

Fueling up

The Economic Implications of the American Oil & Gas Boom

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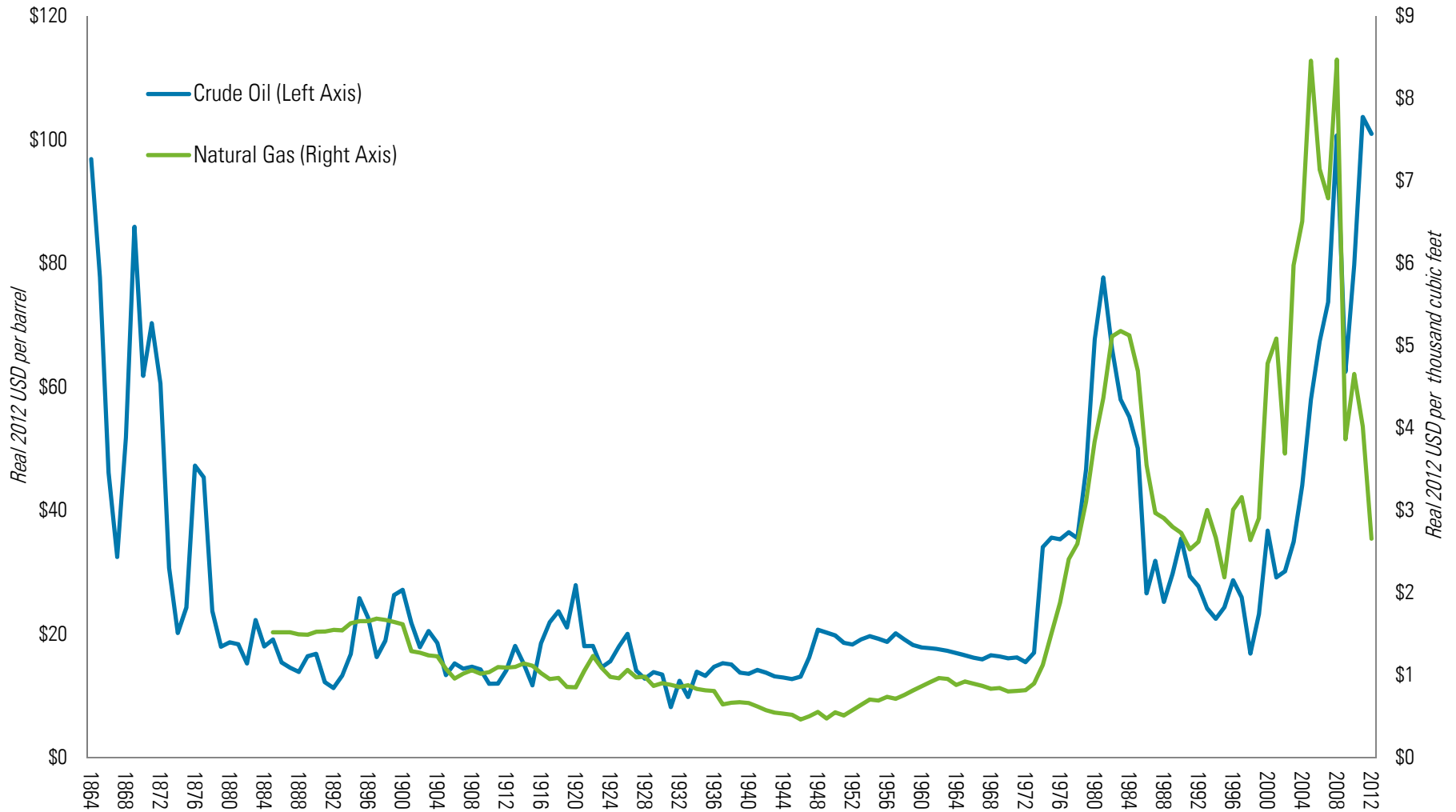
Peterson Institute | Washington, DC

The Dark before the Dawn



Oil and natural gas prices

Real 2012 USD



Source: EIA, BLS, HSUS



President Bush calls for an end to oil

2006 State of the Union Address

Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world.... By applying the talent and technology of America, this country can dramatically improve our environment, move beyond a petroleum-based economy, and make our dependence on Middle Eastern oil a thing of the past.

—President George W. Bush

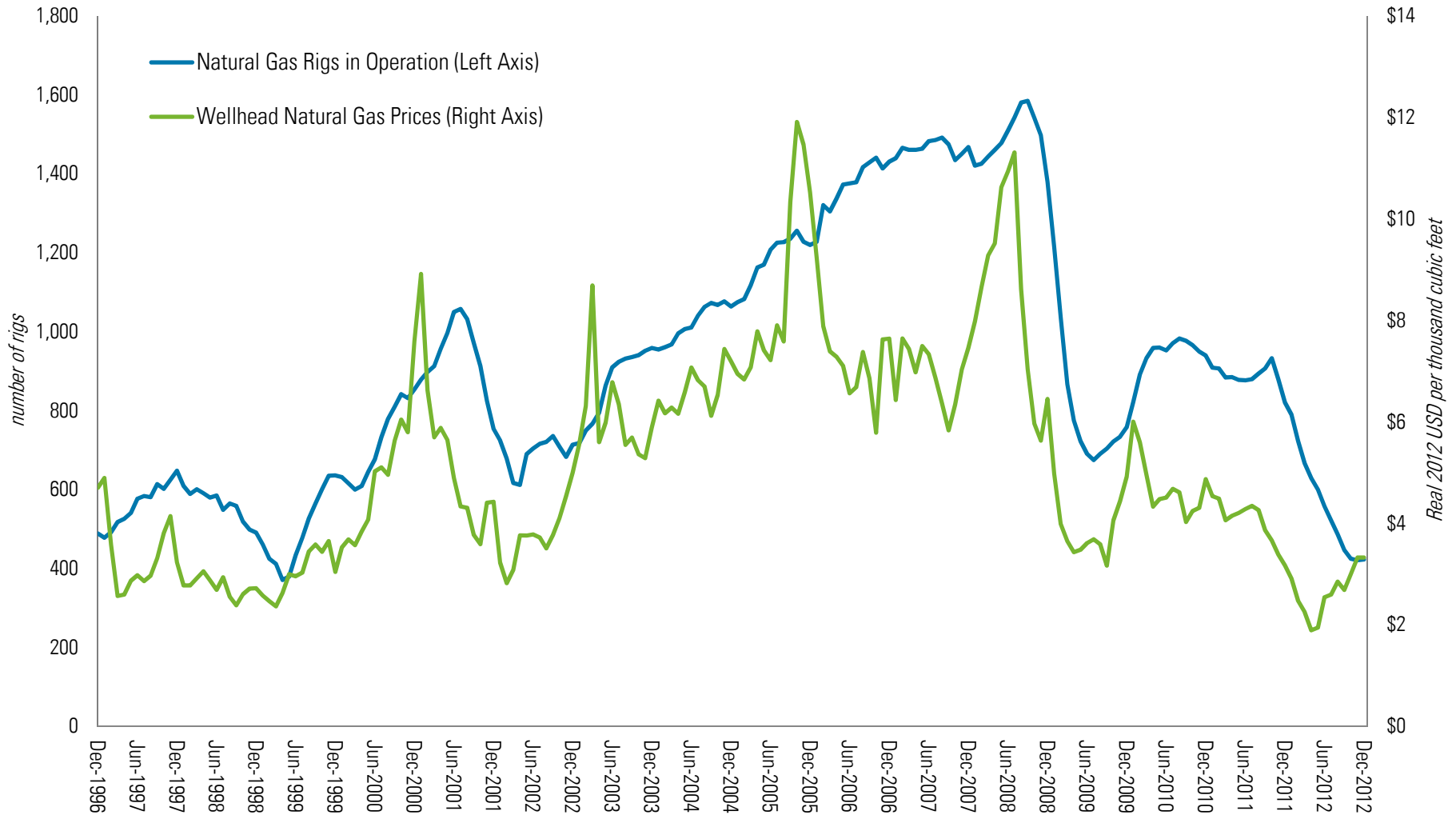


An Oil & Gas Renaissance



High gas prices catalyze upstream investment

Natural gas prices and rig count

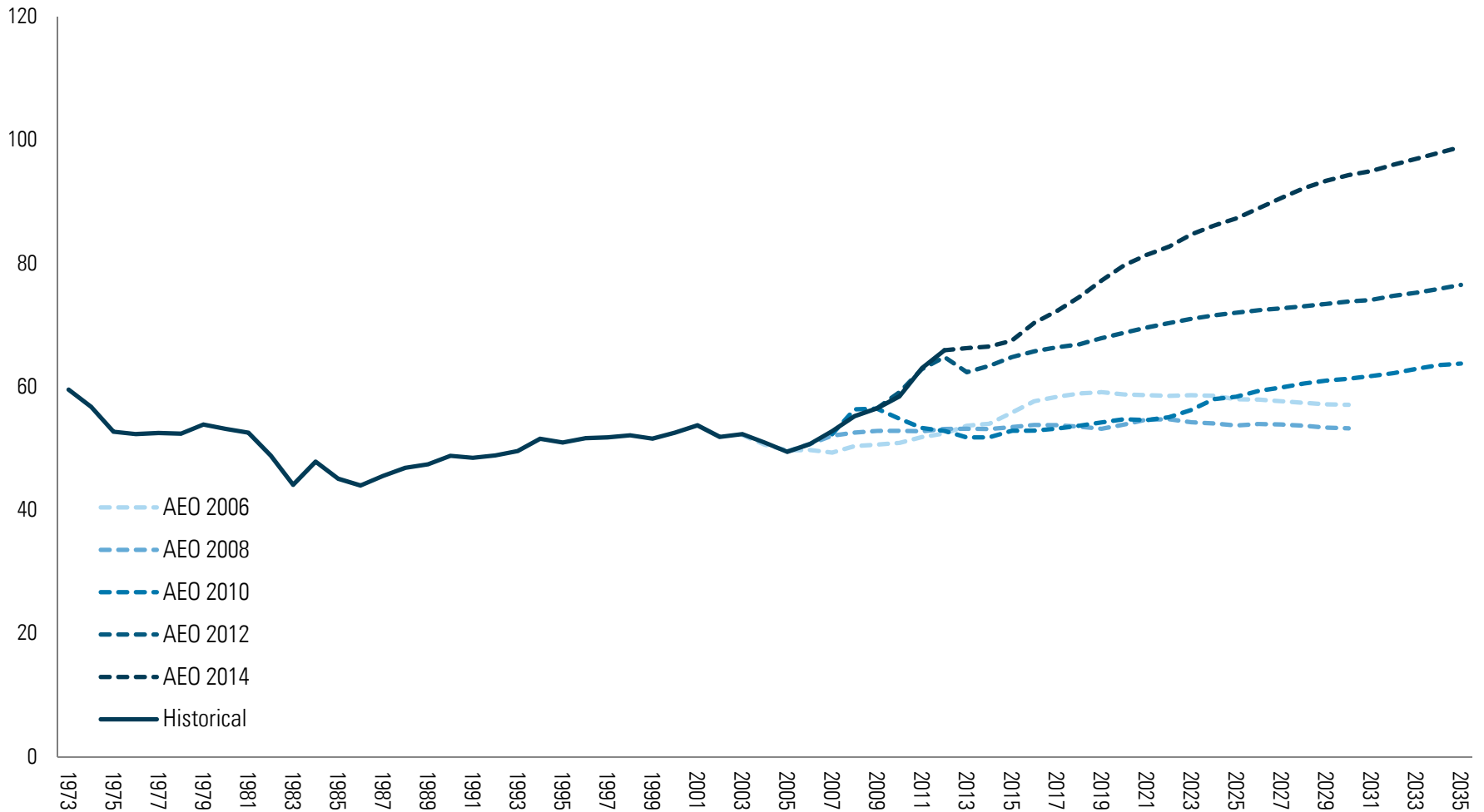


Source: EIA



EIA natural gas production forecasts

Billion cubic feet per day

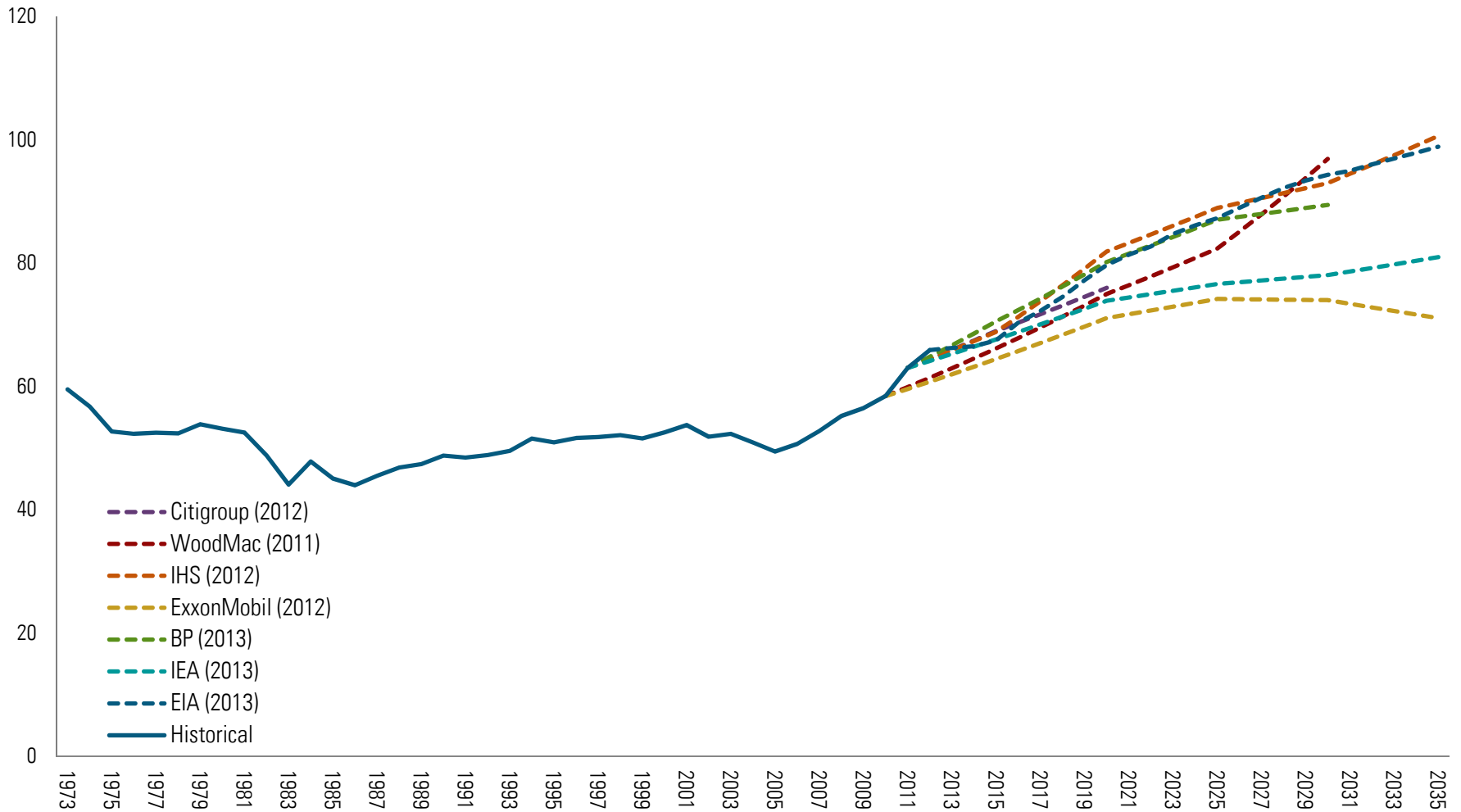


Source: EIA



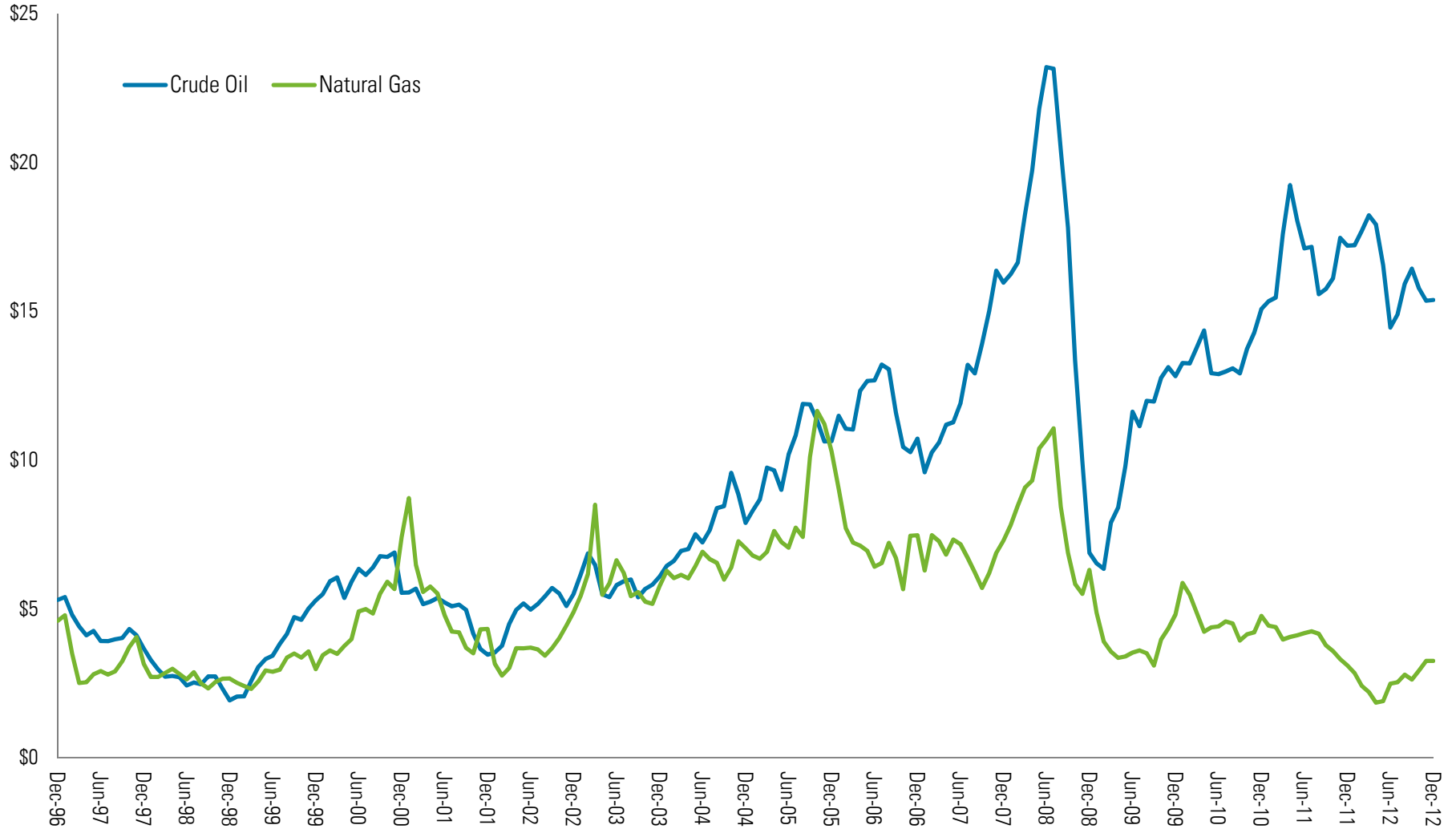
Recent natural gas production forecasts

Billion cubic feet per day



Oil and gas prices part ways

Real 2012 USD per MMBTU

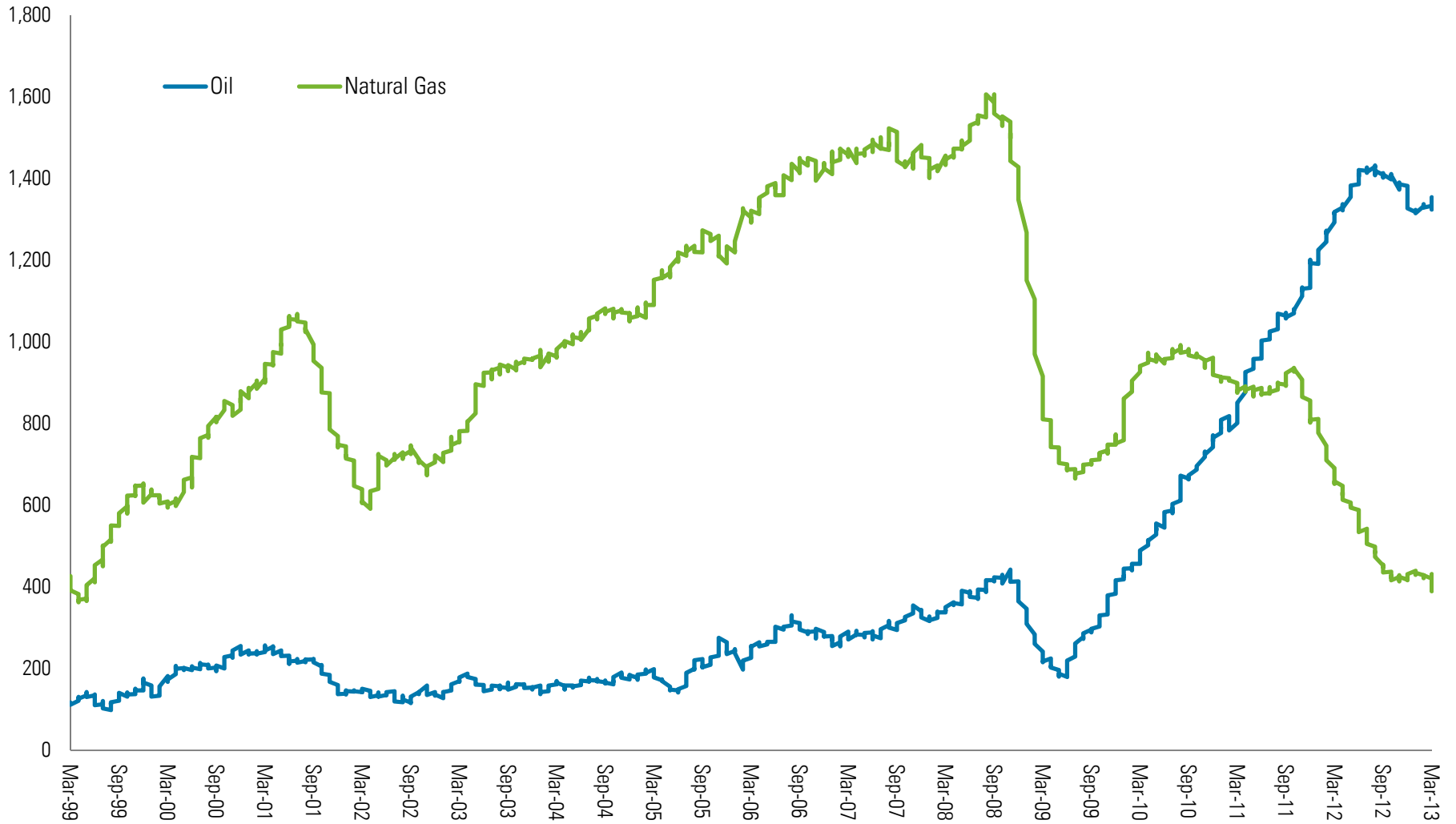


Source: EIA, BLS



Turning the focus to oil

Number of active rigs

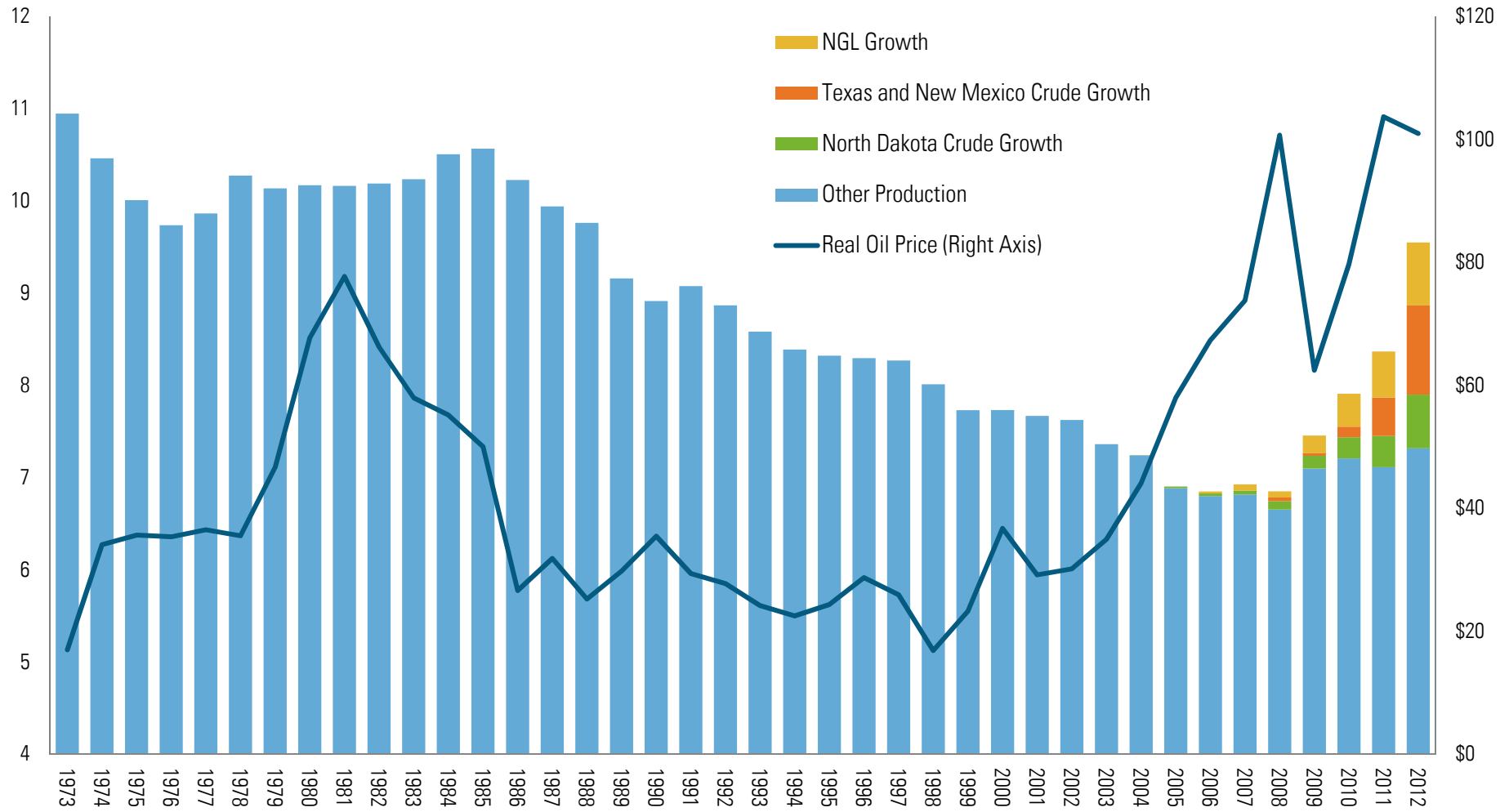


Source: Baker Hughes



A turnaround in US oil supply

Million bbl/d of production

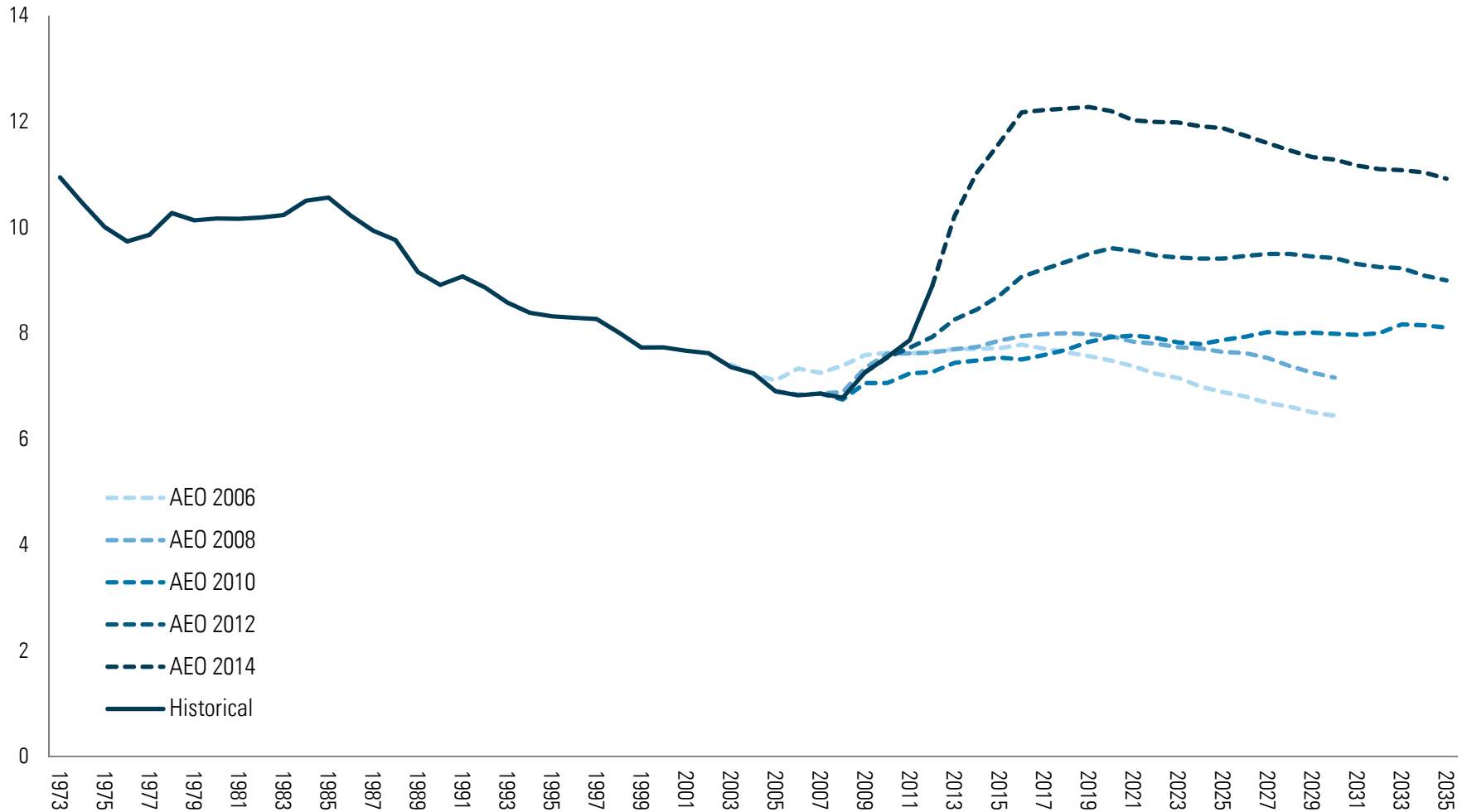


Source: EIA



EIA oil production forecasts

Million bbl/d

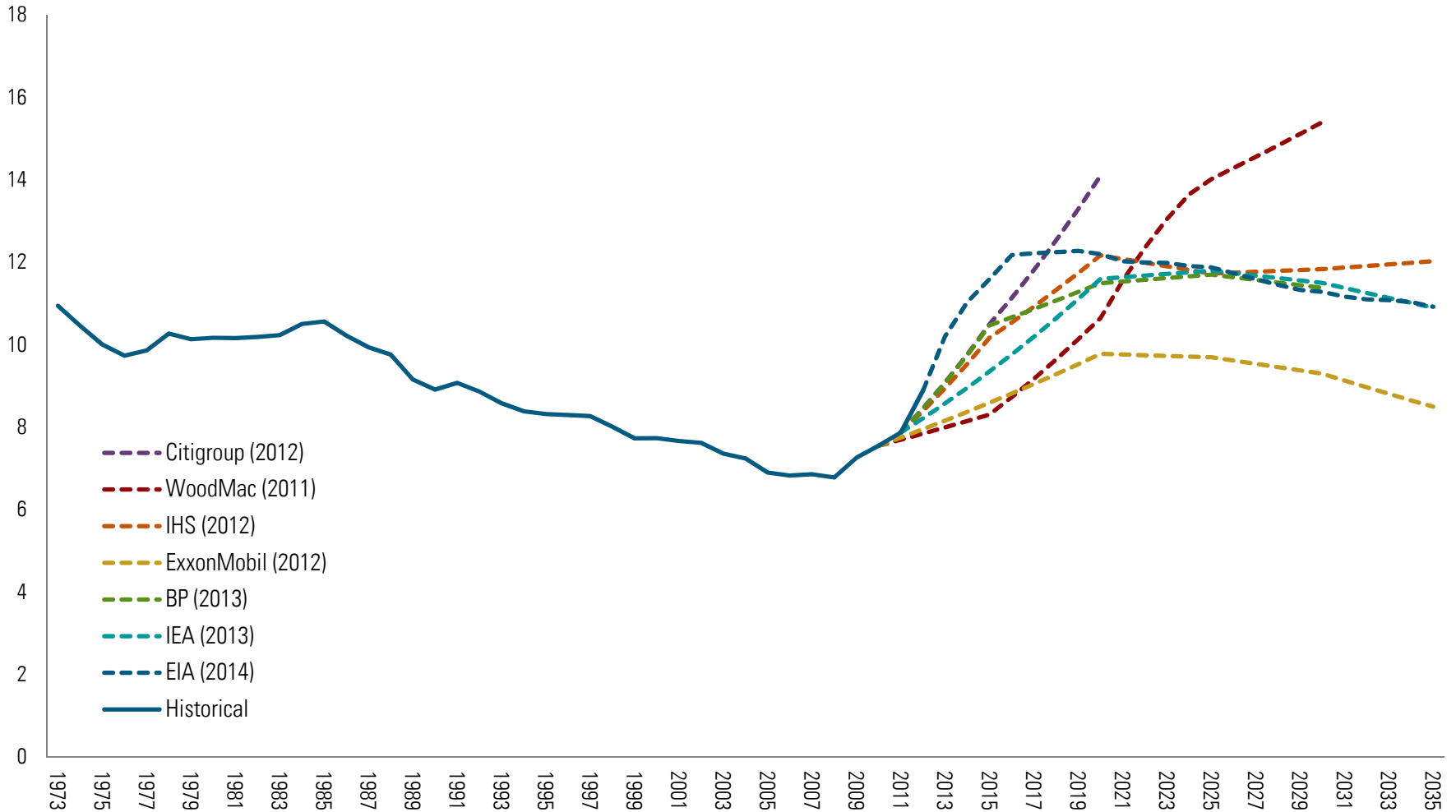


Source: EIA



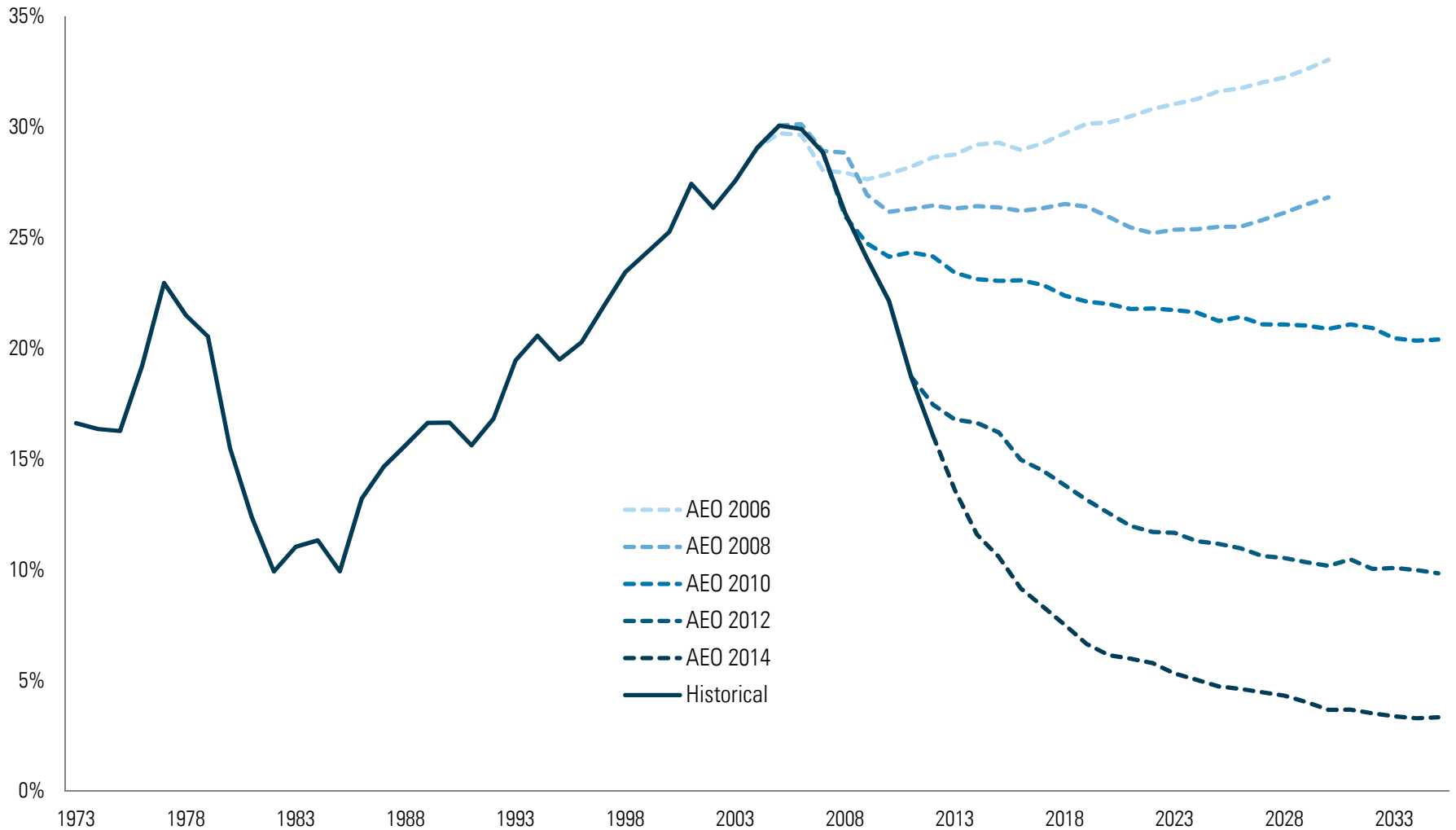
Recent oil production forecasts

Million bbl/d



Changing outlook for US dependence on imported energy

Share of total consumption



Source: EIA

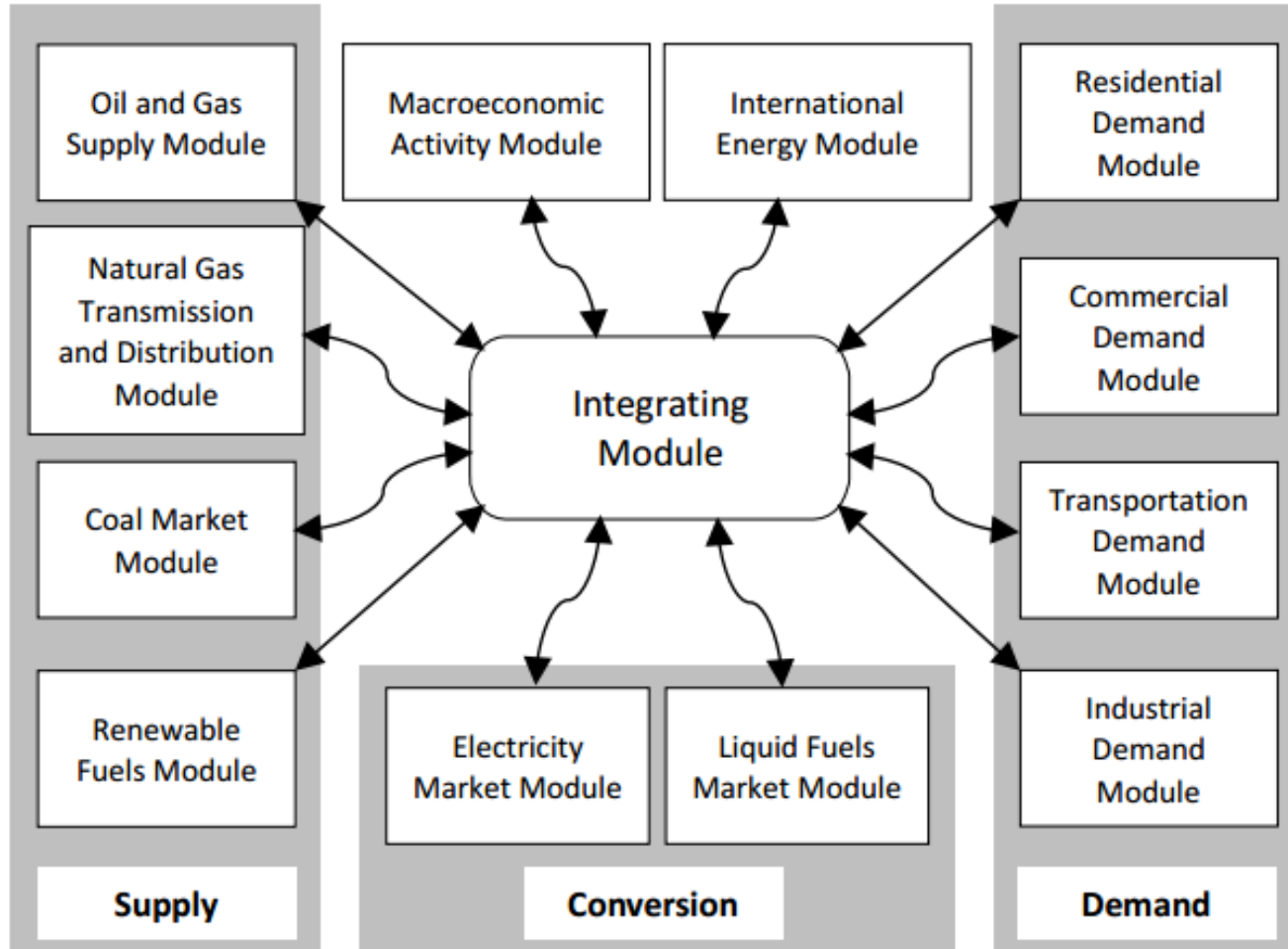


Modeling Framework

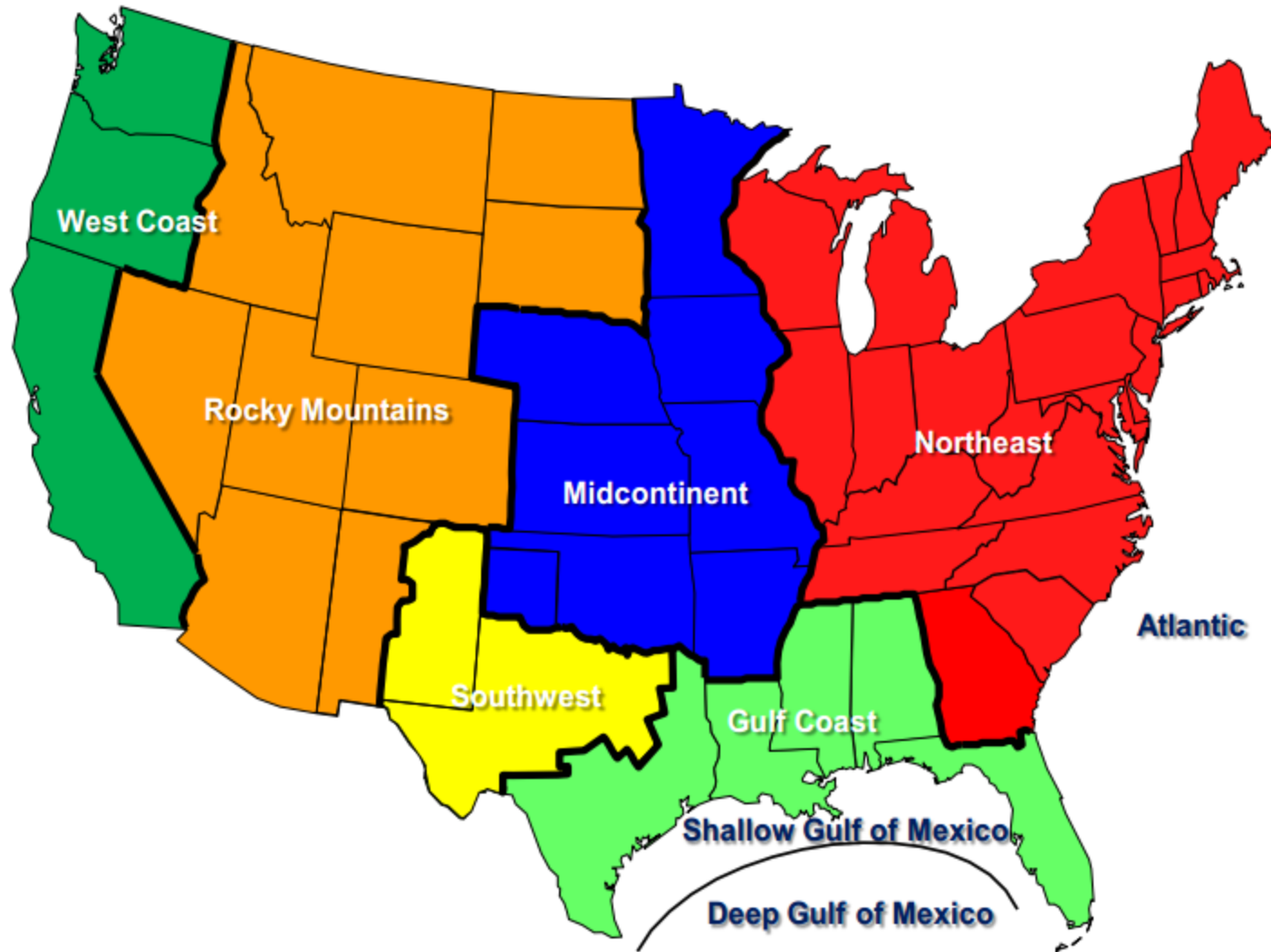


The National Energy Modeling System (NEMS)

Basic structure

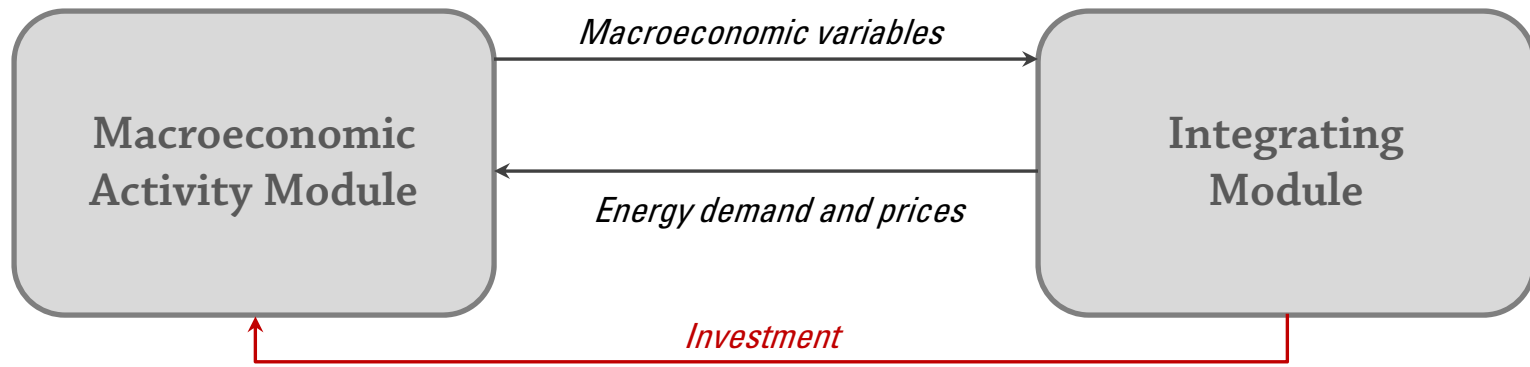


Oil and gas supply module regions



Macroeconomic Activity Module

Interaction with NEMS

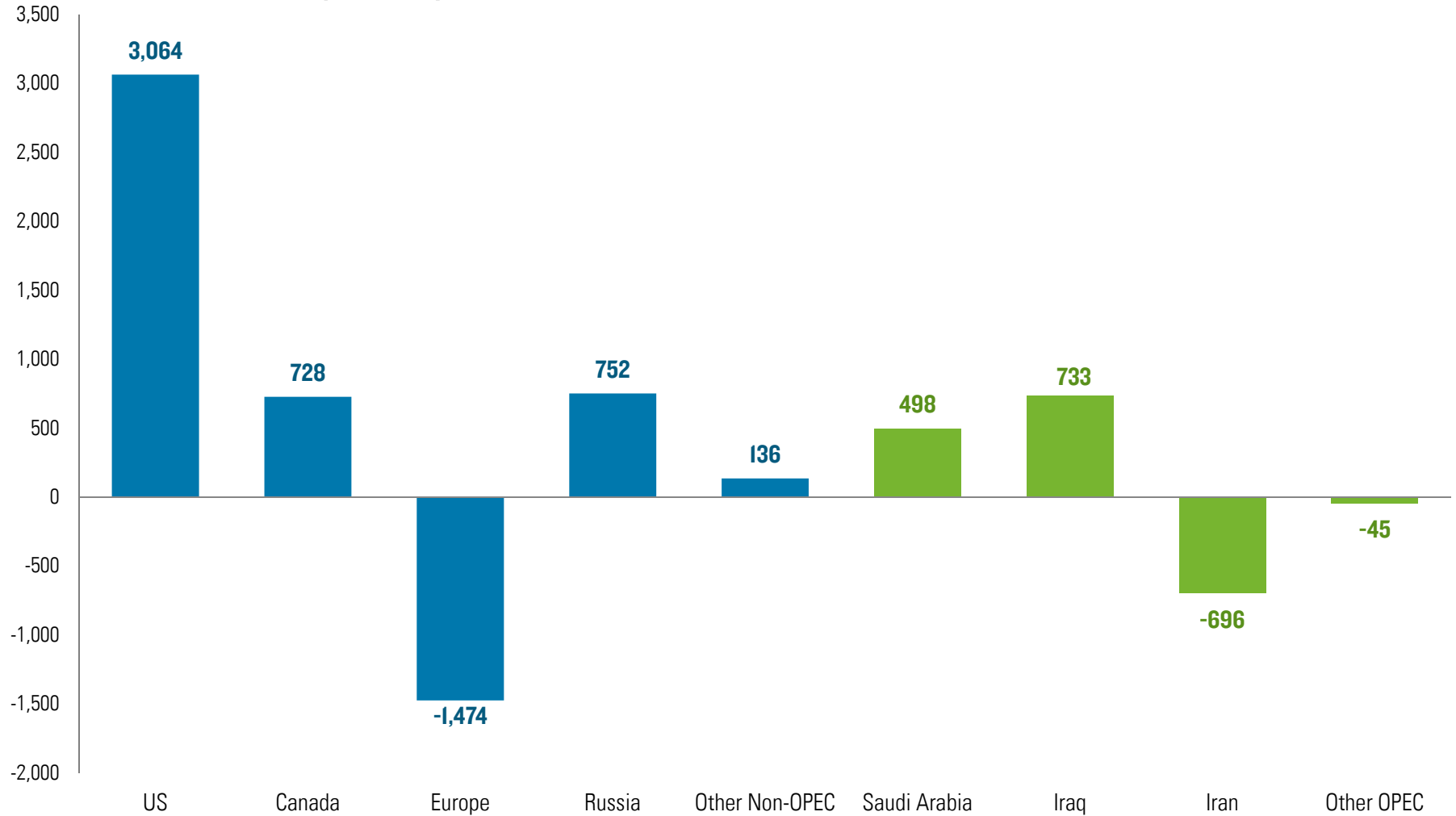


Economic Impact



Change in global oil production, H1 2013 vs. H1 2008

Thousand barrels per day

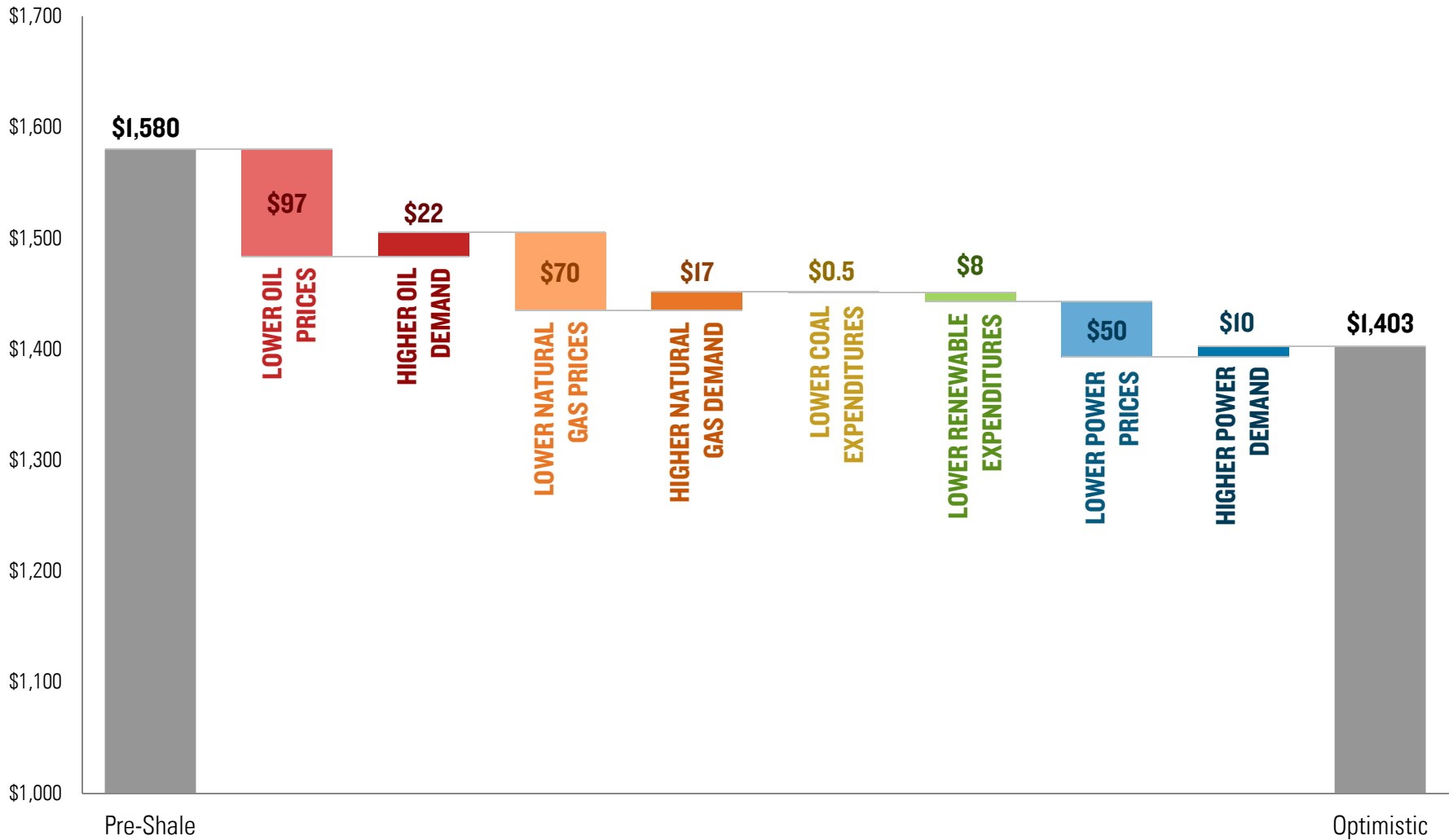


Source: EIA



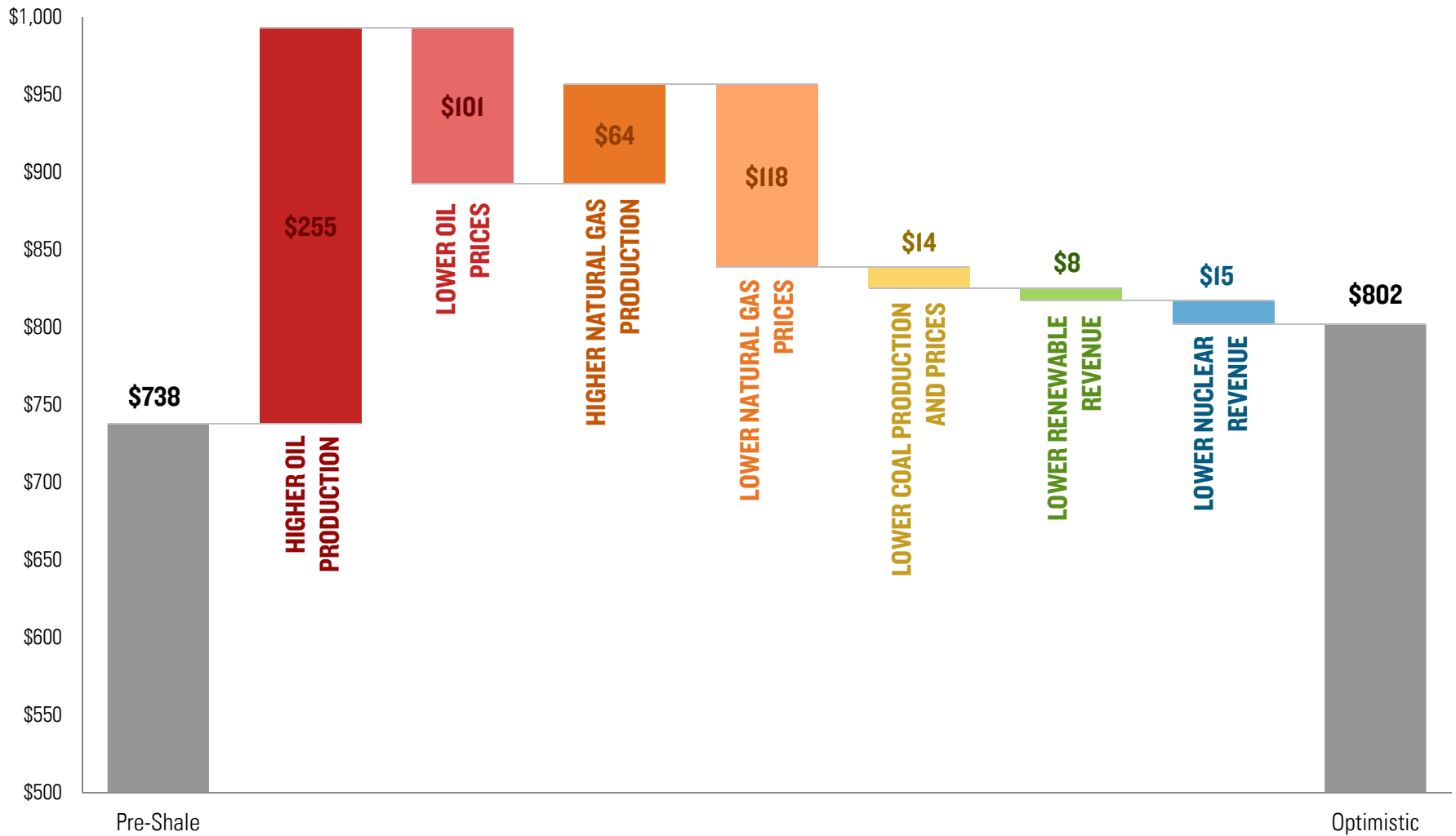
Change in consumer expenditures

Billion USD, 2013-2035 average



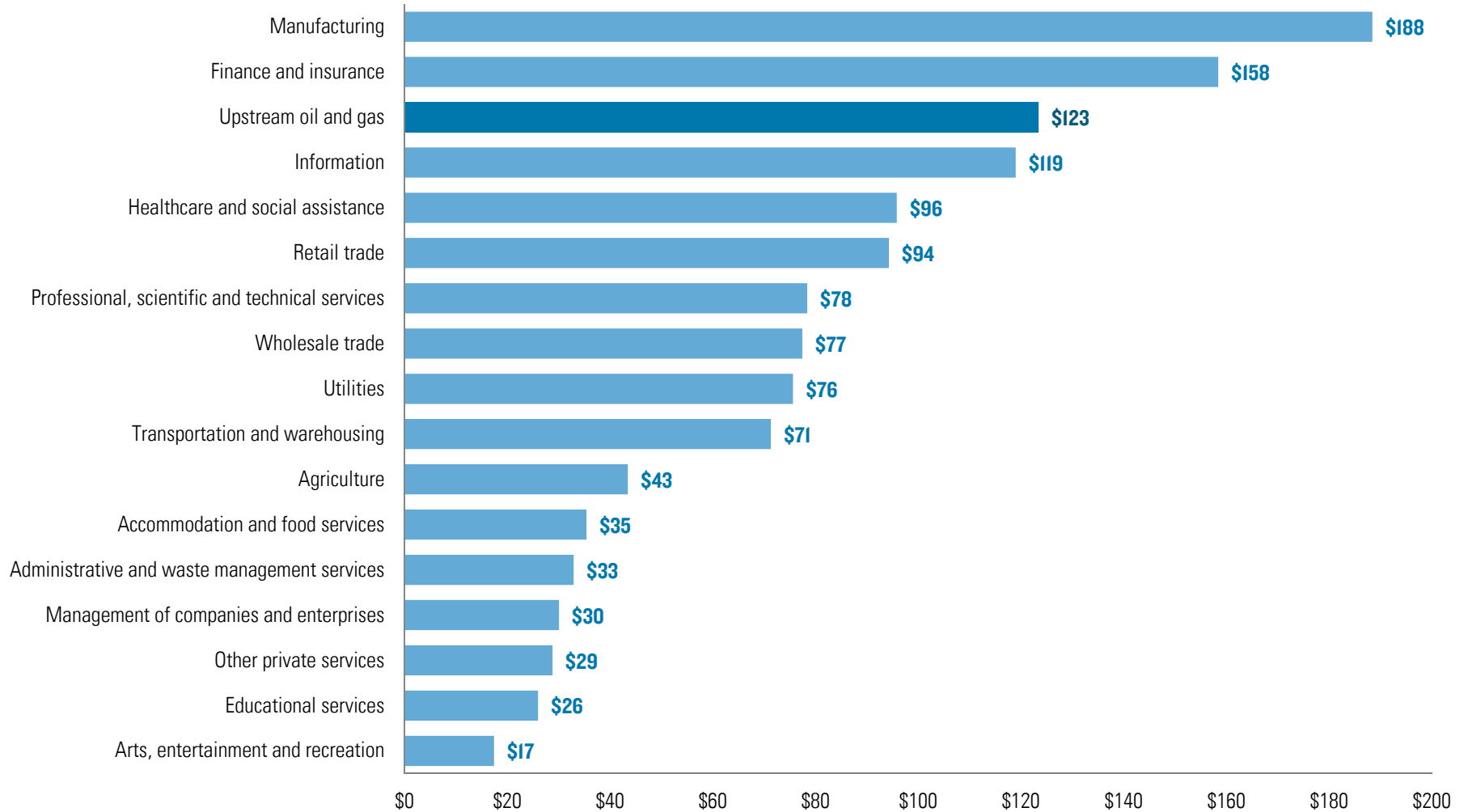
Change in producer revenue

Billion USD, 2013-2035 average



Fixed asset investment by industry

Billion 2005 chained dollars

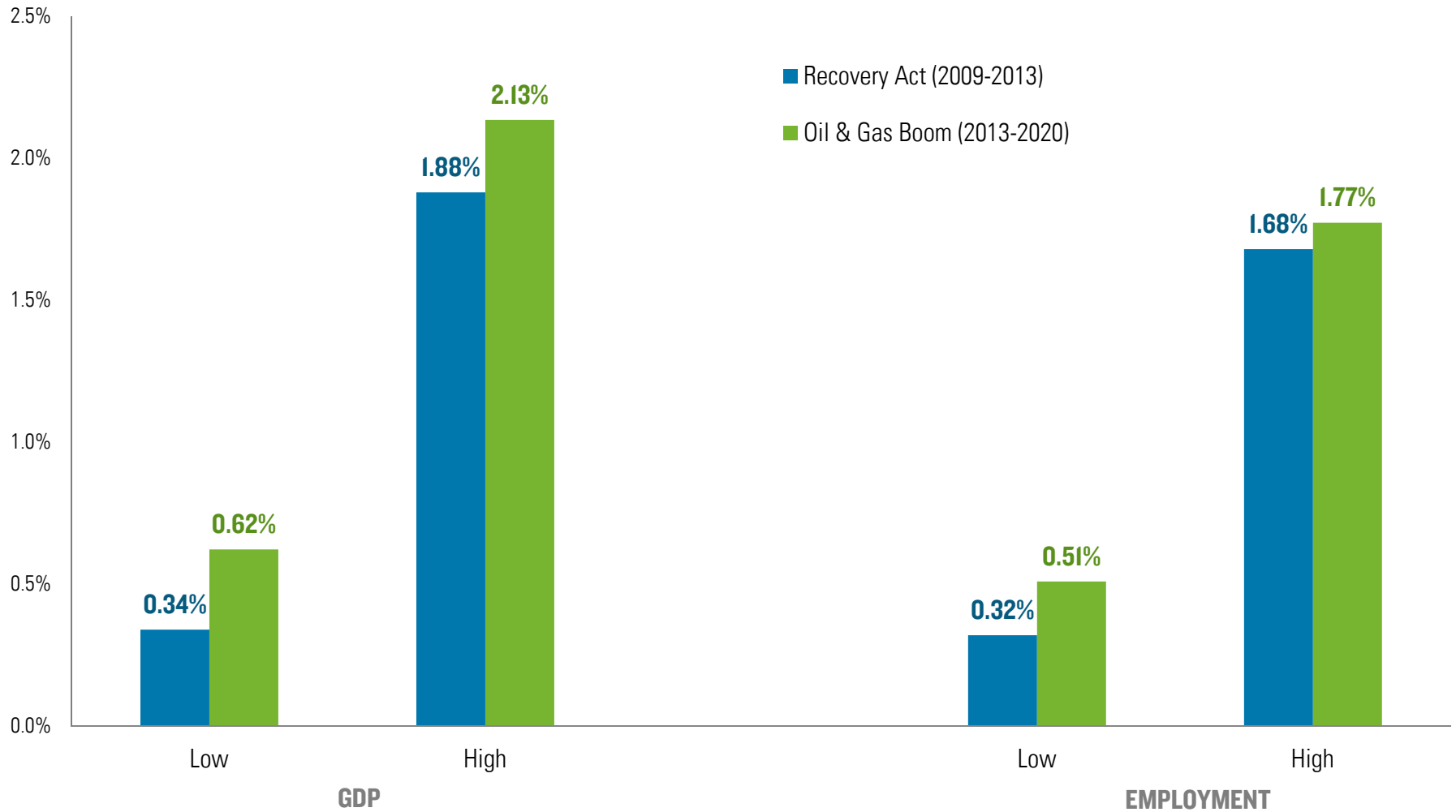


Source: BEA



Textbook stimulus

Impact of the oil and gas boom vs. the American Recovery and Reinvestment Act

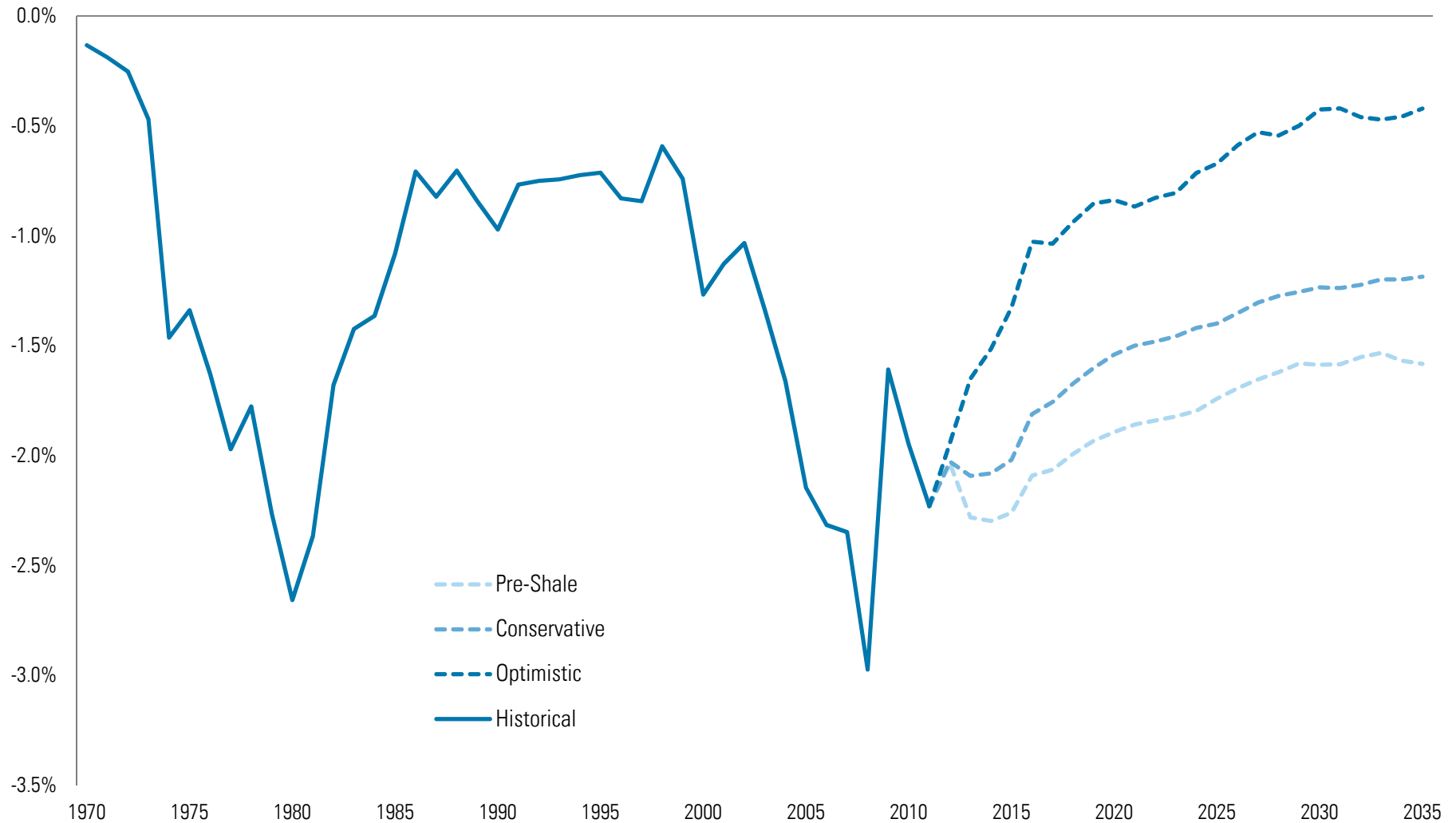


Source: Houser and Mohan



Energy trade deficit

As a percent of GDP



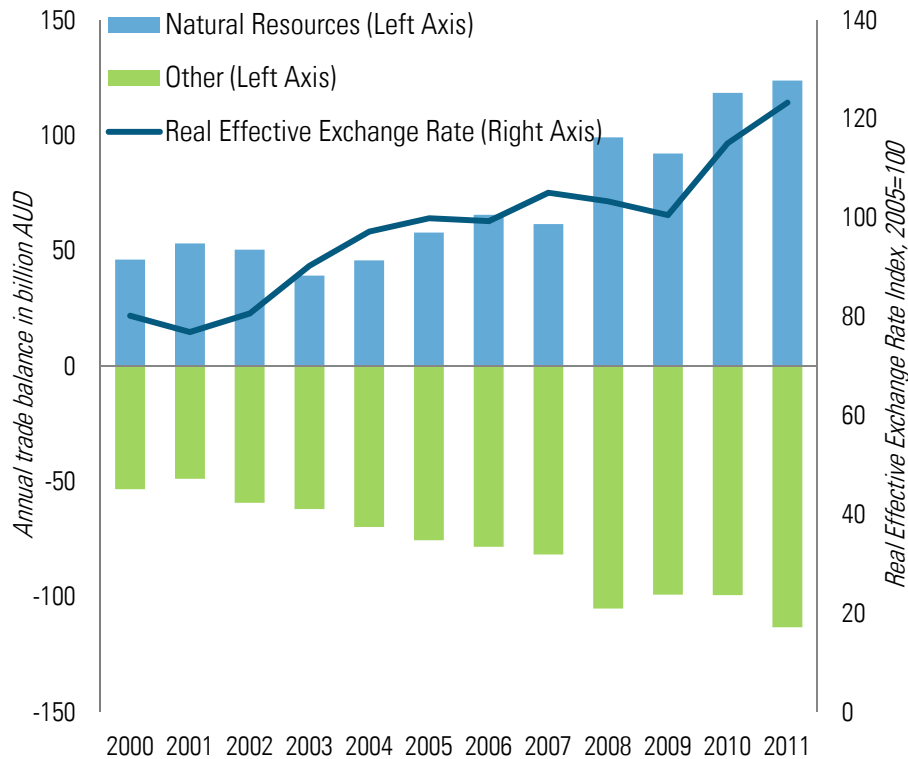
Source: Houser and Mohan



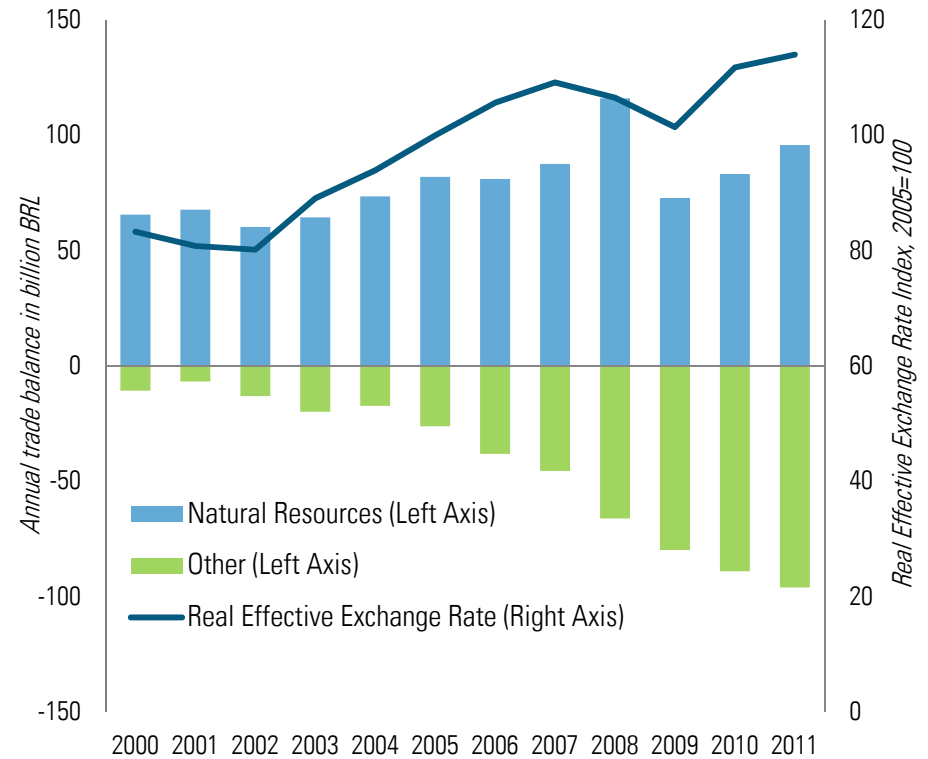
Dutch disease or Dutch sniffle?

Recent precedents

AUSTRALIA



CANADA

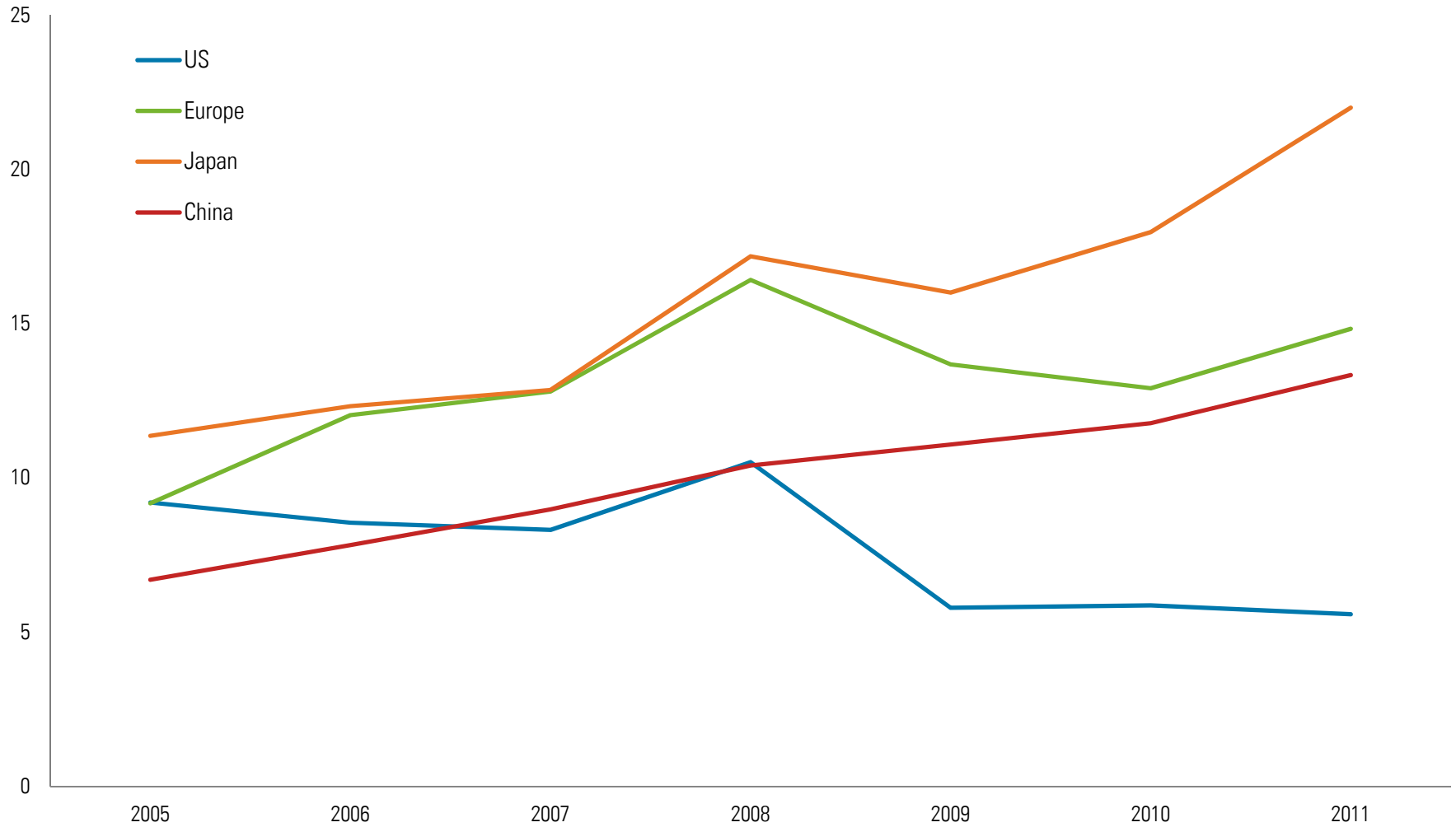


Source: IMF, UN Comtrade



Natural gas prices for industrial consumers

USD per MMBTU

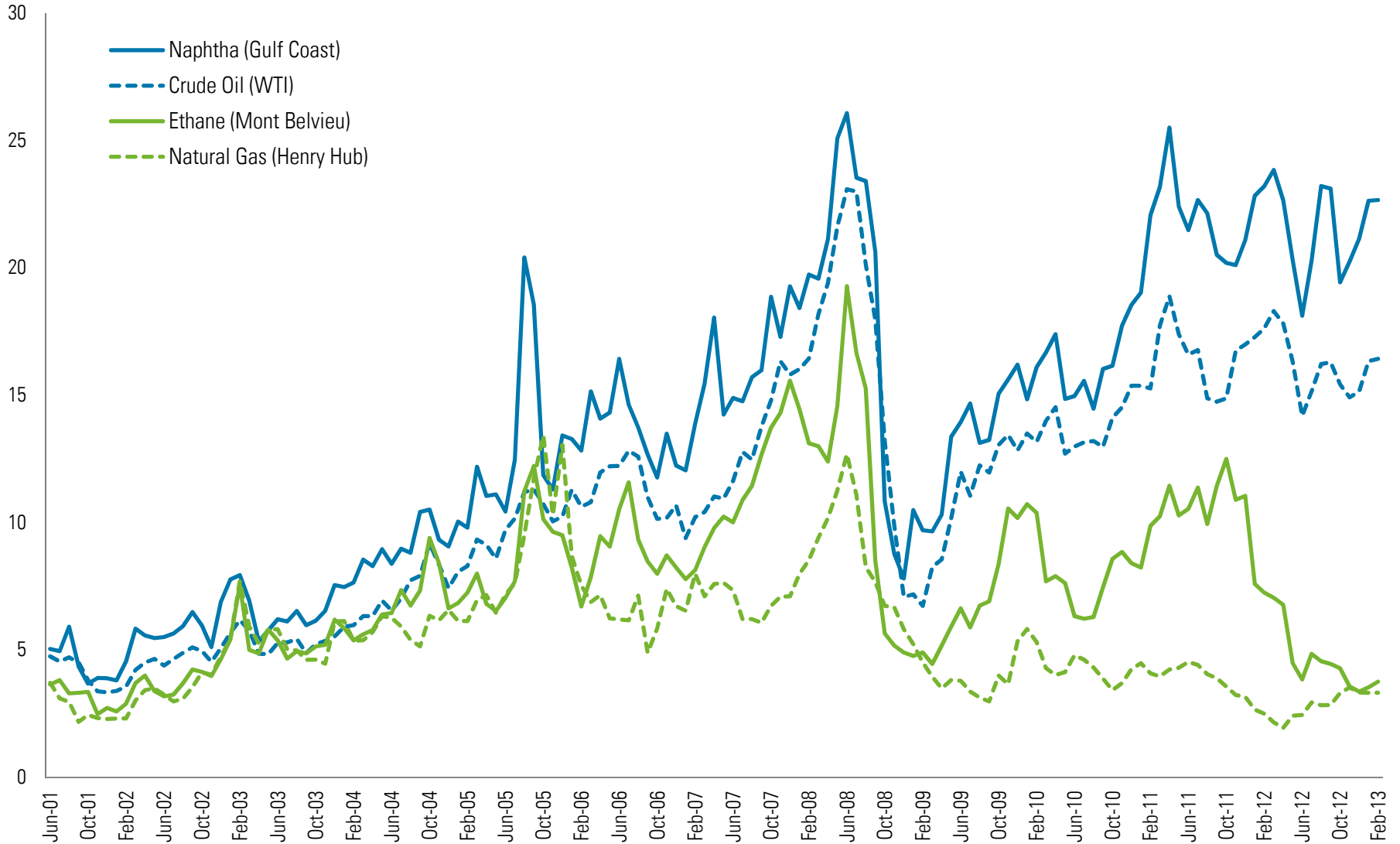


Source: EIA, IEA



A boon to US chemicals production

Feedstock cost, USD per MMBTU

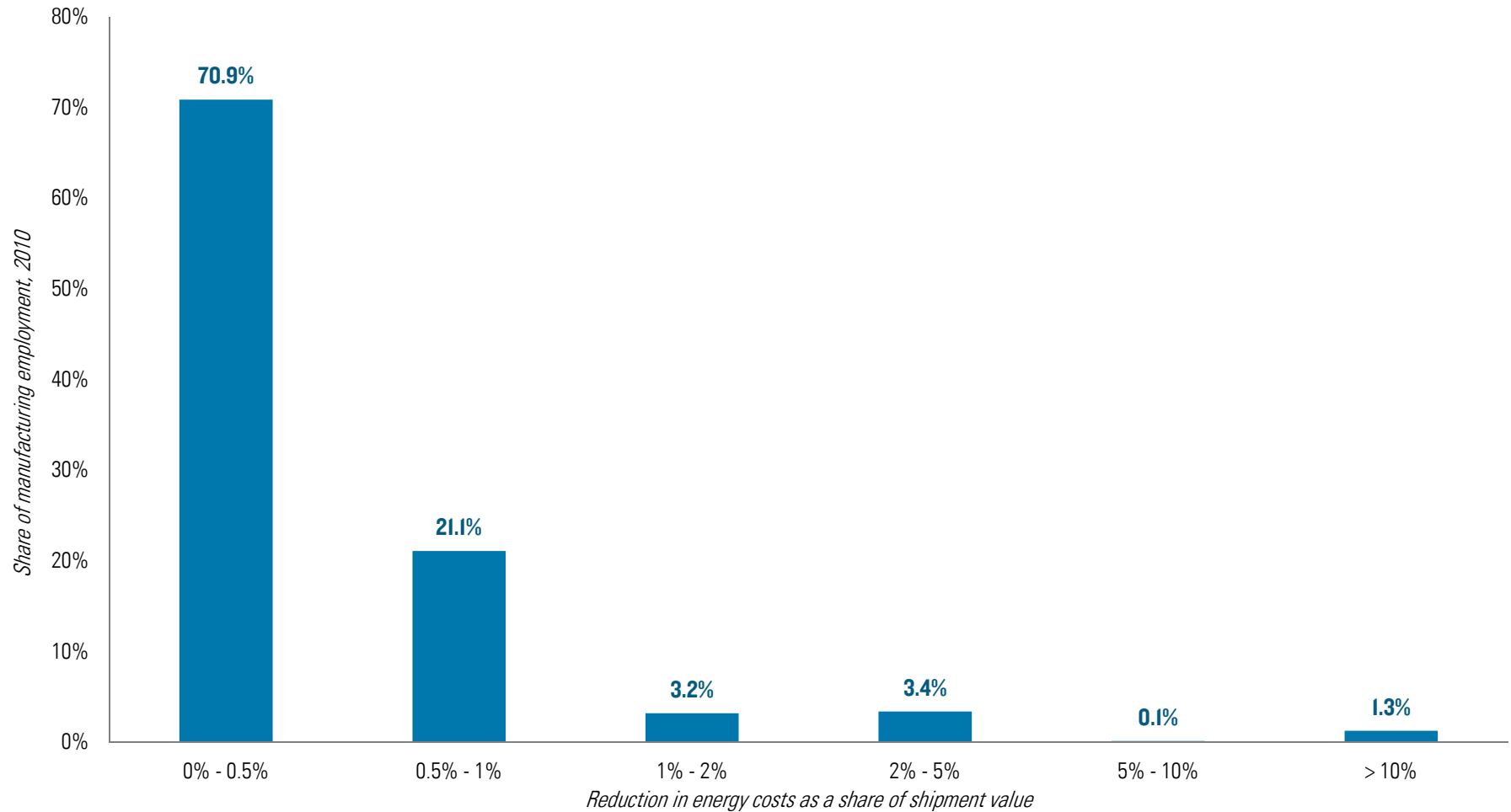


Source: EIA, Bloomberg



Energy-intensive industry in perspective

Potential reduction in energy costs as a share of shipment value

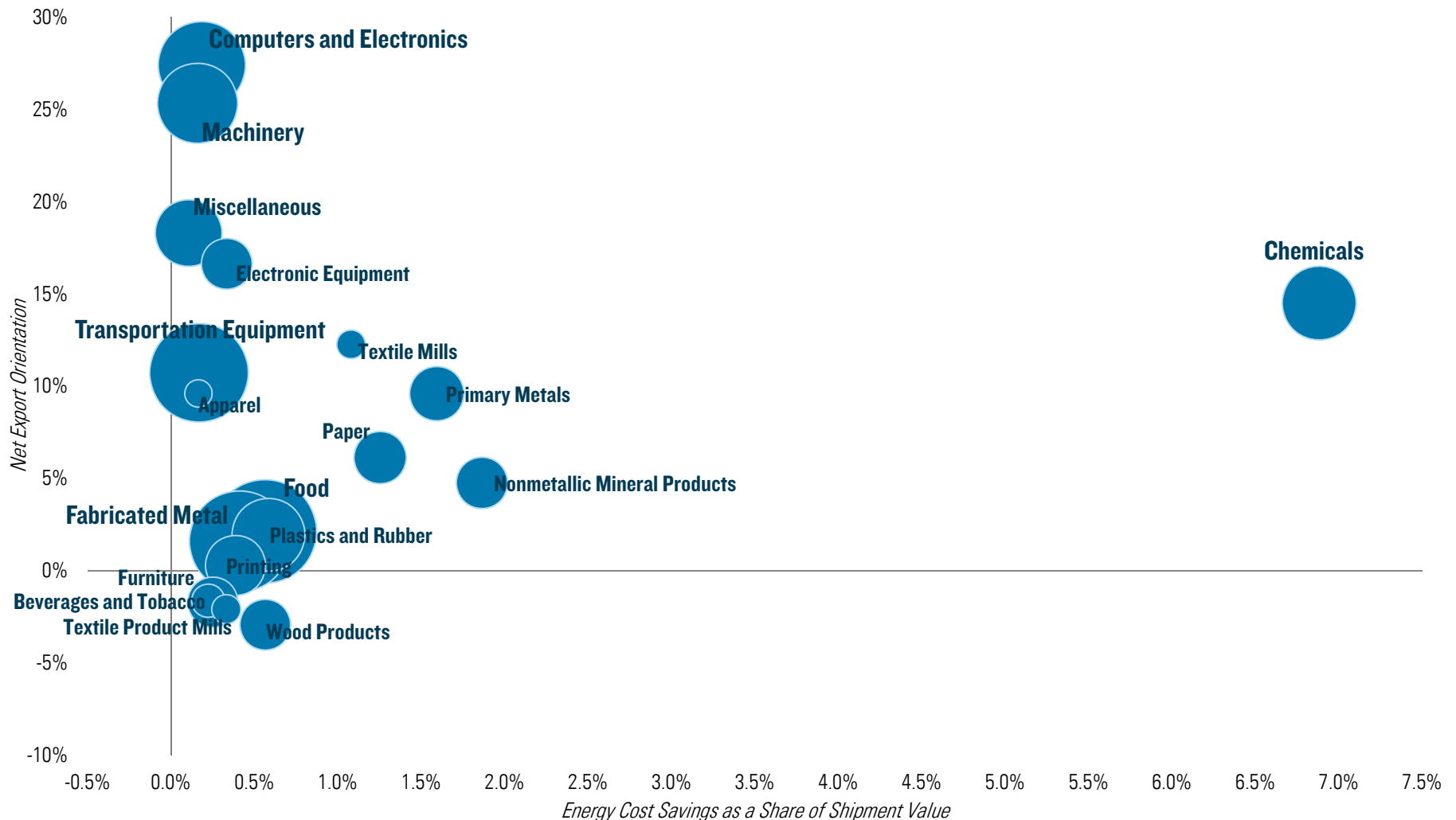


Source: Houser and Mohan



Balancing energy savings against exchange rate effects

Potential cost reductions vs. net export exposure



Source: Houser and Mohan

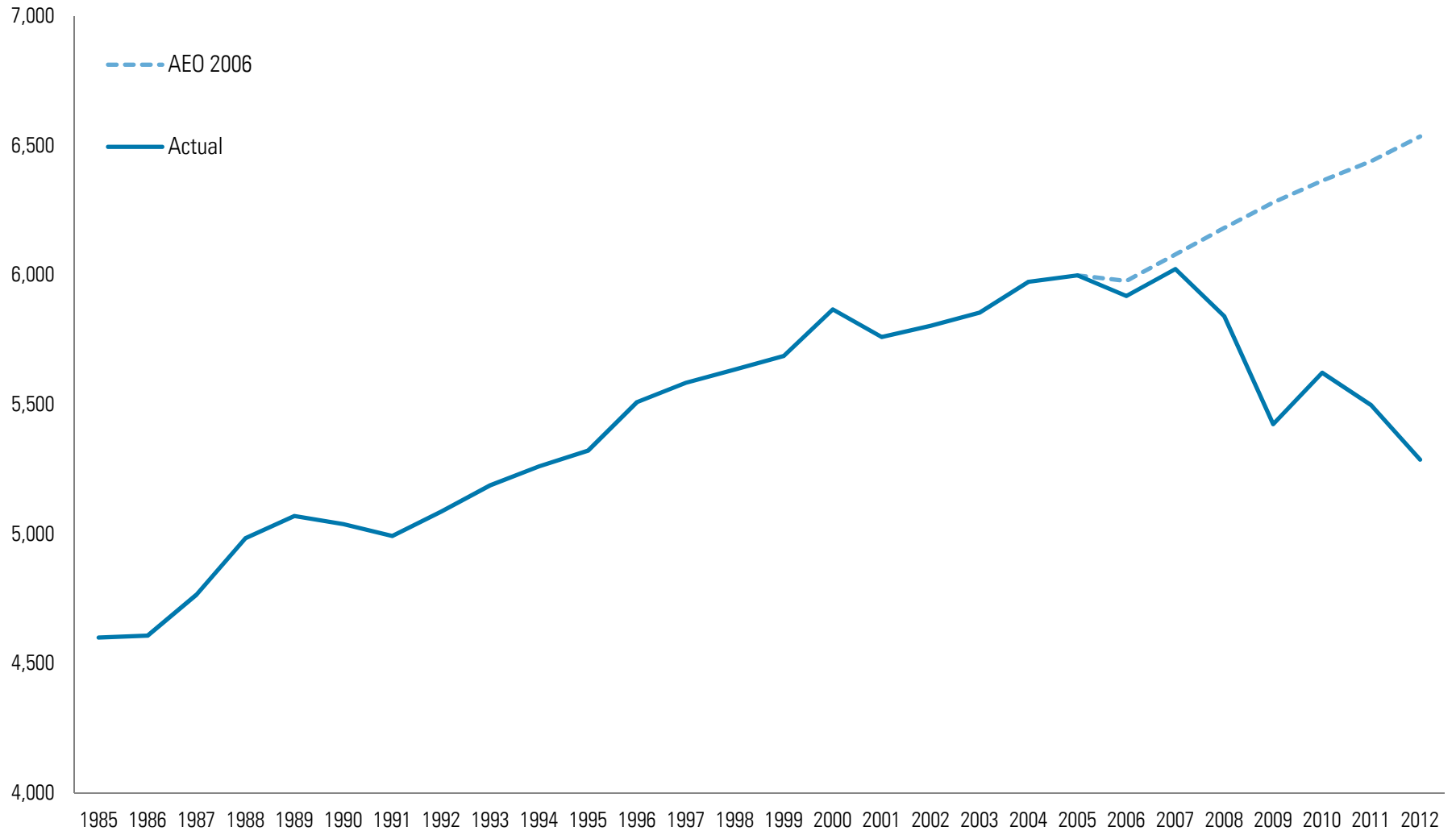


Environmental Effects



US CO2 emissions have dropped sharply

Actual vs. projected energy-related CO2 emission, million tons

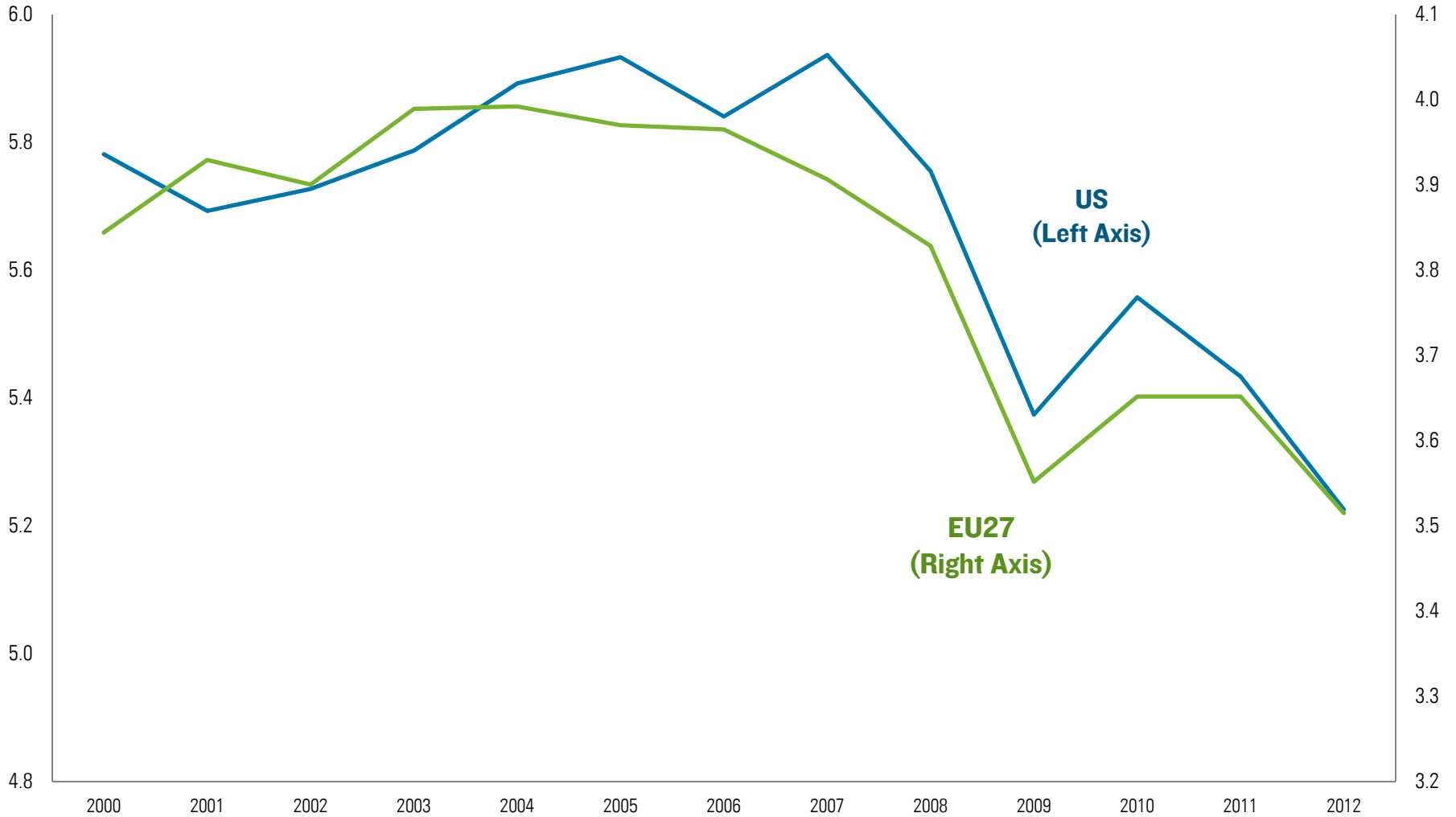


Source: EIA



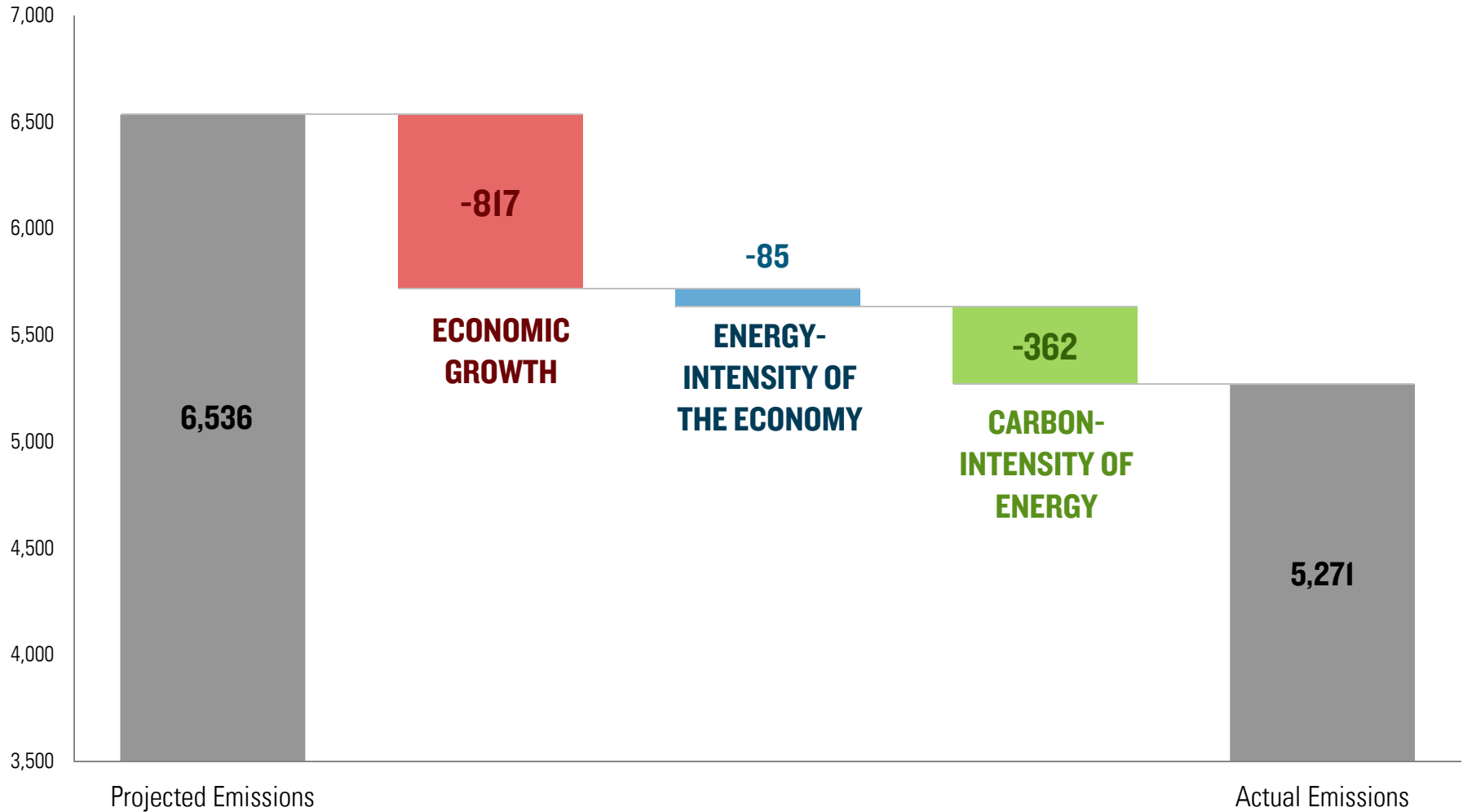
CO2 emissions, US vs. EU

Billion tons



What explains the drop?

Actual vs. projected energy-related CO2 emissions in 2012

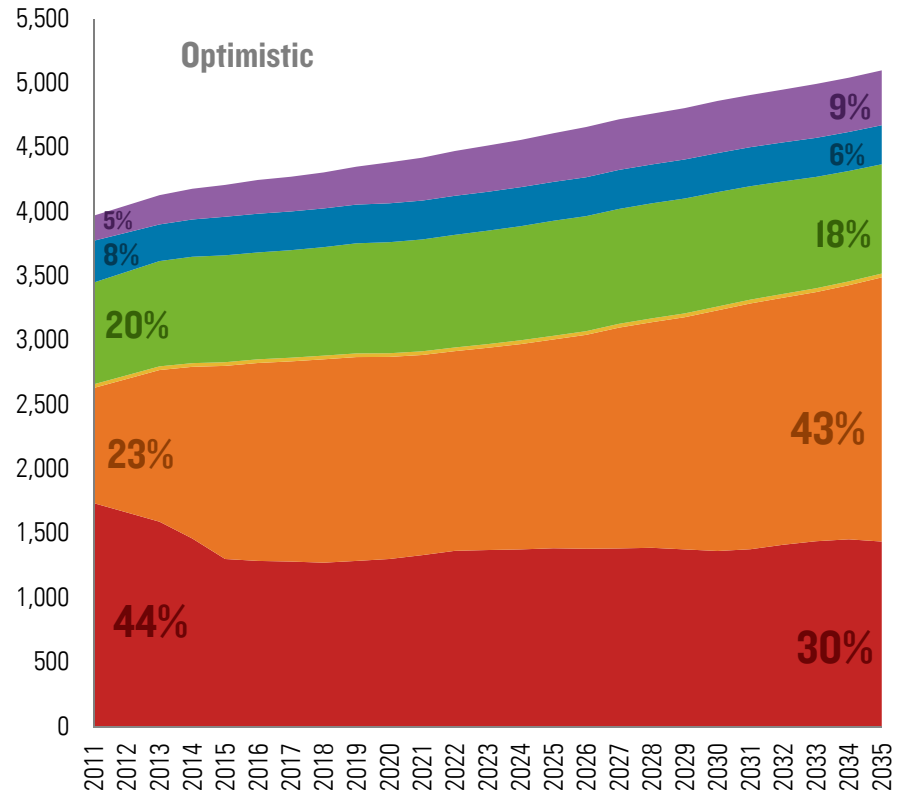
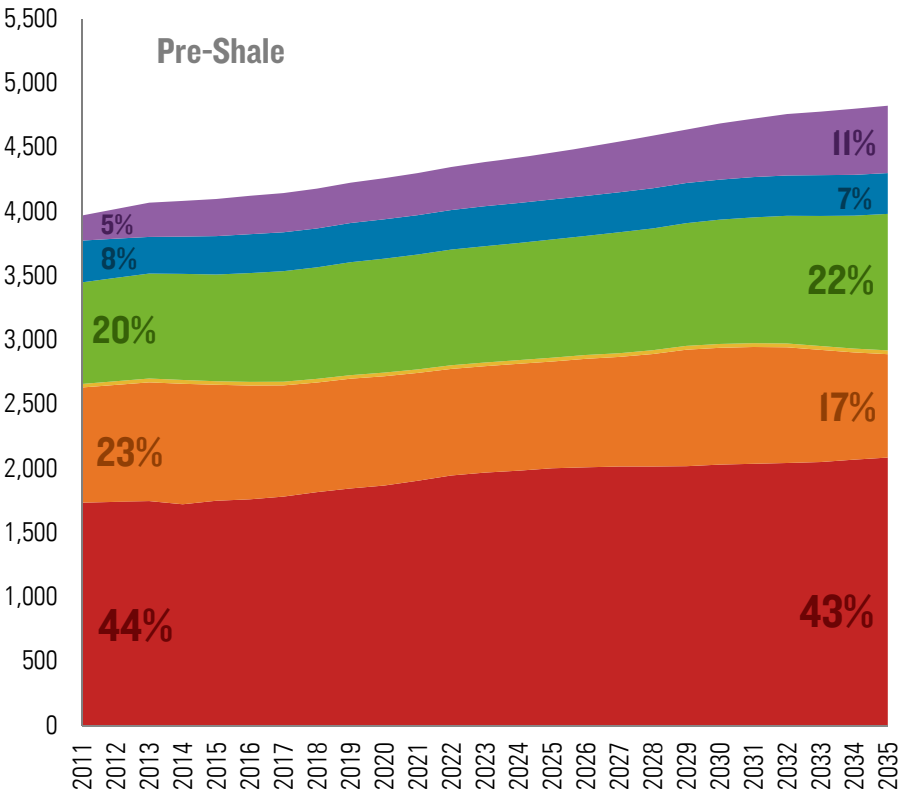


Source: EIA, BEA, authors' estimates



Power generation – pre-shale vs. optimistic

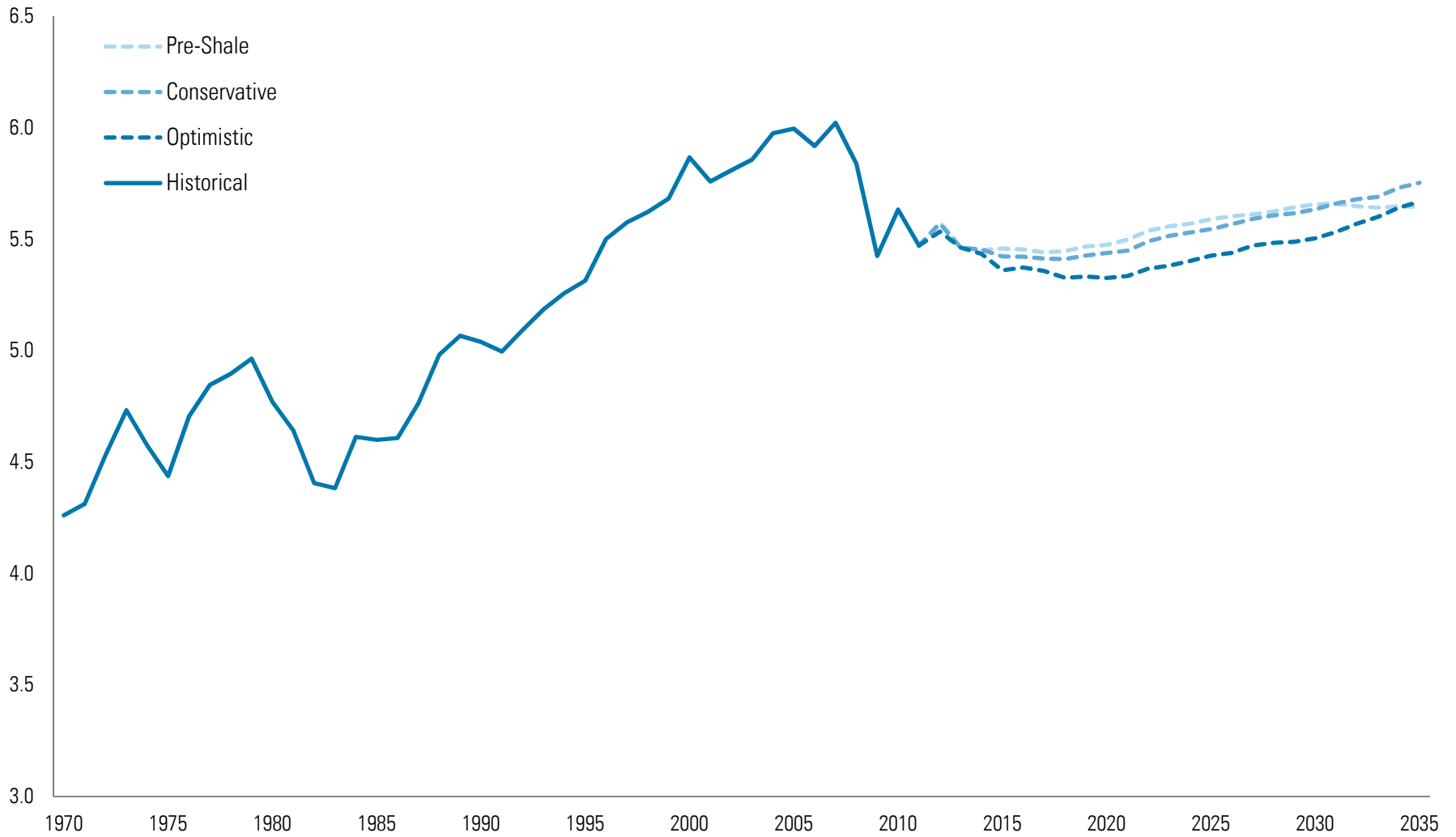
Billion kwh



■ Coal
 ■ Nat Gas
 ■ Petroleum
 ■ Nuclear
 ■ Hydro
 ■ Other Renewables

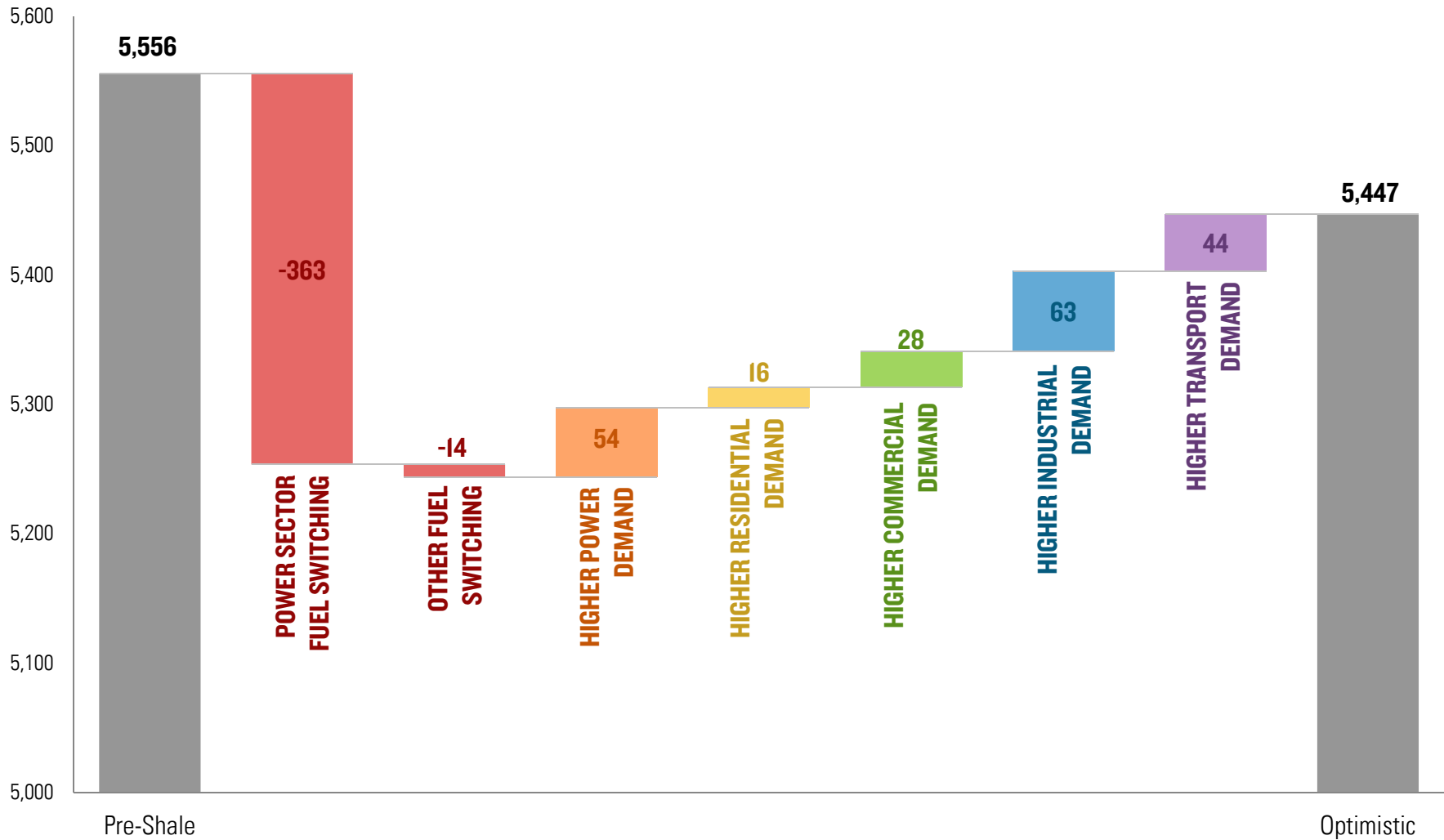
US CO2 emissions

Billion tons



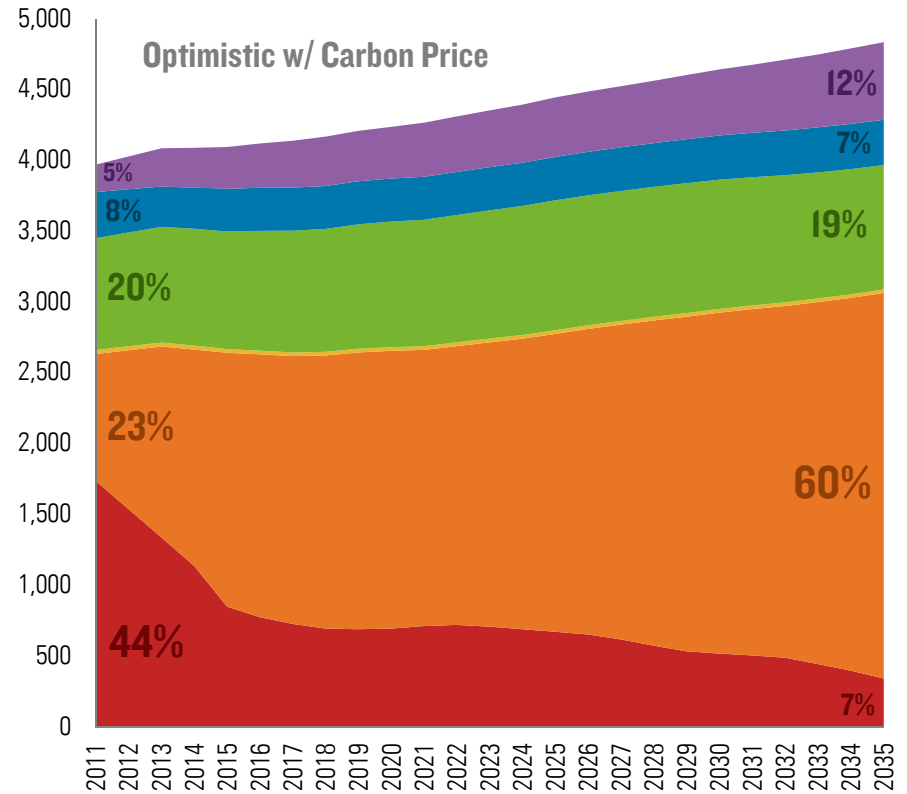
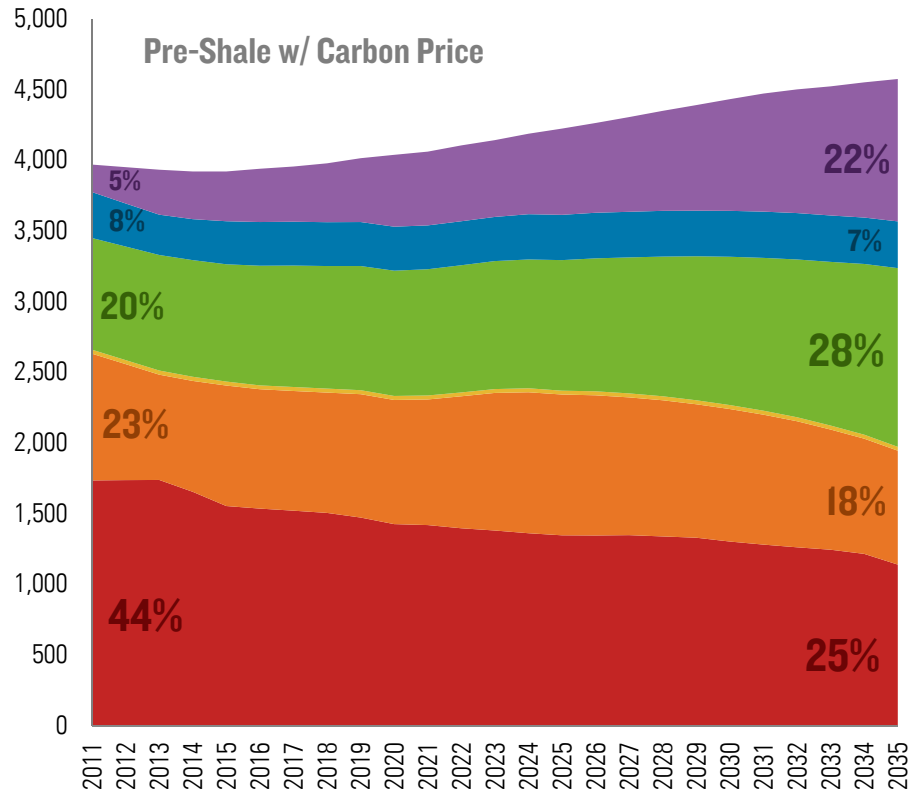
Change in US CO2 emissions by source

Million tons, 2013-2035 annual average



Power generation – pre-shale vs. optimistic w/ carbon price

Billion kwh



■ Coal
 ■ Nat Gas
 ■ Petroleum
 ■ Nuclear
 ■ Hydro
 ■ Other Renewables

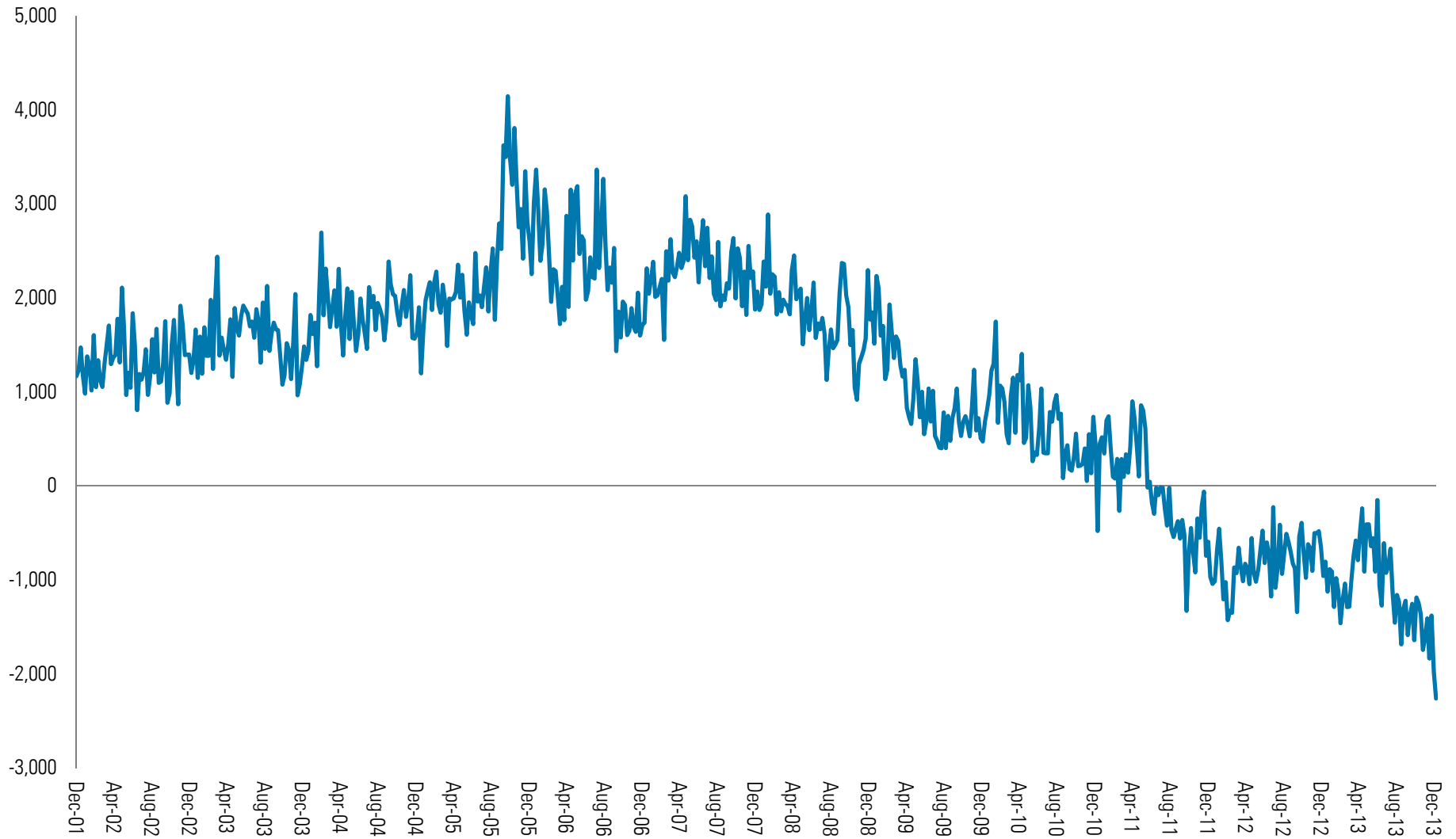


Trade Policy Implications



US refined petroleum product trade balance

Thousand barrels per day

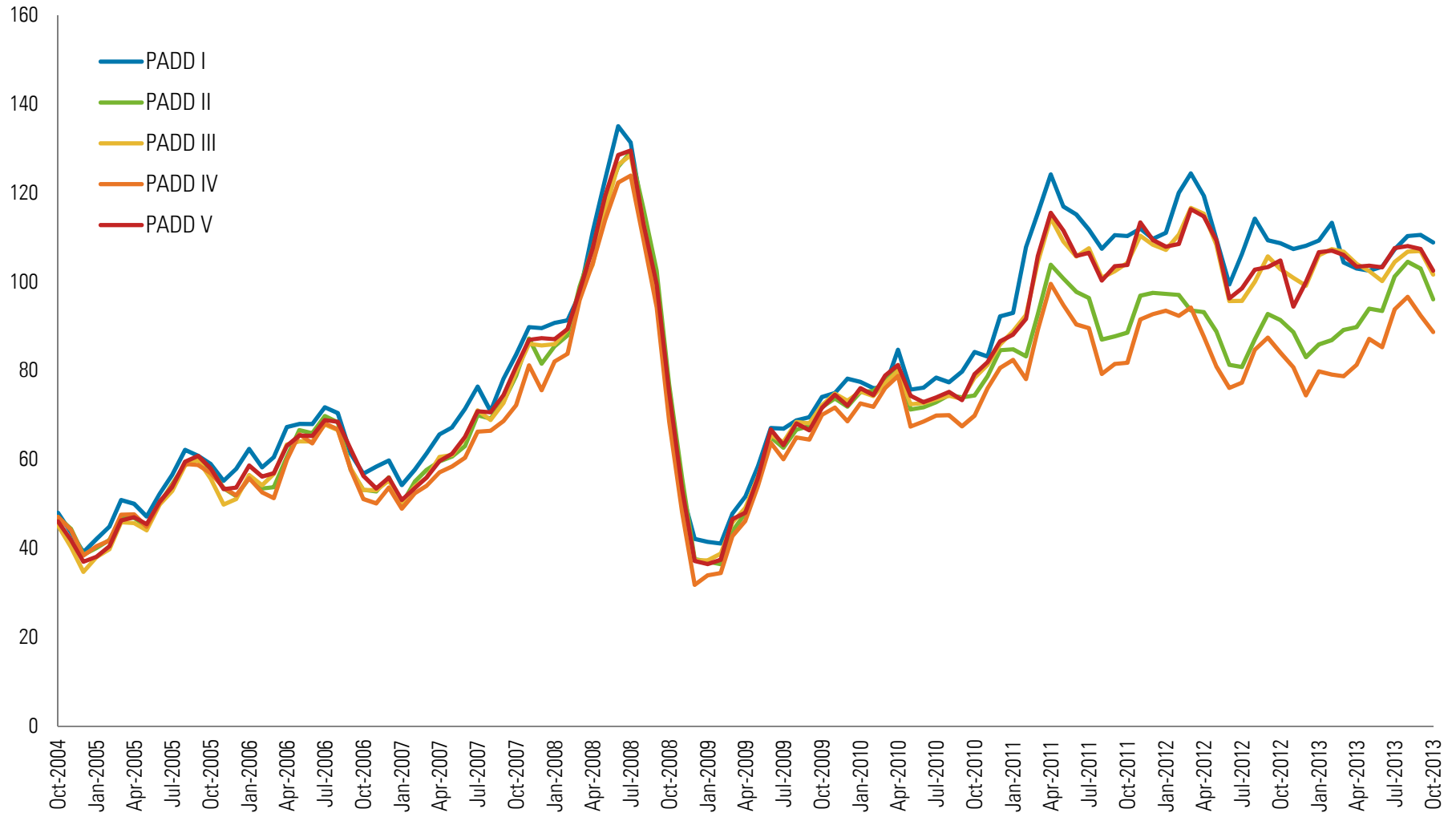


Source: EIA



Refinery acquisition cost of crude

\$ per barrel



Source: EIA



Wholesale gasoline prices

\$ per gallon



Source: EIA



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