The U.S. Energy Outlook

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U.S. Department of Energy

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Independent Statistics and Analysis

How does the *Annual Energy Outlook 2010* reference case handle public policy and technology?

- Generally assumes current laws and regulations
  - provisions sunset if specified (e.g., renewable tax credits expire)
  - excludes potential future laws and regulations (e.g., proposed greenhouse gas legislation is not included)
  - some grey areas
    - adopts proposed regulations that are not yet final, in order to inform the likely implementation of a statute
    - adds a premium to the capital cost of CO_2-intensive technologies to reflect market behavior regarding possible CO_2 regulation
    - assumes implementation of existing regulations that enable building new energy infrastructure and resource extraction
- Includes technologies that are commercial or reasonably expected to become commercial in the next decade or so
  - includes cost and efficiency improvements from learning, but not revolutionary or breakthrough technologies

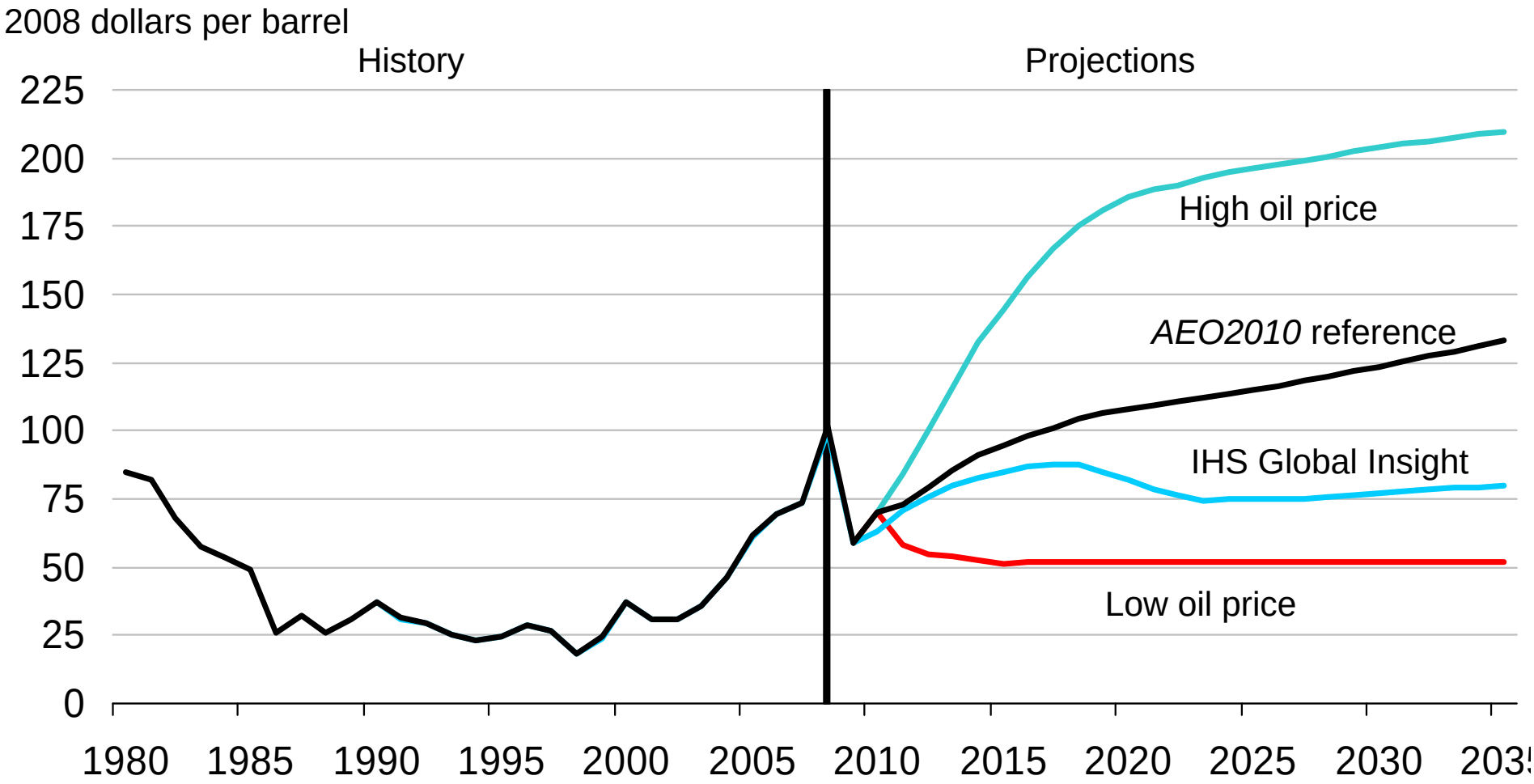
Key updates included in the *AEO2010* reference case

- Extended projection period to 2035
- Changes in Federal and State laws and regulations
  - revised handling of fuel economy standards to reflect the proposal for light-duty vehicles in model years 2012-2016
  - assumes permission will be granted to extend nuclear power unit operating licenses beyond 60 years; no retirements through 2035
- Revised capital costs for capital-intensive projects
  - overnight costs for nuclear and coal power up 10-20%
- Changes to assumptions about oil and gas resource base
  - updated characterization of natural gas shales, reflecting evolution of shale gas resources and technology
  - new lower-48 onshore oil and gas supply submodule

Key results from the *AEO2010* reference case

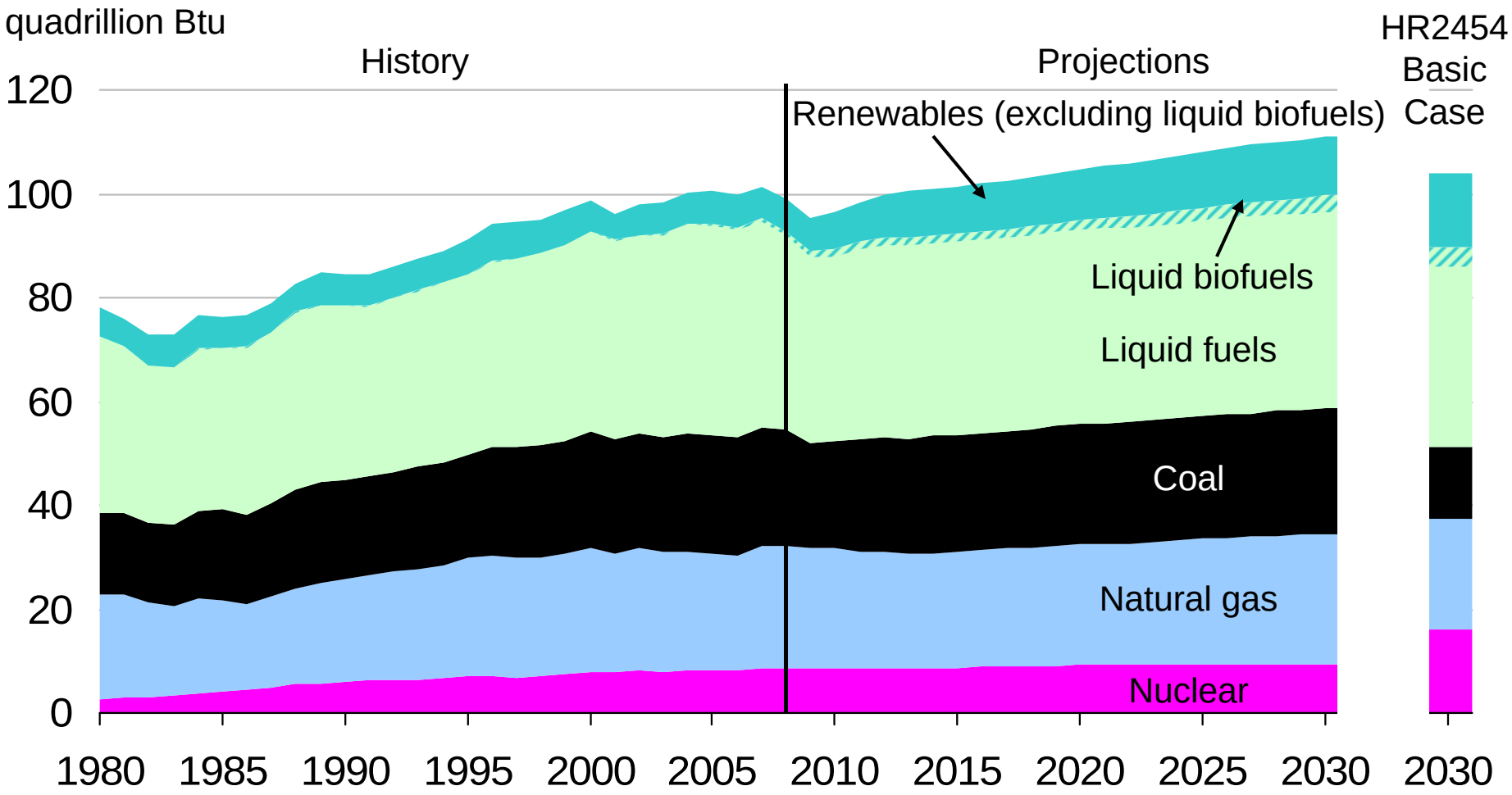
- Moderate energy consumption growth and greater use of renewables due to recent policies and rising energy prices
- Declining reliance on imported liquid fuels
  - U.S. oil use remains near its present level through 2035
  - growth in overall liquids demand is met by biofuels, and ethanol accounts for >17% of gasoline consumption by 2035
- Shale gas drives growth in U.S. natural gas production and reduces reliance on imported gas
- Electricity consumption grows by 1% per year over the projection
- Energy-related CO_2 emissions grow 0.3% per year, absent any new policies to limit emissions

Oil prices in the reference case rise steadily; the full *AEO2010* will include a wide range of prices



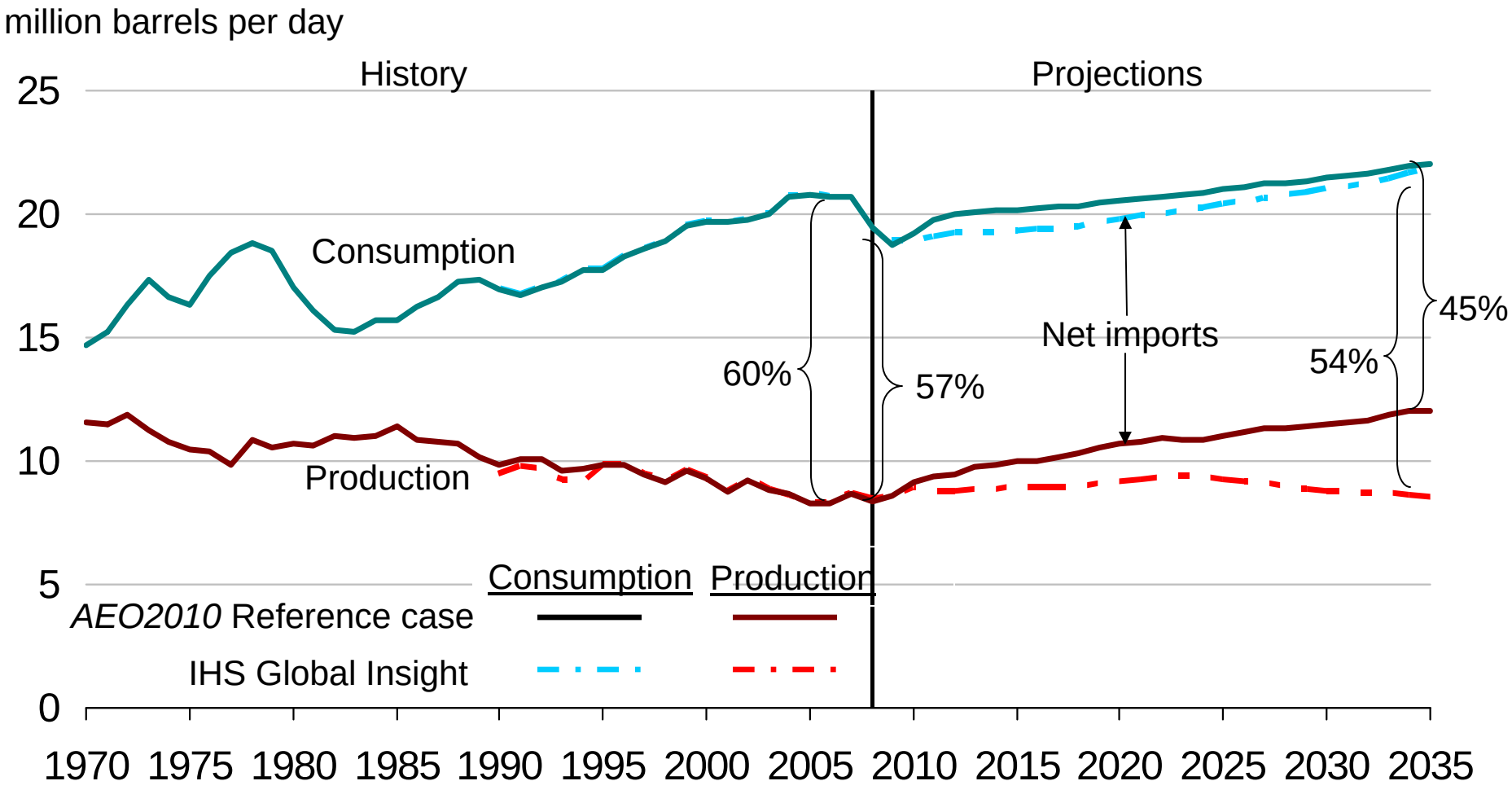
Source: *Annual Energy Outlook 2010*

Non-fossil energy use grows rapidly, but fossil fuels still provide 79 percent of total energy use in 2030



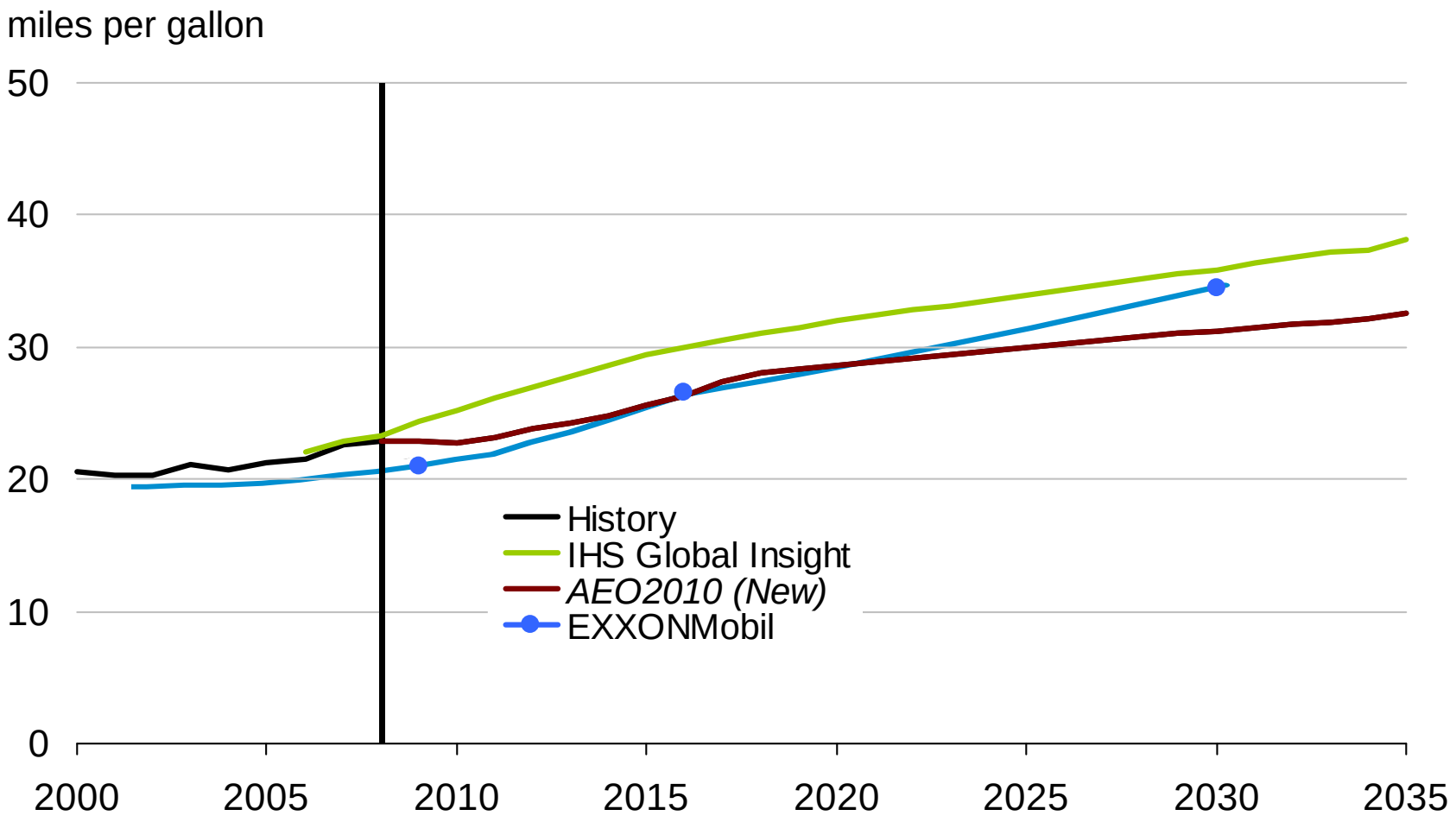
Source: *Annual Energy Outlook 2010;* and ***Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009***

U.S. reliance on imported liquid fuels is reduced by increased domestic production and greater fuel efficiency



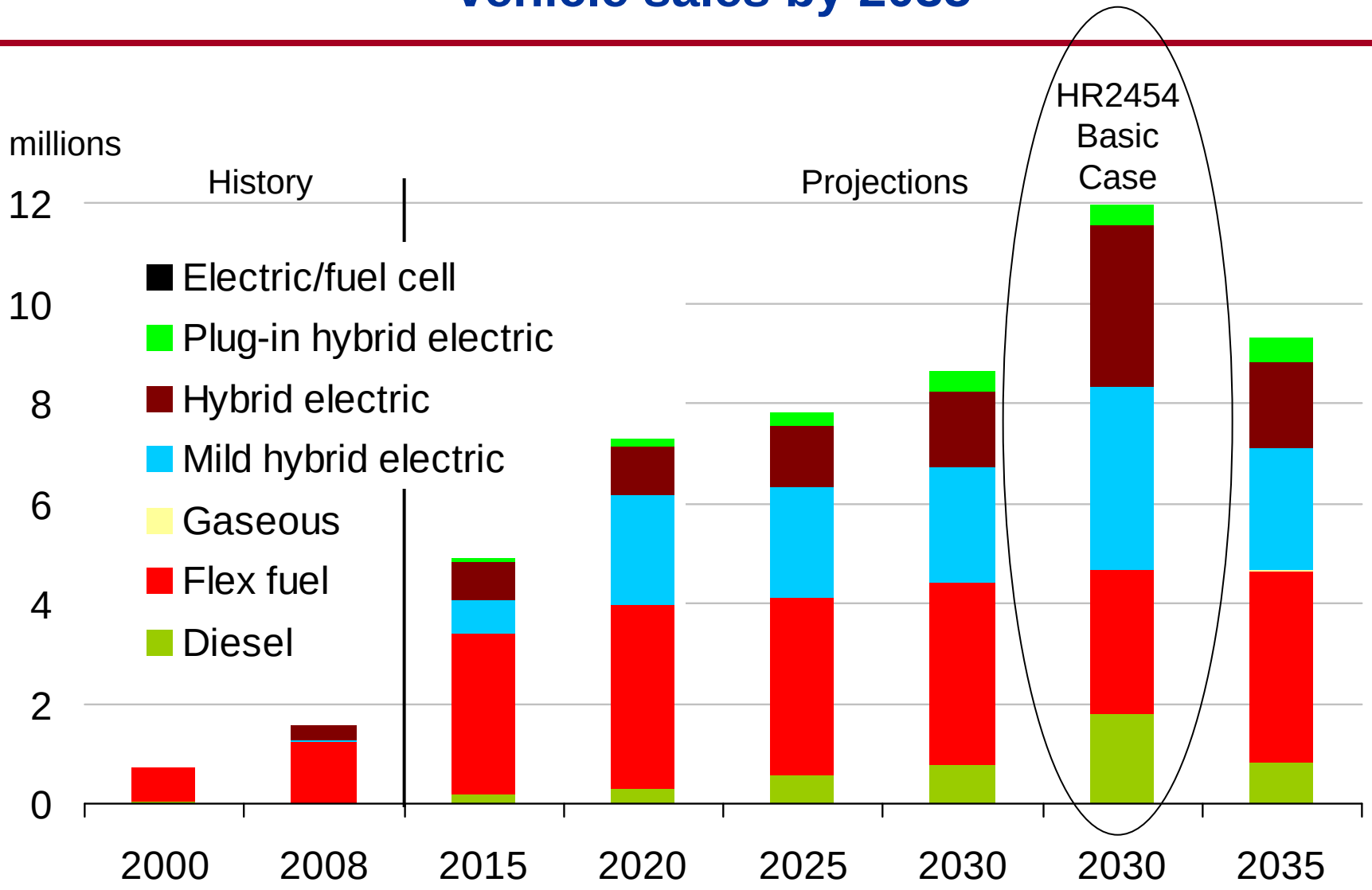
Source: *Annual Energy Outlook 2010*

New light duty vehicle on-road efficiency



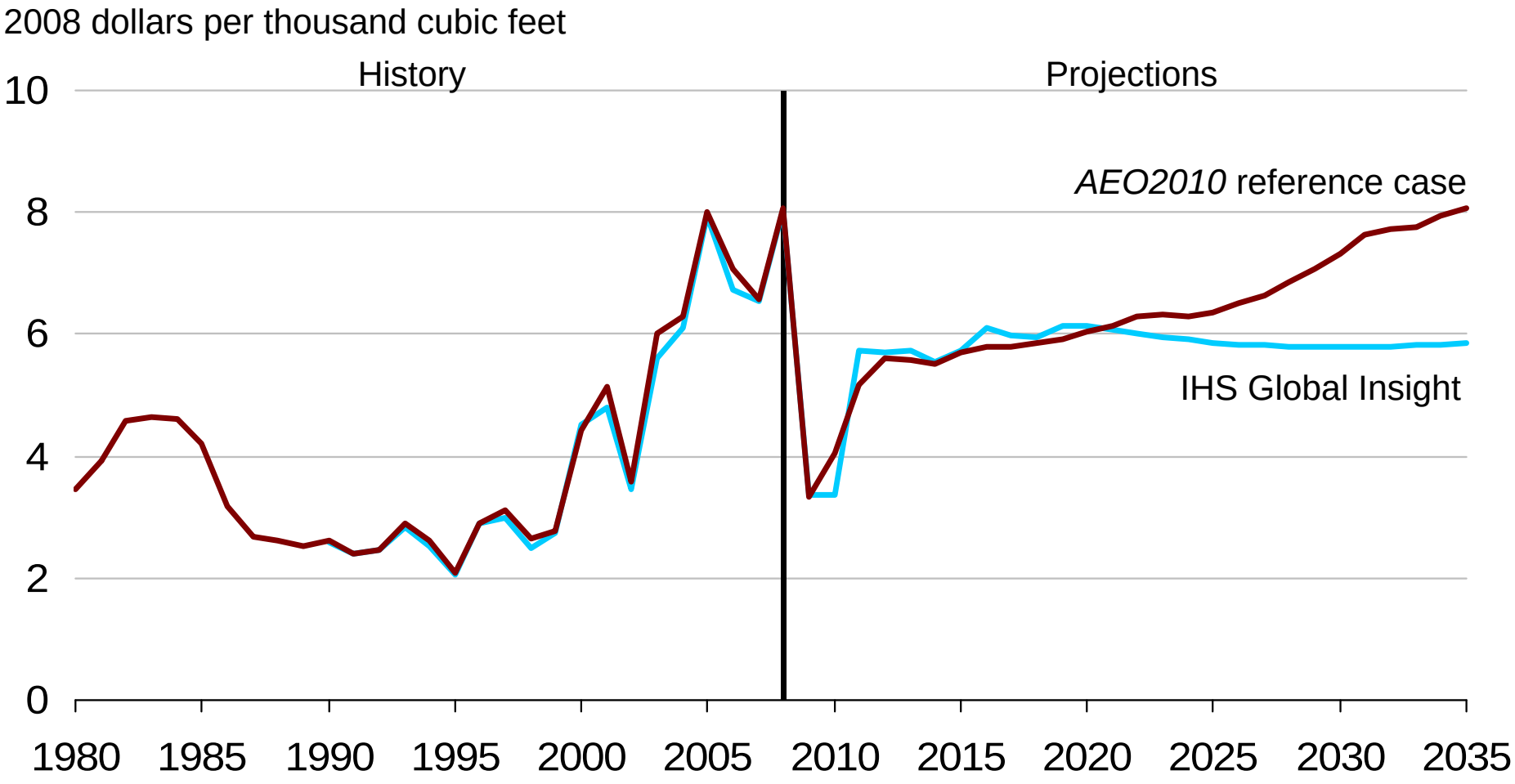
Source: *Annual Energy Outlook 2010*

Mild and full hybrid systems dominate new light-duty vehicle sales by 2035



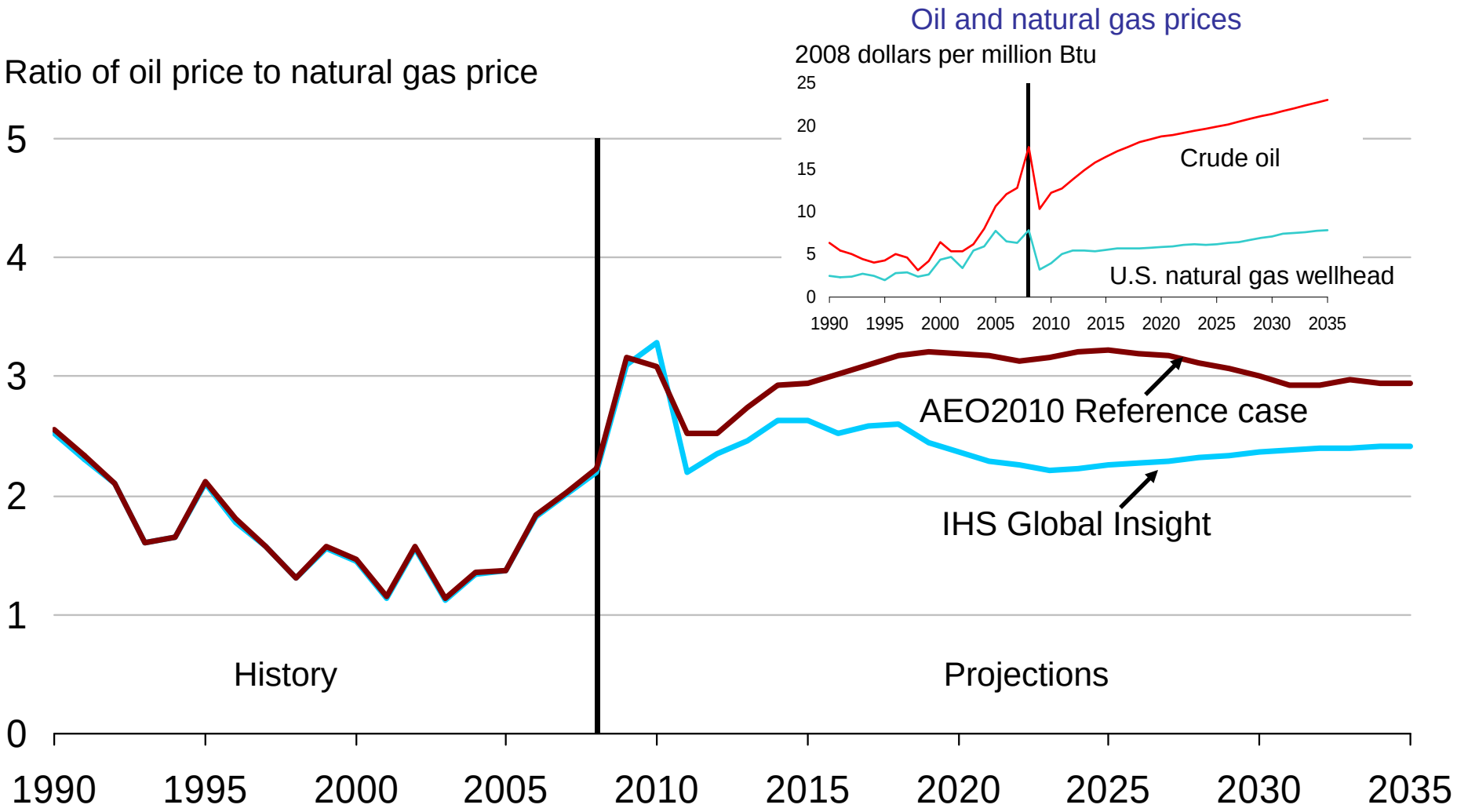
Source: *Annual Energy Outlook 2010;* and ***Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009***

Natural gas wellhead price is projected to rise from low levels experienced during 2008-2009 recession



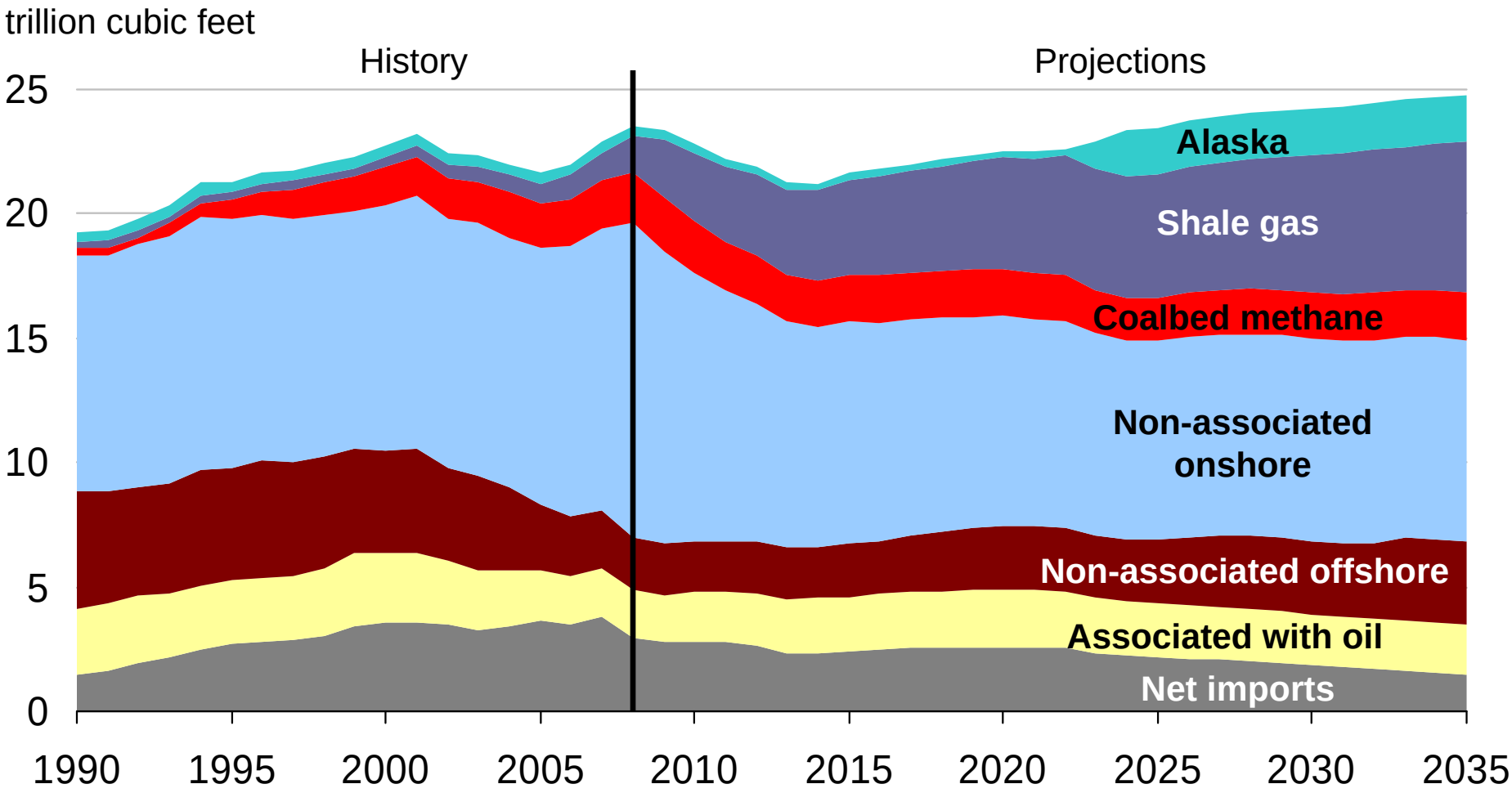
Source: *Annual Energy Outlook 2010*

Oil to natural gas price ratio remains high over the projection



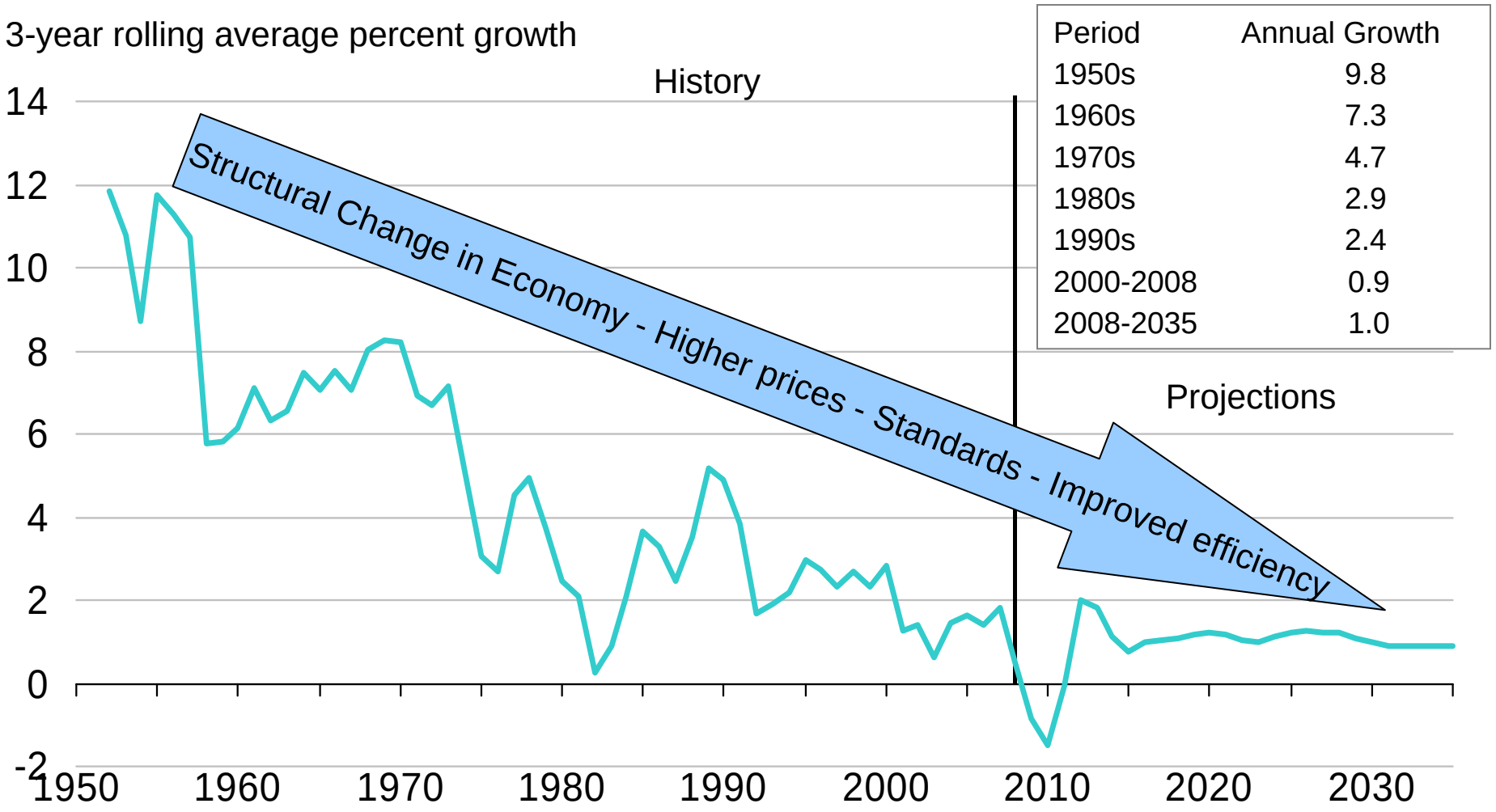
Source: *Annual Energy Outlook 2010*

Shale gas and Alaska production offset declines in supply to meet consumption growth and lower import needs



Source: *Annual Energy Outlook 2010*

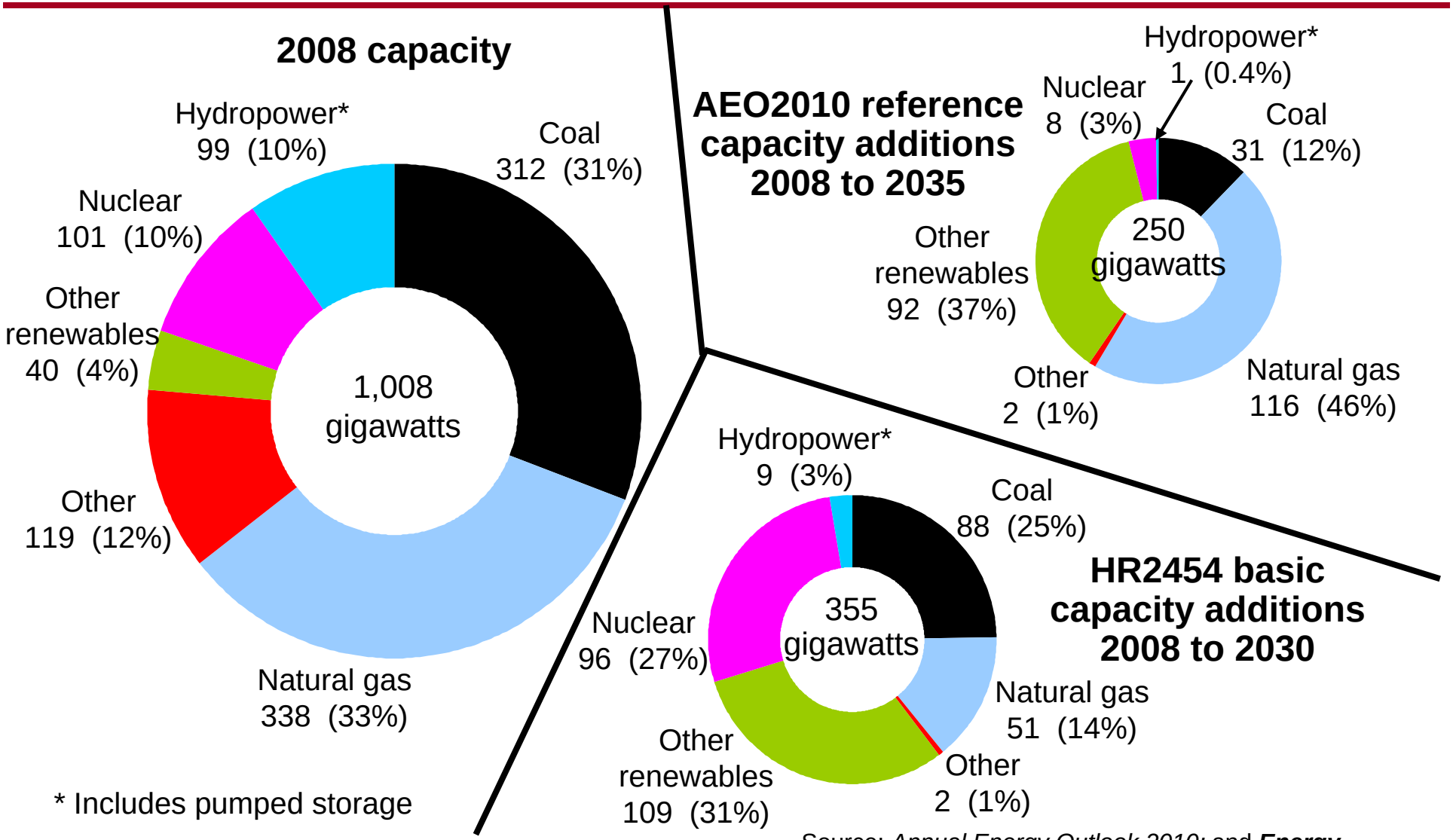
Growth in electricity use continues to slow



Period	Annual Growth
1950s	9.8
1960s	7.3
1970s	4.7
1980s	2.9
1990s	2.4
2000-2008	0.9
2008-2035	1.0

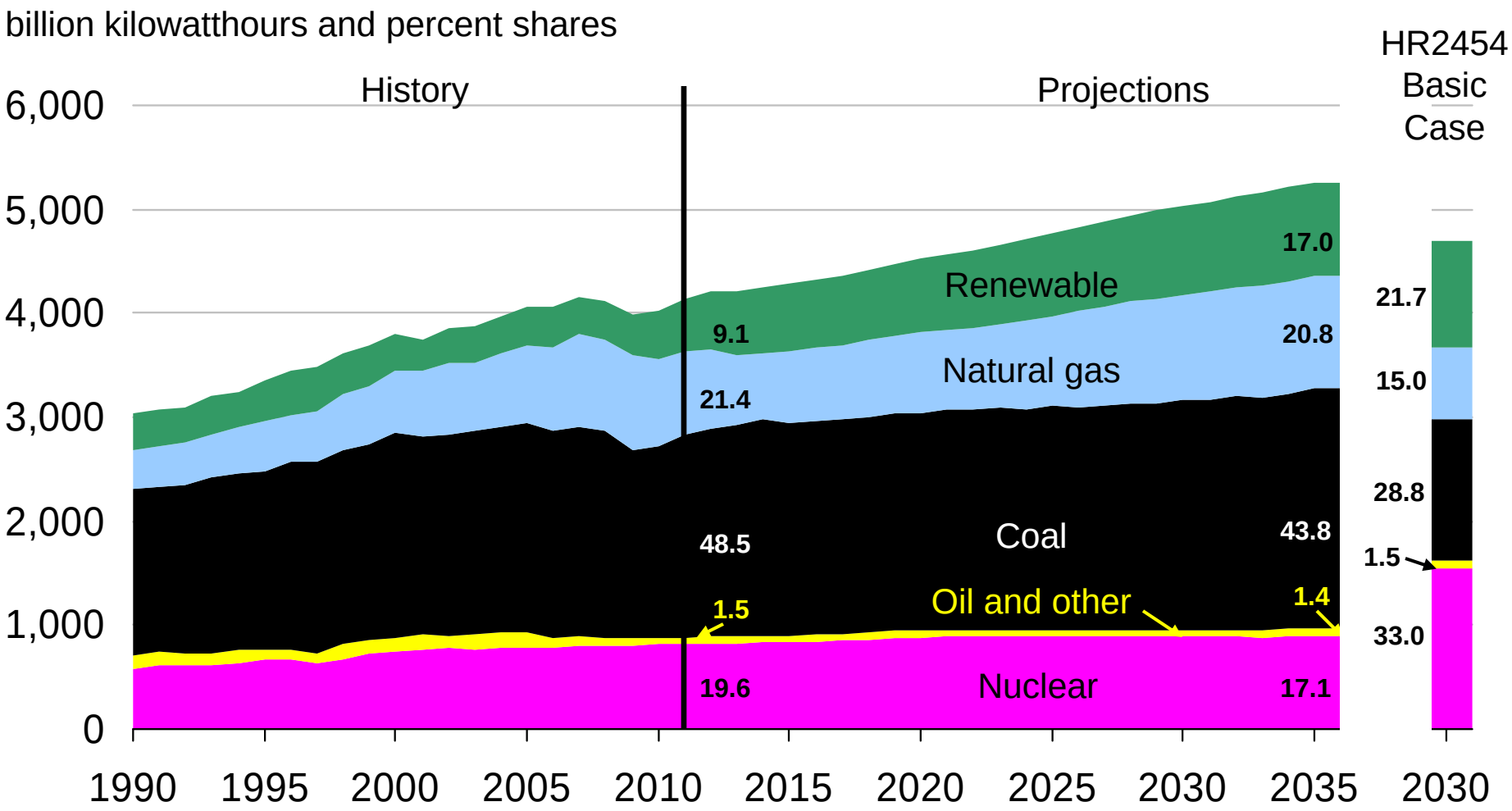
Source: *Annual Energy Outlook 2010*

Natural gas and renewables account for the majority of capacity additions from 2008 to 2035



Source: *Annual Energy Outlook 2010;* and ***Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009***

Renewables gain electricity market share; coal share declines



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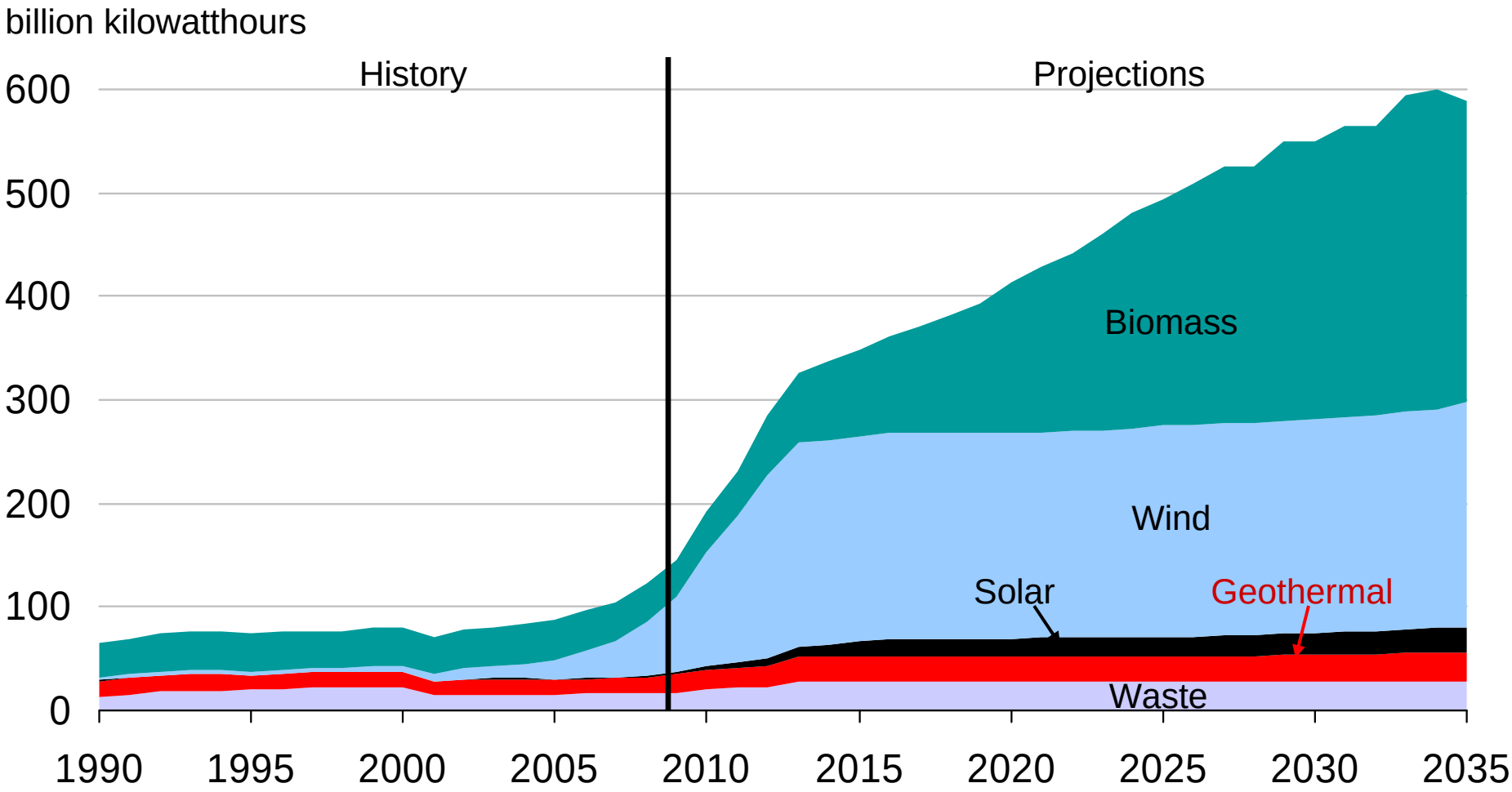
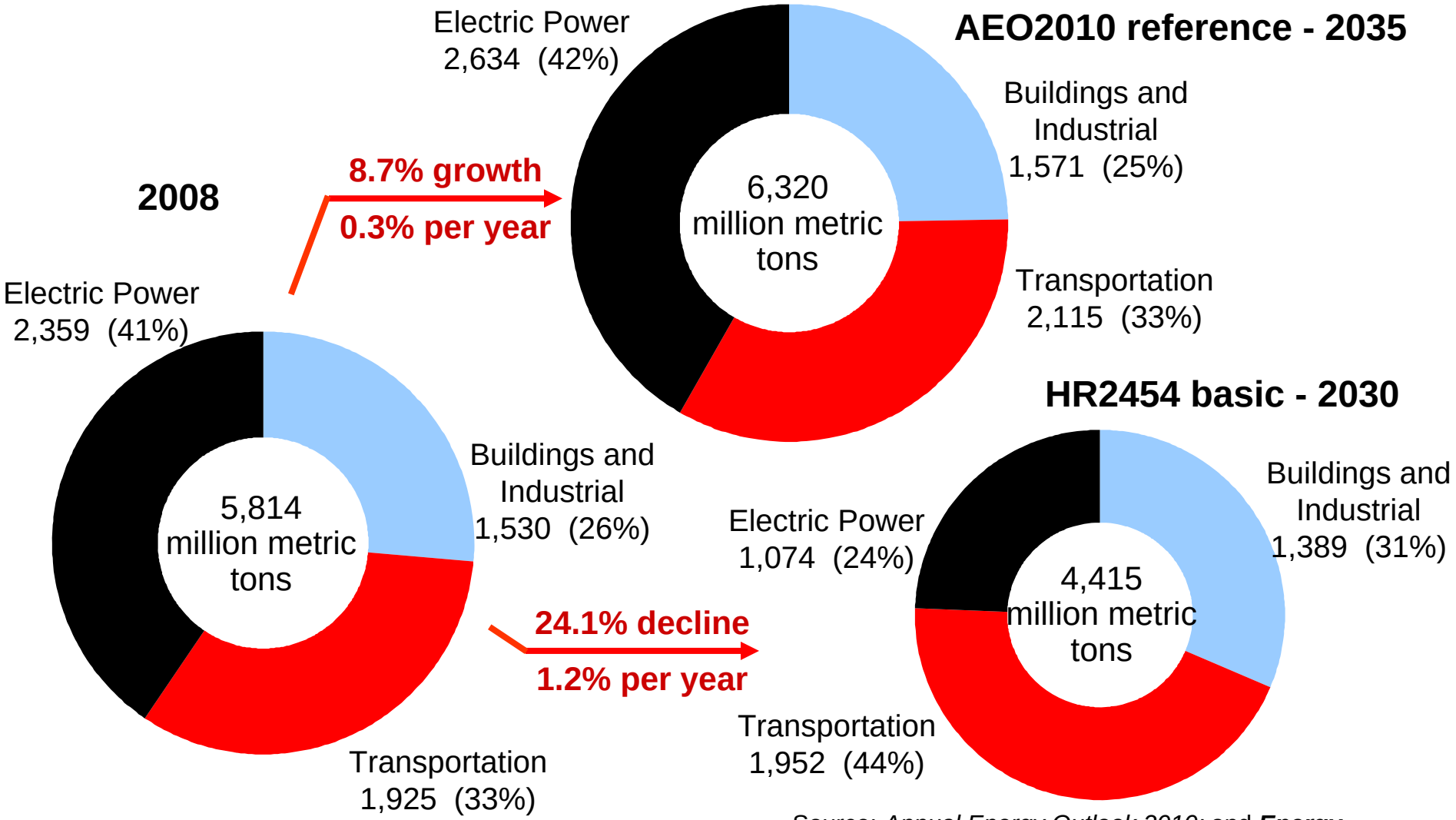
Nonhydropower renewable sources meet 41% of total electricity generation growth from 2008 to 2035



Source: *Annual Energy Outlook 2010*

Assuming no new policies, growth in energy-related CO_2 is driven by electricity and transportation fuel use



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For more information

U.S. Energy Information Administration home page	www.eia.gov
Short-Term Energy Outlook	www.eia.gov/emeu/steo/pub/contents.html
Annual Energy Outlook	www.eia.gov/oiaf/aeo/index.html
International Energy Outlook	www.eia.gov/oiaf/ieo/index.html
Monthly Energy Review	www.eia.gov/emeu/mer/contents.html
National Energy Information Center	(202) 586-8800 Live expert from 9:00 AM – 5:00 p.m. EST Monday – Friday (excluding Federal holidays) email: InfoCtr@eia.doe.gov