Outlook for U.S. oil and gas

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By

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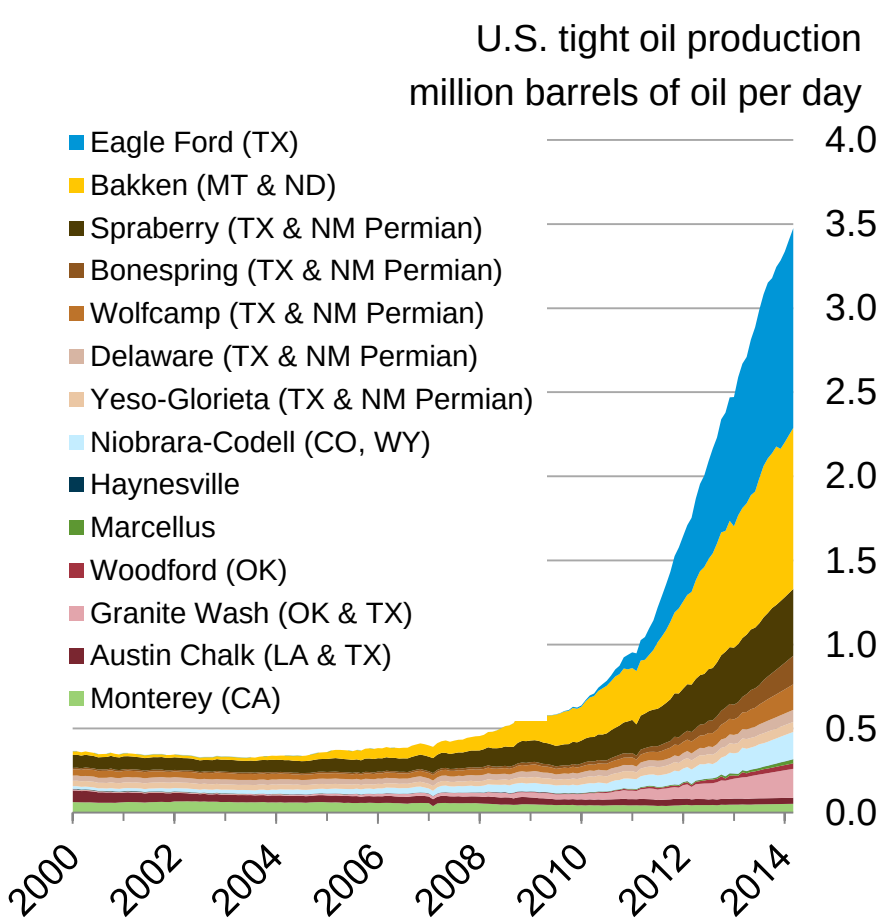
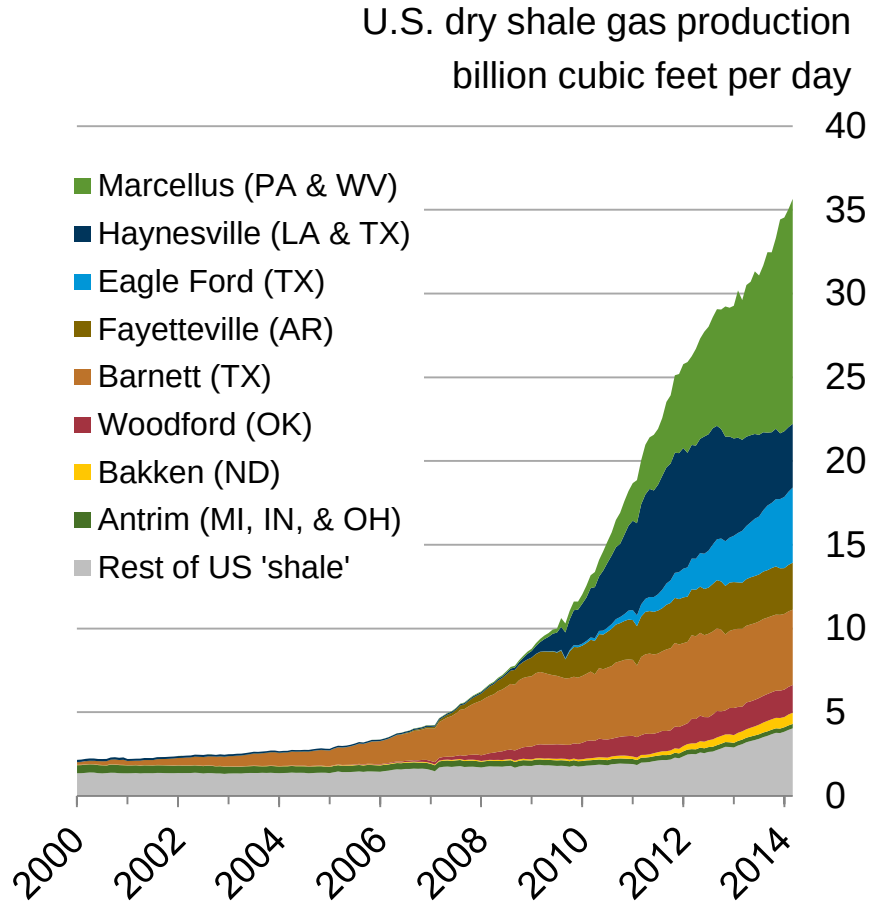
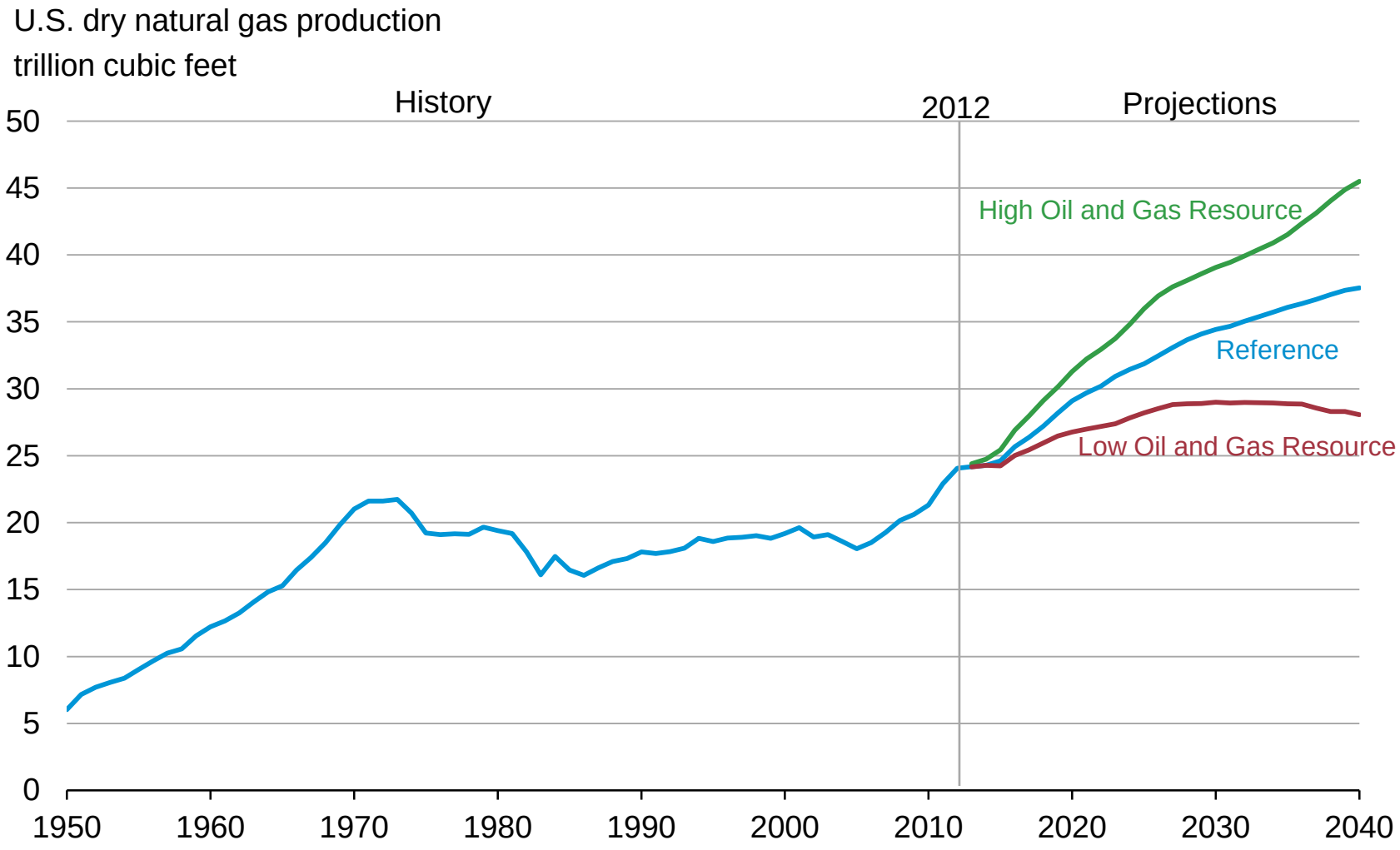
The U.S. has experienced a rapid increase in natural gas and oil production from shale and other tight resources





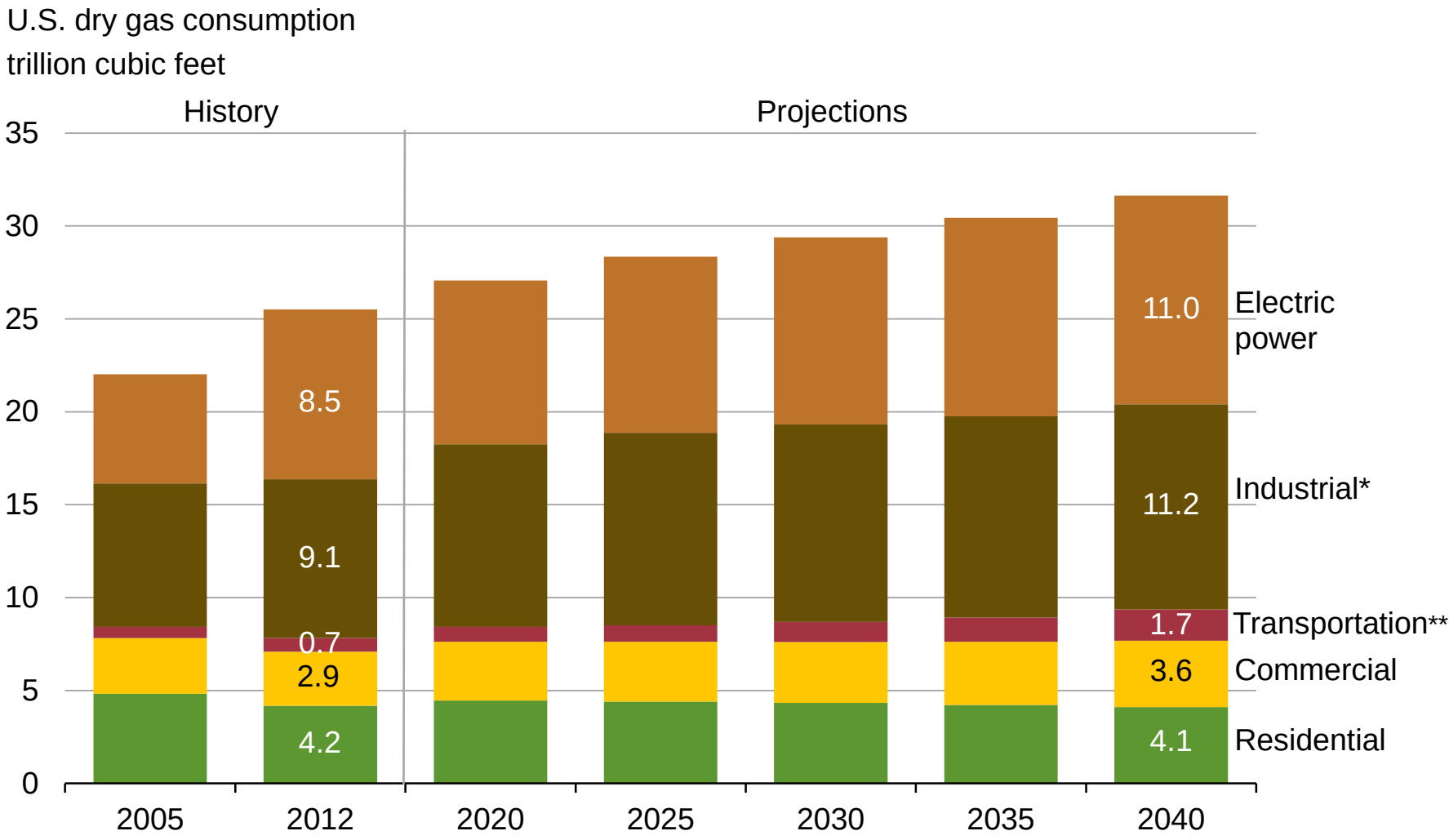
Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through March 2014 and represent EIA's official tight oil & shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).

U.S. natural gas production is nearly double current level in High Oil and Gas Resource case



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

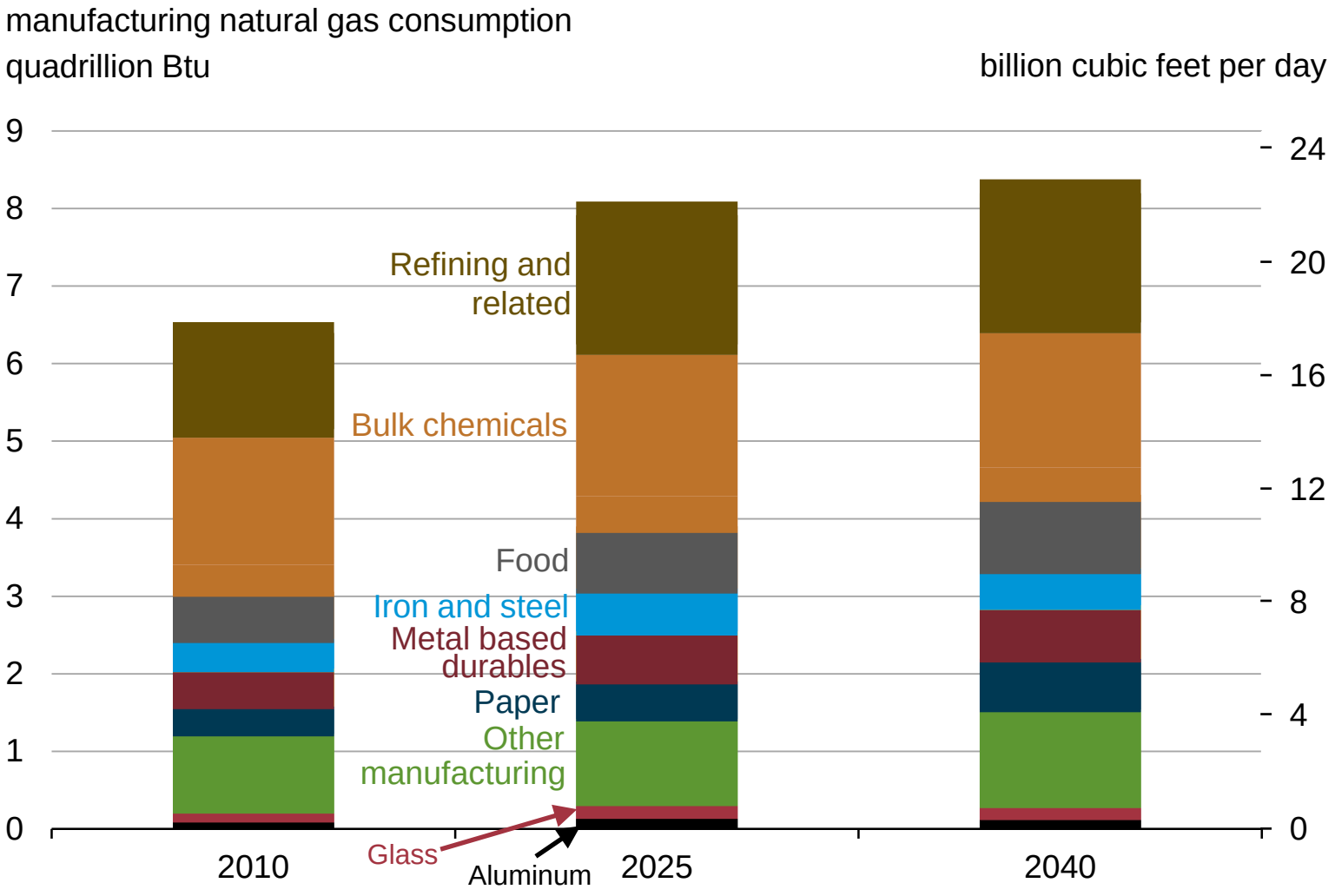
U.S. natural gas consumption growth is driven by electric power, industrial, and transportation use



Source: EIA, Annual Energy Outlook 2014 Reference case

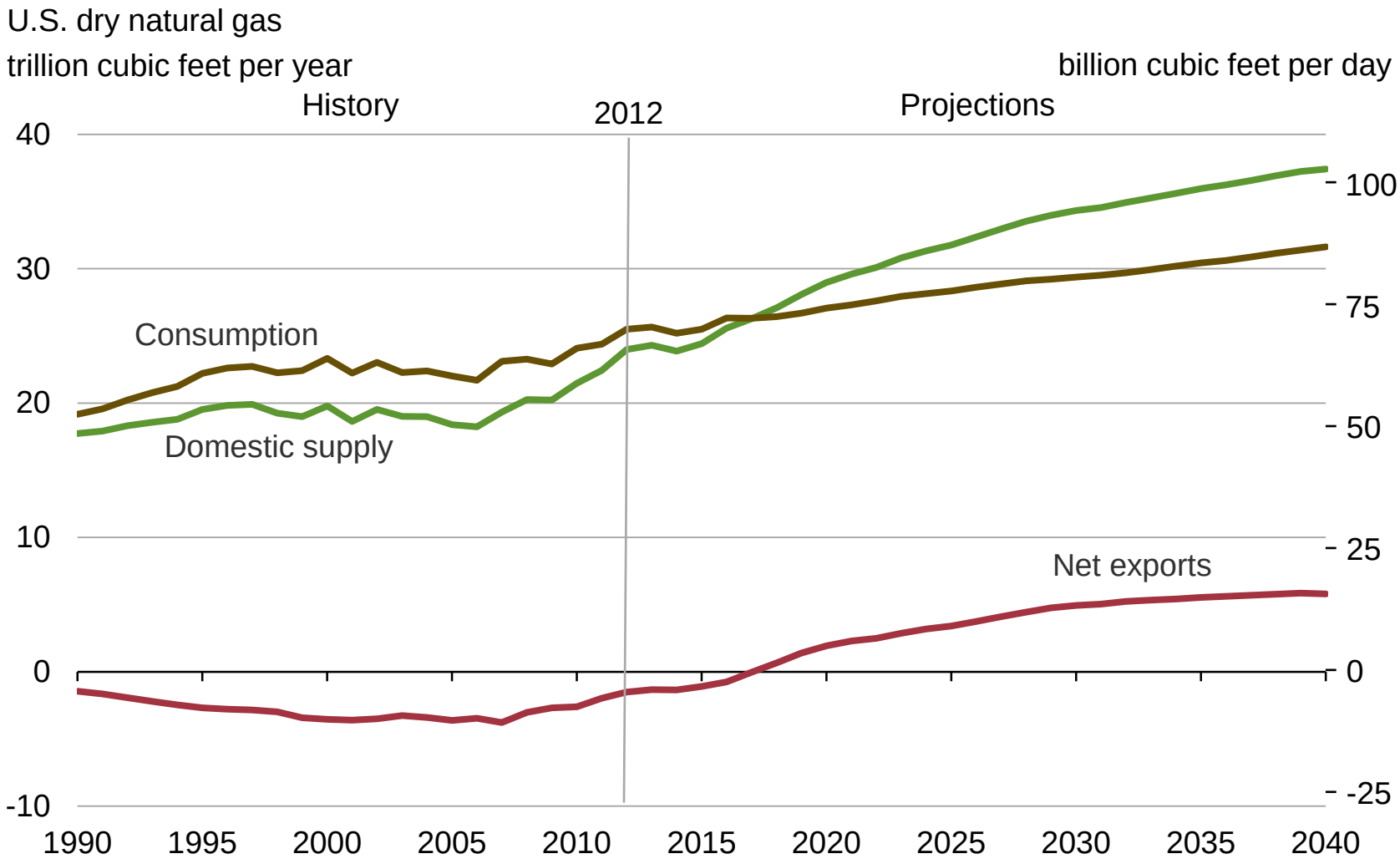
**Includes combined heat-and-power and lease and plant fuel*
***Includes pipeline fuel*

U.S. manufacturing output and natural gas use grows with low natural gas prices, particularly in the near term



Source: EIA, Annual Energy Outlook 2014 Reference case

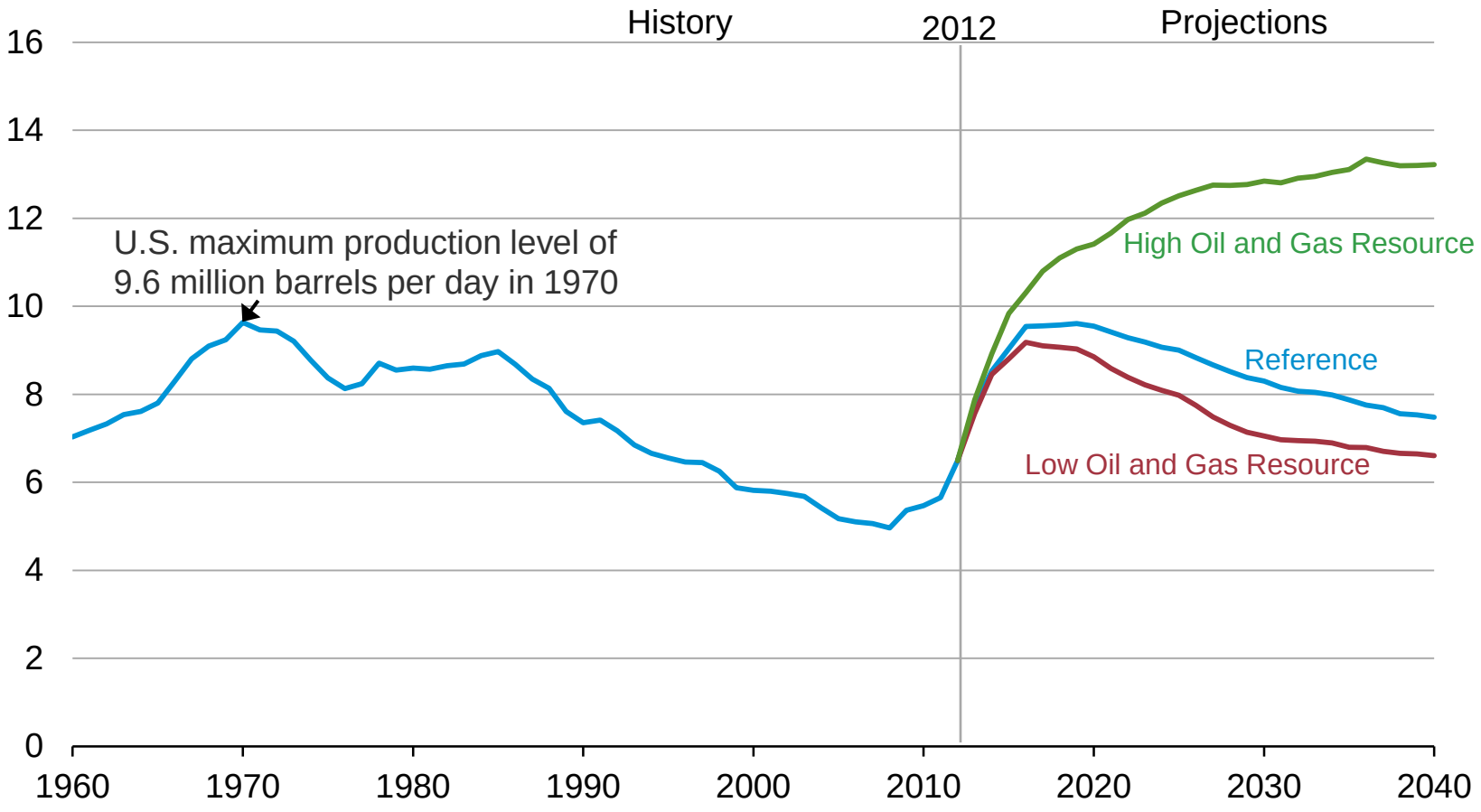
U.S. becomes a net exporter of natural gas in the near future



Source: EIA, Annual Energy Outlook 2014 Reference case

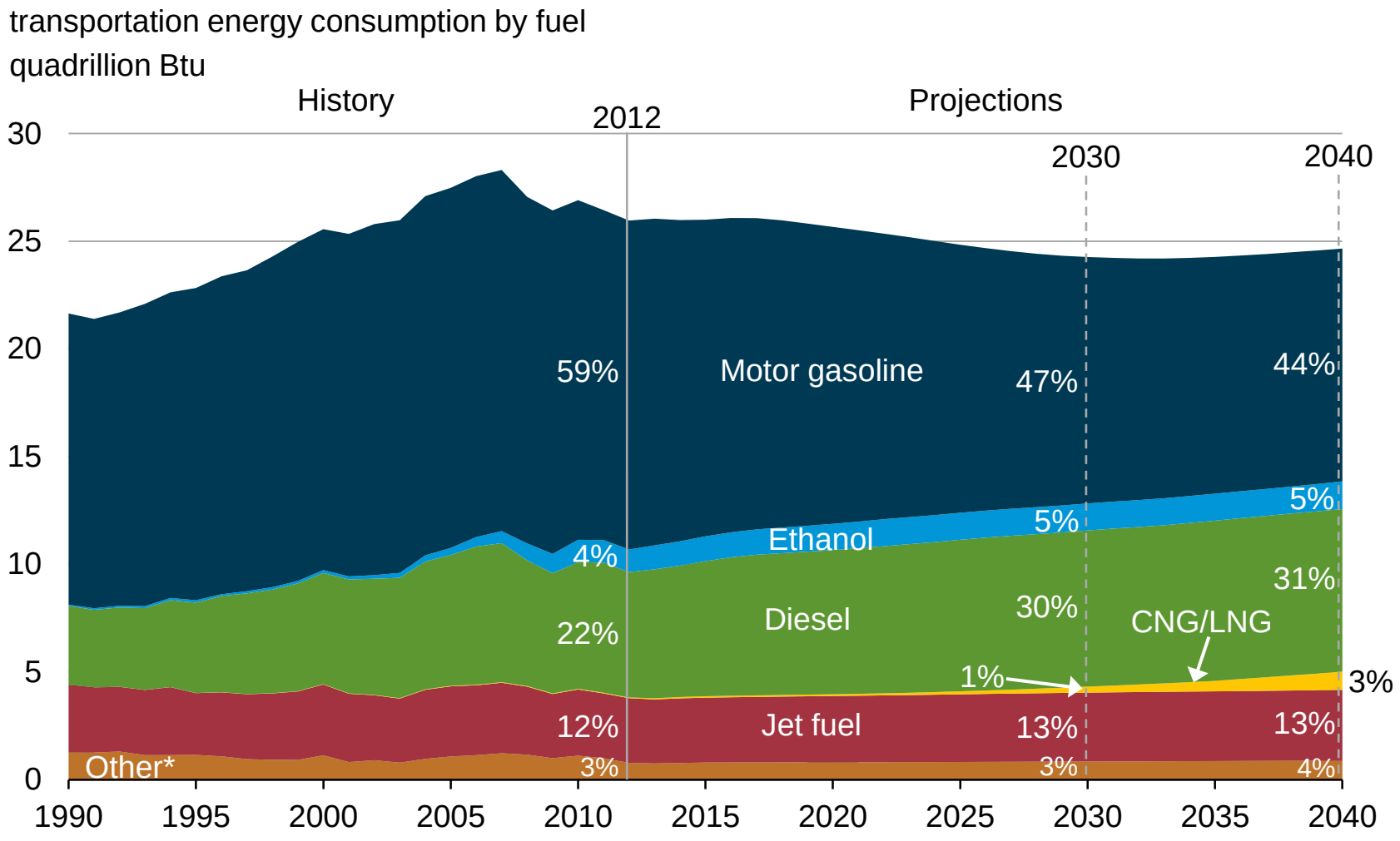
U.S. crude oil production exceeds 13 million bbl/d in High Oil and Gas Resource case

U.S. crude oil production in three cases
million barrels per day



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

U.S. transportation sector motor gasoline demand declines, while diesel fuel accounts for a growing portion of the market

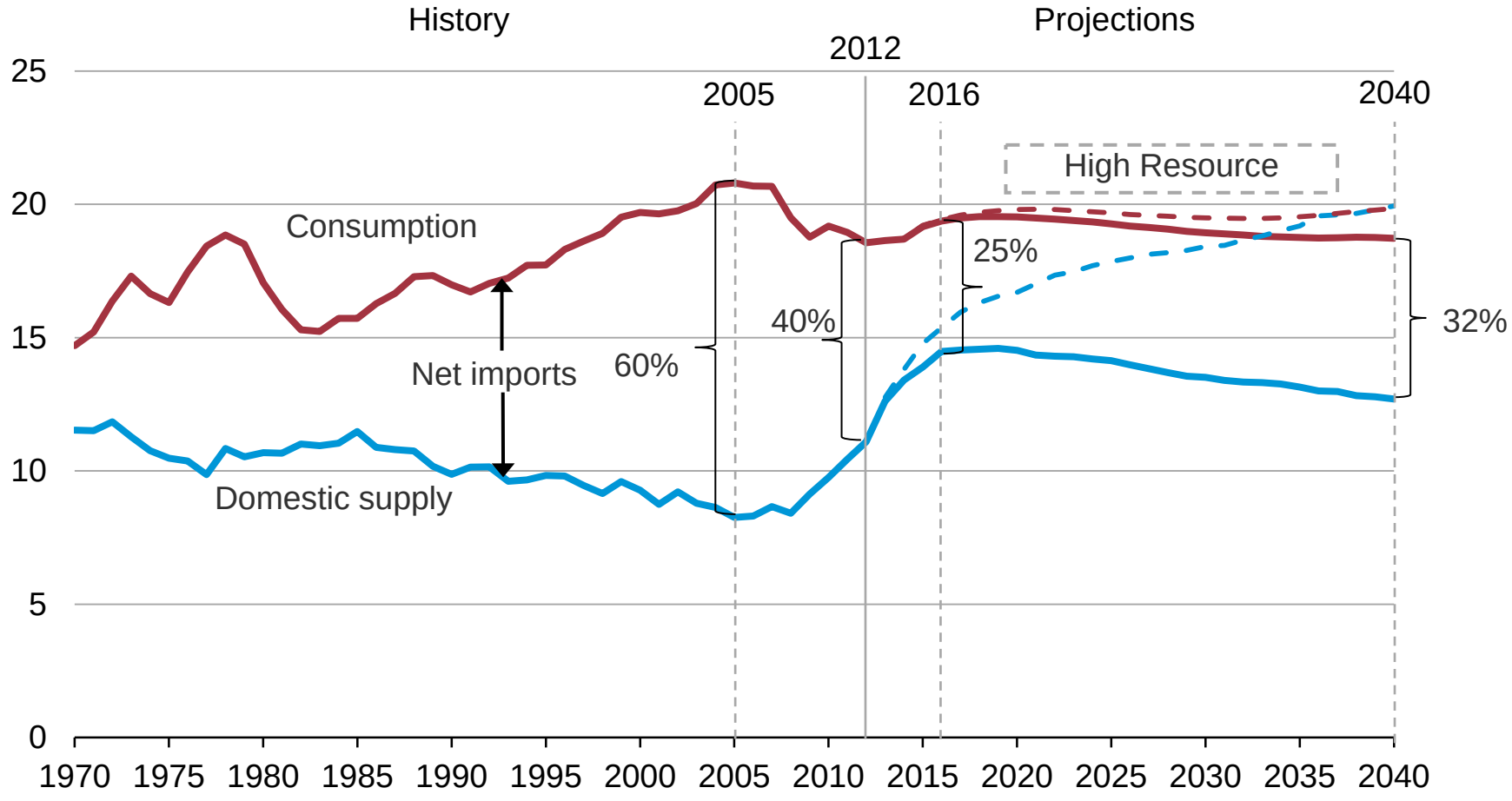


Source: EIA, Annual Energy Outlook 2014 Reference case

**Includes aviation gasoline, propane, residual fuel oil, lubricants, electricity, and liquid hydrogen*

Although oil use is slightly increased in the High Resource case due to lower prices, net import dependence declines rapidly

U.S. liquid fuel supply
million barrels per day

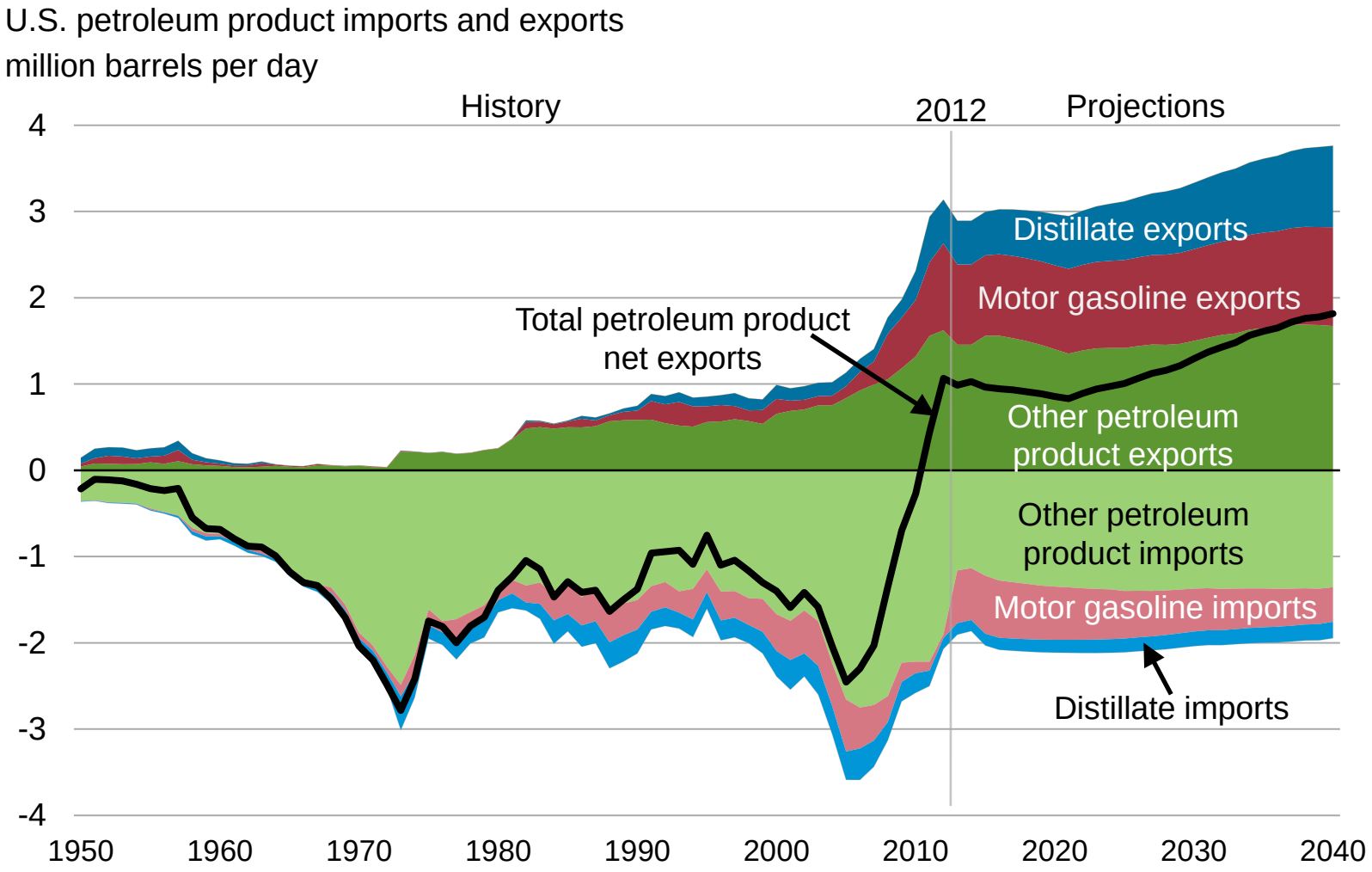


Source: EIA, Annual Energy Outlook 2014 Reference case and High Resource / Improved Technology case

The rise in U.S. crude oil and natural gas production has strategic implications for the United States

- Refinery operations/investment
- Logistics infrastructure investment
- Exports of petroleum products
- Exports of crude oil and natural gas (LNG)
- Operation of the Strategic Petroleum Reserve

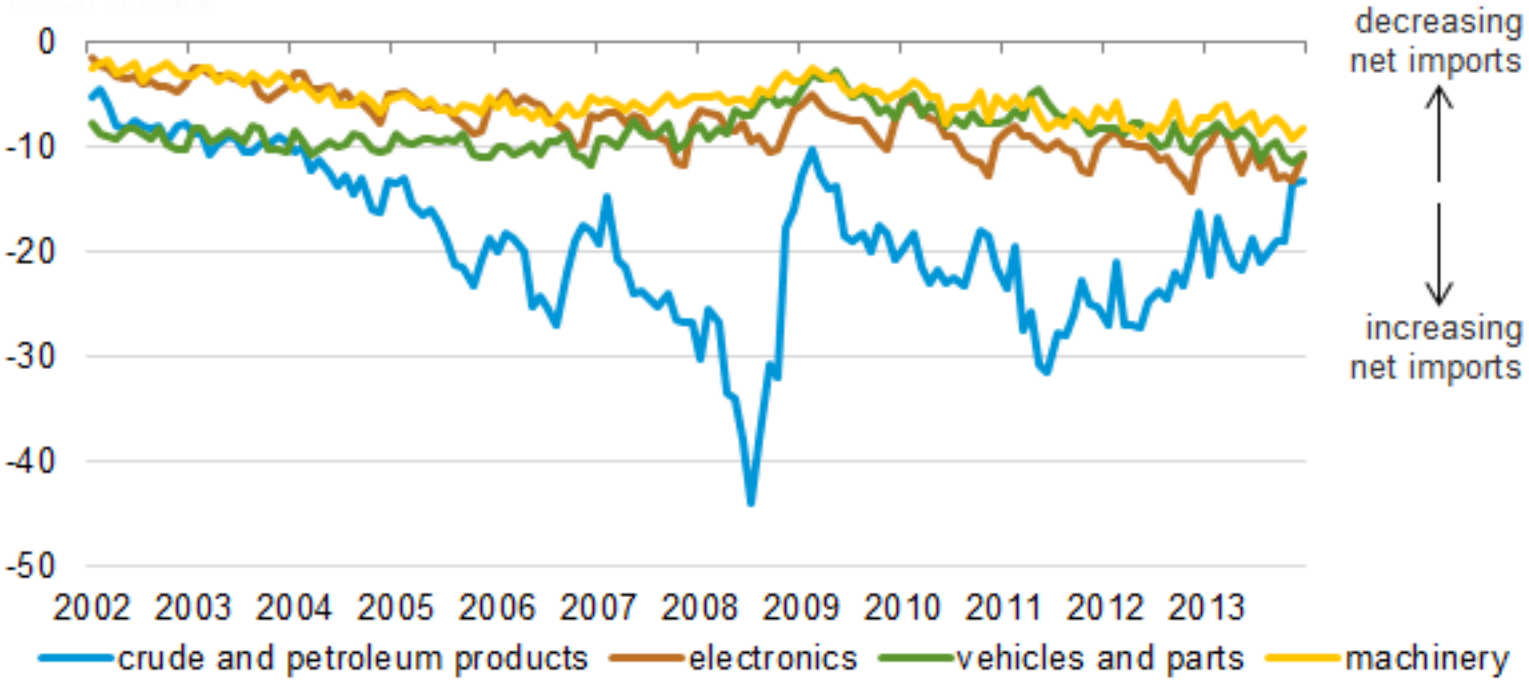
U.S. maintains status as a net exporter of petroleum products



Source: EIA, Annual Energy Outlook 2014 Reference case

Net crude and petroleum products imports value has fallen, while other major net import flows have risen

monthly U.S. net import values by major product category
billion dollars



Source: U.S. Census Bureau- Foreign Trade Division

Note: Net imports are expressed as negative values

Americas have some of the top crude oil producing countries in the world…

Americas crude oil production by major country and 2012 world rank
million barrels per day

Country (world rank)	2011	2012	2013(e)	2014(e)
United States (3rd globally)	5.7	6.5	7.5	8.5
Canada (6th)	2.9	3.1	3.3	3.5
Mexico (10th)	2.6	2.6	2.6	2.6
Venezuela (12th)	2.3	2.3	2.3	2.3
Brazil (13th)	2.1	2.1	2.1	2.2
Colombia (20th)	0.9	0.9	1.0	1.1
Argentina (27th)	0.6	0.6	0.5	0.5
Total Americas	**17.8**	**18.9**	--	--
Total World	**74.1**	**75.6**	--	--

25% of world production by volume in 2012

Source: EIA, Liquid Fuels and Natural Gas in the Americas; EIA, Short Term Energy Outlook; IEA, Oil Market Report

… and some of the top natural gas producing countries in the world

Americas dry natural gas production by major country and 2012 world rank
trillion cubic feet

Country (world rank)	2011	2012	2013(e)	2014(e)
United States (1st globally)	22.9	24.1	24.3	25.0
Canada (4th)	5.2	5.5	--	--
Mexico (18th)	1.8	1.7	--	--
Trinidad and Tobago (21st)	1.4	1.5	--	--
Argentina (23rd)	1.4	1.3	--	--
Venezuela (27th)	0.9	0.8	--	--
Peru (38th)	0.4	0.4	--	--
Total Americas	**35.5**	**37.1**	--	--
Total World	**116.0**	**118.4**	--	--

31% of world production
by volume in 2012

Source: EIA, Liquid Fuels and Natural Gas in the Americas; EIA, Short Term Energy Outlook

Top ten countries with technically recoverable shale resources

Shale gas		
Rank	Country	Trillion cubic feet
1	China	1,115
2	Argentina	802
3	Algeria	707
4	United States	665
5	Canada	573
6	Mexico	545
7	Australia	437
8	South Africa	390
9	Russia	285
10	Brazil	245
	World total	**7,299**

Shale oil		
Rank	Country	Billion barrels
1	Russia	75
2	United States	58
3	China	32
4	Argentina	27
5	Libya	26
6	Australia	18
7	Venezuela	13
8	Mexico	13
9	Pakistan	9
10	Canada	9
	World total	**345**

Source: United States- EIA and USGS; Other basins- ARI.

Note: ARI estimates U.S. *shale gas resources at 1,161 trillion cubic feet* and *U.S. shale oil resources at 48 billion barrels* .

Geopolitical implications of shale resources

- Shale oil is both light and sweet — the rapid growth in its supply has implications for crude oil pricing relationships, the value of different refinery configurations, refinery output slates, and the correspondence between SPR holdings and U.S. crude imports
- China's success in shale development and its future LNG imports (and coal use) are inversely related
- Russia's share of Europe's gas market could be reduced by increased European shale production
- High volumes of shale oil production, with other drivers, could significantly diminish the market share and pricing power of key OPEC producers
- Shorter lead times for the 'manufacturing' model of production from shale resources may reduce price volatility (over an extended period) compared to the historical 'exploration/development' model for conventional resources

Mexico institutes energy reforms

- In December 2013, Mexican government enacted constitutional reforms ending PEMEX's monopoly on the oil and gas sector, opening it to greater foreign investment
- Reforms allow for new exploration and production contract models: licenses, production-sharing, profit-sharing, and service contracts
- Previously, shares or profits of hydrocarbon resources were not allowed for foreign firms, only service contracts were allowed
- PEMEX will have to compete for bids with other firms on new projects

16% of natural gas consumed in Europe in 2013 flowed through Ukraine

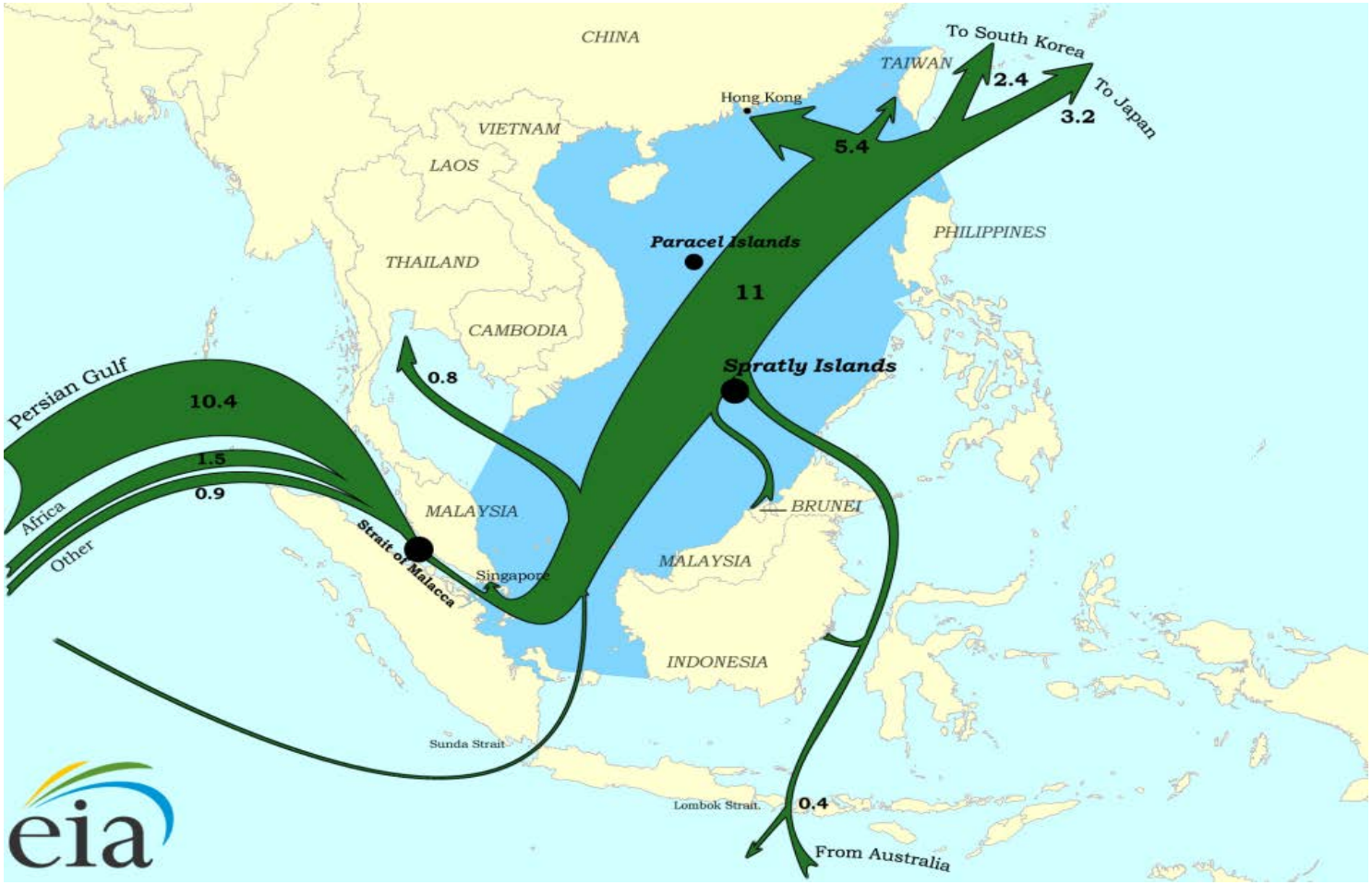
major natural gas transit pipelines flowing through Ukraine

Source: EIA; HIS EDIN; IEA

The South China Sea is an important world crude oil trade route

major crude oil trade flows in the South China Sea, 2011

million barrels per day



Source: EIA

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

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Today in Energy | www.eia.gov/todayinenergy

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