

Comment for Panel Session on
Old King Coal:
Its Role in the U.S. Energy Picture

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Do We Really Still Use Coal ?

- Most people are not aware that coal is the dominant source of energy used to generate electricity
- More than half the electricity we use in the U.S. comes from coal-burning power plants
- So in an increasingly electrified world, coal is a bedrock element of our economy and way of life
- It provides roughly a quarter of all primary energy used in the U.S.

Coal and Energy Security

- Coal is also the only major source of energy on which the U.S. is self-reliant (wind and other renewables provide only a small share of U.S. energy)
- We are net importers of all other major sources of energy— oil, natural gas, and uranium
- In contrast, we are net exporters of coal
- More than half of U.S. coal production now comes from large surface mines west of the Mississippi
- Coal is the least expensive source of fuel today

So What's the Problem ?

- The environmental impacts of coal mining, and the air pollution from coal combustion, have been the major sources of the world's "love-hate" relationship with coal for over 700 years
 - In England, to alleviate foul air problems during sessions of parliament, King Edward I proclaimed (ca. 1300):
"Be it known to all within the sound of my voice, whosoever shall be found guilty of burning coal shall suffer the loss of his head."

Environmental Update

- As a result of increasingly stringent environmental regulations, there have been dramatic improvements in new technologies for coal use and environmental control, especially over the past three decades
- A new power plant today emit less pollution over its lifetime than a new 1970 plant emitted in a single year
- As a result, national air pollutant emissions today are a fraction of what they were 30 years ago, even though the U.S. today uses three times more coal

But

- Despite substantial and widespread improvements, many local problems and adverse impacts still remain, especially at many of the older plants still in use
- Today, worldwide concerns about global climate change have focused new attention on coal use as a major source of the “greenhouse gases” responsible for global warming
- The major culprit is carbon dioxide (CO₂) emitted to the atmosphere when coal (or any other fossil fuel, like oil and natural gas) is burned to provide energy

Can Technology Save the Day ?

- Avoiding global climate change will require major long-term changes in domestic and global energy systems
- New “clean coal technologies” such as coal gasification and carbon sequestration can play an important role in the transition to a more sustainable energy future (e.g., as a source of carbon-free electricity and hydrogen)
- Key needs for achieving energy, economic and environmental goals include sustained programs to promote technology innovation, modernization, and the training of scientists and engineers devoted to these tasks