Energy

How and Why U.S. Greenhouse Gas Emissions Are Falling

Recent data clarify the trends causing emissions to shrink to their lowest level since 1995.

by Mike Orcutt May 6, 2014

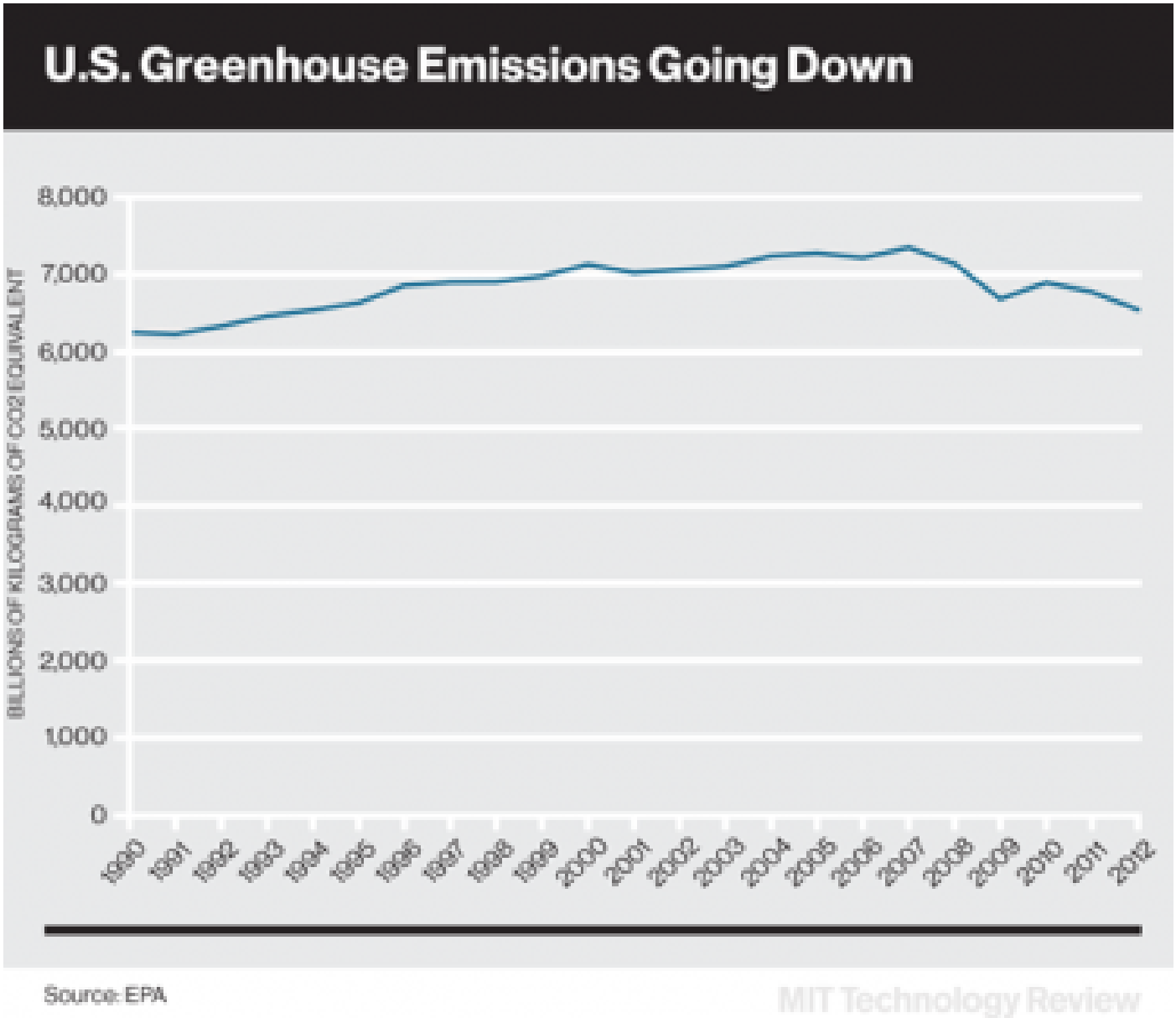
Greenhouse gas emissions, in the U.S. and elsewhere, need to come down significantly by 2020 to avoid the worst consequences of climate change.

Greenhouse gas emissions in the United States fell to their lowest level in 17 years in 2012, according to a new report from the Environmental Protection Agency. Additional data from the U.S. government show why: the trend is largely the result of a rapid drop in coal-fired electricity, and a corresponding rise in electricity generated by cleaner fuels, especially natural gas.

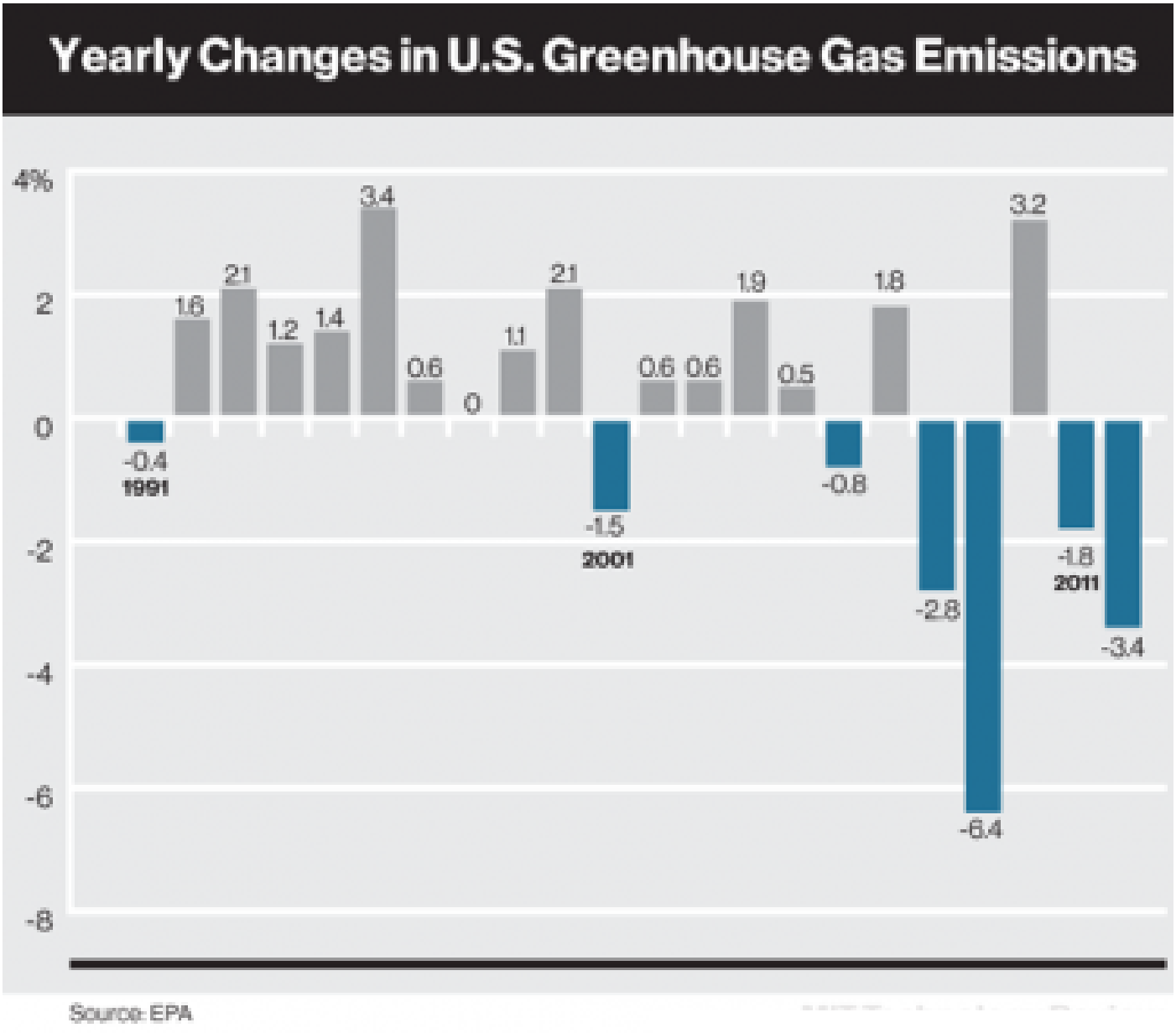
The picture is less encouraging globally. Although a report by Reuters shows that greenhouse gas emissions in industrialized nations fell by 1.3 percent in 2012, with the biggest drop being seen in the United States, energy-related carbon dioxide emissions still rose 1.4 percent worldwide that year, according to a recent report by the International Energy Agency.

The EPA's annual greenhouse gas emissions inventory, released in April, shows that total emissions by the U.S. in 2012 were just 4.7 percent larger than in 1990, the year of the EPA's first report, after having risen to 17.5 percent above 1990 levels in 2007. The year-to-year decrease seen in 2012 was the largest one recorded, aside from 2009, when the economic recession caused a big drop in energy demand. The chart below shows annual greenhouse gas emissions by the U.S. since 1990.

The chart below shows, in greater detail, how greenhouse gas emissions have risen and fallen over the past 23 years.



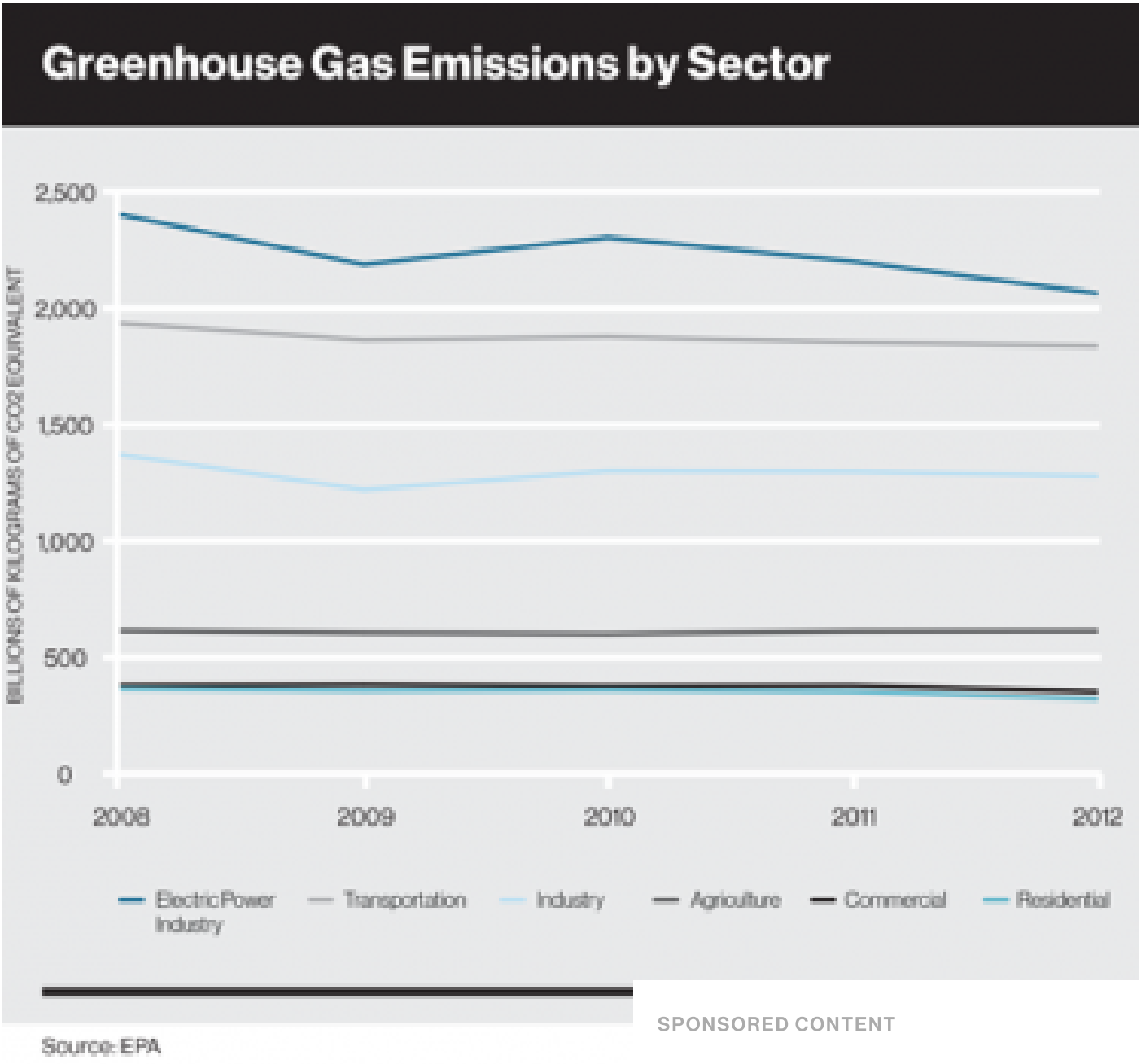
Examining emissions by sector, as shown below, reveals that changes in the electric power industry have played the largest role in reducing emissions over the past several years.



The shift from coal to natural gas in electricity pr[o]duction began in 2009 as the price of coal went up and the price of natural gas went down significantly, and gas has remained relatively chea[p].

The one recent blip in U.S. emissions came in 201[0] when the economy rebounded with the economy, and coal consumption rose again. But the following year the shift away from coal continued, with electricity generators using 5.7 percent less coal than in 2010, and 2.5 percent more natural gas.

In 2012, the switch to natural gas from coal was in full force (See "King Natural Gas"). Coal-fired generation dropped by 12.3 percent, while gas-fired electricity production increased by 20.4 percent. During April of that year gas pulled even with coal for electricity generation for the first time since the Energy Information Agency started collecting data.

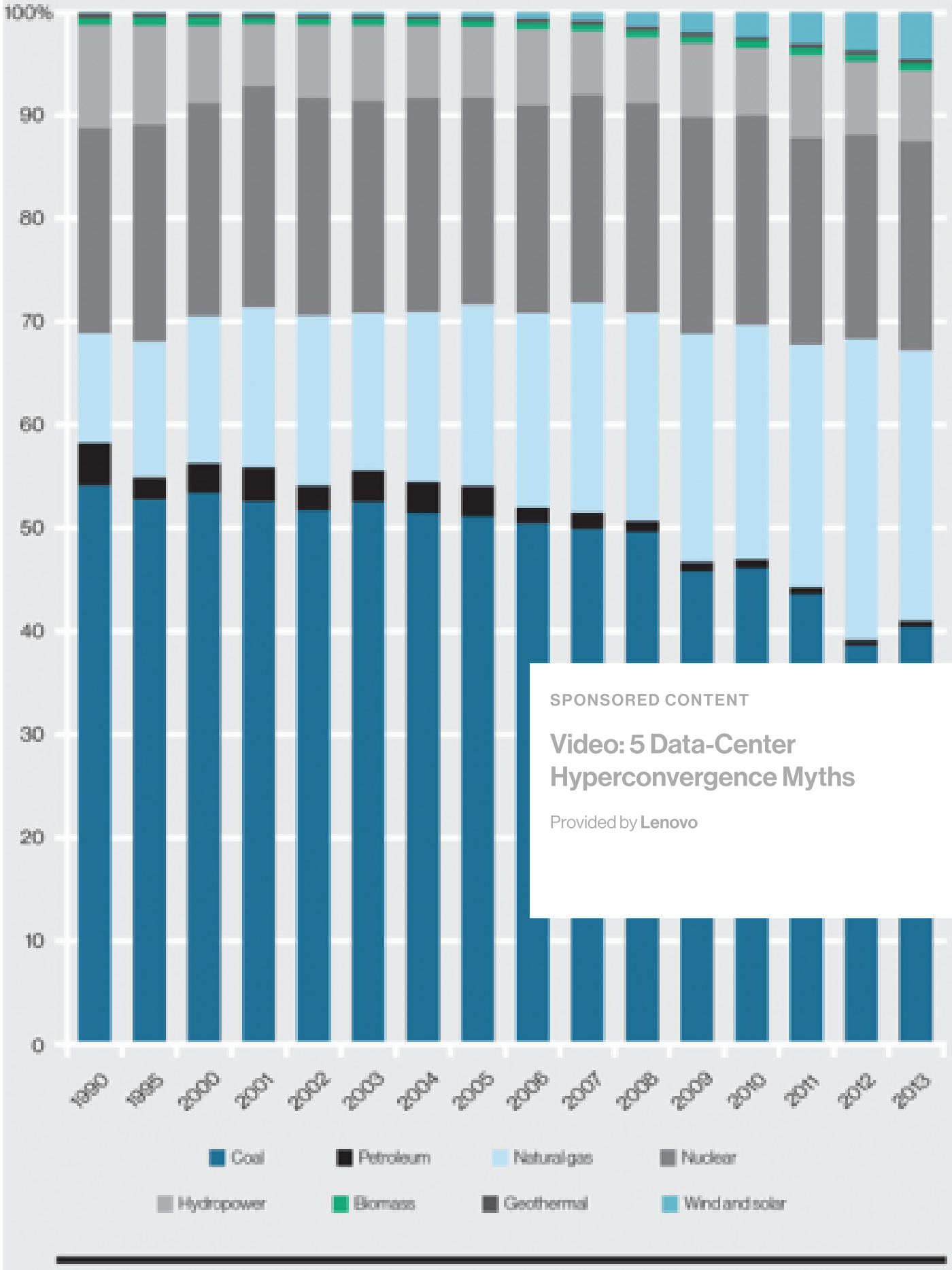


Source: EPA

Since the EPA began publishing its emissions inve
of electricity has fallen from 54 percent to around
from gas has grown from about 11 percent to 26 p
period. Both trends are seen in the chart below.

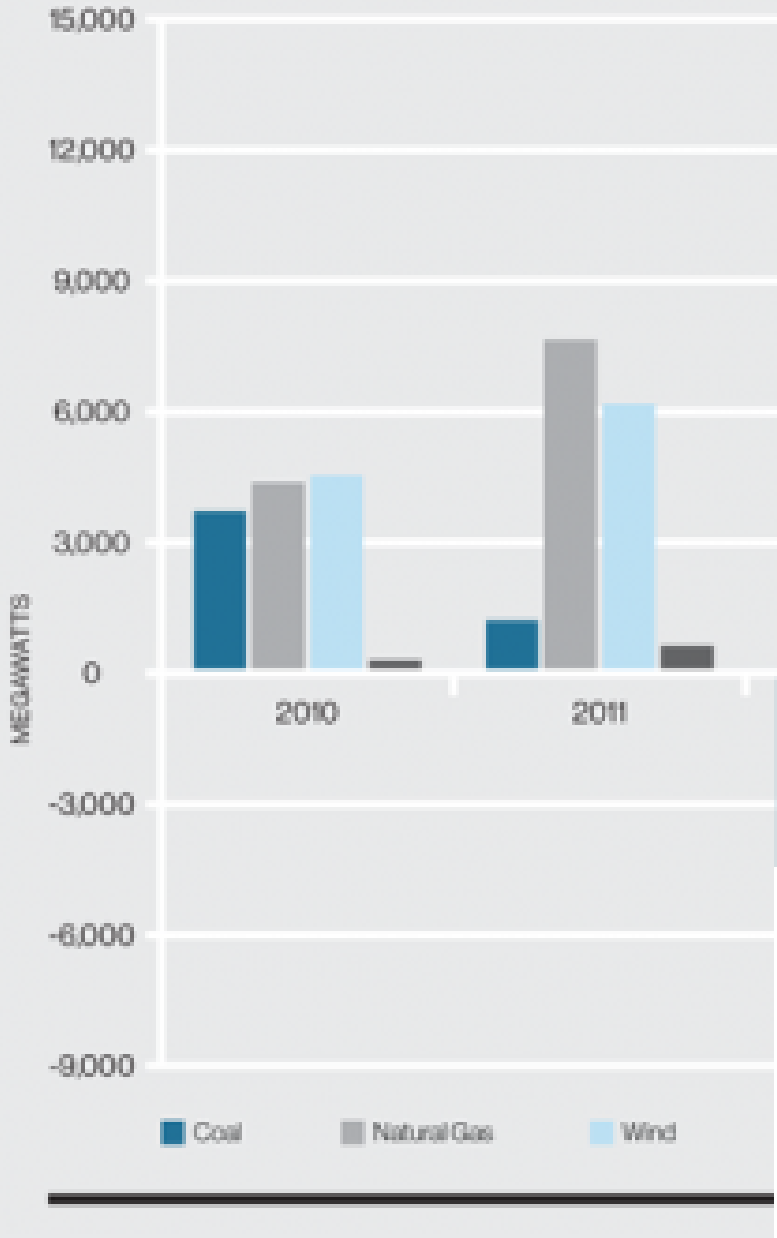
Wind and solar are also gaining momentum as electricity sources. Though they still accounted for only 4.5 percent of 2013's total, the amount of electricity generated from wind and solar power has increased more than 950 percent in the U.S. since 2005. Wind and solar also now account for a significant portion of new electricity generation capacity added each year.

Coal's Decline in Electricity Generation



Source: EIA

New Capacity in the U.S. on the Rise



Source: EIA

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Can we transform how we power and feed the world in time to head off climate change?