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Capture CO2, free economy

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The development of alternative forms of energy, like solar and wind power, is receiving increasing attention in this country as we try to wean ourselves off imported oil. Even nuclear energy is on the verge of making a comeback. But we would be foolish if we didn't also continue working on ways to more effectively use coal, our most abundant domestic energy resource.

One approach is to spawn new technologies that can strip carbon dioxide from coal-plant emissions. By capturing the principal greenhouse gas linked to climate change, these advanced technologies hold potentially great value for the United States and other countries that rely heavily on coal.

No country has more at stake in solving the carbon technology challenge than the United States. Coal is America's energy mainstay. It is important to our future because of its low cost and abundance. We have a 240-year supply of coal, about one-quarter of the world's total. This is a greater share of the world's coal than Saudi Arabia has of the world's oil.

Even with the growth of alternative energies, we use far more coal today than ever before, more than 1 billion tons a year. Coal power plants provide about 55 percent of Pennsylvania's electricity and more than half the nation's power. Coal is cheaper than oil or natural gas, and its economic value is likely to become even more pronounced as oil and gas reserves are depleted. For the foreseeable future, coal will remain an important resource that we must learn to use better by developing techniques such as carbon capture-and-storage. In this process, carbon dioxide is captured from a coal plant's emissions and stored rather than released to the atmosphere.

One of the most promising ways to remove carbon dioxide is undergoing tests at a large coal plant in Wisconsin. For now, the carbon dioxide is being released, but the ultimate goal is to capture 90 percent of it and then send it by pipeline for injection underground into suitable deep geological formations.

Alstom, the international equipment company conducting the tests, plans to expand the scale of the effort and introduce the next step of underground storage.

Carbon capture processes are critical to the future of coal, which accounts for 40 percent of U.S. greenhouse-gas emissions. The scale is enormous because the energy needs of our

economy are enormous.

One hitch is that the carbon-capture process is energy-intensive, sapping 30 percent of a plant's power. Captured carbon dioxide must be compressed, transported by pipeline, and pumped underground. This takes energy, which lowers efficiency and drives up the cost of electricity. Work over the next decade must focus on reducing energy requirements, improving the efficiency of conversion, and validating long-term storage techniques. But eventually, as older coal plants are replaced by new plants with carbon capture, there can be significant reductions in overall carbon dioxide emissions.

As long as coal retains its prominent place — and it will — climate policy will not succeed without carbon capture-and-storage. We cannot develop alternative sources fast enough in the amounts our economy needs. There is really no practical way to reduce carbon dioxide emissions to pre-1990 levels unless carbon emissions are captured at coal plants and sequestered underground. The worldwide goal of cutting carbon dioxide emissions in half by 2050 depends on carbon capture-and-storage at coal plants to account for 21 percent of that drop.

We need to keep our electricity costs affordable and our energy-intensive industries globally competitive. We can do this. But it's going to take a collective effort by government, industry and the scientific community to develop and demonstrate the technology for carbon capture-and-storage. And it's going to require assured, multi-year funding by Congress. If the technology is developed in this country, we can export it to the world.