

AEO2018: review and your feedback



For

First Industrial Working Group

May 22, 2018 / Washington, DC

By

OEA Industrial Team

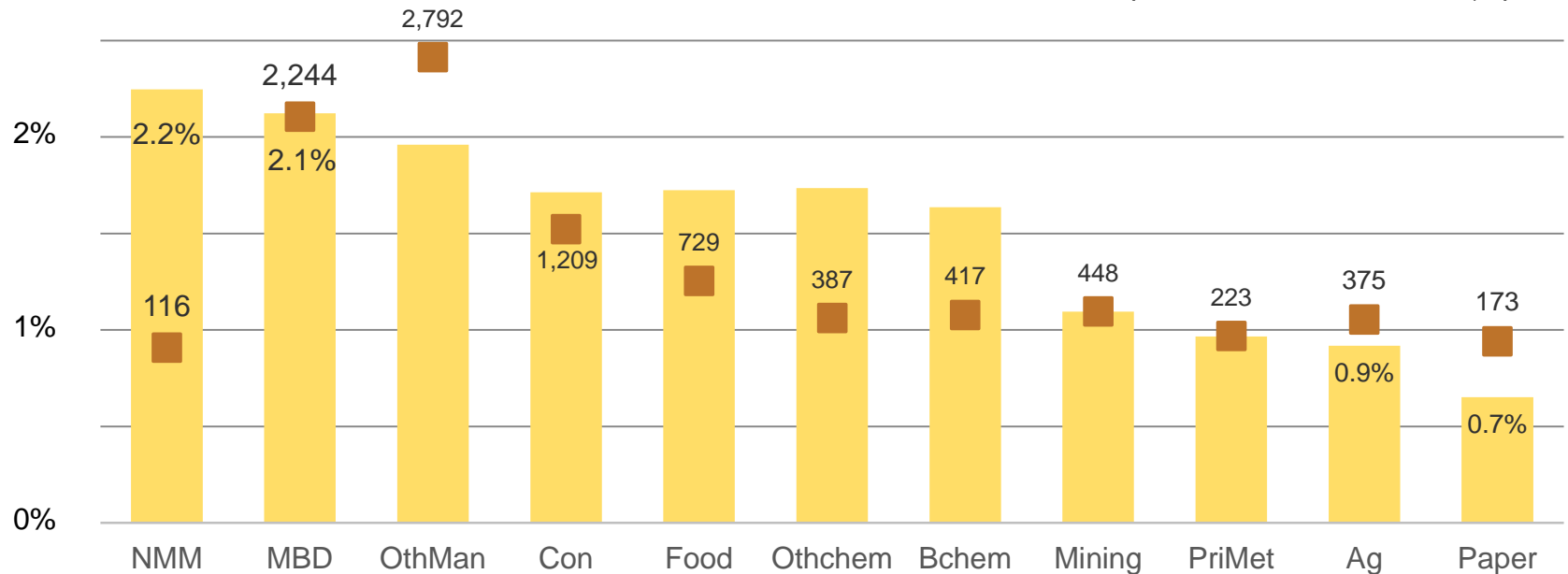
Overview

- Recap of AEO2018
 - Overview of recently released AEO2018
 - Some larger industry results
 - A word about paper
- Your feedback on AEO2018 so we can improve AEO2019

Value of Shipments: Nonmetallic minerals (NMM) and metal-based durables (MBD) show fastest growth in the AEO2018

average annual growth rate 2017-2050 (bars)

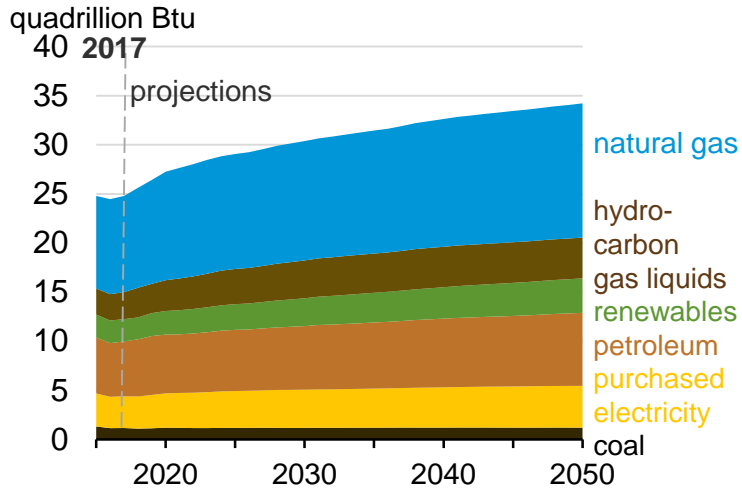
2017 shipments billion 2009 USD (squares)



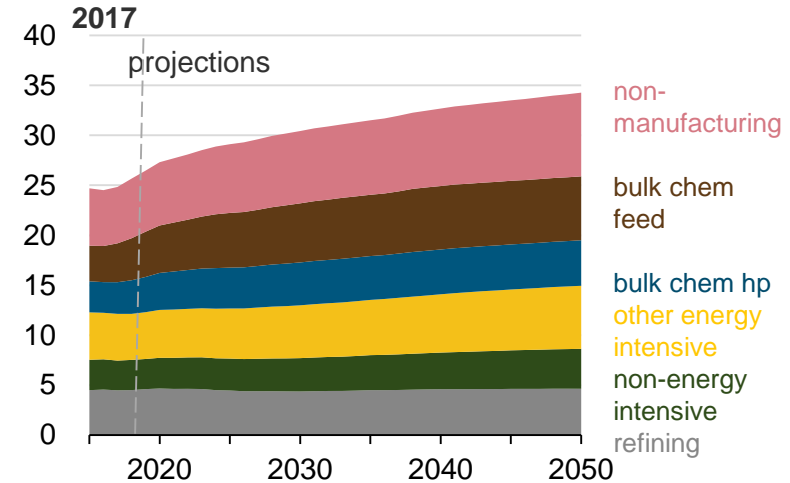
Source: AEO2018

Natural gas is the most consumed energy source in the Industrial sector, while industry consumption shares remain mostly steady

Industrial energy consumption by energy source



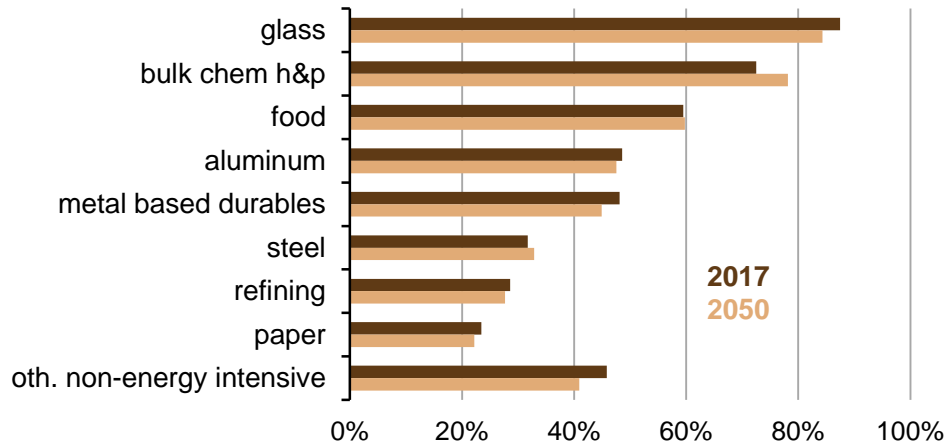
Industrial energy consumption by subsector



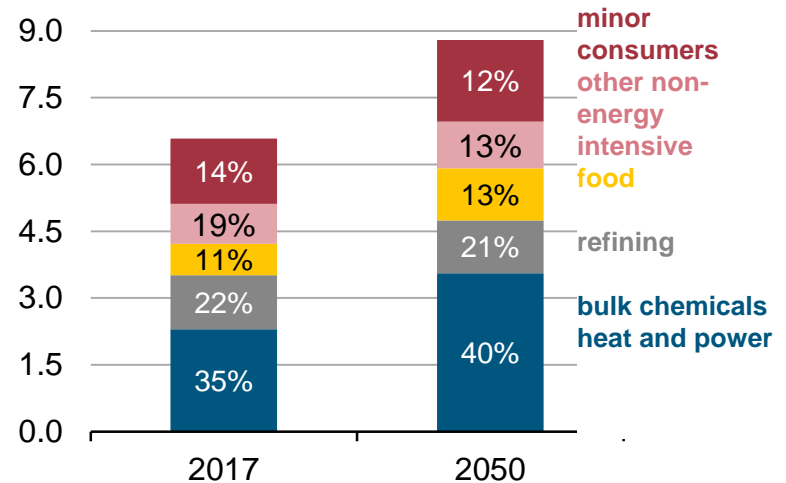
Source: AEO2018 Reference case

Natural gas fuel consumption crucial to many manufacturing industries, though 3 industries consume the majority of it

Natural gas fuel use intensity by manufacturing industry
percent of industry fuel consumption



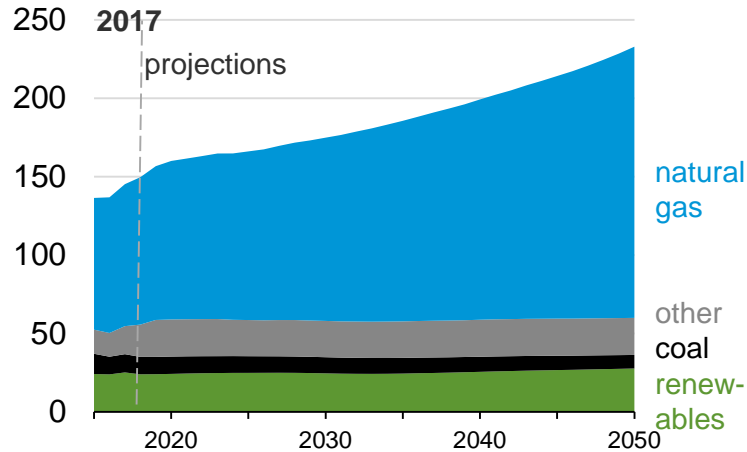
Natural gas fuel consumption in manufacturing
quadrillion btu



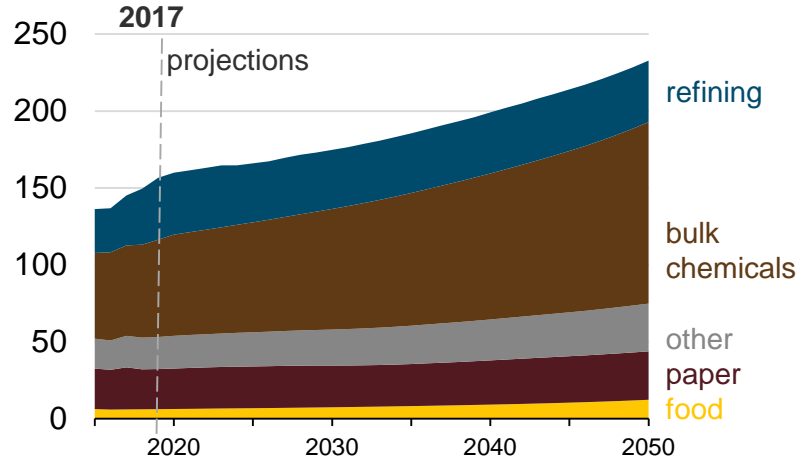
Source: AEO2018 Reference case

CHP is increasingly natural gas fired, with bulk chemicals constituting an ever increasing share

Combined heat and power generation by fuel
billion kilowatthours



Combined heat and power generation by industry
billion kilowatthours

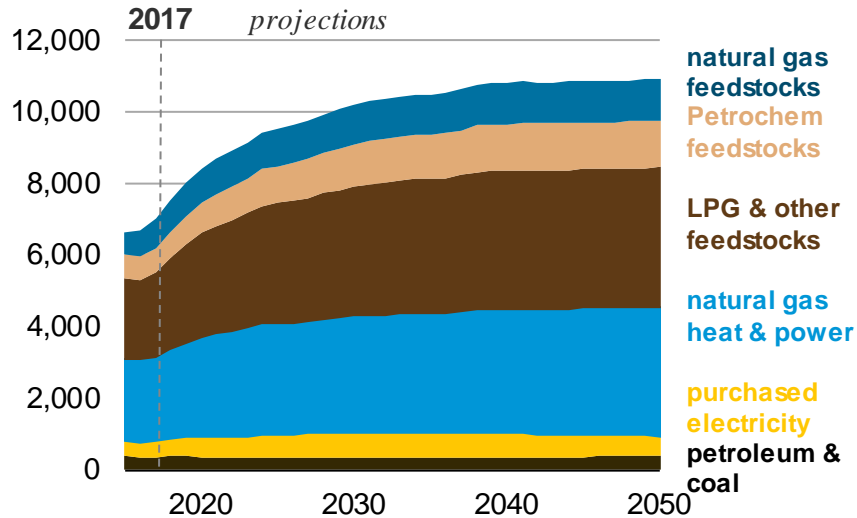


Source: AEO2018 Reference case

Bulk chemicals – what a difference a MECS makes

Bulk chemicals energy consumption

Trillion Btu

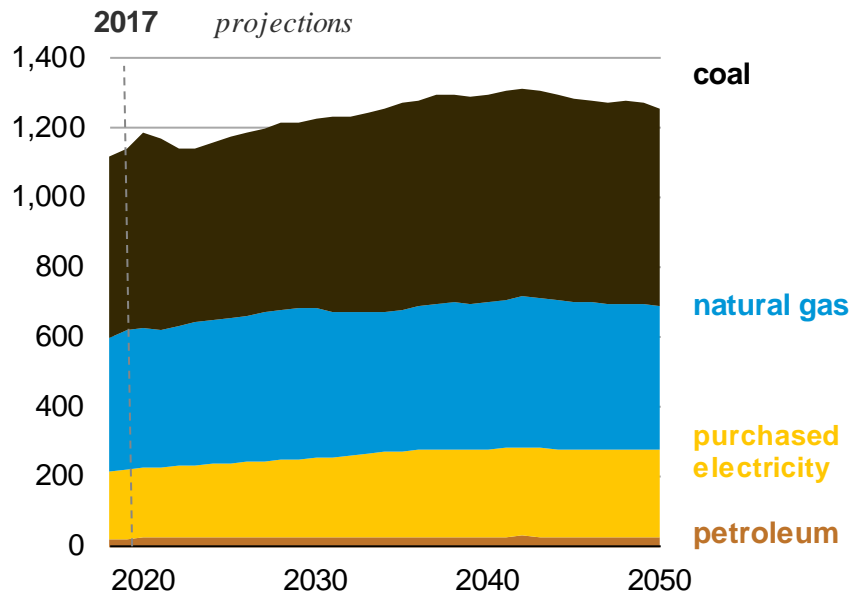


- Bulk chemicals will come to increasingly rely on natural gas for heat and power
- Substantial increase in LPG & other feedstocks in MECS – about 340 trillion Btu - increase of 18% between MECS 2010-2014
- Shares in LPG & other and petrochemical feedstocks don't change much over time

Source: AEO2018 Reference case

Steel: BF/BOF and EAF shares remain steady; small declines in energy intensity over time

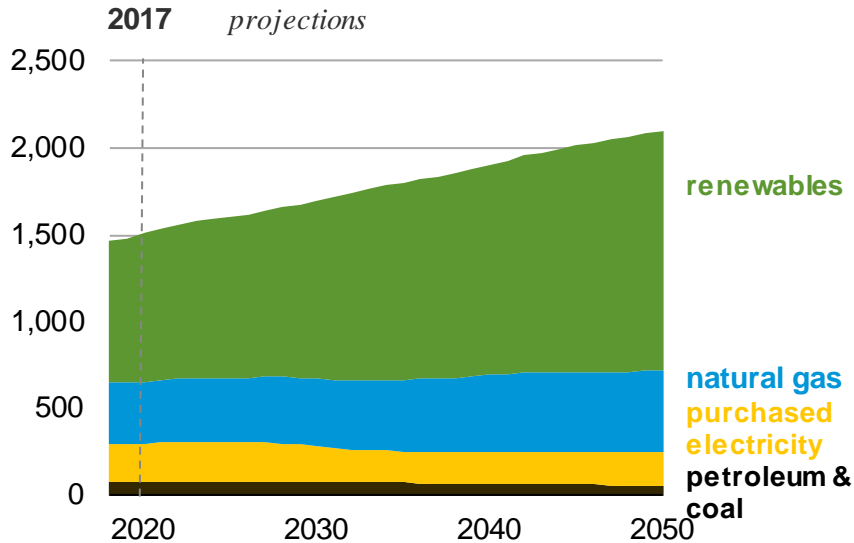
Iron & steel industry energy consumption
Trillion Btu



- Iron and steel and aluminum industries both increasing secondary processing more quickly than in past
- Steel electric arc furnace (EAF) proportion steady at ~67% throughout projection
- Energy intensity declines slightly 2017-2050

Paper energy consumption increases 1%/year; renewables and natural gas fastest growing

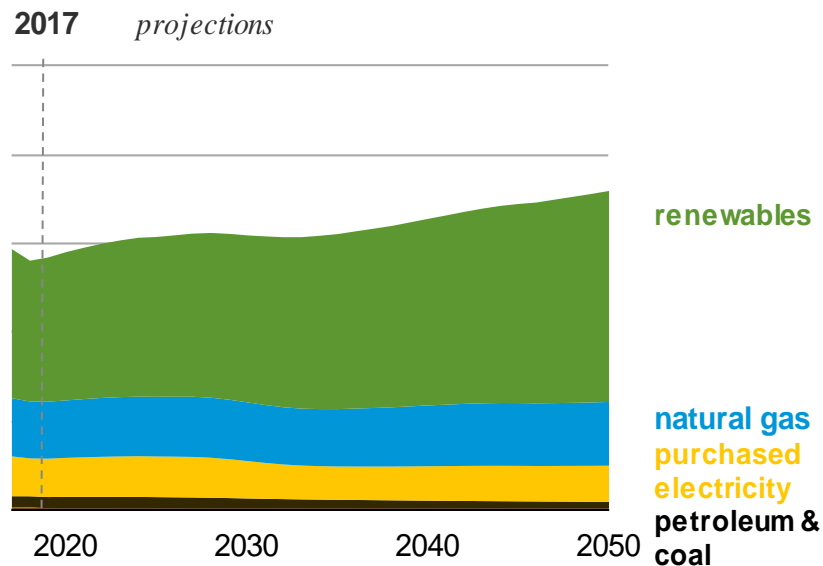
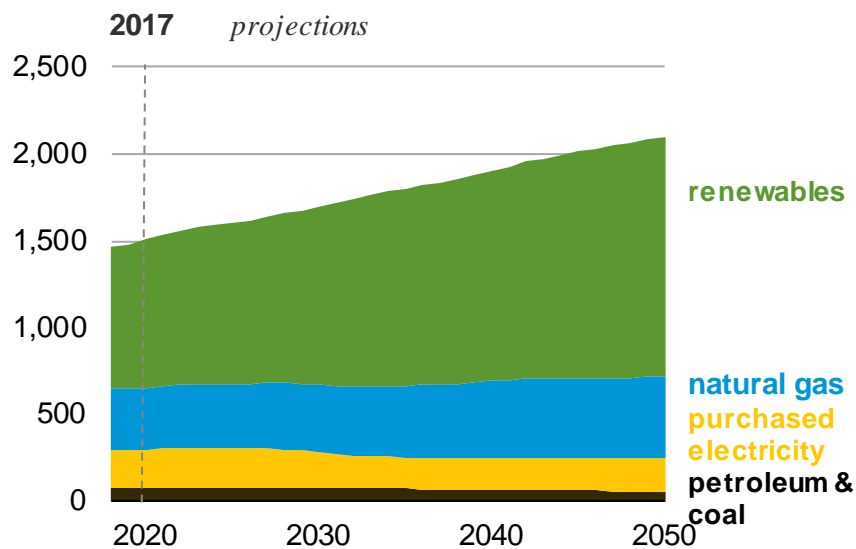
Paper energy consumption, trillion Btu



- Renewables share increases from 56% in 2017 to 66% by 2050
- Total electricity consumption
 - Total electricity (purchased + generated) declines 5% 2017-2050
 - CHP generated increases 15%
- Intensity (energy/\$) increases to 2035 – increased CHP doesn't explain all of it

After fix, paper energy consumption increases 0.6%/year; “Before” on the left, “After” on the right

Paper energy consumption, trillion Btu



Sources: AEO2018 Reference case and AEO2018 run with corrected input file

Your feedback on AEO2018 – how can we improve for AEO2019?

- What would you like to see more of?
 - Coverage?
 - Content?
- What can be improved?
- What insights from your industry can help us?
- Visuals
 - New?
 - Improve existing?

Industrial meeting materials will be posted in
about a month

Link:

<https://www.eia.gov/outlooks/aeo/workinggroup/industrial/>

Next meeting – TBA – may be working
group or smaller workshop

Thank you for your attention!

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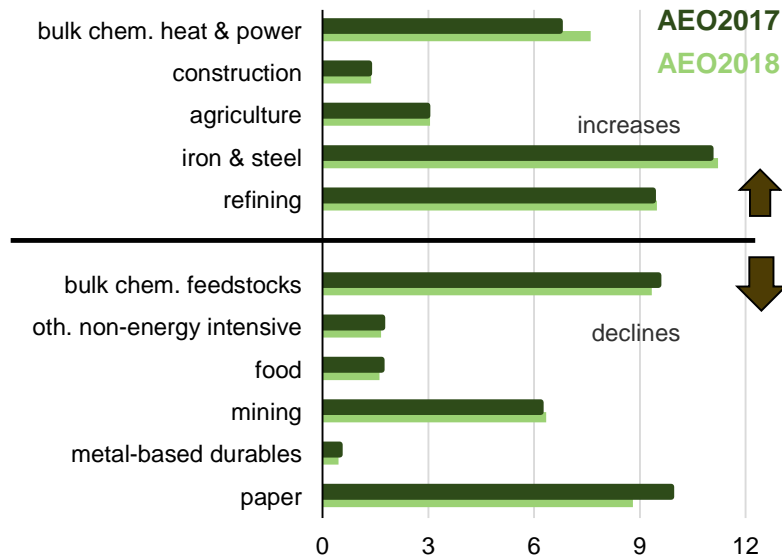
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Preview of AEO2019 and beyond

- Review relationship between types of pulp & paper; paper composition changes over time pulp composition doesn't
- Retire Coal CHP units to reflect recent history; bulk chemicals CHP coal retirements accelerating
- Physical output updates for the process flow industries
- Get ready for a recycling side case
- Expand data sources – EPA GHGRP
- One day data update

Changes in energy intensity between AEO2018 and AEO2017 occur as a result of MECS2014 and historical updates

Energy intensity by industry(Reference), 2017
trillion Btu/billion 2009 dollars shipments



- 2017 values result of different starting values
 - Quadrennial MECS update
 - Annual data updates
 - State Energy Data System for history and manufacturing allocation
 - Benchmarking
 - STEO short run
 - Individual industries
- New MECS changes non-manufacturing

Source: AEO2018 and AEO2017 Reference cases