

AEO2017 Industrial Working Group meeting 2: Preliminary results



Industrial Working Group

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Preliminary Results. Do not Disseminate.

AEO2017 What we did

- Extend model to 2050 (now complete)
- Individual industry benchmark improvements
- Regulation: Kept Boiler MACT as is
- Lowered DRI and relaxed constraints on EAF usage
- Running Limited side cases: macro, price, and resource

Preliminary Results. Do Not Disseminate.

Very little remaining work for this year

- Trying to explain steel output increase in 2040
- May do additional DRI adjustments

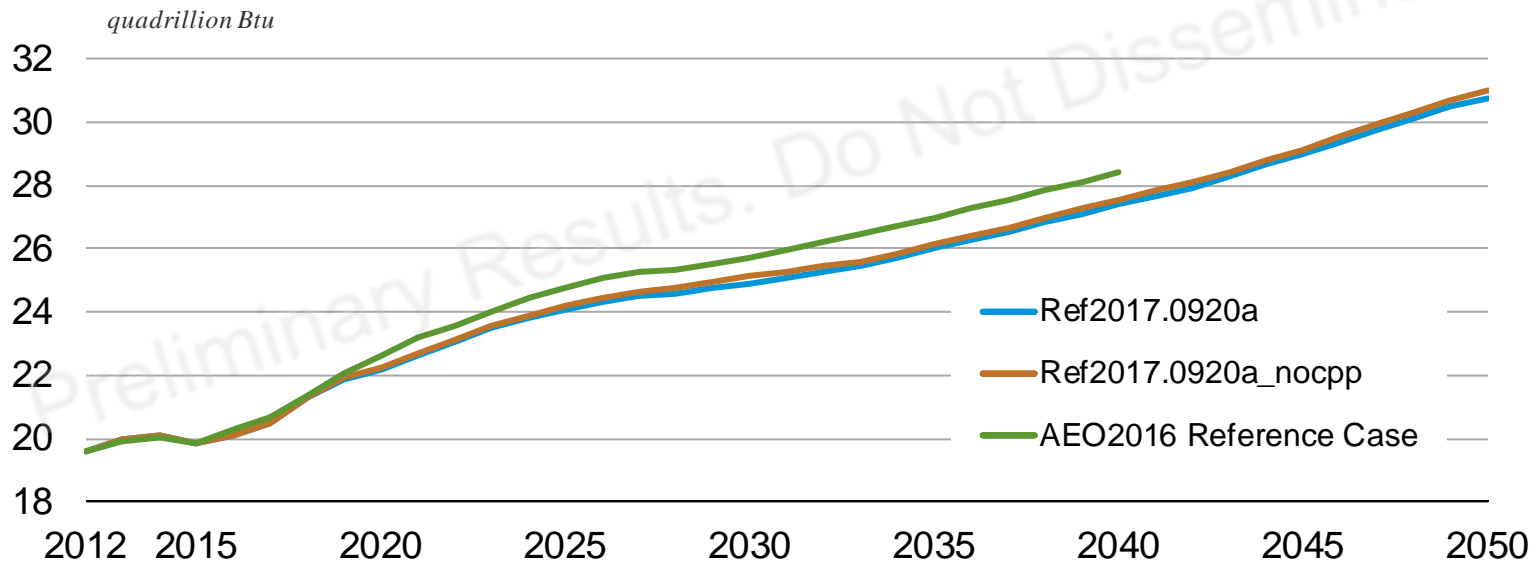
Preliminary Results. Do Not Disseminate.

Industrial results Excludes Refining

Preliminary Results. Do Not Disseminate.

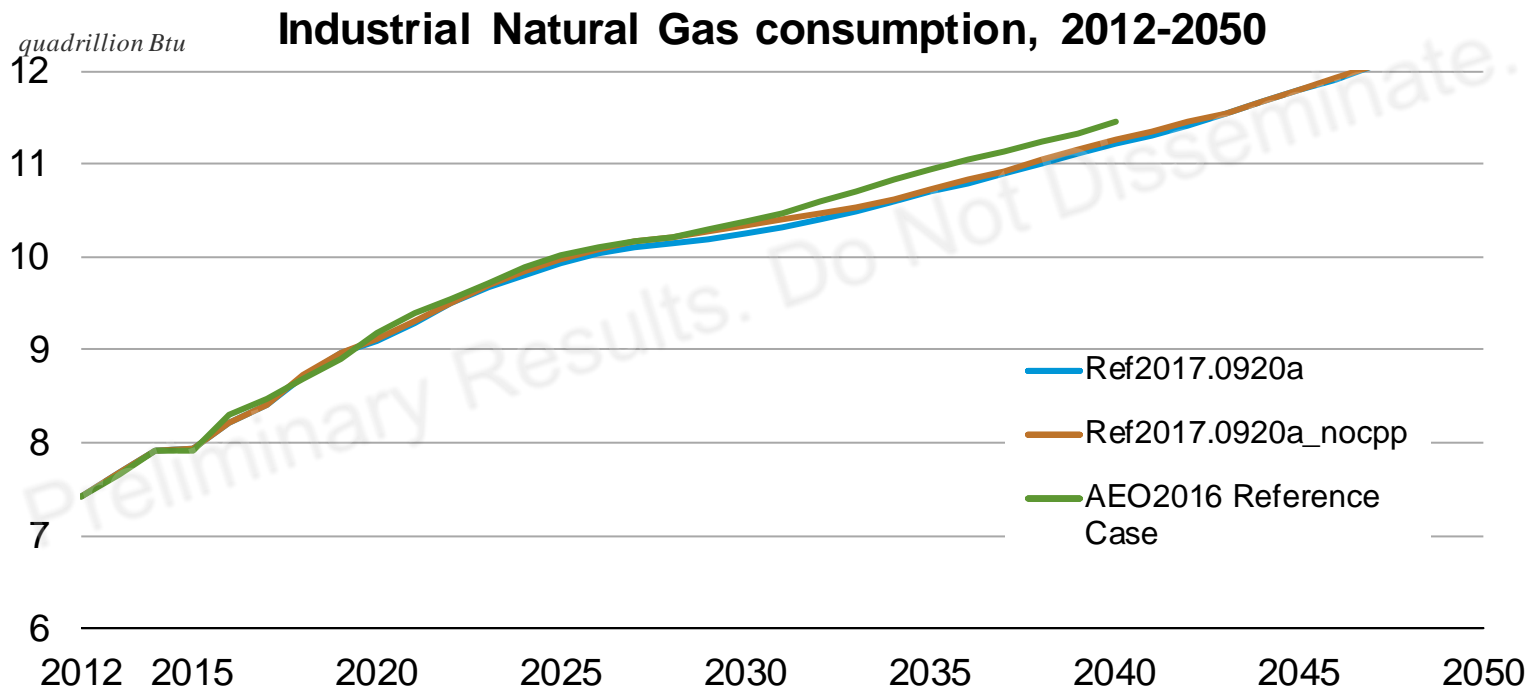
AEO2017 Industrial Energy consumption slightly lower than AEO2016 consumption

Industrial Energy consumption, 2012-2050



EXCLUDES REFINING. Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

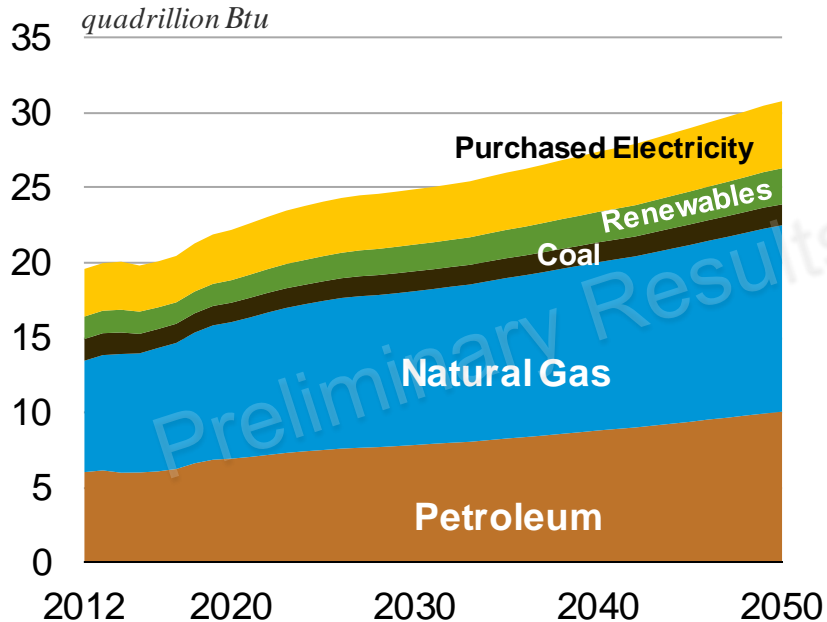
AEO2017 Industrial natural gas consumption about the same as AEO2016 consumption until 2030



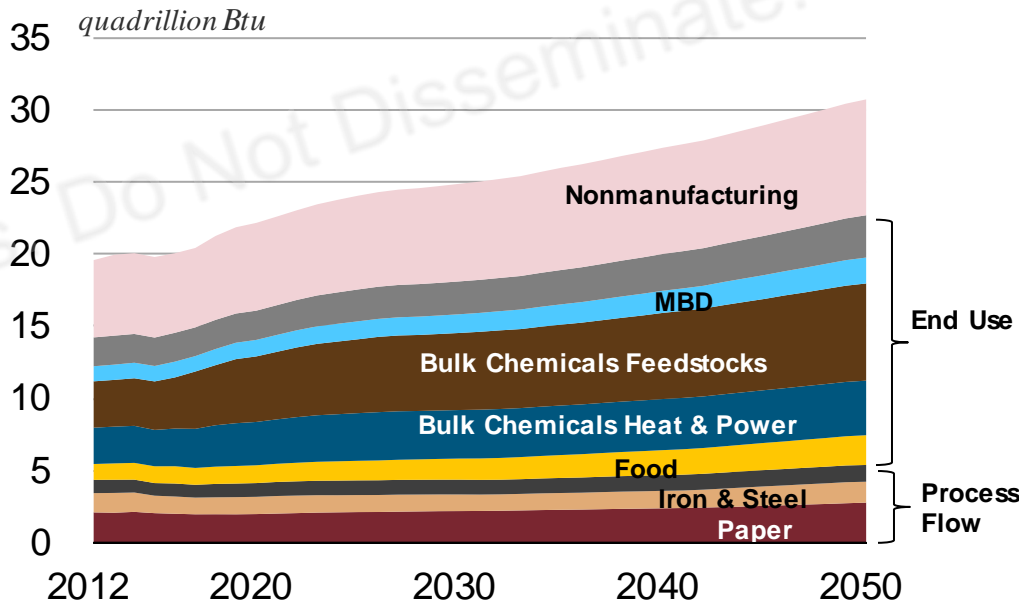
EXCLUDES REFINING. Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

Natural gas share increases slightly to 40% by 2030; Bulk chemicals energy consumption expands

Energy Consumption by Fuel



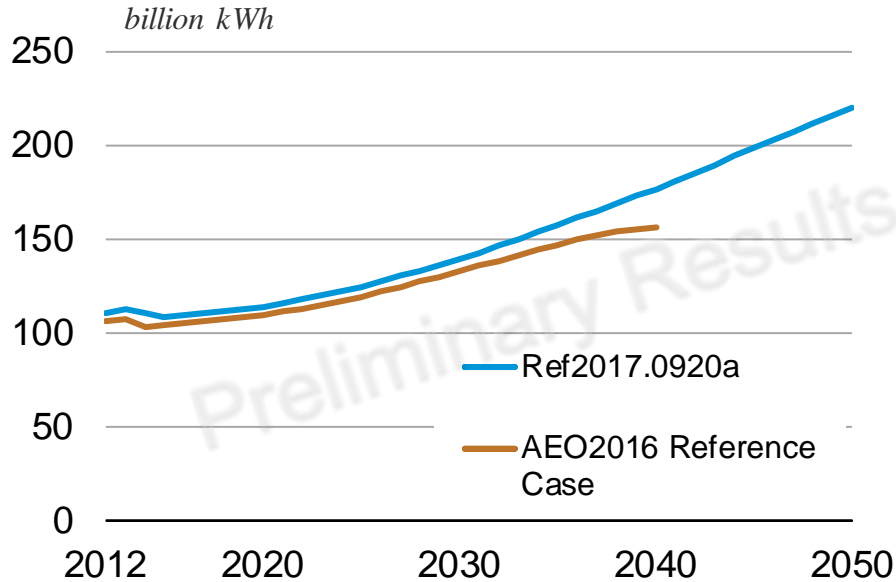
Energy Consumption by Industry



EXCLUDES REFINING. Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

CHP generation slightly higher in AEO2017 vs. AEO2016

CHP generation AEO2017 & AEO2016



- Bulk chemicals, Paper, Food & Steel largest CHP producers in IDM
- CHP generation slightly higher than AEO2016 until about 2030
- Greatest increase in natural gas-fired generation
- Higher bulk chemicals shipments may explain

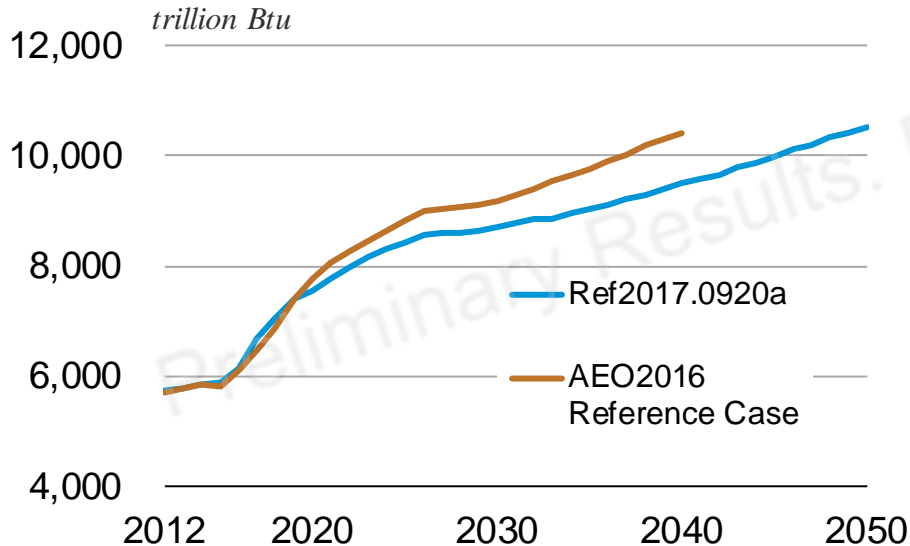
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Individual industry results

Preliminary Results Do Not Disseminate.

AEO2017 Industrial bulk chemicals consumption lower than AEO2016 as a result of feedstocks

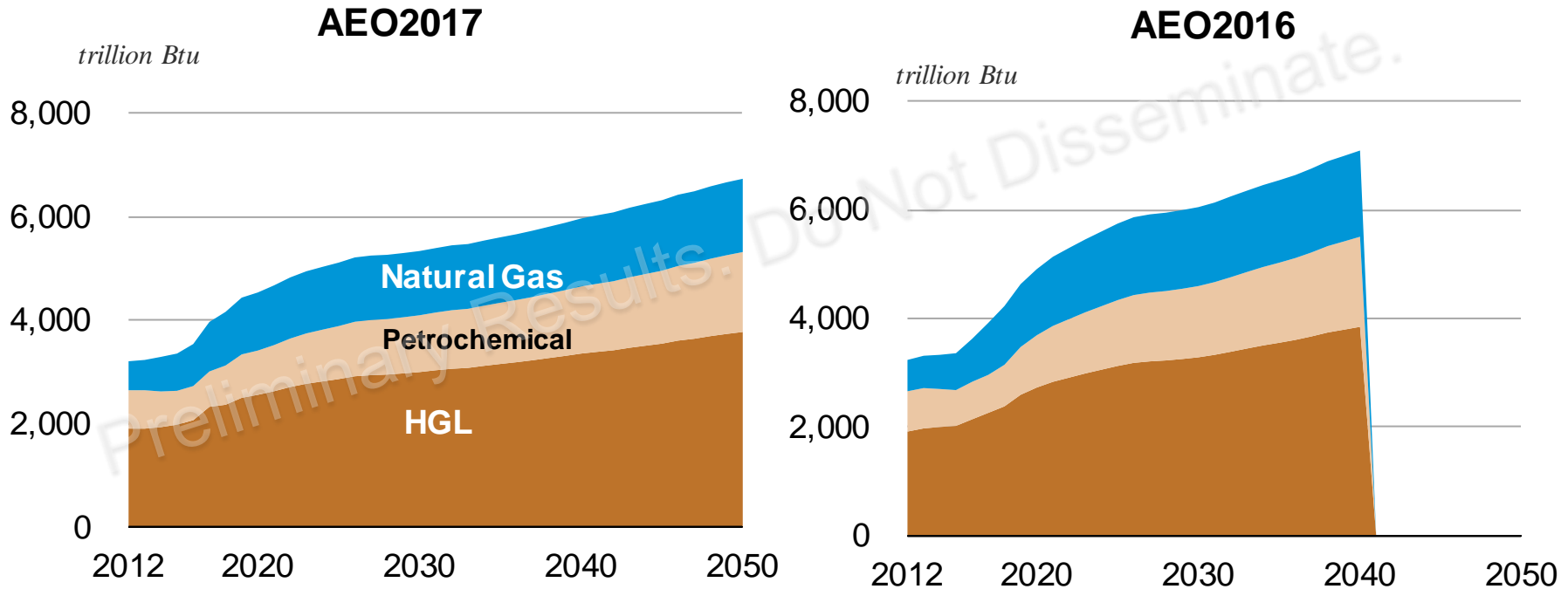
Bulk Chemicals Energy Consumption AEO2017 & AEO2016



- Bulk chemical shipments generally higher than AEO2016; no post-2025 decline
- Heat & Power energy intensity declines over time because of energy efficiency
- Feedstocks lower in AEO2017 – possible benchmarking effect

Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

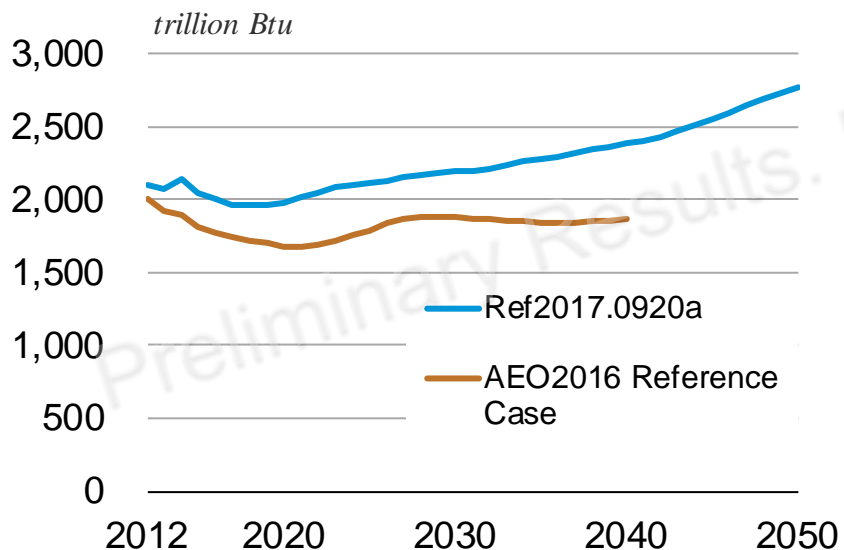
AEO2017 Industrial bulk chemicals liquid feedstocks lower than AEO2016; natural gas higher



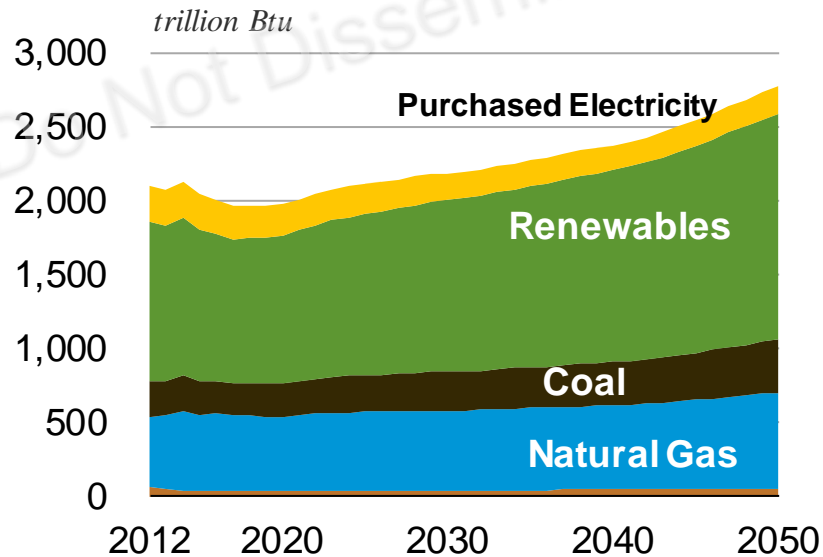
Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

Paper energy consumption for AEO2017 higher than AEO2016; shipments largely the difference

Paper Energy consumption AEO2017 & AEO2016



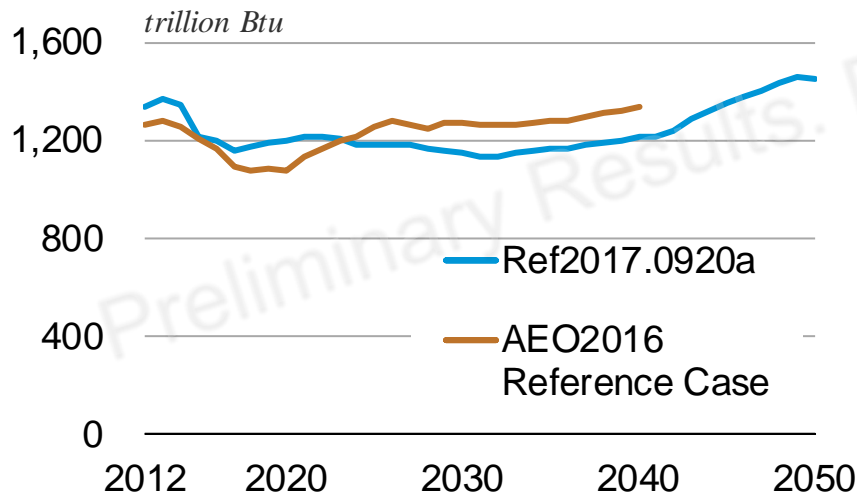
Paper Energy Consumption by Fuel AEO2017



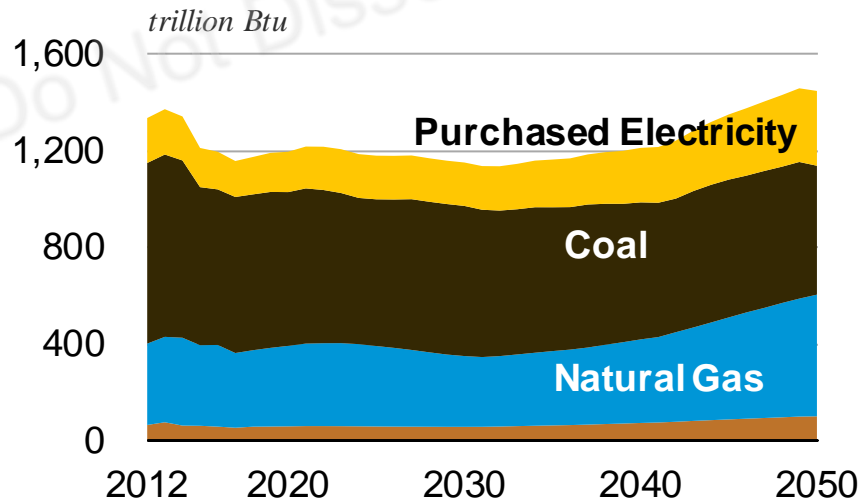
Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

Steel energy consumption for AEO2017 generally lower AEO2016; again, shipments largely the difference

Iron & Steel Energy Consumption AEO2017 & AEO2016

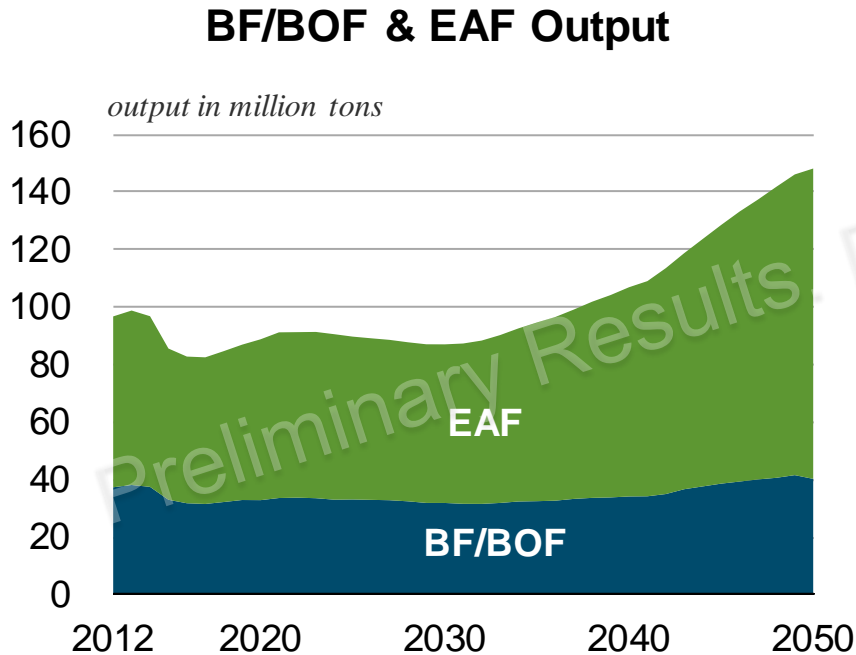


AEO2017 Iron & Steel Energy Consumption by Fuel



Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

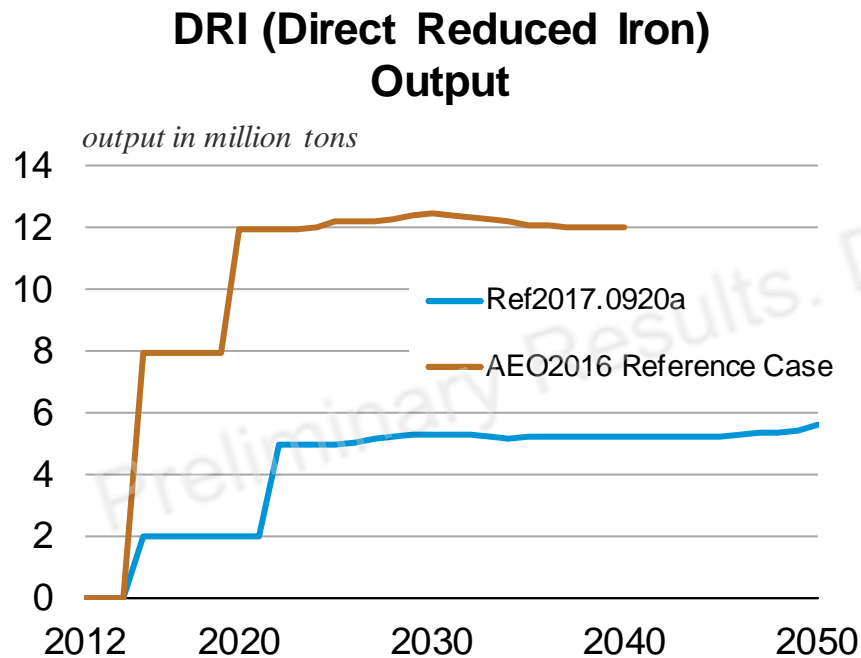
EAF shares increase over time, nearly 75% of total steel output by 2050



- Steel output does not cross 100 million ton mark until late 2030s
- EAF share increases over time, especially last 10 years
 - 61% in 2012
 - 68% in 2040
 - 73% in 2050
- Need to explain last 10 year surge in output

Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

Direct Reduced Iron (DRI) output lower than last year because output lower than originally thought



- DRI output assumed exogenous in model
- Lower capacity in 2015; capacity bump in 2022
- Differing use assumptions
 - BOF uses 10% of DRI output in AEO2017; at least 50% in AEO2016
 - EAF now unconstrained
- Lower DRI visibly increases coal use

Source: NEMS runs AEO2017.0920a, AEO2017.0920_nocpp and AEO2016 Reference case

Industrial meeting materials will be posted in about a month; macro is already posted.

Link (new address):

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

Thank you for your attention!

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