



Cumberland Chapter

Fossil-Fuel Fired Power Plant Policy Statement

The Cumberland Chapter of the Sierra Club has developed this policy statement on fossil-fuel fired power plants to provide a consistent basis for action when assessing specific proposals and projects. For the reasons detailed below, the Sierra Club will oppose the construction of new fossil fuel-fired power plants in Kentucky, unless they are more efficient and less polluting than existing power plants, and their proposed operation is linked specifically, in a legally binding manner, to the simultaneous shutdown of an equal or greater capacity of such existing power plants.

I. The Existing Energy System is Inefficient and Unsustainable

The system of energy generation and consumption that has grown up in Kentucky and most other states over the last century is extremely inefficient, is based primarily on non-renewable fossil fuels, imposes large external costs on the environment and the public, and is vulnerable to disruption from natural disasters or attacks by saboteurs. When coal is burned in large, centralized power plants, approximately two-thirds of the energy content in the fuel is wasted in the process of generating electricity and along the power lines that connect the power plants with consumers. When the energy finally reaches consumers, inefficient and outdated end-use technologies waste vast additional quantities of energy. Numerous existing regulatory practices actually reward inefficiency and create barriers against the selection of the most cost-effective energy technologies. In short, the energy system is physically, economically and environmentally unsustainable. Tinkering at its edges will not lead to large enough changes to correct its critical shortcomings.

II. Our Vision of the Future Energy System

The ideal energy system of the future would use highly-efficient technologies in our homes, businesses and factories to dramatically reduce the amount of fossil fuel that needs to be extracted from the earth and burned in power plants. Pervasive market barriers that now lead to energy waste in all sectors of our economy would be overcome through the cooperative efforts of the private sector, regulated utilities, and public institutions. The generation of electricity would be largely decentralized using smaller-scale conversion technologies. Much of the heat energy that is now wasted by centralized fossil-fueled power plants would be put to use through cogeneration, i.e., combined heating, cooling and power systems. The use of free, nonpolluting renewable energy sources would increase dramatically.

The potential to increase energy efficiency is enormous, and is actually growing as design methods and end-use technologies improve. New methods of designing buildings such as cool daylighting and superinsulation yield superior levels of indoor comfort while using less than half the purchased energy that is needed when standard design and construction practices are used. Yet the initial cost of such homes and buildings can be equal to, or only a few percent higher than, a standard, inefficient building of the same size. Existing buildings can be retrofitted to cut energy use substantially, at a cost that is significantly lower than obtaining the same amount of energy from the construction of new power plants and power lines. Industries can save vast amounts of energy by using improved designs for new factories and unleashing the creativity of their workers to find energy-saving opportunities in their existing plants. Cogeneration can yield approximately twice the efficiency that occurs when fuels are used in the traditional manner to produce electricity and heat separately.

The electric grid itself needs to be made more responsive to changing conditions. As energy experts Clark Gellings and Kurt Yeager noted in their December, 2004 article in *Physics Today*, titled "Transforming the Electric Infrastructure," "Computers, sensors, and computational ability have transformed every major industry in the Western world except the electric power industry." They describe a more "intelligent" electric grid of the future that "will be an integrated, self-healing, electronically controlled electricity supply system of extreme resilience and responsiveness that is capable of responding in real time to the billions of decisions made by consumers and their increasingly sophisticated microprocessor agents. The transformation, we believe, will open the door to a convergence of electricity and communication that will usher in a new era of productivity and prosperity."

In 2002 the Rocky Mountain Institute published a revolutionary book called *Small Is Profitable*, which describes 207 ways in which the size of "electrical resources" – devices that make, save, or store electricity – affects their economic value. Primary author Amory Lovins and his co-authors found "that properly considering the economic benefits of 'distributed' (decentralized) electrical resources typically raises their value by a large factor, often approximately tenfold, by improving system planning, utility construction and operation (especially of the grid), and service quality, and by avoiding societal costs." (Web site: <http://www.smallisprofitable.org/index.html>) Small-scale generation provides financial benefits to the utility by reducing construction lead times, financial risk, fuel price volatility, power line energy losses and congestion, and in numerous other ways. Utility companies, regulators and public officials need to familiarize themselves with these concepts so as to assign the correct value to small-scale and renewable energy sources when planning how best to meet society's need for energy services.

III. More Large Power Plants Are Not Needed

It is clear from this analysis that nuclear power, which the market has already determined to be uneconomical, will never be able to compete with efficiency and small-scale generating technologies. Any capital invested in new nuclear power plants could have produced a far larger quantity of energy services if it had instead been invested in small-scale renewables and on

improving end-use efficiency; nuclear power therefore represents a misallocation of scarce resources that society cannot afford.

It is technically possible and economically advantageous to meet Society's need for energy services, with improved performance and quality of life, without building any more large, centralized power plants than now exist. Shutting down the old coal-fired power plants as soon as possible will be a high priority during the transition period. The Sierra Club will oppose the construction of new fossil fuel-fired power plants in Kentucky, unless they are more efficient and less polluting than existing power plants, and their proposed operation is linked specifically, in a legally binding manner, to the simultaneous shutdown of an equal or greater capacity of such existing power plants. New generating capacity from renewable energy sources, such as new generating turbines installed on existing dams, is far preferable to building new fossil-fueled power plants.

IV. The Transition to the Future Energy System

The Sierra Club recognizes that a new energy system based on energy efficiency and renewables will take several years to implement, and that therefore a transition period will be needed during which electricity will continue to be generated using coal and natural gas. Certain methods of mining coal such as mountaintop removal and valley-filling, however, are so environmentally destructive that they must be ended now. Besides devastating mature forest ecosystems, mountaintop removal reduces the number of coal mining jobs and eliminates economic opportunity for many residents of the Appalachian Mountains.

Traditional regulatory policies will need to be changed to both induce and require conservative utility companies to invest in the new methods of delivering energy services that have been described above.

Starting with political commitment from all levels of state government, regulations need to be crafted that make utilities' most profitable strategy the same as the least-cost strategy from the perspective of society. This policy has already been made part of Federal law, but Kentucky and most other states have not implemented it.

Environmental externalities must be considered when making investment decisions.

Regulations should set environmental performance targets and lead to the use of increasingly effective pollution control technologies.

Regulations should require that environmental impacts be factored into economic comparisons between fossil fuel plants, end-use efficiency improvements and renewables. Failure to do so would represent a political decision to bias the energy services marketplace in favor of polluting, non-renewable technologies.