CO2 emissions in US drop to 20-year low

KEVIN BEGOS, Associated Press

PITTSBURGH (AP) -- In a surprising turnaround, the amount of carbon dioxide being released into the atmosphere in the U.S. has fallen dramatically to its lowest level in 20 years, and government officials say the biggest reason is that cheap and plentiful natural gas has led many power plant operators to switch from dirtier-burning coal.

Many of the world's leading climate scientists didn't see the drop coming, in large part because it happened as a result of market forces rather than direct government action against carbon dioxide, a greenhouse gas that traps heat in the atmosphere.

Michael Mann, director of the Earth System Science Center at Penn State University, said the shift away from coal is reason for "cautious optimism" about potential ways to deal with climate change. He said it demonstrates that "ultimately people follow their wallets" on global warming.

"There's a very clear lesson here. What it shows is that if you make a cleaner energy source cheaper, you will displace dirtier sources," said Roger Pielke Jr., a climate expert at the University of Colorado.

In a little-noticed technical report, the U.S. Energy Information Agency, a part of the Energy Department, said this month that total U.S. CO2 emissions for the first four months of this year fell to about 1992 levels. The Associated Press contacted environmental experts, scientists and utility companies and learned that virtually everyone believes the shift could have major long-term implications for U.S. energy policy.

While conservation efforts, the lagging economy and greater use of renewable energy are factors in the CO2 decline, the drop-off is due mainly to low-priced natural gas, the agency said.

A frenzy of shale gas drilling in the Northeast's Marcellus Shale and in Texas, Arkansas and Louisiana has caused the wholesale price of natural gas to plummet from $7 or $8 per unit to about $3 over the past four years, making it cheaper to burn than coal for a given amount of energy produced. As a result, utilities are relying more than ever on gas-fired generating plants.

Both government and industry experts said the biggest surprise is how quickly the electric industry turned away from coal. In 2005, coal was used to produce about half of all the electricity generated in the U.S. The Energy Information Agency said that fell to 34 percent in March, the lowest level since it began keeping records nearly 40 years ago.

The question is whether the shift is just one bright spot in a big, gloomy picture, or a potentially larger trend.

Coal and energy use are still growing rapidly in other countries, particularly China, and CO2 levels globally are rising, not falling. Moreover, changes in the marketplace - a boom in the economy, a fall in coal prices, a rise in natural gas - could stall or even reverse the shift. For example, U.S. emissions fell in 2008 and 2009, then rose in 2010 before falling again last year.

Also, while natural gas burns cleaner than coal, it still emits some CO2. And drilling has its own environmental consequences, which are not yet fully understood.

"Natural gas is not a long-term solution to the CO2 problem," Pielke warned.

The International Energy Agency said the U.S. has cut carbon dioxide emissions more than any other country over the last six years. Total U.S. carbon emissions from energy consumption peaked at about 6 billion metric tons in 2007. Projections for this year are around 5.2 billion, and the 1990 figure was about 5 billion.

China's emissions were estimated to be about 9 billion tons in 2011, accounting for about 29 percent of the global total. The U.S. accounted for approximately 16 percent.

Mann called it "ironic" that the shift from coal to gas has helped bring the U.S. closer to meeting some of the greenhouse gas targets in the 1997 Kyoto treaty on global warming, which the United States never ratified. On the other hand, leaks of methane from natural gas wells could be pushing the U.S. over the Kyoto target for that gas.

Even with such questions, public health experts welcome the shift, since it is reducing air pollution.

"The trend is good. We like it. We are pleased that we're shifting away from one of the dirtiest sources to one that's much cleaner," said Janice Nolen, an American Lung Association spokeswoman. "It's been a real surprise to see this kind of shift. We certainly didn't predict it."

Power plants that burn coal produce more than 90 times as much sulfur dioxide, five times as much nitrogen oxide and twice as much carbon dioxide as those that run on natural gas, according to the Government Accountability Office, the investigative arm of Congress. Sulfur dioxide causes acid rain and nitrogen oxides lead to smog.

Bentek, an energy consulting firm in Colorado, said that sulfur dioxide emissions at larger power plants in 28 Eastern, Midwestern and Southern states fell 34 percent during the past two years, and nitrous oxide fell 16 percent. Natural gas has helped the power industry meet federal air pollution standards earlier than anticipated, Bentek said.

Last year the Environmental Protection Agency issued its first rules to limit CO2 emissions from power plants, but the standards don't take effect until 2014 and 2015. Experts had predicted that the rules might reduce emissions over the long term, but they didn't expect so many utilities to shift to gas so early. And they think price was the reason.

"A lot of our units are running much more gas than they ever have in the past," said Melissa McHenry, a spokeswoman for Ohio-based American Electric Power Co. "It really is a reflection of what's happened with shale gas."

"In the near term, all that you're going to build is a natural gas plant," she said. Still, she warned: "Natural gas has been very volatile historically. Whether shale gas has really changed that - the jury is still out. I don't think we know yet."

Jason Hayes, a spokesman for the American Coal Council, based in Washington, predicted cheap gas won't last.

"Coal is going to be here for a long time. Our export markets are growing. Demand is going up around the world. Even if we decide not to use it, everybody else wants it," he said. Hayes also said the industry expects new coal-fired power plants will be built as pollution-control technology advances: "The industry will meet the challenge" of the EPA regulations.

The boom in gas production has come about largely because of hydraulic fracturing, or fracking. Large volumes of water, plus sand and chemicals, are injected to break shale rock apart and free the gas.

Environmentalists say that the fluids can pollute underground drinking water supplies and that methane leaks from drilling cause serious air pollution and also contribute to global warming. The industry and many government officials say the practice is safe when done properly. But there have been cases in which faulty wells did pollute water, and there is little reliable data about the scale of methane leakage.

"The Sierra Club has serious doubts about the net benefits of natural gas," said Deborah Nardone, director of the group's Beyond Natural Gas campaign.

"Without sufficient oversight and protections, we have no way of knowing how much dangerous pollution is being released into Americans' air and water by the gas industry. For those reason, our ultimate goal is to replace coal with clean energy and energy efficiency and as little natural gas as possible."

Wind supplied less than 3 percent of the nation's electricity in 2011 according to EIA data, and solar power was far less. Estimates for this year suggest that coal will account for about 37 percent of the nation's electricity, natural gas 30 percent, and nuclear about 19 percent.

Some worry that cheap gas could hurt renewable energy efforts.

"Installation of new renewable energy facilities has now all but dried up, unable to compete on a grid now flooded with a low-cost, high-energy fuel," two experts from Colorado's Renewable and Sustainable Energy Institute said in an essay posted this week on Environment360, a Yale University website.

How much further the shift from coal to natural gas can go is unclear. Bentek says that power companies plan to retire 175 coal-fired plants over the next five years. That could bring coal's CO2 emissions down to 1980 levels. However, the EIA predicts prices of natural gas will start to rise a bit next year, and then more about eight years from now.

Despite unanswered questions about the environmental effects of drilling, the gas boom "is actually one of a number of reasons for cautious optimism," Mann said. "There's a lot of doom and gloom out there. It is important to point out that there is still time" to address global warning.

Associated Press writers Seth Borenstein in Washington and Jonathan Fahey in New York contributed to this story.

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