶ Biesk, Joe. “State, Federal Officials Plan Campaign Against Drugs in Mines.” Associated Press, October 28, 2004. Quote from Dave Lauriski, U.S. Assistant Secretary of Labor.

²⁷ Source: www.surfacemining.ky.gov

white ash, black walnut, yellow poplar, royal paulownia and eastern white pine). The data indicates that surface-mined lands are very capable of supporting high-value forest if properly reclaimed.”²⁸

In addition to the Starfire project, and through funding from the U.S. Forest Service and U.S. Department of Energy, more than one million native hardwood trees have already been planted on approximately 1,500 acres throughout the Kentucky coal fields. When this project is complete, more than two million trees will have been planted on 3,000 acres throughout the coalfields.

The Starfire Mine site is also one of the four locations where elk have been reintroduced into eastern Kentucky. These reclaimed surface mines serve as a friendly habitat to what is becoming a thriving elk population (4,600) in eastern Kentucky.

The Appalachian Wildlife Initiative (AWI) is a recent partnership between the Department for Natural Resources, the Kentucky Department of Fish and Wildlife Resources and the Rocky Mountain Elk Foundation. The AWI ultimately should provide for the reestablishment of an improved wildlife habitat that will, for the most part, employ the reclamation techniques used to restore healthy hardwood forest on mined land. These reclaimed areas should provide a wonderful opportunity for both

eco-tourism and recreational hunting. The goal of the AWI and the Kentucky Reforestation Initiative is to demonstrate that progressive reclamation techniques can balance the responsible development of Kentucky’s

The data indicates that surface-mined lands are very capable of supporting high-value forest if properly reclaimed.

²⁸ Source: www.surfacemining.ky.gov

energy resources with a commitment to environmental quality and commercial opportunity.

Recommendation 32:

The Commonwealth of Kentucky should continue to promote progressive reclamation practices through reforestation and the creation of wildlife habitats that support environmental restoration and enhanced economic development and tourism opportunities.

Recommendation 33:

The Commonwealth of Kentucky should design and implement policies that promote the recovery of the energy resources inherent to abandoned coal refuse and the proper reclamation of those properties.

Area Mining is a method of mining currently authorized by the Surface Mining Control and Reclamation Act of 1977. The issue of area mining has been discussed for many years in Kentucky. The need to support a cost-effective method of coal mining must be balanced with the environmental concerns surrounding it. Further, the method is conducive to the creation of post-mining land use for commercial, industrial, residential or agricultural development.

The Fletcher Administration has taken a number of recent actions to balance the responsible development of Kentucky energy resources with main-

“Over a 5-year period, about 1,500 elk were released at eight different locations in the eastern coal fields. Now it is estimated that there are more than 4,000 elk in Kentucky and we are on our way to reaching the state’s population goal of 8,000 elk over a 16 county area.”

David Ledford, Rocky Mountain Elk Foundation

taining a commitment to environmental quality. In 2004, there was only one permit issued for area mining in Kentucky. The Fletcher Administration has worked closely with the coal industry to develop mining plans that reduce the volume and acreage of hollowfills, thereby decreasing the adverse impacts on our streams. Compared to statistics for the year 2000, the average volume of hollowfills has been reduced by 57% and the average acreage of hollowfills has been reduced from 16 to 12.

In addition, the Fletcher Administration is participating in an interagency task force that is evaluating the impact of coal mining methods and hollowfills on our natural resources. Participants in this effort include the federal Office of Surface Mining, US EPA, US Army Corps of Engineers, US Fish and Wildlife Service, Kentucky Department for Fish and Wildlife Resources and the Kentucky Department of Environmental Protection.

The federal Office of Surface Mining Reclamation and Enforcement (OSM) has proposed to amend certain regulations related to area mining. The Fletcher Administration is monitoring the actions of OSM on this new proposed rule and will be developing changes to Kentucky's regulatory program to accommodate the federal rule change.

Additional consultation on area mining to determine whether common ground can be found is warranted. By bringing various groups to the table, progressive policy aimed at promoting the vitality of the coal industry and addressing environmental concerns could be developed.

Recommendation 34:

The Commonwealth of Kentucky should monitor the proposals of the Office of Surface Mining sur-

rounding the issues of area mining and determine what appropriate changes should be made to the current state regulatory program to bring it in line with proposed federal rule changes.

Recommendation 35:

The Commonwealth of Kentucky should support dialogue between appropriate energy and environmental parties to determine the policy options related to area mining within the context of the proposed federal rule changes.

Innovative research is being conducted to transform waste into non-hazardous byproducts that, when mixed with combustible coal, lower sulfur emissions. The research could potentially take the trash out of Kentucky's landfills and create "value-added" industries.

Recommendation 36:

The Commonwealth of Kentucky should design and implement policies to promote the transformation of waste into value-added products, particularly directed at opportunities to reduce the environmental impact of coal-fired emissions.

Kentucky's Natural Gas: Untapped Potential

According to the Energy Information Administration (EIA), “total natural gas consumption (in the United States) is projected to increase” for the next 20 years.²⁹ Growth in demand is expected in each

economic sector: residential, commercial, industrial and transportation. The EIA continues, “domestic natural gas consumption is met by domestic production and net imports. All forecasts show domestic production providing a decreasing share of total natural gas supply.”³⁰



Dr. Jim Cobb, Director - Kentucky Geological Survey

Kentucky has 1.9 billion cubic feet of proven natural gas reserves—or about 1% of the nation's proven reserves. In 2002, Kentucky produced over 86 million cubic feet of natural gas. If this gas was wholly consumed within the state (which it was not) Kentucky's production would have accounted for only 41% of the state's consumption. Consequently, Kentucky is a net importer of natural gas.

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Investment in Natural Gas Infrastructure

Recent complications have impeded the responsible development of Kentucky's natural gas reserves. Getting natural gas from the field to the interstate pipelines that cross the state has been made difficult due to significant infrastructure barriers. Consequently, a number—some estimates suggest up to 2,000—natural gas wells are “shut in,” denying the Commonwealth the opportunity to realize the benefits of jobs in the industry and increased severance revenues.

A robust natural gas infrastructure is essential to providing reliable and cost-effective service to Kentucky's consumers. Natural gas infrastructure is capital-intensive, requiring significant investment on the front end. Storage is one tool that companies use to reduce volatility in the natural gas prices passed on to consumers. According to a report from the former Kentucky Energy Policy Advisory Board, “more gas storage in Kentucky can help flatten out seasonal price curves and lead to more stable natural gas prices.”³¹

Recommendation 37:

The Commonwealth of Kentucky should develop and implement policies that encourage investment in intrastate natural gas pipelines, gathering lines and distribution capacity.

²⁹ Annual Energy Outlook 2004-Market Trends. Energy Information Administration. www.eia.doe.gov

³⁰ Annual Energy Outlook 2004-Market Trends. Energy Information Administration. www.eia.doe.gov

³¹ Kentucky Energy Policy Advisory Board, *An Interim Report from the Kentucky Energy Policy Advisory Board to Governor Paul E. Patton.*

Recommendation 38:

The Commonwealth of Kentucky should determine the opportunities for increased natural gas storage capacity and, if appropriate, promote its development.

Coal-Bed Methane: An Emerging Opportunity

Coal-bed methane is a promising source of energy and economic development. Coal-bed methane is defined as “methane generated during coal formation... contained in the coal microstructure.”³² Methane is the principal component of natural gas. Coal bed methane can be added to natural gas pipelines without any special treatment.

The Kentucky Geological Survey estimates that Kentucky has 848 billion cubic feet of coal bed methane. A lack of substantial research diminishes the ability to substantiate these estimates.

Methane gas is also a byproduct of refuse decomposition. Methane is being leaked into the atmosphere at many of Kentucky’s landfills. Capturing this resource would supplement the state’s energy

portfolio and diminish the environmental impact of landfills.

Further, methane is a component part of multiple products, particularly plastics. The need for methane as an input into industrial processes provides an opportunity for Kentucky to leverage this inherent resource to expand value-added industry.

Recommendation 39:

The Commonwealth of Kentucky should promote research to accurately determine the extent of coal-bed methane and natural gas reserves in Kentucky and its prominent locations.

Recommendation 40:

The Commonwealth of Kentucky should design and implement policies to promote the recapture of methane from the state’s landfills.

Recommendation 41:

The Commonwealth of Kentucky should identify the potential of coal bed methane value-added industries and, if feasible, design economic development strategies to grow those industries around the state’s coal bed methane reserves.

³² Source: Energy Information Administration. www.eia.doe.gov

Kentucky's Energy Future: A Perpetual Commitment

Kentucky does not have a high-level government organization dedicated to energy. This has not always been the case. During the energy shortages of the 1970's, Kentucky had an Energy Cabinet. Over the years, however, the dedication to energy issues has been diminished. This creates a myriad of problems:

- Energy policy is developed in an ad-hoc manner without a coordinating body promoting the responsible development of Kentucky's energy resources.
- There is no coordinating body bringing together industry and environmental concerns to discuss issues which will lead to balancing the responsible development of Kentucky's energy resources with a commitment to environmental quality.
- There is no coordinating body to encourage collaborative research and development among Kentucky's universities.
- Kentucky is at a disadvantage competing for industry investment in its energy sectors.
- Kentucky is at a disadvantage in competing for federal resources in its energy sectors.

In order to better ensure Kentucky's low-cost energy future, there must be a perpetual commitment.

Recommendation 42:

The Commonwealth of Kentucky should place a high-level emphasis on energy policy to continue the vital work necessary to ensure Kentucky's low cost energy future, the responsible development of Kentucky's energy resources and Kentucky's commitment to environmental quality.

Recommendation 43:

The Commonwealth of Kentucky should engage federal regulatory and energy agencies to ensure that the state has a 'place at the table' while energy issues are being discussed.

Recommendation 44:

The Commonwealth of Kentucky should investigate the emerging impact of global and national policies and institutions on Kentucky's energy future.

Recommendation 45:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to develop and invest in programs targeted at workforce development within the energy industry.

Low Income Assistance

Although Kentuckians enjoy the lowest electricity rates in the nation, low income citizens, particularly those on fixed incomes, have a difficult time paying their energy bills, particularly in the wintertime when natural gas and propane prices are generally higher. There are a number of programs in place to provide assistance to low income Kentuckians, and they need to be promoted better.

The Kentucky Association for Community Action and its Community Actions agencies, through the state's Cabinet for Health and Family Services, manage

"There are issues being hammered out as we speak in pleadings and meetings between stakeholders, regional transmission organizations, States and the Federal Energy Regulatory Commission. For Kentucky, it is critical that we remain active and engaged in these discussions."

*Jason Bently, General Counsel,
Kentucky Public Service
Commission*



Kip Bowmar, Kentucky Association for Community Action

Although Kentuckians enjoy the lowest electricity rates in the nation, low income Kentuckians, particularly those on fixed incomes, have a difficult time paying their energy bills.

Energy Research, Development and Deployment

Billions of dollars for energy research and development are available through the federal government. Unfortunately, Kentucky has a very poor track record capturing these resources. This must change.

several state and federal programs—e.g. Low Income Home Energy Assistance Program and the Weatherization Assistance Program—to help low income Kentuckians with energy issues. The Low Income Home Energy Assistance Program helps approximately 150,000 Kentucky families pay their utility bills each winter. These initiatives are vital to ensuring that these citizens are able to keep their homes warm in the winter and cool in the summer.

Recommendation 46:

The Commonwealth of Kentucky should partner with community-action agencies and the energy industry to provide energy assistance to Kentucky's neediest citizens.

Recommendation 47:

The Commonwealth of Kentucky should promote the awareness of utility check-off programs and encourage widespread participation.

“Through our support of low-income programs, we attempt to help customers who are struggling with their bills manage through high natural gas prices.”

Joseph Kelly, President, Columbia Gas

In 2002, the federal government launched the “Clean Coal Power Initiative (CCPI).” The initiative is described as “an innovative technology demonstration program (to foster) more efficient clean-coal technologies for use in new and existing electric power-generating facilities in the United States.”³³

The CCPI is only one of several federal initiatives that direct resources to energy research and development (R&D). Most of

these initiatives require cost sharing to participate. In the past, Kentucky has not made a concerted effort to pursue these federal dollars. Such a commitment could lead to increased federal R&D dollars coming into Kentucky's universities and enhanced investments by industry in clean coal technology.

The federal government also announced its intention

Billions of dollars for energy research and development are available through the federal government. Unfortunately, Kentucky has a very poor track record at garnering these resources. This must change.

³³ *Program Fact Sheet*, U.S. DOE, Office of Fossil Energy. www.doe.gov

to partner with industry to invest over \$1 billion in FutureGen—the world's first zero-emission power plant. Other states have moved aggressively to attract this investment while Kentucky has not.

Programs that focus on helping our industries become more competitive through energy efficiency help ensure that we will keep our existing industries in the Commonwealth, as well as attract new industry.

Kentucky's small and mid-sized manufacturing firms are a vital component of our economy. According to the U.S. Department of Labor, in 2003 there were 272,000 manufacturing jobs in Kentucky. A large portion of these jobs are provided by small-to mid-sized manufacturing companies. Energy and utility bills significantly affect the profitability of these companies.

Several southeastern states have university-sponsored energy efficiency assessment centers that help keep these smaller-sized manufacturing companies profitable in their respective states. Currently, Kentucky only has a limited capability to help our companies improve their profitability through energy efficiency and resources management.

The federal government sponsors substantial investment in energy efficiency and renewable energy technologies. The bulk of this funding goes to states that have worked to establish their

Mercury emissions... have not yet been efficiently controlled. The Mercury Emission and Control Laboratory at Western Kentucky University is one of only five labs in the nation capable of performing mercury sampling and testing at power plants.

Wei-Ping Pan, Ph.D., Western Kentucky University

own coordinated groups of researchers, educators, commodity groups and energy professionals, to focus on energy research, development and deployment.

Individuals and organizations that have the good ideas and initiative to develop biobased products, renewable energy or energy efficiency often have to “go it alone,” because the state lacks a central clearinghouse and networking partner to help

bring their ideas to market and profitability.

Recommendation 48:

The Commonwealth of Kentucky should partner with the state's universities, private industry and non-profit organizations to aggressively pursue federal research and development resources that are dedicated—but not limited—to clean-coal technology, energy efficiency, hydrogen technology and renewable energies.

Recommendation 49:

The Commonwealth of Kentucky should initiate a full-scale effort to attract and site the federal FutureGen facility in Kentucky.

“Location of the FutureGen project in Kentucky will place the state in the forefront of energy and environmental research.”

Richard Schmidt, Ph. D. Kentucky Consortium for Energy and the Environment.

Recommendation 50:

The Commonwealth of Kentucky should encourage and assist the state's universities, private industry and non-profit organizations to leverage available federal energy research and development resources.

Recommendation 51:

The Commonwealth of Kentucky should promote greater collaboration between Kentucky's universities to synergize ongoing energy research efforts at individual institutions.

Securing Kentucky's Critical Energy Infrastructure

According to the U.S. Department of Homeland Security, “energy drives the foundation of many of the sophisticated processes at work in American society. It is essential to our economy, national defense and quality of life.”³⁴ Additionally, “it is important to remember that protection of our critical infrastructures and key assets is a shared responsibility. Accordingly, the success of our protective efforts will require close cooperation between government and the private sector at all levels.”³⁵ Kentucky, with its critical energy infrastructure being vital to the state and national economy, must be engaged in ensuring that this national security priority is fulfilled.

Recommendation 52:

The Commonwealth of Kentucky should partner with the federal government, local governments and private industry to promote enhanced security of Kentucky's critical energy infrastructure.

Recommendation 53:

The Commonwealth of Kentucky should partner with local governments and private industry to pursue federal funding opportunities that promote enhanced security of Kentucky's critical energy infrastructure.

³⁴ *The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*. U.S. Department of Homeland Security. www.dhs.gov

³⁵ Letter from President George W. Bush within *The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*. U.S. Department of Homeland Security. www.dhs.gov

Recommendation 54:

The Commonwealth of Kentucky should partner with the federal government to enhance the nation's energy security through research and development directed at transforming Kentucky's energy resources into the resources that fuel the nation.

Conclusion: Kentucky's Energy—Opportunities for Our Future

Kentucky's energy sector is currently well positioned but that position is not guaranteed. Our challenge today is to continue to grow our economy, utilize our resources in a sustainable manner and protect and maintain our commitment to environmental quality. To accomplish these objectives, Kentucky must have a comprehensive state energy strategy.

Governor Fletcher has committed to work with the legislature in a bipartisan manner to develop and implement a comprehensive energy strategy for the benefit of all Kentuckians. As Kentuckians unite to build a Commonwealth of opportunity, the competitive advantage Kentucky enjoys in low-cost energy is an important building block. We must act now to secure a low-cost energy future through the responsible development of Kentucky's energy resources and a sustained commitment to environmental quality.

All Kentuckians hope to leave the next generation of Kentuckians with a more prosperous and more beautiful Kentucky. This strategy serves as a framework to get us there.



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