

# Energy-Related Carbon Emissions



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*for*

*Carbon Forum - North America*

*October 1, 2012 Washington, D.C.*

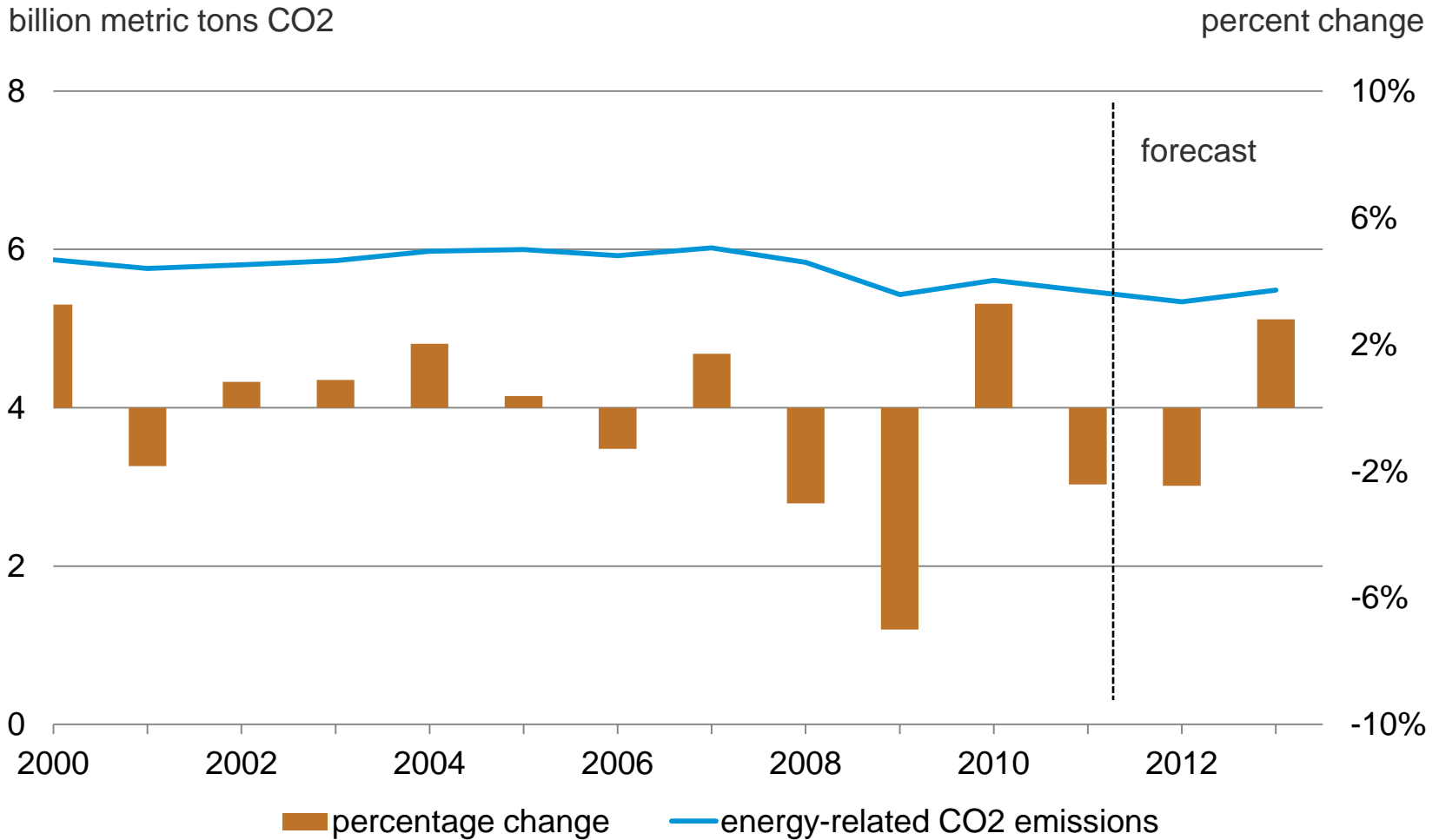
*by*

*Adam Sieminski, Administrator*

# What's driving recent U.S. trends in energy-related carbon dioxide emissions?

- Gas/coal substitution
  - Gas prices in July 2012 (Henry Hub) were 33 percent below July 2011
  - Coal consumption for electricity generation fell 8 percent from July 2011 to July 2012
  - Abundant supply from shale plays and warm weather have driven natural gas prices down
- Growth in renewables
  - Renewables other than hydropower were up seven-fold in 2011 over 2002
  - Renewable portfolio standards allow renewables to grow despite relatively low natural gas prices
- Lower economic growth
  - While the U.S. economy grew in 2011 and is projected to show growth in 2012, it did not grow as much as 2010 when emissions increased by 3.3 percent

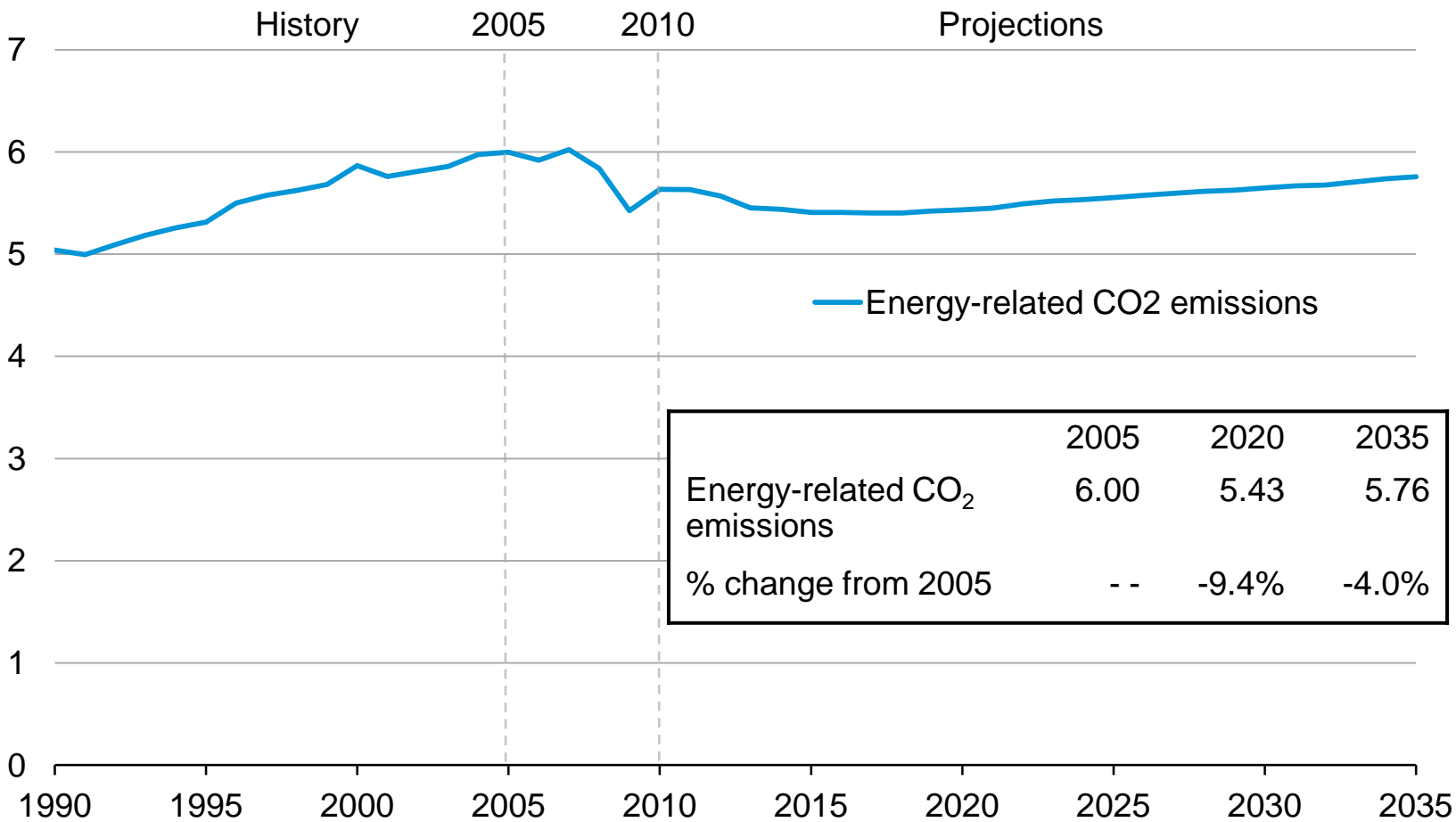
# Emissions have been declining the last two years



Source: U.S. Energy Information Administration Short-term Energy Outlook, September 2012

# Energy-related CO<sub>2</sub> emissions never get back to pre-recession levels in the AEO2012 Reference case

energy carbon dioxide emissions  
billion metric tons



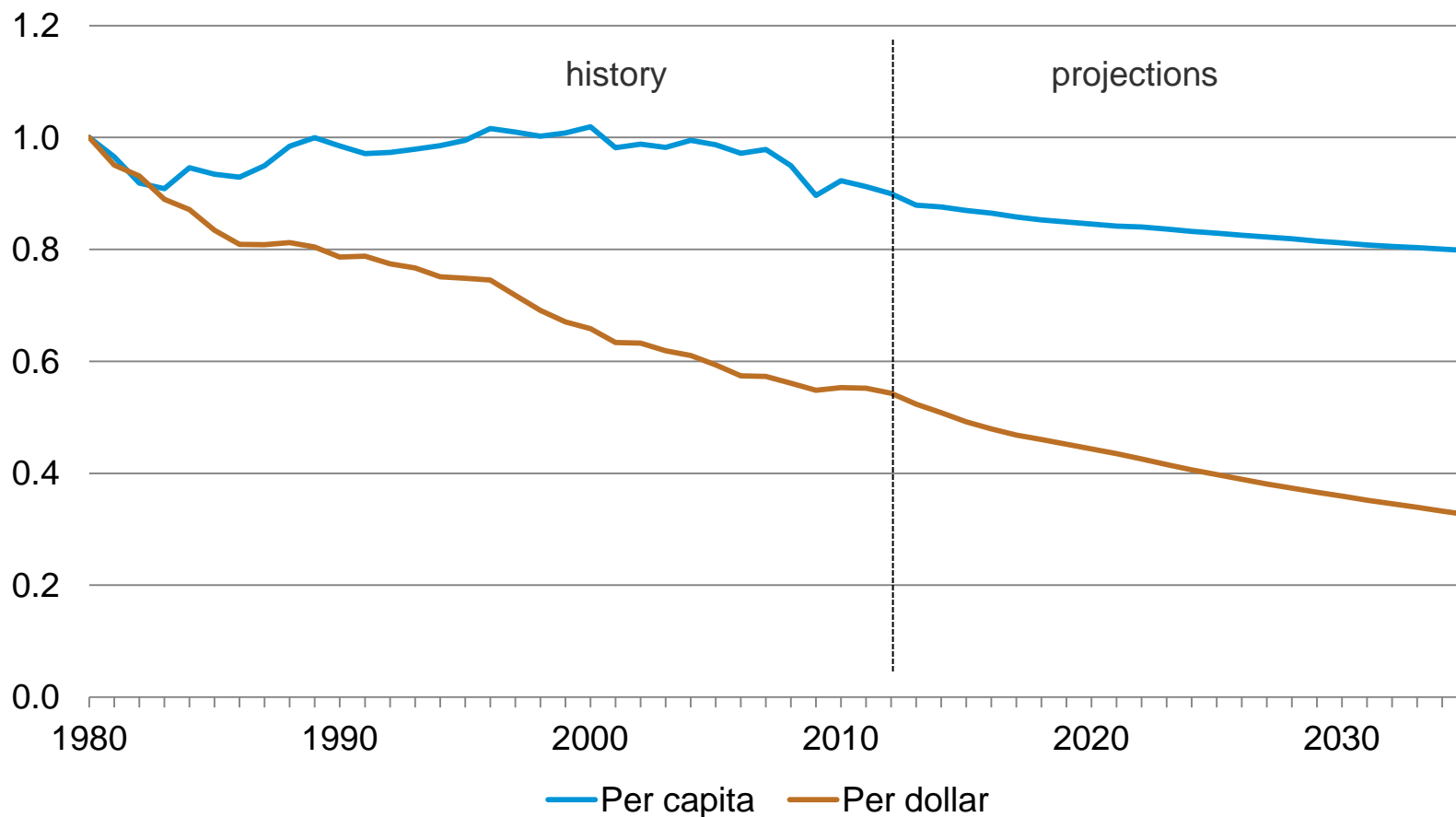
Source: EIA, Annual Energy Outlook 2012

# What is the longer-terms emissions trend?

- Over the next 25 years or so, energy-related carbon dioxide emissions are expected to grow only moderately such that by 2035 emissions of 5,758 MMTCO<sub>2</sub> will remain below the 2005 level of 5,996 MMTCO<sub>2</sub>
- The AEO reference case only includes existing legislation, however, the possibility of future legislation can affect investment decisions in emissions-intensive technologies
- The U.S. economy continues to get less energy intensive over the forecast horizon due to both structural changes and changes in energy efficiency.

# Energy use per capita and per dollar of gross domestic product 1980 – 2035

values indexed to 1980



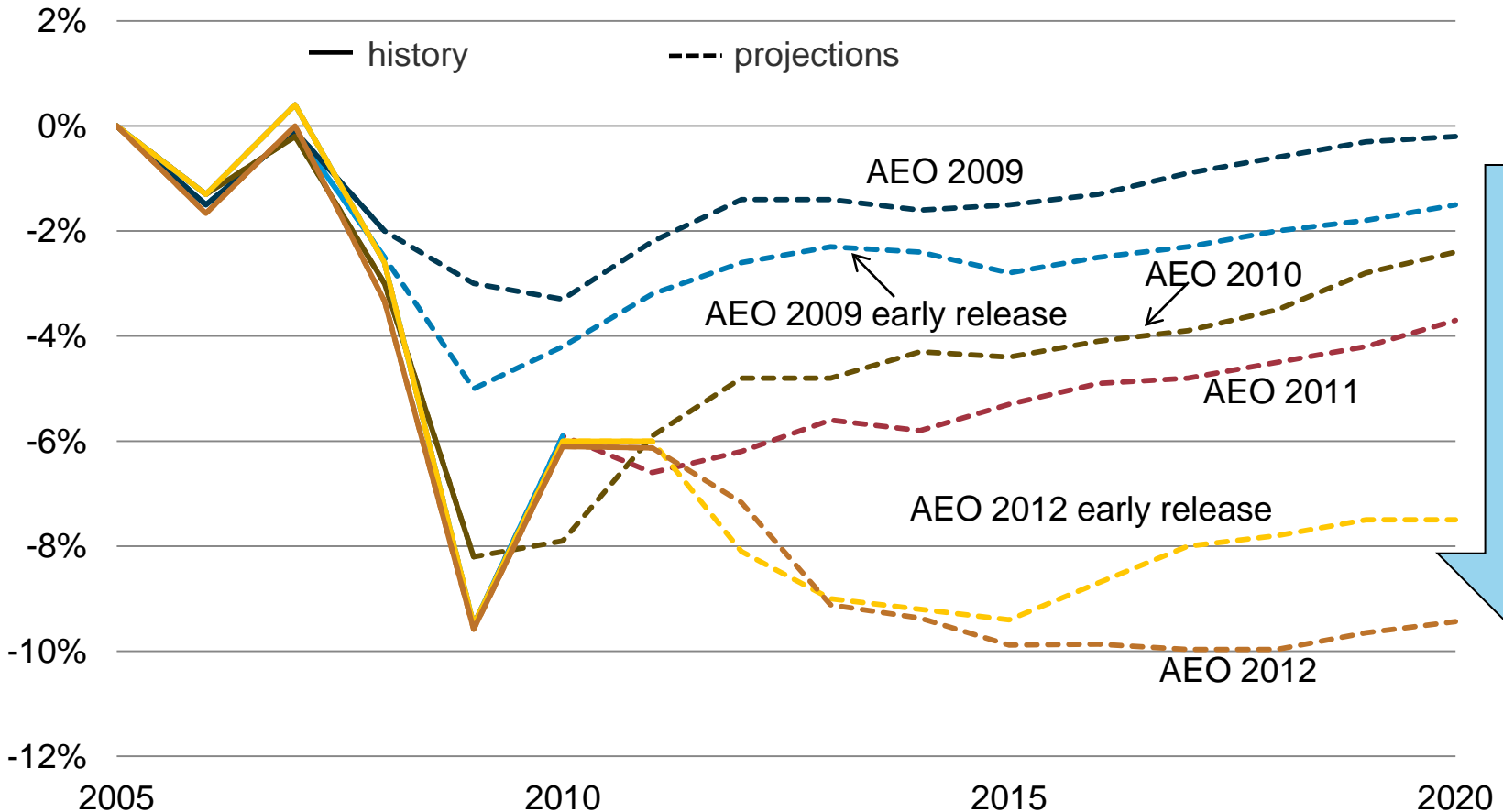
Source: U.S. Energy Information Administration Annual Energy Outlook 2012

# Projections of U.S. energy-related carbon emissions have been falling

- There has been a downward trend in emissions projections in recent *AEOs*
- When the American Recovery and Reinvestment Act was added to *AEO2009* this reduced emissions projected for 2020 by about 2 percent
- In subsequent *AEOs* and including the updated and extended versions of *AEO2012* emission projections have been reduced further to over 10 percent below the original *AEO2009* projection for 2020

# Reductions in U.S. energy-related carbon dioxide projections since AEO 2009

U.S. energy-related CO2 reductions  
percent change from 2005



Note: AEO 2009 early release did not include ARRA funding while AEO 2009 did.

Source: U.S. Energy Information Administration Annual Energy Outlooks, 2009-2012



# How the United States compares to the rest of the world

- While U.S. carbon dioxide emissions have been relatively flat over the past decade, China's emissions have nearly tripled as strong economic growth drove an increase in fossil fuel use.
- In 2007, China's emissions exceeded those of the United States for the first time and by 2010, China's total energy-related carbon dioxide emissions were 48 percent higher than the U.S. level.
- EIA expects China's emissions to account for nearly one-third of the world's total emissions by 2035, as robust economic growth and continued reliance on carbon-intensive fossil fuels such as coal are used meet its energy needs.

# 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/aeo](http://www.eia.gov/aeo)

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

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

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