

Winter Fuels Outlook



For

NCAC-USAAEE

October 24, 2014 | Washington, DC

By

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U.S. Energy Information Administration

Winter Outlook

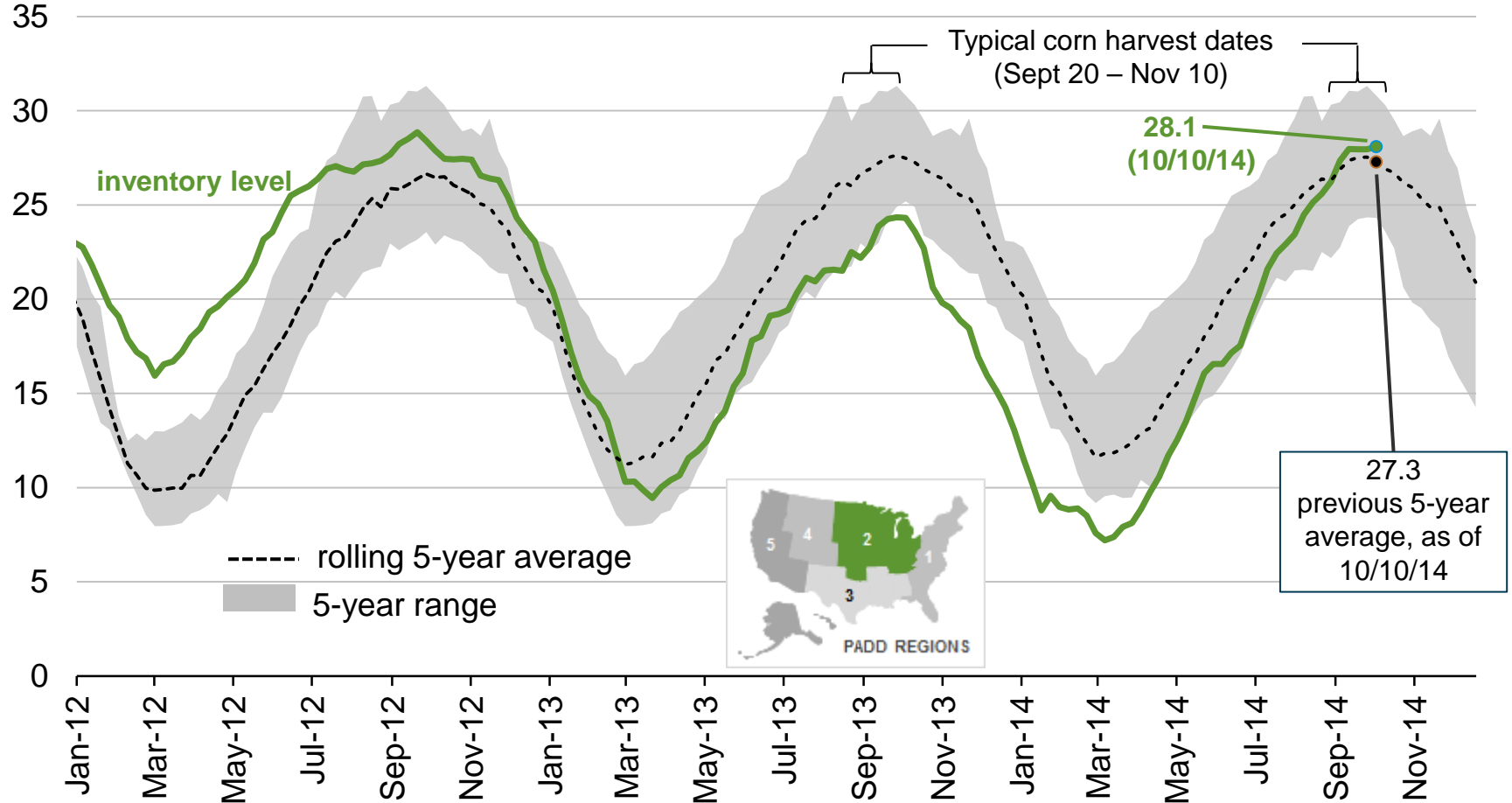
Winter 2013-14 compared with winter 2014-15

- **NOAA's central forecast** is for 12% lower winter heating degree days.
- **Natural gas** stocks are lower this winter, but production levels are elevated. We anticipate continued congestion in natural gas transportation into New England for home heating and electricity generation.
- **Propane** stocks are beginning this winter much higher in PADD 1 (East Coast), PADD 2 (the Midwest) and PADD 3 (Gulf Coast) than last winter. Secondary and tertiary stocks have reportedly been building in the Midwest.
- **Corn harvest** forecasts by the USDA call for a record crop yield. Last year's large, wet corn harvest increased the demand for propane used in crop drying. The corn belt has been drier this year.
- **Total distillate stocks**, which include heating oil as well as Ultra Low Sulfur Diesel (ULSD) are about the same as year-ago levels. Five states in the Northeast have lowered sulfur specifications for heating oil.
- **Coal** stocks at electric utilities are at the low end of the 2006-2013 range.

PADD 2 (Midwest) propane inventories are currently above the five-year average

PADD 2 propane* inventories

million barrels

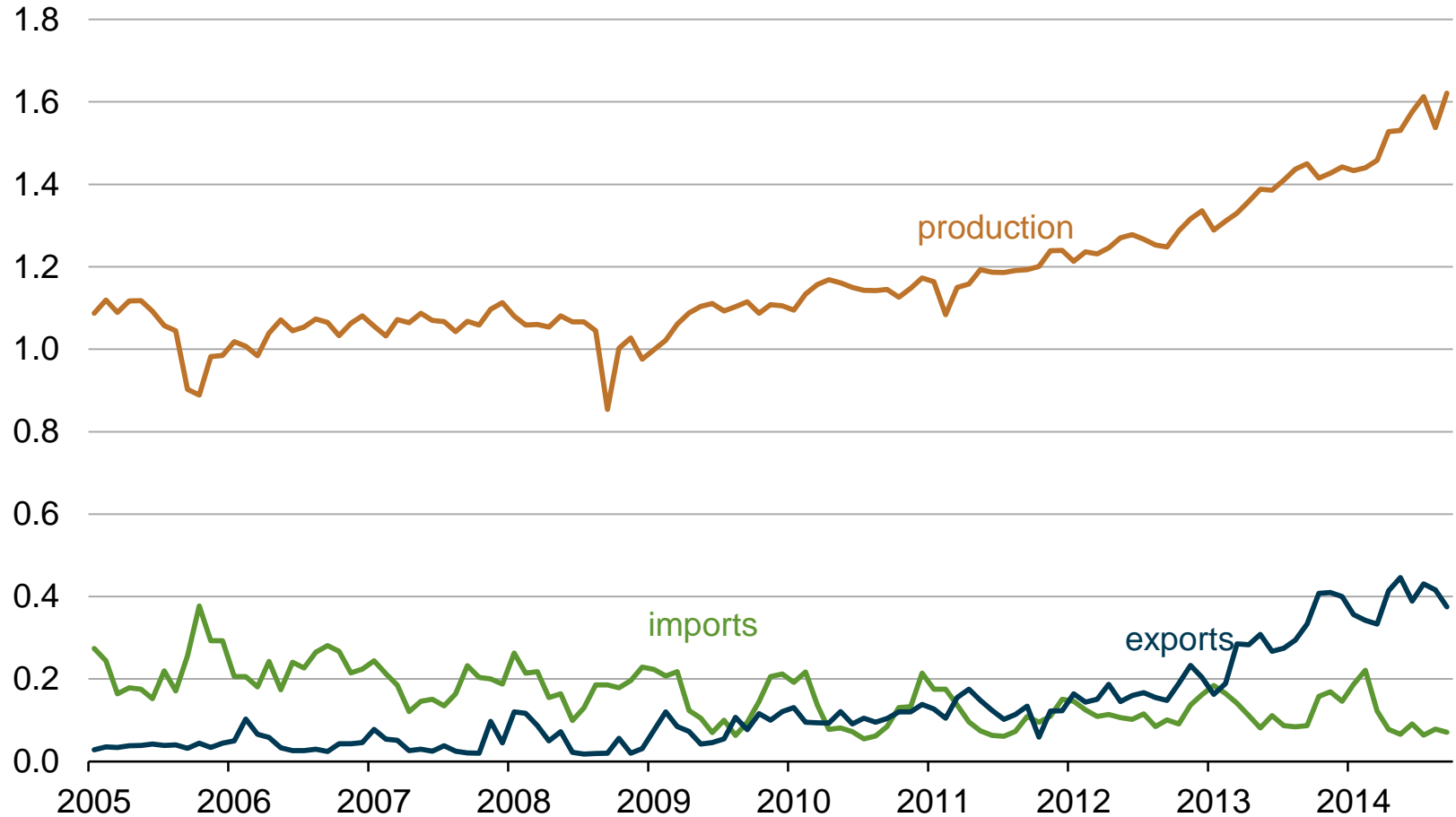


Source: EIA, Weekly Petroleum Status Report, data through October 10

*propane/propylene for fuel use only

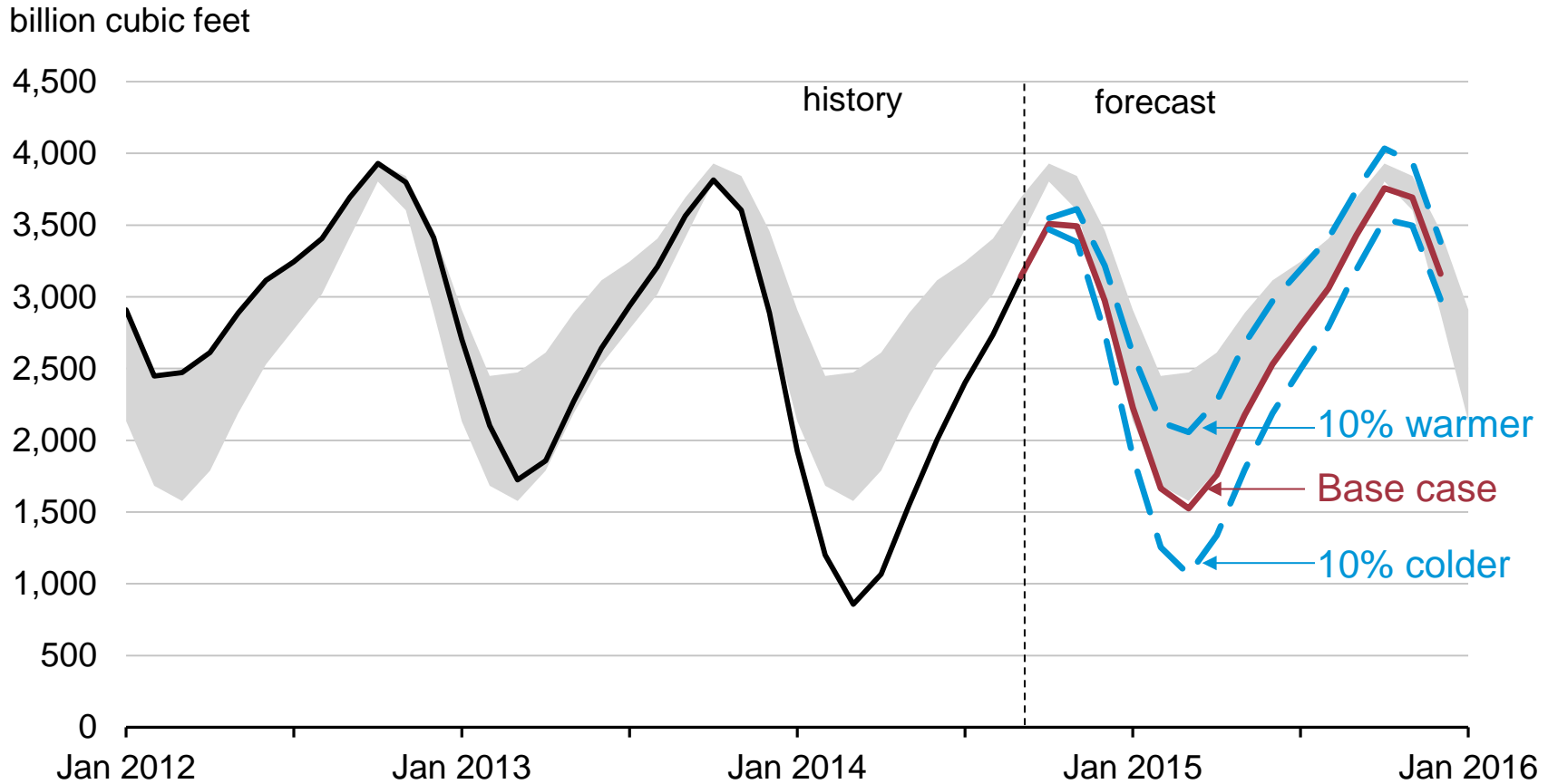
U.S. propane production and trade trends

U.S. propane and propylene production, imports, and exports
million barrels per day



Source: EIA, Petroleum Supply Monthly through July 2014; August and September 2014 are estimates

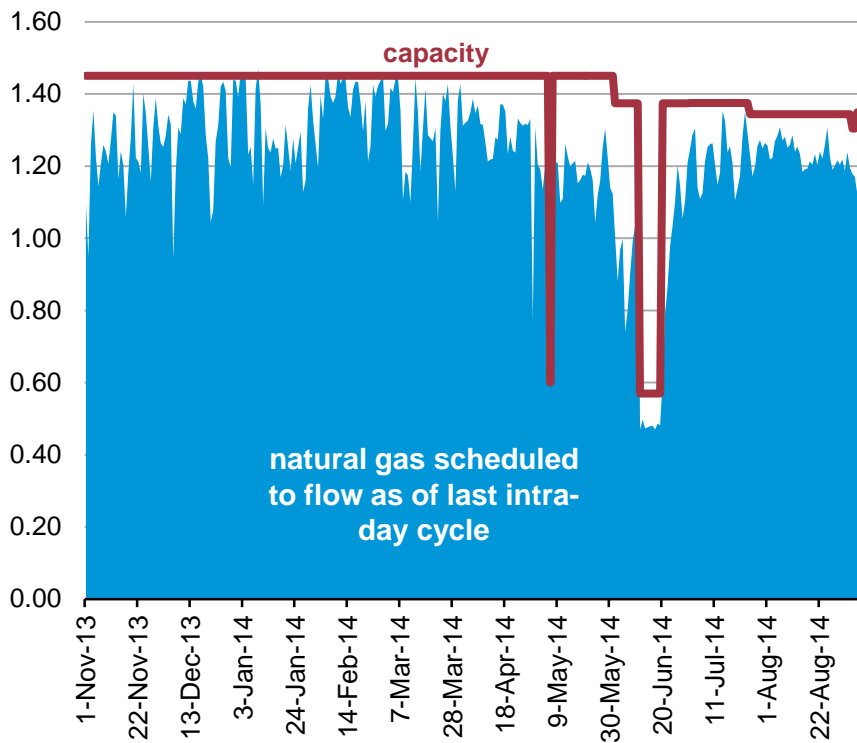
Natural gas stocks are currently below the five-year average and five-year minimum, but have been climbing steadily



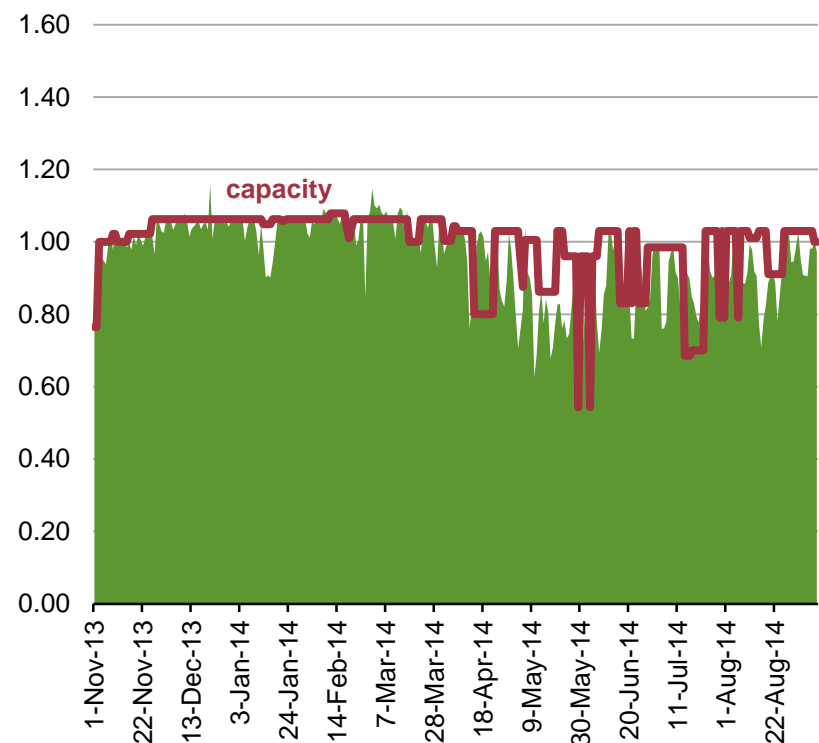
Note: Normal range (gray band) represents the range between the minimum to maximum from Jan. 2009 to Dec. 2013
Source: EIA Short-Term Energy Outlook, October 2014

Key pipelines delivering natural gas into New England have been at or close to capacity on most days since the start of last winter

Daily scheduled natural gas and maximum capacity at the Stony Point Compressor Station on Algonquin Gas Transmission billion cubic feet per day



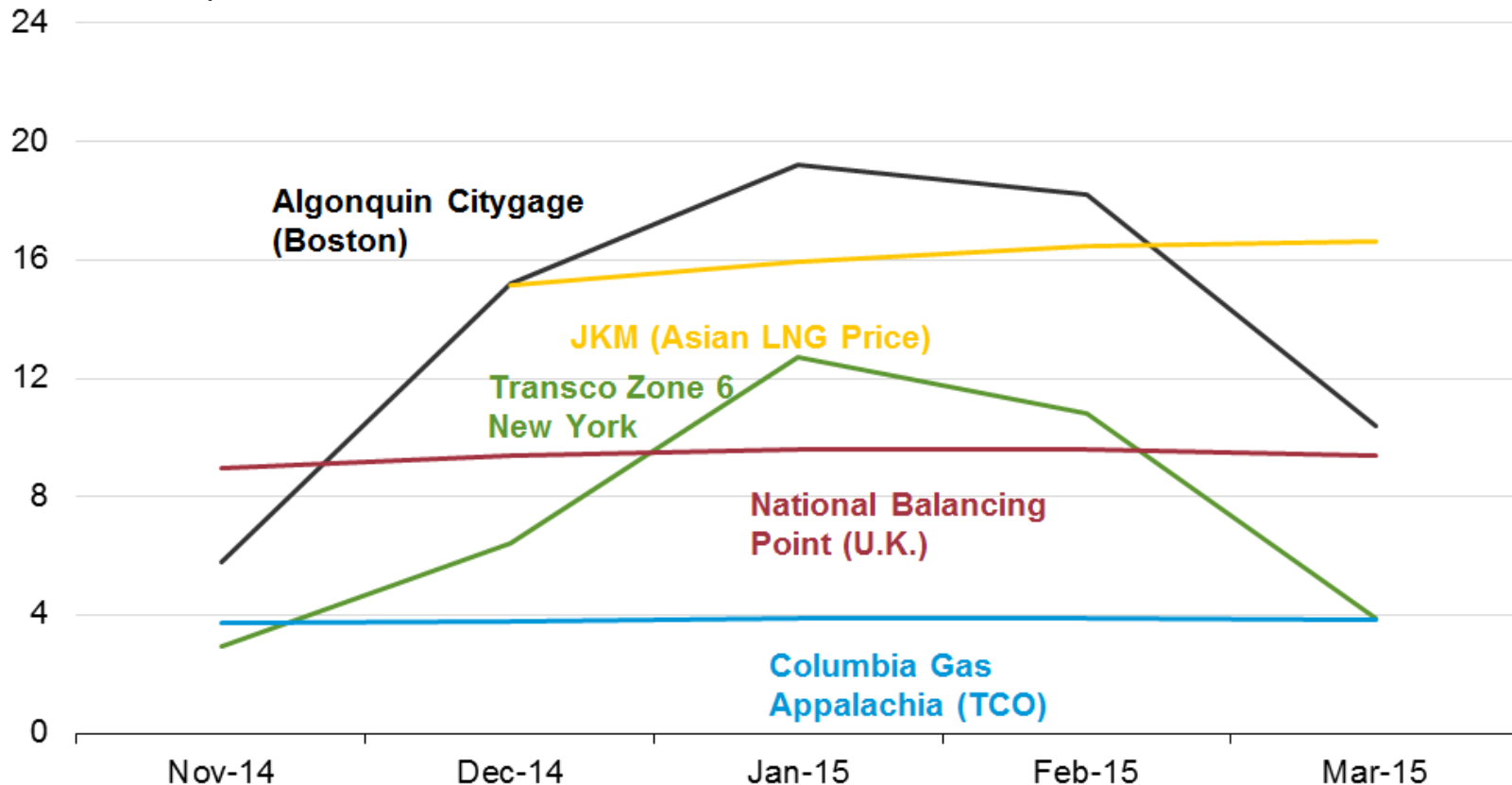
Daily scheduled natural gas and maximum capacity at Segment 245-249 on the Tennessee Gas Pipeline billion cubic feet per day



Source: Derived from the Ventyx Energy Velocity Suite. Scheduled volumes based on Algonquin Gas Transmission's Stony Point compressor station and Tennessee Gas Pipeline's Station 245-249 Segment using intra-day 2 nominations from November 1, 2013 to September 9, 2014.

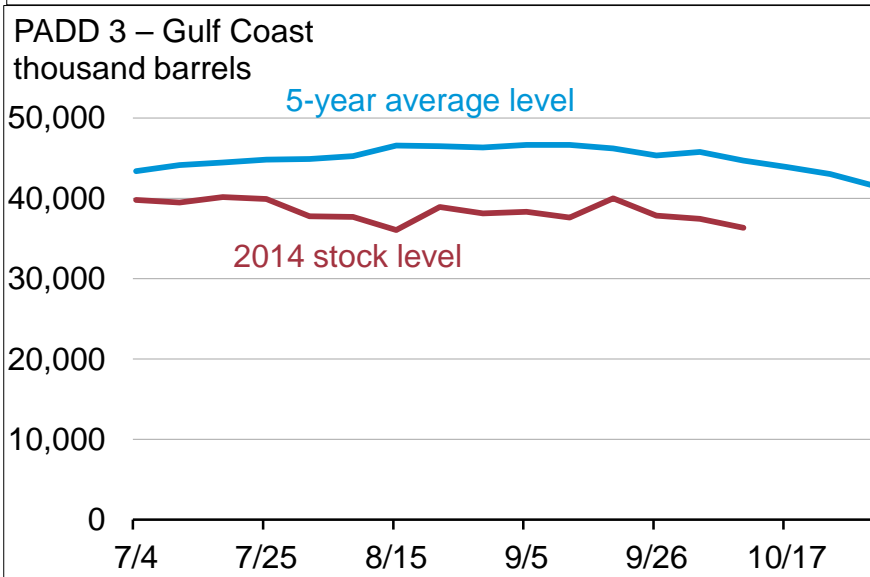
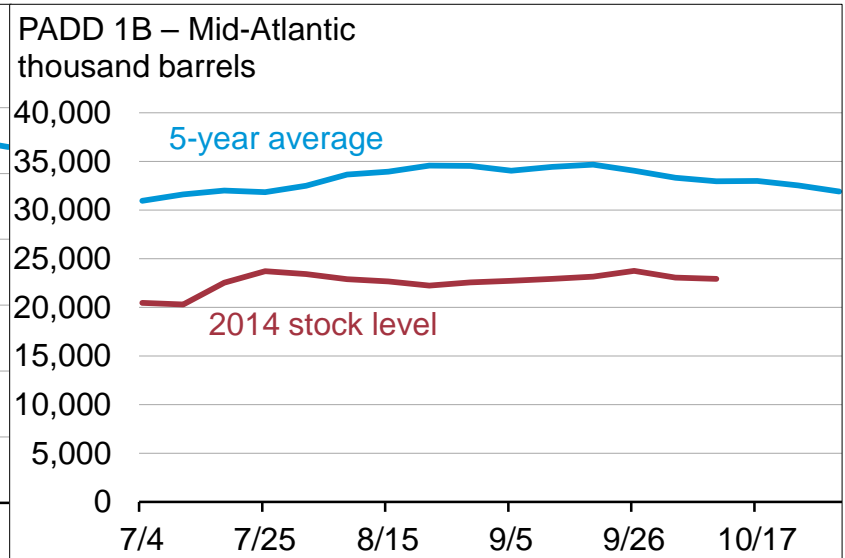
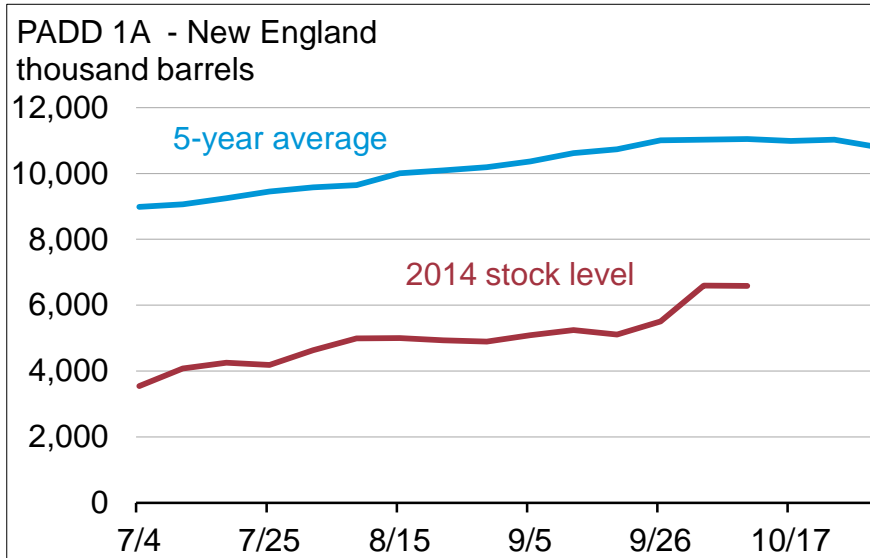
Current forward natural gas prices in Boston, and to a lesser extent New York, indicate the likelihood of constraints again this winter

Forward natural gas prices for winter months 2014-15 in selected markets as of early October
U.S. dollars per million British thermal unit



Source: Ventyx Energy Velocity Suite and Bloomberg. JKM is a proxy for LNG priced into Japan, Korea, and Malaysia. The Algonquin Citygates, Transco Zone 6 New York, and Columbia Gas Appalachia prices include the Henry Hub natural gas futures market price. Prices reflect recent settlements in early October.

Distillate inventories in key regions



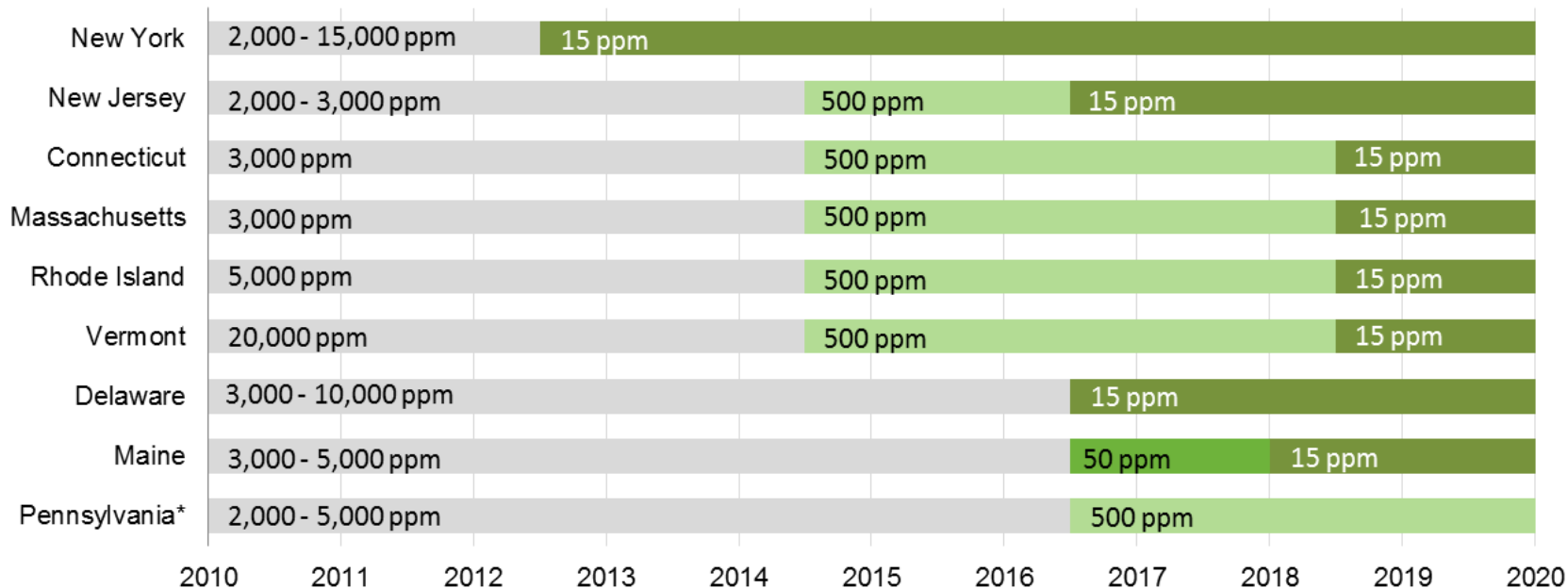
EIA is using total distillate fuel inventories for heating oil notifications under Reliable Home Heating Fuels (RHHA).

For many states, the largest component of total distillate fuel is diesel fuel, which contains less than 15 ppm of sulfur content. Lower sulfur distillate may be used when higher sulfur heating oil is scarce.

Heating oil sulfur specifications lowered in five states as of July 2014

Schedule for maximum sulfur content of heating oil in the Northeast by year

parts per million (ppm)



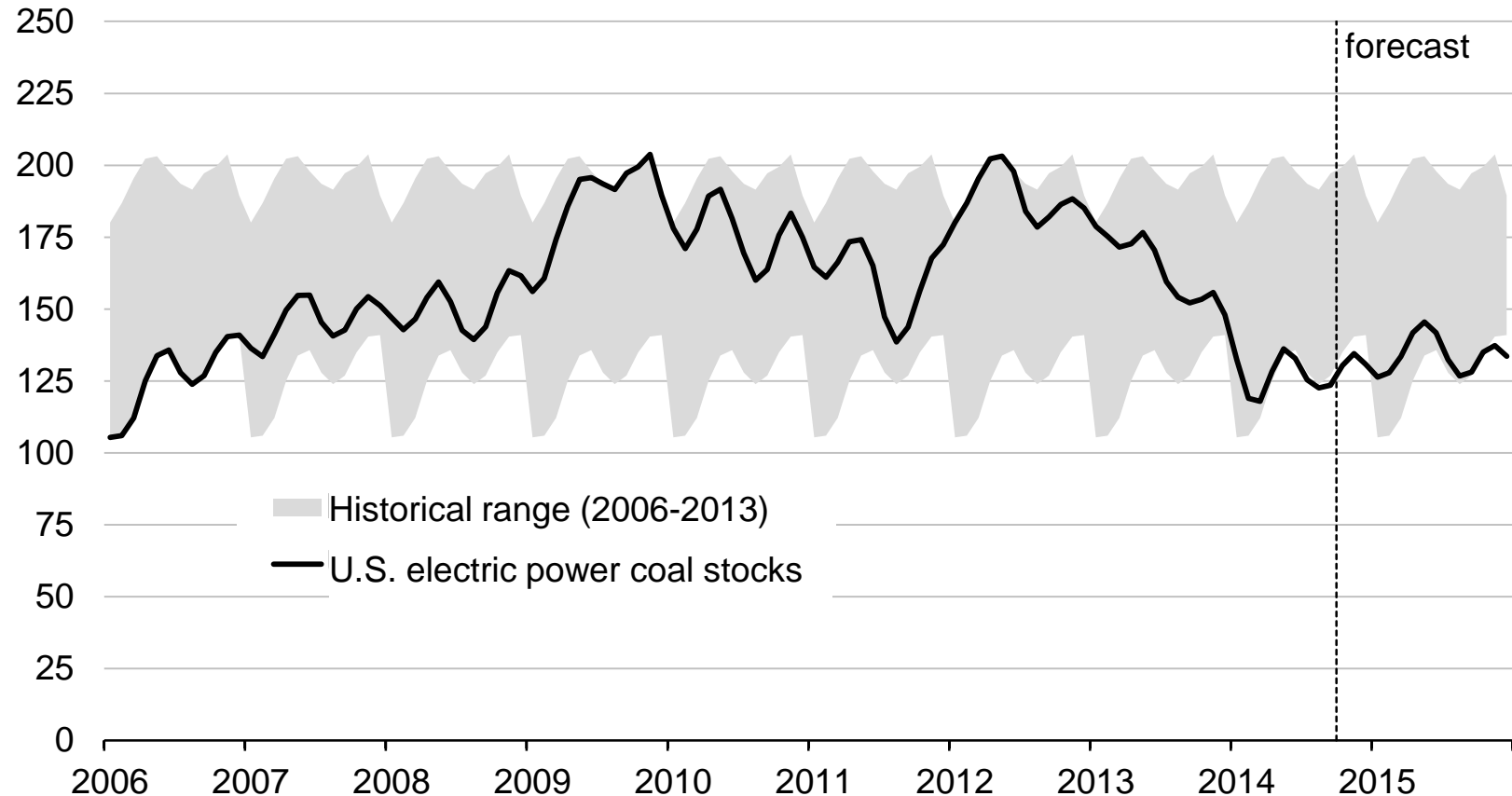
Note: Specifications change on July 1 of the years shown, with the exception of Maine's 15 ppm requirement, which changes on January 1, 2018.

** Philadelphia, Pennsylvania changes from 2,000 ppm to 15 ppm on July 1, 2015.*

Source: U.S. Energy Information Administration

Coal stocks at electric utilities are at the bottom of the multi-year range

U.S. coal stocks
million short tons



Note: Range represents difference between minimum and maximum from 2006 to 2013

Source: EIA Short-Term Energy Outlook, October 2014

EIA actions to improve winter fuels information

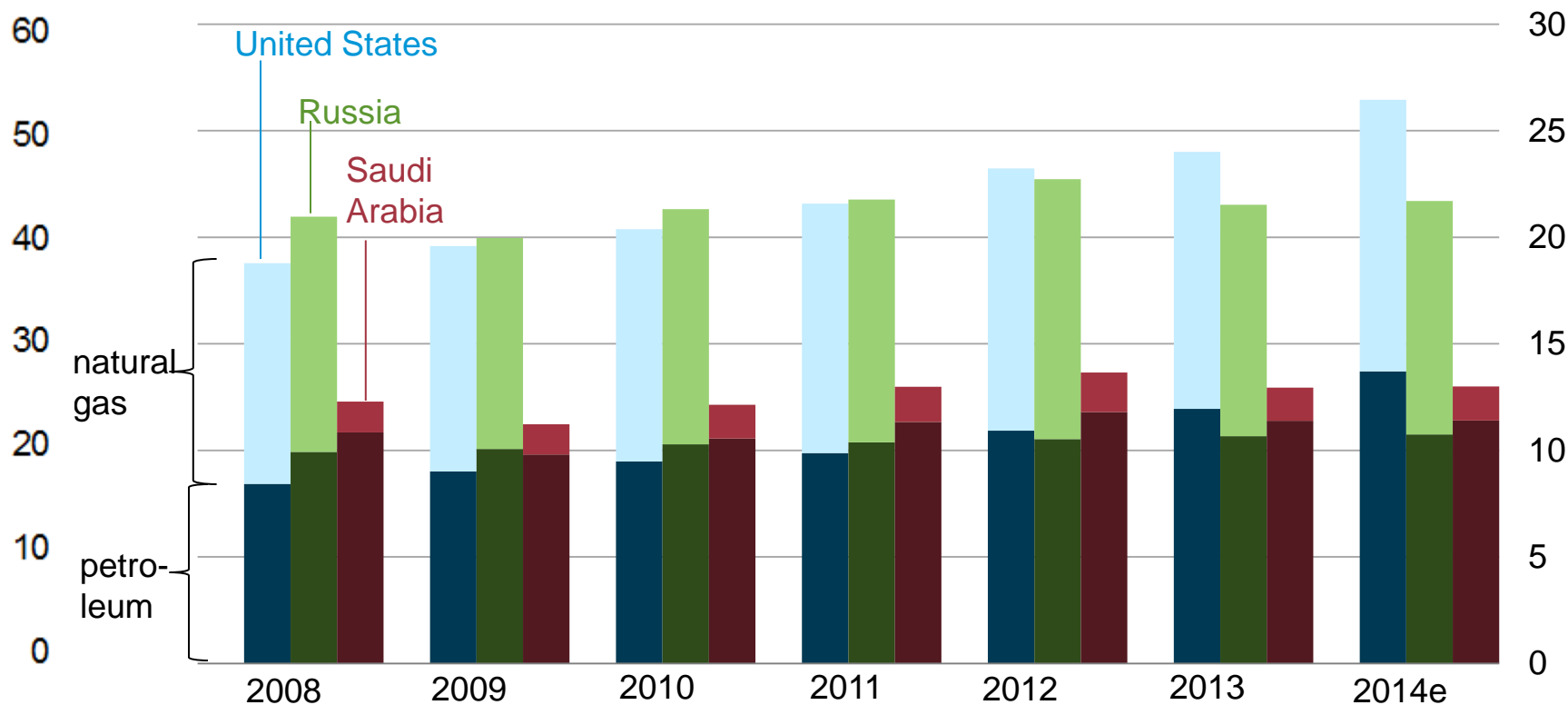
- **More Detailed Weekly Propane Stock Data** – In addition to weekly PADD-level propane stocks, EIA will publish figures for Kansas (Conway hub), Michigan, Minnesota and Wisconsin, and a 4-state total for Iowa, Illinois, Indiana and Ohio.
- **Notification to Governors of Low Stock Levels** – Pursuant to the Reliable Home Heating Act, EIA now notifies state Governors when stocks of heating oil, natural gas, or propane in their PADD fall below the 5-year average for more than 3 weeks.
- **Expanded State Participation in EIA Weekly Price Reporting** – The State Heating Oil and Propane Program (SHOPP) now includes 14 more states for a total of 38. The first data release was on October 16.
- **Increased Visibility on EIA Website and Targeted Communication with State Officials** – EIA launched a special winter fuels webpage showcasing stock and price data. Beyond this, EIA will proactively reach out to both industry and public stakeholders in the states.

Oil and Gas Markets

U.S. is the largest producer of petroleum and natural gas in the world

estimated U.S., Russia, and Saudi Arabia petroleum and natural gas production
quadrillion Btu

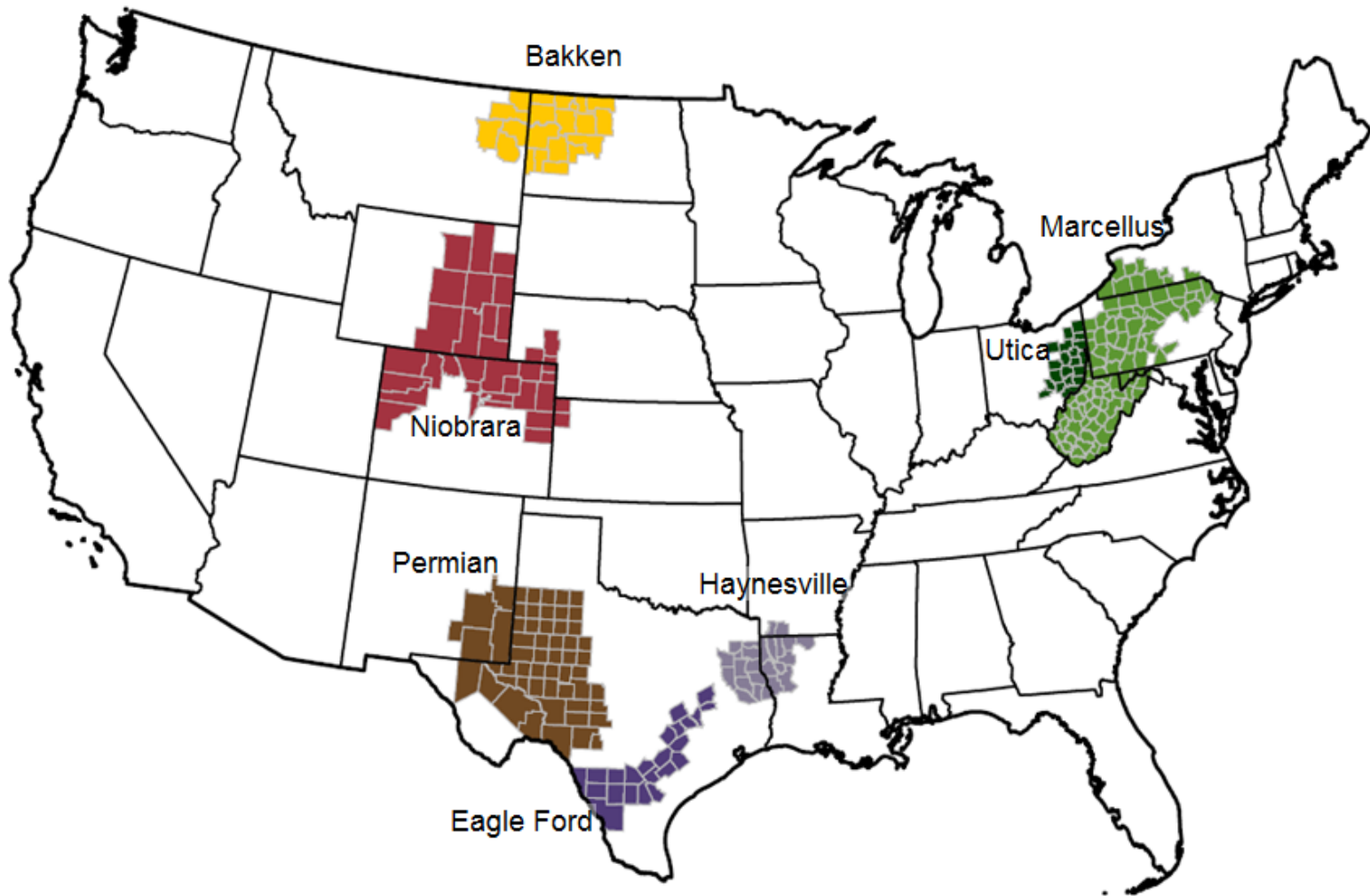
million barrels per day of oil equivalent



Source: U.S. Energy Information Administration

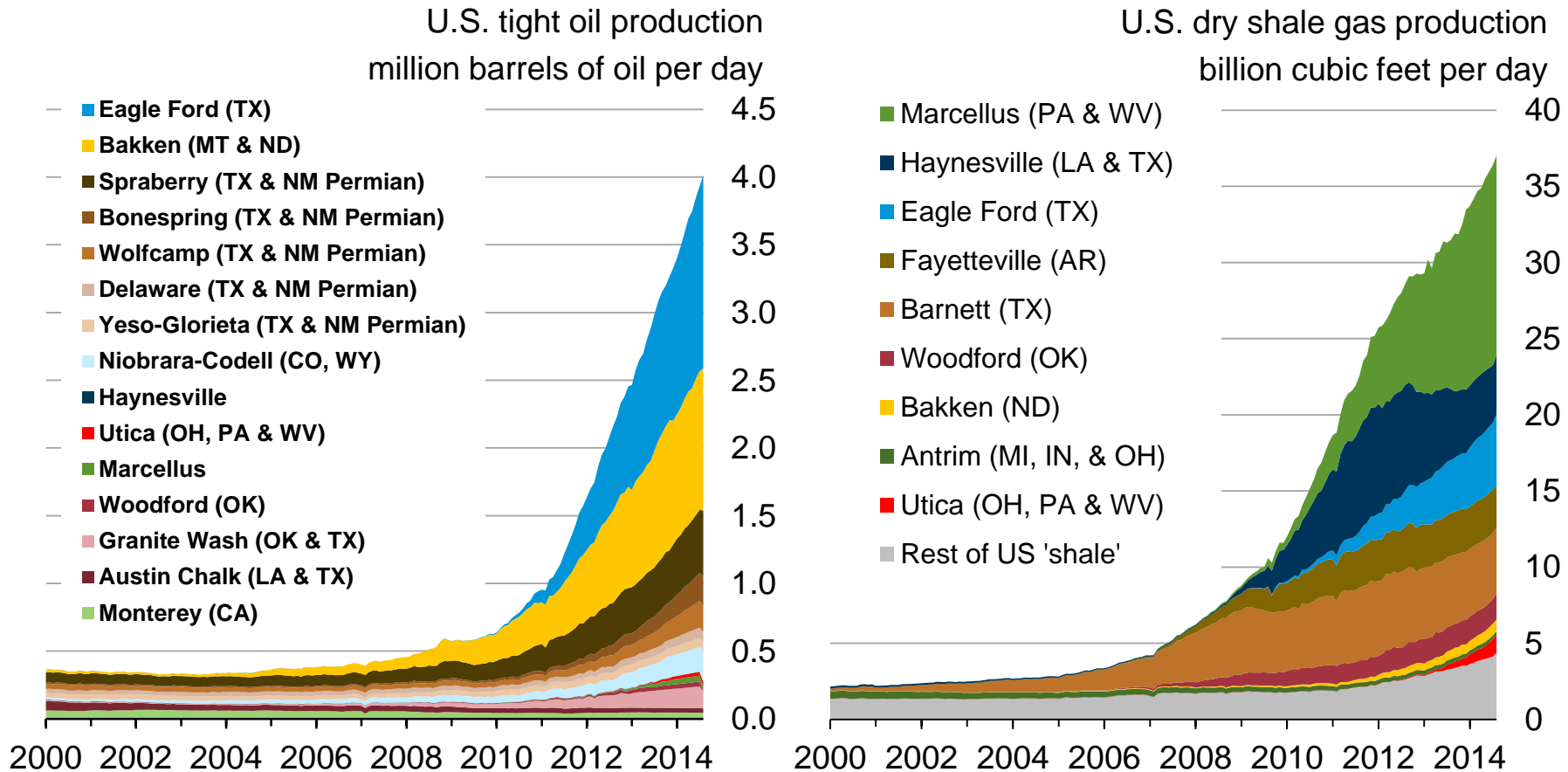
Note: Petroleum production includes crude oil, natural gas liquids, condensates, refinery processing gain, and other liquids, including biofuels; barrels per day oil equivalent were calculated using a conversion factor of 1 barrel oil equivalent=5.55 million British thermal units (Btu)

These seven regions accounted for 95% of U.S. oil production growth and all U.S. natural gas production growth from 2011-2013



Source: EIA, Drilling Productivity Report

The U.S. has experienced a rapid increase in natural gas and oil production from shale and other tight resources



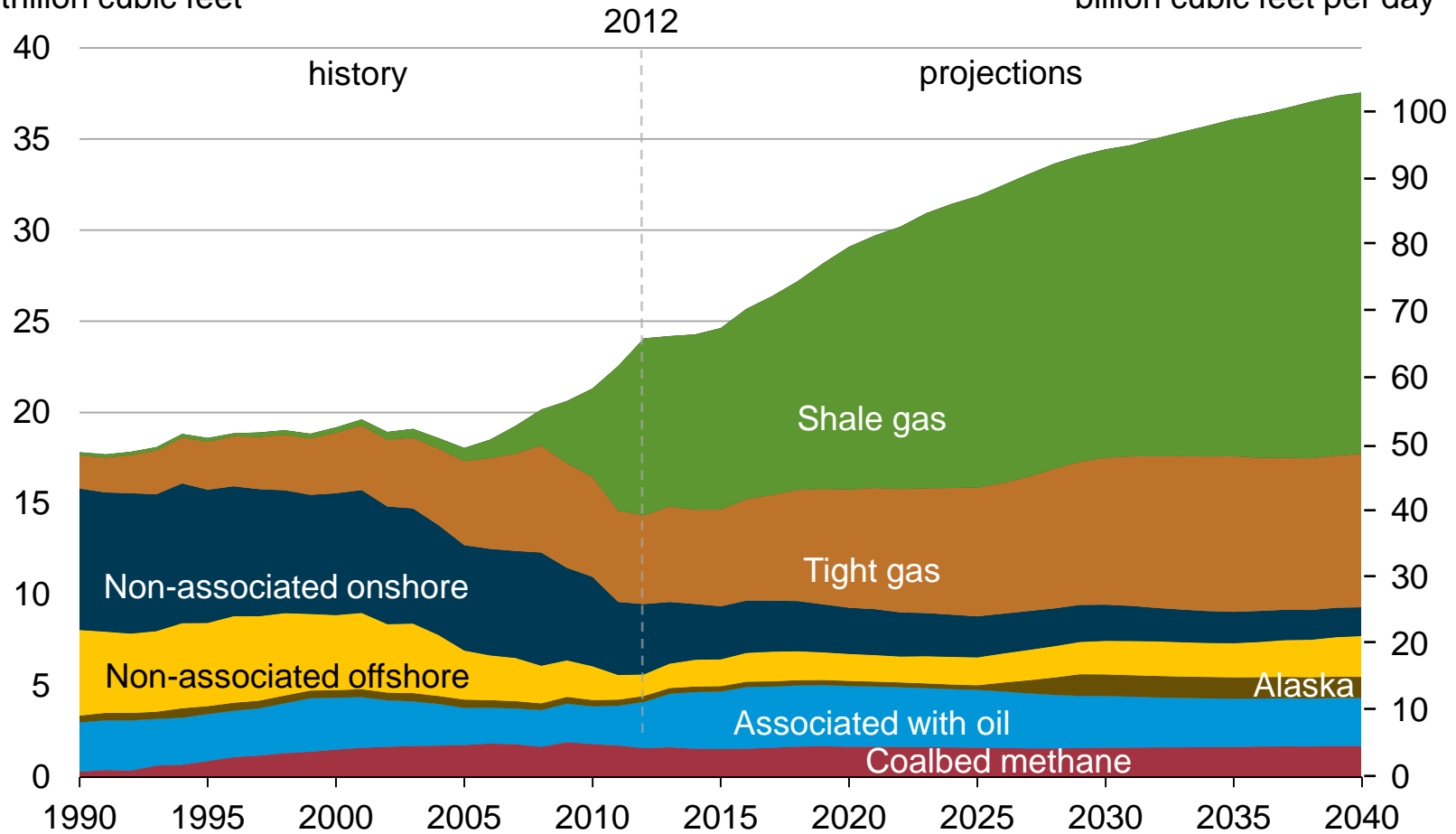
Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through August 2014 and represent EIA's official tight oil & shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).

U.S. shale gas leads growth in total gas production through 2040, when production exceeds 100 billion cubic feet per day

U.S. dry natural gas production

trillion cubic feet

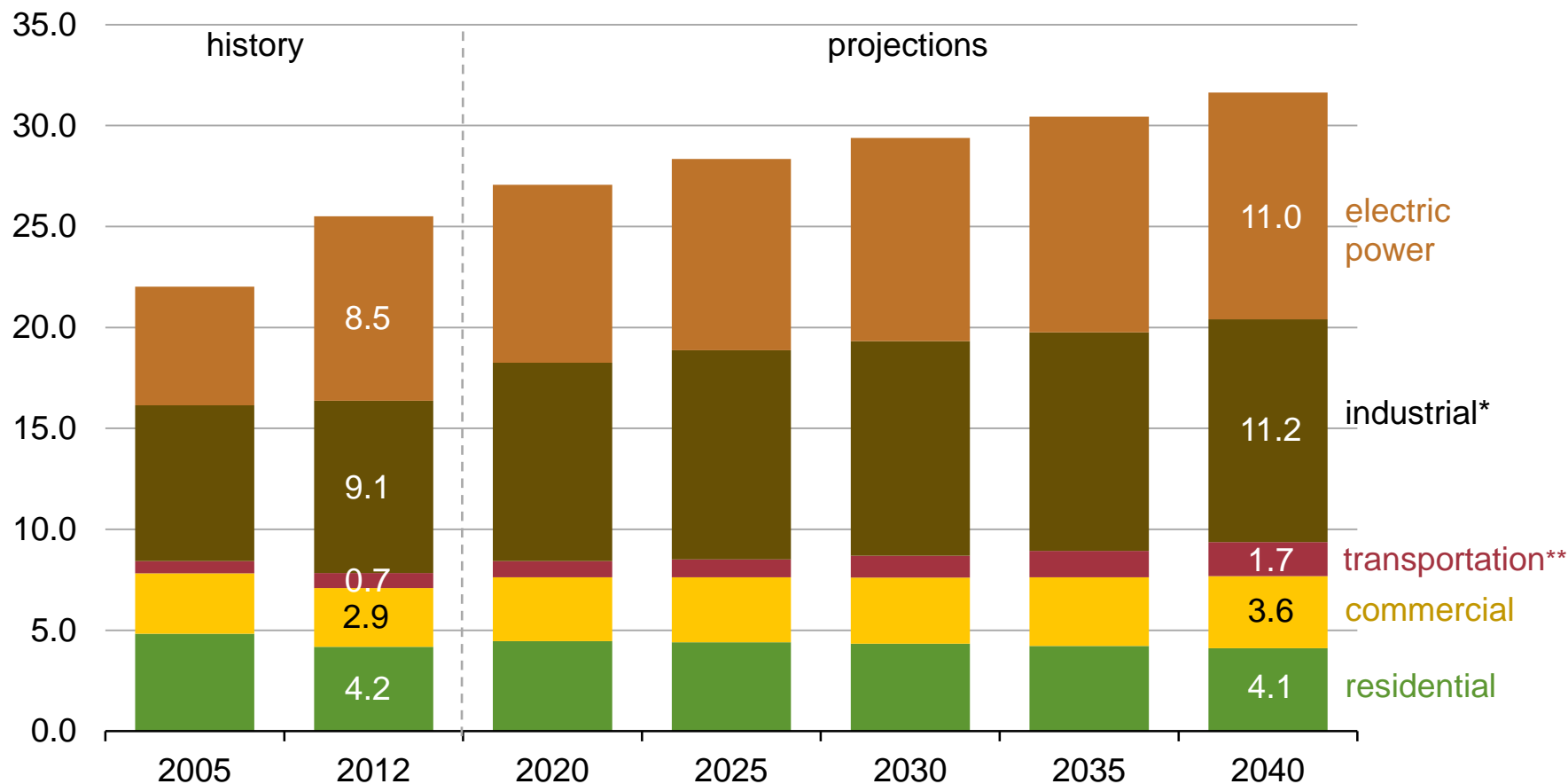
billion cubic feet per day



Source: EIA, Annual Energy Outlook 2014, Reference case

Natural gas consumption growth is driven by electric power, industrial, and transportation use

U.S. dry gas consumption
trillion cubic feet



Source: EIA, Annual Energy Outlook 2014, Reference case

*Includes combined heat-and-power and lease and plant fuel

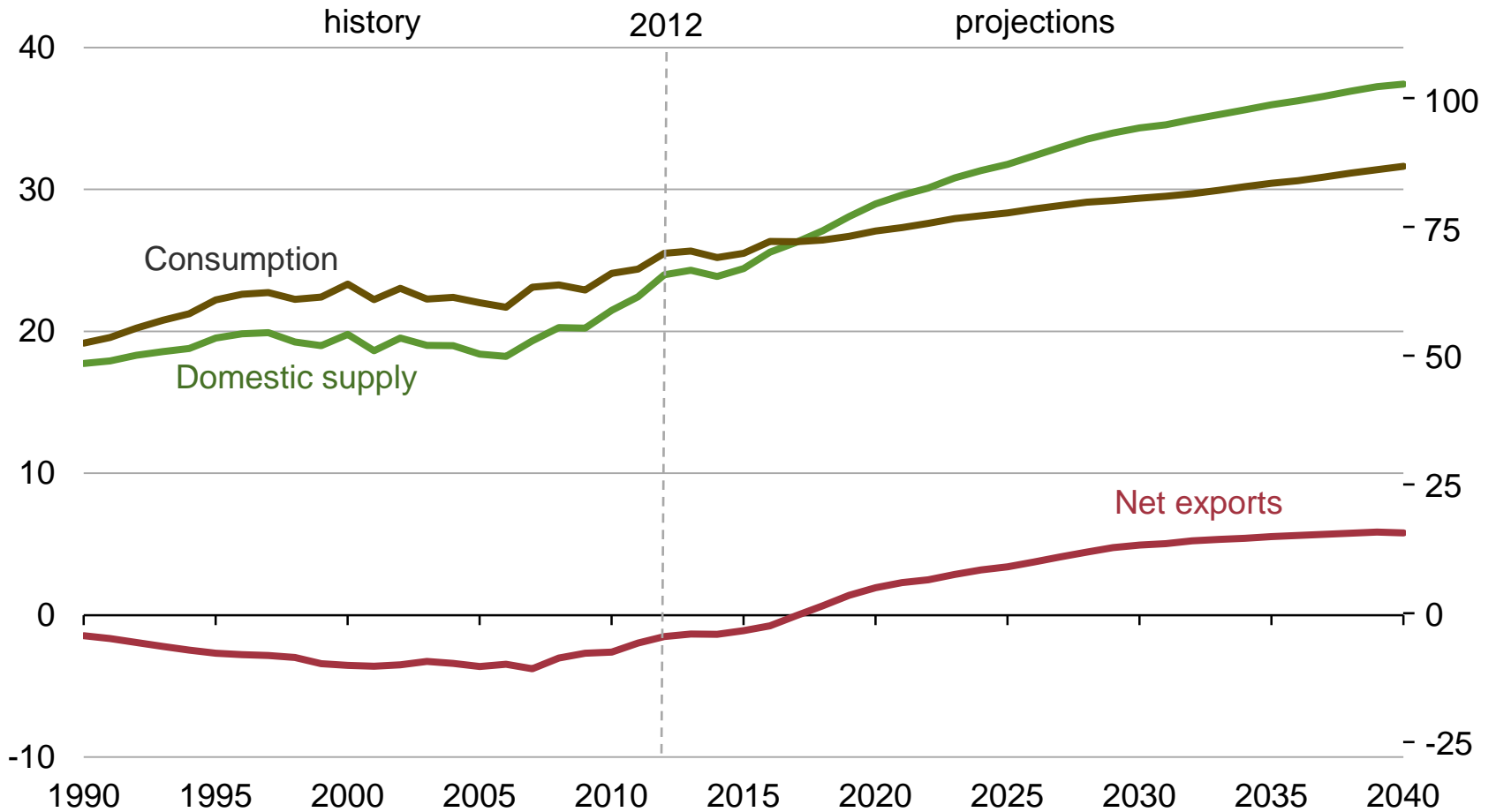
**Includes pipeline fuel

U.S. becomes a net exporter of natural gas in the near future

U.S. dry natural gas

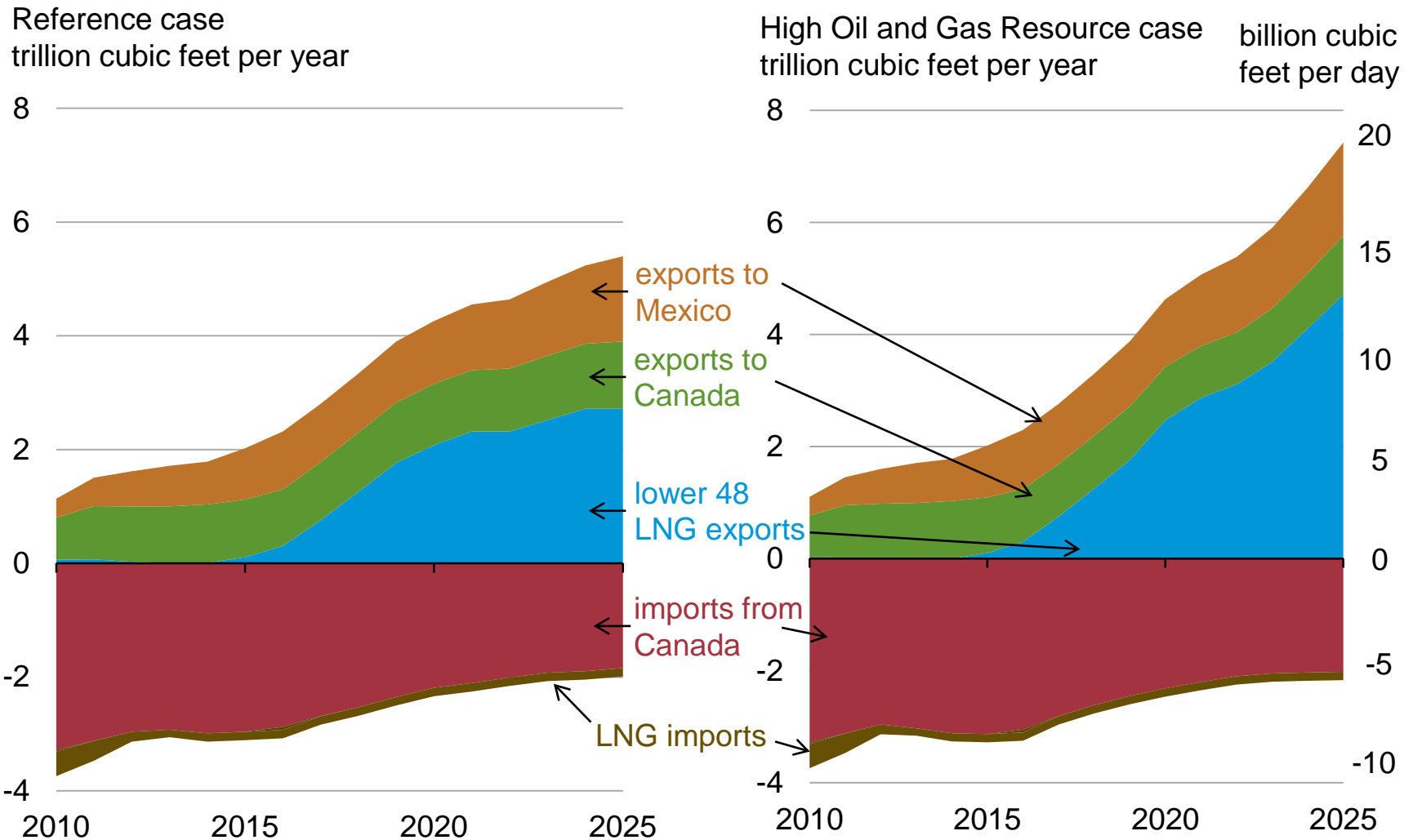
trillion cubic feet per year

billion cubic feet per day



Source: EIA, Annual Energy Outlook 2014 Reference case

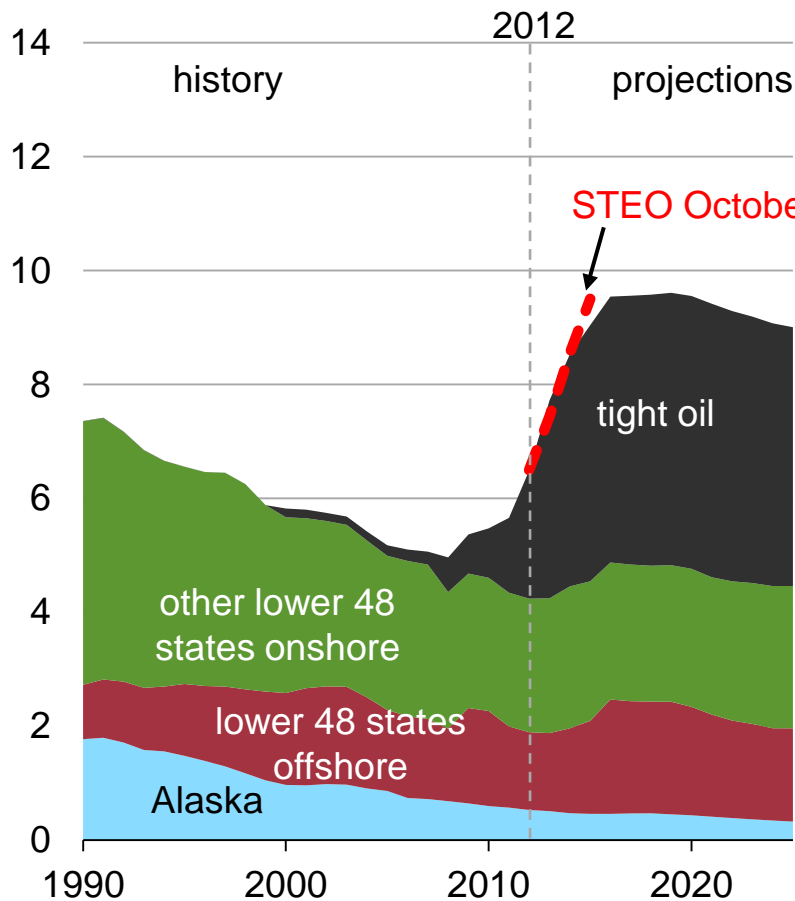
Projected U.S. natural gas trade depends on assumptions regarding resources and future technology advances



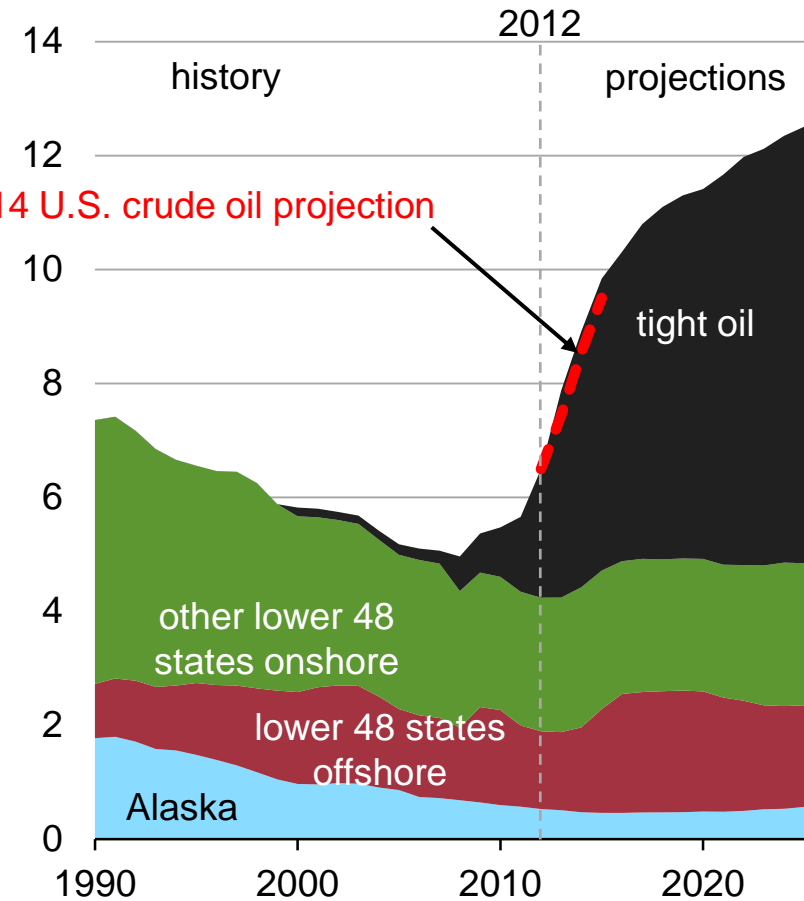
Source: EIA, Annual Energy Outlook 2014, Reference case and High Oil and Gas Resource case

Resource and technology assumptions have major implications for projected U.S. crude oil production beyond the next few years

Reference case
million barrels per day

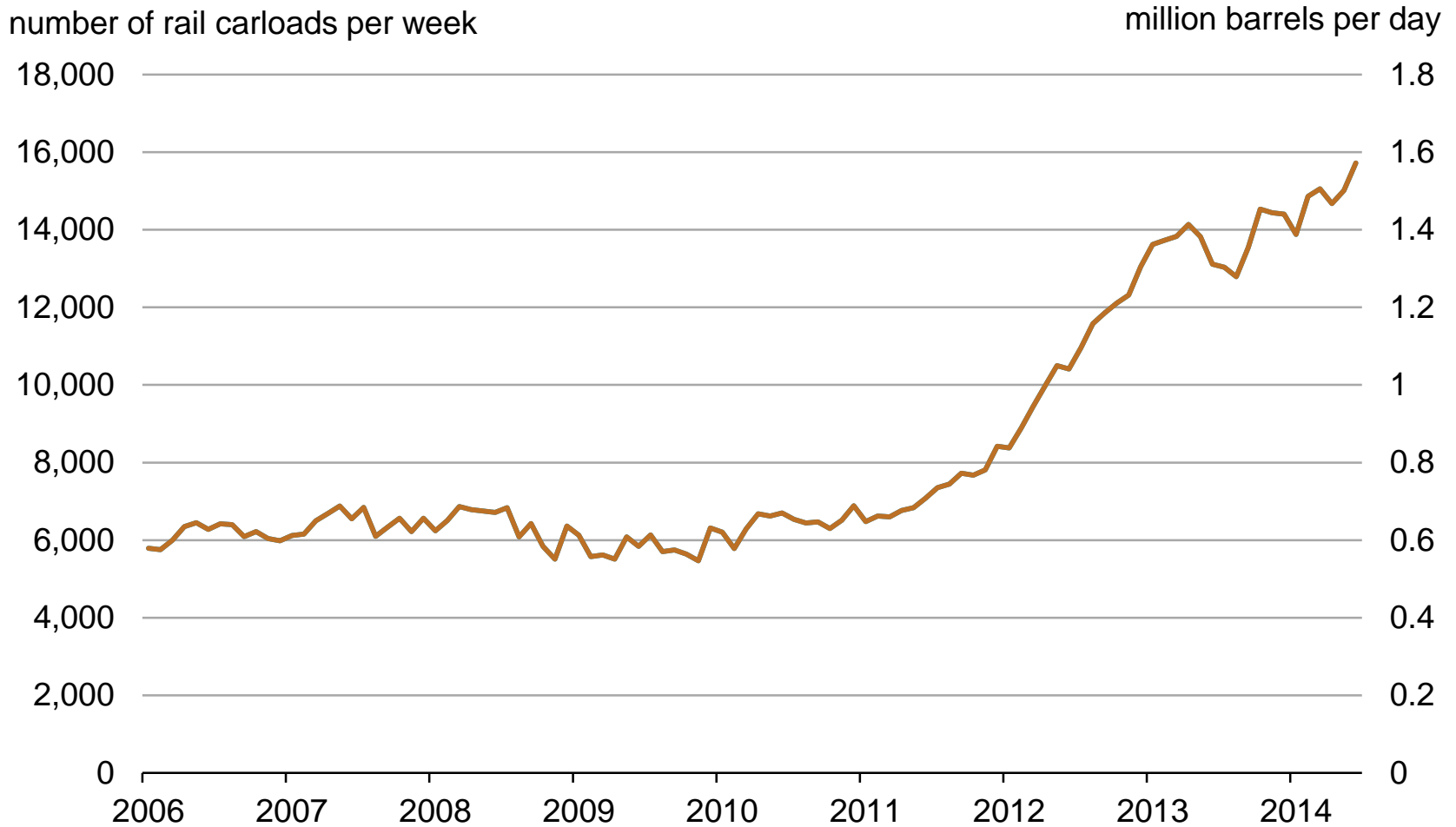


High Oil and Gas Resource case
million barrels per day



Source: EIA, Annual Energy Outlook 2014; Short Term Energy Outlook, October 2014

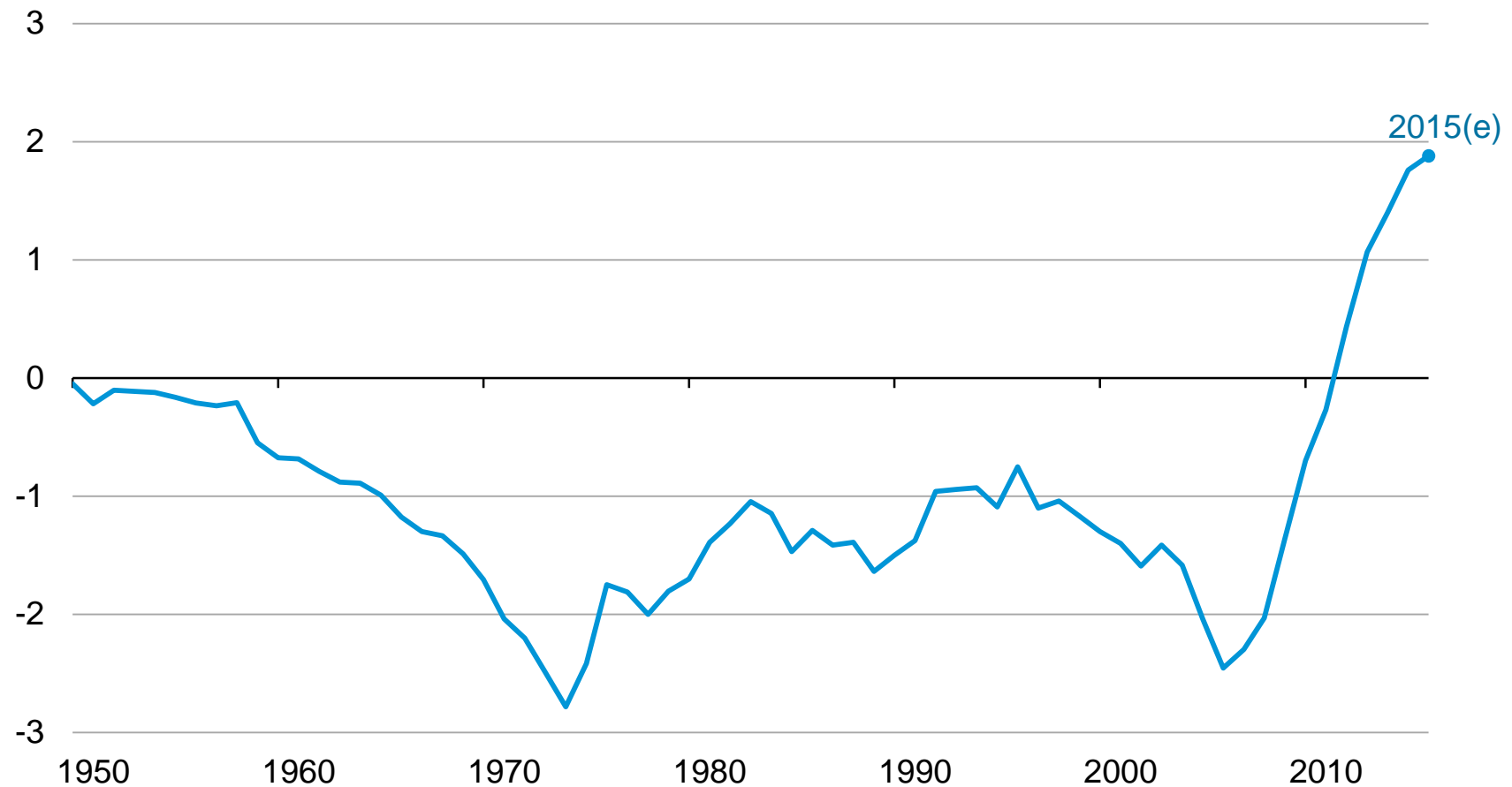
U.S. rail carloads of crude oil and petroleum products exceed 1.5 million b/d in 2014



Source: U.S. Energy Information Administration, based on Association of American Railroads

U.S. is already a major net exporter of petroleum products

U.S. petroleum product net exports
million barrels per day

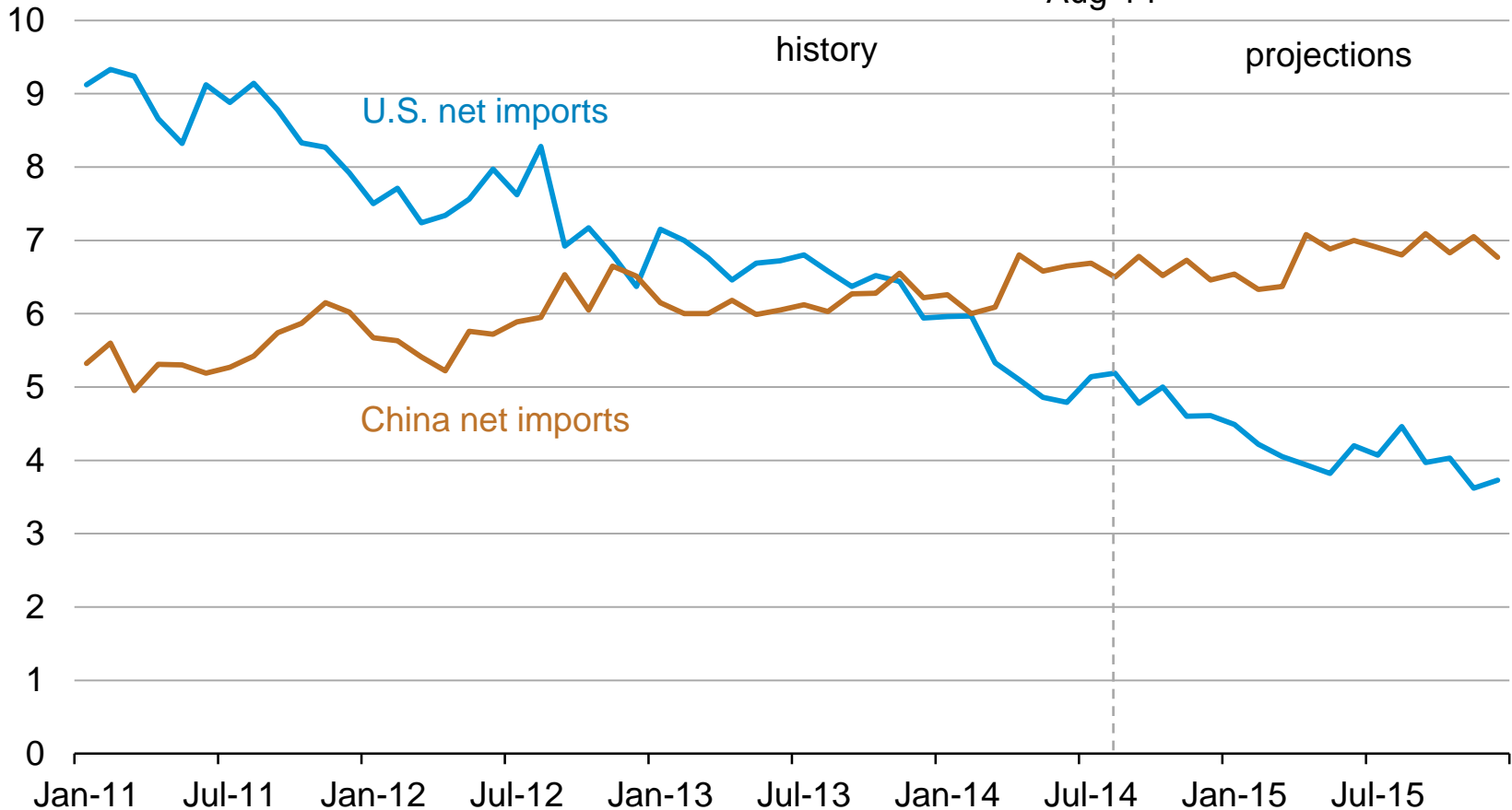


Source: EIA, Annual Energy Outlook 2014 Reference case and Short Term Energy Outlook

Growing U.S. oil production and rising demand in China have together made China the world's largest net oil importer

net imports for China and the United States

million barrels per day

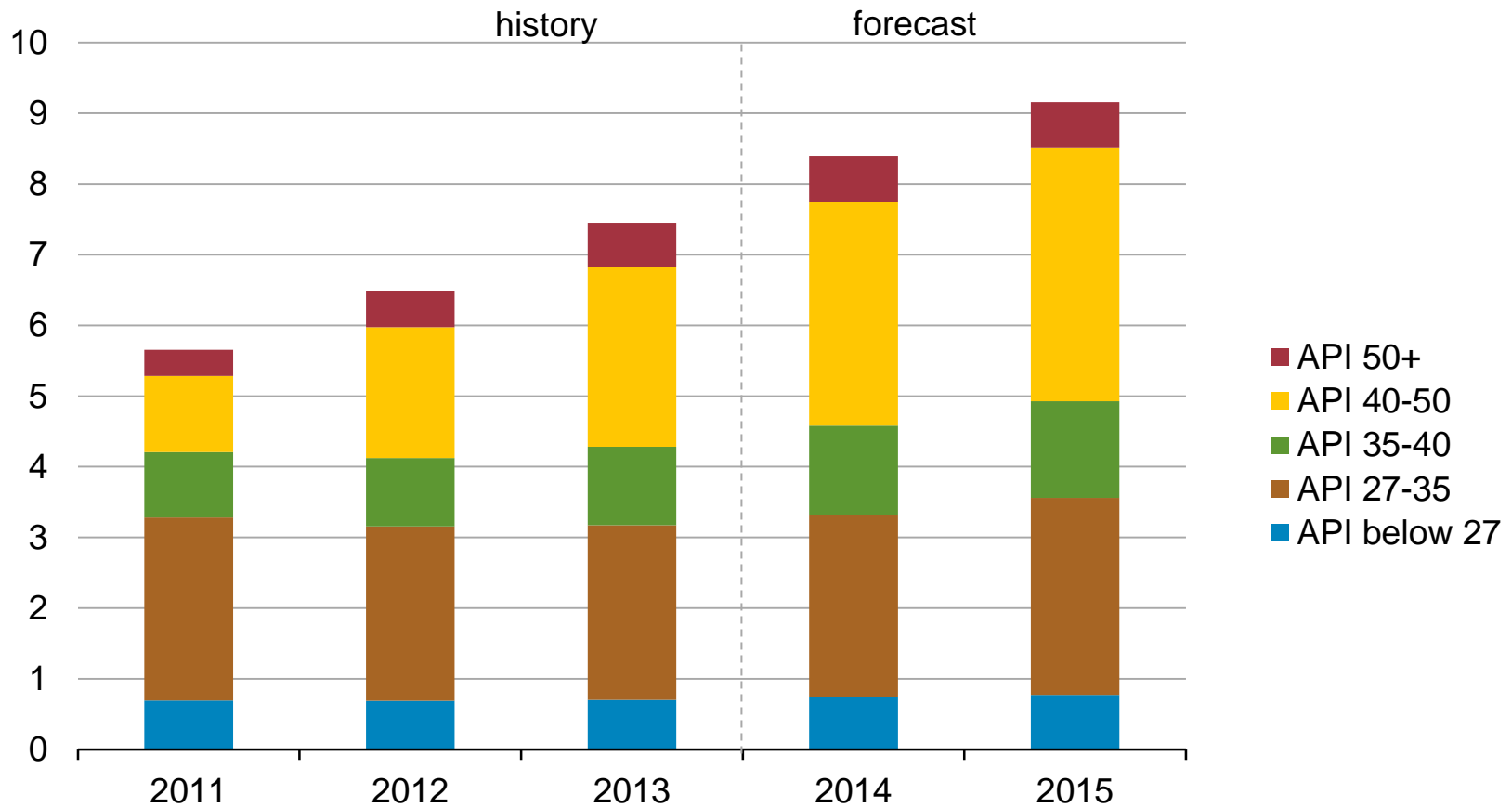


Note: Net oil imports are defined as total liquid fuels consumption less domestic production

Source: EIA, Short-Term Energy Outlook, October 2014

Most of the growth in production between 2011 and 2015 consists of sweet grades with API gravity of 40 or above

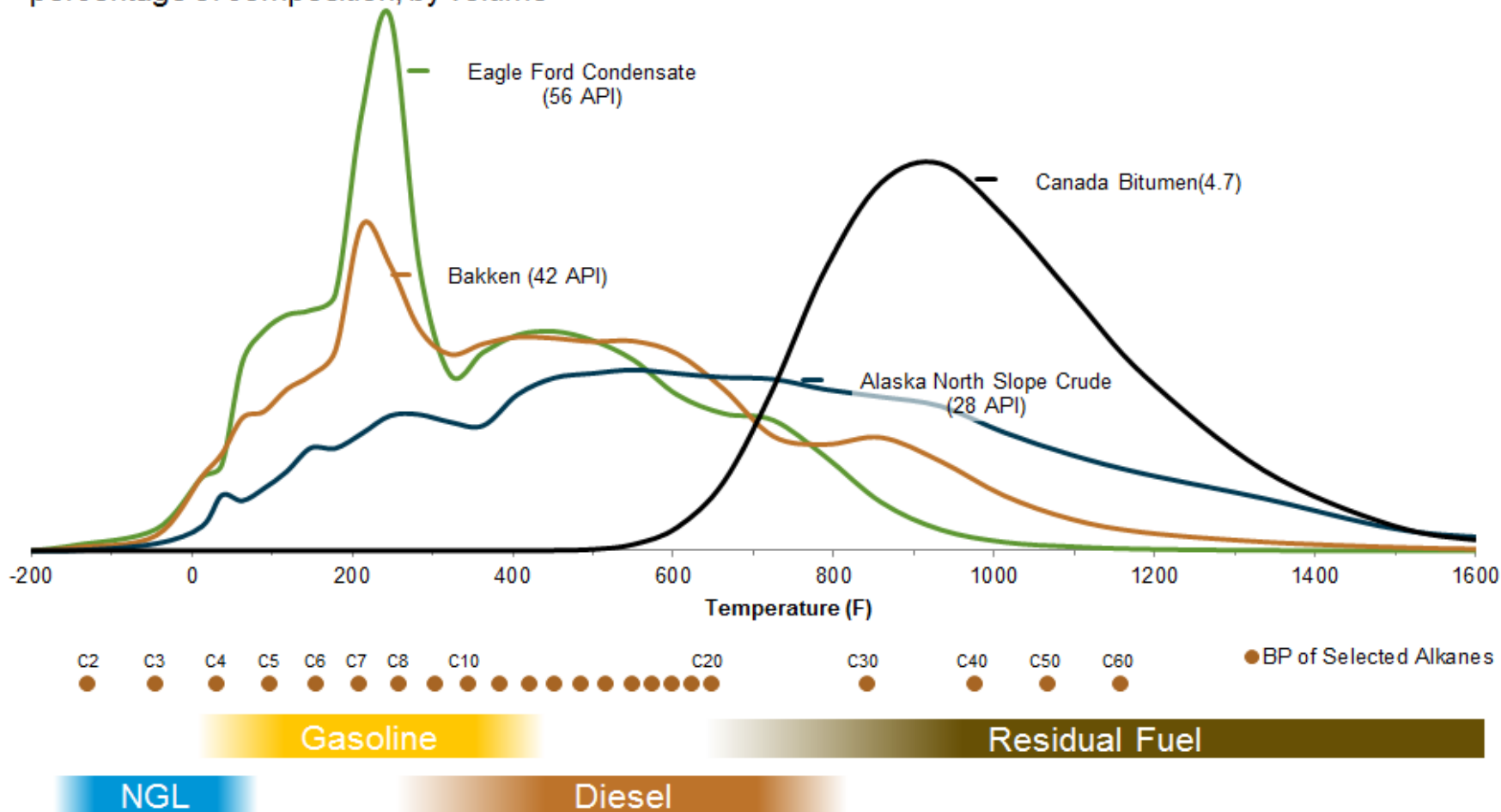
U.S. crude oil production by type
million barrels of oil per day



Source: EIA, DrillingInfo, Colorado DNR, Texas RRC. <http://www.eia.gov/analysis/petroleum/crudetypes/>

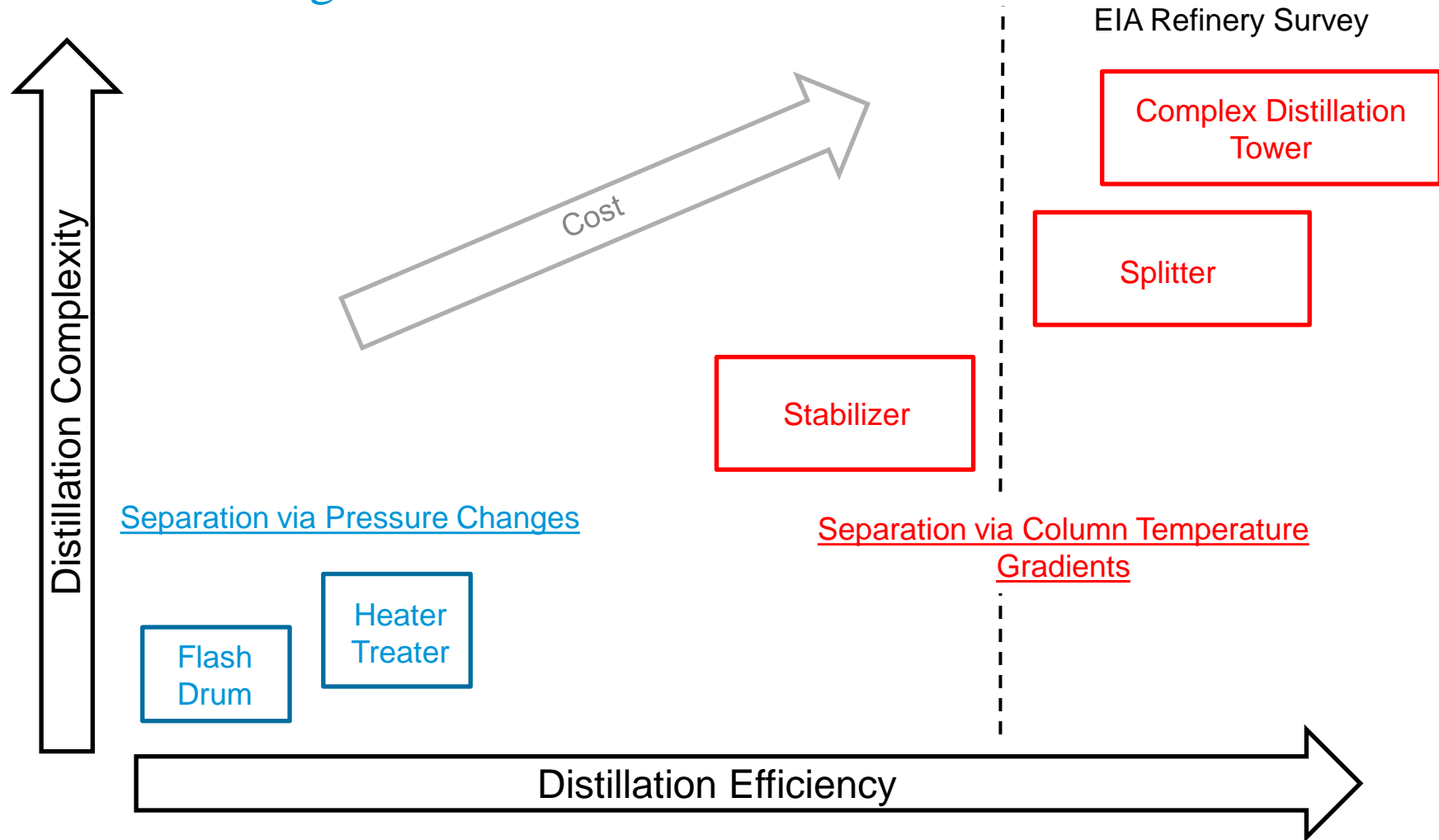
Crude oil and associated liquids contain a wide variety of hydrocarbons

percentage of composition, by volume

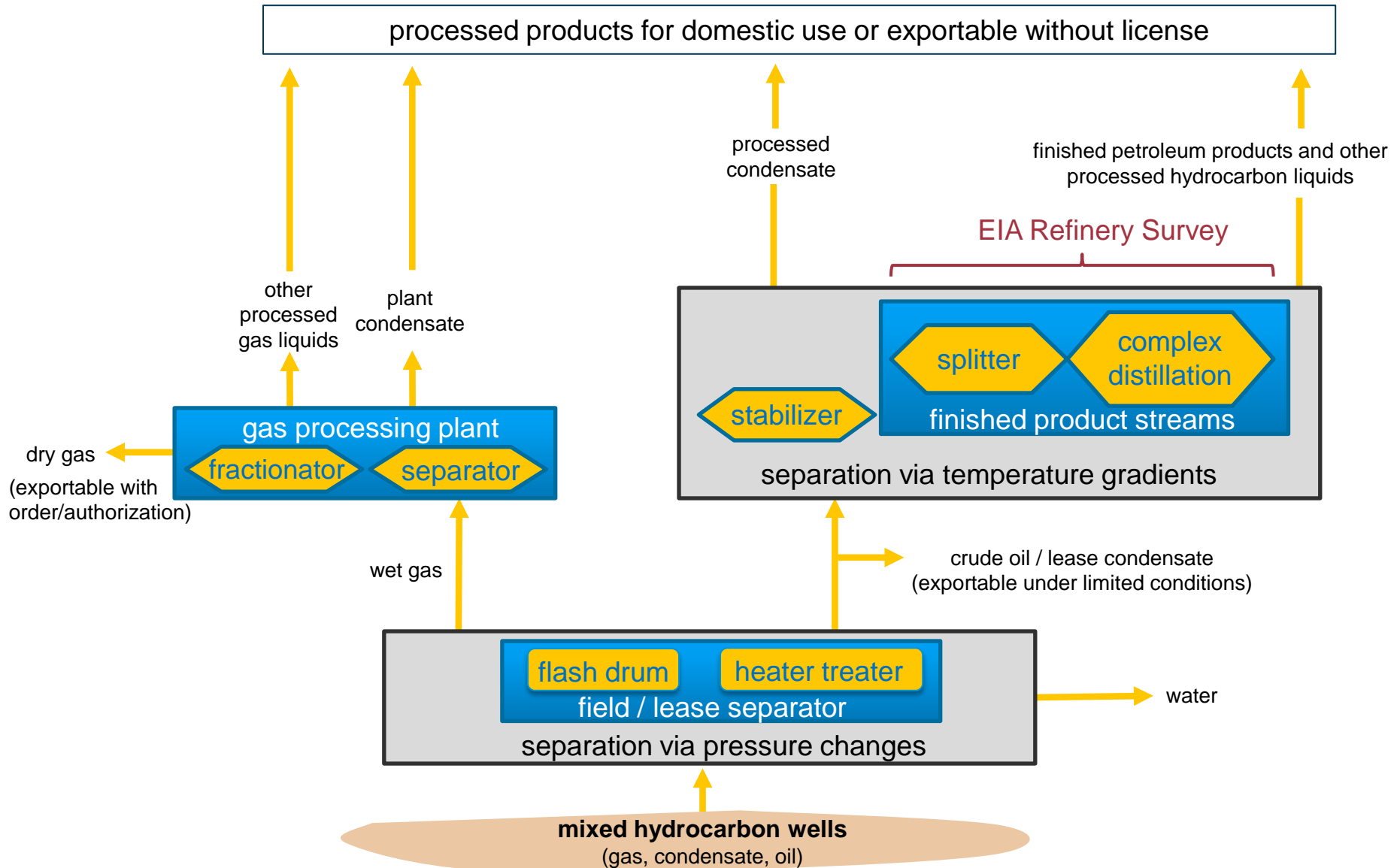


Source: EIA via Harvey Crude Assay Management System

There are several different distillation processes used in the petroleum industry; they are typically named for their function, not their configuration



Distillation processes and resulting products



Areas of uncertainty in the outlook

- China's energy demand growth; particularly in transportation
 - EIA is working with MIT and others to upgrade the structural and macroeconomic determinates of transportation demand in all regions for IEO2015
- Increasing global trade of natural gas and HGL in addition to oil
 - EIA is integrating the representation of oil and natural gas supply and other hydrocarbons
- Global development of tight oil and shale gas resources
 - EIA is gathering geology and production information, and conducting outreach
- Policy decisions on crude oil exports
- Impact of geopolitical tensions on energy supply
 - EIA exploring options for representing these uncertainties in the outlook

For more information

U.S. Energy Information Administration home page | www.eia.gov

Annual Energy Outlook | www.eia.gov/aeo

Short-Term Energy Outlook | www.eia.gov/steo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy

State Energy Portal | www.eia.gov/state

Drilling Productivity Report | www.eia.gov/petroleum/drilling/