THE INDIANAPOLIS STAR

November 17, 2008

Energy future depends on capturing emissions

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A successful energy plan needs to do more than reduce our nation's dependence on foreign oil. It needs to come up with a practical way to take advantage of the energy resources we have available. One means to do that is to develop systems to capture and store carbon dioxide emissions from power plants so our country can continue to make use of its vast coal reserves.

With coal plants providing 52 percent of the nation's electricity, the first step toward sensible environmental policy is to face reality. Despite the technological promise of solar and wind power, for now they cannot supply the bulk of U.S. energy supplies. Just as important, coal will continue to account for the bulk of the electricity produced around the world, so we need to be able to offer technologies that other countries can use to reduce their carbon dioxide emissions.

With regard to greenhouse-gas emissions, coal has enjoyed a free ride. U.S. coal plants pour more than 1 billion tons of carbon dioxide a year into the atmosphere, accounting for 40 percent of the nation's greenhouse-gas emissions. Yet, until recently the environmental consequences of this seemed a mystery to many Americans, including many members of Congress.

Just to slow the pace of global warming will not be easy. The United States -- and indeed the world -- demands more and more energy. Where will it come from? Conservation and energy-efficiency measures can help temper demand but trends suggests that U.S. demand for energy will continue to grow.

Coal's value is unquestionable. But we need a reliable and affordable process for capturing and storing carbon dioxide emissions in deep geological formations. Here's how it might work.

In a traditional power plant that burns coal, the emissions are primarily nitrogen, carbon dioxide and water vapor. To capture the carbon for storage underground, the carbon dioxide can be absorbed with a solvent and heated to remove water and create a pure carbon dioxide stream, which can be compressed to a near-liquid form. The carbon dioxide is then transported by pipeline to depleted oil and gas reservoirs or salt-water aquifers where it is injected thousands of feet underground. When these sites are considered full, they are sealed to prevent the CO2 from leaking into the atmosphere.

Clearly, it's not cheap to sequester carbon dioxide. The cost might range from $25 to $40 per ton. If carbon sequestration is to be financially feasible, it will require new methods for capturing emissions that use less energy. Long-term federal funding will be essential to help defray the upfront cost of research and development, followed by several large-scale demonstrations of carbon sequestration. It is estimated this would cost $2 billion a year for a decade. That is a price worth paying.

Progress on carbon mitigation could have a major impact on reducing greenhouse-gas emissions, and put our nation on a path toward a stronger economy and greater energy security. By showing leadership now, the United States will also be in a better position to persuade countries that burn large amounts of coal to mitigate emissions with carbon sequestration technology.