

EIA's Early Release Annual Energy Outlook 2012: Focus on U.S. coal use through 2035



Diane Kearney, Operations Research Analyst

Rail Energy Transportation Advisory Committee to the Surface Transportation Board

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Energy Information Administration

- Statistical and analytical agency within the U.S. Department of Energy
- Produces monthly short-term and annual long-term projections
- Produces special analyses of emerging issues and regulatory changes
- EIA's analyses and projections are independent, by law, and should not be seen as representing the views of the Department of Energy, the Administration, or any other organization.

Overall results from the AEO2012 Reference case, which assumes current laws remain unchanged

- Projected growth of energy use slows over the projection period reflecting an extended economic recovery and increasing energy efficiency in end-use applications
- Domestic crude oil production increases, reaching levels not experienced since 1994 by 2020
- Natural gas production increases throughout the projection period and exceeds consumption early in the next decade
- Renewables and natural gas fuel a growing share of electric power generation
- Total U.S. energy-related carbon dioxide emissions remain below their 2005 level through 2035

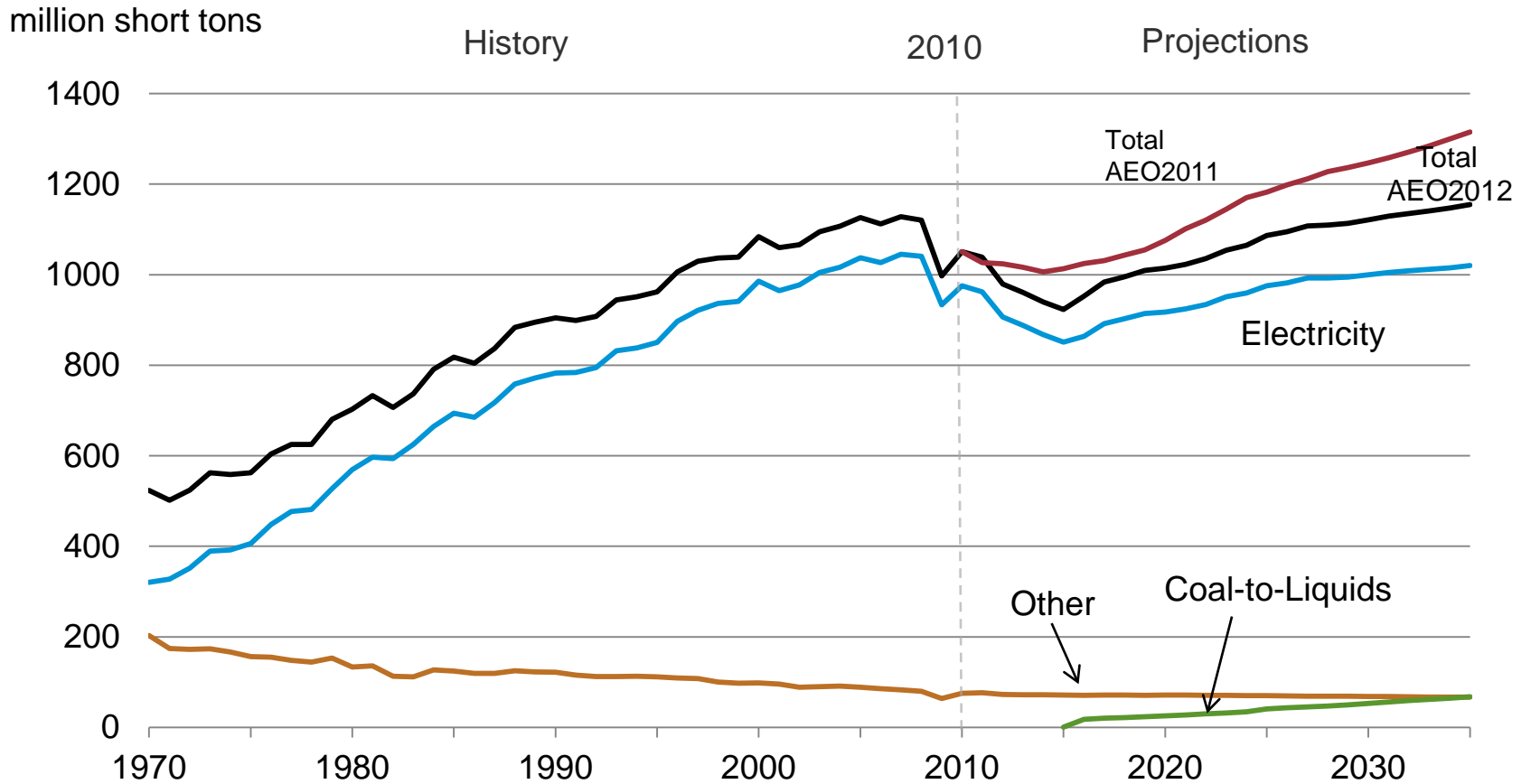
AEO2012: Some relevant assumptions

- Current laws and regulations
 - Includes representation of the Cross State Air Pollution Rule
 - Includes State Renewable Portfolio Standards
 - Includes state regulations on mercury
- More pessimistic coal mining productivity assumptions compared to previous outlook
- 3% higher cost of capital for coal plants (including coal-based synthetic liquid plants) for greenhouse gas intensive projects

AEO2012: Some relevant assumptions (cont.)

- The first commercial coal-based synthetic liquids plant is not allowed until 2015
- 1 gigawatt of coal w/ carbon capture and sequestration (CCS) assumed by 2017 (investment tax credits in the Energy Improvement and Extension Act of 2008 and funding from the American Recovery and Revitalization Act of 2009)

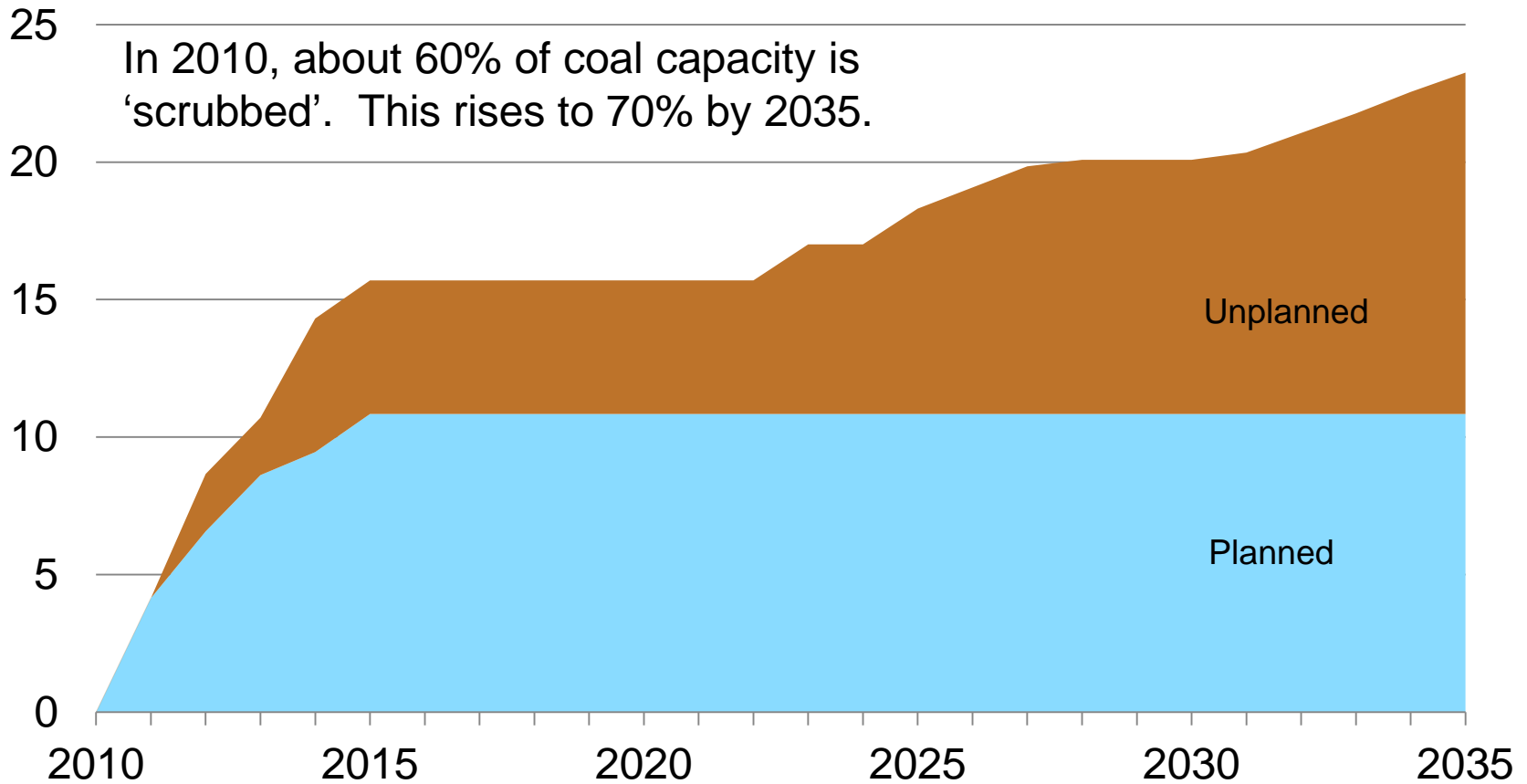
Coal consumption by sector, 1970-2035



Source: EIA, Annual Energy Outlook 2012 Early Release and Annual Energy Outlook 2011

Cumulative SO2 scrubber retrofits in AEO2012, 2011-2035

gigawatts

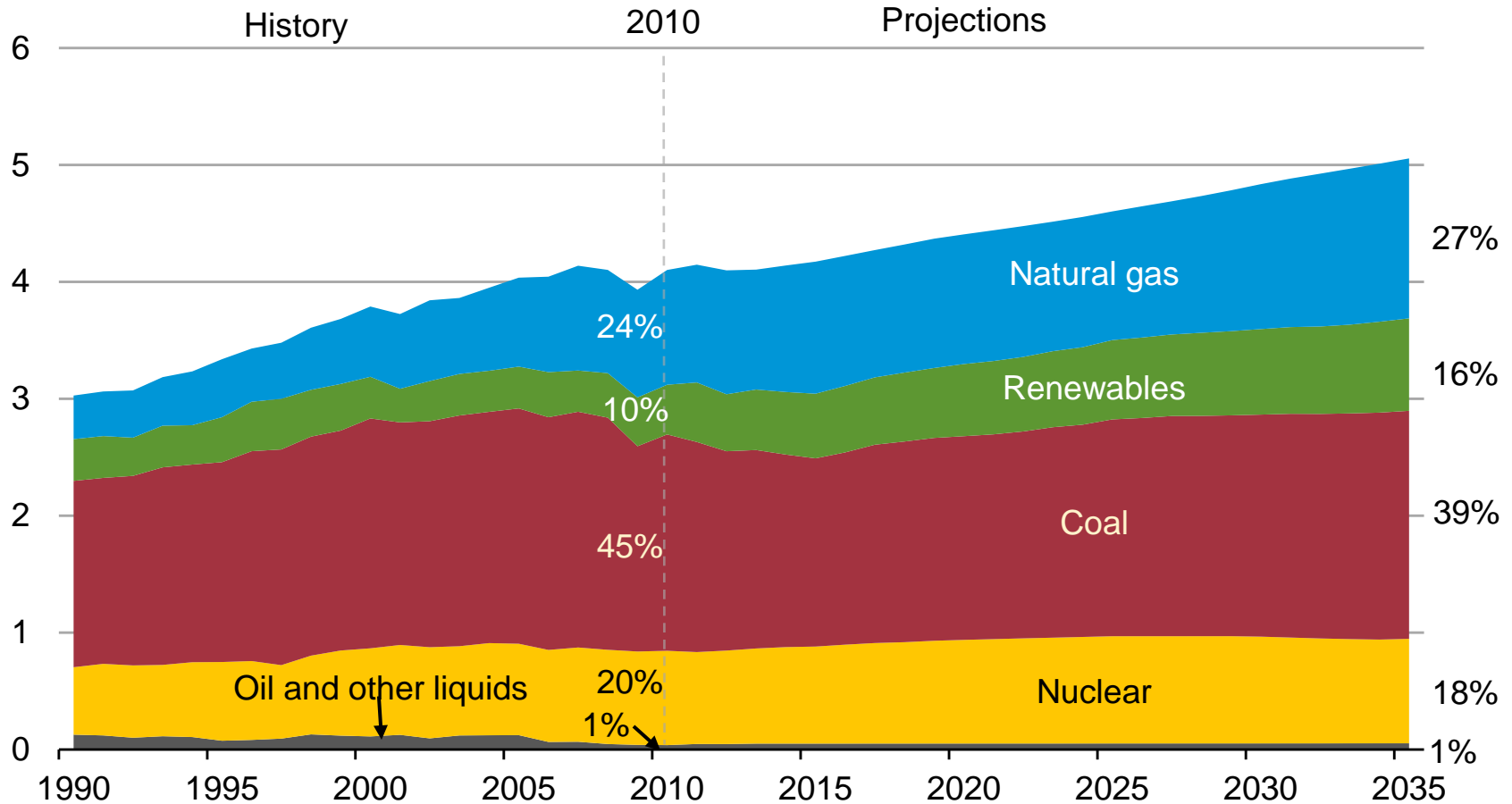


Source: EIA, Annual Energy Outlook 2012 Early Release

Electricity mix gradually shifts to lower-carbon options, with generation from natural gas rising 39% and renewables 84%

electricity net generation

trillion kilowatthours per year

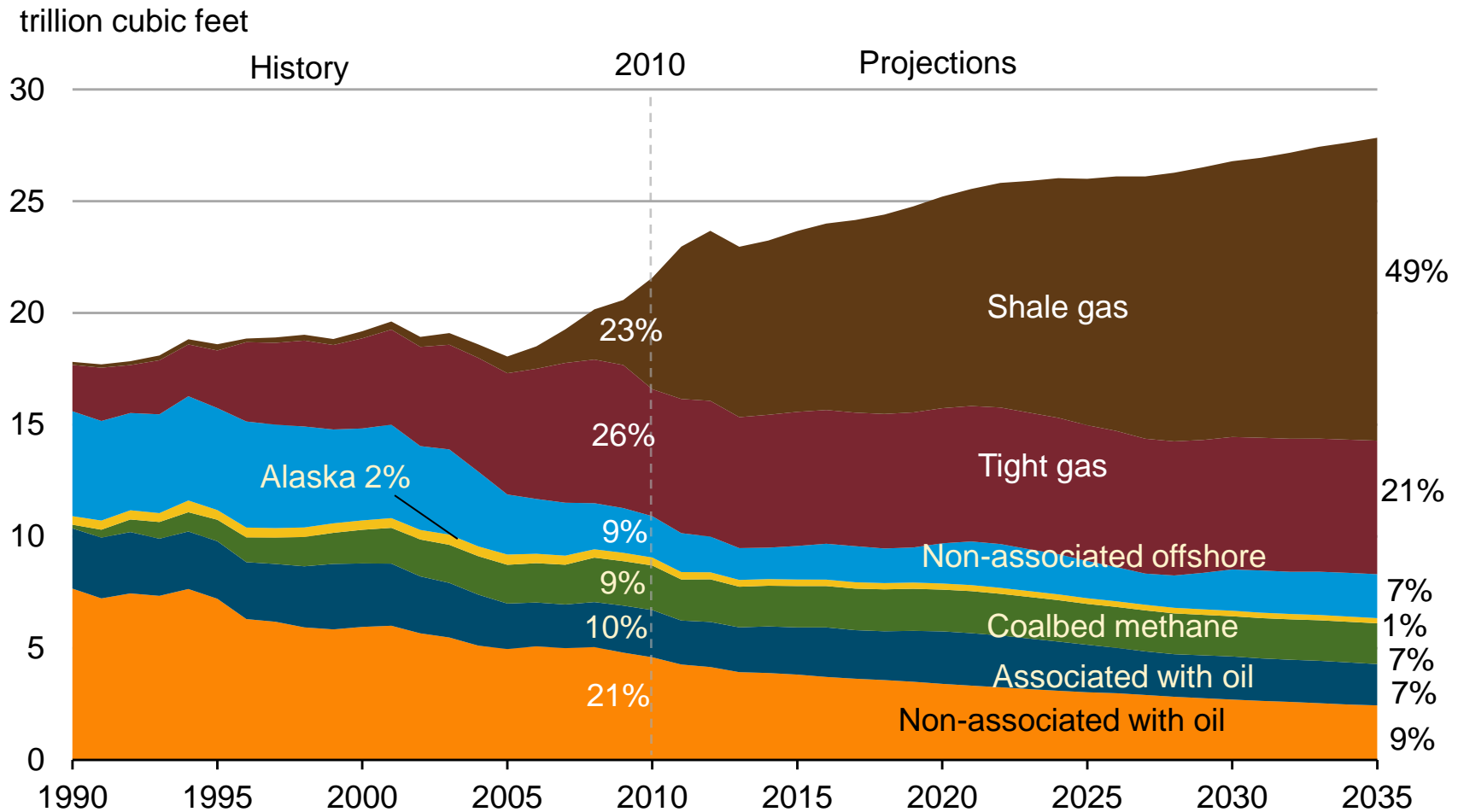


Source: EIA, Annual Energy Outlook 2012 Early Release

AEO2012 coal outlook:

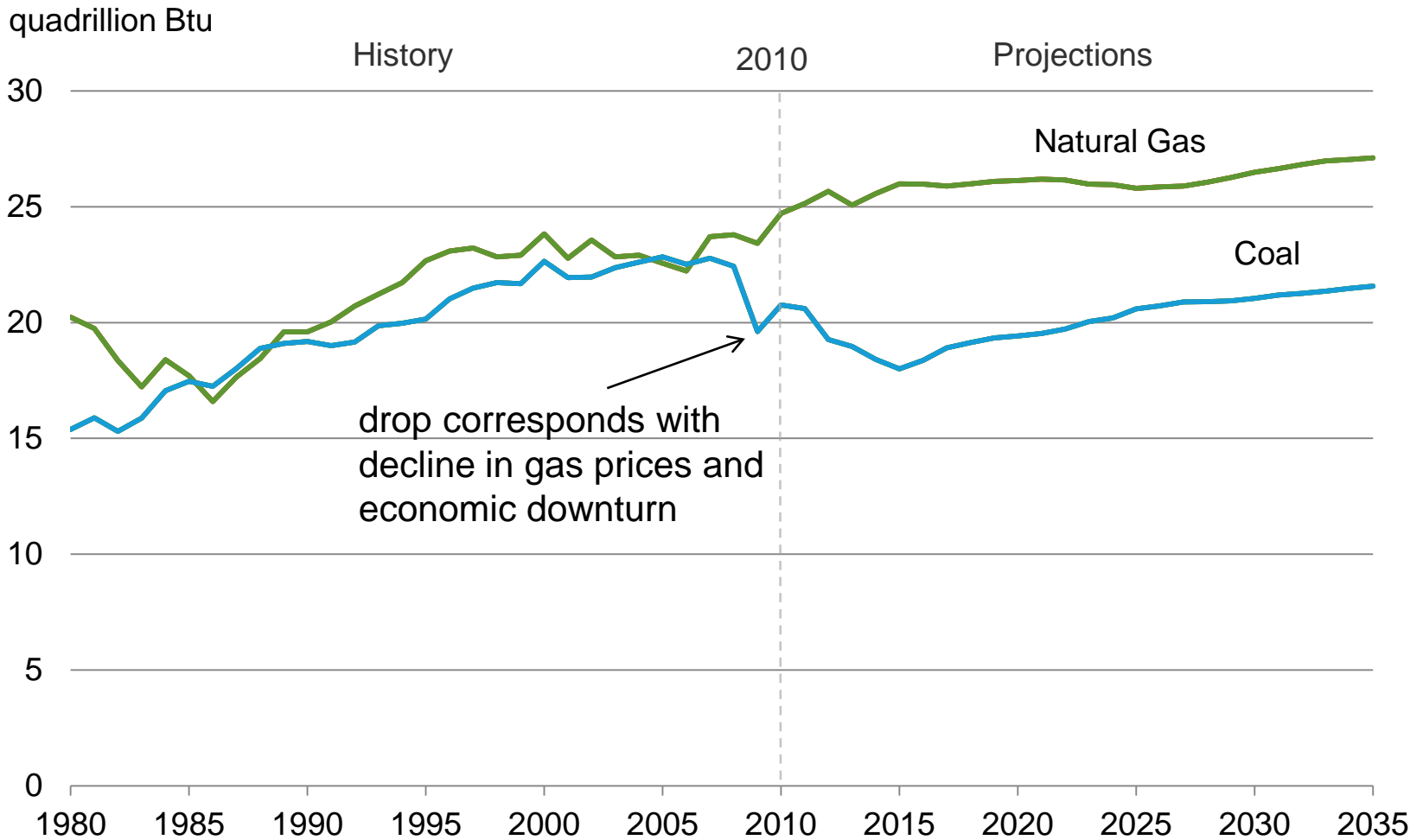
- Coal's share of generation falls to 39% by 2035
 - Low natural gas prices -> lower coal plant utilization with some recovery later in the projection as gas prices rise and electricity demand rises
 - Higher capital costs compared to gas plants -> most new coal plants already under construction (9 gigawatts)
 - CSAPR in combination with lower gas prices and slow growth in electricity demand -> 33 gigawatts of coal retirements
 - Renewable portfolio standards
- Higher minemouth coal prices in AEO2012 compared to previous outlook
- Central Appalachia continues its downward production trend
 - Declining productivity, higher cost coal
- High world oil price outlook makes coal-to-liquids sector economic
- Coal exports rise to 134 million tons by 2035 against the backdrop of continued strong international coal demand in the projection

U.S. natural gas production, 1990-2035



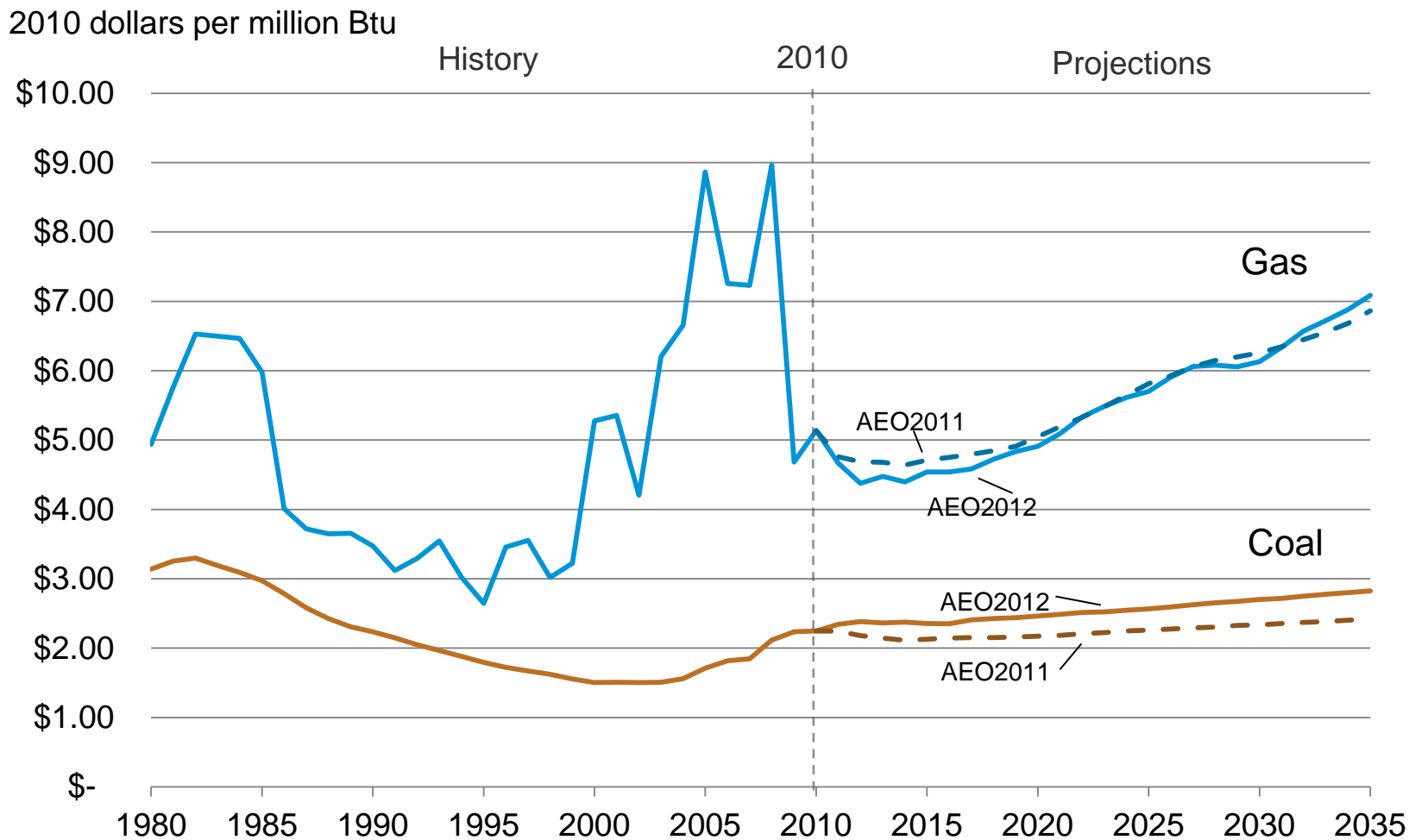
Source: EIA, Annual Energy Outlook 2012 Early Release

Coal versus gas (all sectors), 1980-2035



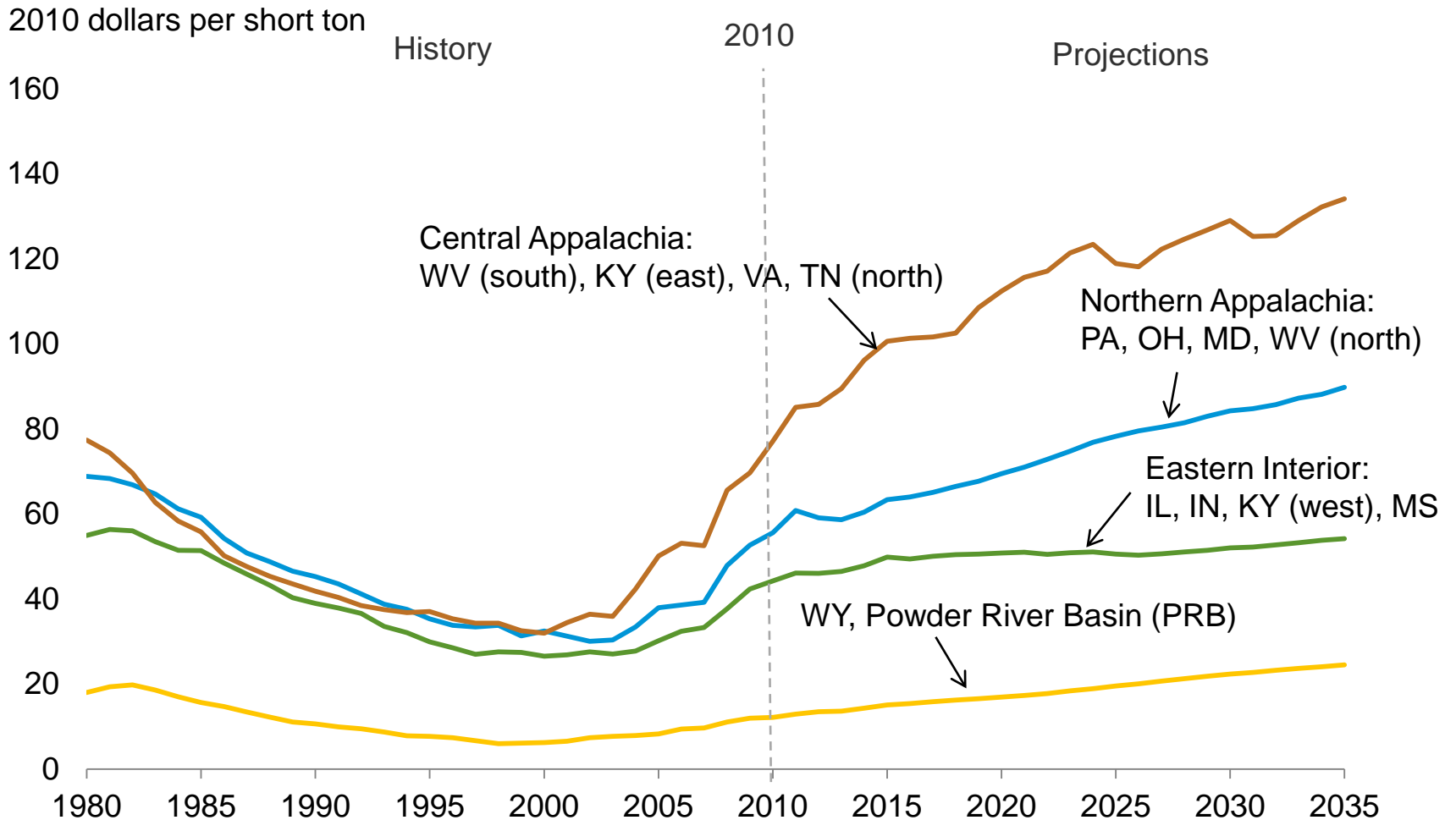
Source: EIA, Annual Energy Outlook 2012 Early Release

Coal and gas prices delivered to the electric power sector, 1980-2035



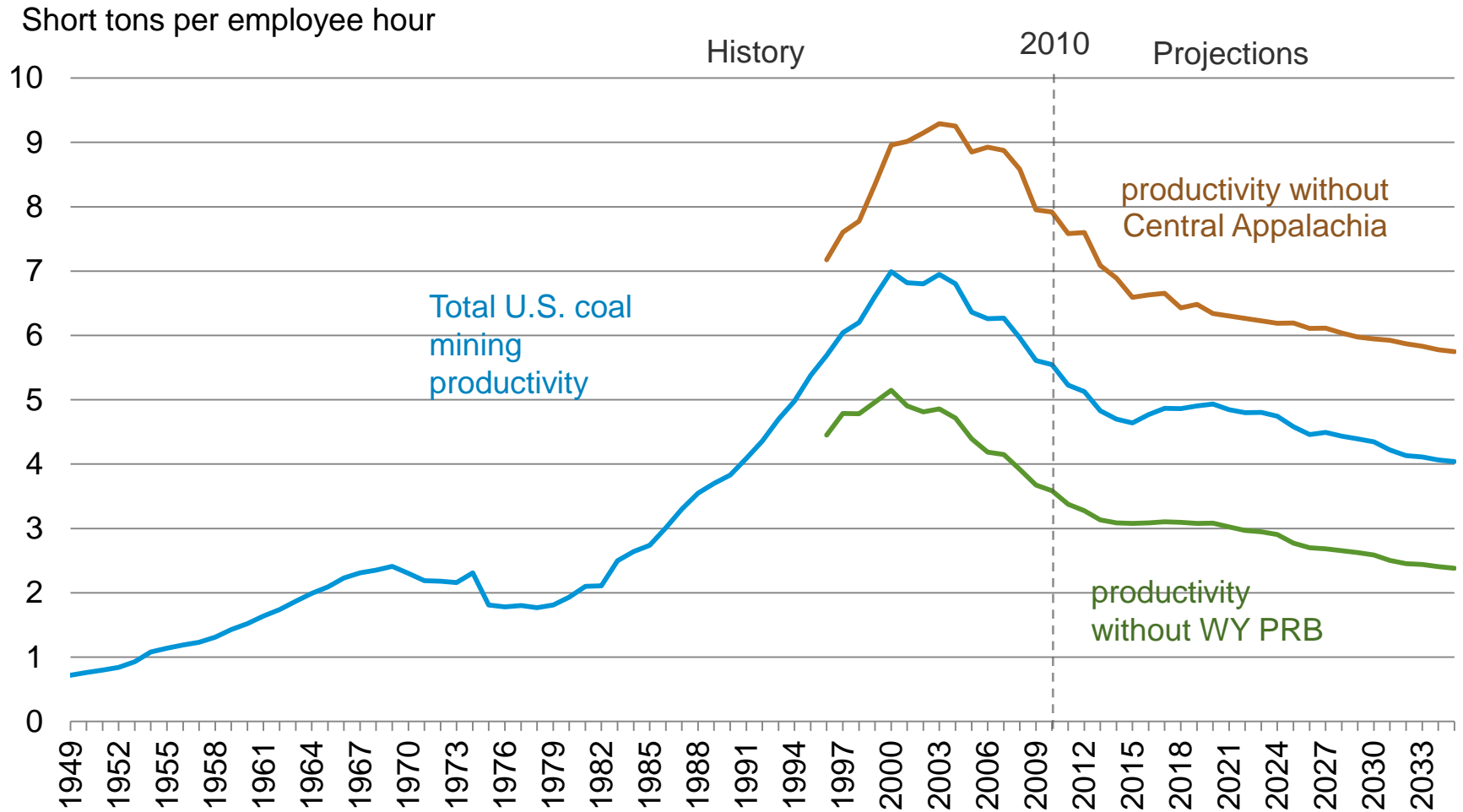
Source: EIA Annual Energy Outlook 2012 Early Release and Annual Energy Outlook 2011

Average minemouth coal prices by selected region, 1980-2035



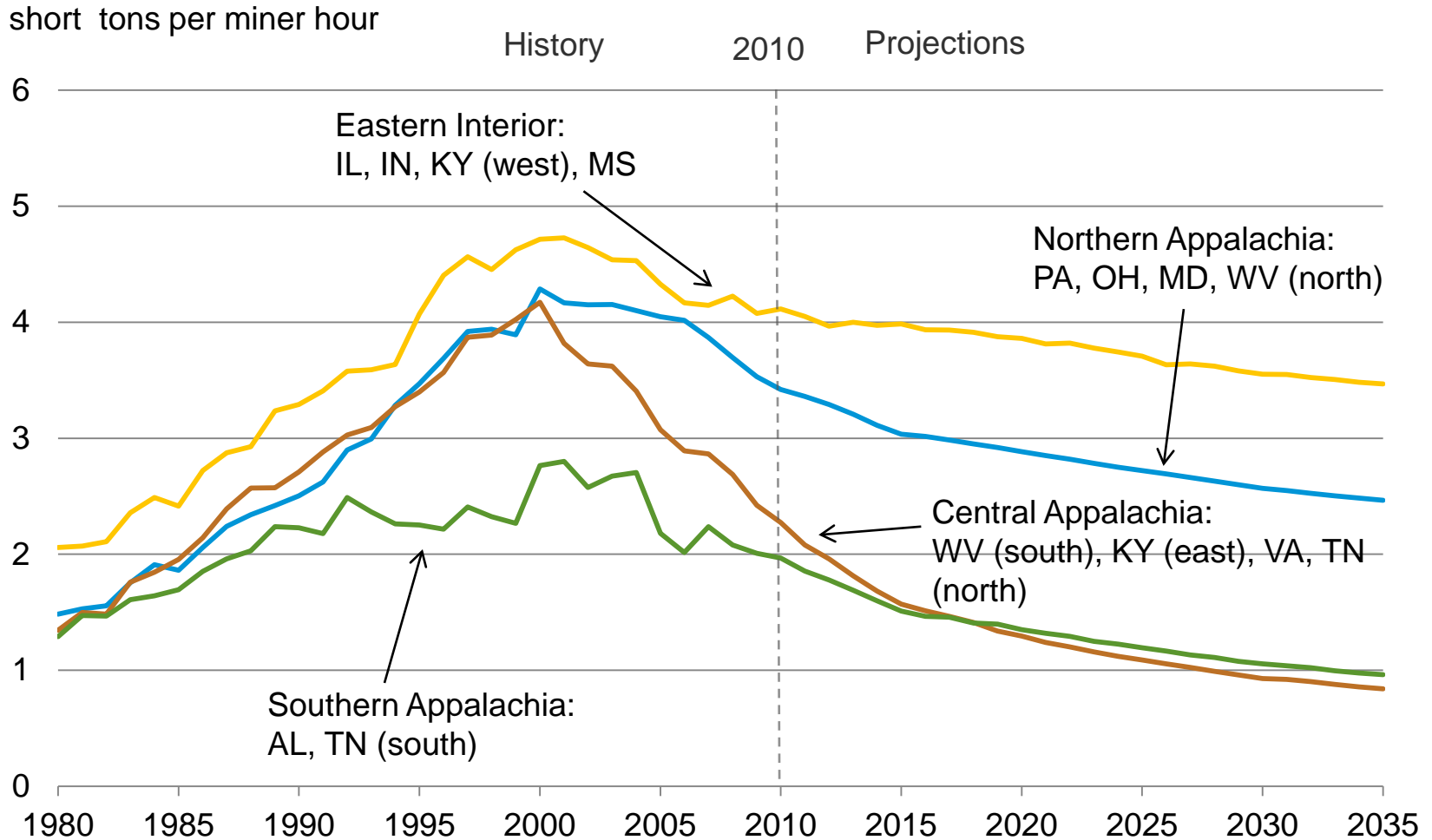
Source: U.S. Energy Information Administration (EIA). **Notes:** Historical price series exclude data for MD, MS, and TN. Historical price data for Wyoming's PRB is represented by data for Campbell county.

Coal mining productivity, 1949-2035



Source: EIA, Annual Energy Outlook 2012 Early Release

Coal Mining Productivity by Region, 1980-2010

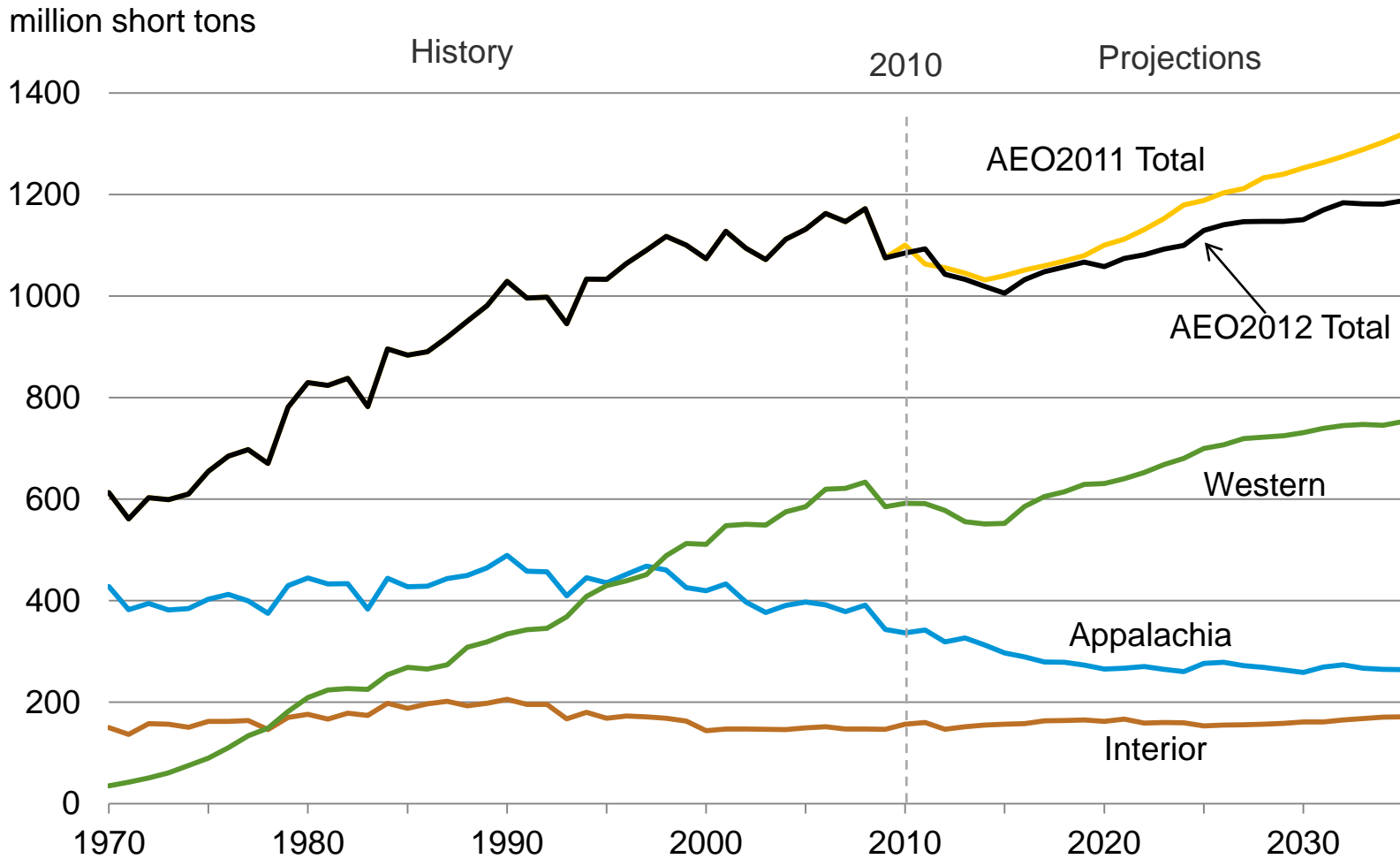


Source: Annual Energy Outlook 2012 Early Release, U.S. Energy Information Administration (EIA); and U.S. Mine Safety and Health Administration.

Average annual growth in coal mining labor productivity for selected supply regions (percent)

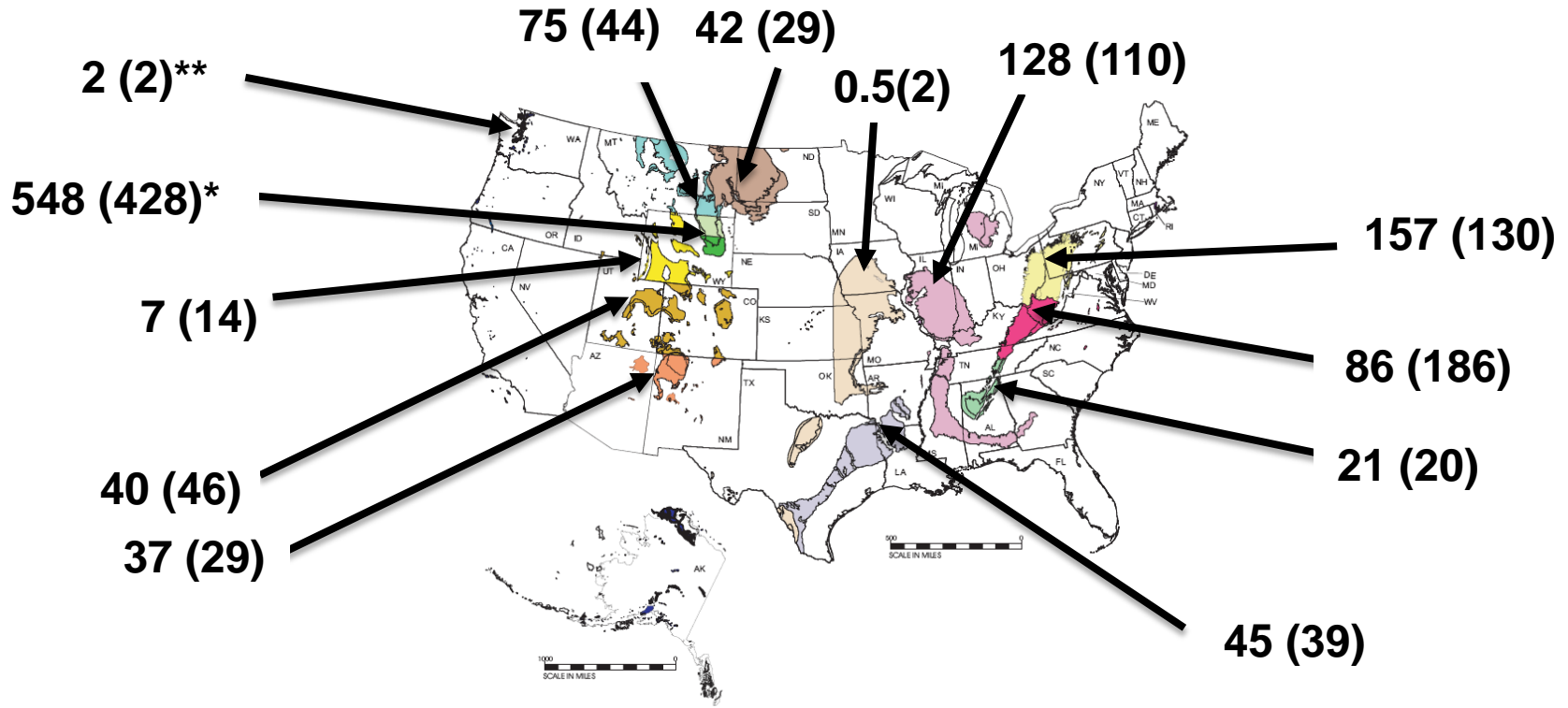
Coal Market Module Supply Region	AEO2012			
	80-90	90-00	00-10	10-35
Northern Appalachia	5.4	5.5	-2.2	-1.3
Central Appalachia	7.3	4.4	-5.9	-3.9
Eastern Interior	4.8	3.7	-1.4	-0.7
Dakota Lignite	2.6	2.4	-2.7	-1.0
Gulf Lignite	6.0	1.0	-3.6	-2.6
Western Montana	4.6	2.0	-2.8	-1.3
Wyoming, Northern Powder River Basin	7.5	3.2	-2.9	-1.9
Wyoming, Southern Powder River Basin	7.2	4.9	-2.5	-1.9
Rocky Mountain	7.8	5.5	-3.5	-2.0
U.S. Average	7.1	6.2	-2.3	-1.3

Coal production by region, 1970-2035



Source: EIA, Annual Energy Outlook 2012 Early Release and Annual Energy Outlook 2011

Coal production, 2035 (and 2010) (million short tons)



- APPALACHIA**
 - Northern Appalachia
 - Central Appalachia
 - Southern Appalachia
- INTERIOR**
 - Eastern Interior
 - Western Interior
 - Gulf Lignite
- NORTHERN GREAT PLAINS**
 - Dakota Lignite
 - Western Montana
 - Wyoming, Northern Powder River Basin
 - Wyoming, Southern Powder River Basin
 - Western Wyoming
- OTHER WEST**
 - Rocky Mountain
 - Southwest
 - Northwest

**U.S. Total:
1,188 (1,084)**

* Includes production from all mines in Wyoming's Powder River Basin.

** Includes production from mines in both Alaska and Washington.

Source: EIA, Annual Energy Outlook 2012 Early Release

Expected changes in the AEO2012 Reference case for the complete release

- Incorporation of Mercury and Air Toxics Standards (MATS) issued by EPA in December, 2011
- Updated historical data and equations in the transportation sector, based on revised data from the National Highway Traffic Safety Administration (NHTSA) and Federal Highway Administration
- Revised long-term macroeconomic projection based on an updated long term projection from IHS Global Insight, Inc.
- New model for cement production in the industrial sector
- Updated handling of biomass supply

For more information

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

Annual Energy Outlook | www.eia.gov/forecasts/aeo

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

International Energy Outlook | www.eia.gov/forecasts/ieo

Monthly Energy Review | www.eia.gov/totalenergy/data/monthly

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For more information

diane.kearney@eia.gov, (202) 586-2415

michael.mellish@eia.gov, (202) 586-2136

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