
Investment and challenges in the petrochemical and refining sector



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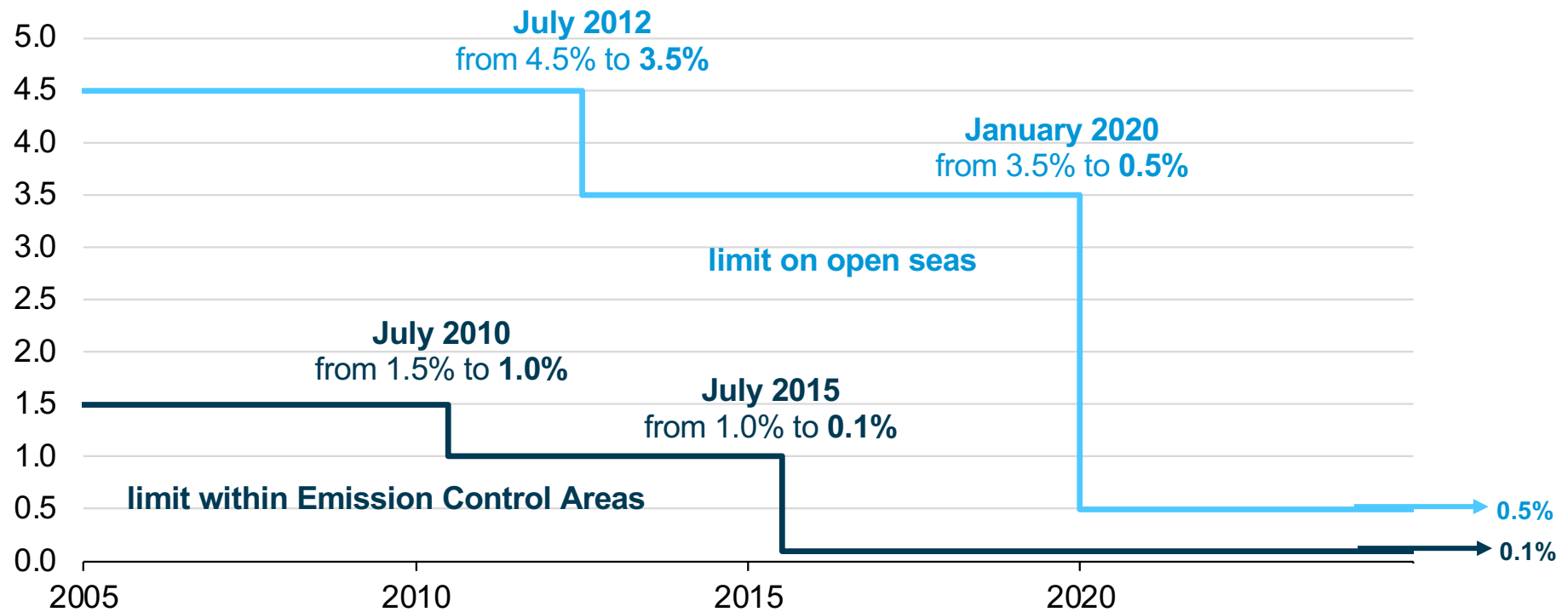
Key takeaways

- Changes resulting from the new International Maritime Organization (IMO) requirements are projected to stabilize at a new equilibrium in a few years
- In large part, the development of Hydrocarbon Gas Liquids (HGL) markets has been is a story of investment in midstream infrastructure and logistics
- Clear, well-defined data on final products and infrastructure investment are needed to identify trends for forecasting, analysis, and other purposes

New IMO fuel specification changes for ocean-going vessels go into effect in 2020

Global marine fuel sulfur limits

percent by weight

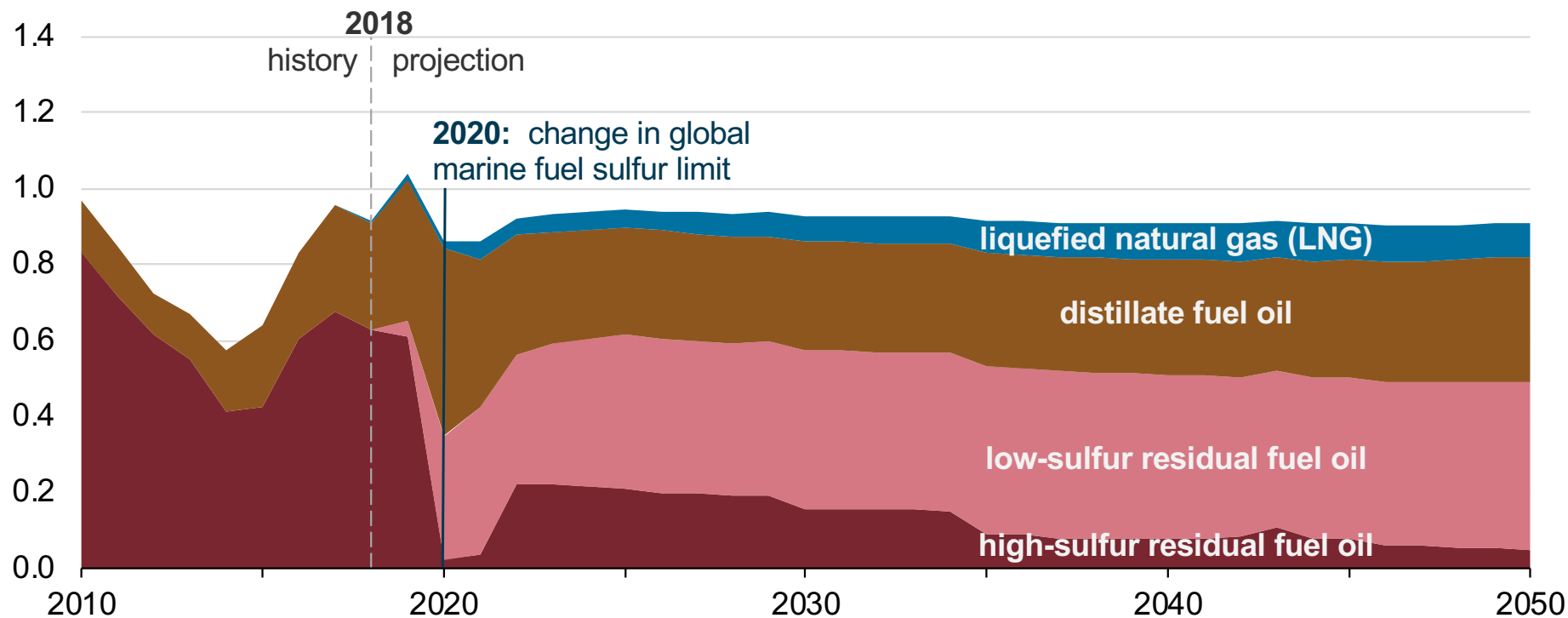


Source: U.S. Energy Information Administration

Effect of the new regulation will peak in 2020 as markets adjust and settle on a new equilibrium

U.S. ocean-going marine vessel fuel consumption in AEO2019 Reference case

quadrillion British thermal units

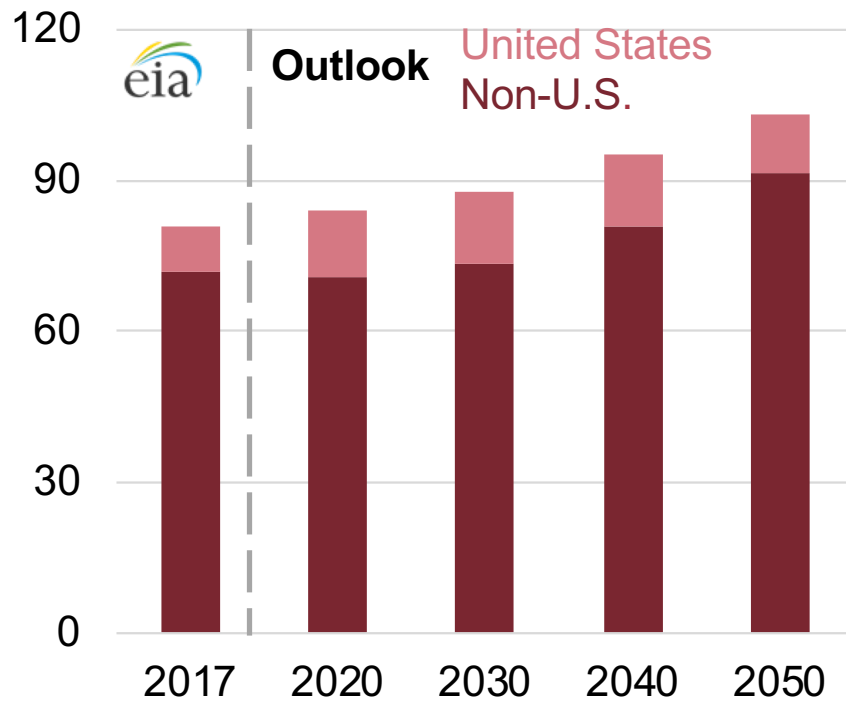


Source: U.S. Energy Information Administration, Annual Energy Outlook 2019

U.S. share of world crude oil output remains steady, while NGPL share rises to 45% of global total by mid-2020's

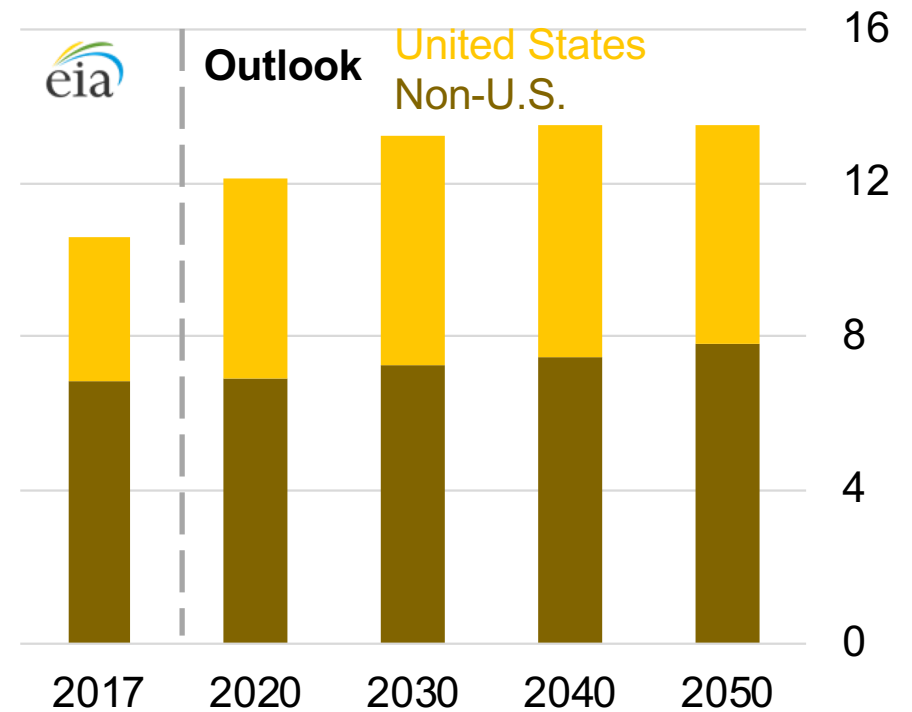
Global crude oil production

million barrels per day



Global NGPL production

million barrels per day

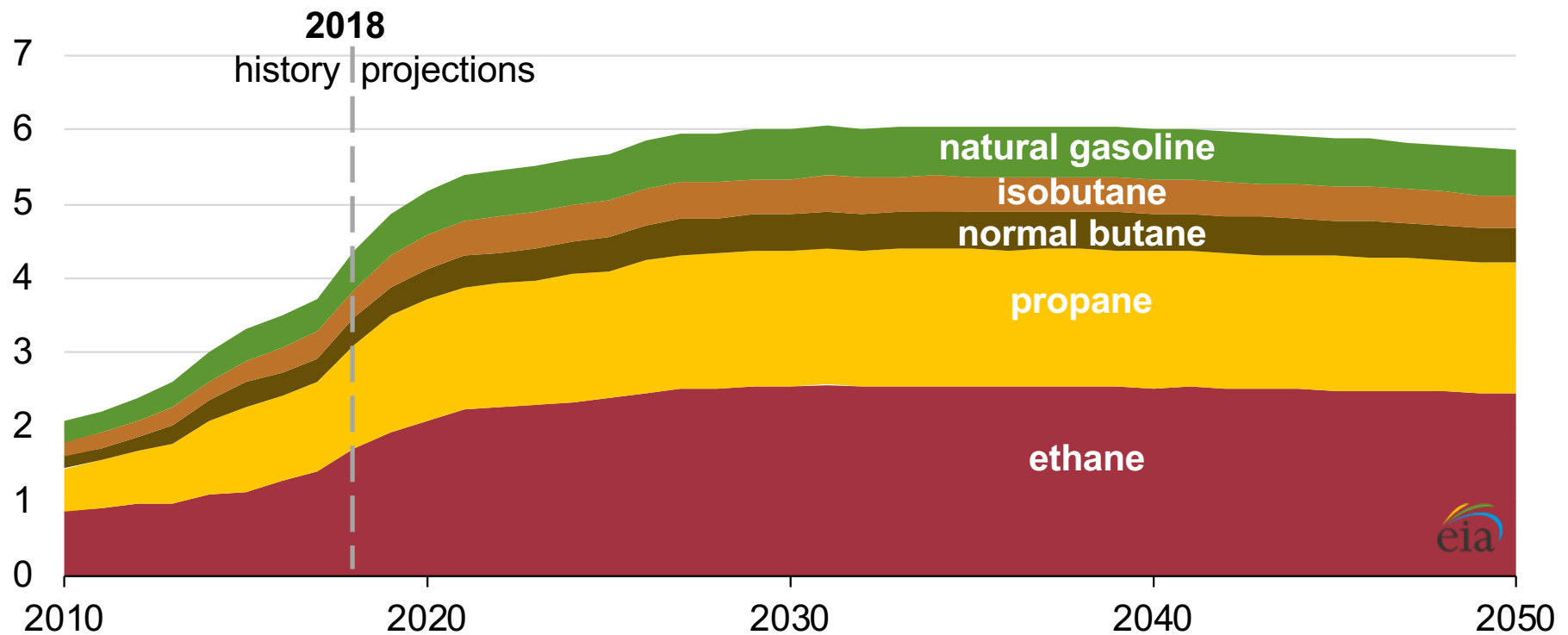


Source: U.S. Energy Information Administration, Annual Energy Outlook 2019

NGPL barrel projected to become lighter with ethane constituting 43% by 2050

U.S. natural gas plant liquids production (Reference case)

million barrels per day

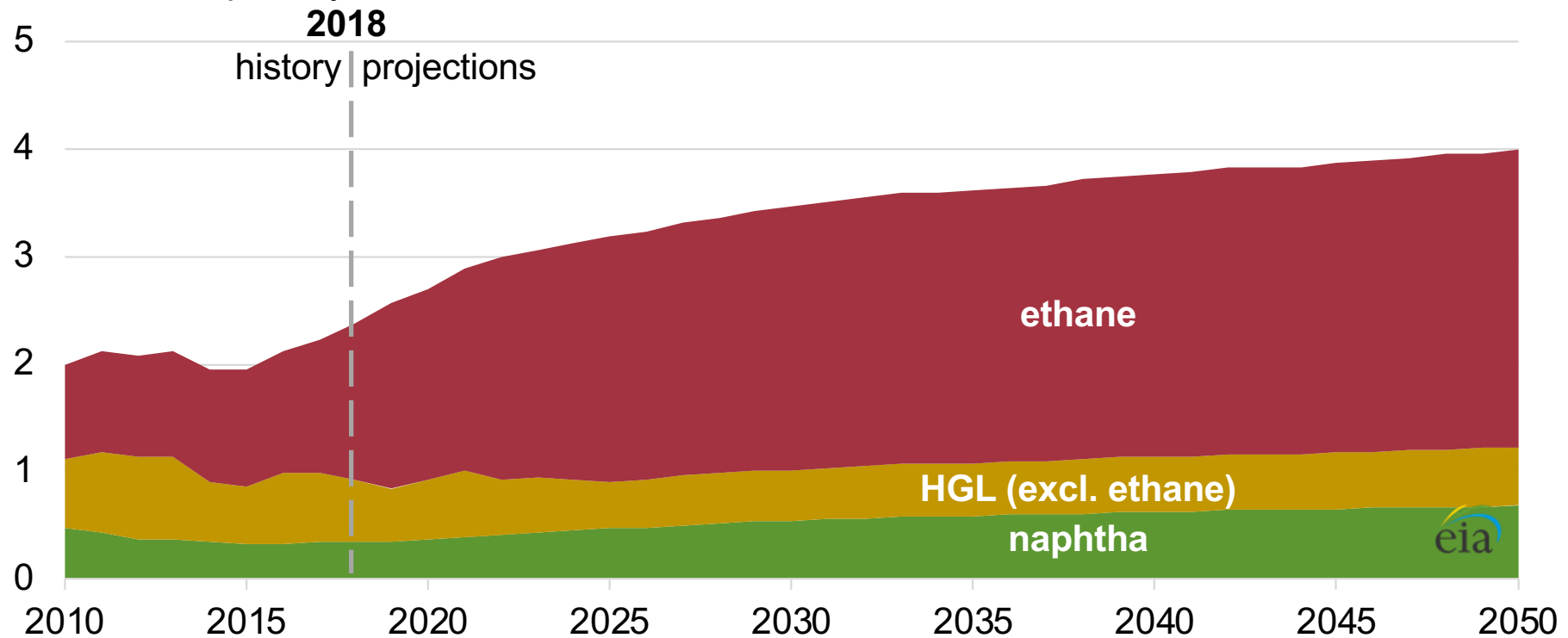


Source: U.S. Energy Information Administration, Annual Energy Outlook 2019

Growth in NGPL production provides cost-advantaged feedstock to petrochemical industry

U.S. petrochemical industry feedstock consumption

million barrels per day



Source: U.S. Energy Information Administration, Annual Energy Outlook 2019 and analyst judgement

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