

# *Annual Energy Outlook 2015*



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*STEPS Workshop: Achieving Targets Through 2030*

*UC Davis, Institute of Transportation Studies*

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*By*

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## Context: AEO2015 is a shorter AEO

- Shorter AEO has limited side cases (mainly sensitivity cases)
  - Reference
  - High/Low macroeconomic growth (impacts demand)
  - High/Low oil price (exogenous assumption)
  - High shale resources
- AEO2016 will be a complete AEO again
- In all cases (unless otherwise specified), AEO represents:
  - Current laws and regulations
    - No NSPS, no CPP, no emissions targets, e.g.
    - CAFE held constant after 2025
    - HD National Program, Phase I, but not Phase II (expected final rule 2016)
    - No ZEV program in NEMS
  - Projections, not forecasts (the way the world would be, not the way it will be)

## Summary: Be careful how you employ models

- Uncertainties in any BAU case can have profound impacts on a back-casting exercise
  - Tune models under a BAU case
  - Run sensitivity cases with other assumptions to map out the (asymmetric) success envelope around the BAU case
- Feedback loops are important
  - Holding any assumption fixed may be inconsistent with the modeled solution
    - Economic growth
    - Prices
    - Response from non-modeled regions (ROW)

*If you choose not to decide, you still have made a choice.*

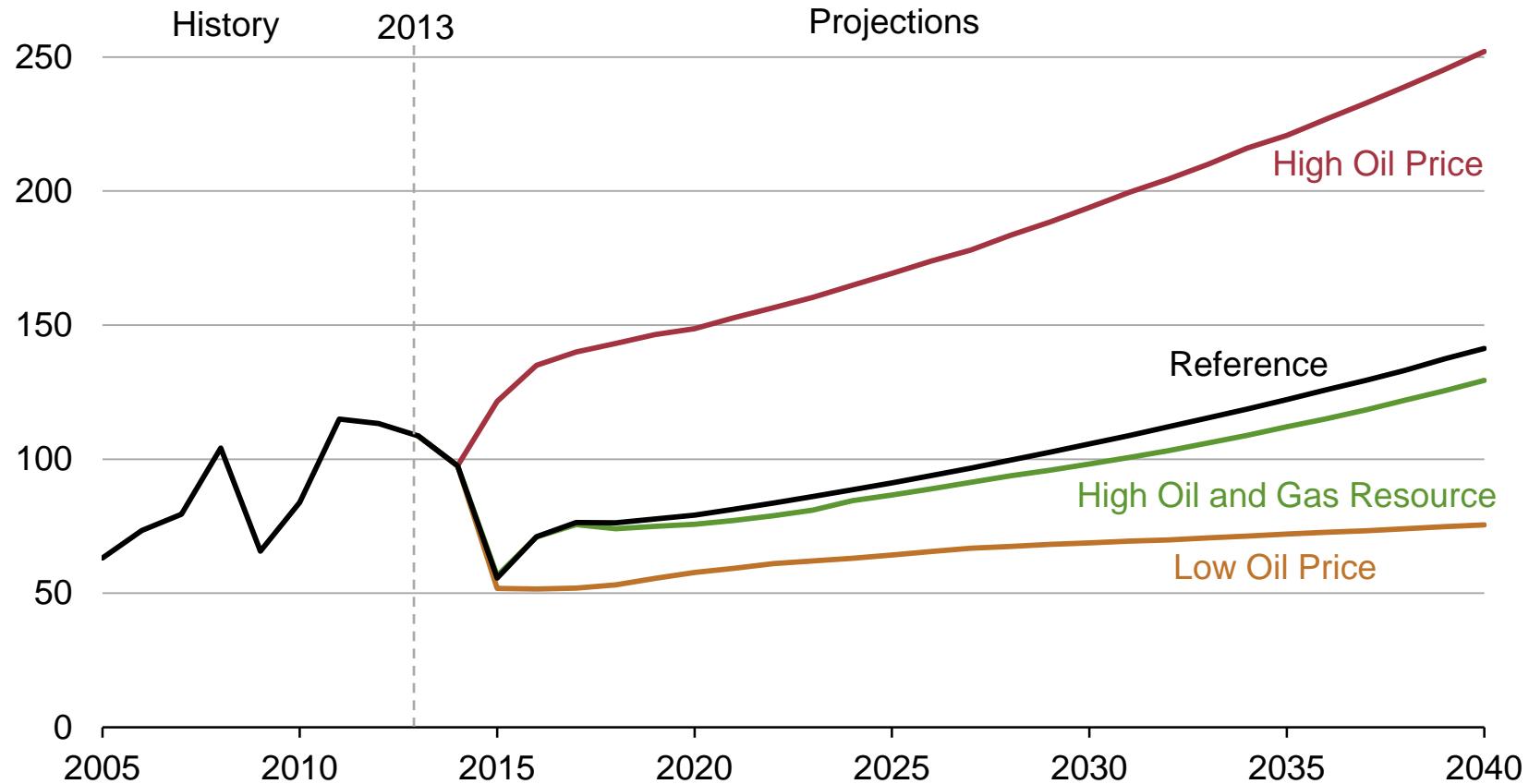
- G. Lee

## The future path of crude oil prices can vary substantially

Brent spot price

2013 dollars per barrel

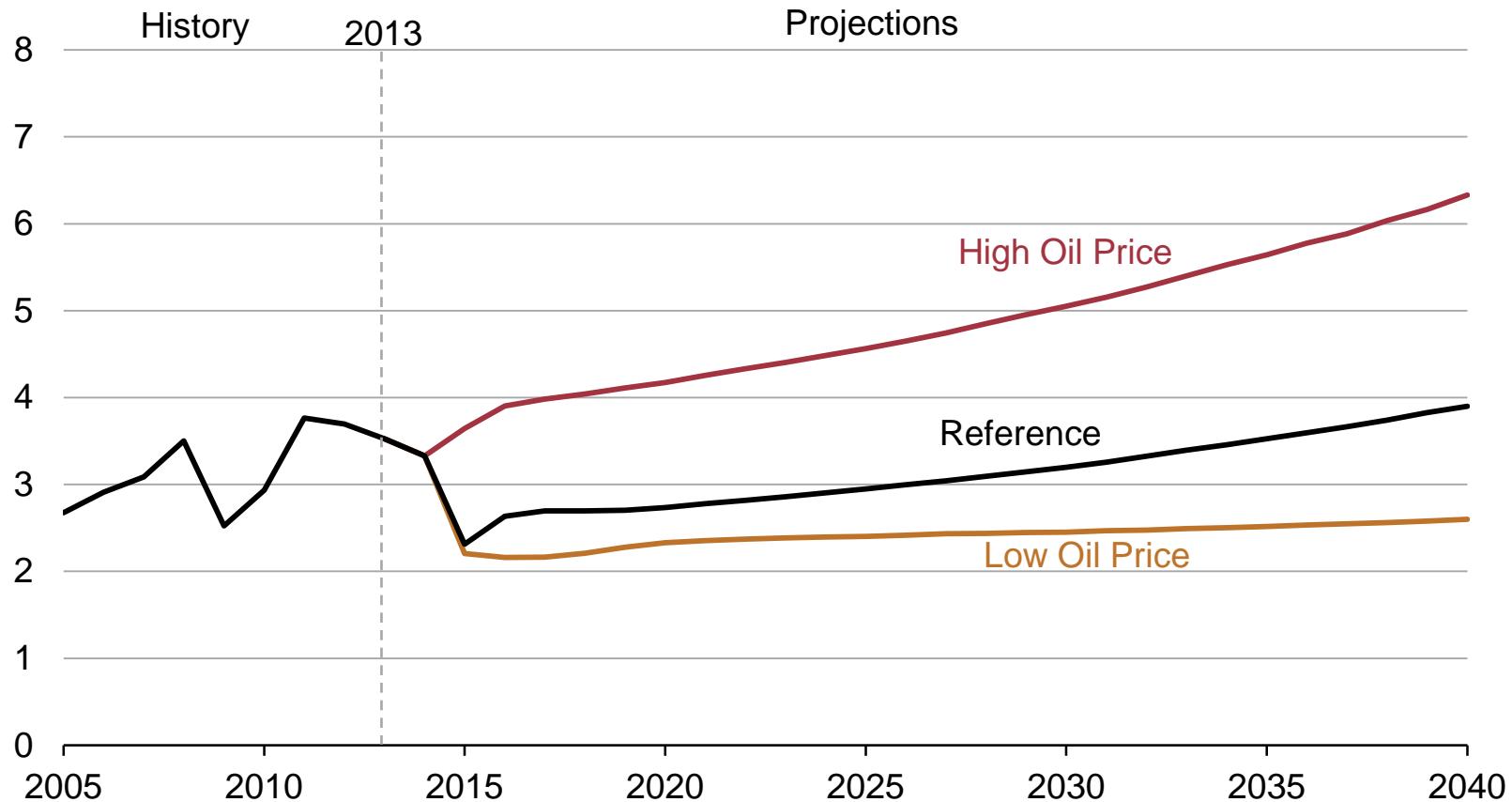
Source: EIA, Annual Energy Outlook 2015



## Crude oil prices affect motor gasoline prices...

motor gasoline price  
2013 dollars per gallon

Source: EIA, Annual Energy Outlook 2015

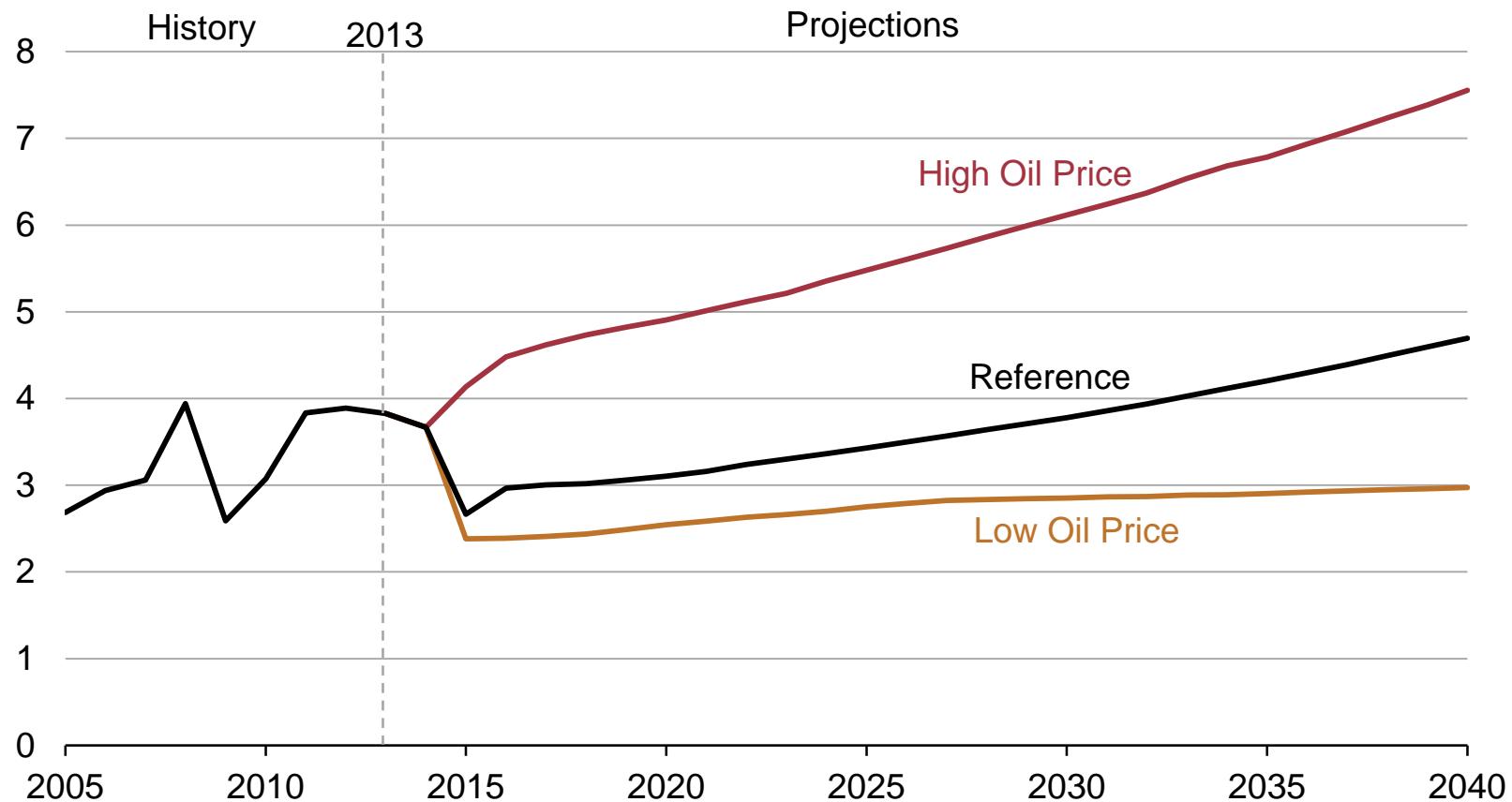


...And diesel prices perhaps slightly more

distillate fuel oil price

2013 dollars per gallon

Source: EIA, Annual Energy Outlook 2015

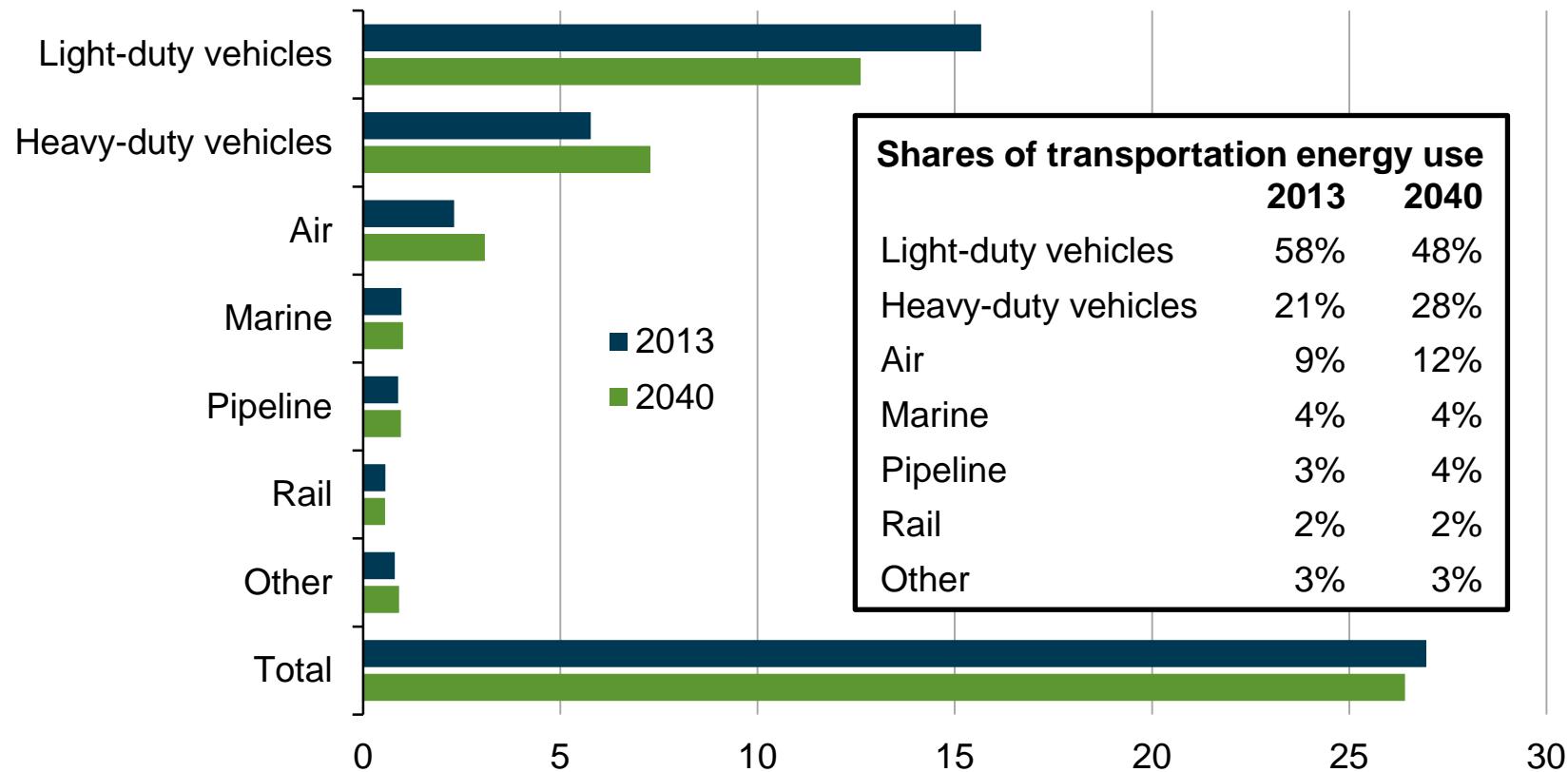


# Delivered energy consumption for transportation by mode in the Reference case, 2013 and 2040

energy consumption

quadrillion Btu

Source: EIA, Annual Energy Outlook 2015

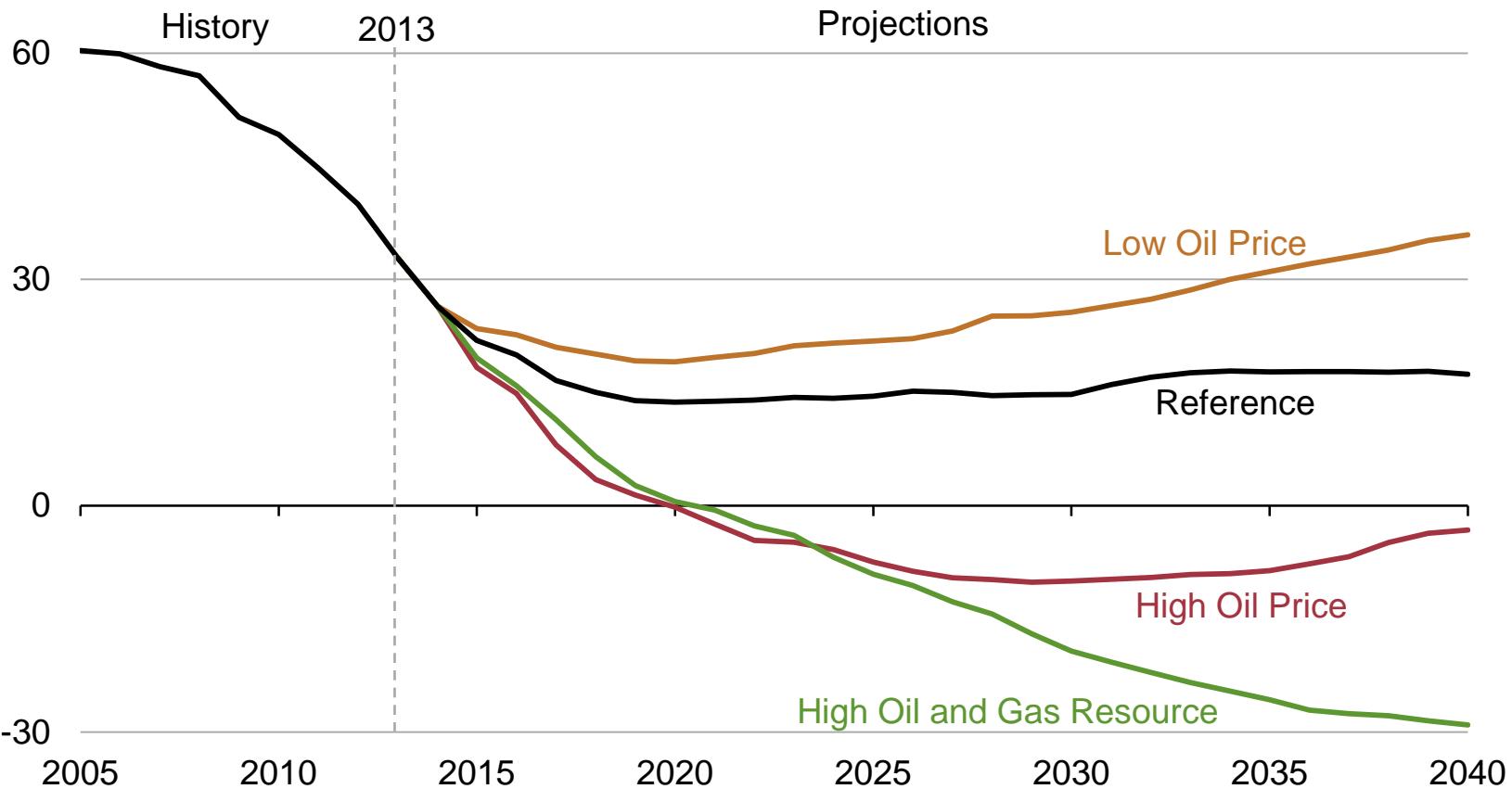


## Different input assumptions can have profound impacts

net crude oil and petroleum product imports

percent of U.S. product supplied

Source: EIA, Annual Energy Outlook 2015



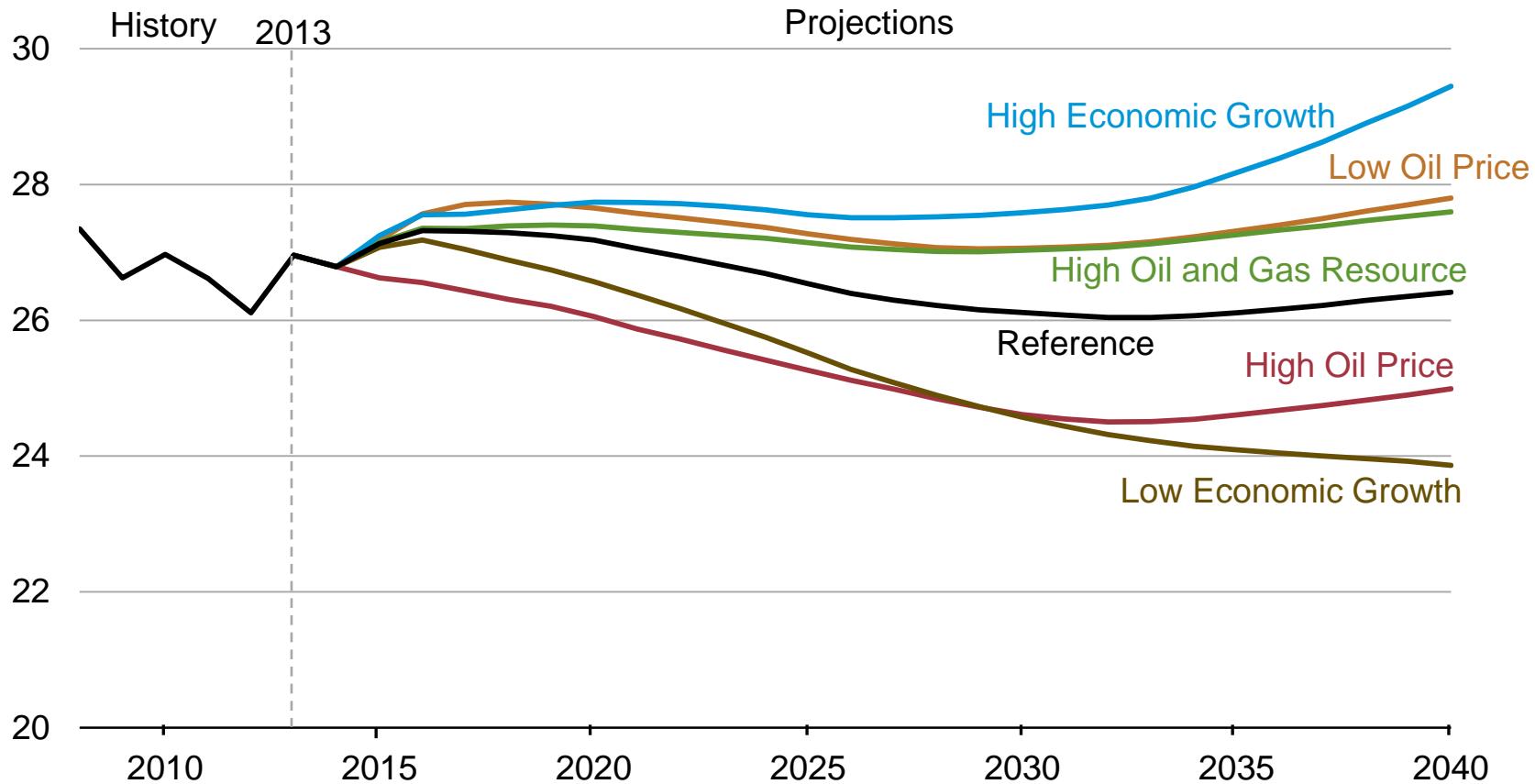
# Selected transportation results from AEO2015

## Delivered energy consumption for transportation in six cases, 2008-2040

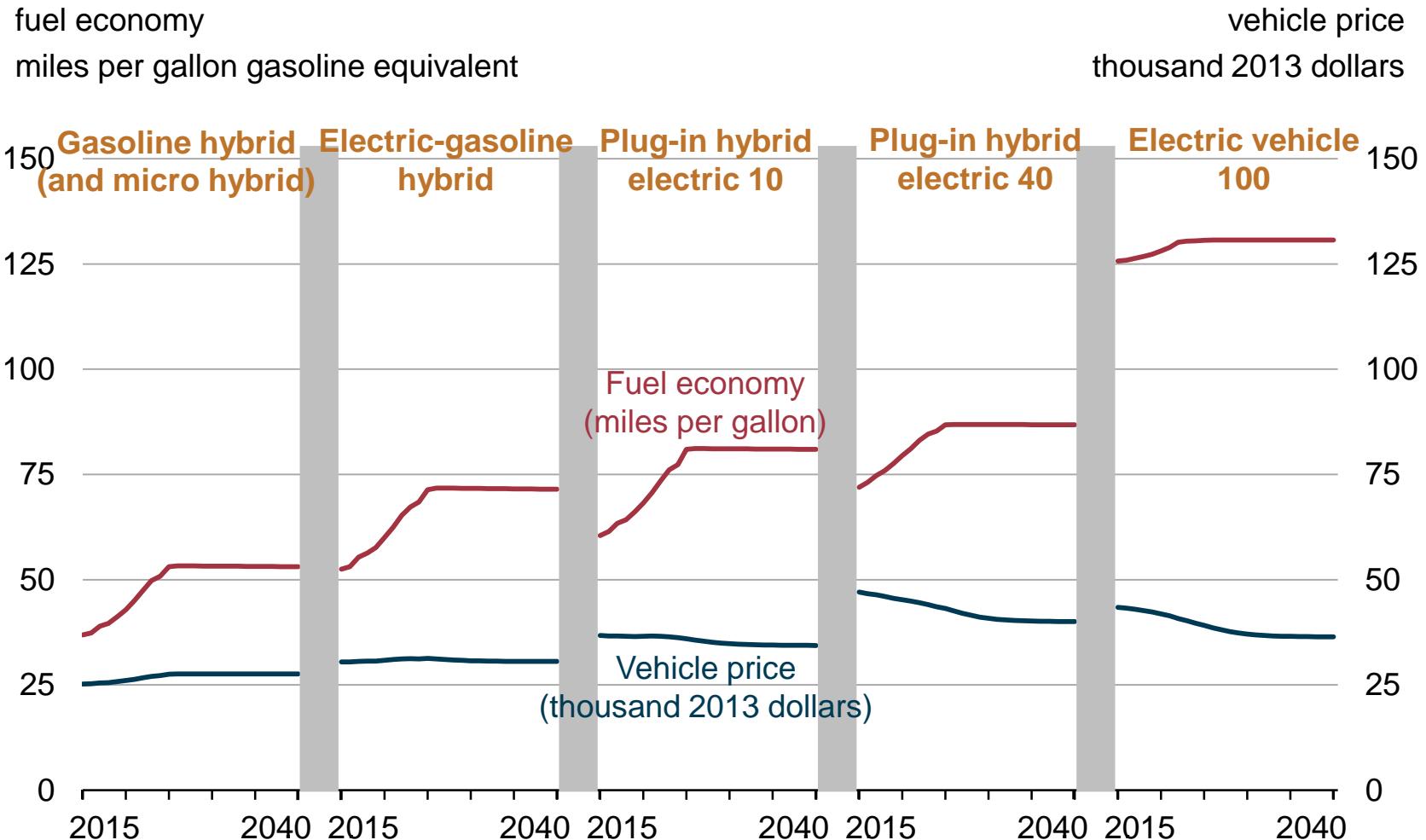
energy consumption

quadrillion Btu

Source: EIA, Annual Energy Outlook 2015



## Midsized passenger car fuel economy and vehicle price by technology type in the Reference case, 2015-2040



Source: EIA, Annual Energy Outlook 2015

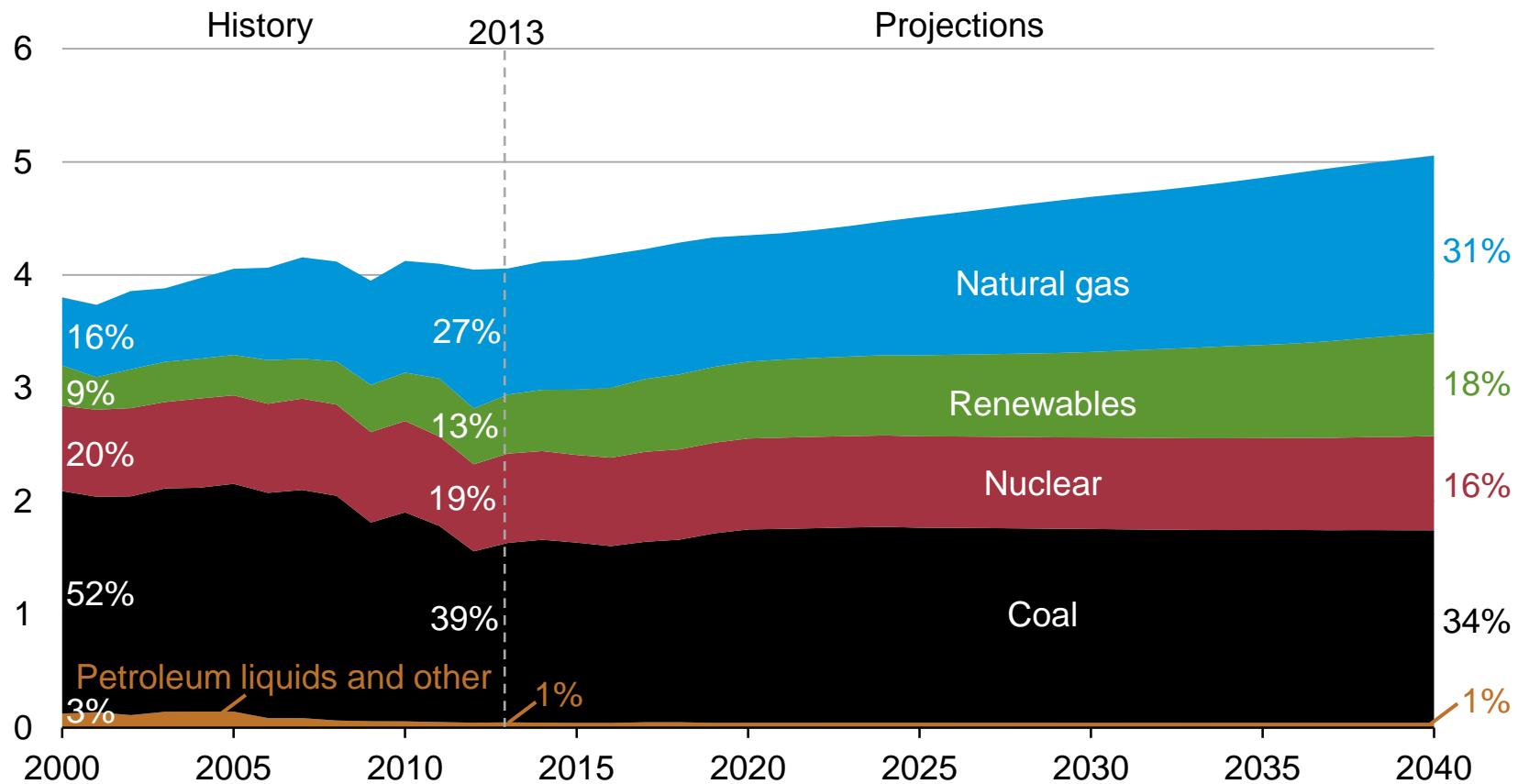
# Selected electricity results from AEO2015

## Electricity generation by fuel in the Reference case, 2000-2040

electricity net generation

trillion kilowatthours

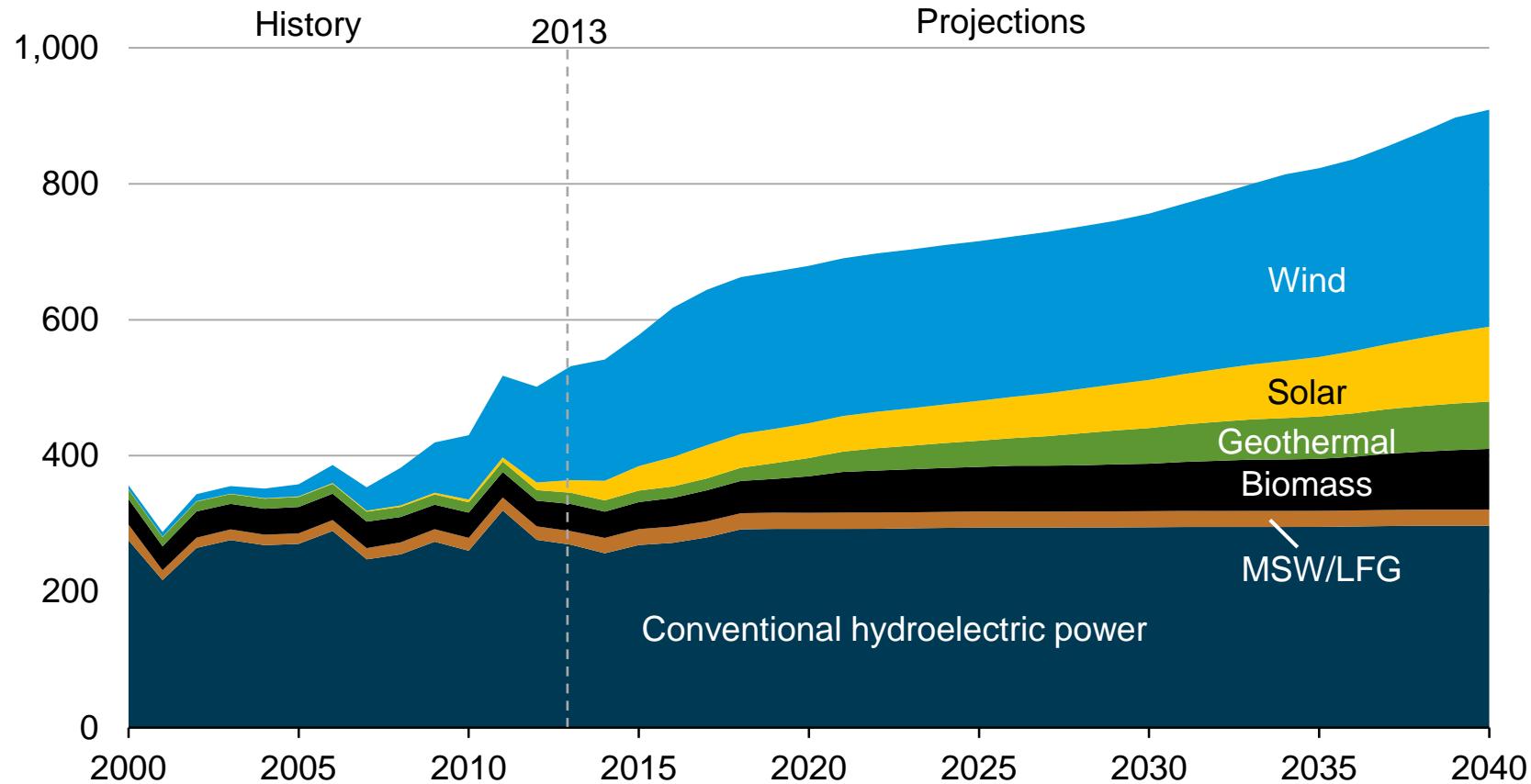
Source: EIA, Annual Energy Outlook 2015



# Renewable electricity generation by fuel type in the Reference case, 2000-2040

electricity net generation  
billion kilowatthours

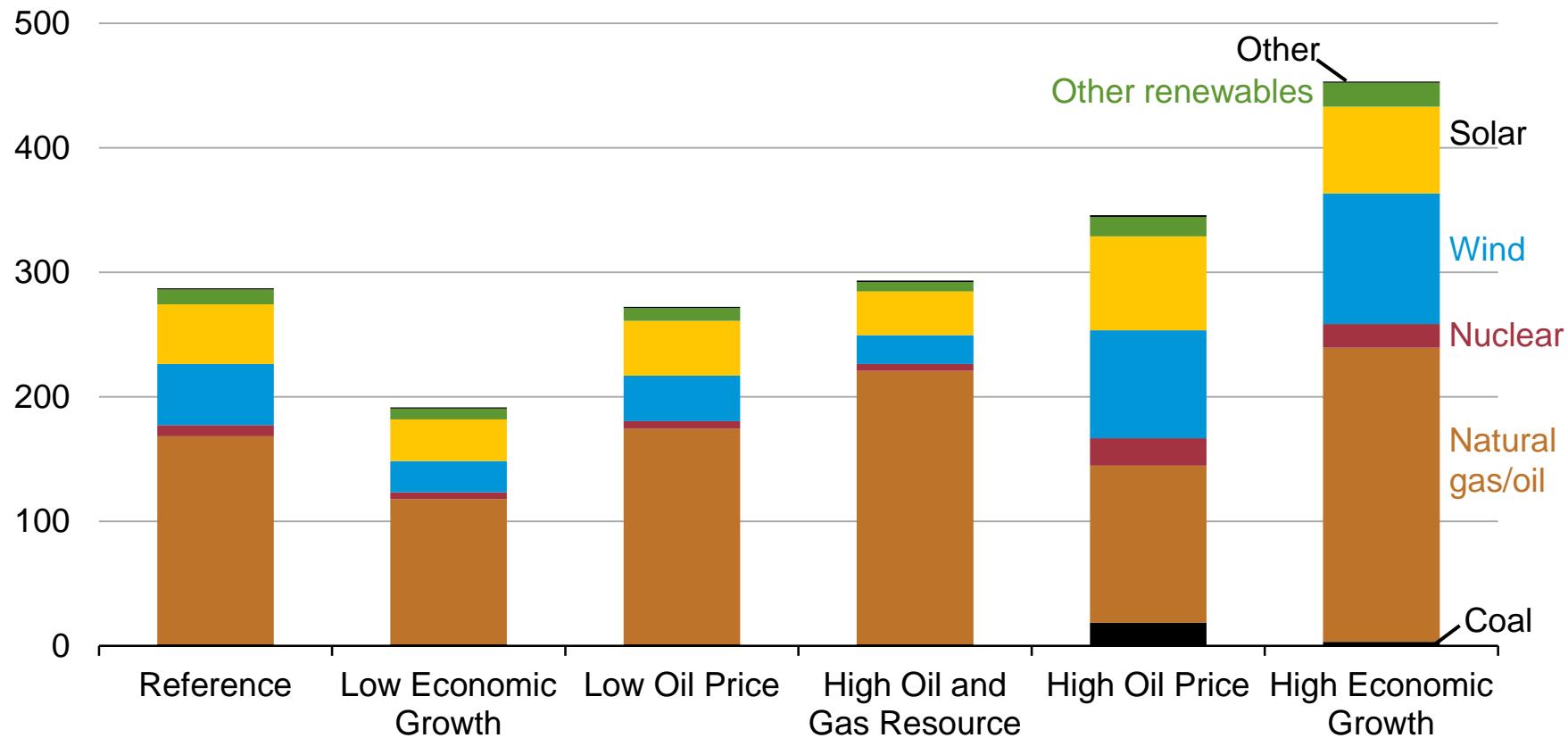
Source: EIA, Annual Energy Outlook 2015



# Cumulative additions to electricity generation capacity by fuel in six cases, 2013-2040

capacity additions  
gigawatts

Source: EIA, Annual Energy Outlook 2015



# For more information

U.S. Energy Information Administration home page | [www.eia.gov](http://www.eia.gov)

Short-Term Energy Outlook | [www.eia.gov/steo](http://www.eia.gov/steo)

Annual Energy Outlook | [www.eia.gov/aoe](http://www.eia.gov/aoe)

International Energy Outlook | [www.eia.gov/ieo](http://www.eia.gov/ieo)

Monthly Energy Review | [www.eia.gov/mer](http://www.eia.gov/mer)

Today in Energy | [www.eia.gov/todayinenergy](http://www.eia.gov/todayinenergy)