

# AEO2018 Industrial Working Group meeting 1: planned updates



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*Industrial Working Group*

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*Preliminary Results. Do not Cite or Disseminate.*

# Plans for AEO2018 - full AEO

- What is a full AEO?
  - Extensive model and data updates allowed
  - Side cases
    - Basic (all years): Hi/Lo macro, Hi/Lo Price, Hi/Lo Resource & Technology
    - Full AEO years: policy cases, energy efficiency case, ?
- Policy cases
- Major data / input updates – notably 2014 MECS
- Small model changes

# How the IDM Works

- Inputs
  - Macroeconomic
  - Prices
  - Energy demand from Liquids Fuels Market Module, Oil & Gas Supply Module
  - Variables from Buildings & Transportation models for nonmanufacturing
- Returns
  - Energy consumption by fuel
  - Technologies chosen for 5 process flow industries

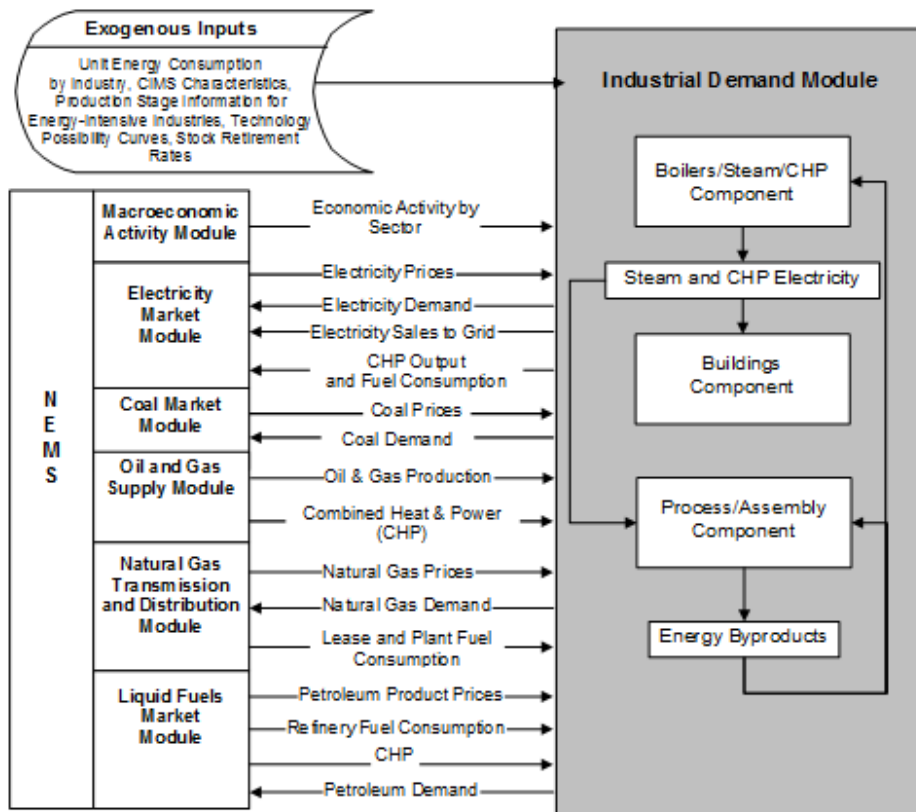


Figure source: IDM 2014 Documentation, Figure 1

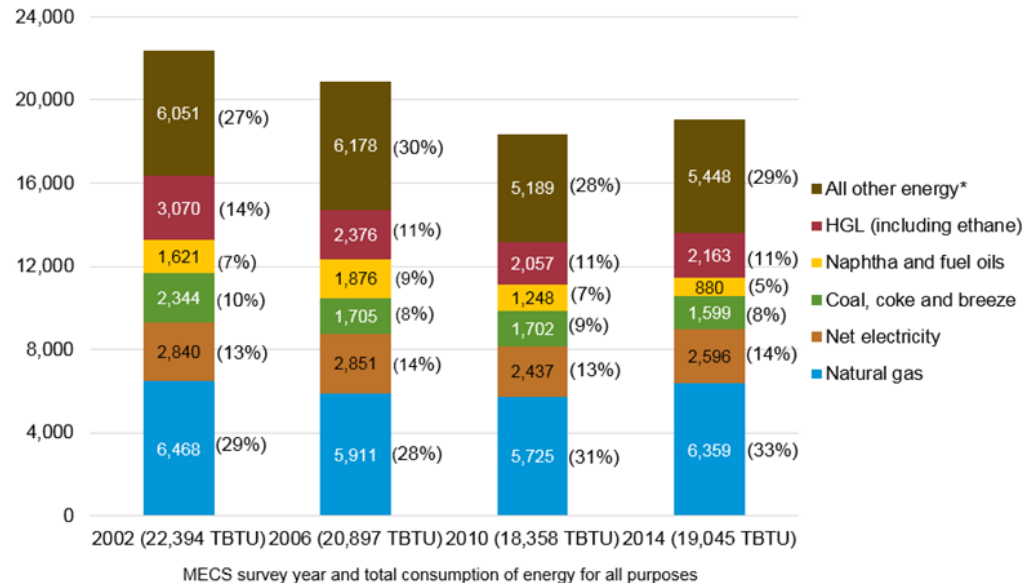
## Policy cases: some explanation

- AEO Reference case projections assume laws / regulations currently on books (including those that take effect in future); some examples
  - California carbon policies and 2030 reduction goal in effect
  - Boiler MACT (Maximum Achievable Control Technology – aka NESHAP)
  - Clean Power plan in Reference case for AEO2016 – AEO2017
- Policy side cases used to determine effect of likely, supposed, or hypothetical policies
  - We had Extended Policy case in AEO2016 that extended CHP tax credits that expired in 2017 to end of projection period – small effect for Industrial
  - May have different approach to policy cases this year: some discussion of “high” and “low” policy

# 2014 MECS update: different world from 2010

- Economic activity no longer near recessionary levels as in 2010
- Shale gas production nationwide increased more than 150% over 2010-2014
- Return of some industries, notably agricultural chemicals

Figure 1. Manufacturing energy consumption has increased for the first time since 2002  
trillion Btu



Source: U.S. Energy Information Administration

\* Shipments were subtracted from all other energy.

Source: 2014 MECS preliminary release [https://www.eia.gov/consumption/manufacturing/reports/2014/pre\\_estimates/?src=< Consumption Manufacturing Energy Consumption Survey \(MECS\)-f1](https://www.eia.gov/consumption/manufacturing/reports/2014/pre_estimates/?src=< Consumption Manufacturing Energy Consumption Survey (MECS)-f1)

# MECS change far reaching

- Manufacturing
  - All manufacturing industries benchmarked to MECS
  - New Unit Energy Consumption (UEC) and Technology Possibility Curves (TPC)s for the end use industries change
  - Starting values for manufacturing for the process flow industries
- Nonmanufacturing changes too
  - Base year (2014) nonmanufacturing energy is total energy less manufacturing – with some adjustments
    - Formula: Non-manufacturing energy = (2014 SEDS – 2014 MECS)
    - We adjust if the result is implausible using series such as EIA's Fuel Oil and Kerosene Sales (FOKS), Economic Census, and USDA products
  - Bring back the agriculture TPCs by activity – irrigation, vehicles and buildings
- Base year reset to 2014 from 2010 – year model results start

## Other data / input updates

- Renewable and non-biogenic waste fuel allocation in cement, agriculture, and food – use USGS and EPA's GHGRP database
  - Short run goal: better representation of renewables and waste fuel in these industries
  - Long run: deepen our thinking on combustion of renewables and waste
- CHP
  - New CHP cost and type data – last time done AEO2012
  - Updated and simplified calculation of ACEEE regional coefficients – now based on EIA Form 860 survey of electric capacity (done)
  - Biennial data update for CHP capacity and generation from Forms 860 and 923
- Chemicals – history and near term projections

## Other data / input updates

- Process flow inputs for paper, glass, cement & lime, steel, and aluminum in ironstlx.xlsx file
  - Logistic coefficients – determine how important fixed cost, fuel cost, and emissions are in selecting technology
  - Boiler / CHP exogenous
  - Stretch: update physical outputs to 2015 or 2016 where known – primary aluminum production has declined significantly
- Annual updates
  - Macroeconomic - #1 influence in our modeling
  - Benchmarking
    - History / Regional update to 2015 SEDS (State Energy Data System)
    - STEO (Short Term Energy Outlook) – results to 2019



# Model Changes

- Individual industry benchmarked coal consumption – is there a fix?
  - Coal consumption in sum of IDM industries ~50 trills (4% higher) than Table 6 amount – nearly constant
  - Connected to when refinery model, which fills in refinery variables, is called
  - Good news: < 3 trills for petroleum, spot on for all other fuels
- Steel: Final fix to metallurgical coal consumption increasing with respect to carbon prices – currently have a brute force fix

# We don't do this alone: notable collaborations

- Macroeconomics team
- MECS team
- OEA Natural gas team
- SEDS team
- YOU - members of the Industrial Working Group

Industrial meeting materials will be posted in  
about a month

Link:

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

Second meeting: 9/14/17, 1:00-2:00 EDT

# Thank you for your attention!

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