Developing a statewide energy economy that provides jobs, reduces emissions, and protects the environment.

Len Peters, Kentucky Energy & Environment Cabinet

State Energy Policy and Initiatives: Making It Happen
Southern States Energy Board
August 19, 2011
Kentucky Energy Plan Development

• Governor Beshear included energy in his campaign platform.

• Governor created the Energy and Environment Cabinet—the first state that placed both programs in one executive branch agency.

• Governor created a comprehensive energy plan.
  ▫ Goals of plan tie in with many existing state policies and statutes.
  ▫ Plan implementation—very much a stakeholder process, including follow-on initiatives through Biomass Task Force and Kentucky Climate Action Plan Council.
Energy & Kentucky’s Economy

• Electricity rates among the lowest in the nation, especially for industrial users.
  ▫ KY: 4.63 cents/kWh
  ▫ National: 6.52 cents/kWh

• Industrialized economy (213,000 employed) with major energy users: automotive, steel, aluminum.

• Industrial electricity use is 45 percent higher than the national average.

• 3rd largest coal producer in country (18,000 mining jobs); 3rd largest automotive industry; provide 40 percent of the nation’s aluminum; and 30 percent of the stainless steel (all with just 1.3 percent of the nation’s population).
Current Profile

Electricity Generation by Fuel Type, 2008

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Gigawatt Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>97,553</td>
<td>100%</td>
</tr>
<tr>
<td>Coal</td>
<td>91,621</td>
<td>94%</td>
</tr>
<tr>
<td>Petroleum</td>
<td>2,874</td>
<td>3%</td>
</tr>
<tr>
<td>Hydro</td>
<td>1,917</td>
<td>2%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>983</td>
<td>1%</td>
</tr>
<tr>
<td>Wood &amp; Biomass</td>
<td>919</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
86 percent of the coal mined in Eastern Kentucky is exported—with the majority exported to SSEB member states.
Kentucky’s Energy Drivers

• Improve energy security.
• Diversify our energy portfolio.
• Reduce carbon dioxide emissions.
• Provide economic prosperity and job creation.
• Protect manufacturing base.

“We can keep producing and consuming energy the way we’ve always done so, a choice that means we will be left behind. Or we can adapt to a changing world and make wise decisions today that will benefit us economically and environmentally in the long term.”—Governor Steve Beshear, September 2009
Kentucky’s Energy Challenges

- Aging infrastructure—average age of coal generation fleet is 35 years.
- Rising energy costs.
- Limited affordable renewable resource potential with current technologies.
- Growing demand for energy in all sectors (40% by 2025).

These challenges are not unique to Kentucky among Southern States.
Today’s Realization: Federal environmental policy is driving energy policy

- Federal rules & regulations (sheer number and timelines for implementation)—greenhouse gas tailoring rule; coal combustion residuals; revised NAAQS; cross-state air pollution; cooling water intake and water discharges; mercury and hazardous air pollutants.

- Federal policies creating additional uncertainty—guidelines affecting coal mine permitting for Appalachian states; congressional discussions regarding clean energy standards; FERC rules on national transmission system to facilitate growth in renewables.
Strategies, Policies & Programs

• **7-Point Comprehensive Energy Plan**
  ▫ Improved energy efficiency; growth in renewable energy; including biomass; policy support for coal to liquid, coal to gas and carbon capture/storage; and examine the use of nuclear power for electricity generation in Kentucky.

• **Key Legislative Actions**
  ▫ Incentives for coal conversion, renewables, efficiency programs, sustainable manufacturing, R & D.
Strategies, Policies & Programs

Programs

- Energy efficiency programs for industries, businesses, K-12, agriculture, residential, and government buildings.
- Smart grid, appliance rebates.
- Biomass Task Force; other renewable development programs.
- University-state partnerships in R & D: battery technology; algae; carbon capture and storage; biomass development; renewables and efficiency.
- Carbon management; coal conversion.
- Tools to enhance programs: in-house economic modeling & forecasting; technical training through U.S. DOE.
Kentucky’s Renewable Potential, 2025

- Wind, 2%
- Landfill Methane, 5%
- Solar, 13%
- Hydro, 27%
- Biomass, 53%

Total: 130 tBtu, which is equivalent to about 270 thousand GWh
Promising Areas

• Biomass
  • Good Capacity Factor.
  • Reduce atmospheric carbon.
  • Sustain market for coal through co-firing.
  • Potential $3.4 billion revenue; job creation.

• Energy Efficiency in Schools
  • Large returns on investment.
  • Kentucky already has two net-zero schools; growing number of Energy Star school buildings.
  • Willing participants—school districts are learning of others’ successes.

• Battery Technology
  • Kentucky-Argonne Battery Manufacturing Research and Development Laboratory.

• Coal Conversion
  • Construction has started at three CTL facilities.
Kentucky’s Strategic Energy Direction

- Diversifying Electricity Portfolio

Kentucky’s Electricity Generation Sources

- Renewables
- Biomass
- Nuclear
- Natural Gas
- Petroleum
- Coal w/CCS
- Coal

2005 vs. 2035
Diversified Electricity & Transportation Portfolio Will Allow Us To

- Mitigate electricity cost increases over the long-term—EPRI study.
  - Limited portfolio leads to reduced coal usage and higher energy costs (EPRI, 2009).
- Continue using coal resources; increase biomass production.
- Create economic development opportunities—higher value coal utilization; green jobs; robust manufacturing base.
- Enhance energy security.
Our energy future will be determined by finding the appropriate balance:

- **ENERGY**—We must not sacrifice energy reliability, the cornerstone of our nation’s growth.

- **ENVIRONMENT**—We can and must use our energy resources in an environmentally responsible manner.

- **ECONOMY**—We shouldn’t pick winners at the expense of losers, and energy affordability must be at the forefront of policy discussions for economic development.