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June 24, 2010

Study Says Natural Gas Use Likely to Double

By **MATTHEW L. WALD**

WASHINGTON — Natural gas will provide an increasing share of America's energy needs over the next several decades, doubling its share of the energy market to 40 percent, from 20 percent, according to a report to be released Friday by the [Massachusetts Institute of Technology](#).

The increase, the report concluded, will come largely at the expense of [coal](#) and will be driven both by abundant supplies of [natural gas](#) — made more available by shale drilling — and by measures to restrict the carbon dioxide emissions that are linked to [climate change](#).

In the long term, however, the future may be dimmer for natural gas if stricter regulations are put in place to cut greenhouse gas emissions by 80 percent below 1990 levels by 2050 — a goal set by [President Obama](#). Although lower in carbon than coal, natural gas is still too carbon-intensive to be used under such a target absent some method of carbon capture, the authors of the report concluded.

The report, one of a series on energy resources, is the result of a two-year effort by 14 prominent energy experts, led by Ernest J. Moniz, an M.I.T. professor who is a former under secretary of energy. Previous reports focused on nuclear power and coal. The report was financed in part by the American Clean Skies Foundation, which represents the interests of the natural gas industry.

In the report, the authors point out that there is a mismatch between current energy practice in the United States and the nation's energy goals. As zero-carbon wind is added to the national

electric system, the report said, it is being used to reduce consumption of natural gas, which is relatively benign in carbon impact, rather than coal, which has twice as much carbon dioxide per kilowatt-hour. The reason is that gas is more expensive than coal.

Gas will eventually replace some of the coal used to make electricity, the study predicts, and gas will be the benchmark against which other carbon-saving technologies like wind or nuclear will be measured. But those other technologies will eventually be needed.

Some companies that make equipment for coal- and gas-fired generating stations say that the switch to gas from coal **has already begun**. One reason is that switching to gas will make it easier to meet air quality standards for conventional pollutants, like smog and mercury.

The study noted that the only natural gas car sold by a major car company in the United States, the **Honda GX**, costs an extra \$5,500, while the VW Passat TSI Eco-fuel, sold only in Europe, costs only \$3,700 extra. Converting a gasoline vehicle to natural gas is also much more expensive here than in Europe, the report said, and it suggests that the reasons be examined.

High-mileage fleet vehicles, like taxis, could be economically converted to natural gas, the study said. But the recent history of natural gas vehicles in the United States suggests that buses and small delivery vehicles are more likely candidates for conversion than the great mass of privately owned vehicles.

Natural gas vehicles emit about three-quarters as much carbon dioxide per mile as gasoline-powered ones. The switch would not have a large impact on carbon — only about a ton per vehicle per year for a typical American car, according to the report.

“There is no longer any doubt that we have the capacity to repower our electricity sector and move away from dirtier fuels,” said Gregory C. Staple, the chief executive of the American Clean Skies Foundation, in a statement.

T. Boone Pickens, the Texas oilman, said that the study paid too much attention to the electricity sector and not enough to using natural gas as a substitute for gasoline and diesel in transportation.

“You’ve got plenty of gas to do both,” he said.

Natural gas has an erratic price history, which has made some American electric utilities nervous about overreliance. But “abundant global natural gas resources imply greatly expanded natural gas use,” the study concluded.

Globally, the average projection of the amount of recoverable gas represents about a century and a half’s supply at current rates of consumption, the report noted. In the United States, the amount of recoverable gas is equal to 92 times the consumption last year, the study said.

Especially in the United States, one reason for new optimism about supplies is the success that drillers have had exploring shale formations for natural gas. Shale drilling requires fracturing the rock, a technique called “fracking.” The method has raised concern about damage to underground water supplies and faces opposition from environmental groups, especially in areas that do not now have oil and gas drilling.

Somewhat like oil, natural gas deposits are disproportionately concentrated in the Middle East. Natural gas can be chilled until it turns into a liquid and then shipped by tanker, and the American capacity to import such gas has grown, but a long supply chain for natural gas could come to represent another energy vulnerability, the report said.