

The Great Revival of US Oil and Gas Production: What does it mean for oil and gas markets?

Foreign Service Officers Training Course

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Agenda

THE GREAT REVIVAL OF US OIL AND GAS PRODUCTION: WHAT DOES IT MEAN FOR OIL AND GAS MARKETS?



- Key overall messages
- The Great Revival of US Oil Production: Impact on production, demand and prices
- North America Natural Gas: Impact of shale gas



Key Overall Messages

- 1. Bakken to Baghdad:** The axis of crude oil production growth runs from the Americas to the Middle East: Brazil, Canada, Iraq and the United States will account for 86% of global crude oil production gains from 2012 to 2020
- 2. Demand is “on the double”:** Global refined product demand is poised to rise 10.3 million barrels per day (mbd) from 2012 to 2020--more than double the 4.9 mbd volume gain of the preceding 8 years.
- 3. “Shale gale”** revitalizing US industrial and power demand for gas

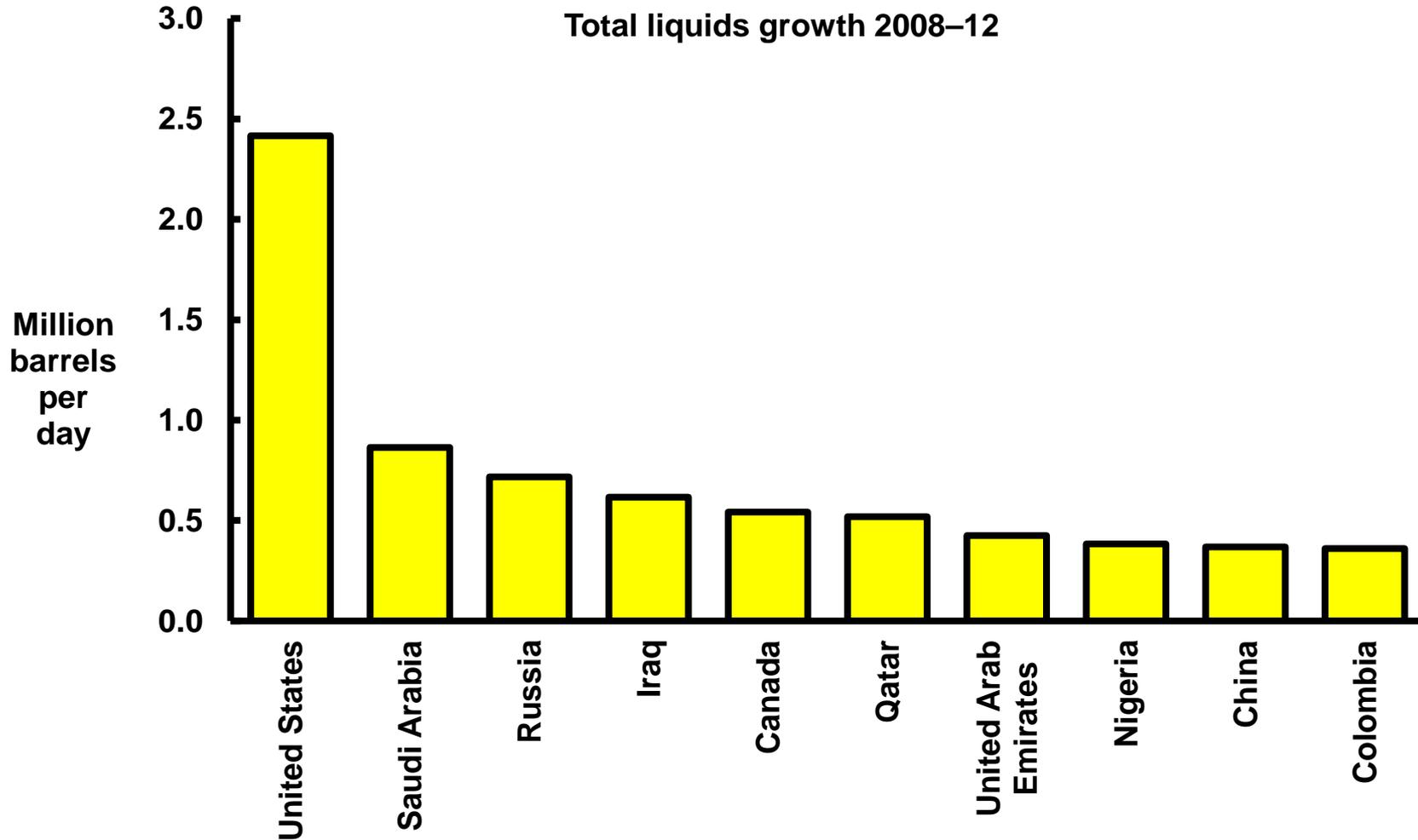
Source: IHS CERA. Please note messages are numbered for ease of reference and are not intended to illustrate order of importance.

The Great Revival of US Oil Production

Impact on production, demand and prices



United States is by far the largest source of new liquids supply since 2008 among all countries, including in OPEC



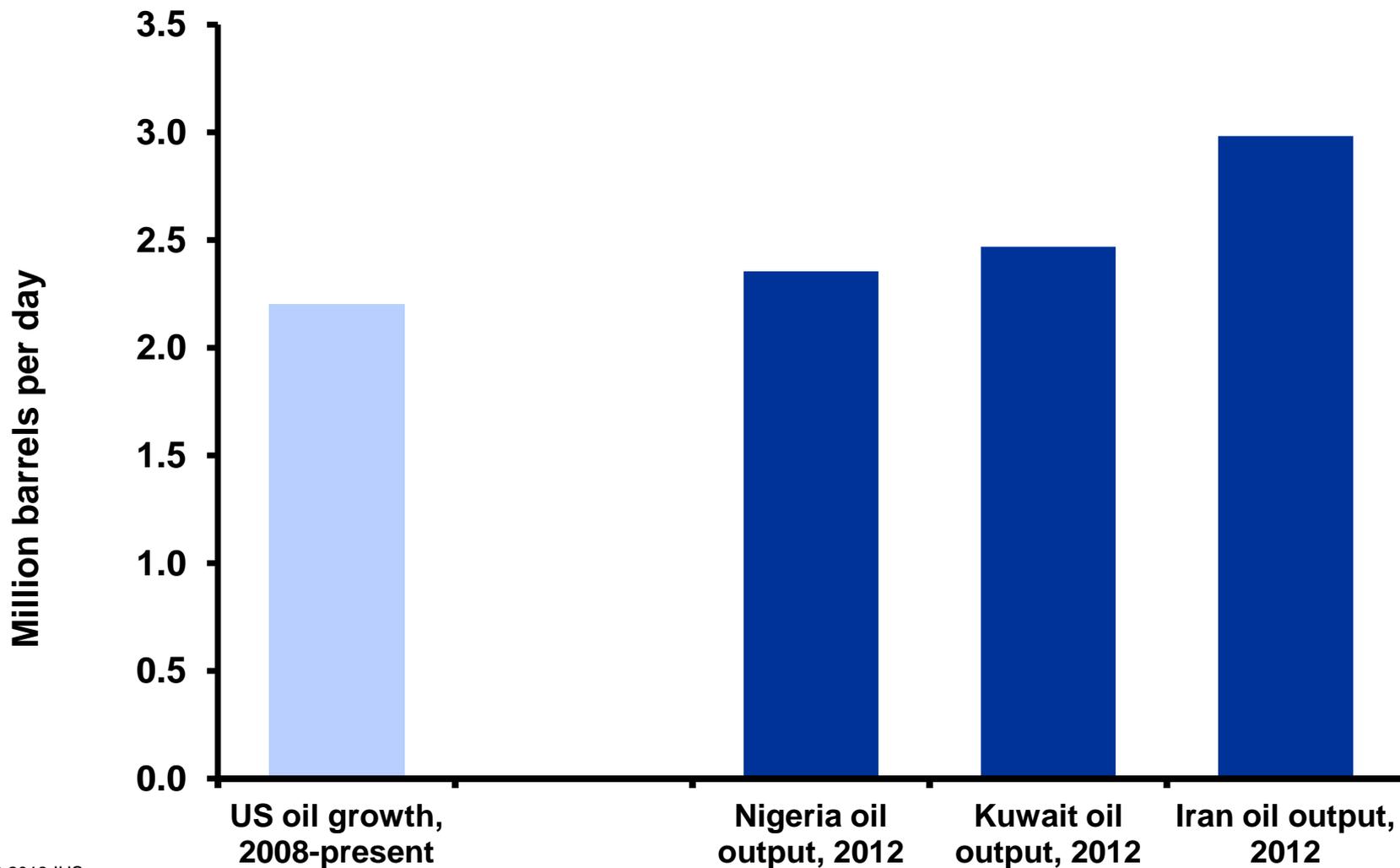
Source: IEA, IHS CERA, national government data.

Note: Liquids includes ethanol and biodiesel for the United States and Canada, and ethanol for China and Columbia.

US crude oil production growth since 2008 is similar to total output of several major OPEC members



US crude oil production growth and output of selected OPEC countries

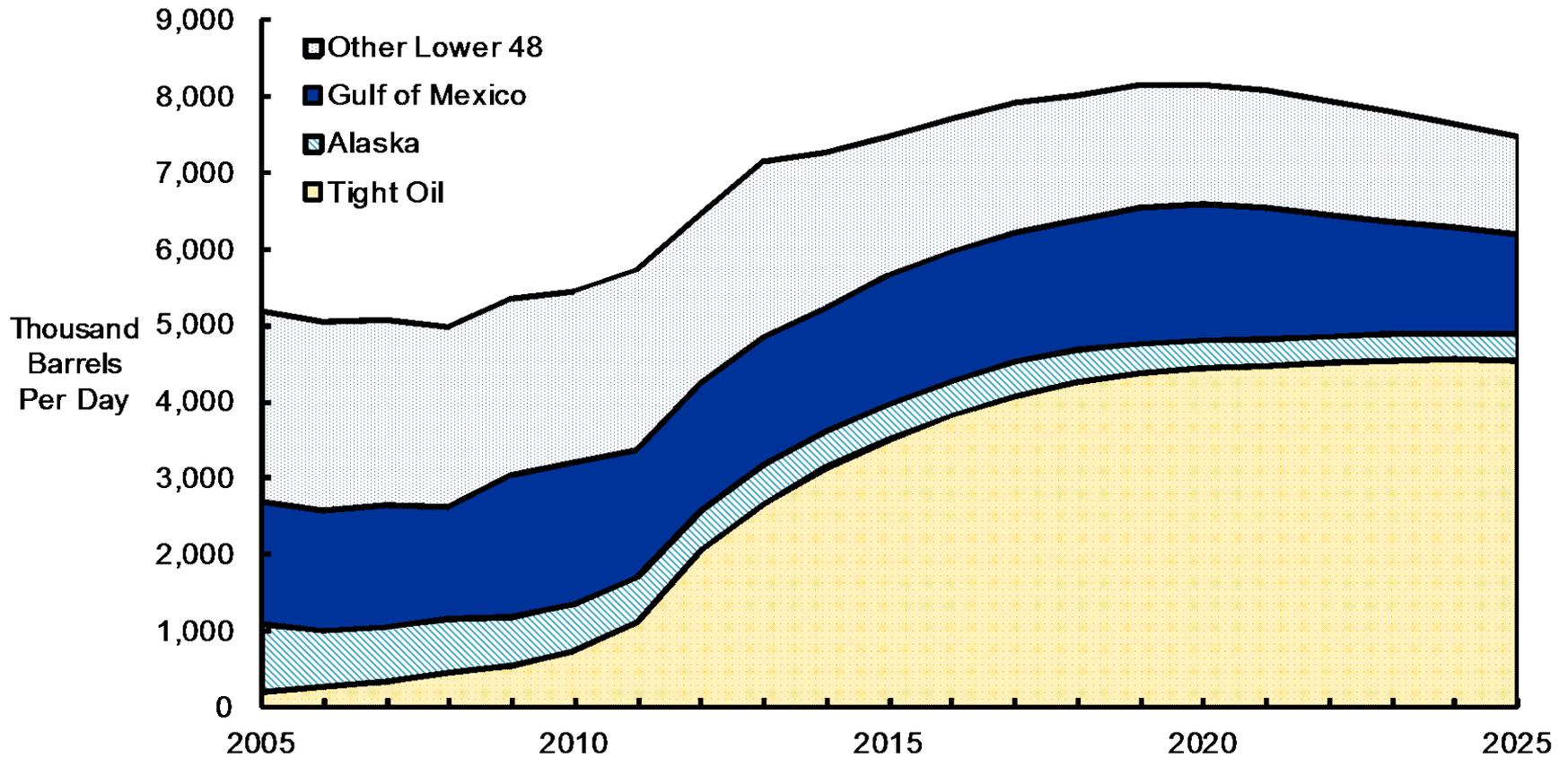


US crude oil production set to reach 8 mbd by 2019: Highest annual average level in 30 years



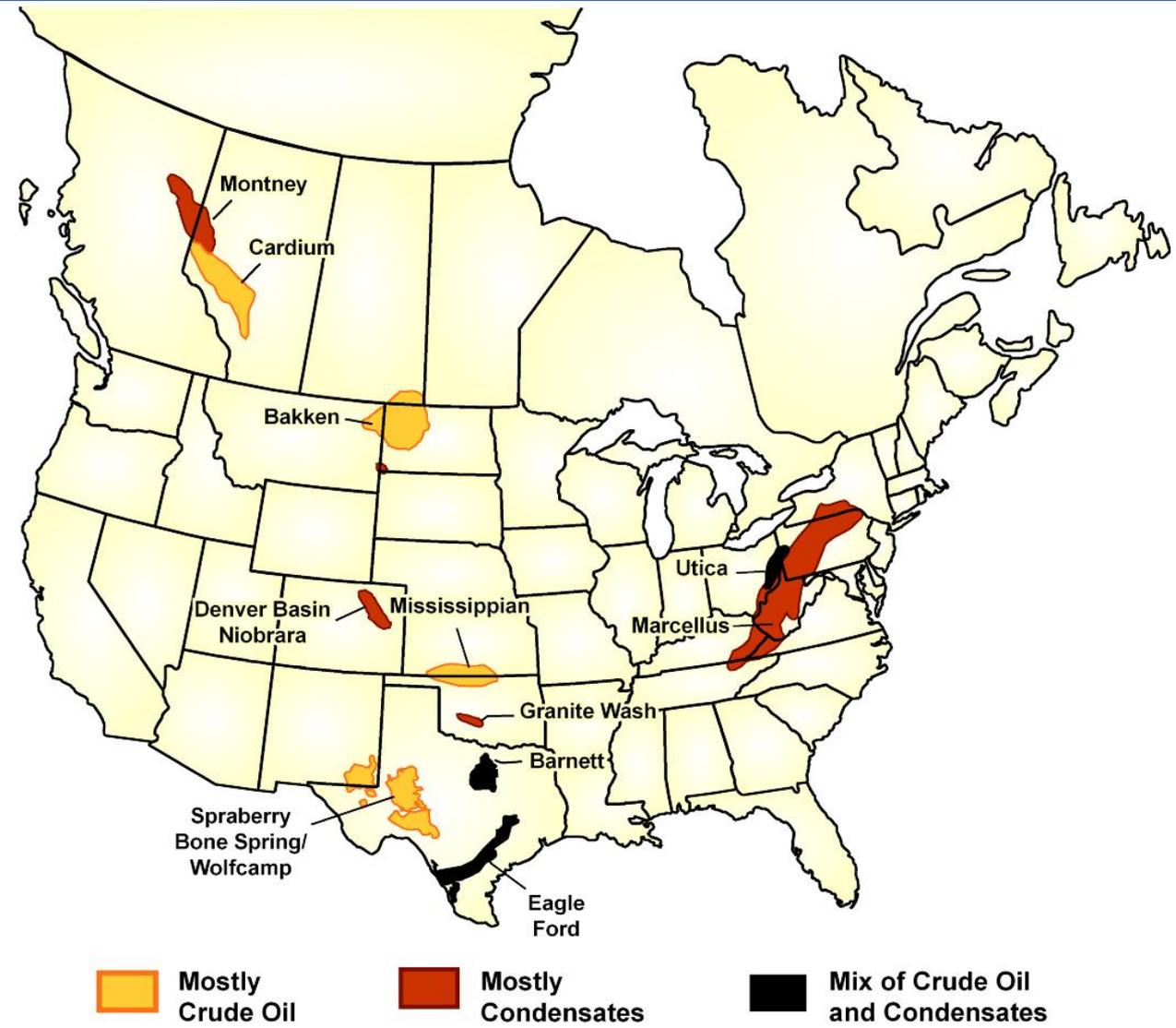
This outlook may turn out to be too conservative

US crude oil production outlook



Source: IHS CERA

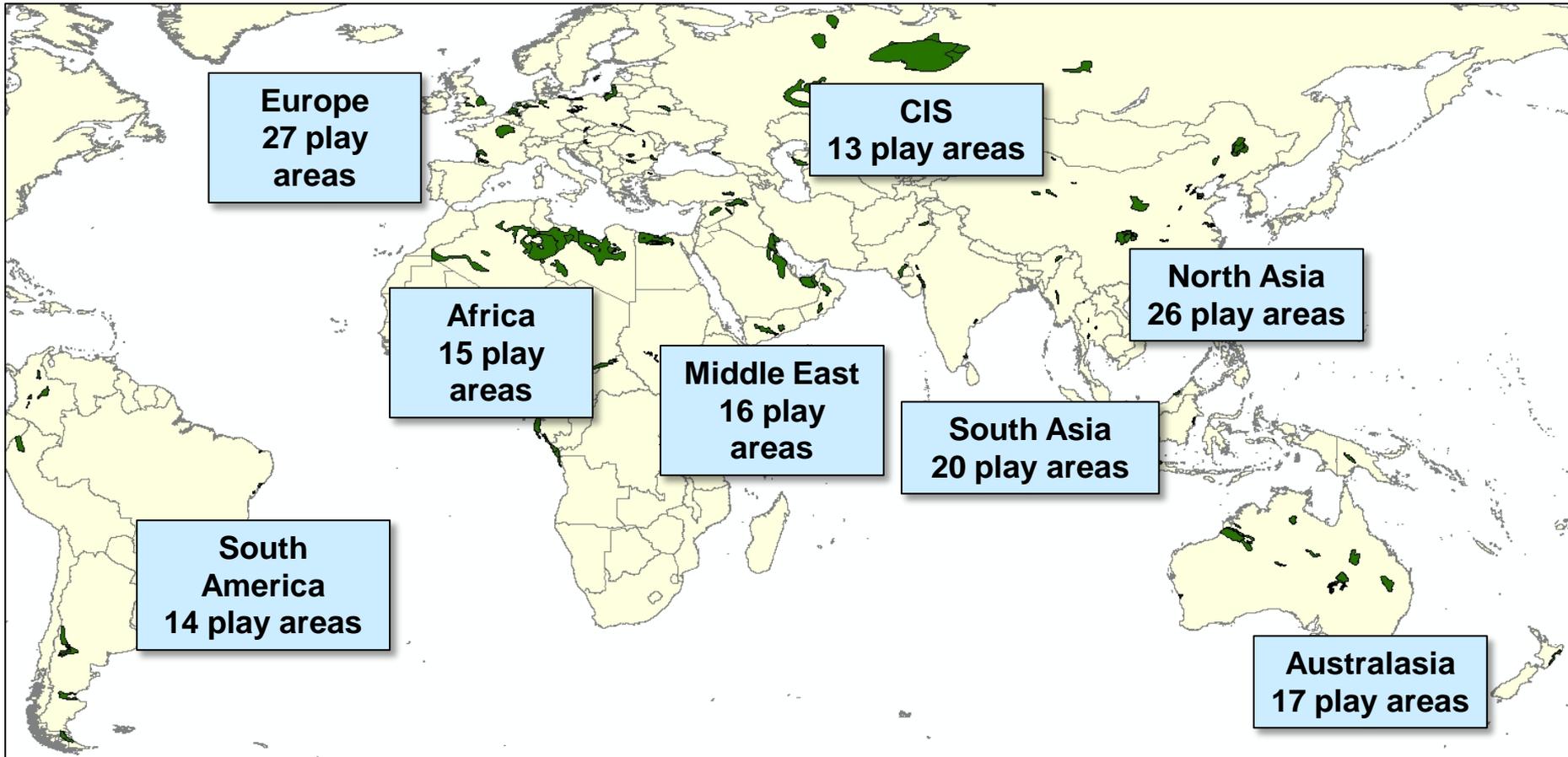
Major tight oil and shale gas plays in the US and Canada



Source: IHS CERA.
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Our ongoing Global Tight Oil Study has identified many plays outside of North America that could be sources of significant production

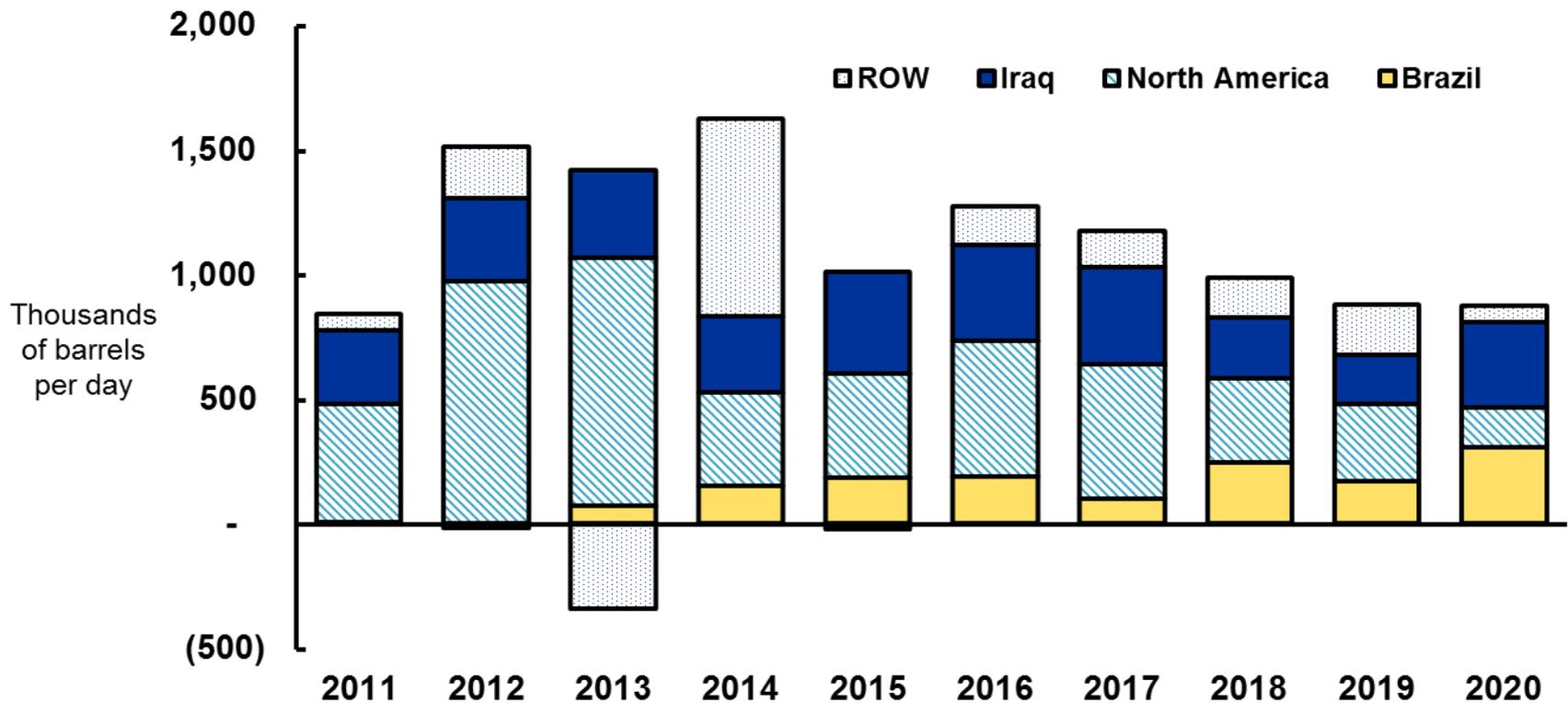


Source: IHS CERA.

Bakken to Baghdad: The axis of crude oil production growth runs from the Americas to the Middle East



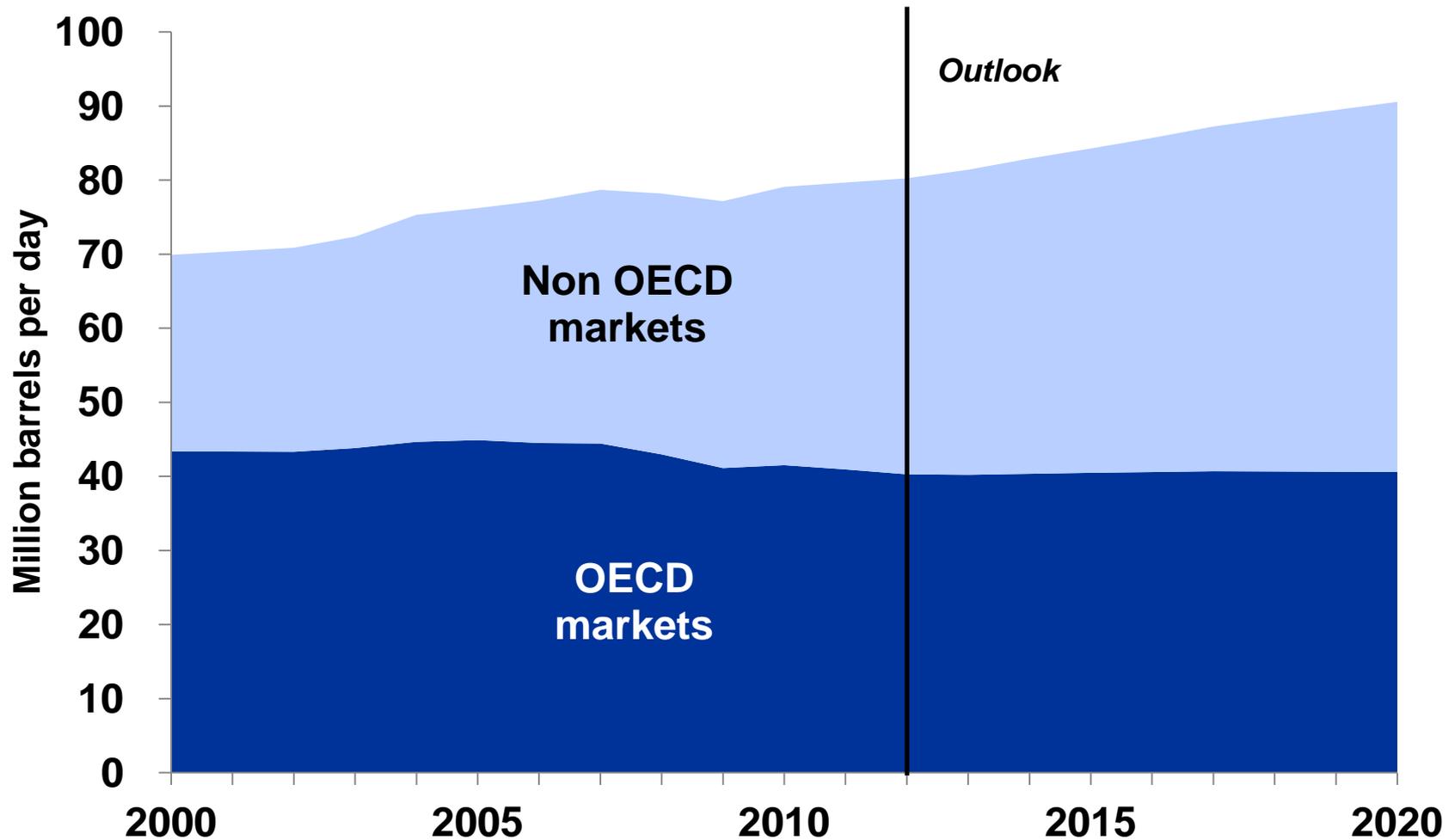
Year-On-Year World Crude Oil Supply Growth



Sources: IHS CERA, with some historical data from International Energy Agency and US EIA.

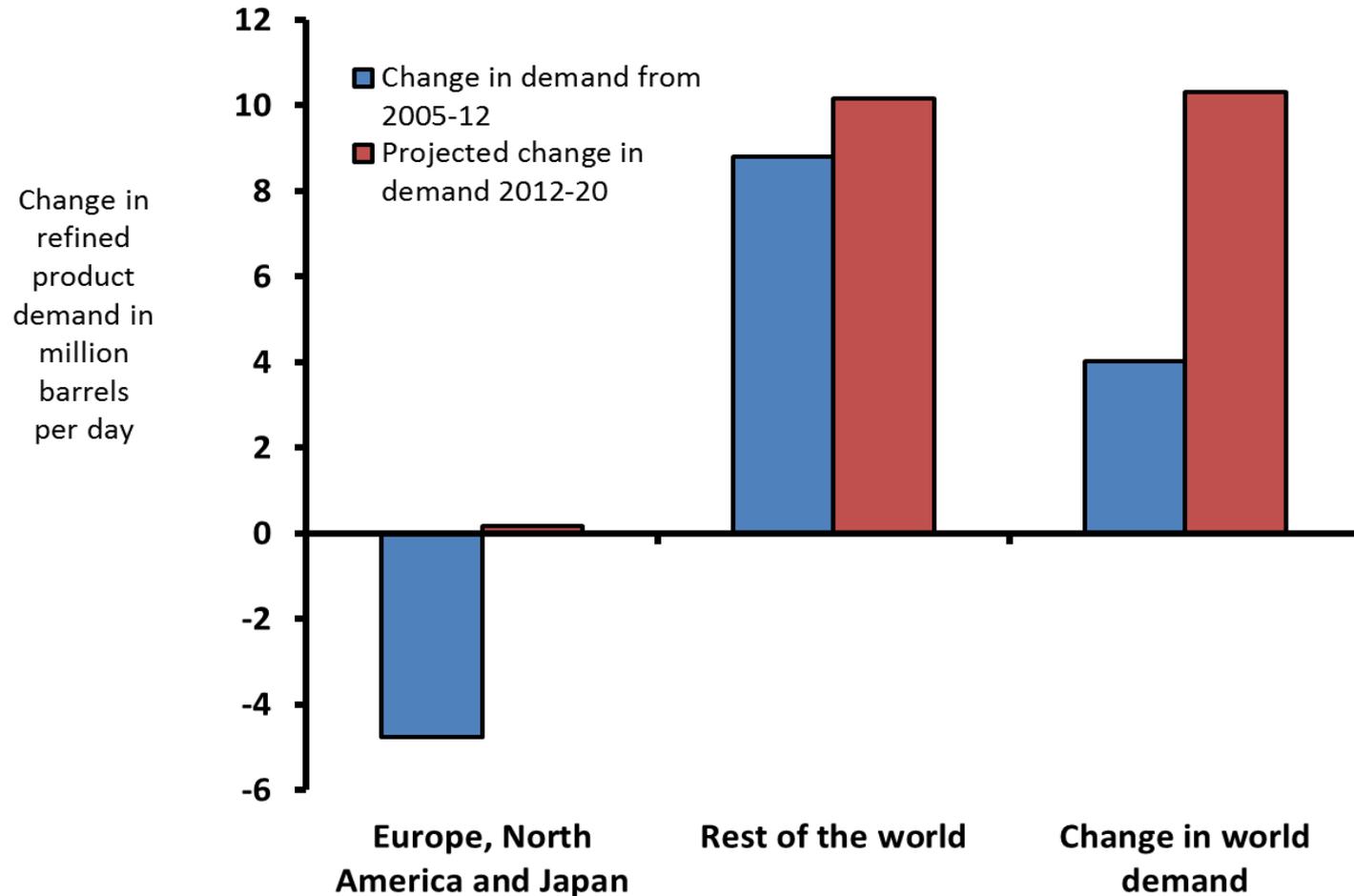
Oil demand and refining

Oil demand in developing markets set to surpass developed markets



Sources: Historical data from the IEA, EIA, and IHS CERA. Projection from IHS CERA. Note: This figures does not include demand for natural gas liquids

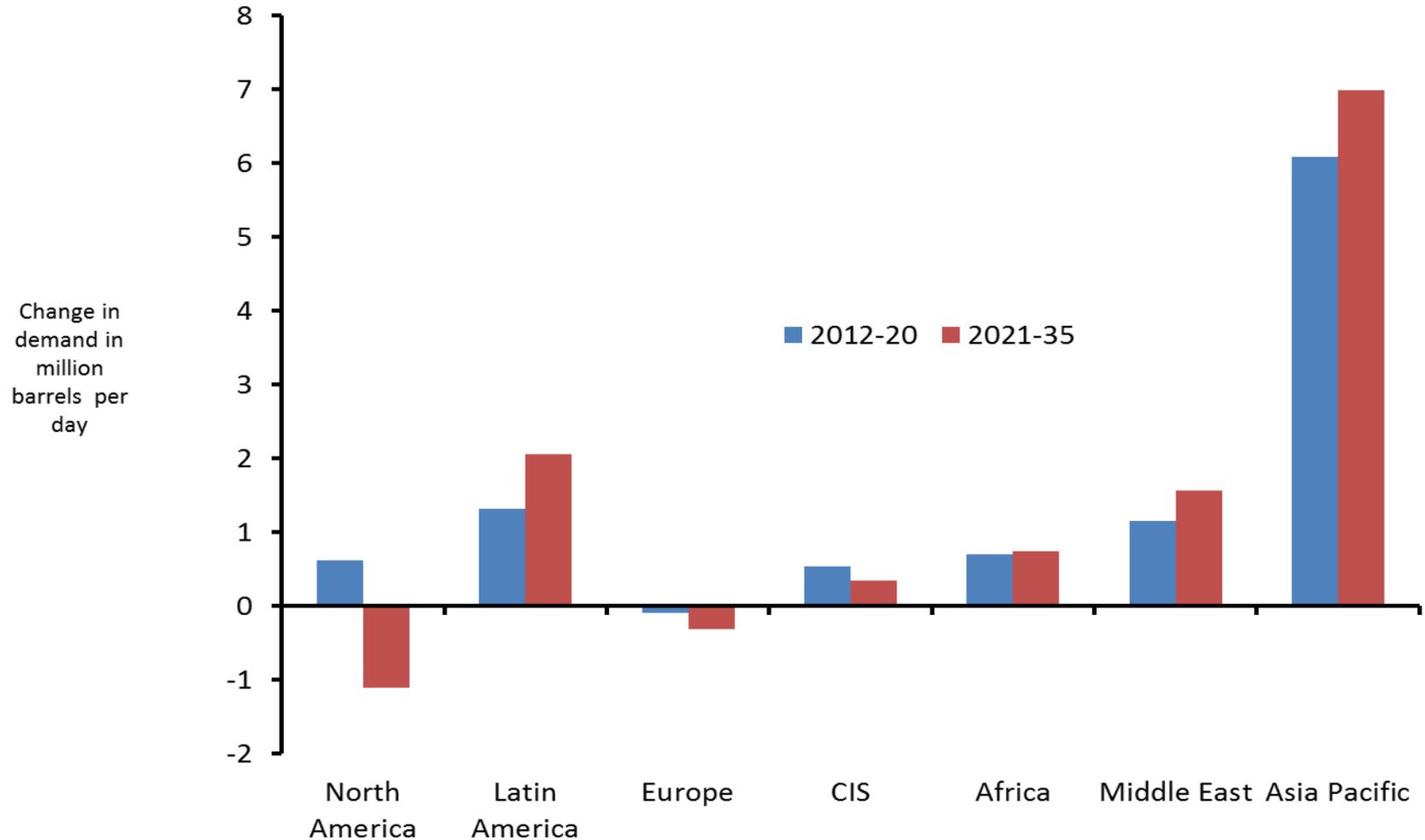
On the double: Europe, North America and Japan no longer a drag, the pace of world oil demand growth expected to be stronger to 2020



Source: IHS CERA with historical data from government agencies.

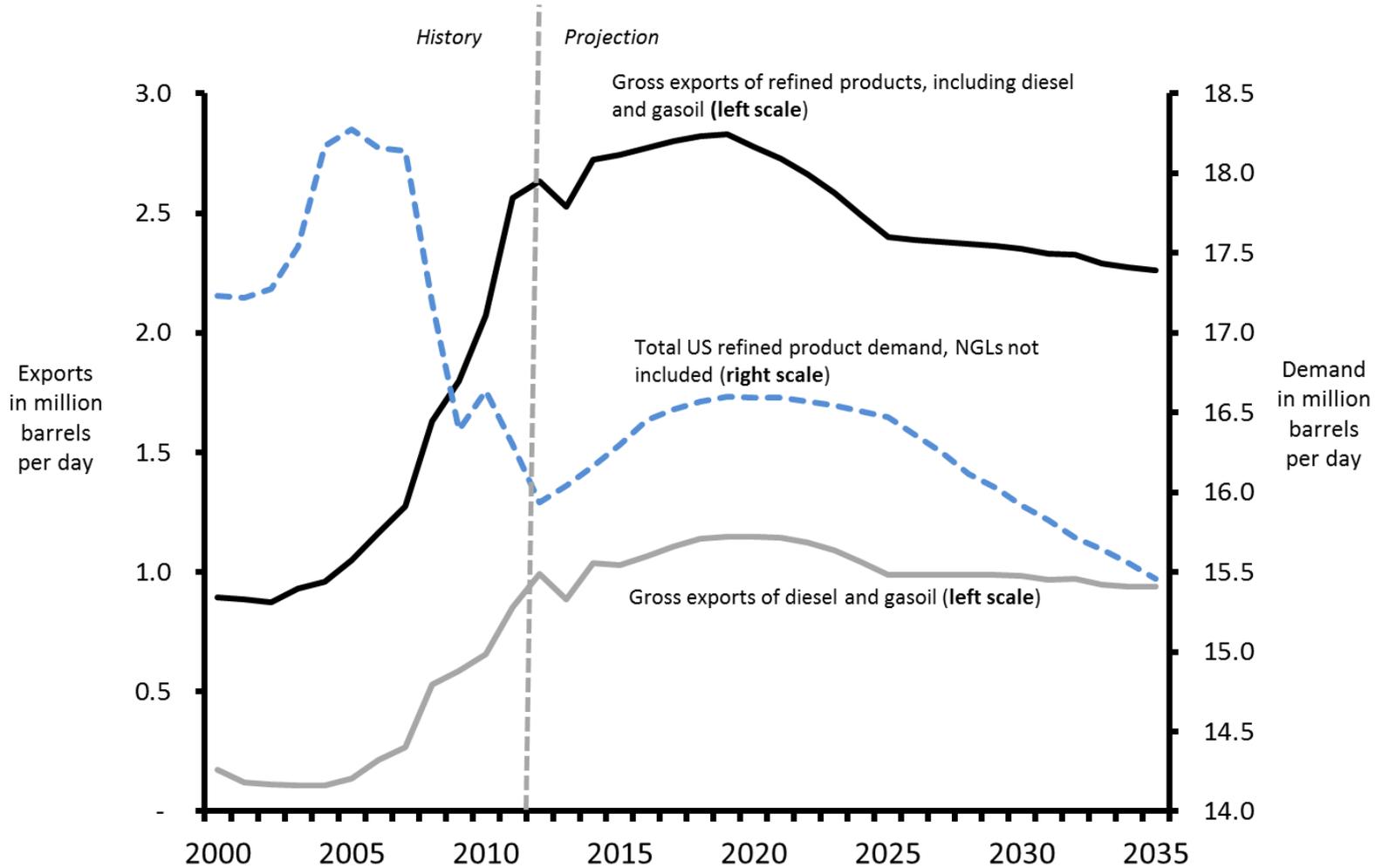
Asia dominates growth in oil demand

Change in oil demand by region 2012-20 and 2021-35



Source: IHS CERA. Note: Mexico is included in Latin America. CIS = Commonwealth of Independent States (Eurasia). Africa includes the entire continent, including Egypt.

The US is in a post-peak oil demand era, but product exports to help support domestic refining business



Source: Projection from IHS CERA. History from US EIA.

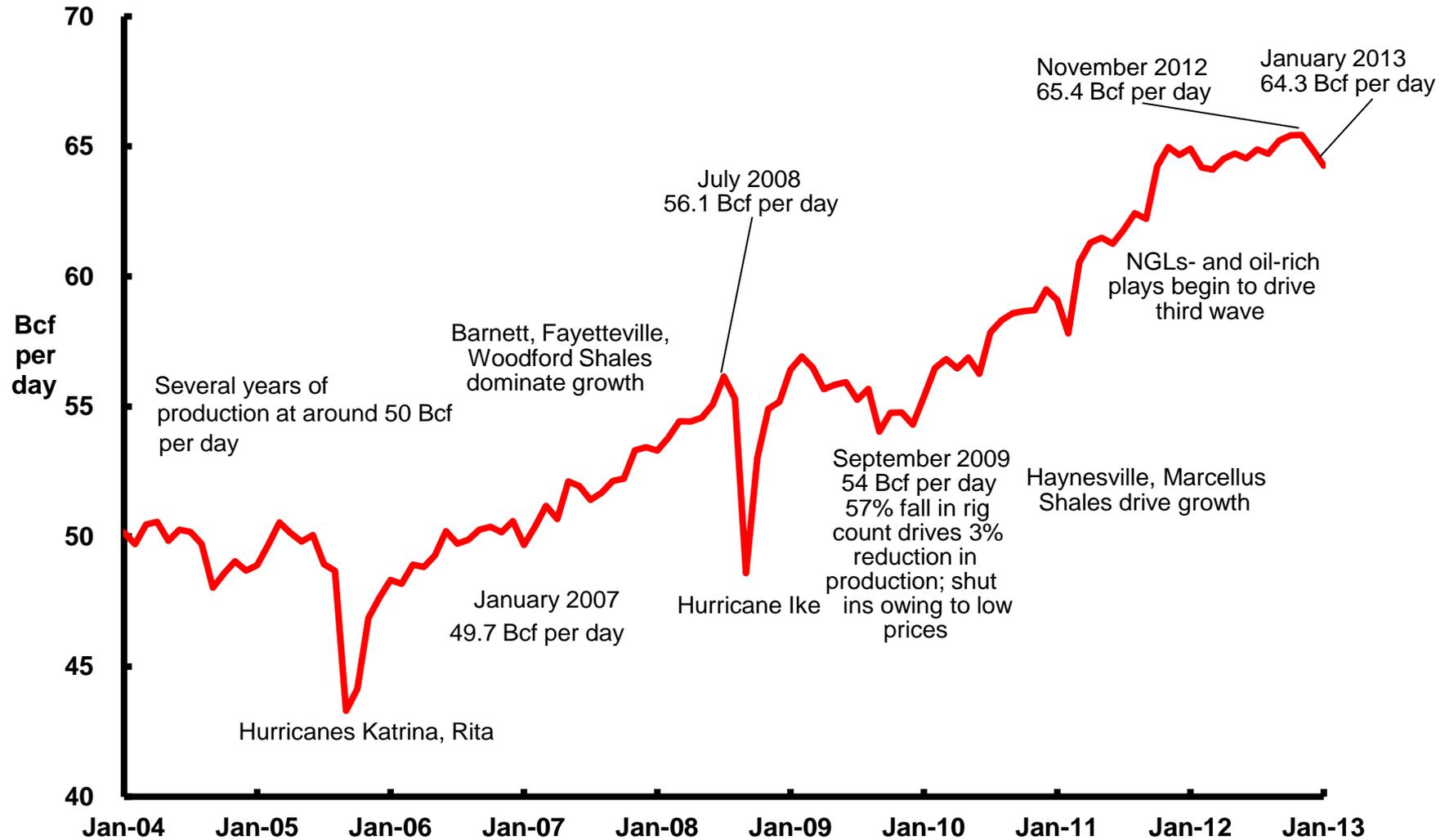
North American Natural Gas

Impact of Shale Gas





Unconventional gas has led to rapid US production growth



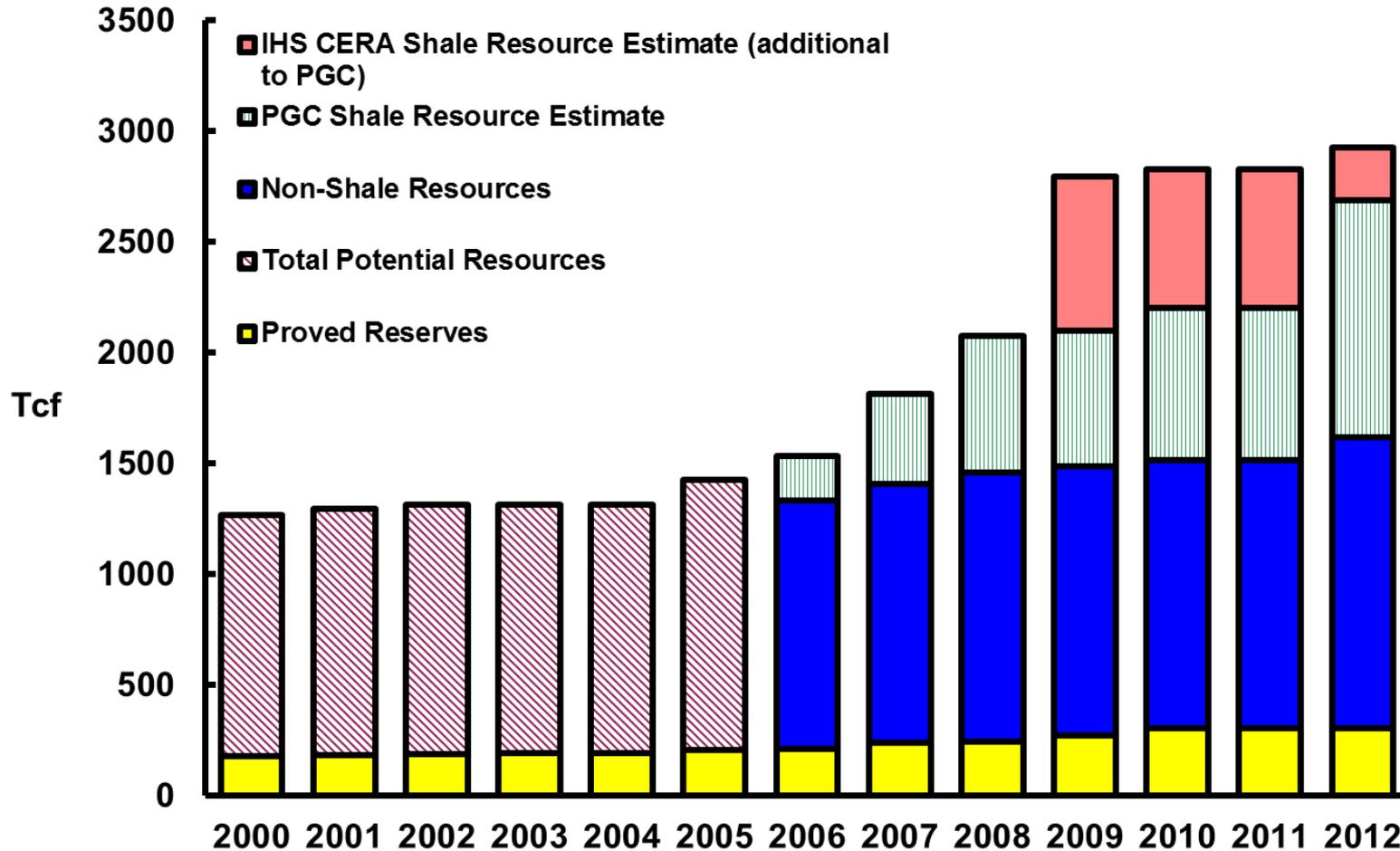
Source: Energy Information Administration (EIA), IHS CERA. Production is for lower 48 US states.

Note: Bcf = billion cubic feet.

A significant US resource base exists and will increase (albeit at a slower pace)



US natural gas reserves and resources

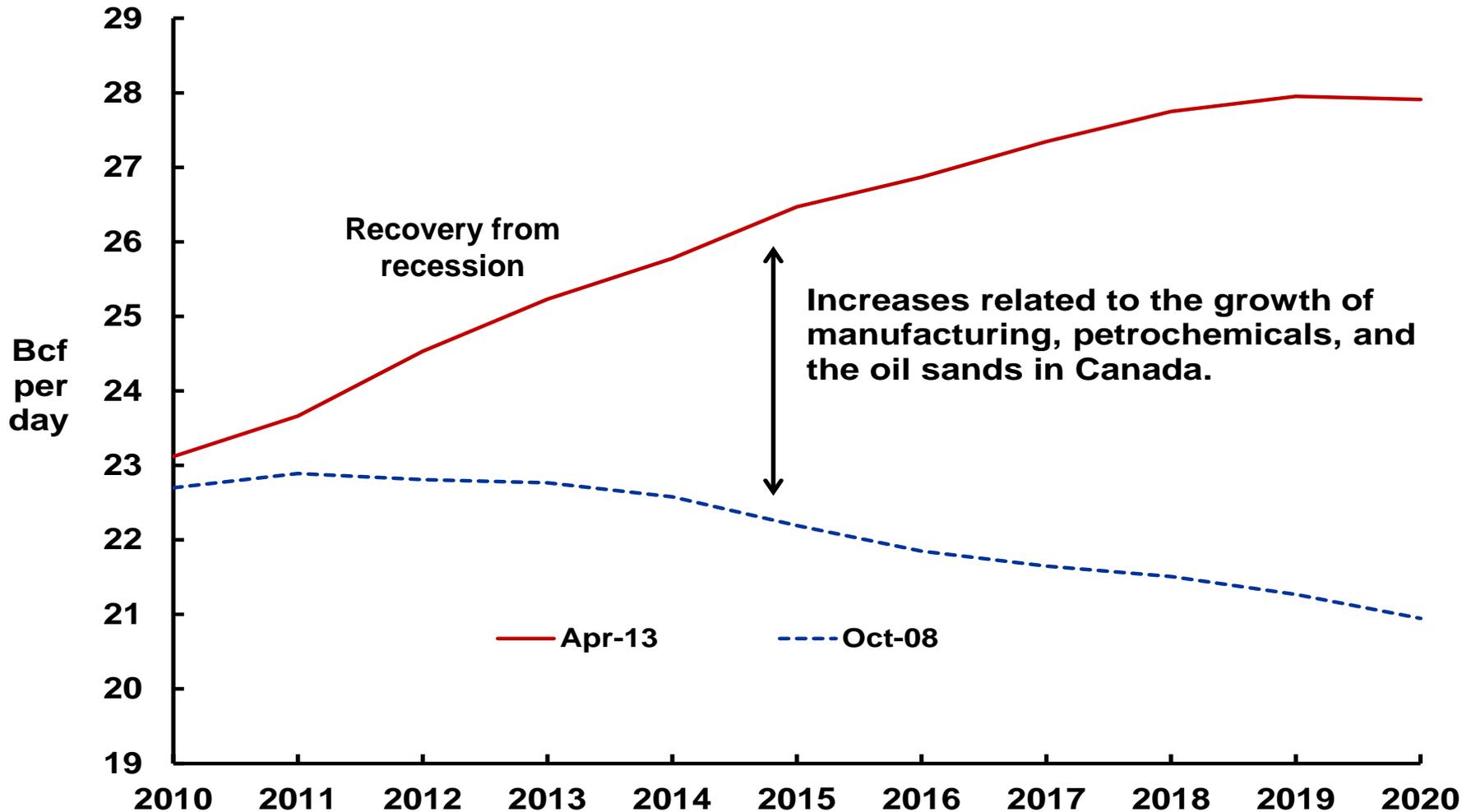


Source: EIA, PGC, IHS CERA.
Note: Tcf = trillion cubic feet.

Consequences of the shale boom: Demand growth

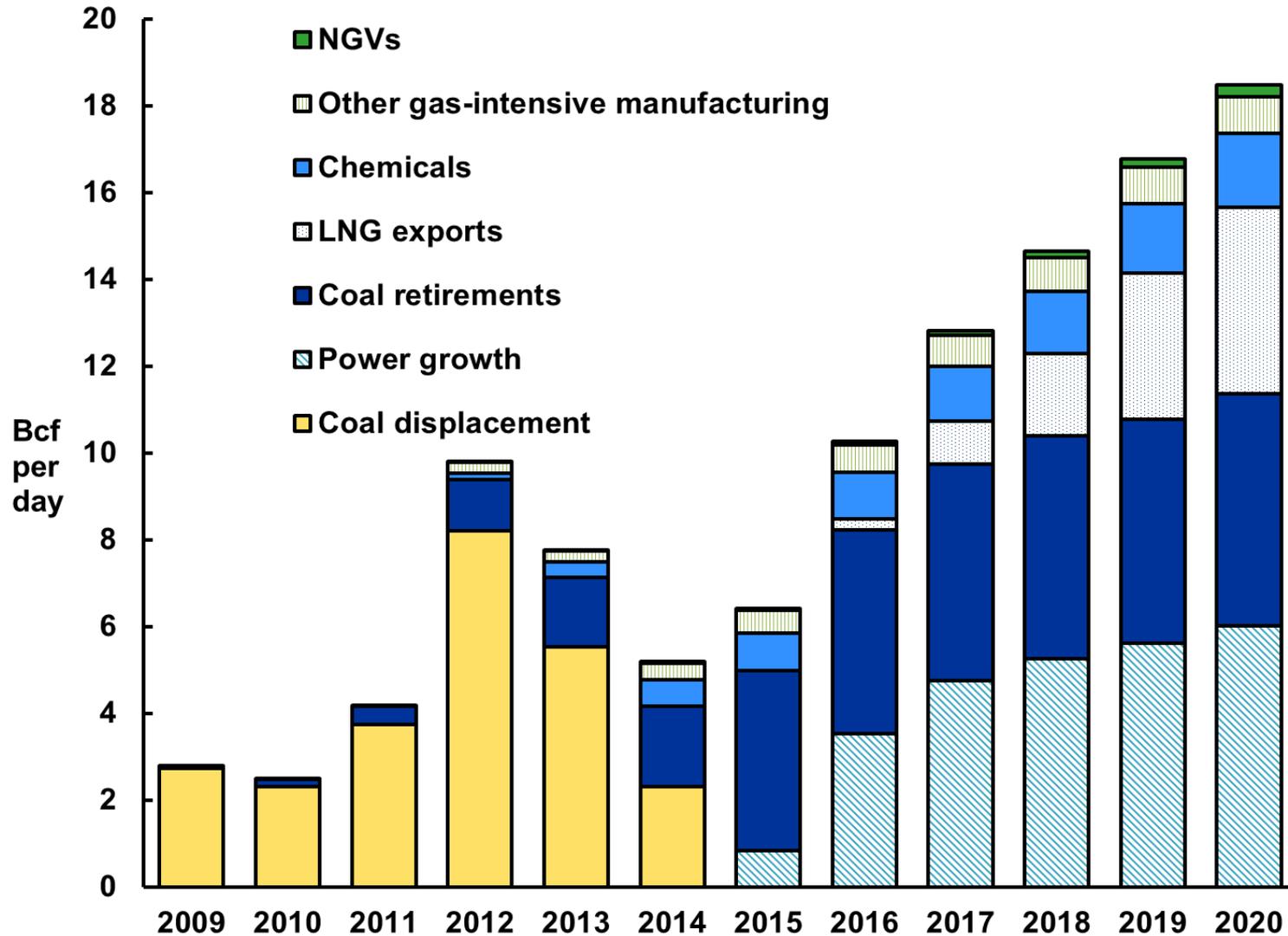


North American industrial gas demand: Slow growth replaces long-term decline



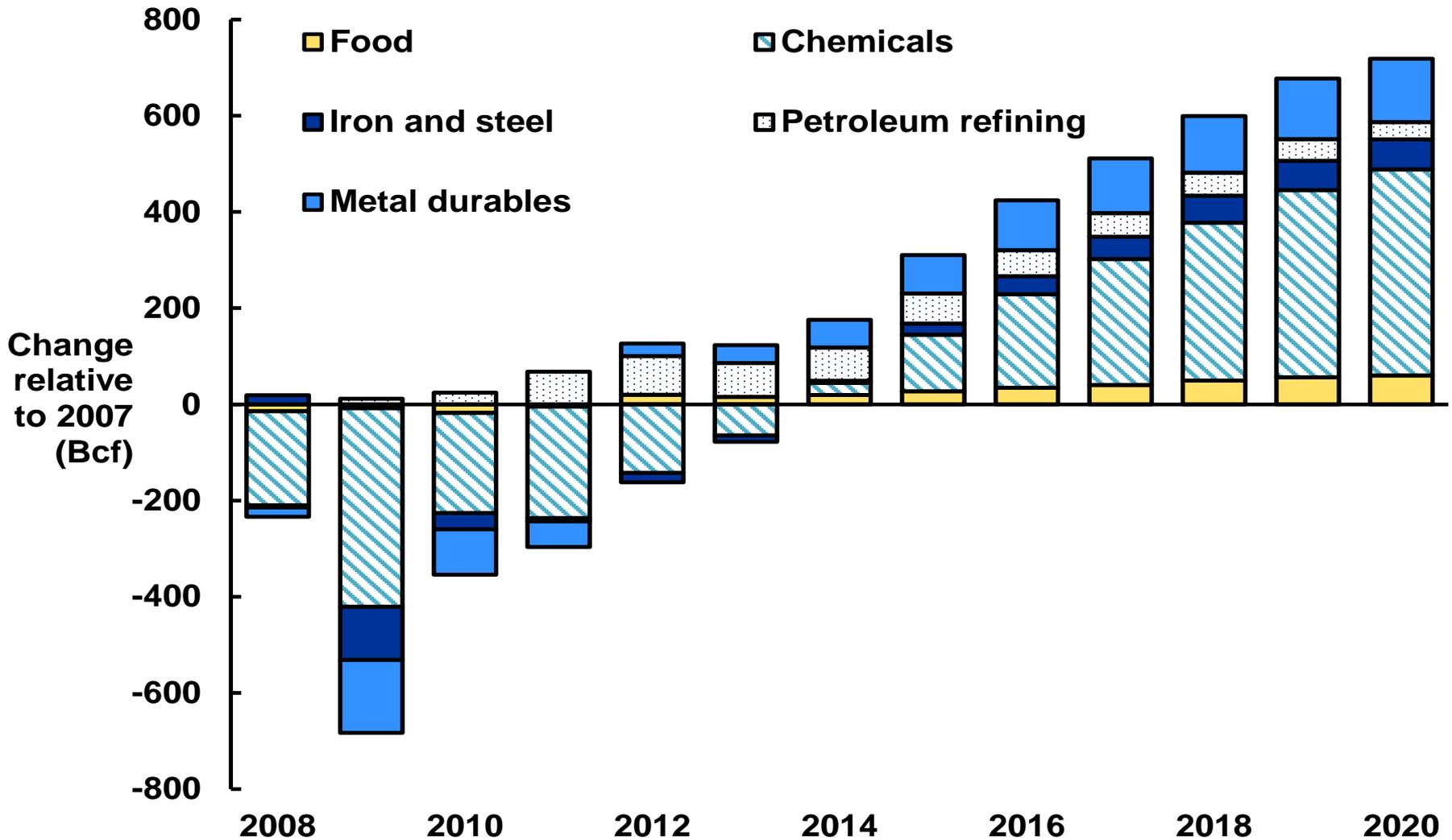
Source: EIA, Statistics Canada, IHS CERA.

Components of US gas demand growth relative to 2008

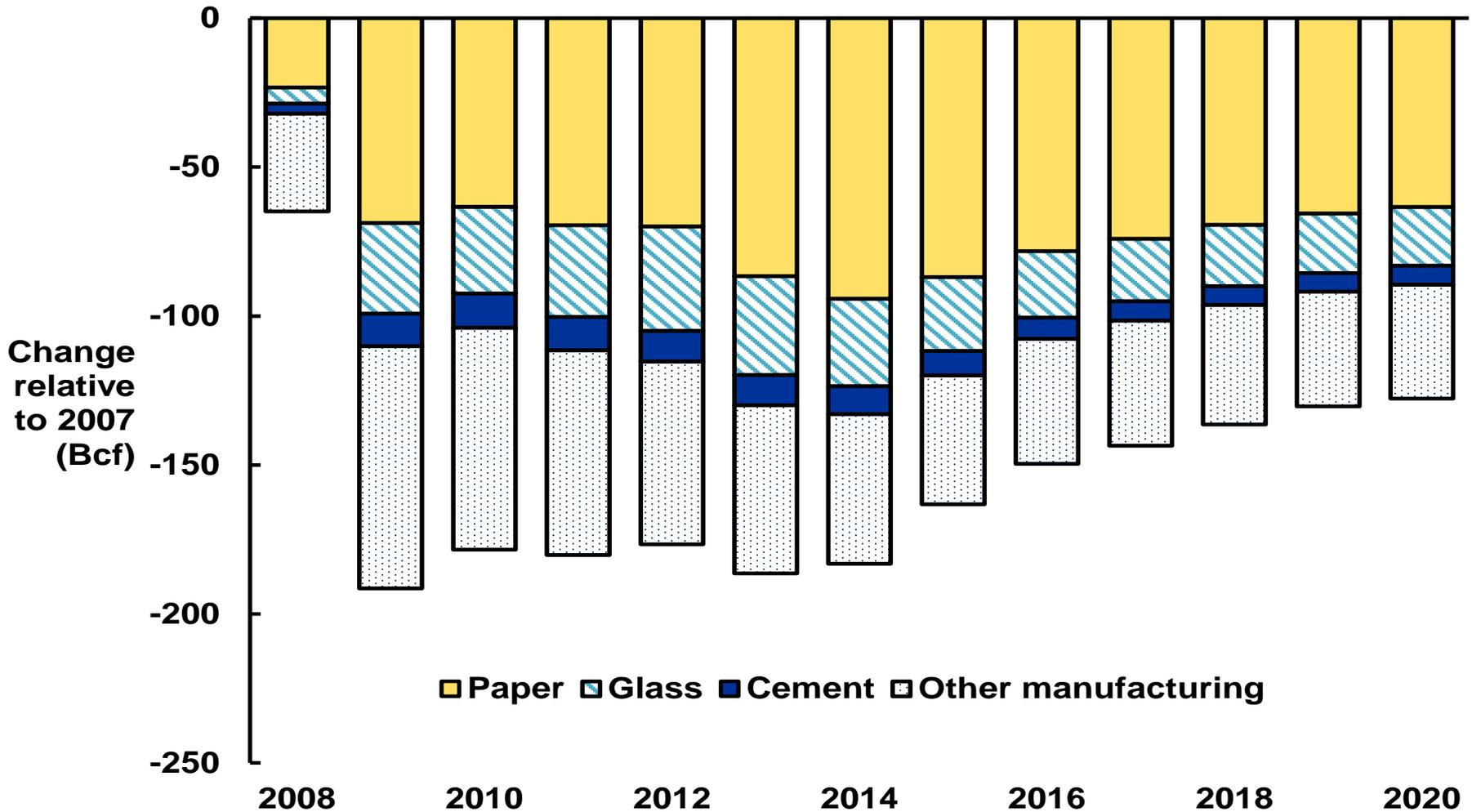


Source: IHS CERA. Data covers lower 48 US states.
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US Gas-Intensive Industries Which Have Rebounded

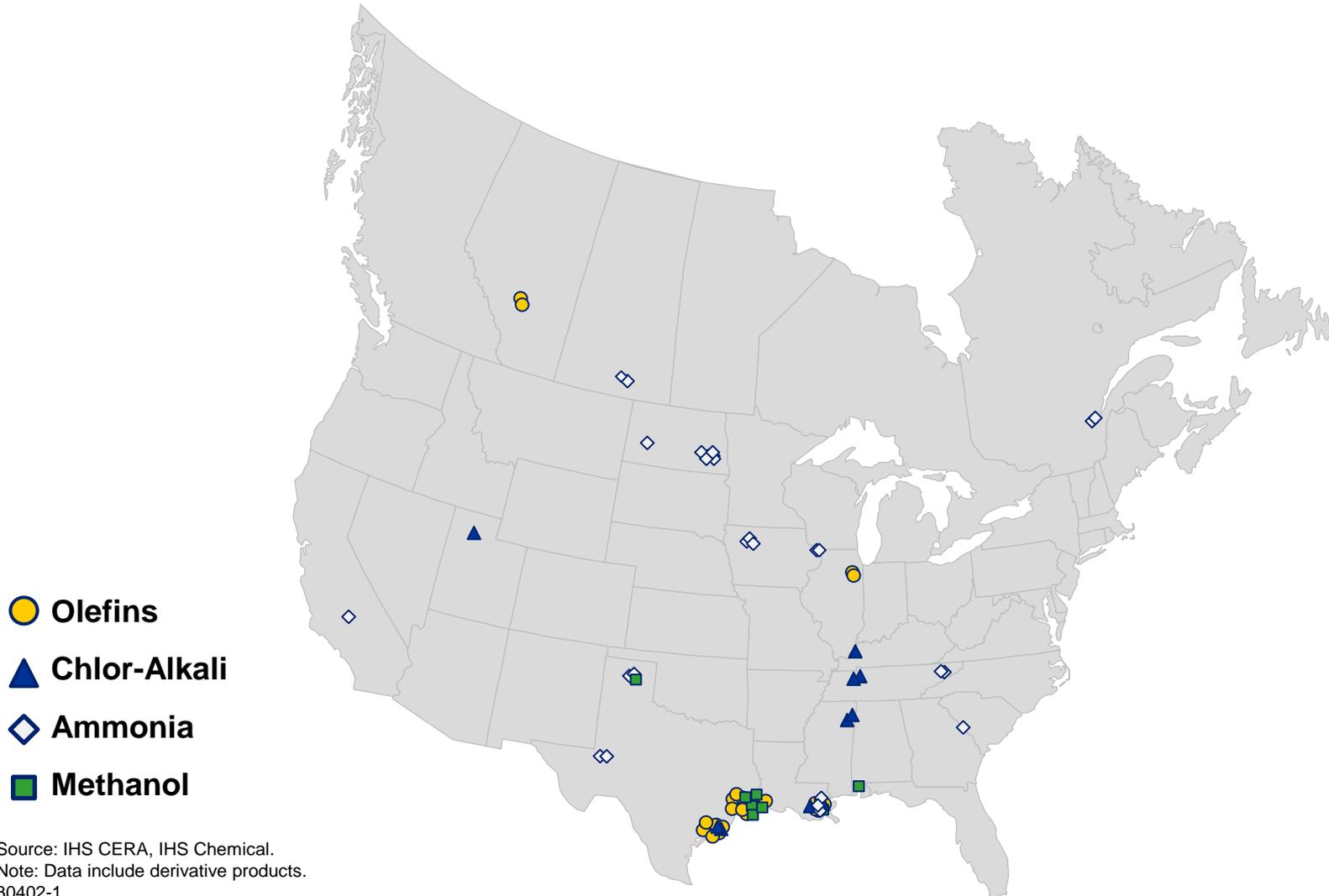


US Gas-Intensive Industries Struggling to Get to Pre-Recession Levels of Consumption



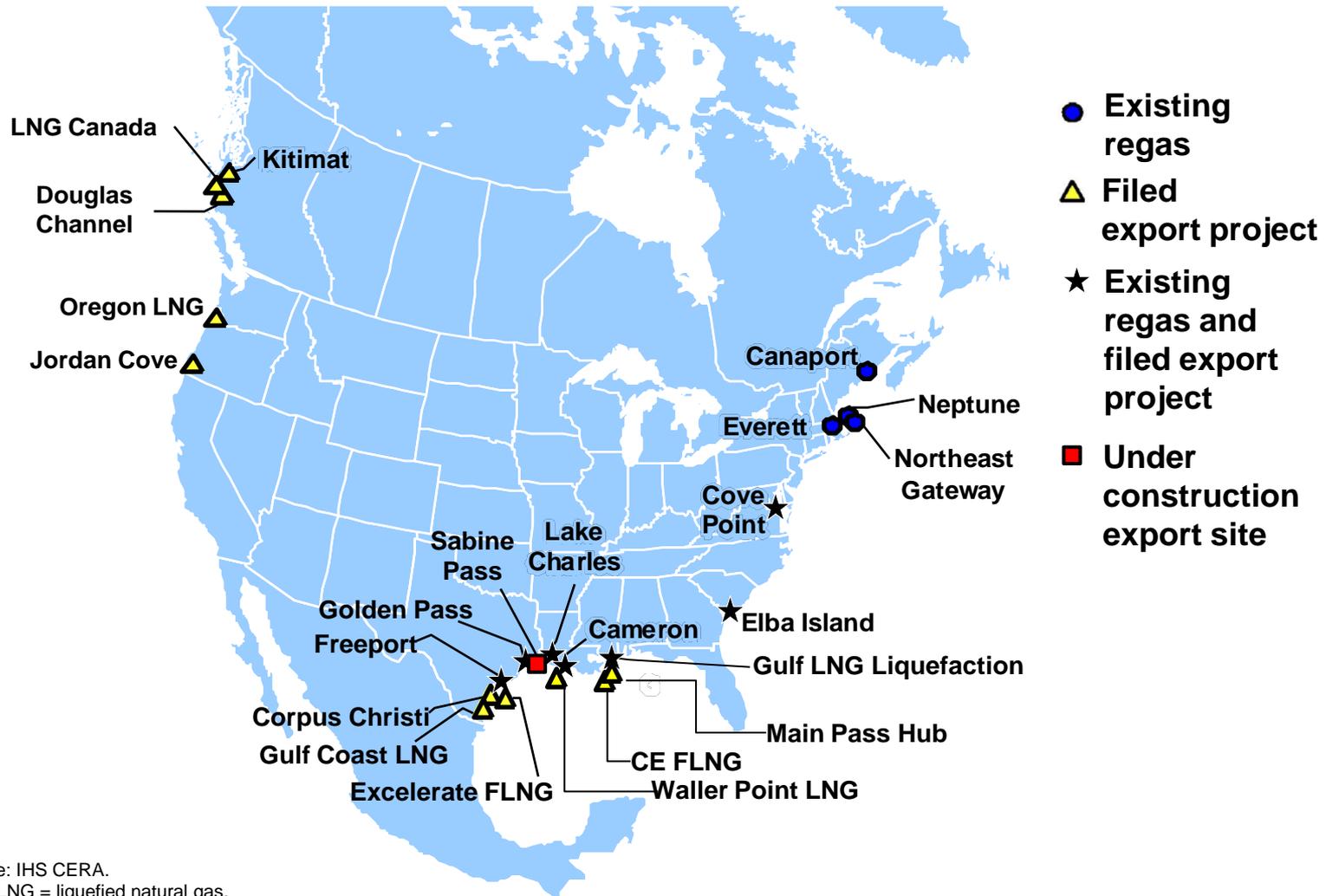
Source: IHS CERA. Data covers lower 48 US states.
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North American chemical plants expansions and new capacity



Source: IHS CERA, IHS Chemical.
Note: Data include derivative products.
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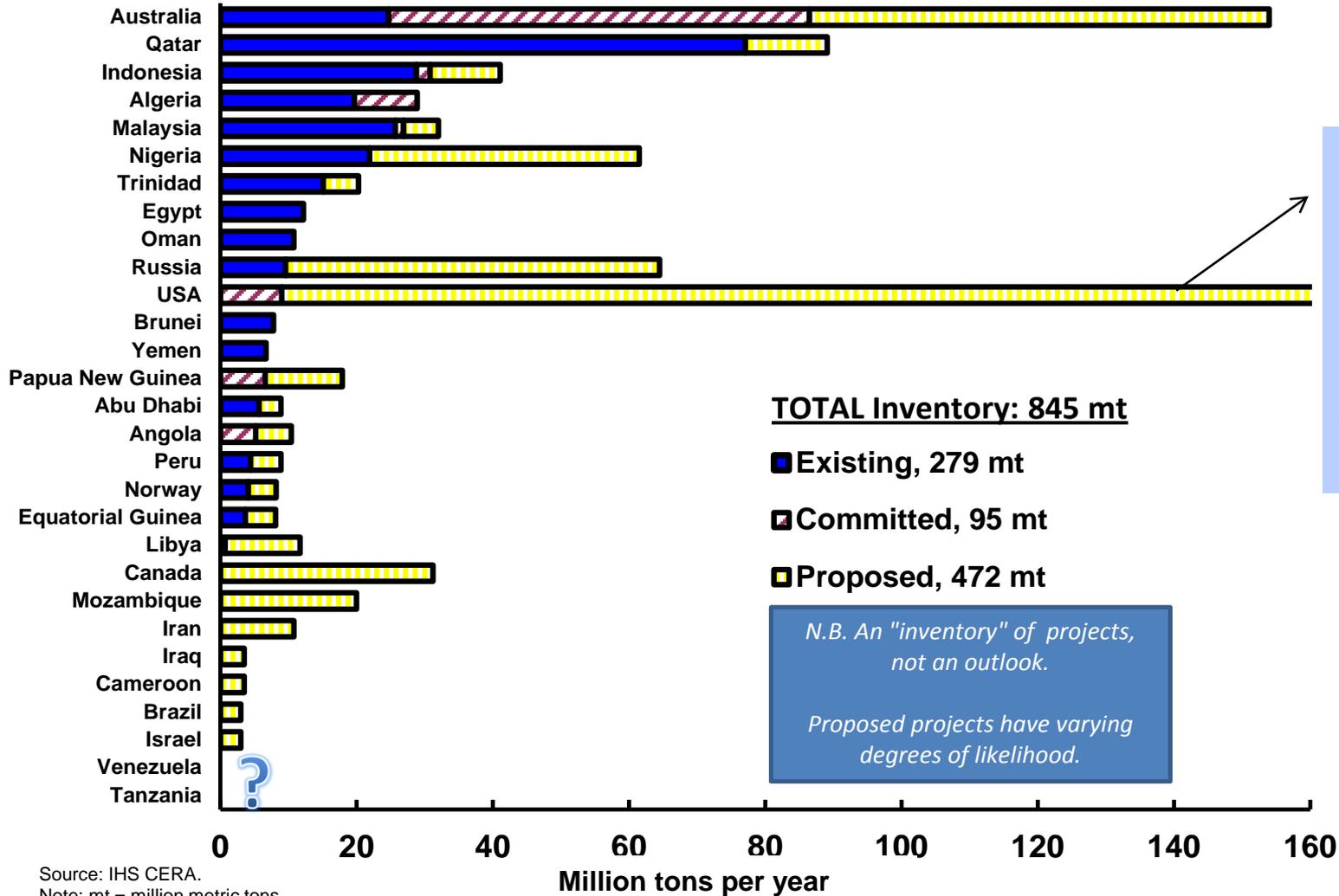
Existing regasification and filed liquefaction projects: US Lower 48 and Canada



Source: IHS CERA.
Note: LNG = liquefied natural gas.

Proposed LNG supply

Qatar, Australia followed by United States?



Over 190 mt proposed to a regulator in the United States. Varying likelihoods of moving beyond the application process.

Source: IHS CERA.
Note: mt = million metric tons.