



Petroleum Independence

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3 metrics of independence

- Imports
- Flexibility
- Salience

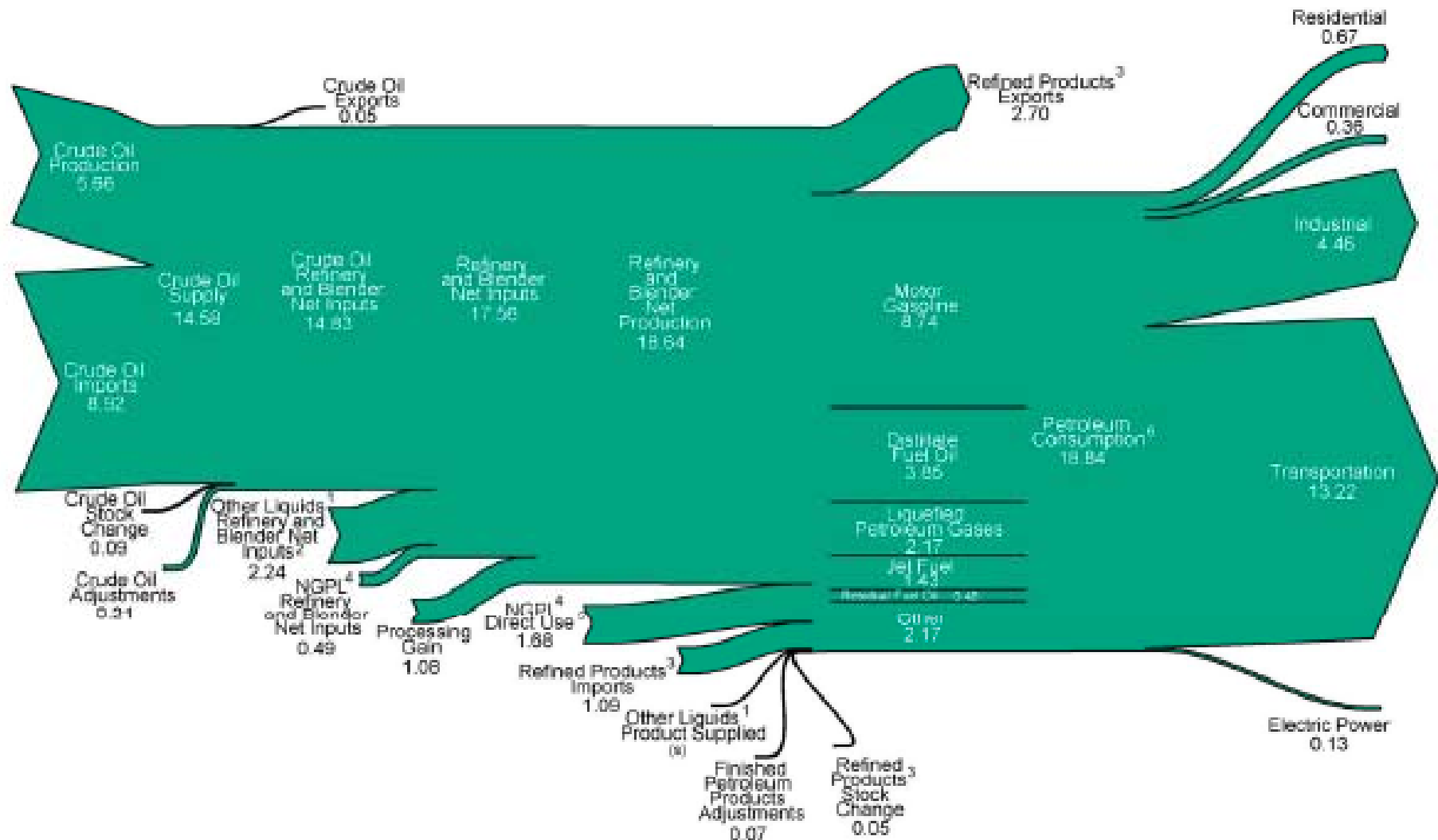


Imports



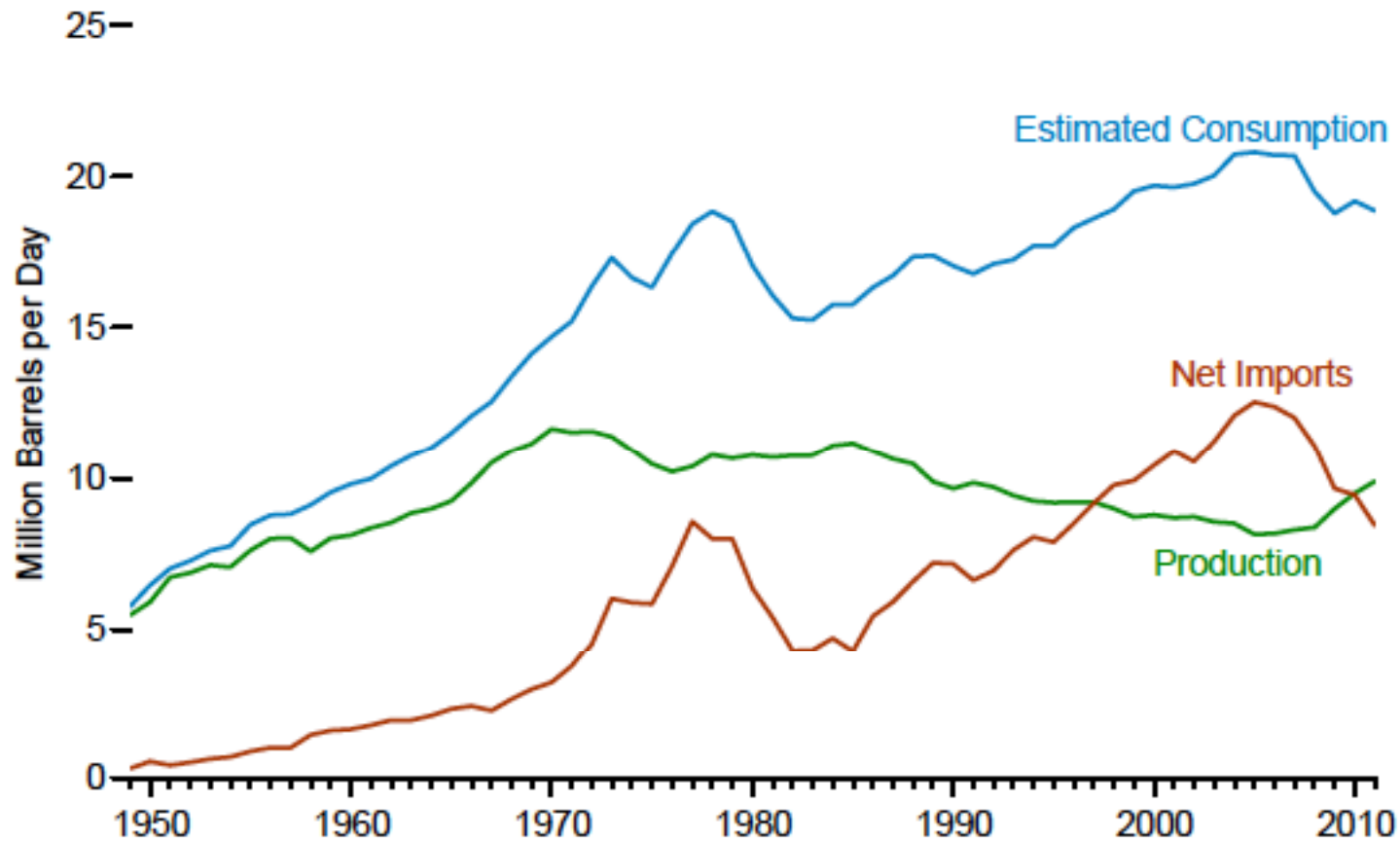
US Petroleum Flow 2011

19 million barrels per day



US Petroleum Production

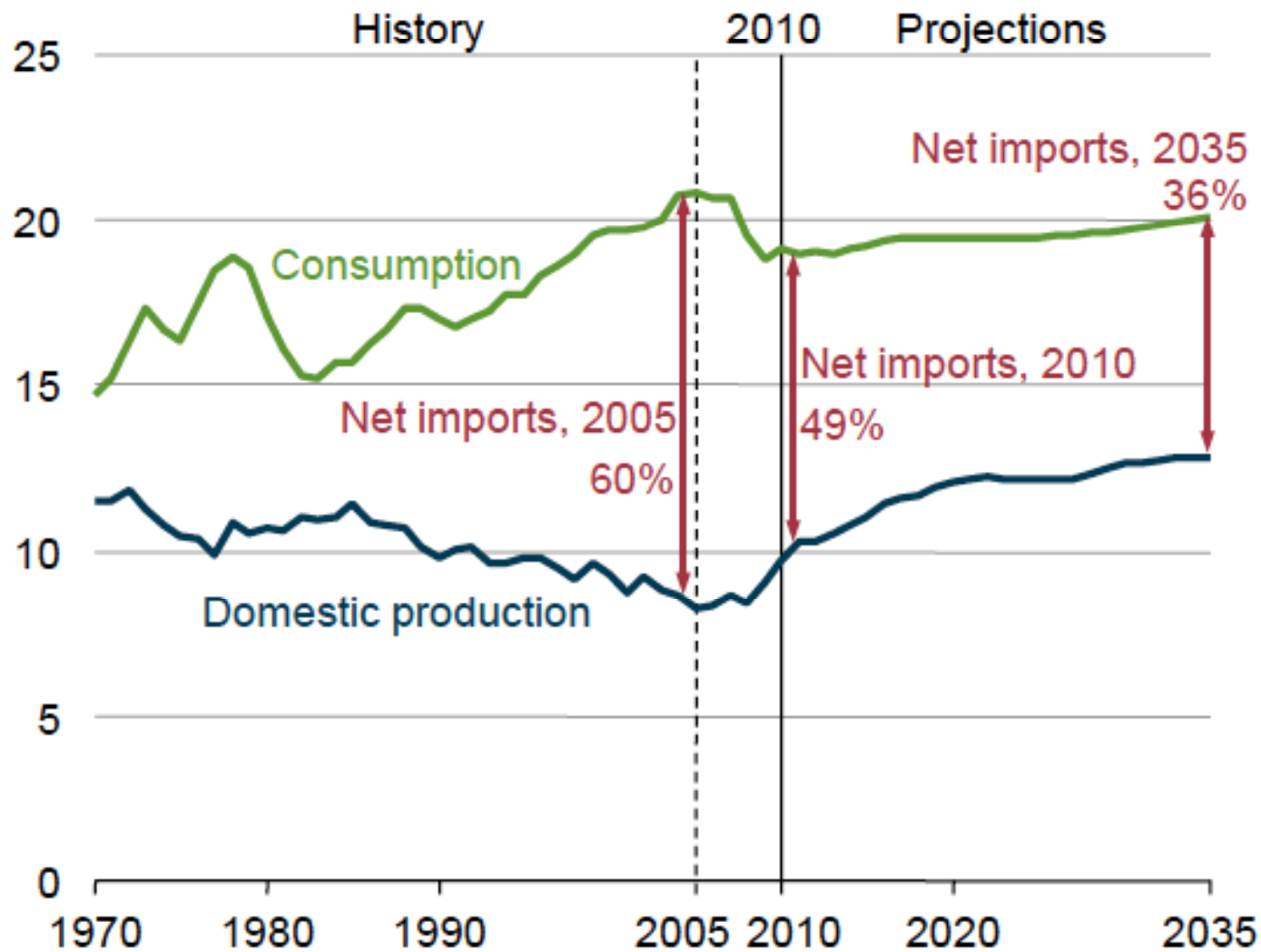
Overview, 1949-2011



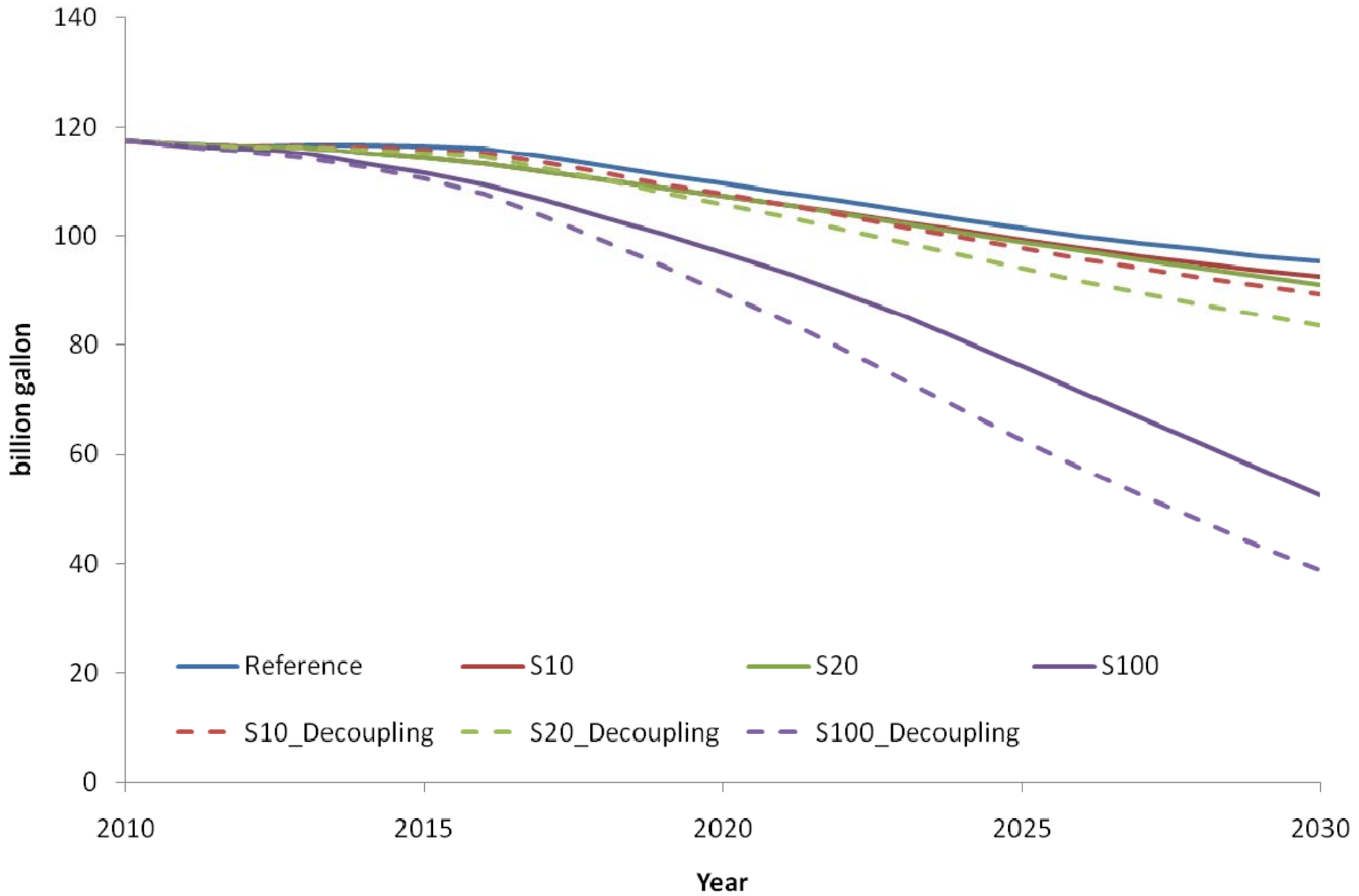
Includes production of crude oil, natural gas liquids, biofuel and processing gain.

DOE EIA. Annual Energy Review 2012. <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf>

Total US production and consumption petroleum and other liquids (million barrels per day)



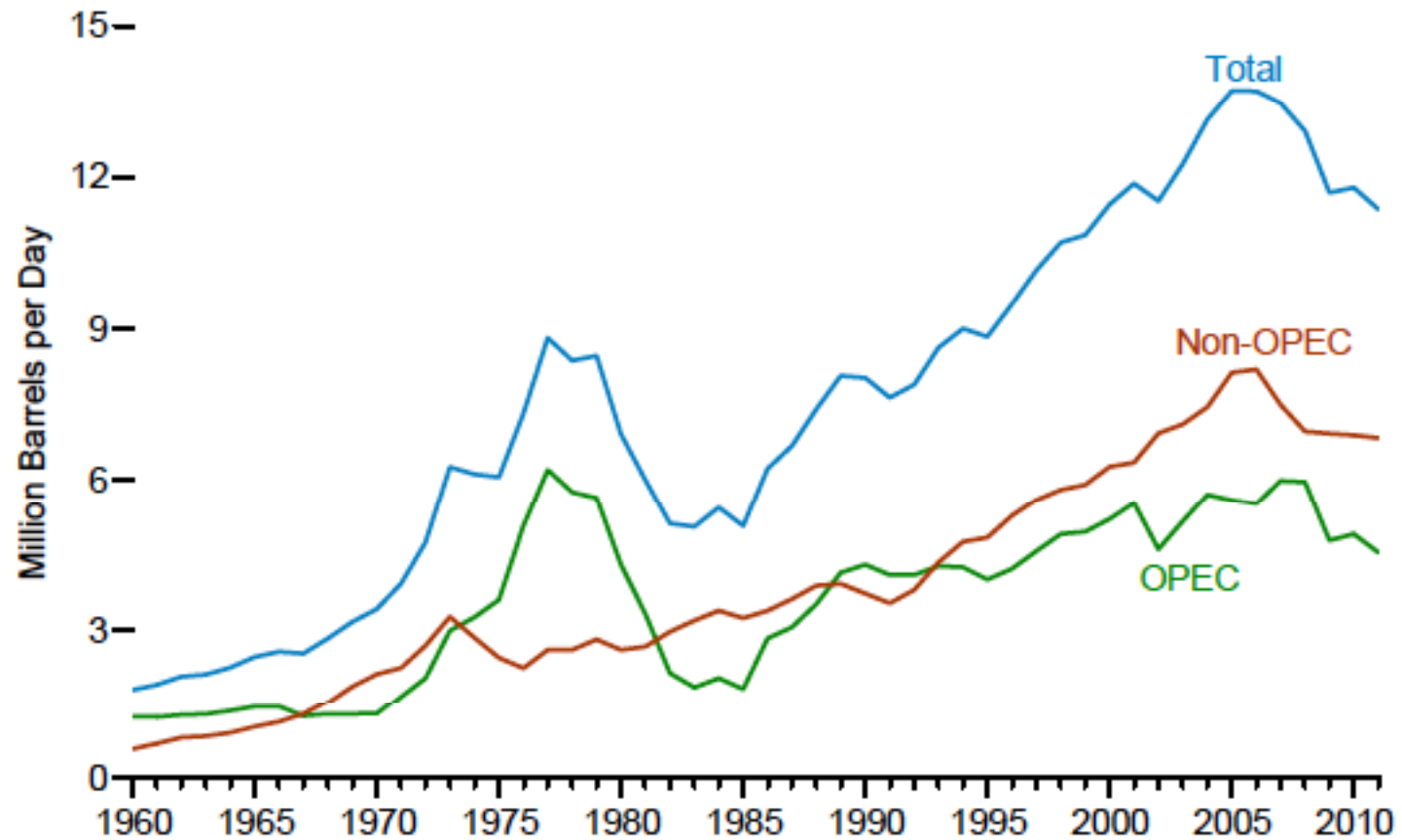
Vehicle Fuel Efficiency Projection



Choi, Kreikebaum, Thomas, Divan, 2012.

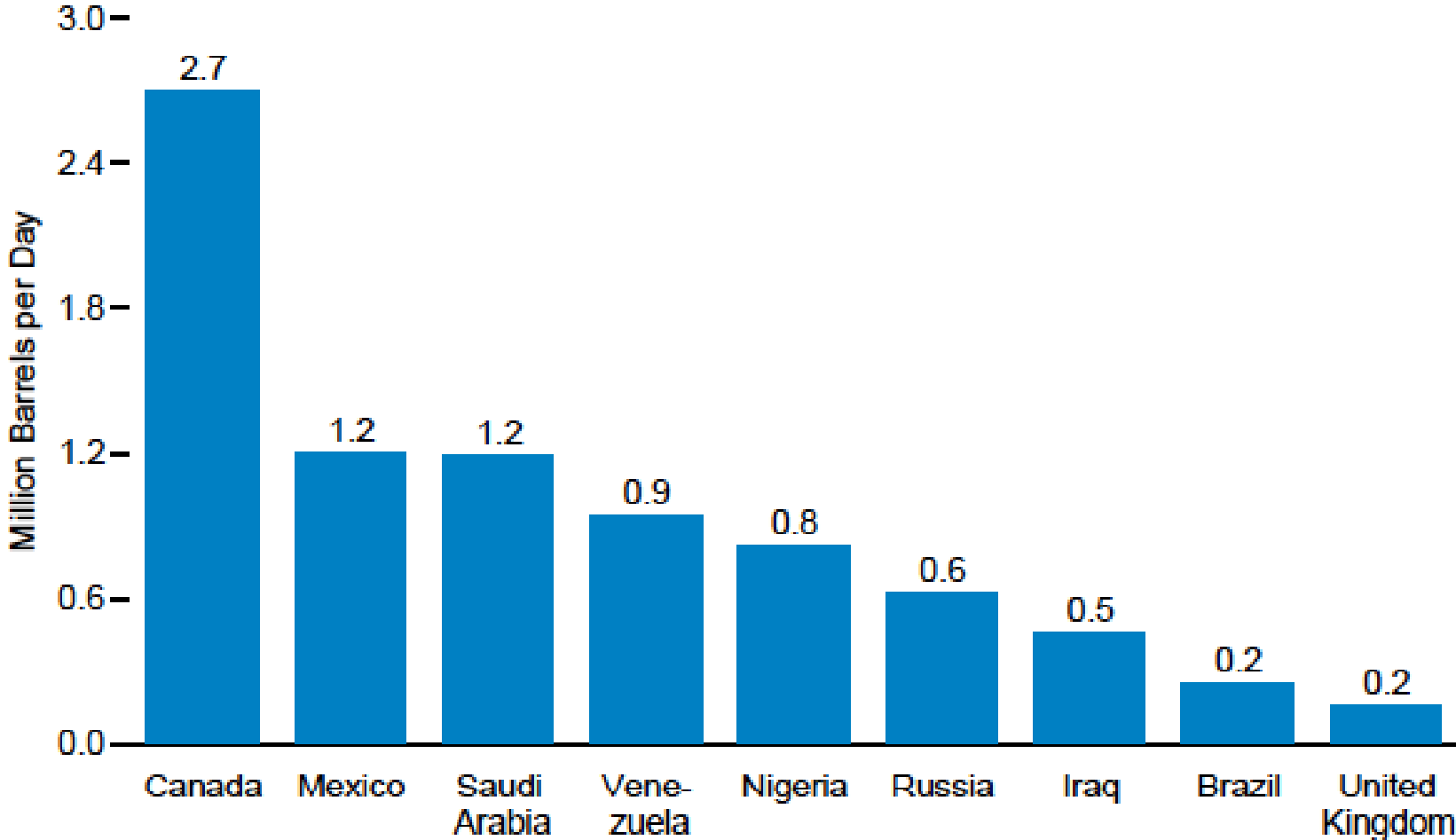
US petroleum imports

Total, OPEC, and Non-OPEC, 1960-2011



US petroleum imports by country

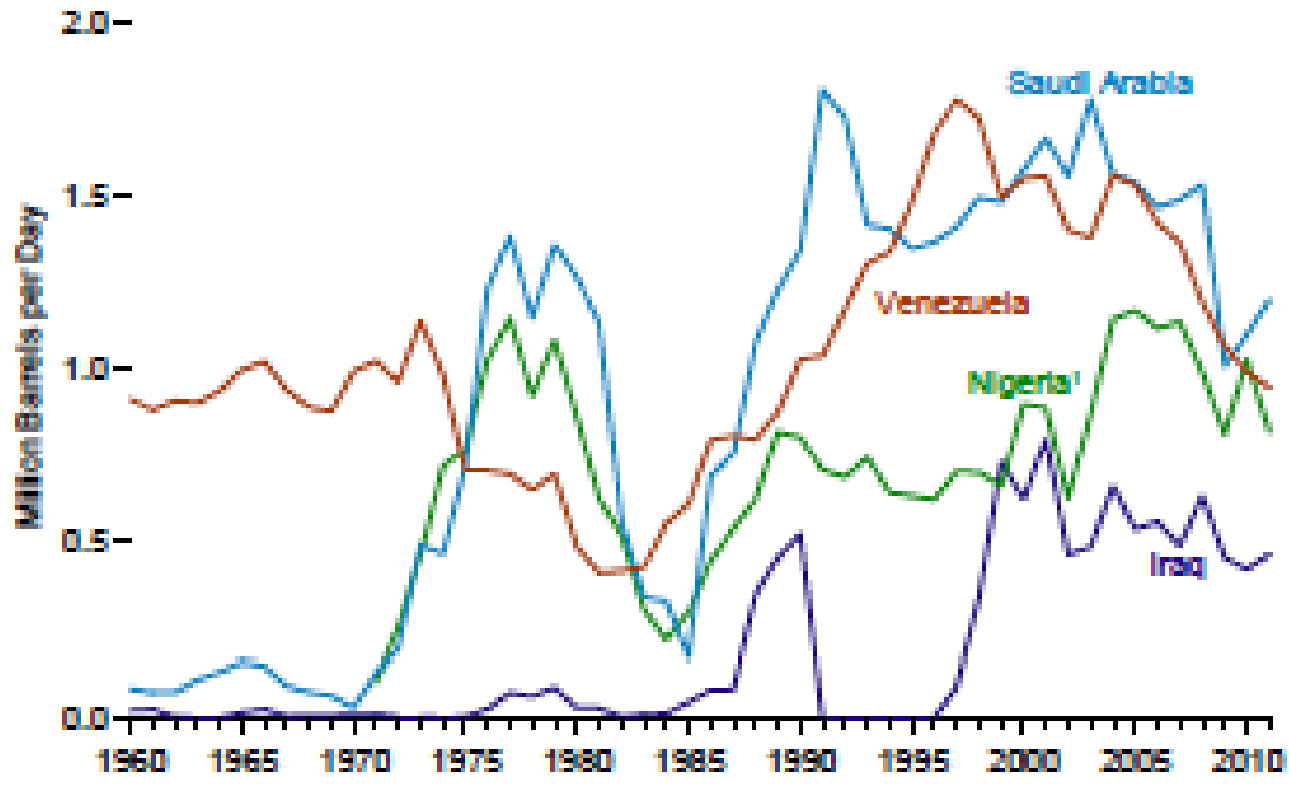
Selected Countries, 2011



DOE EIA. Annual Energy Review 2012. <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf>

US petroleum imports from OPEC

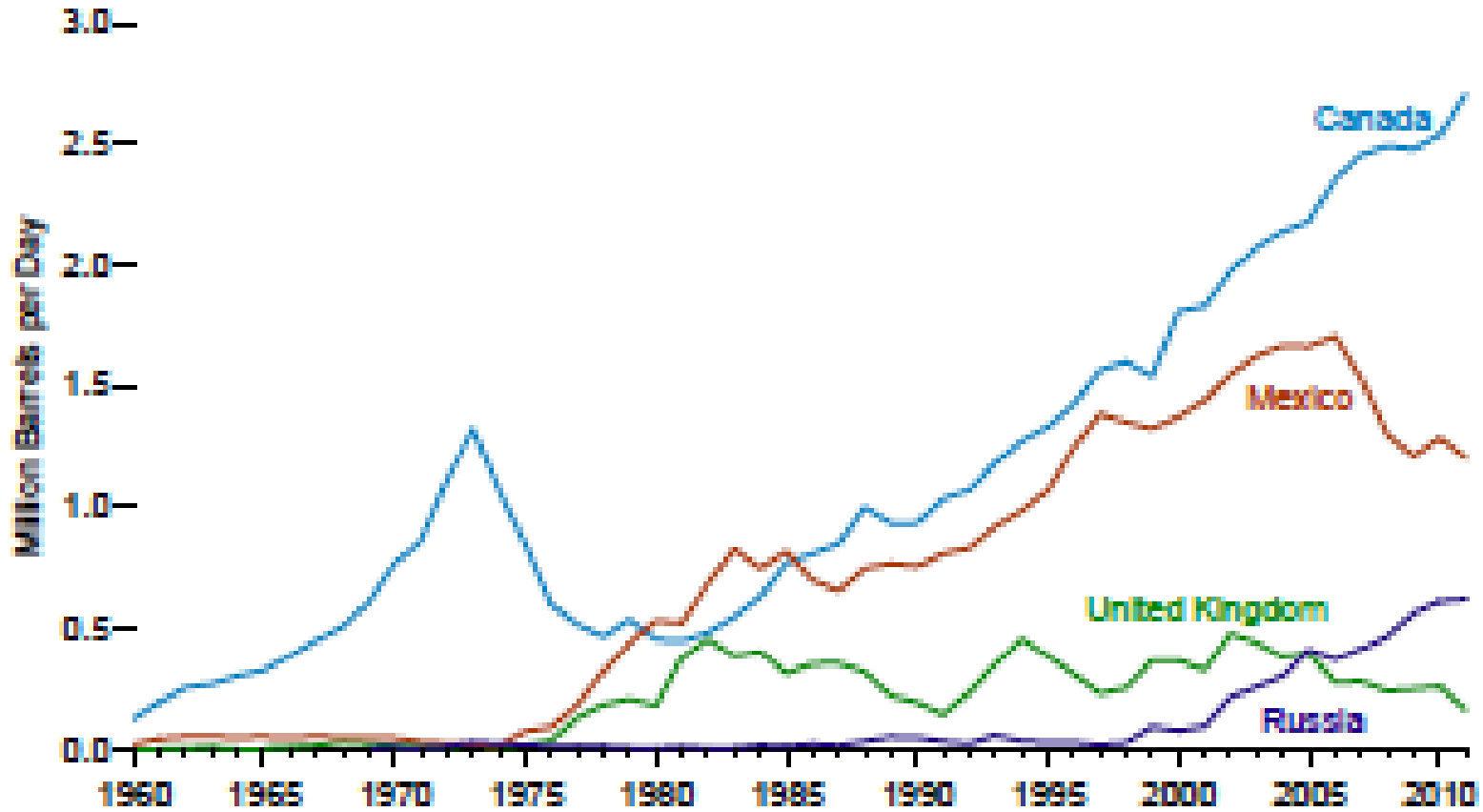
Selected OPEC Countries, 1960-2011



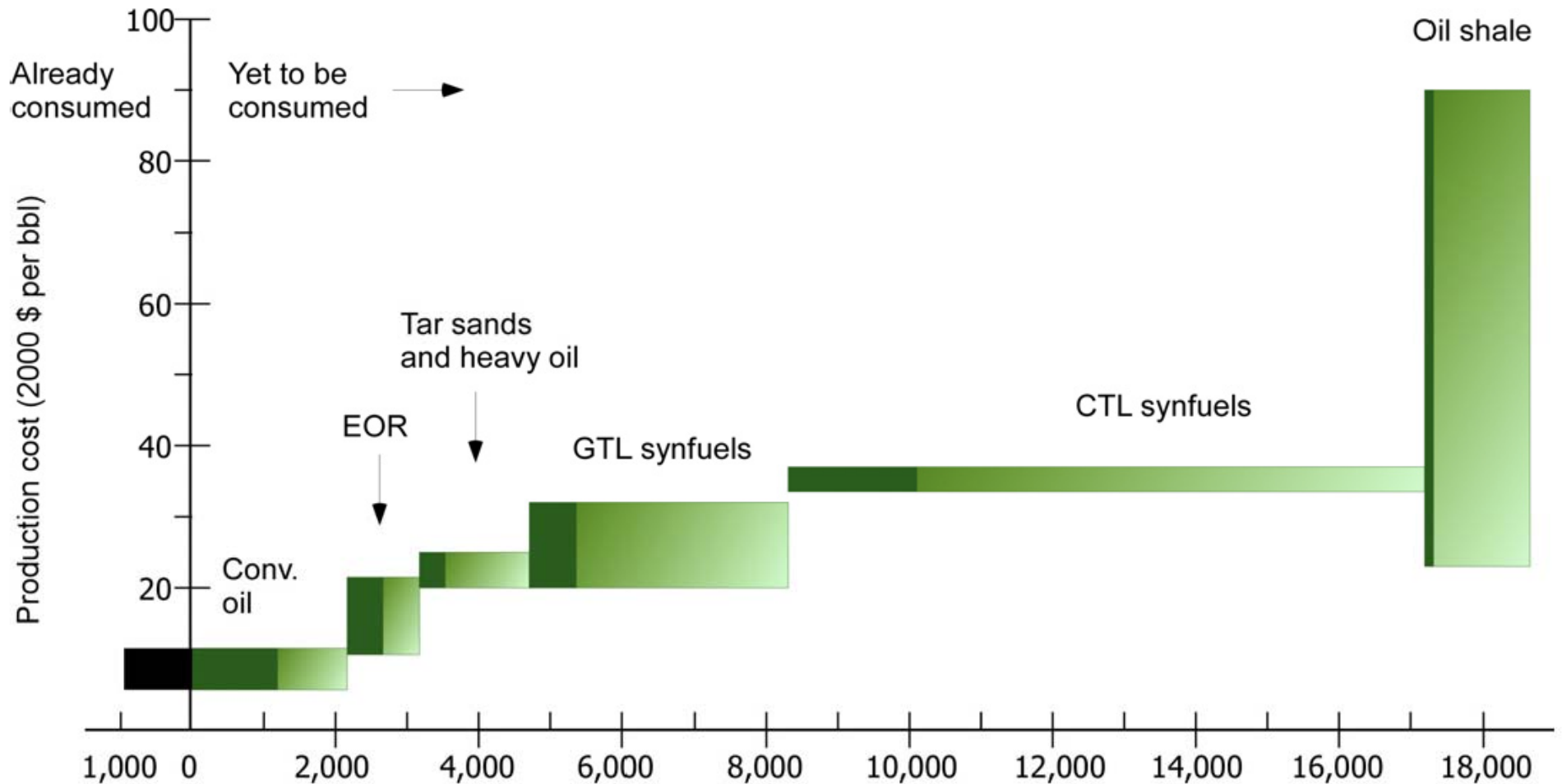
¹ On this graph, imports from Nigeria are shown beginning in 1971, when Nigeria joined OPEC.

Non-OPEC US petroleum imports

Selected Non-OPEC Countries, 1960-2011

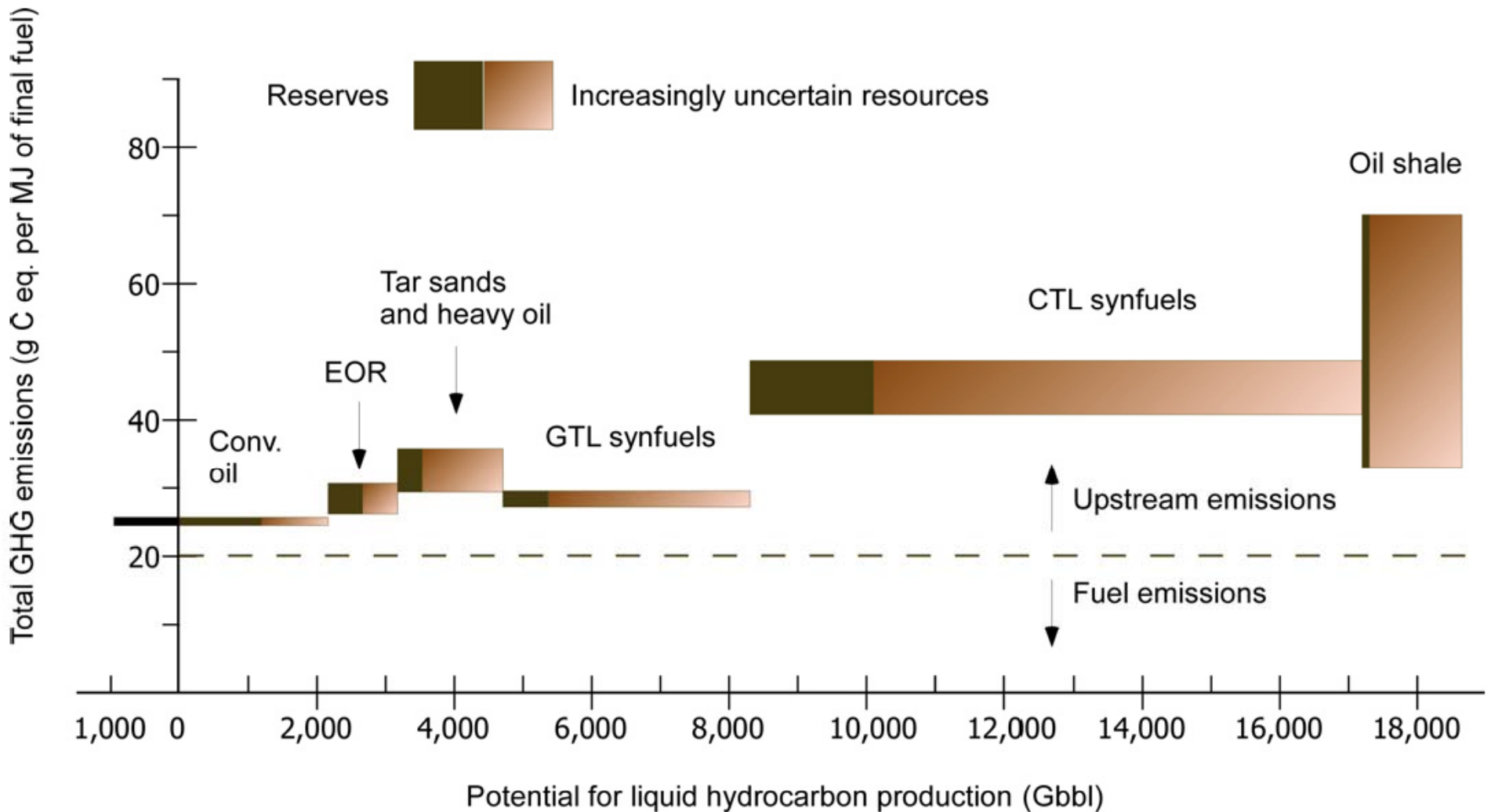


Global supply of liquid hydrocarbons from all fossil resources and associated costs in dollars



EOR is enhanced oil recovery, GTL and CTL are gas- and coal-derived synthetic liquid fuels. The CTL and GTL quantities are theoretical maxima because they assume all gas and coal are used as feedstock for SCPs and none for other purposes. The lightly shaded portions of the graph represent less certain resources. Results are based on costs and conversion efficiencies of current technologies available in the open literature. Gas hydrates are ignored due to a lack of reliable data. The GTL cost estimates assume a range of \$0.5 to \$2 per MBTU.

Global supply of liquid hydrocarbons from all fossil resources and associate greenhouse gas emissions.

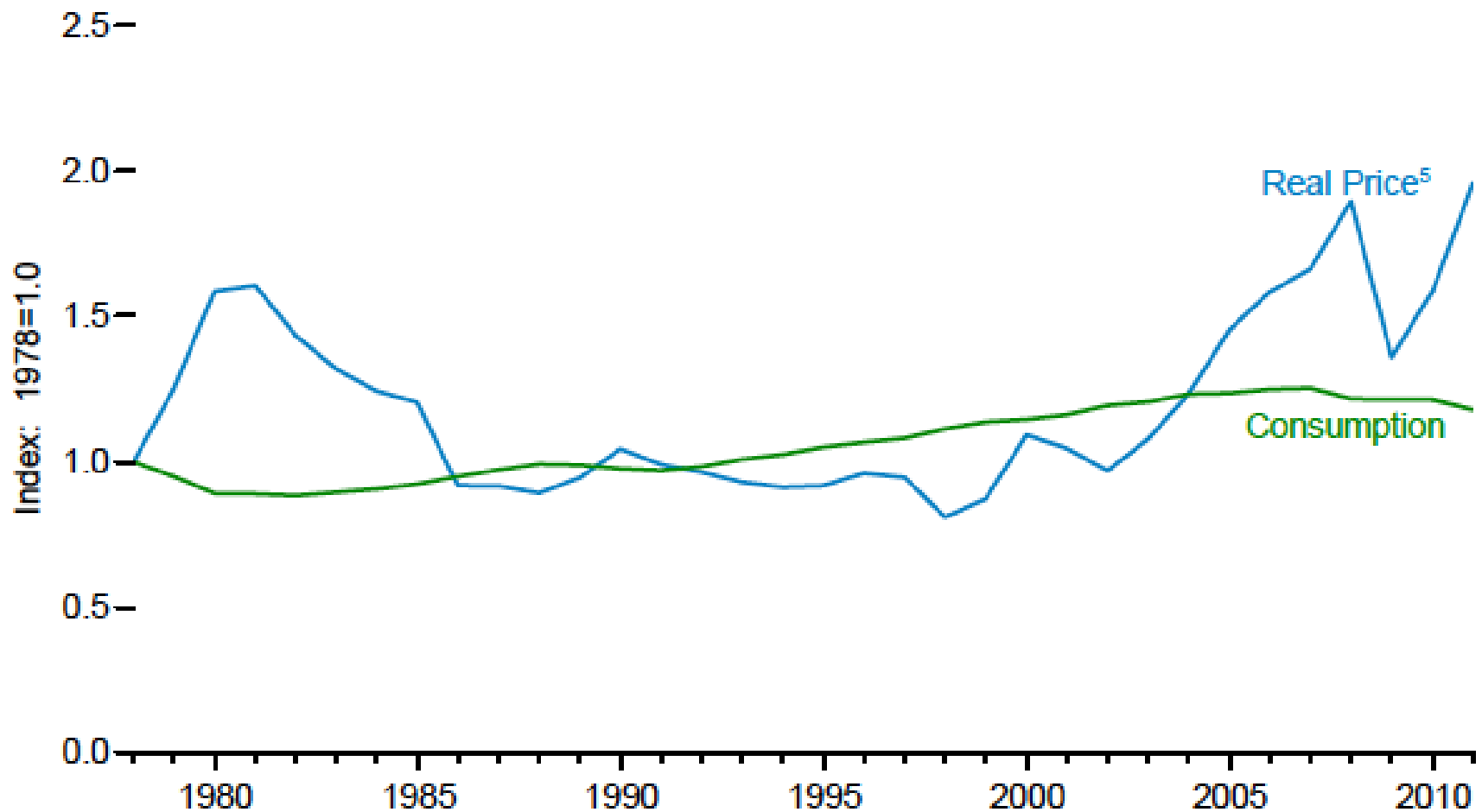


GHG emissions are separated into fuel combustion (downstream) and production and processing (upstream) emissions by a dashed line.

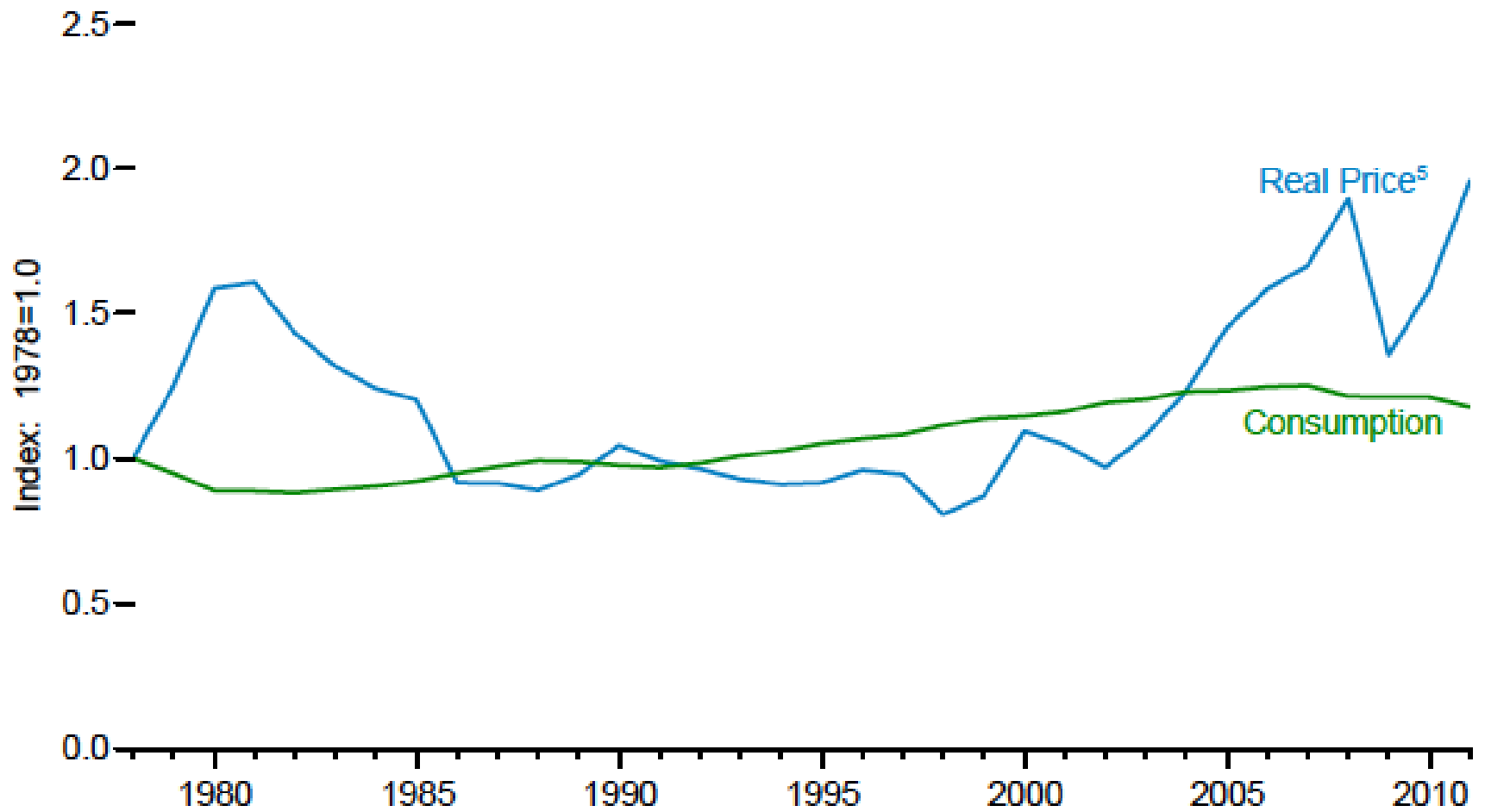
Flexibility



Motor gasoline price and consumption 1978-2011

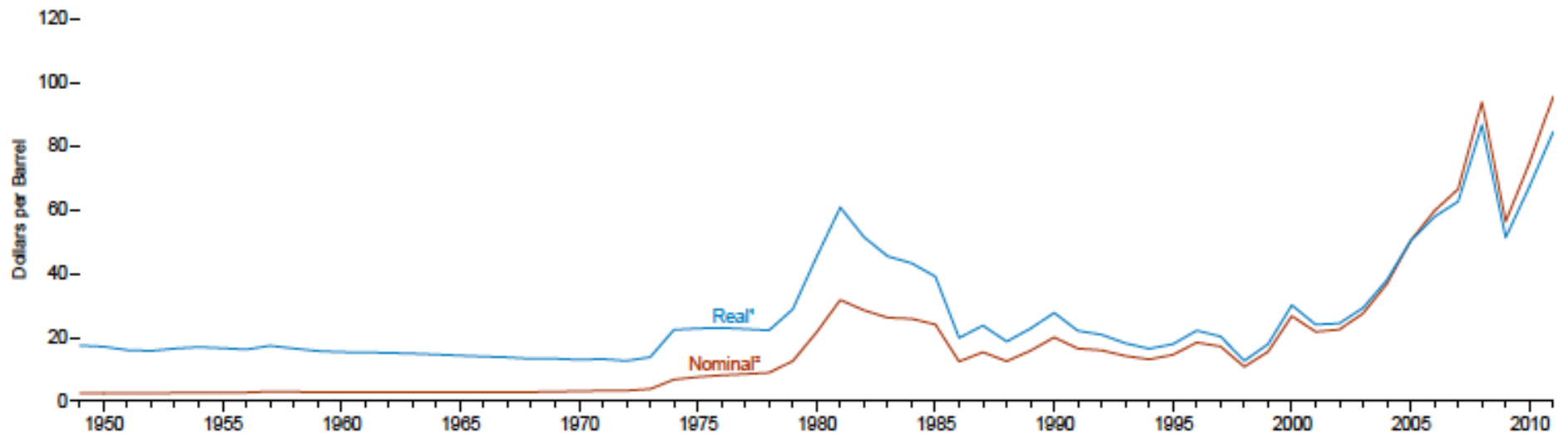


Salience



US petroleum prices 1949-2011

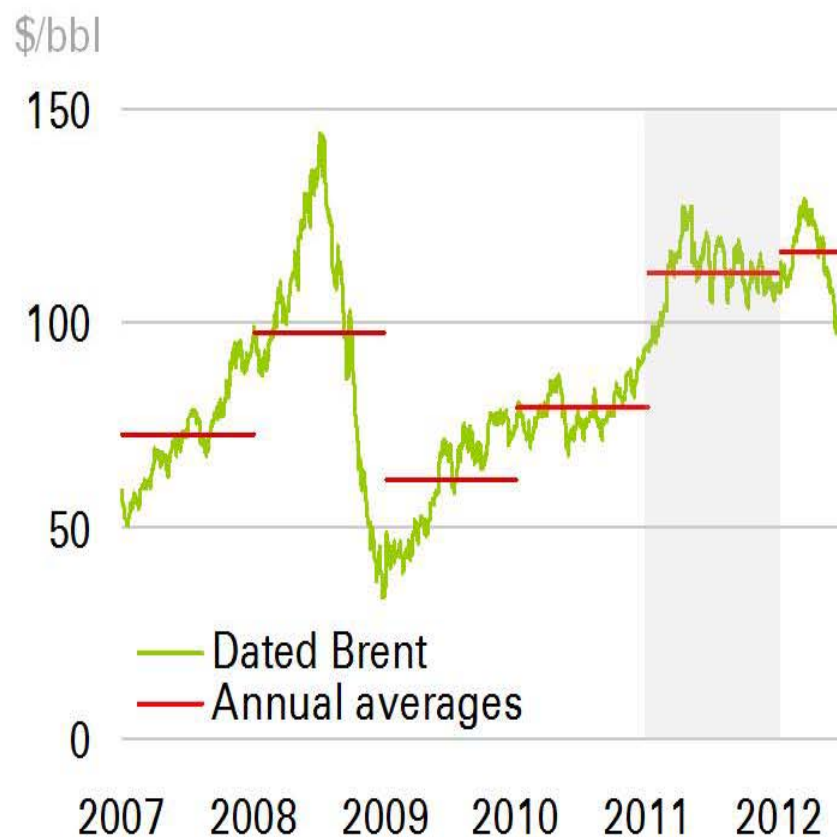
U.S. Average Prices, 1949-2011



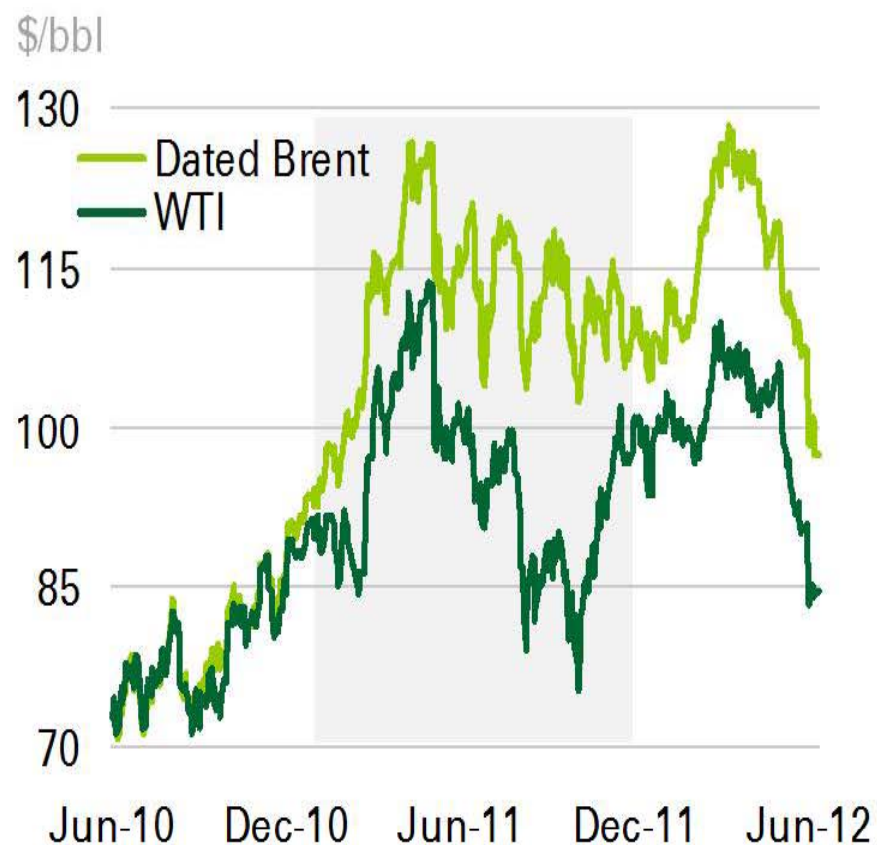


Crude oil prices

Dated Brent



Dated Brent and WTI

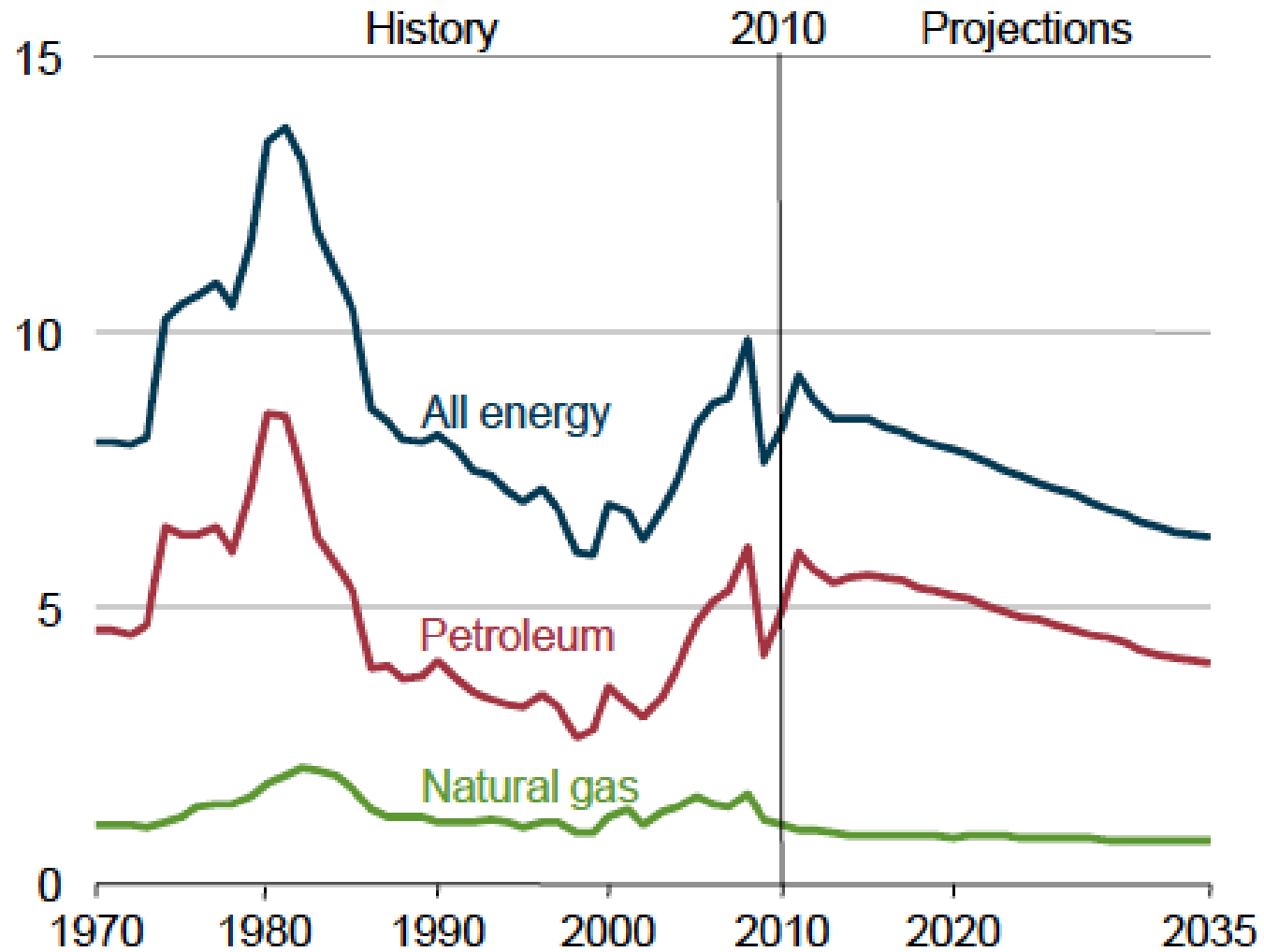


Source: includes data from Platts

BP Statistical Review of World Energy

© BP 2012

Energy expenditures as % of GDP



US DOE Annual Energy Outlook 2012



Petroleum Independence

Lighten up

Be creative

Innovate

Declare independence

