Comments for Session 3: Deploying the Solutions: The Role of Public Policy

Edward S. Rubin
Department of Engineering and Public Policy
Department of Mechanical Engineering
Carnegie Mellon University
Pittsburgh, Pennsylvania

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My Premises

• Before we can talk about deploying “solutions” (the title of this session) we need to first define the “problem”

• Public policy is the key determinant of whether or not there is a problem with coal use

• Historically, the main problem with coal use has been the air pollution impacts of coal combustion

A perspective on public policy: Things Could be Worse

• “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.”

– Proclamation of King Edward I of England, 1306, to provide a smoke-free environment in London during sessions of Parliament

Federal Environmental Laws Have Imposed Increasingly Stringent Requirements on Coal Use

Source: EPRI
Air Pollutant Emission Rates Have Been Reduced Significantly

Air Pollutant Emission Rates from New Coal-Fired Power Plants

- Particulate Matter
- Sulfur Dioxide
- Nitrogen Oxides


Coal Today

- “Coal use in America has tripled over the last four decades while key emissions have been reduced more than 80%, thanks to advanced clean coal technologies.”

So What’s the Problem?

- Many existing plants are not covered by stringent federal standards for new sources
- Regional emissions still exceed levels needed to achieve air quality standards for some health-related pollutants (especially PM$_{2.5}$ and O$_3$
- Hazardous air pollutants (especially Hg) and solid wastes from coal plants pose additional concerns, as do . . .
- Environmental impacts of coal mining and transport
- Greenhouse gas emissions (mainly CO$_2$) from fossil fuel combustion are not presently controlled
Can Clean Coal Technology Save the Day?

What Do We Mean by “Clean Coal”? 

“Clean coal refers to technologies that improve the environmental performance of coal-based electricity plants.”

— American Coalition for Clean Coal Electricity, September 2012

“Clean coal is a term pollsters came up with because it polls higher than regular coal. What we want are real cleaner-burning fuels . . .”

— President Jeb Bartlet, The West Wing (TV series), March 27, 2002

“[part of a] strategy to take control of our energy future … invested substantially in [cost-effective] carbon capture and sequestration”

— President Barack Obama (website), September 2012

Achieving the U.S. policy goal of stabilizing atmospheric GHG levels requires large reductions in GHG emissions, soon

CO₂ from energy use is the dominant greenhouse gas; Large CO₂ reductions are needed

Insights from Energy Models

• Coal with CCS is a critical component of cost-effective strategies for sustainable low-carbon energy systems.

• CCS on gas-fired plants also is very important, especially as natural gas gains a larger share of power generation markets.
Key Barriers to CCS Deployment

- Policy
- Policy
- Policy

Without a policy requirement or incentive there is little or no reason to deploy CCS

Need a Mix of Carrots and Sticks
(to foster technology deployment and innovation)

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<tr>
<th>TECHNOLOGY POLICY OPTIONS</th>
<th>REGULATORY POLICY OPTIONS</th>
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<tr>
<td>Direct Gov't Funding of Knowledge Generation</td>
<td>Economy-wide, Sector-wide, or Technology-specific Regs and Standards</td>
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<tr>
<td>Direct or Indirect Support for Commercialization and Production</td>
<td>Knowledge Diffusion and Learning</td>
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<td>R&amp;D contracts with private firms (fully funded or co-owned)</td>
<td>R&amp;D tax credits</td>
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<td>R&amp;D contracts and grants with universities and non-profits</td>
<td>Patents</td>
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<td>In-house R&amp;D in government laboratories</td>
<td>Production subsidies or tax credits for firms bringing new technologies to market</td>
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<td>R&amp;D contracts with consortia or collaborations</td>
<td>Tax credits, rebates or payments for purchasers/users of new technologies</td>
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Can You Imagine This Ad in 2050?

- “Coal use continued to grow over the last four decades while key greenhouse gas emissions have been reduced more than 80%, thanks to advanced clean coal technologies.”

Thank You

rubin@cmu.edu