

Annual Energy Outlook 2015



STEPS Workshop: Achieving Targets Through 2030

UC Davis, Institute of Transportation Studies

May 12, 2015 | Davis, California

By

David Daniels, Chief Energy Modeler, EIA

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

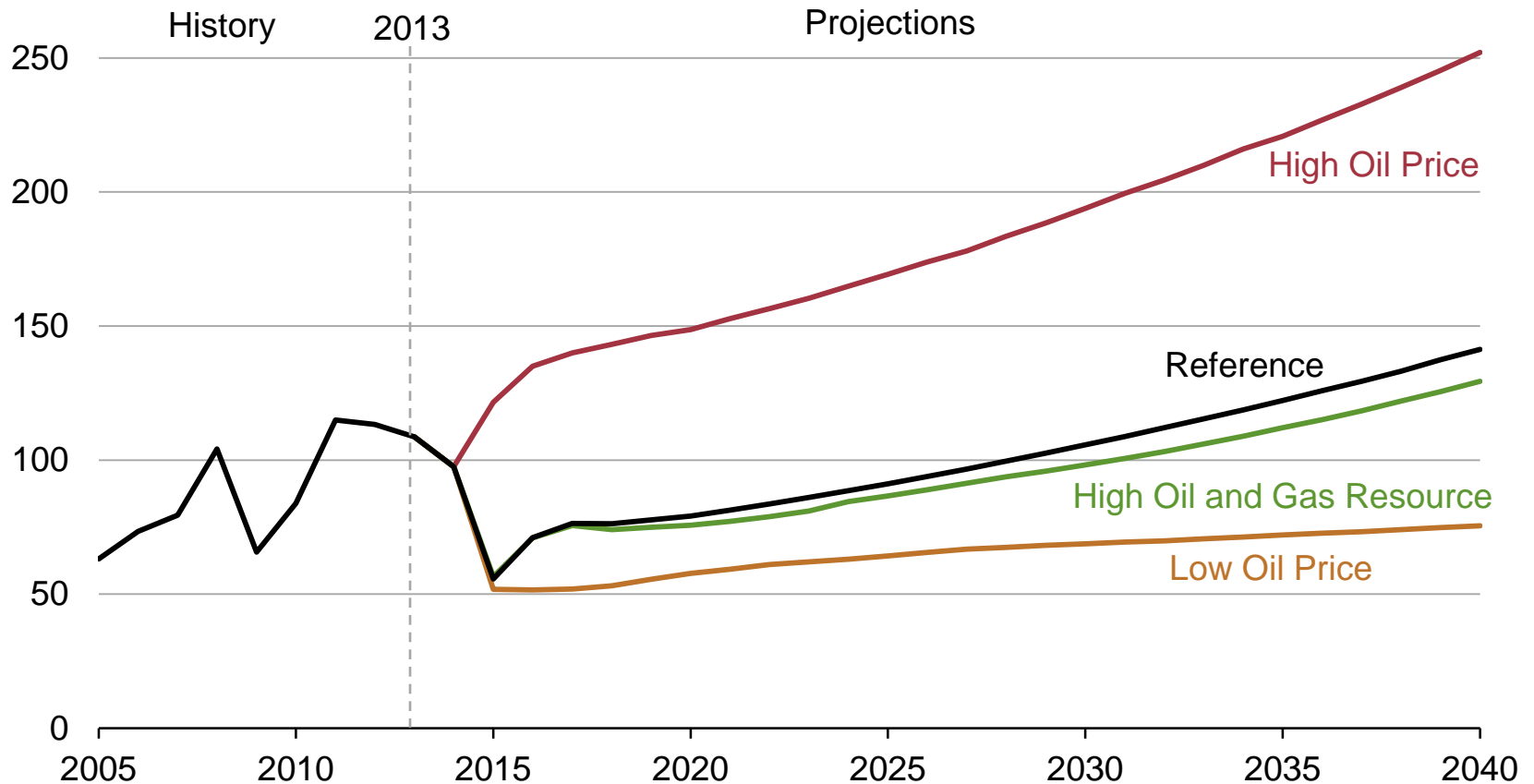
- Uncertainties in any BAU case can have profound impacts on a back-casting exercise
 - Tune models under a BAU case
 - Run sensitivity cases with other assumptions to map out the (asymmetric) success envelope around the BAU case
- Feedback loops are important
 - Holding any assumption fixed may be inconsistent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

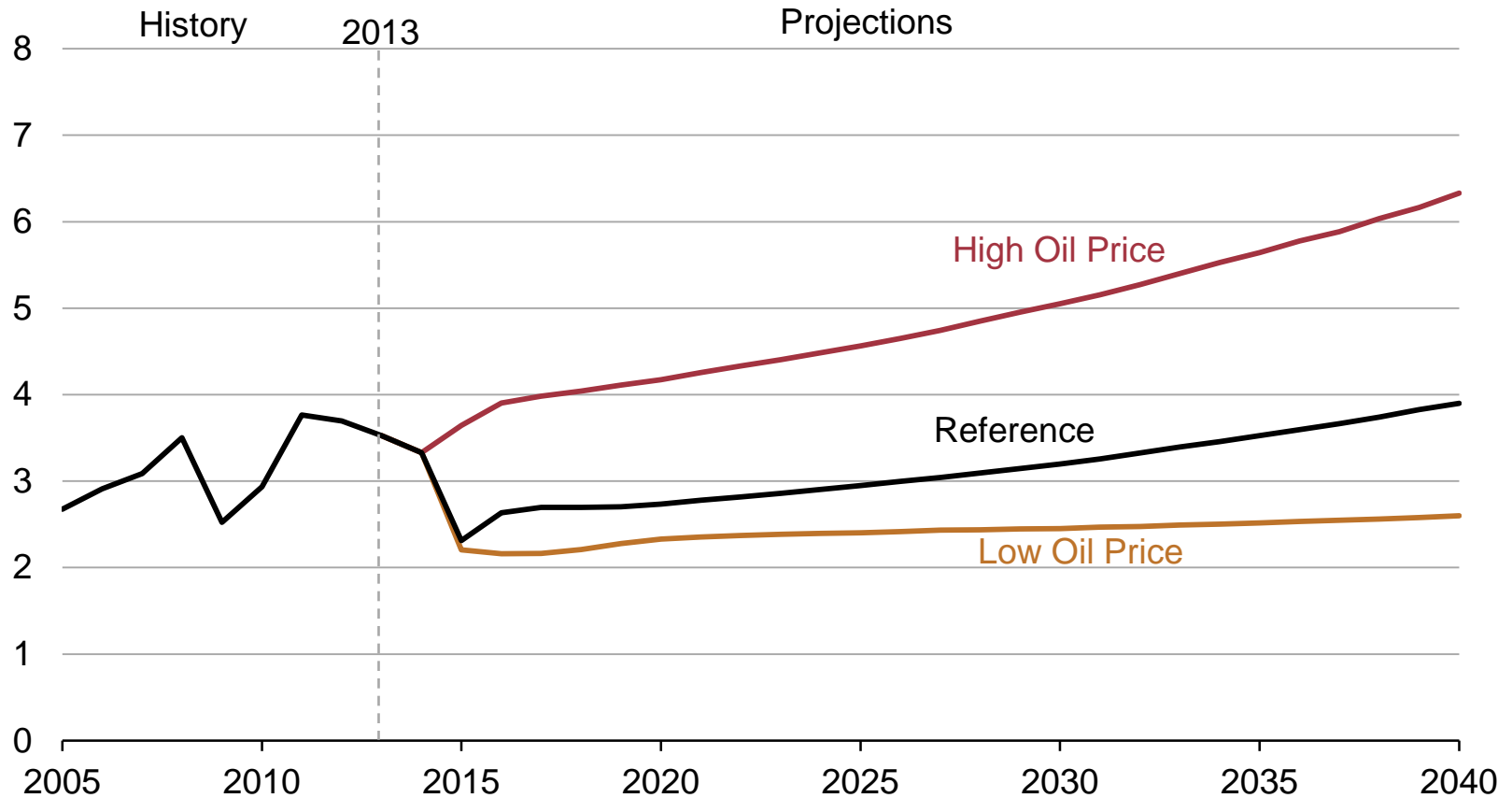
Source: EIA, Annual Energy Outlook 2015



Crude oil prices affect motor gasoline prices...

motor gasoline price
2013 dollars per gallon

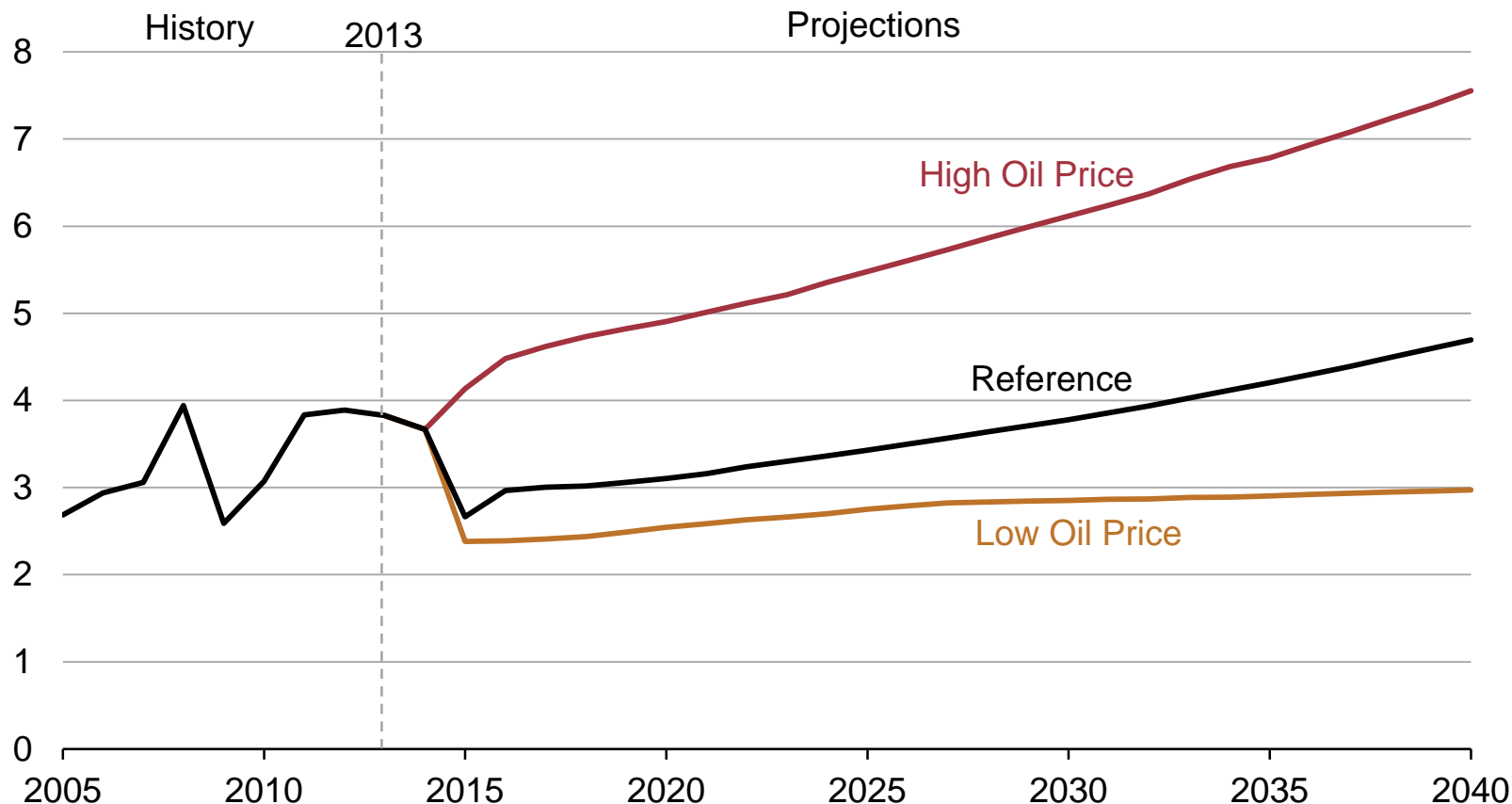
Source: EIA, Annual Energy Outlook 2015



...And diesel prices perhaps slightly more

distillate fuel oil price
2013 dollars per gallon

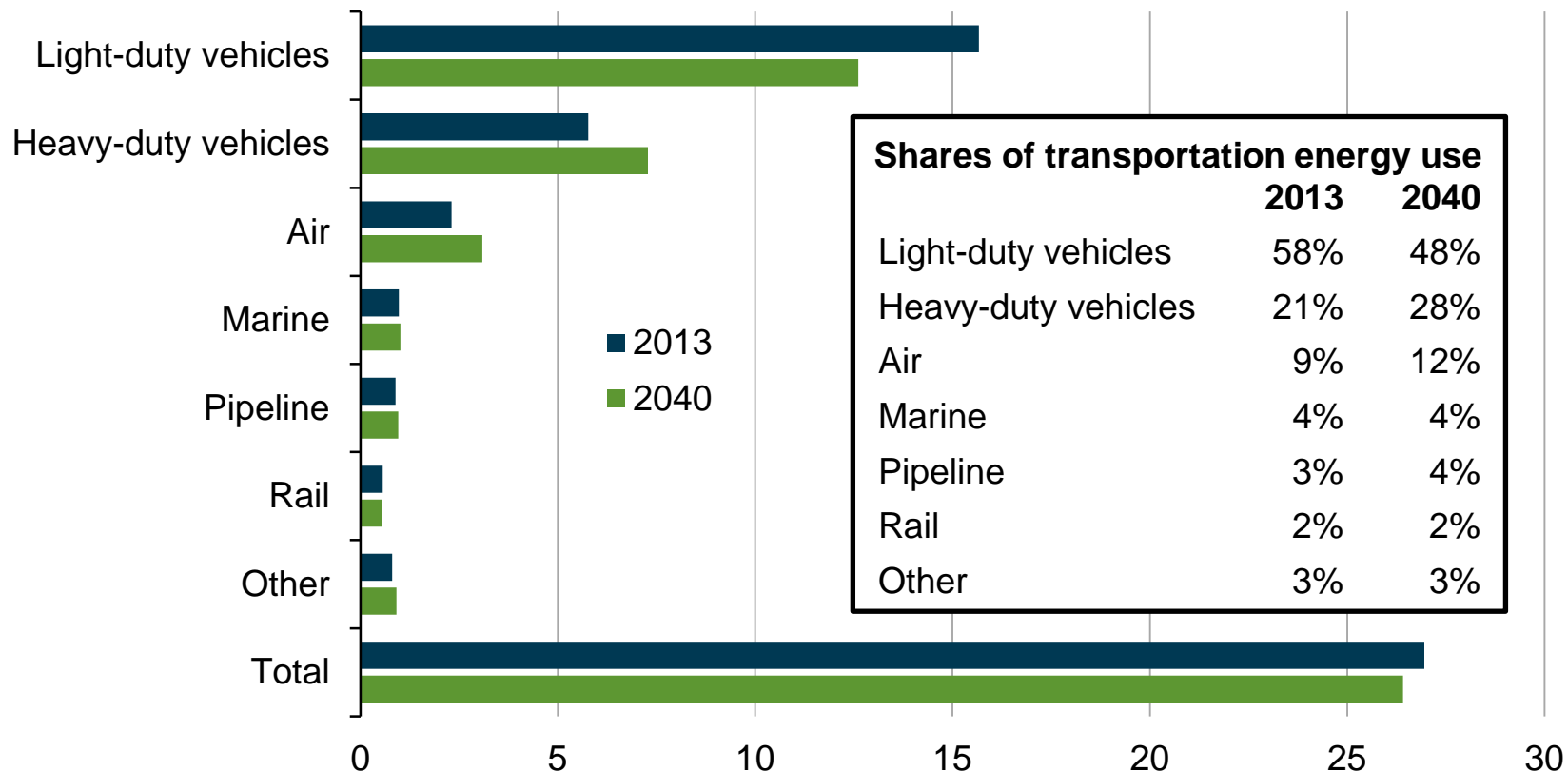
Source: EIA, Annual Energy Outlook 2015



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

energy consumption
quadrillion Btu

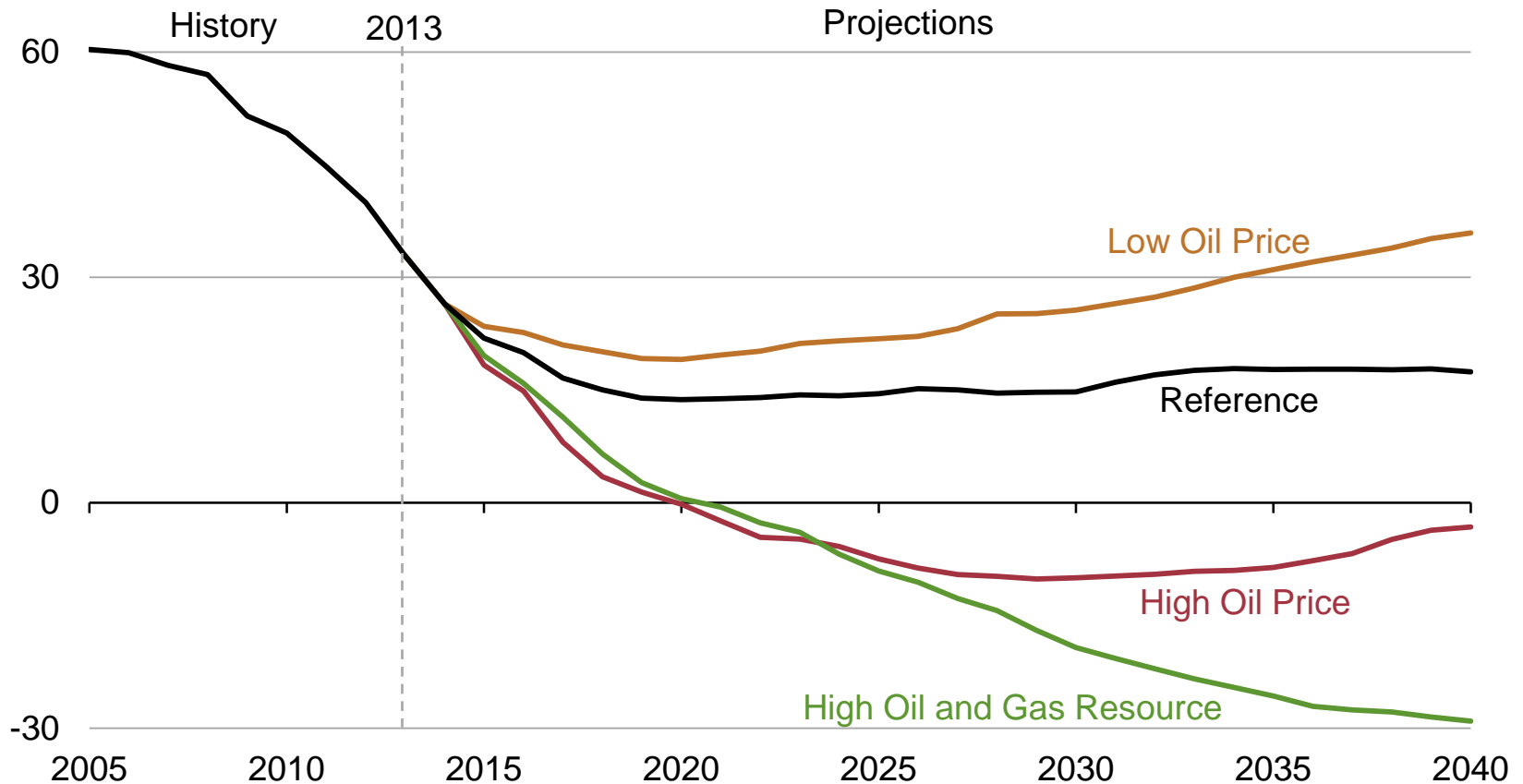
Source: EIA, Annual Energy Outlook 2015



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

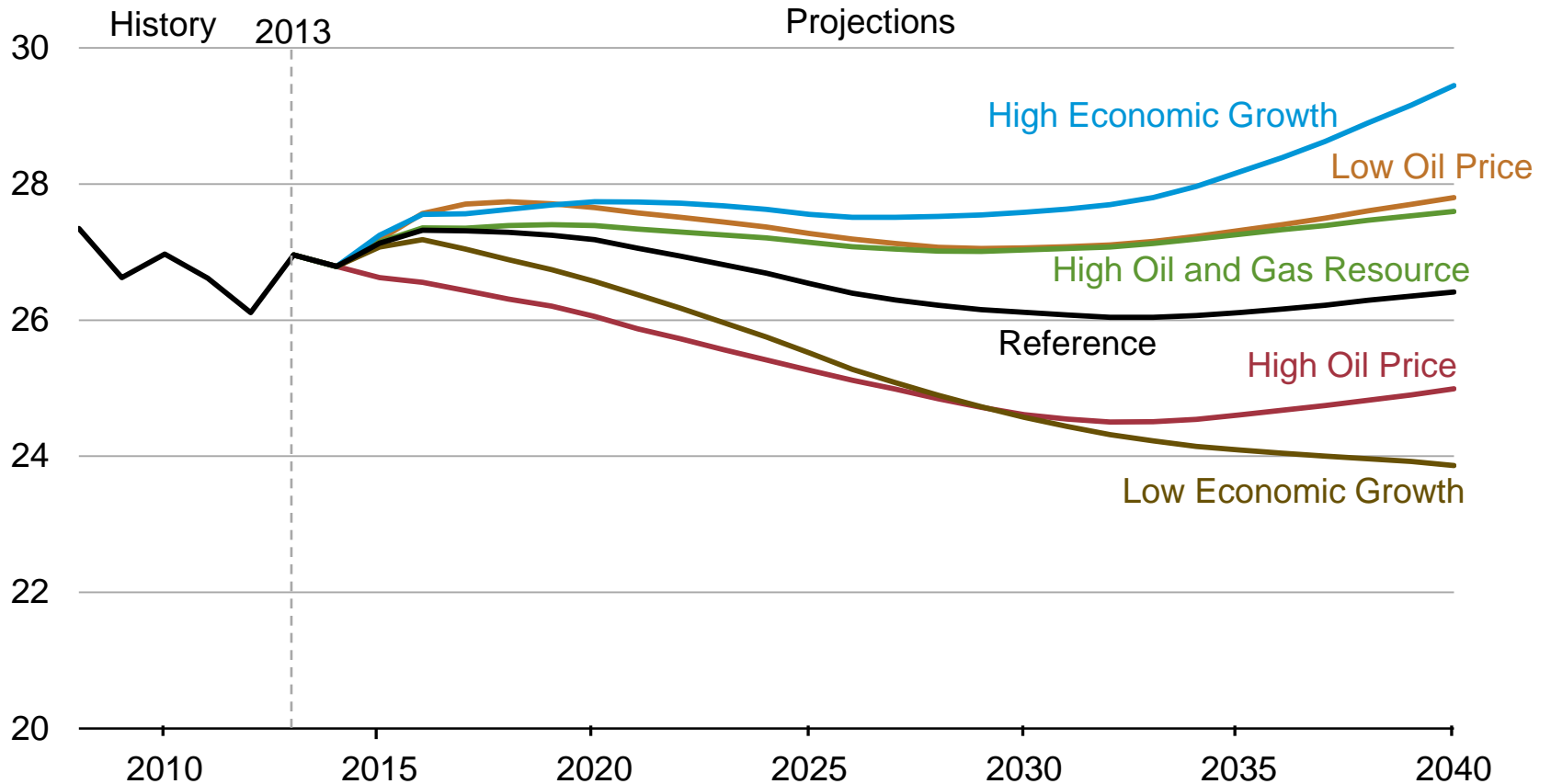


Selected transportation results from AEO2015

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

energy consumption
quadrillion Btu

Source: EIA, Annual Energy Outlook 2015



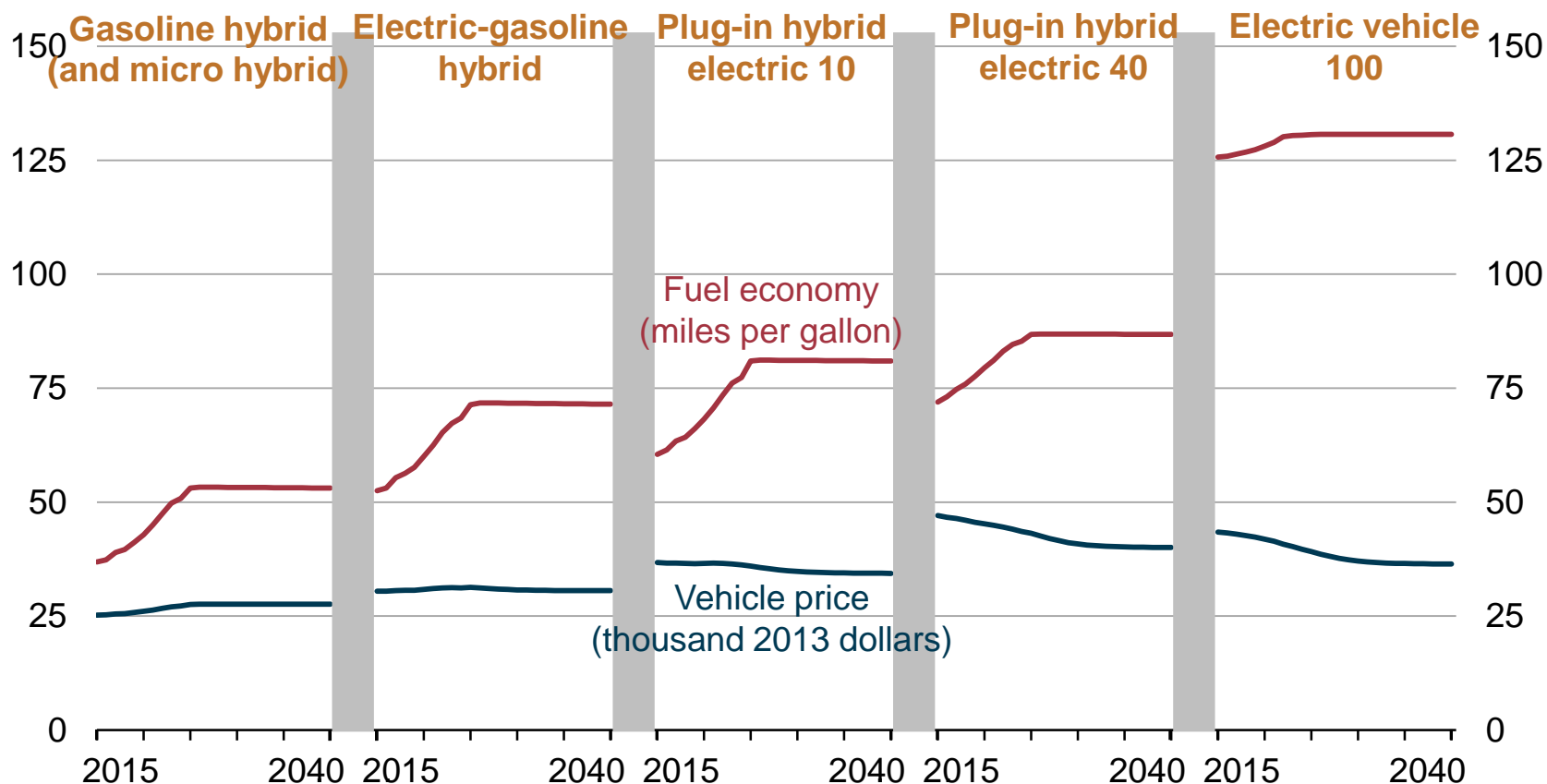
Midsize passenger car fuel economy and vehicle price by technology type in the Reference case, 2015-2040

fuel economy

miles per gallon gasoline equivalent

vehicle price

thousand 2013 dollars



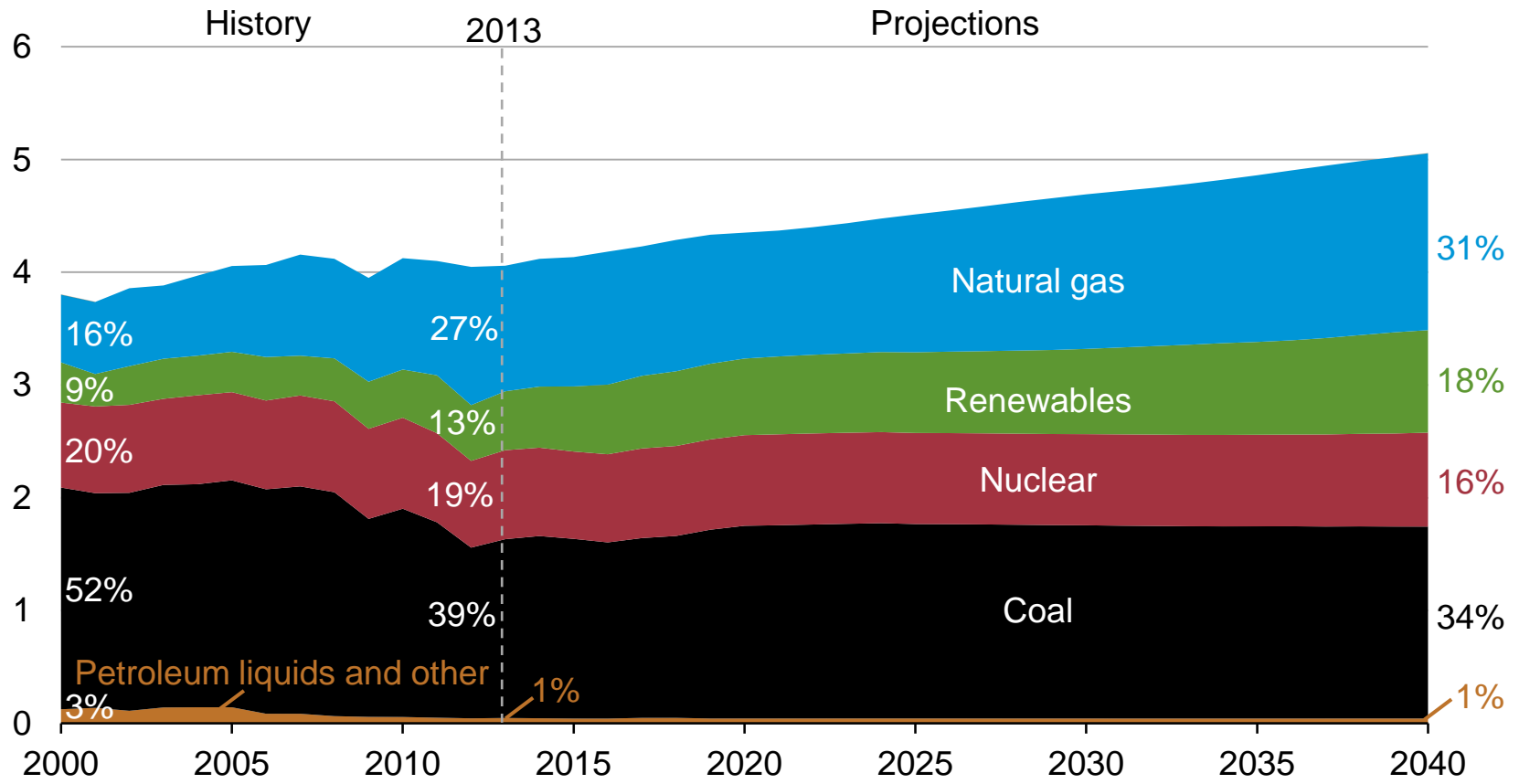
Source: EIA, Annual Energy Outlook 2015

Selected electricity results from AEO2015

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

electricity net generation
trillion kilowatthours

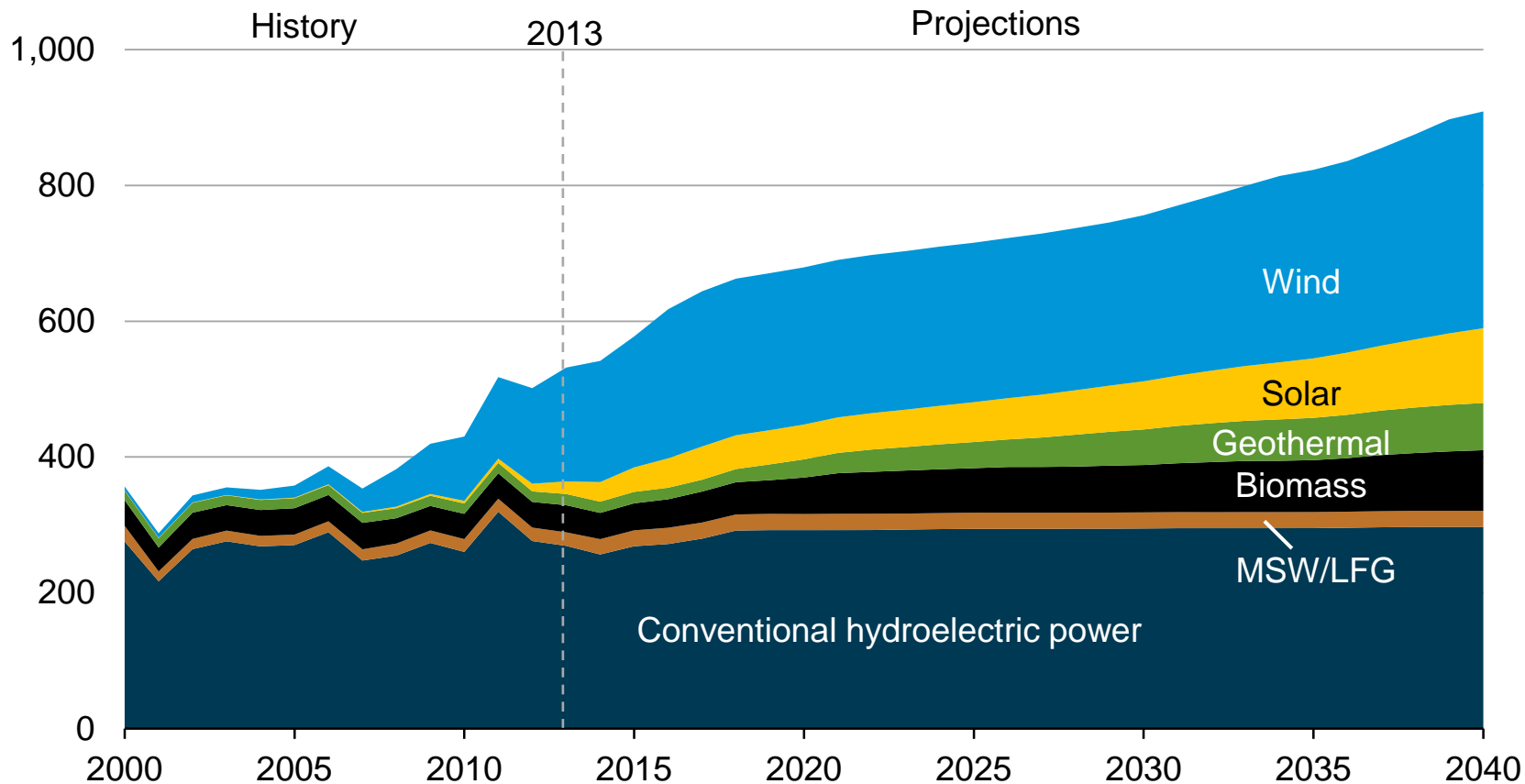
Source: EIA, Annual Energy Outlook 2015



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

electricity net generation
billion kilowatthours

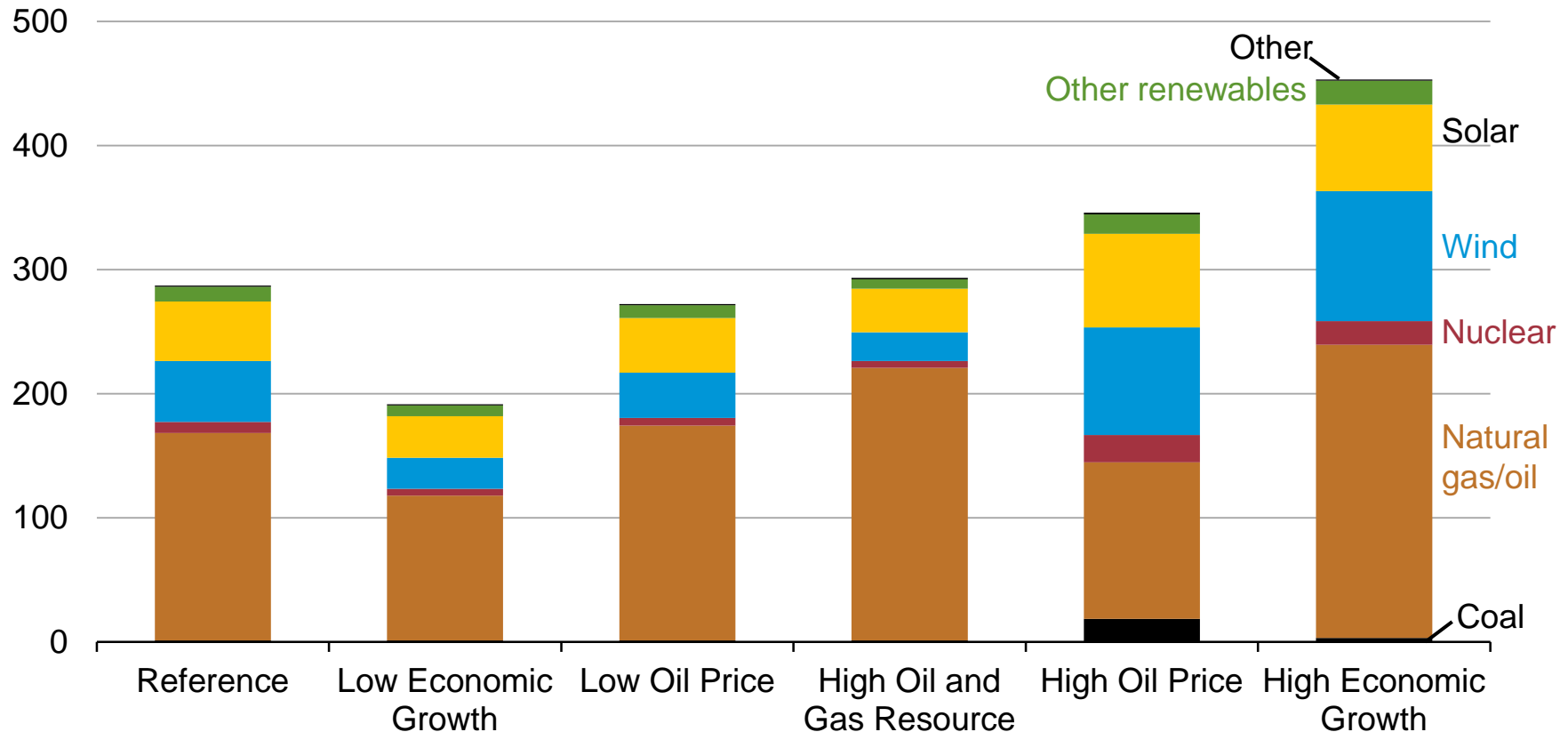
Source: EIA, Annual Energy Outlook 2015



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

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

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy