

Industrial team preliminary results for *AEO2015*



Macro Industrial Working Group (MIWG)

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WORKING GROUP PRESENTATION FOR DISCUSSION PURPOSES

DO NOT QUOTE OR CITE AS RESULTS ARE SUBJECT TO CHANGE

Overview AEO2015

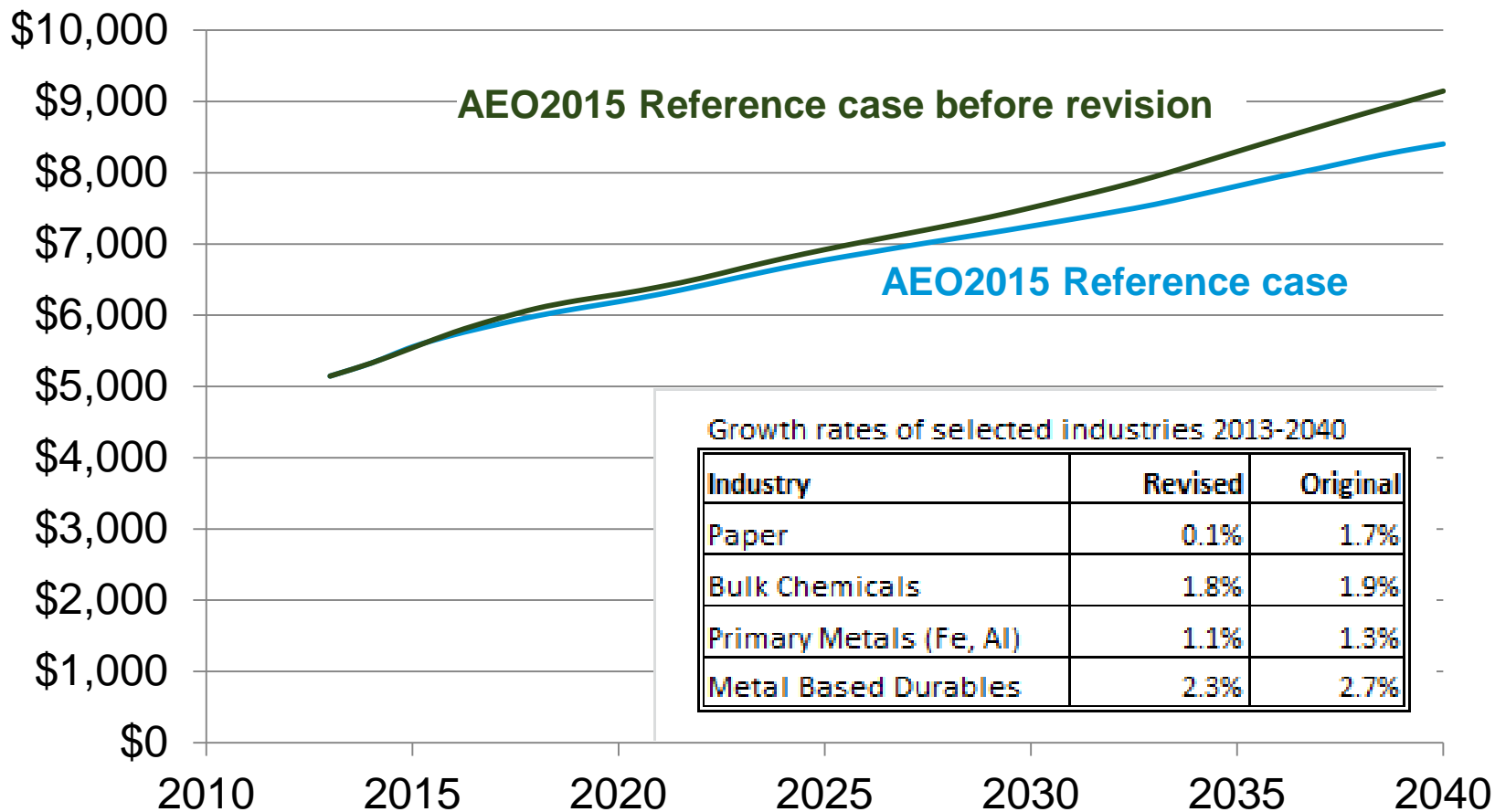
- AEO2015 is a “Lite” year
 - New ethane/propane pricing model only major update
 - Major side cases released with Reference case in late 2014: price, resource and macro
- Macro model results have changed since first MIWG; growth not as robust for some industries, especially after 2025
- What you’ll see today
 - Shipments
 - Industrial energy use (total and excluding both refining and lease & plant fuel)
 - AEO2015 Reference and selected side cases
 - AEO2015 v. AEO2014
 - New ethane/propane price model results

Side case definitions

- Price cases relative to Reference case
 - High Oil Price case: technology and policy half as effective in reducing demand in non-OECD countries, increasing demand; OPEC restricts production, reducing market share; higher production of tight oil; higher production of other liquid fuels as a result of technology development and increased development of previously uneconomic resources
 - Low Oil Price case: technology and policy twice as effective in reducing demand in non-OECD countries, decreasing demand substantially; OPEC maintains market share; lower production of tight oil and other liquid fuels
 - Economic growth the same in Reference, High and Low Price Cases
- High Resource case: substantially higher Estimated Ultimate Recovery of tight oil, tight gas, and shale gas, more resources

Macro model revision means lower growth for manufacturing 2013-2040

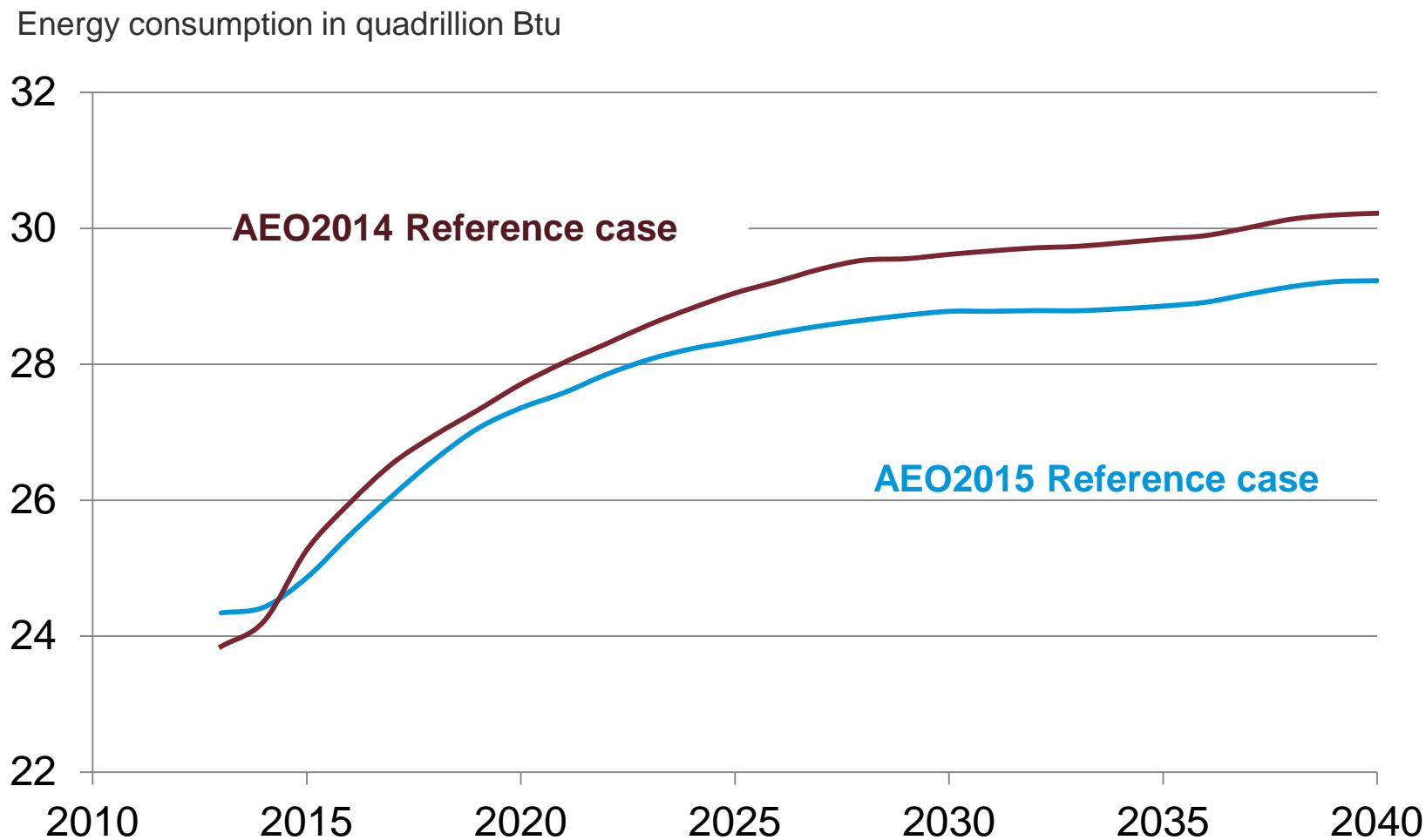
Manufacturing shipments in 2009 billion U.S. dollars



Source: ref2015.0922a, ref2015.0909a

Full Industrial sector results

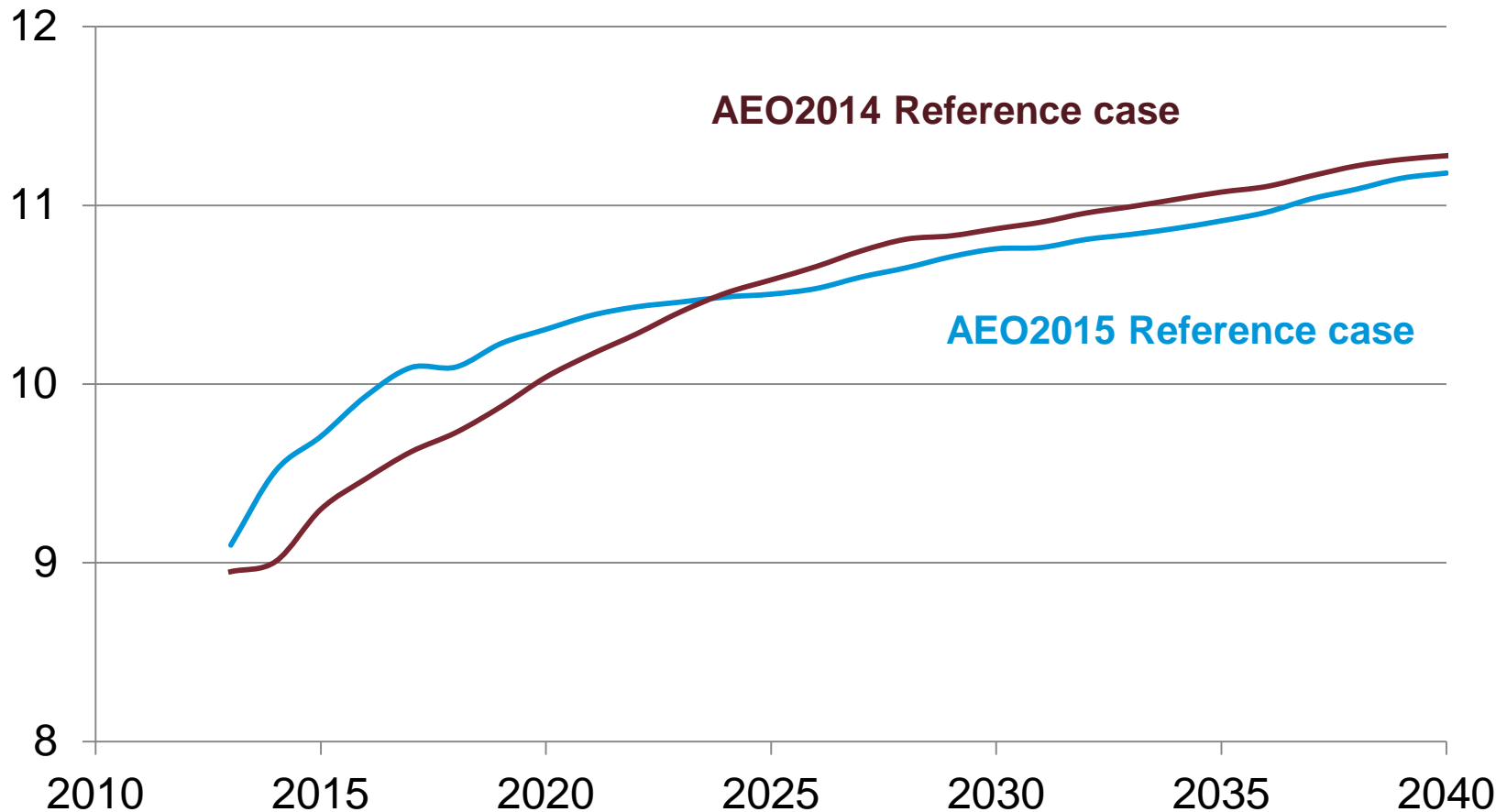
Total Industrial delivered energy consumption AEO2015 Reference case and AEO2014 Reference case



Source: AEO2015.0922a and AEO2014 Reference case – includes total industrial sector

Total industrial natural gas consumption AEO2015 Reference case and AEO2014 Reference case

Energy consumption in quadrillion Btu

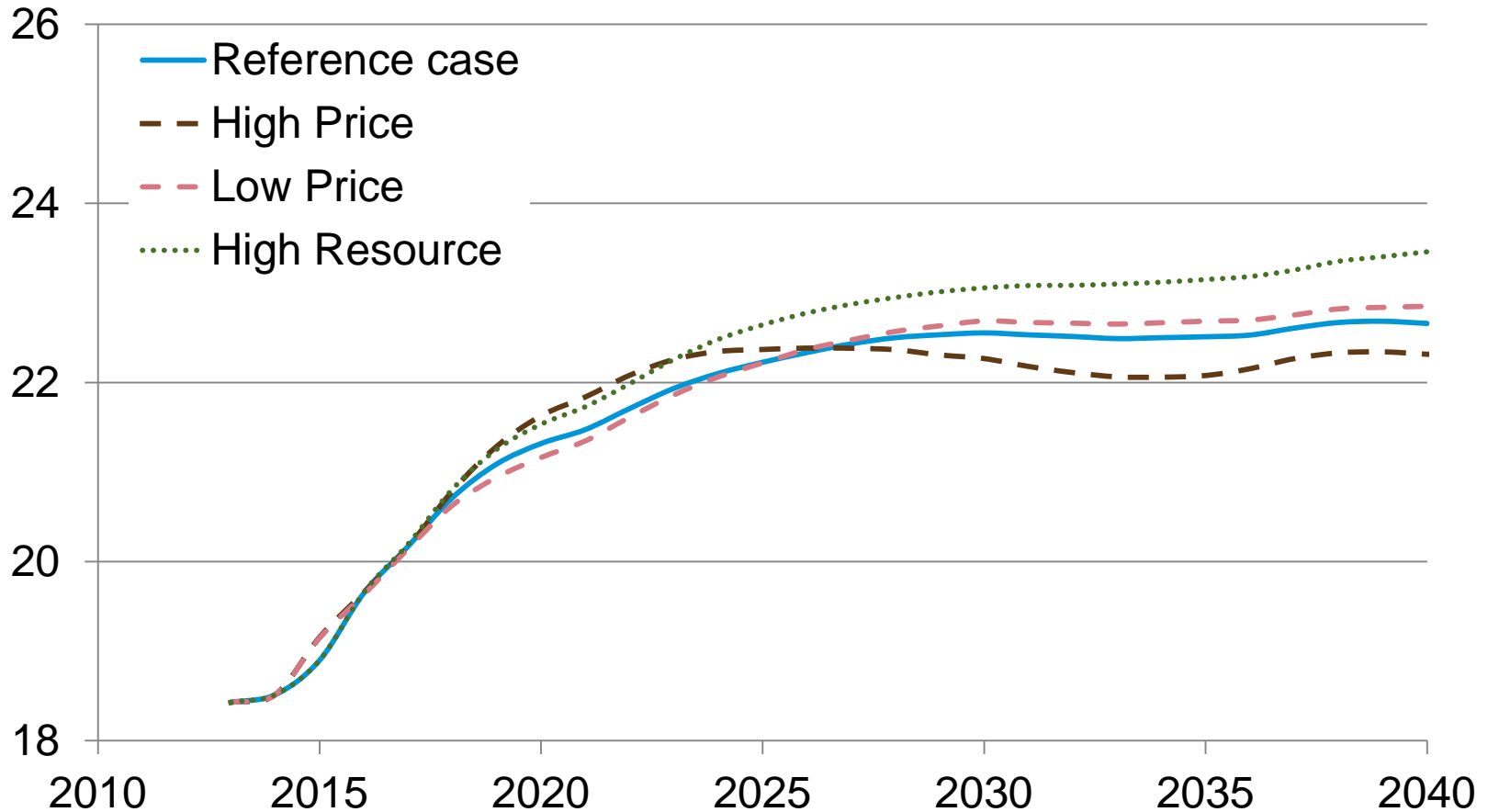


Source: AEO2015.0922a and AEO2014 Reference case – includes total industrial sector

IDM Results – excluding refining and lease and plant fuel

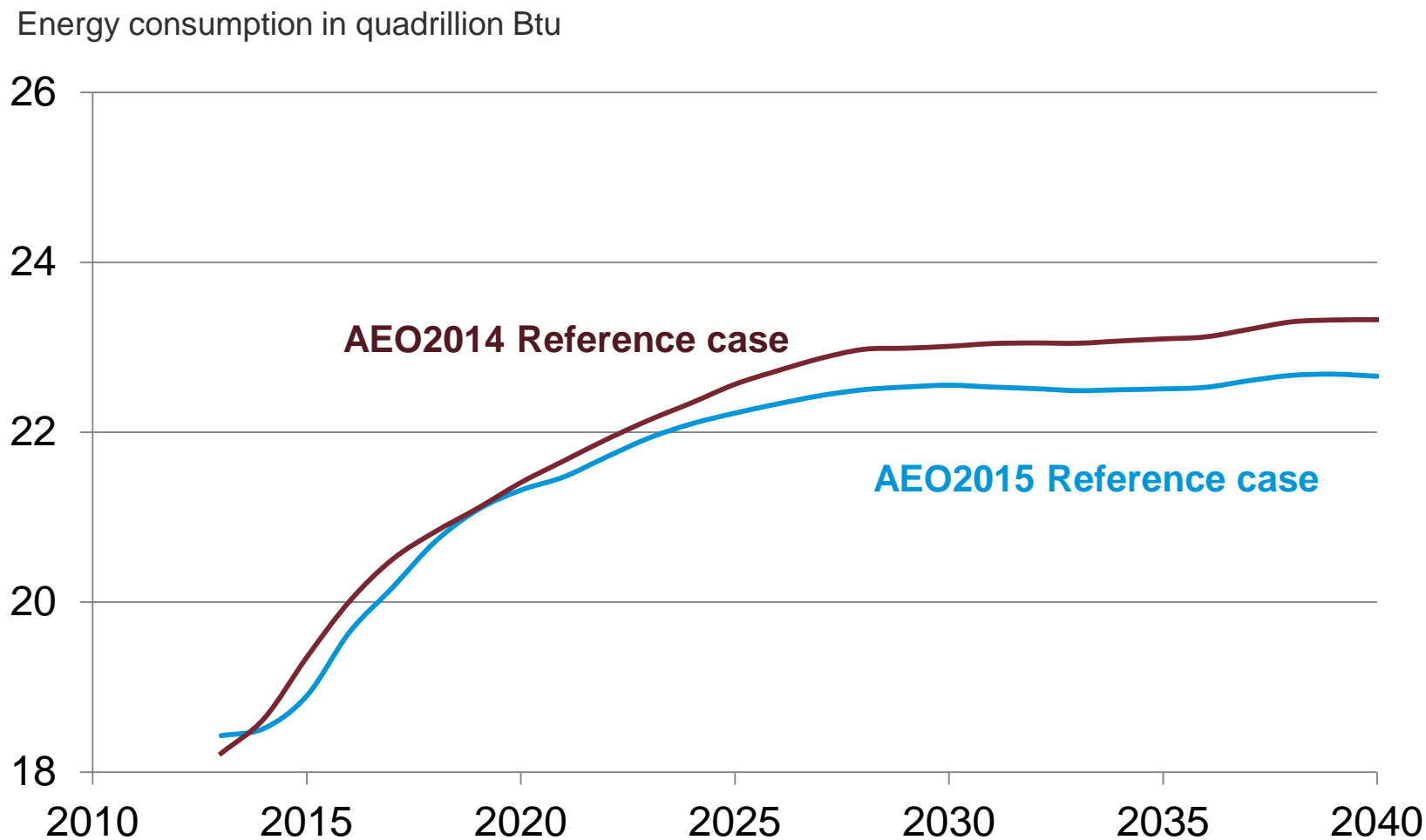
Industrial delivered energy consumption, Reference case and selected side cases for AEO2015

Energy consumption in quadrillion Btu



Source: AEO2015.0922a excludes refining and lease & plant fuel

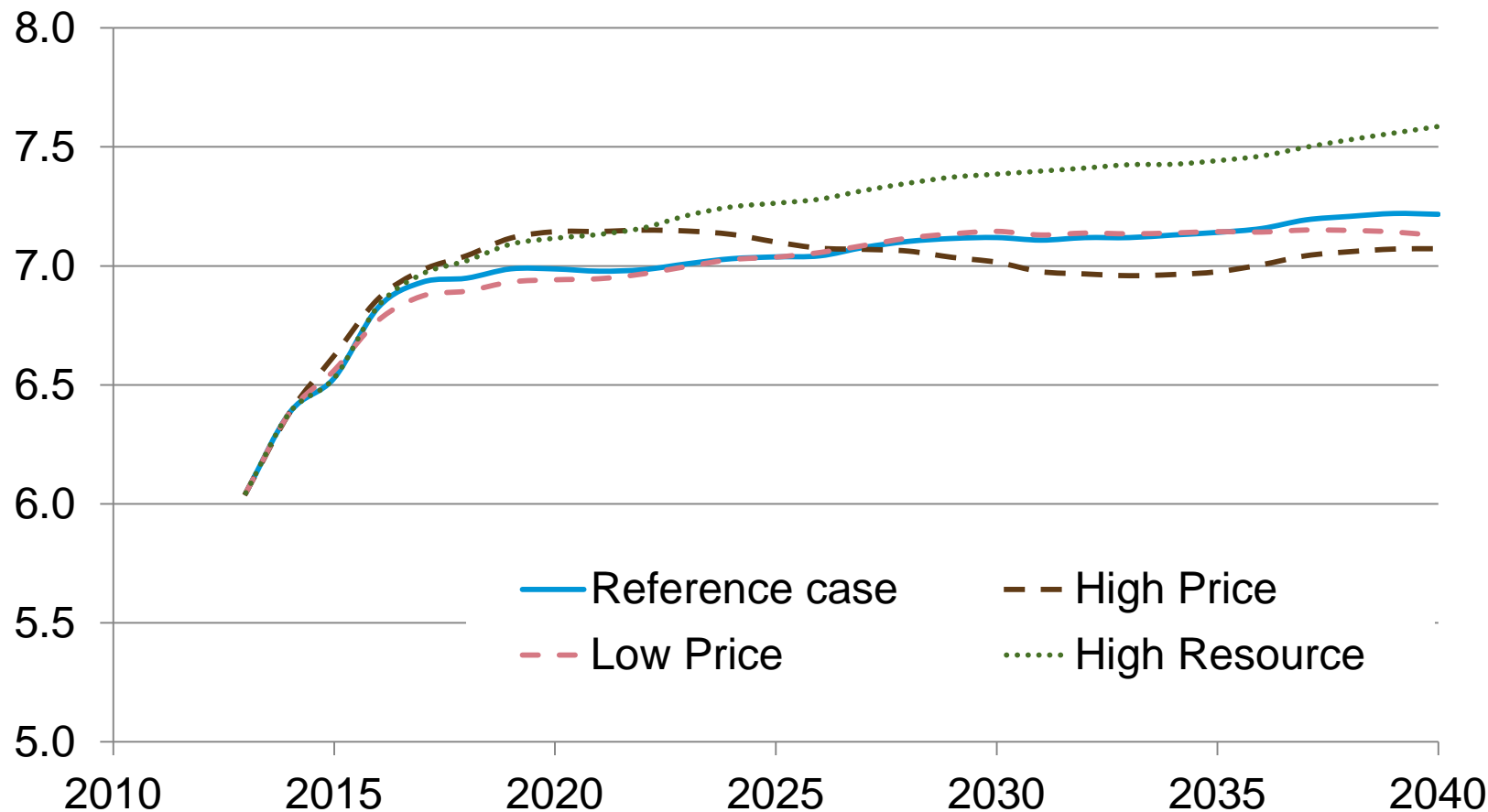
Industrial delivered energy consumption AEO2015 Reference case and AEO2014 Reference case



Source: AEO2015.0922a and AEO2014 Reference case excludes refining and lease & plant fuel

Industrial natural gas consumption, Reference case and selected side cases for AEO2015

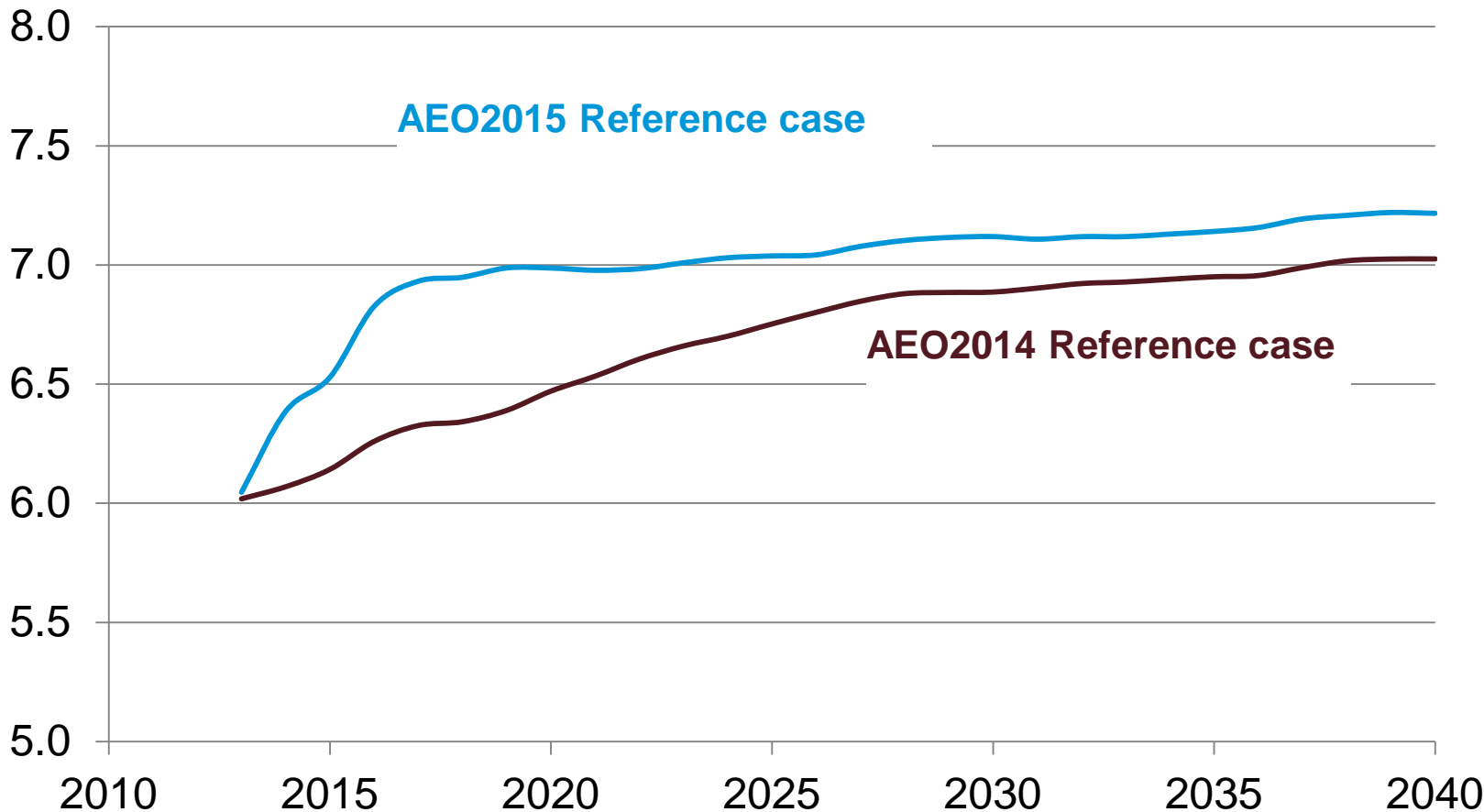
Energy consumption in quadrillion Btu



Source: AEO2015.0922a excludes refining and least and plant fuel

More feedstock use, optimistic short run mean higher short run industrial natural gas consumption in AEO2015 than AEO2014

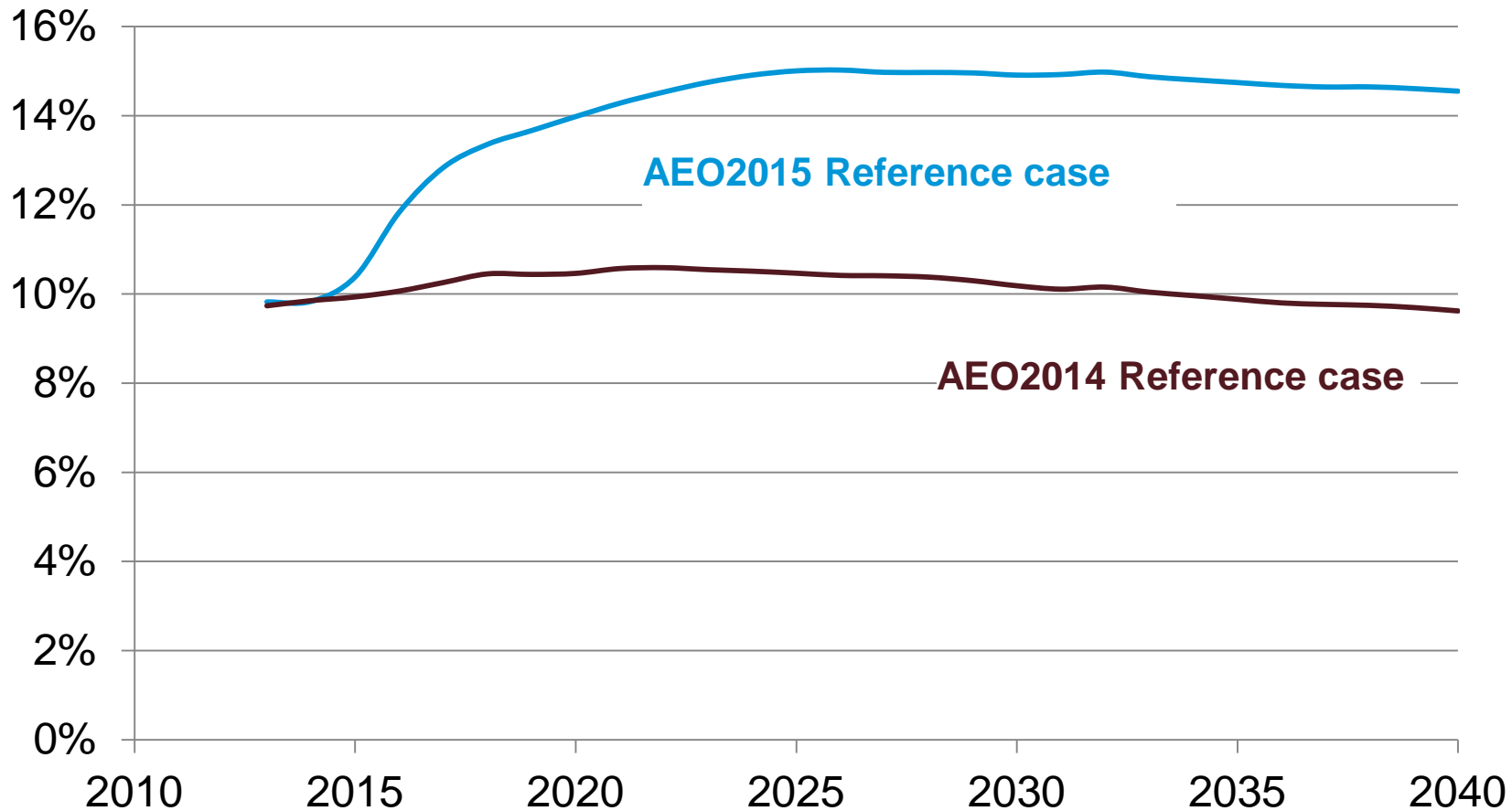
Consumption in quadrillion Btu



Source: AEO2015.0922a and AEO2014 Reference case excludes refining and lease and plant fuel

More domestic methanol and fertilizer production boosts proportion of natural gas feedstock consumption in AEO2015

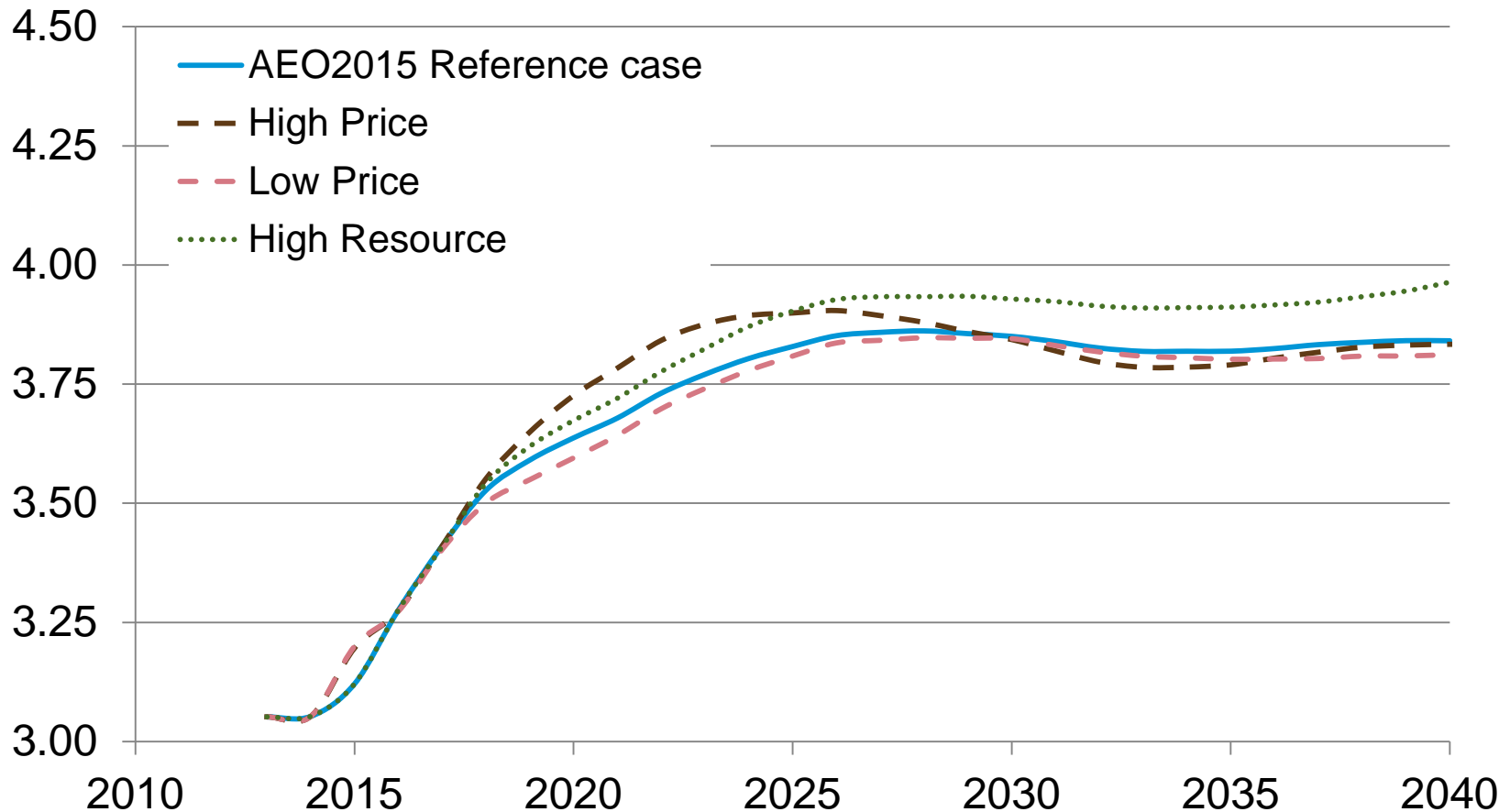
Natgas feedstock as % of industrial natgas consumption



Source: AEO2015.0922a and AEO2014 Reference case excludes refining and lease and plant fuel

Industrial purchased electricity consumption, Reference case and selected side cases for AEO2015

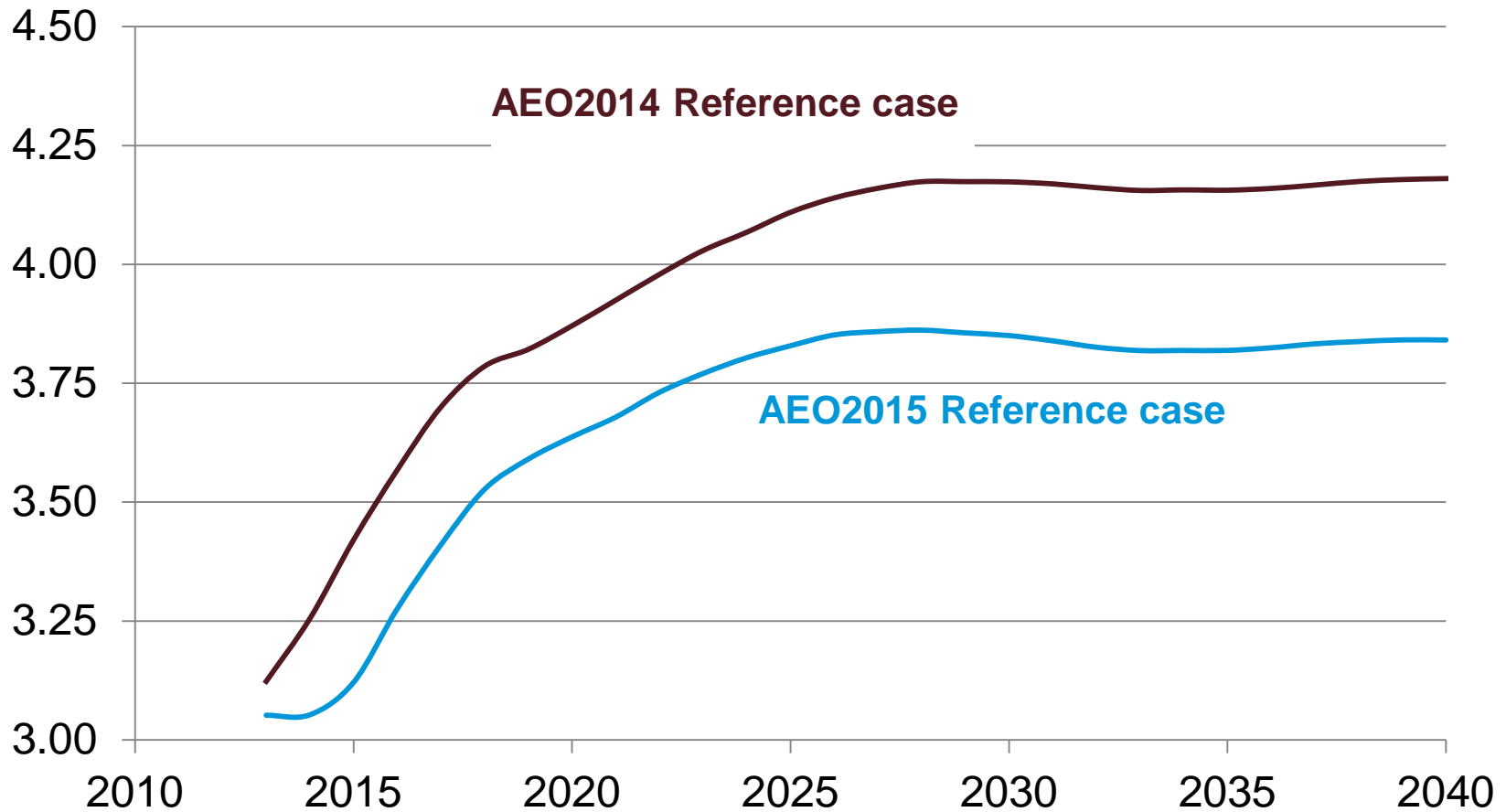
Consumption in quadrillion Btu



Source: AEO2015.0922a

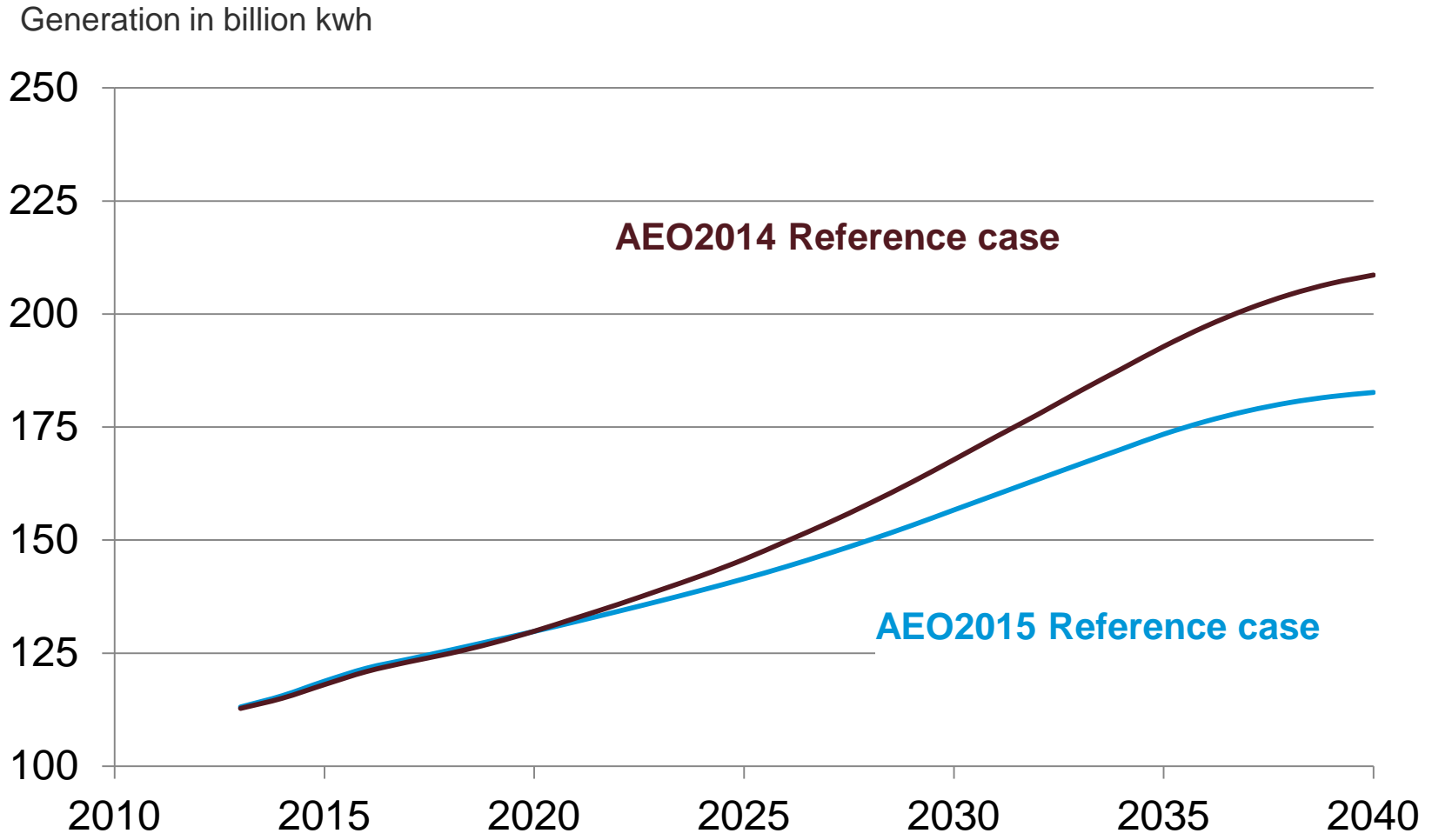
Industrial purchased electricity: Lower relative MBD shipments, less short term use lead to AEO2015 consumption

Consumption in quadrillion Btu



Source: AEO2015.0922a and AEO2014 Reference case excludes refining

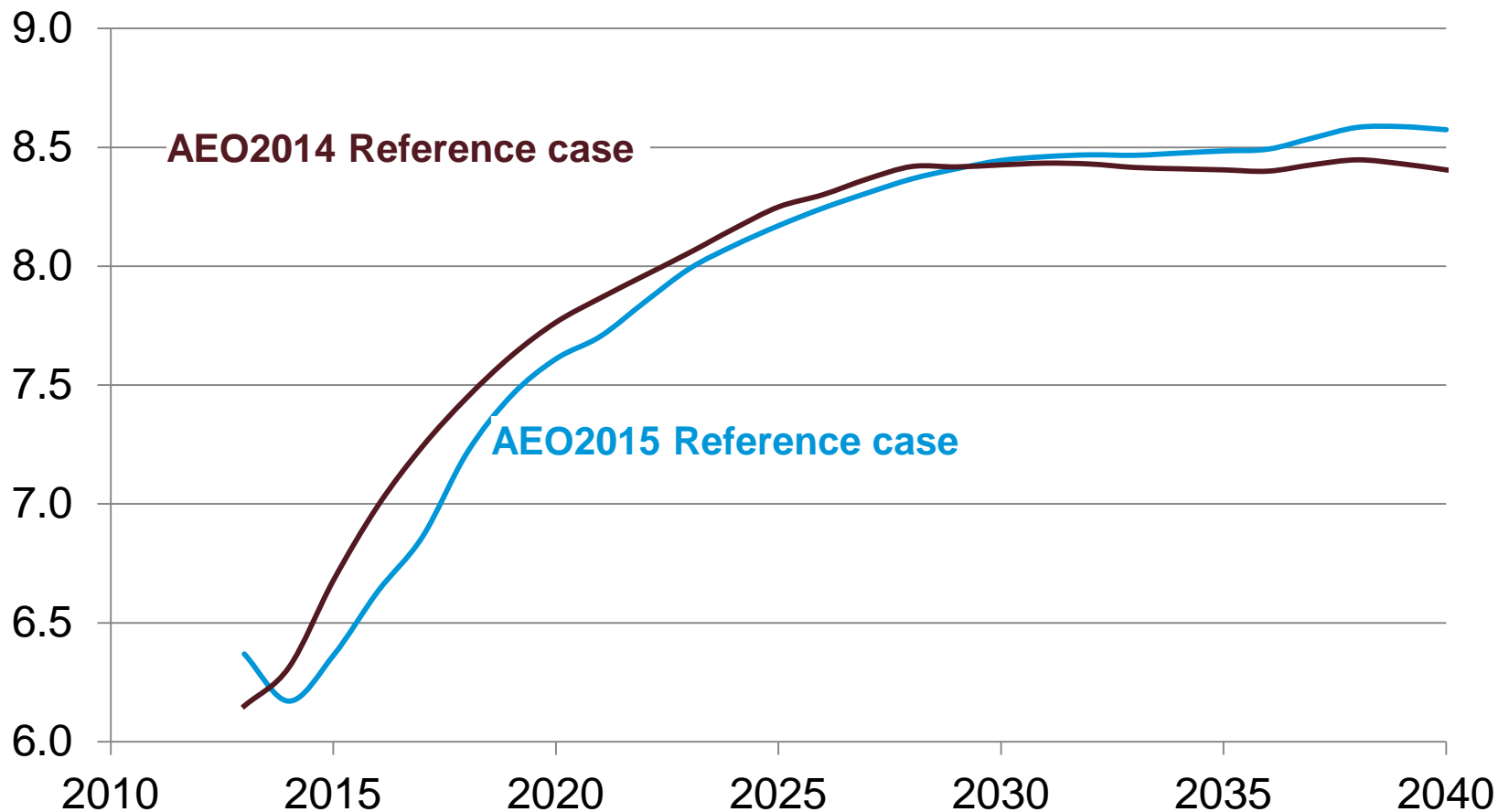
Industrial CHP generation: lower long term growth in energy intensive industries lowers AEO2015 generation



Source: AEO2015.0922a and AEO2014 Reference case excludes refining

Industrial liquids consumption: Higher AEO2015 HGL consumption offsets lower liquids consumption in other categories

Consumption in quadrillion Btu



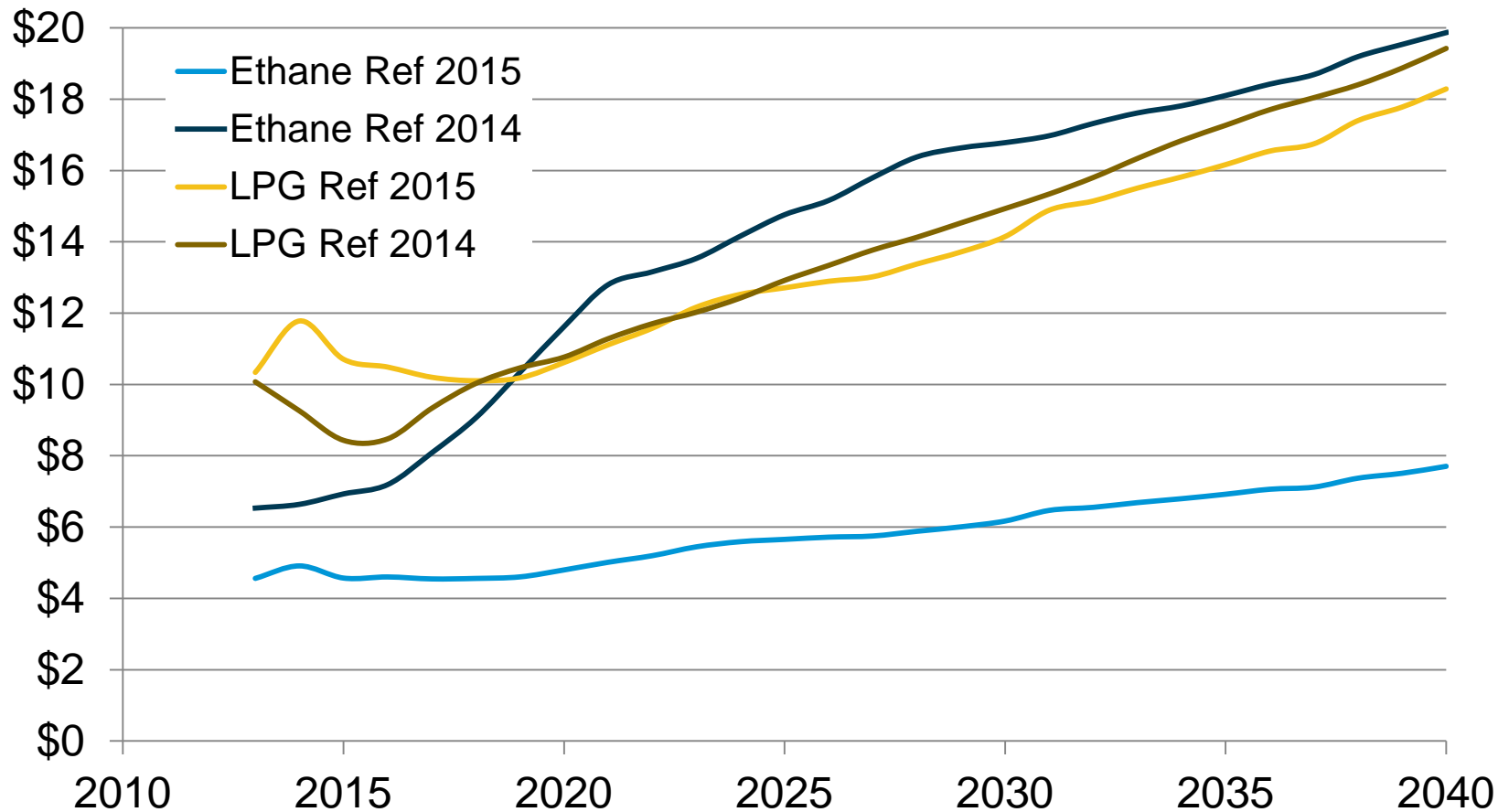
Source: AEO2015.0922a and AEO2014 Reference case excludes refining

Ethane/Propane Price Modeling for 2015

- Dynamic Linear Model (DLM) joint pricing model of ethane and propane
 - Dependence of ethane and propane prices on oil and natural gas prices can vary over time
 - Historically high wet gas discoveries increase the role of natural gas prices from very little to a larger amount
- Automated updating of parameters with new data as it arrives
- Drivers will also include exports, chemical shipments, and “total” ethane supply

Liquid feedstock prices – ethane and propane HGL and petrochemicals - in bulk chemicals industry, AEO2015 v AEO2014

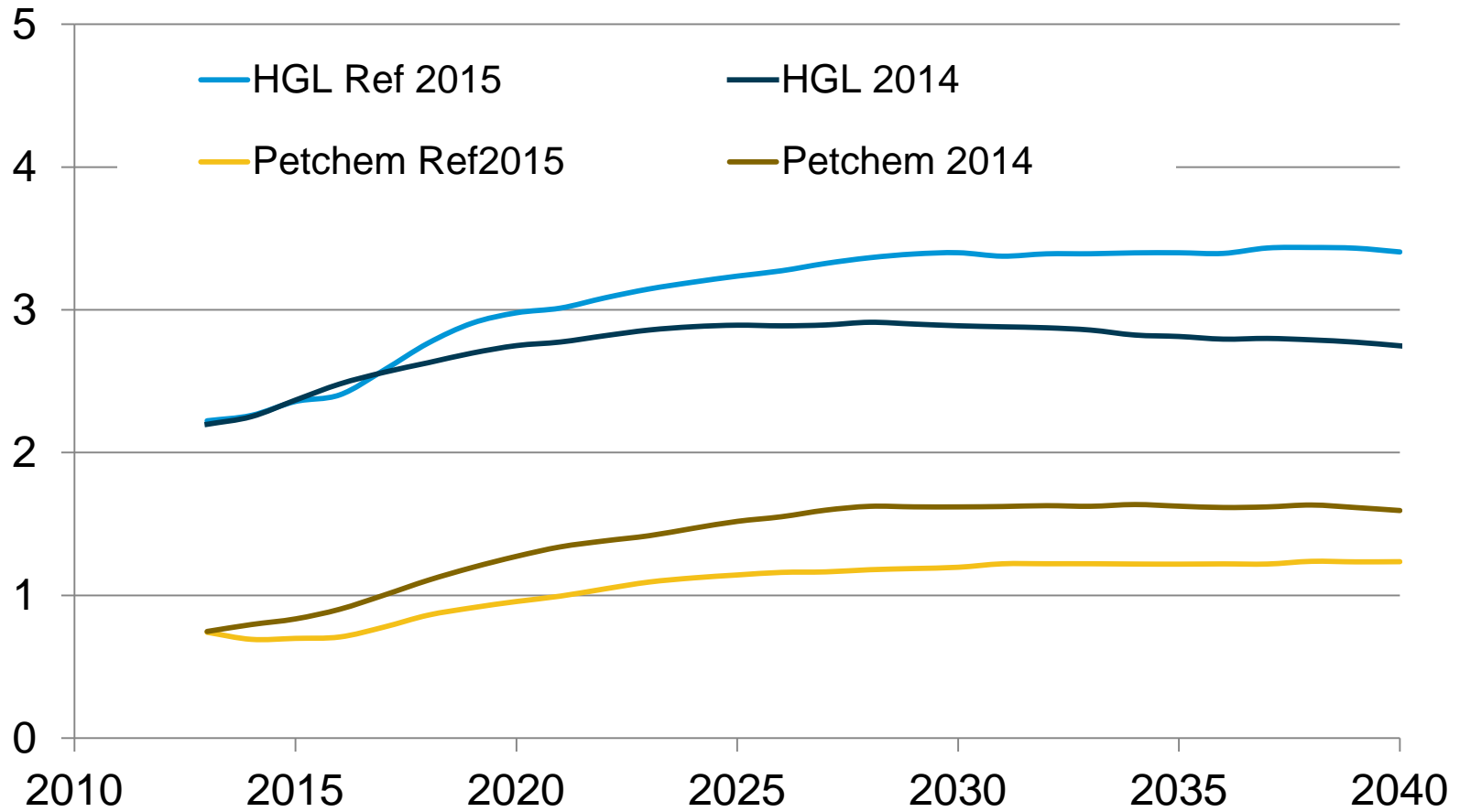
Price in 2013 \$/MMBtu



Source: AEO2015.0922a and AEO2014 Reference case

Liquid feedstock consumption – HGL and petrochemicals - in bulk chemicals industry, AEO2015 v AEO2014

Consumption in quadrillion Btu



Source: AEO2015.0922a and AEO2014 Reference case

Memo on this meeting and presentation can be found here in about a month:

<http://www.eia.gov/forecasts/aeo/workinggroup/macroindustrial/>

Thank you for your attention!

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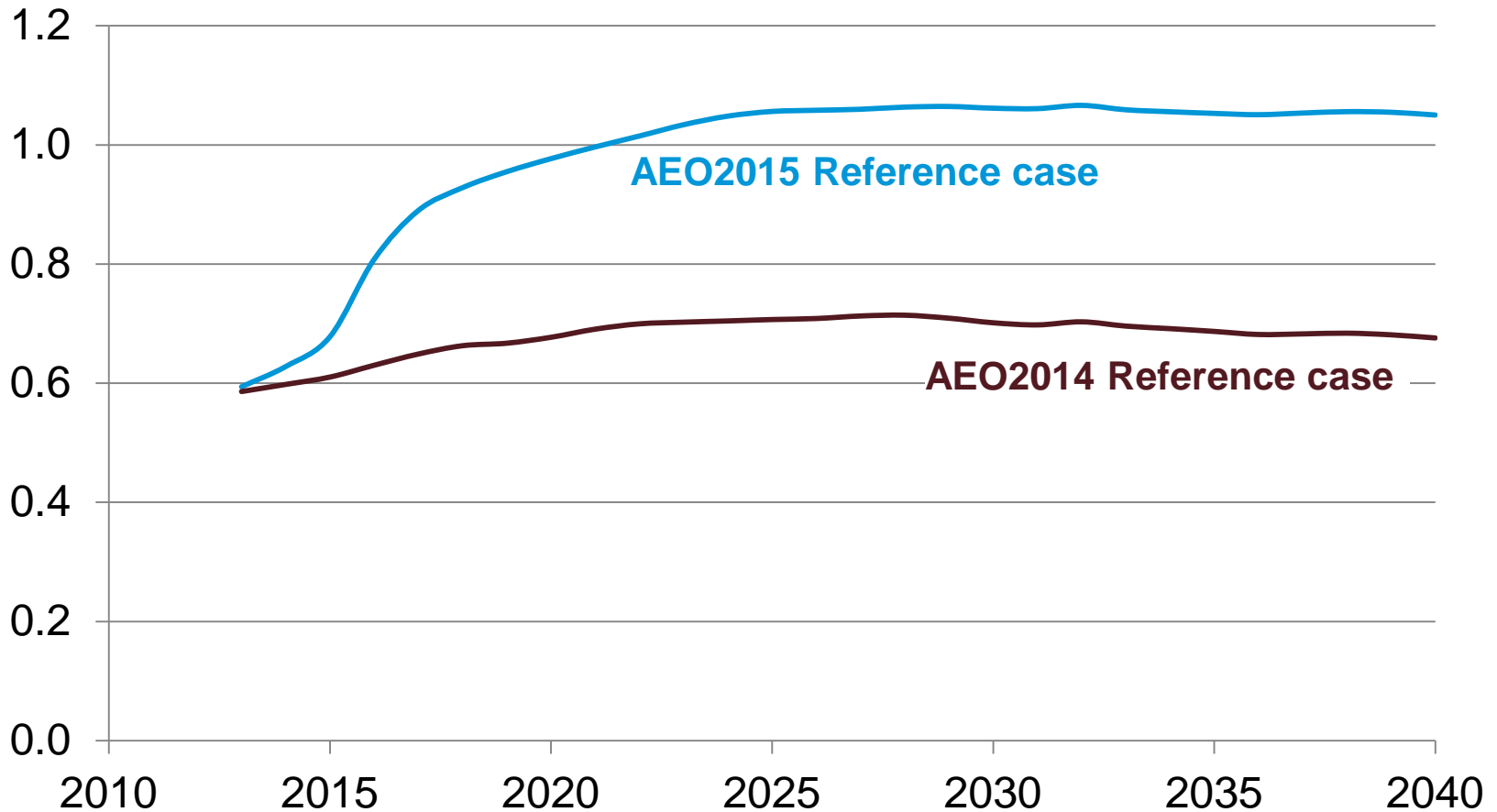
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Bonus slides

More domestic methanol and fertilizer production boosts natural gas feedstock consumption in AEO2015

Consumption in quadrillion Btu



Source: AEO2015.0922a and AEO2014 Reference case excludes refining and lease and plant fuel