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Power companies are increasingly switching to natural gas to fuel their electricity plants, driven by low prices and forecasts of vast supplies for years to come.

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While the trend started in the late 1990s, the momentum is accelerating and comes at the expense of coal. Some utilities are closing coal-fired plants; others are converting them to run on gas.

Black Days for Coal

An analysis of the impact over the next several years if all coal-fired power plants must install sulfur-dioxide scrubbers to meet EPA emissions standards for mercury and acid gases

1,885 million megawatt-hours

Coal-fired generation in the U.S. in 2009

47 million MWh

Loss of generation expected over next five years due to natural plant retirements

244 million MWh

Loss expected because of EPA regulation of sulfur-dioxide and mercury emissions

110 million MWh

Gain expected from new coal plants

1,704 million MWh

Expected coal-fired generation in 2015

—9.6%

Percentage change in coal-fired generation, 2015 versus 2009

Sources: Ventyx, Electric Power Research Institute, Energy Information Administration, Bernstein Research analysis

The switch is occurring globally and is getting a push from regulators who want to limit emissions that contribute to climate change, haze and health problems such as respiratory illness. Though efforts in

Congress to pass legislation attaching a price to carbon emissions appear stalled for now, utilities still anticipate eventual carbon restrictions. The Tennessee Valley Authority, for example, recently announced a 20-year development plan that emphasizes nuclear and gas, and includes fewer coal units.

'Migration' Occurring

"It's pretty clear that, whether it's caused by future carbon legislation or action by the EPA, the migration away from coal has begun," says [Constellation Energy Group](#) Chief Executive Mayo Shattuck.

Coal-burning facilities are expected to slip to 10% of total new capacity in the U.S. in 2013, down from 18% in 2009, the U.S. Energy Information Administration reports. Gas, meanwhile, is expected to soar to 82% of new capacity in 2013 from 42% last year.

Natural gas also has the edge in Europe. In 2009, far more gas- than coal-burning plants were built in the European Union—24% of new capacity versus 8.7%.

Journal Reports

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In China and India, though, no such shift is occurring—yet. Both nations rely on coal—an abundant local resource—for most of their power and lack the sort of integrated gas-pipeline networks that make switching to gas possible in the U.S. China's government has pledged to roughly double the percentage of electricity the country gets from non-fossil sources, to 15% from 8%, by 2020. But much of that new energy will come from hydropower. India, meanwhile, has agreed to cut its carbon emissions 20% from 2005 levels by 2020. But the country doesn't have enough domestic gas to support a large-scale shift to that fuel, although government agencies are considering increasing imports of liquefied natural gas to take advantage of a growing global glut.

The falling price of natural gas in the U.S., to about \$4 per one million British thermal units, has helped gas capture an ever-increasing share of power generation. Hardly a week goes by without a company announcing changes that push coal to the sidelines, usually in favor of natural gas, renewables or nuclear plants.

Small Won't Survive

Most big coal-burning utilities have invested billions of dollars to install pollution-control equipment on their largest coal-fired plants. But they are replacing or idling smaller coal plants for which such expenditures can't be justified.

In August, [Xcel Energy](#) Inc., based in Minneapolis, notified regulators it wants to close a coal-burning plant in Boulder, Colo., and convert four units at its Cherokee plant in Denver to burn natural gas instead of coal. Xcel says the changes would cost the company \$1.3 billion but still would be \$225 million cheaper than installing pollution-control equipment on the aging coal units.

The program should help satisfy Colorado state goals to reduce releases of nitrogen oxides, carbon dioxide, sulfur dioxide and mercury. The state is reviewing Xcel's plan, which the utility says could raise customer bills an average of 1% annually for several years.

[Calpine](#) Corp., Houston, says it will convert to gas some of the coal-fired plants in Delaware and New Jersey that it is buying from [Pepco Holdings](#) Inc., in a \$1.65 billion deal. The units are older plants that are in need of upgrades. Calpine says it can change the burners for less than it would cost to add pollution-control equipment like scrubbers.

[Progress Energy](#) Inc. of Raleigh, N.C., intends to close four coal-burning plants and replace two of them with gas-fired plants by 2017. The company says it's cheaper to build gas-fired plants than it is to outfit the coal units with the necessary pollution-control equipment.

Other utilities are backing away from coal projects because the recession is giving them more breathing room to figure out other ways to meet future energy needs.

For example, [CMS Energy](#) Corp., Jackson, Mich., had planned to seek regulatory approval in August to build an 830-megawatt "clean coal" power plant in Bay City, Mich. But it has indefinitely deferred the project, citing slack electricity demand and a forecast for continued low natural-gas prices. As a result, the company says, it's cheaper to buy electricity from others than to build a \$2 billion coal plant.

"We're going to monitor the gas market," says CMS spokesman Jeff Holyfield. "But for now, it doesn't make sense."

Questions of Cost

Not everyone is willing to give up on coal, of course. Many big coal-burning utilities are trying to find ways to use coal more cleanly. But even they have suffered setbacks.

[American Electric Power](#) Co. failed in its bid, in July, to get Virginia customers to pay \$54 million of the cost of creating an experimental carbon-capture-and-storage system at its Mountaineer coal-fired plant in West Virginia. The plant is owned by AEP's utilities in Virginia and West Virginia. But the Virginia utility commission said it wasn't fair to levy so much of the expense on Virginians when AEP customers

in many other states who were not being charged stood to benefit, too. AEP, based in Columbus, Ohio, is appealing the decision.

[Duke Energy](#) Corp. has been hurt by escalating costs at a state-of-the-art coal-gasification power plant under construction in Indiana. The Edwardsport plant, which is more than half complete, is expected to cost about \$3 billion, or 50% more than the \$2 billion original estimate. The new cost estimate exceeds the sum that Charlotte, N.C.-based Duke is being allowed to recover from customers. The Indiana commission was expected to hold hearings this month.

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