EPA Carbon Dioxide Regulations:

Rules for New Coal-Fueled Power Plants Require Not-Ready-For-Primetime Technology

Proposed Regulations Effectively Ban New Coal-Fueled Power Plants

The U.S. Environmental Protection Agency has proposed New Source Performance Standards for greenhouse gas emissions from new fossil fuel electricity generating plants. By setting the allowed carbon dioxide emissions rate for coal-fueled power plants at 1,100 pounds per megawatt-hour, the regulation effectively requires any new coal-fueled plant to install carbon capture and storage ("CCS") technology.

In proposing the regulation, EPA had an obligation to write standards that are achievable using commercially available technologies. Unfortunately, key CCS technologies remain in the research and development stage while only a handful of commercial scale projects are moving forward at tremendous cost. Meanwhile, EPA is establishing separate permitting requirements that may make actual operation CCS projects unfeasible. The result is an effective ban on the construction of new coal-fueled generation.

The Kemper power plant, currently under construction in Mississippi, has experienced construction delays and increases from its original cost estimate of $2.8 billion. Some experts believe the final cost may exceed $5 billion.

Carbon Capture and Storage Technology Unproven at Large Scale

Although the practice of injecting carbon dioxide deep underground for Enhanced Oil Recovery has been around for years, the technology needed to separate carbon dioxide from a power plant's emissions is relatively new. It is also unproven at the commercial scale. Out of 21 planned power plant CCS projects worldwide, only two are under construction and none are operational.

The only power plant CCS project movingd forward in the United States – Southern Company's Kemper facility in Mississippi – has encountered significant delays and increases in costs that may almost double its original anticipated cost of construction. It is also unlikely that all of the planned projects will make it to completion. According to the Global CCS Institute's 2013 status report, five CCS projects were canceled this year, one was scaled back and seven others were postponed.

In addition to high costs, a key barrier to development of CCS infrastructure is sheer size. According to Vaclav Smil, a professor at University of Manitoba, the facilities needed to store just one-fifth of global carbon dioxide emissions would require infrastructure capable of handling twice the volume material currently handled by the entire oil industry.

Carbon Capture and Storage Policy Unsupportive of Technology Deployment

Even if CCS technology was commercially available, the United States lacks supporting policies to allow its deployment. One government subsidized CCS demonstration project at the Mountaineer power plant in West Virginia was shut down in 2011 because markets could not be found for the carbon dioxide and state regulators would not allow the plant operator to charge customers for operating the facility.

On the federal level, EPA requires CCS in its New Source Performance Standards, but erects roadblocks to the technology in the form of permitting requirements such as mandating post-injection monitoring for 50 years.

Large scale Power Plant CCS Projects Worldwide

Project Name	Leader	Feedstock	Size MW	Capture Process	CO^2 Fate	Status	Location
USA							
Kemper County	Southern	Coal	582	Pre	EOR	Under Construction	Mississippi
TCEP	Summit Power	Coal	400	Pre	EOR	Planning	Texas
WA Parish	NRG Energy	Coal	240	Post	EOR	Planning	Texas
HECA	SCS	Petcoke	421	Pre	EOR	Planning	California
FutureGen	FutureGen Alliance	Coal	168	Oxy	Saline	Planning	Illinois
CANADA							
Boundary Dam	SaskPower	Coal	110	Post	EOR	Under Construction	Saskatchewan
Bow City	BCPL	Coal	1000	Post	EOR	Planning	Alberta
EUROPEAN UNION							
ROAD	E.ON	Coal	250	Post	Saline	Planning	Netherlands
Compostilla	ENDESA	Coal	323	Oxy	Saline	Planning	Spain
Getica	Turceni Energy	Coal	330	Post	Saline	Planning	Romania
Peterhead	Shell and SSE	Gas	385	Post	Depleted Gas	Planning	UK
Don Valley Power Project	2Co Energy	Coal	920	Pre	EOR	Planning	UK
Teesside Low Carbon	Progressive	Coal	400	Pre	Depleted Oil	Planning	UK
Killingholme	C.GEN	Coal	430	Pre	Saline	Planning	UK
White Rose	Capture Power	Coal	426	Oxy	Saline	Planning	UK
Porto Tolle	ENEL	Coal	250	Post	Saline	Planning	Italy
Captain	Summit Power	Coal	400	Post	Depleted Oil	Planning	UK
Magnum	Nuon	Various	1200	Pre	EOR/ EGR	Planning	Netherlands
NORWAY							
Longyearbyen	Unis CO2	Coal	N/A	N/A	Saline	Planning	
REST OF THE WORLD							
Daqing	Alstom & Datang	Coal	350	Oxy	EOR	Planning	China
GreenGen	GreenGen	Coal	250/400	Pre	Saline	Planning	China

SOURCE: Massachusetts Institute of Technology, Carbon Capture and Sequestration Technologies Program

What Others Are Saying

"The EPA is holding the coal industry to impossible standards. And for the first time ever, the federal government is trying to force an industry to do something that is technologically impossible to achieve – at least, right now."

— **U.S. Senator Joe Manchin**, D-West Virginia

"CCS has not been adequately demonstrated. There is continuing uncertainty with respect to the application of this technology on this scale as well as continued concerns about the availability of geologic formations for sequestration."

— **Donald R. van der Vaart, Ph.D., P.E., J.D.**, North Carolina Department of Environment and Natural Resources

"…it is disingenuous to state that the technology is 'ready' and it is wrong to underfund to assure failure if the true goal is 'All of the Above.'"

— **Charles D. McConnell**, Executive Director, Energy and Environment Initiative, Rice University (former head of U.S. Department of Energy Office of Fossil Energy)

"Most if not all coal-fired units will be forced to retire as a result of the regulation of GHG emissions, which would astronomically increase electricity rates and ultimately cause further job losses."

— **Anthony S. "Tony" Campbell,** President & CEO, East Kentucky Power Cooperative

"So if somebody wants to build a coal-powered plant, they can; it's just that it will bankrupt them."

— **Barack Obama**, January 2008