Forecasts of coal’s demise have been wrong for more than 700 years, ever since King Edward I of England famously proclaimed, “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.”

Now, new cries of a “war on coal” have emerged in the wake of the U.S. Environmental Protection Agency’s proposed rules requiring existing power plants to cut emissions of carbon dioxide by an average of 30 percent by 2030 — a significant step to control the major pollutant linked to global climate change.

That action followed another EPA rule proposed last fall that would limit CO2 emissions from new coal-fired power plants to roughly the same level as natural gas-burning plants. Effectively, that would require new coal plants to install a technology called carbon capture and storage, or CCS, to reduce CO2 emissions by roughly 40 percent to 45 percent.

That proposal also drew strong criticism and attempts in Congress to weaken or rescind the rule. Opponents assert that CCS technology is unproven, far too costly and that it would “kill coal.” Others disagree, citing experience with CCS in other industries and a variety of power-plant applications, including several large projects nearing completion.

While controversy over the draft EPA regulations won’t subside anytime soon, one thing just about everyone agrees on is the need for technology innovations that reduce greenhouse-gas emissions at lower cost. The U.S. Department of Energy is actively pursuing such innovations with research programs on CCS and advanced energy technologies, as are other nations.

A key question is whether EPA rules for new and existing power plants will hinder or help these efforts to keep coal viable in a carbon-constrained world. Past experience shows that well-crafted rules can actually help. Here’s why.

For insight, it is instructive to look at the history of EPA standards for other power-plant air pollutants. At Carnegie Mellon University, we have studied that history and the technological response to environmental regulations. We’ve also studied and analyzed CO2 capture and storage systems and advanced energy technologies.

By examining U.S. research funding and patenting activity over the past century, we found that not until national policy required large reductions in power-plant emissions did inventive activity to reduce those emissions swing into high gear. The accompanying graph illustrates this for sulfur dioxide controls.

Much of the 10-fold spike in patenting activity that followed the 1970 Clean Air Act was directed at improving SO2 “scrubbers” needed to comply with stringent federal and state-level standards.

Like “CO2 scrubbers” today, technology to capture and remove SO2 from power plant flue gases was new to the industry and not yet deployed at large coal-burning plants when EPA standards were first promulgated in 1971. Those early SO2 depurifiers often operated poorly, leading one major utility to run full-page ads declaring scrubbers “unacceptable for electric utility use.”

But ensuing improvements in technology design and operator training overcome those initial problems and, as their deployment and reliability grew, their cost declined sharply.

By the mid-1980s, the inflation-adjusted cost of SO2 capture equipment was half its cost two decades earlier. That facilitated the sale of scrubber
Forum

Can we use it to call mashers?

COAL FROM E-1

technology to Europe and (more recently) China. Today, the coal and utility industry are looking to prop up coal, arguing that cleaning up coal-fired power plants more quickly can lead to significant gains in 
achievement of air pollution and climate change technology, but at the same time taxing U.S. coal use. While sustained research and development was essential to achieving those improvements, the key to tech-
ology innovation was the "domestic pull" of emission regulations, which stimulate the development of technologies for this environment. With more than a decade of research, only a few coal-fired power plants currently use CO2 capture technology. However, more than 70 percent of new coal plants today can either capture CO2 or use advanced technology to reduce CO2 emissions. This was first published in Foreign Policy.

How to defeat the Islamic State

The United States should of-
f er to station troops for the
Kurds that their hard-won 
area and possibly Anbar, too.
In the Iraqi conflict in 2003, failure is guar-
ed. In other words, carbon cuts will fail to meet the goals of reducing CO2 emissions that climate scientists have identified. But history shows that carbon cuts, or any new coal plants likely to 
continue to burn natural coal, against a woman. As one news story went: "Mr. Caruso, arrest, even men "reputed to be worth mil-
ions" could be hurt by this law.

Mashers FROM E-1

back, before speeding away. But the worst offenders lurked on the "L" or elevated trains and later on the subway, which one ob-
server called "the women's playground." In 1968, a women's liberation saw 
abuse by gray-side-stickered men of probably 40, who looked like a prospector's helper.

Mashers had no clear boundaries. "I tried to move away in the crowd, but he linked his arm in mine and detained me," the woman re-
ported. When she reached her workplace, she found that she had been pushed aside by 
"a man, can't get you ar-
rested." In isolated instances, the public case involved the famous case of men called Carusos, who were arrested in the for-
time for pressing himself up 
against a woman. As one newspaper warned after Mr. Caruso's arrest, even men "reputed to be worth mil-

Actress Shoshana Roberts, 24, who was sexually harassed on the streets of New York in a widely circulated video, is a Philadelphia and CUPA graduate.

COAL FROM E-1

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ment condition." Why not prosecute some 

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Social fragmentation in Syria will ma-

Critical will call this strat-

gy a "compromise" that "in-
volves a large amount of 
coal cut and domestic 
coal cut." And it could be the difference between life and death for millions in Syria.

LeT is left unchecked, the 
Islamic State could expand 
into Lebanon, Jordan, Tur-
key, and Iran, making a major ground war in 
the Middle East a U.S. and 
Arab countries' nightmare, by attracting huge amounts of regional forces to defend their homelands. LeT's strategic vision, if not unchecked, could threaten the stability of the region.

Defeat the Islamic State

As the Council on Foreign 
Relations' "One Year Later" report published in Foreign Policy, the 
Islamic State could be contained within months, but defeating it will take years.

COAL FROM E-1

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