

Buildings Working Group Meeting

AEO2016 Preliminary Results



Office of Energy Consumption and Efficiency Analysis

February 18, 2016 | Washington, DC

By

Buildings Energy Analysis Team

Overview

- Key policies
 - Clean Power Plan
 - Federal standards and ENERGY STAR specifications
- Sector drivers
 - Fuel prices
 - Weather
 - Commercial floorspace
- Distributed generation
- Residential and commercial consumption

Clean Power Plan

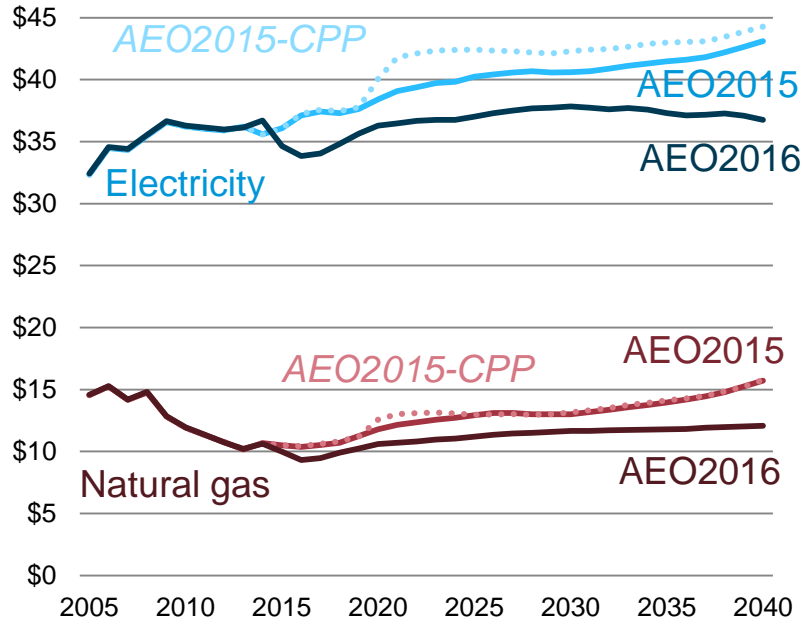
- EIA issued analysis of proposed Clean Power Plan (CPP) in 2015; CPP was finalized by EPA and is currently under judicial review. The Supreme Court has issued a stay on CPP implementation that will remain in effect until the DC Circuit rules on the matter and the Supreme Court itself decides whether or not to hear a possible appeal to the circuit court ruling.
- AEO2016 cases that include the effects of the CPP will affect the buildings sector mainly via rebates to major end-use equipment, which are used to represent energy efficiency's role as a CPP compliance option.
- AEO2016 will also prominently discuss modeling results that do not include the CPP.
- AEO2016 will also include an Issues in Focus discussion of the CPP.

Federal standards and ENERGY STAR specifications

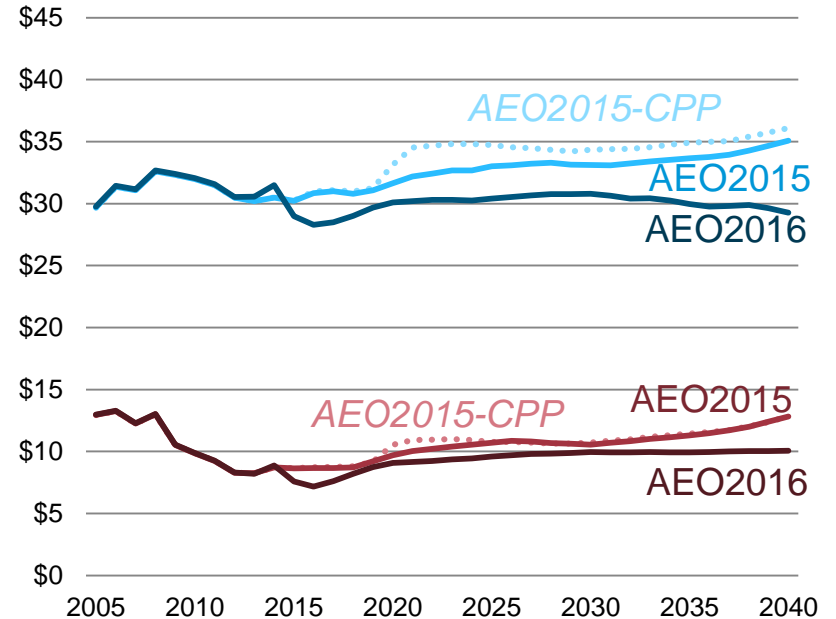
- Equipment standards
 - Residential boilers (effective 2021)
 - commercial packaged air conditioners and heat pumps (effective 2018 and 2023)
 - commercial warm-air furnaces (effective 2023)
 - commercial pumps (e.g., municipal water services) (effective 2020)
 - general service fluorescent lamps (effective 2018)
 - commercial ice makers (effective 2018)
 - commercial beverage vending machines (effective 2019)
 - commercial oil-fired water heaters (effective 2016)
 - *commercial pre-rinse spray valves (effective 2019) didn't make it in*
- ENERGY STAR specifications
 - televisions/ displays, set-top boxes, computer monitors, and dehumidifiers

Even with inclusion of the Clean Power Plan, end-use fuel prices are lower in AEO2016 than AEO2015

residential fuel prices (2014 \$/MMBtu)

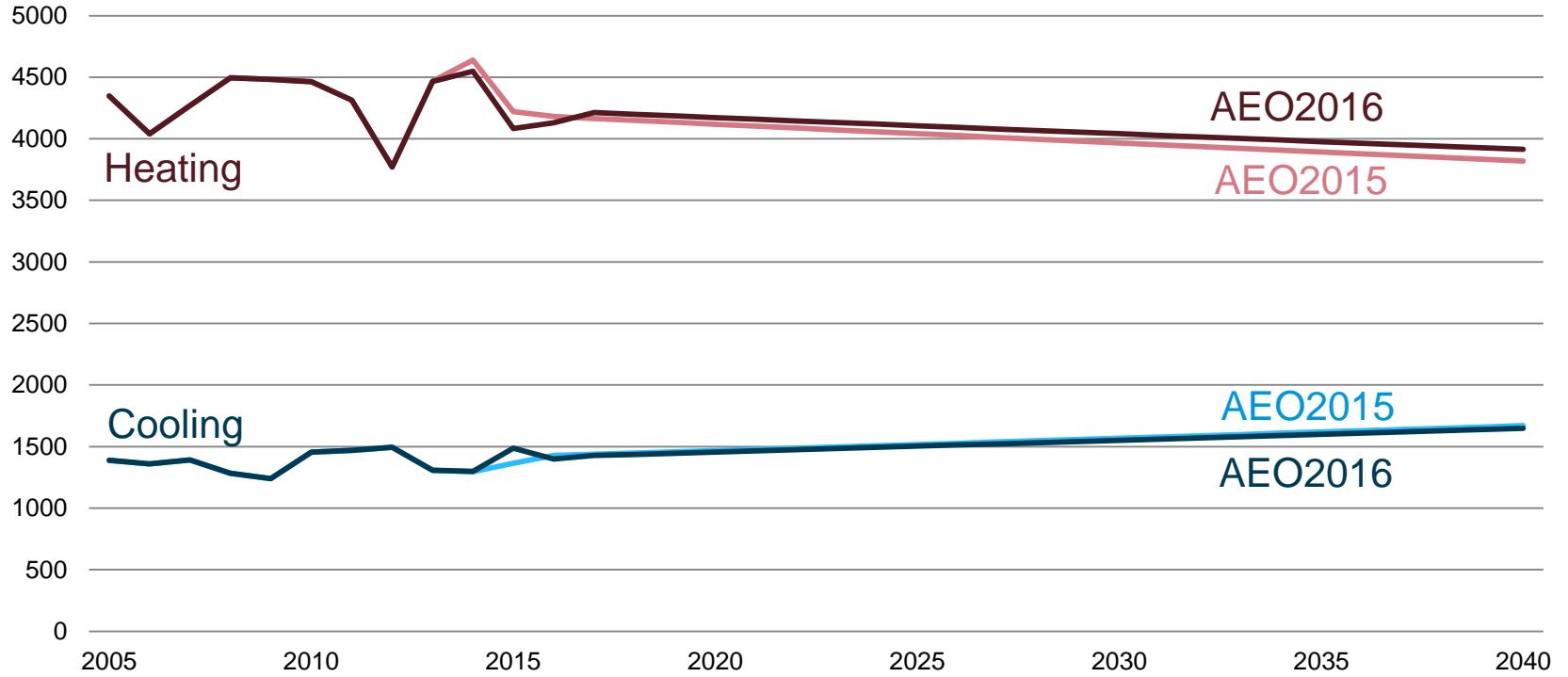


commercial fuel prices (2014 \$/MMBtu)



Source: ref2016.0216a, ref2015.0219a, rf15_111_all.0306a

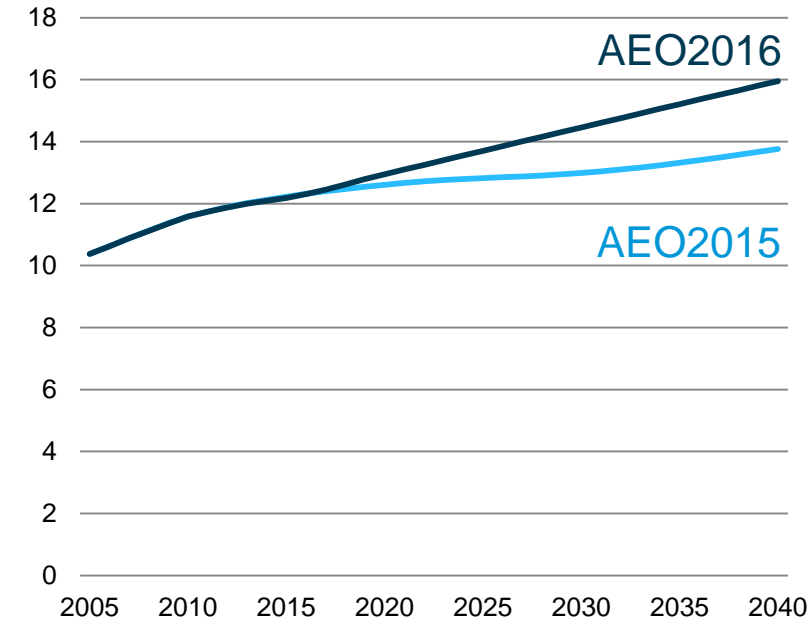
AEO2016 uses NOAA data from 1986 through 2015 to project heating and cooling degree days for the 2017-40 period



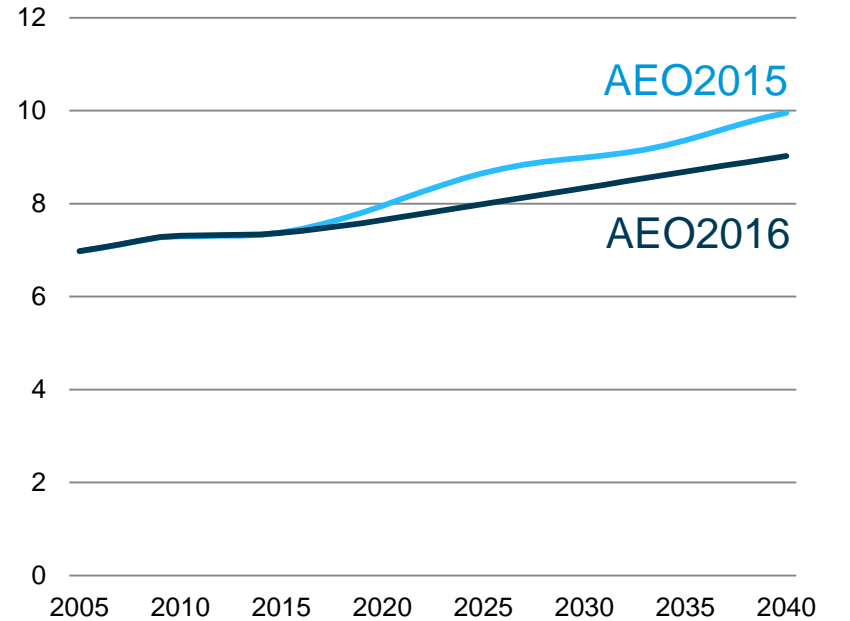
Source: ref2016.0216a, ref2015.0219a

Though trends for individual building types may have changed, total commercial floorspace grows 1.1% per year from 2014 to 2040

education floorspace (billion square feet)



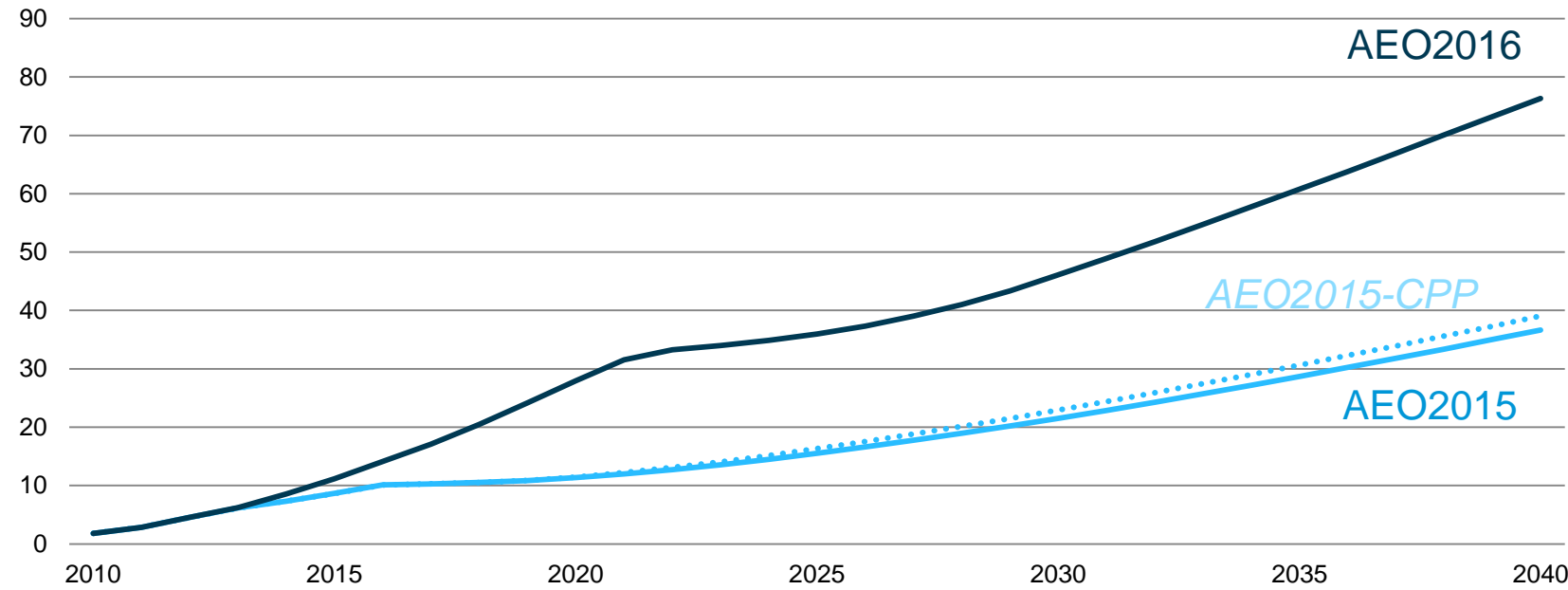
large office floorspace (billion square feet)



Source: ref2016.0216a, ref2015.0219a

Extension of investment tax credits, combined with decreasing solar photovoltaic costs, leads to greater adoption of PV in buildings

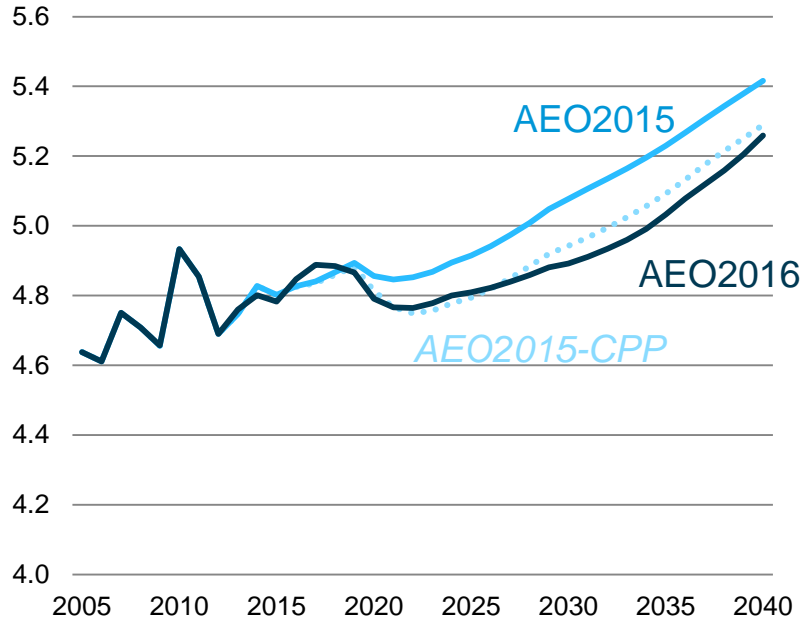
distributed solar PV capacity, gigawatts



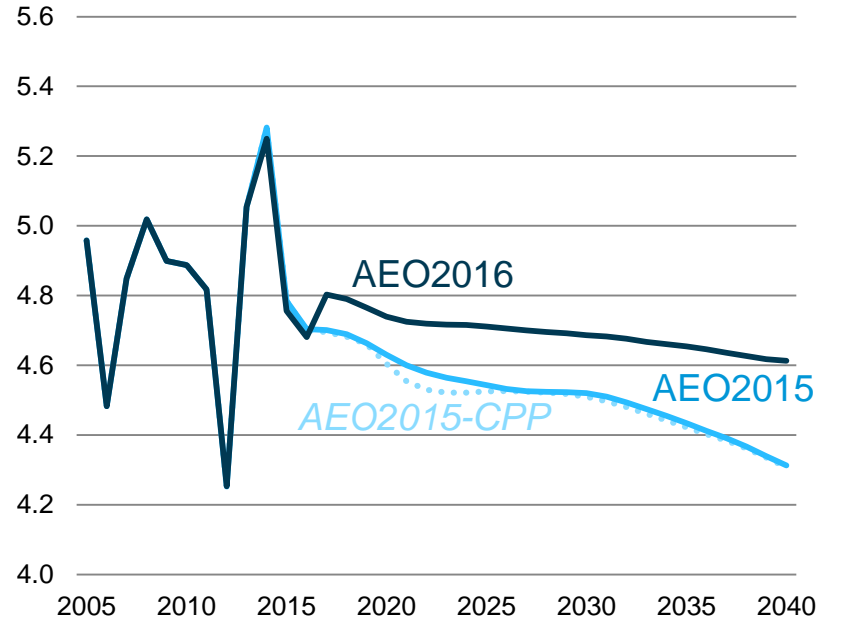
Source: ref2016.0216a, ref2015.0219a, rf15_111_all.0306a

Residential electricity consumption lower while natural gas consumption is higher than AEO2015

delivered electricity consumption (quadrillion Btu)



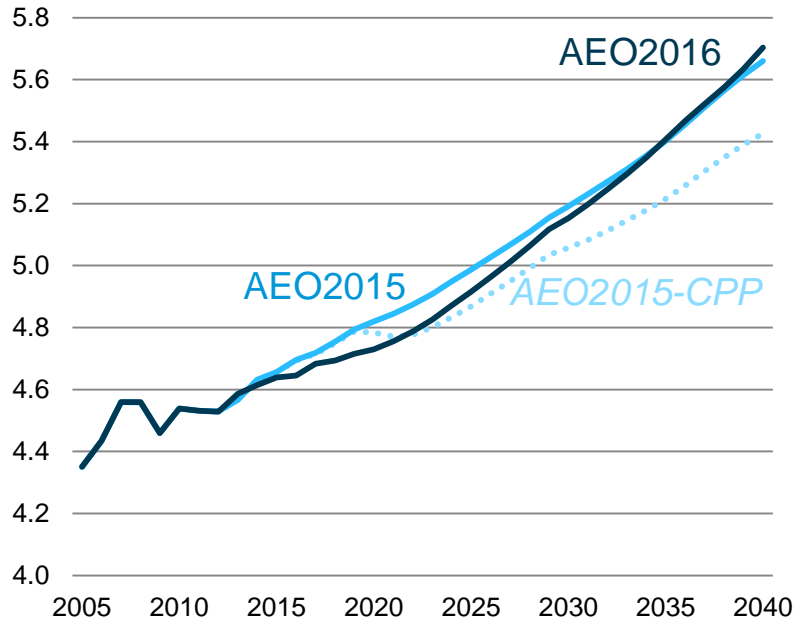
delivered natural gas consumption (quadrillion Btu)



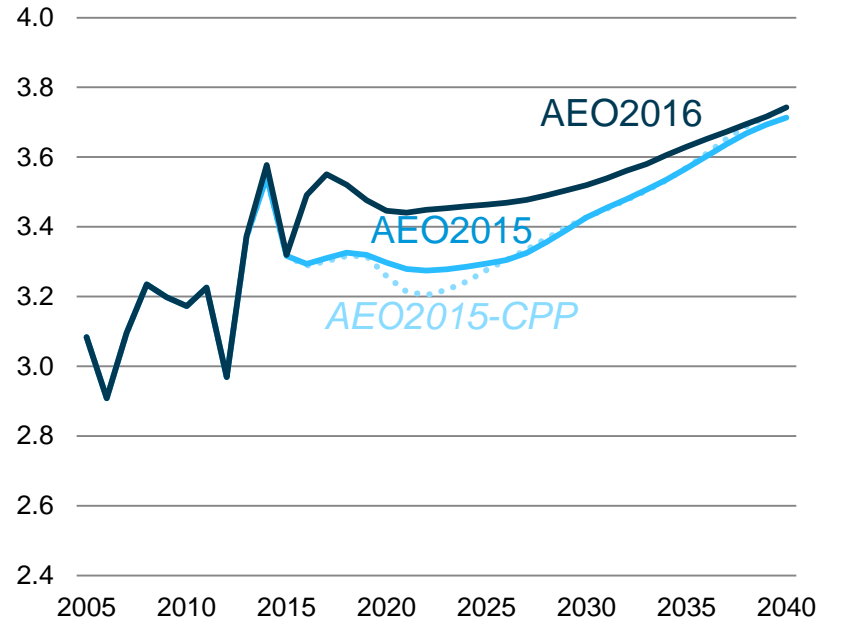
Source: ref2016.0216a, ref2015.0219a, rf15_111_all.0306a

Commercial electricity consumption generally lower while natural gas consumption is higher than AEO2015

delivered electricity consumption (quadrillion Btu)



delivered natural gas consumption (quadrillion Btu)



Source: ref2016.0216a, ref2015.0219a, rf15_111_all.0306a

For more buildings information

Kevin Jarzomski | phone: 202-586-3208
| email: kevin.jarzomski@eia.gov

David Peterson | phone: 202-586-5084
| email: david.peterson@eia.gov

Behjat Hojjati | phone: 202-586-1068
| email: behjat.hojjati@eia.gov

Carol Brotman White | phone: 202-586-7924
| email: carol.white@eia.gov

Kimberly Klaiman | phone: 202-586-1678
| email: kimberly.klaiman@eia.gov

Erin Boedecker | phone: 202-586-4791
Team Lead | email: erin.boedecker@eia.gov

For more EIA information

U.S. Energy Information Administration home page | www.eia.gov

Annual Energy Outlook | www.eia.gov/aeo

Short-Term Energy Outlook | www.eia.gov/steo

Monthly Energy Review | www.eia.gov/mer

Residential Energy Consumption Survey (RECS) |
<http://www.eia.gov/consumption/residential/>

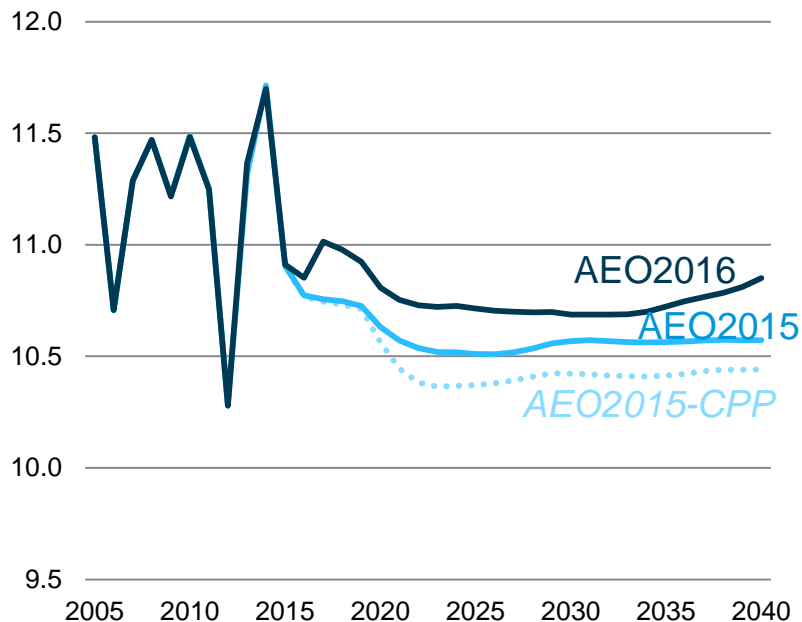
Commercial Buildings Energy Consumption Survey (CBECS) |
<http://www.eia.gov/consumption/commercial/>

Today in Energy | www.eia.gov/todayinenergy

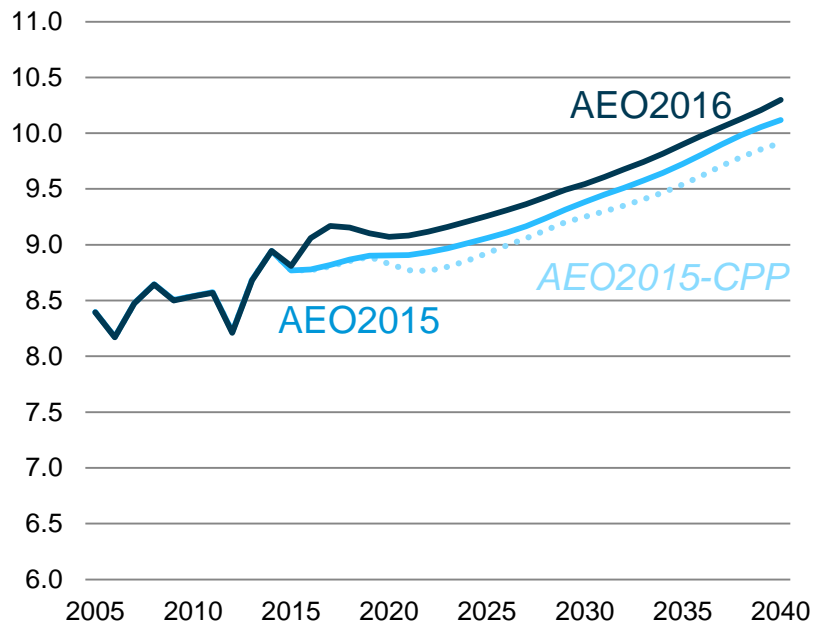
Bonus slides

Total delivered energy consumption in both residential and commercial sectors

residential delivered energy (quadrillion Btu)



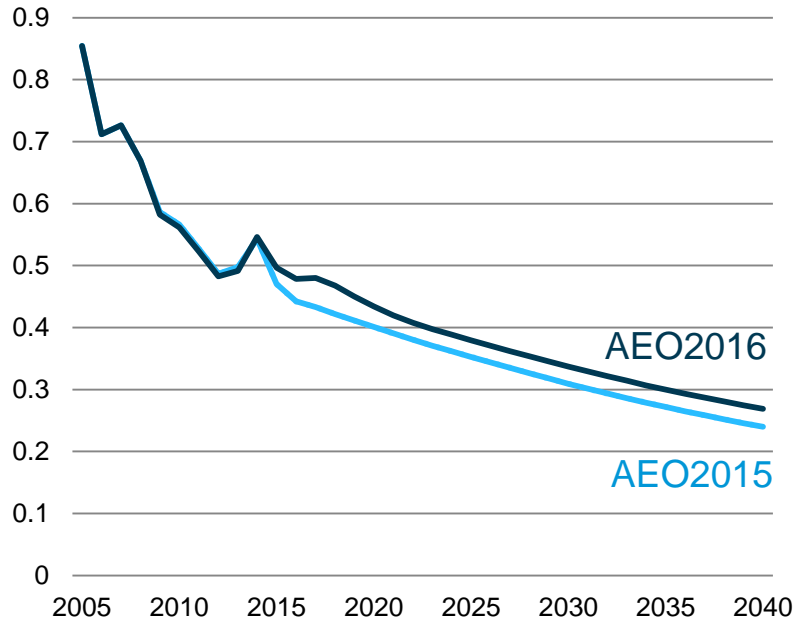
commercial delivered energy (quadrillion Btu)



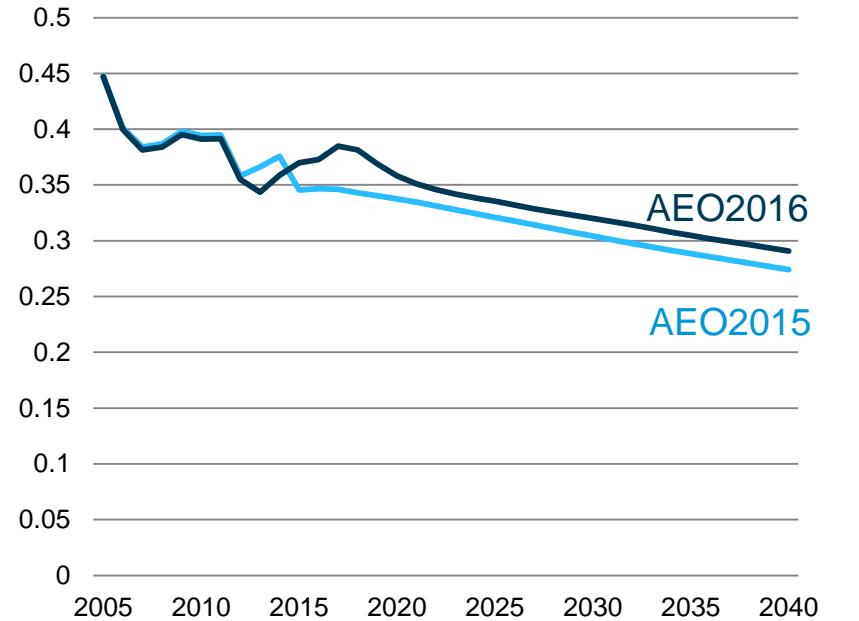
Source: ref2016.0216a, ref2015.0219a, rf15_111_all.0306a

Distillate fuel oil consumption

residential distillate consumption (quadrillion Btu)



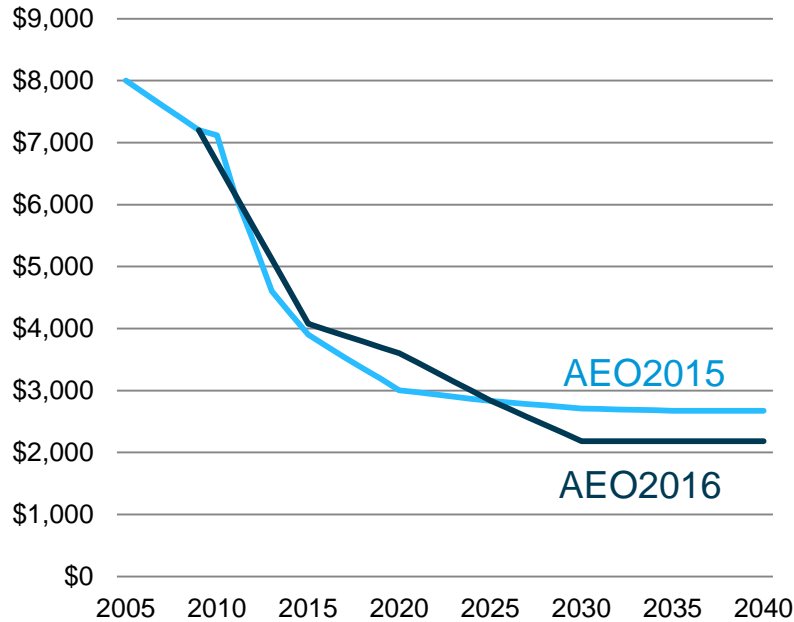
commercial distillate consumption (quadrillion Btu)



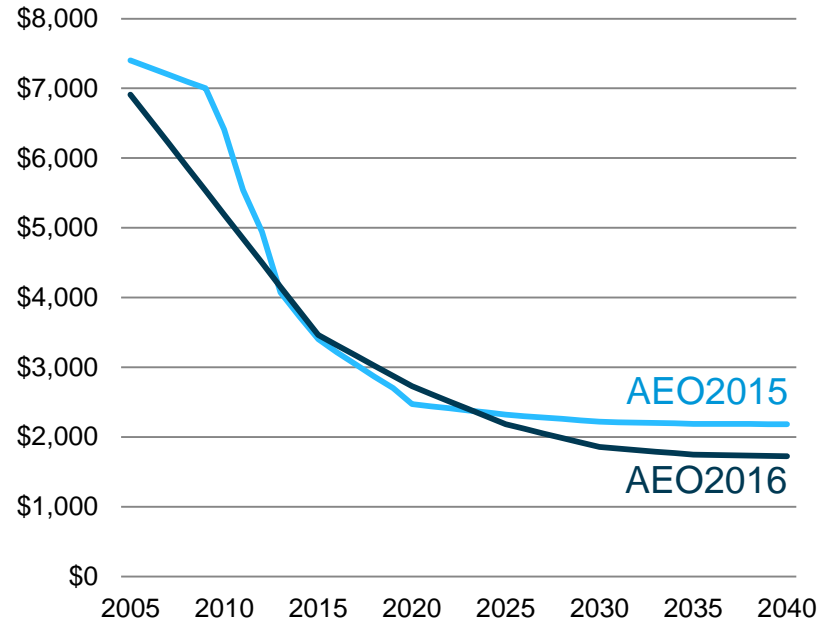
Source: ref2016.0216a, ref2015.0219a

AEO2016 residential and commercial installed solar PV cost projections lower than AEO2015

residential installed cost (\$/kWdc)



commercial installed cost (\$/kWdc)



Source: ref2016.0216a, ref2015.0219a