

# CLEAN ENERGY SOLUTIONS WORK FOR KENTUCKY

In this document, you can expect to find:

- Information about the potential to save energy and money through improved energy efficiency in Kentucky's homes and buildings, as well as the need among low and moderate-income households to have access to funding that supports home energy efficiency improvements.
- A list of recommended demand-side management programs that should be state policy or law
- The extent and feasibility of various types of renewable, clean energy in Kentucky including solar power, wind power and biofuels
- Details about how investing into community-based renewable energy and energy efficiency will expand the economic capacity and job potential of Kentucky communities in a larger and more sustainable manner than coal mining
- Three examples of successful, progressive energy projects currently underway in the state

## NEW POWER OPTIONS FOR KENTUCKY'S FUTURE

Today, only slightly more than 4% of Kentucky's electric energy comes from renewable energy sources—of that, most is hydroelectric power.<sup>1</sup> Kentucky's energy-related House Bills 1 and 2 provide limited incentives for investments into renewable energy. The funding level, however, is not adequate to make significant strides towards the state's stated goal of deriving 25% of our energy from renewable sources by 2025.<sup>2</sup>

There is not just one solution, a “silver bullet,” that will address the problem of rising energy demand, rising fossil fuel costs, dwindling natural resources and increasing global warming. Thus, to address the Kentucky energy crisis on a scale of appropriate magnitude, our approach must include a combination of strategies.

### Energy Efficiency: Kentucky's Best Source of Cheap Energy

Investments in energy efficiency – including better insulation and more efficient heating and cooling systems – are the best source of cheap energy in Kentucky. Studies show these measures cost about 3.2 cents for every kilowatt-hour of energy they save. For comparison, the retail price of electricity in Kentucky is about 8 cents per kilowatt hour. **All state growth in energy demand through 2017 can be met through improved energy efficiency.**<sup>3</sup>

Three quarters of Kentucky's buildings will be significantly renovated within 30 years.<sup>4</sup> That creates an important opportunity to make energy efficiency upgrades. New policies should require new and remodeled buildings to meet energy standards, and new programs should help pay for those investments.

In 2006-2007, federal funds helped 2,225 low-income households in Kentucky weatherize their homes and reduce their energy costs by 20%. This program creates jobs in local communities, reduces pollution, and saves customers money. However, the resources to so effectively and simply help low and moderate income families improve home efficiency are too scarce.<sup>5</sup>

### Demand-Side Solutions

Demand-side solutions focus on lowering the demand for electricity, either through government-sponsored or utility-sponsored programs. Two specific recommendations include:<sup>6</sup>

**Strengthen Kentucky's Demand Side Management Policy law. Kentucky's DSM law is outdated, having been passed in 1994.** There are a number of flaws in it that have resulted in much less investment in demand side management strategies by our utilities. Citizens across the state are engaged in a dialogue about ways to improve the statute in order to give the Public Service Commission and Utilities much more of a mandate and incentive to invest in energy

efficiency strategies. One focus of any revisions would be to ensure that utility companies prioritize investments in energy efficiency strategies that benefit low-income customers.

**Establish a fund to support renewable energy installations and weatherization/energy efficiency linked to low-income/affordable housing:** The funding might come from a variety of places. In Boulder, CO, a portion of the sales taxes paid for the purchase of photovoltaic and solar water heating installations go into to a fund for a grant program that provides funding for PV and solar hot water installations on housing for low and moderate income people. In Kentucky, some of the funding could come from coal severance tax funds.

Other key ideas are listed below<sup>7</sup>:

- Improve energy efficiency standards for buildings, homes and new construction
- Raise standards for fuel and provide access to renewable fuels
- Require government to purchase more fuel-efficient vehicles for all public uses
- Improve access to, use and scope of public transportation
- Establish net metering and interconnection standards (net metering allows individuals or businesses with renewable energy systems to track the energy they produce in excess of their needs and improved interconnection standards would allow these meters to communicate with local utilities so the excess energy can be sold back)
- Create power transmission and distribution standards to lessen the amount of energy lost when power is transmitted through lines to homes and businesses
- Establish and enforce more energy efficient appliance and equipment standards
- Require businesses to have a renewable energy portfolio (meaning they would be required to have some portion of their electricity come from renewable sources)

These demand-side solutions are funded in other states in numerous manners including through tax credits, grants, loans, rebates, grants, venture capital investments, and public benefits funds. In Kentucky, it is particularly important that lower-income households and communities should be gaining the most benefit from any policy passed.

## Clean, Renewable Energy Is Possible NOW In Kentucky



Kentucky must develop sources of clean, renewable energy to meet our future energy needs and reduce coal dependence. Many of these energy solutions are already cost competitive with the price of coal-fired electricity. Clean, renewable energy provides great potential for the creation of community-based power solutions. The income generated by such sources will remain in communities to benefit Kentucky families long-term.

◆ **Hydro-Electric:** Kentucky has significant untapped potential to generate electricity from water flowing over existing dams along our rivers. Studies state that Kentucky could generate 191 mega-watts of power by using existing dam sites, at a per kilowatt hour cost that is less than a new coal-burning power plant.<sup>8</sup>

◆ **Wind Power:** Studies show that our southeastern Kentucky mountains have good resources for large and community-scale wind projects.<sup>9</sup>

◆ **Geo-Thermal Heat Pumps:** During the winter heating season a heat pump transfers the earth's heat to a building or home. In the summer, the process is reversed to cool the building by pulling heat from the building and placing it in the ground. Bodies of water such as ponds and lakes also make great sources of ground source energy. Installing a geothermal pump reduces the electricity required to heat and cool a building by 30-70%—and resources (the ground) are widely available.<sup>10</sup>

◆ **Solar:** Kentucky's climate is well-suited for solar hot water systems and for using solar electricity in homes and buildings. The average household gets approximately 5 hours of usable sunlight a day. Solar hot water systems can meet 50-80% of a household's annual needs. Commercial-scale solar hot-water systems are particularly cost effective and can greatly reduce electrical demand from water-heavy businesses such as laundromats and hotels. The cost of solar power generation in our state remains high compared to current electricity rates, but the gap is expected to continue shrinking in coming years.<sup>11</sup>

◆ **Biomass for Fuel:** There are 5 biofuel or biodiesel plants in operation today, two of which are corn ethanol plants. However, corn is an extremely water-heavy crop, creating some doubts about its ability to truly improve energy usage over petroleum fuels in use today. There are 14 native Kentucky species suitable for biomass fuel and energy production, such as switchgrass. Due to Kentucky's farming infrastructure, biofuels from certain crops can be feasibly produced in our state as a renewable and clean alternative to oil for fuel.<sup>12</sup>

◆ **Landfill Methane Capture:** Kentucky has multiple landfills with methane off-gassing that can be captured for use in energy production. WHERE NOW

### Using Reclaimed Mine Sites for Renewable Energy<sup>13</sup>

A recent study considered the viability of using reclaimed mine sites for the placement of solar panels and/or wind turbines. Researchers found 19 sites suitable for wind power and 77 sites suitable for solar power located both in eastern and western Kentucky. Most of the potential

sites in the east suitable for wind turbines were located in Pike County, but several counties had sites suitable for solar. In the west, wind and solar sites were located in many counties.

## Sustainable Jobs in Kentucky

Community-based renewable energy forms will offer sustainable jobs to many local economies in the state, as well as re-tool the coalfields for the future. The U.S. Department of Energy website states: “Renewable energy and energy efficiency tend to be labor-intensive and local. They can mean promising, quality job growth in manufacturing, construction, operation, and maintenance. In addition, studies indicate that dollars saved through energy efficiency tend to be spent locally and then re-spent multiplying the benefits.”

Figure 4. Comparison of Coal, Wind and PV (In Person-Years Per \$1 Million in Cost Over 10 Years Including Capital and Construction)

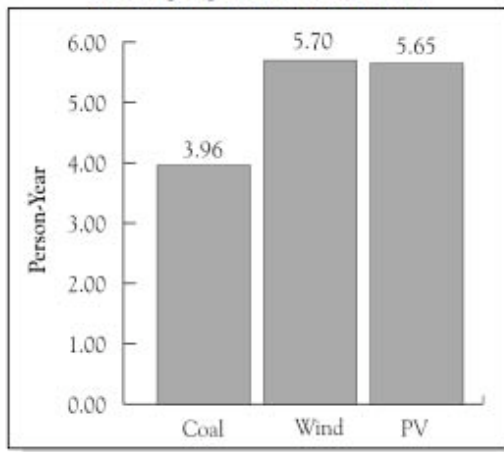


Table 7. Fewer Jobs and Greater Productivity in Coal Mining

Data	1988	1998	2008	% Increase in Output Per Employee: 1988-2008 <sup>a</sup>
Employment (in 1,000s)	151	92	59	19%
Rate of Job Loss		39%	36%	

a. Based on dollars of output associated with each employee.  
Source: REPP with data from Bureau of Labor Statistics, Employment Projections—Industry Data. <http://ftp.bls.gov/pub/special.requests/ep/ind.employment/indout4.txt>, viewed December 5, 2000.

According to a study published by the DOE, **wind and solar PV provide more than 40% more in employment than coal.**<sup>14</sup> Below, the figure on the left shows how many more people are employed in renewable energy-based jobs per dollar compared to coal. The figure on the right shows the nationwide decrease in coal-mining jobs while coal production has increased over the past 20 years.

A proposal from the Apollo Alliance states that through a plan of massive investment in both energy efficiency and renewable energy sources over a 10-year period, Kentucky’s economy would grow in the following ways<sup>15</sup>:

- An additional \$2.8 billion of economic activity;
- 44,783 new jobs, including 13,085 manufacturing jobs and 5,277 construction jobs;
- \$1.8 billion of increased income for Kentucky citizens;
- And, all of this for only a \$900 per job annual investment!

## CLEAN ENERGY NOW: KFTC WORK IN PROGRESS



### Benham Energy Project

Benham sits at the base of Black Mountain in Harlan County. Originally a coal camp, many of the 300 houses in town were built in the 1930s. The age of these homes, coupled with the fact that the town has the lowest electric rates in the state, are key reasons why Benham's residents have one of the highest state levels of household electricity use. As with the rest of Kentucky, almost all of it comes from coal-fired power.

KFTC members and Benham residents Carl Shoupe and Roy Silver are helping the community to work towards clean energy. With help from KFTC, MACED and MIT, community members are developing options for improving energy efficiency and developing renewable energy. Currently the group's efforts are focused on: a) bringing renewable energy resources to Benham, including a community-scale wind project, residential solar and micro-hydro electric; and b) creating a model program to help residents weatherize homes and improve energy efficiency.

### Eastern Kentucky Power Cooperative

EKPC generates power – mostly from coal – for 16 rural electric cooperatives that have customers in 87 counties across the state. EKPC wants to construct two new coal-fired power plants near Winchester, Kentucky. Together with several allies, Madison County KFTC members are working to oppose the plants and persuade EKPC to invest in energy efficiency and clean renewables. KFTC, the Sierra Club and the Kentucky Environmental Foundation released a report showing that it would cost EKPC far less to help customers save energy than to build a new plant. Our organizations are reaching out to educate co-op customers and to involve them in this campaign. EKPC still has several regulatory hoops to pass through before it has the necessary permission to start construction.



### Madison County's Energy Workteam

Madison County KFTC members are identifying ways to help local residents – especially low and moderate income families – save money and electricity. The group has collected more than 200 surveys from local residents about ways they are affected by rising energy prices and the kinds of help needed to make their homes more efficient. In response to KFTC's efforts, the Berea City Council recently formed a citizens advisory board to help the city-owned utility company examine these issues.

## REFERENCES

- <sup>1</sup> Energy Information Administration State Profile of Kentucky. Calculated from consumption information provided. Excel data sheets available: [http://tonto.eia.doe.gov/state/state\\_energy\\_profiles.cfm?sid=KY](http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=KY).
- <sup>2</sup> Kentucky Department for Energy Development and Independence. “25 by ’25 in Kentucky.” Available: <http://energy.ky.gov/dre3/25by25.htm>.
- <sup>3</sup> Kentucky Pollution Prevention Center. “An Overview of Kentucky’s Energy Consumption and Energy Efficiency Potential.” Prepared for the Governor’s Office of Energy Policy, August 2007. Available: <http://energy.ky.gov/dre3/efficiency/>.
- <sup>4</sup> KPPC.
- <sup>5</sup> Community Action Partnership of Kentucky, part of the Kentucky Cabinet for Health and Family Services. Available: <http://chfs.ky.gov/dcbs/dfs/Weatherization.htm>.
- <sup>6</sup> KFTC. “An overview of key state energy efficiency and renewable energy policies.” Published November 2008.
- <sup>7</sup> Bailey, Jason. “New Energy State Policy Categories and Options.” MACED, 2008.
- <sup>8</sup> Tennessee Valley Authority. “Kentucky River Dam Facts.” Available: [www.tva.com/sites/kentucky](http://www.tva.com/sites/kentucky).
- <sup>9</sup> AWS Truewind LLC. “Wind Resource Maps of Kentucky.” July 2008. Available: <http://www.energy.ky.gov/>.
- <sup>10</sup> Kentucky Department for Energy Development and Independence. Available: <http://www.energy.ky.gov/dre3/renewable/geothermal.htm>.
- <sup>11</sup> Kentucky Inter-County Energy Cooperative. “Solar and Wind in Kentucky.” Available: [www.intercountyenergy.net](http://www.intercountyenergy.net).
- <sup>12</sup> Kentucky Department for Energy Development and Independence. “Biofuels and Biofuel Production Facilities.” Available: <http://energy.ky.gov/dre3/renewable/biofuels.htm>.
- <sup>13</sup> Lambert, Susan Carson. “Renewable Energy Resources Inventory in Kentucky.” RE Strategies. Published 2008.
- <sup>14</sup> Singh, Virinder. “The Work That Goes Into Renewable Energy.” Renewable Energy Policy Project, November 2001. Page 4.
- <sup>15</sup> Perryman Group. “Redefining the Prospects for Sustainable Prosperity, Employment Expansion, and Environmental Quality in the US: An Assessment of the Economic Impact of the Initiatives Comprising the Apollo Project.” Published November 2003. Available upon request from the Apollo Alliance.