
Analysis of Proposed Policy at EIA

ACEEE 30th Anniversary Analysis Conference Scoring/Assessing Policy Proposals

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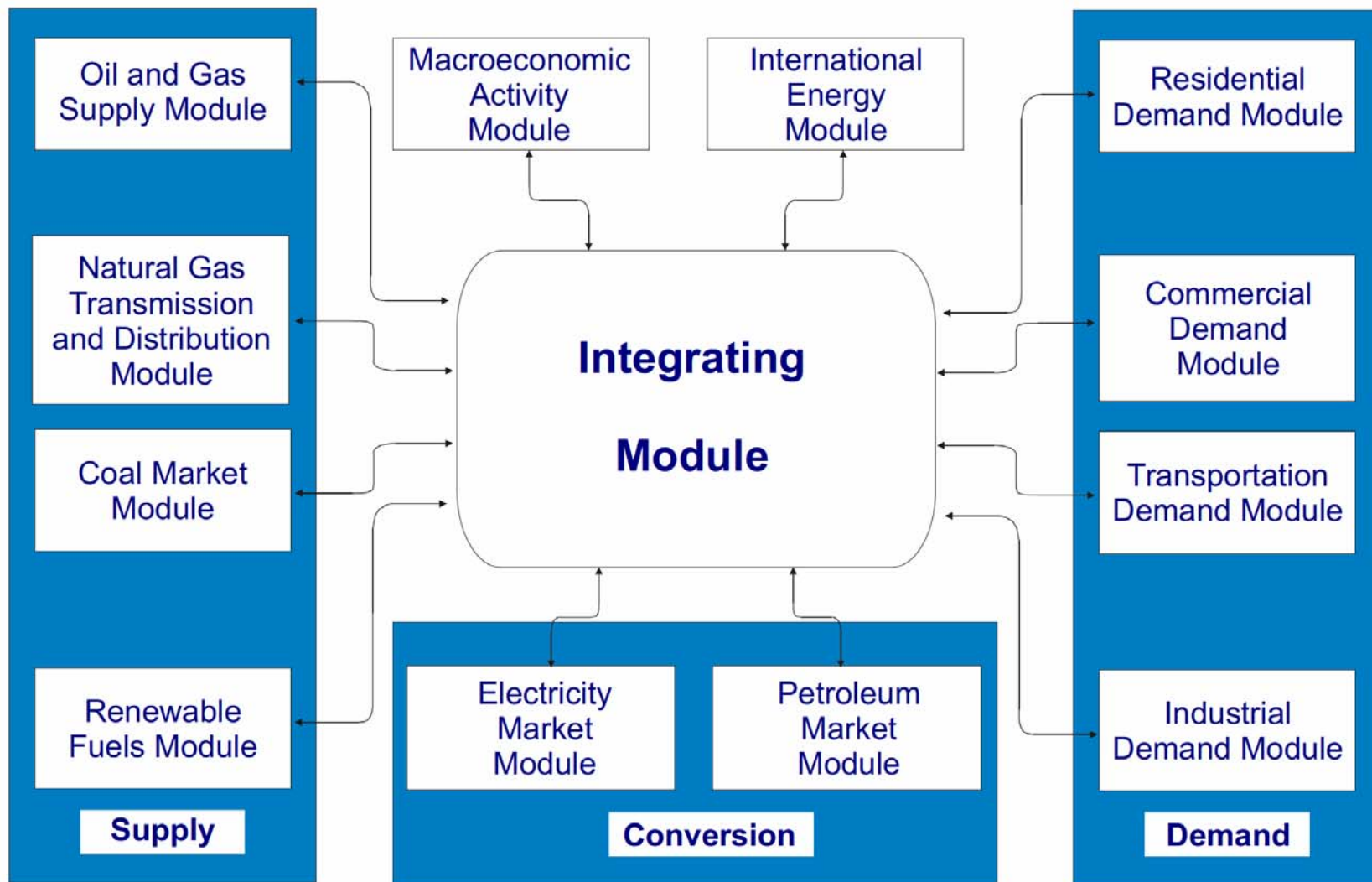
Overview

- EIA's analytical capability
- Capturing a range of impacts and dealing with uncertainty
- Insights from EIA's analysis of HR 2454

Analysis focus is consistent with EIA's statutory mission and expertise

- Impacts of proposals on energy choices by consumers and producers
- Implications of energy decisions on the economy
- *Annual Energy Outlook* Reference case provides a starting point based on technological and demographic trends, current laws and regulations, and consumer behavior derived from available data
- Modeling horizon is about 25 years (through 2035)
- Studies do not account for potential health or environmental benefits

The National Energy Modeling System (NEMS) is designed to represent U.S. energy market interactions



NEMS can be used to analyze the impact of a variety of proposed initiatives

- Energy production and use
- Potential impact of new and advanced energy production, conversion, and consumption technologies
- The impact and cost of greenhouse gas control
- The impact of increased use of renewable energy sources
- Potential savings from increased efficiency of energy use
- Impact of regulations on the use of alternative or reformulated fuels

Technology representation in NEMS facilitates depiction of specific policy options

- Explicit technology representations (efficiencies, capital and O&M costs, capacity factors, date commercial, equipment life)
 - residential and commercial
 - transportation
 - electricity generation
 - natural gas transmission and distribution
 - refineries
- Indirect technology representation with technological progress over time
 - oil, gas, and coal supply
 - industrial sector demand – except for new combined heat and power and motors

An analysis often evolves through a dialogue with the requesting party

- EIA receives an initial analysis request
- Requester specifies the scenarios and assumptions for the analysis; EIA begins evaluation of what can be modeled and how
- EIA may ask for additional information needed and confirmation on modeling approach, identify provisions that will not be addressed, and provide estimated timeframe for completion
- Scope of analysis and scenarios may be refined based on information exchange and required completion date
- Dialogue is often an iterative process

Recent EIA service reports

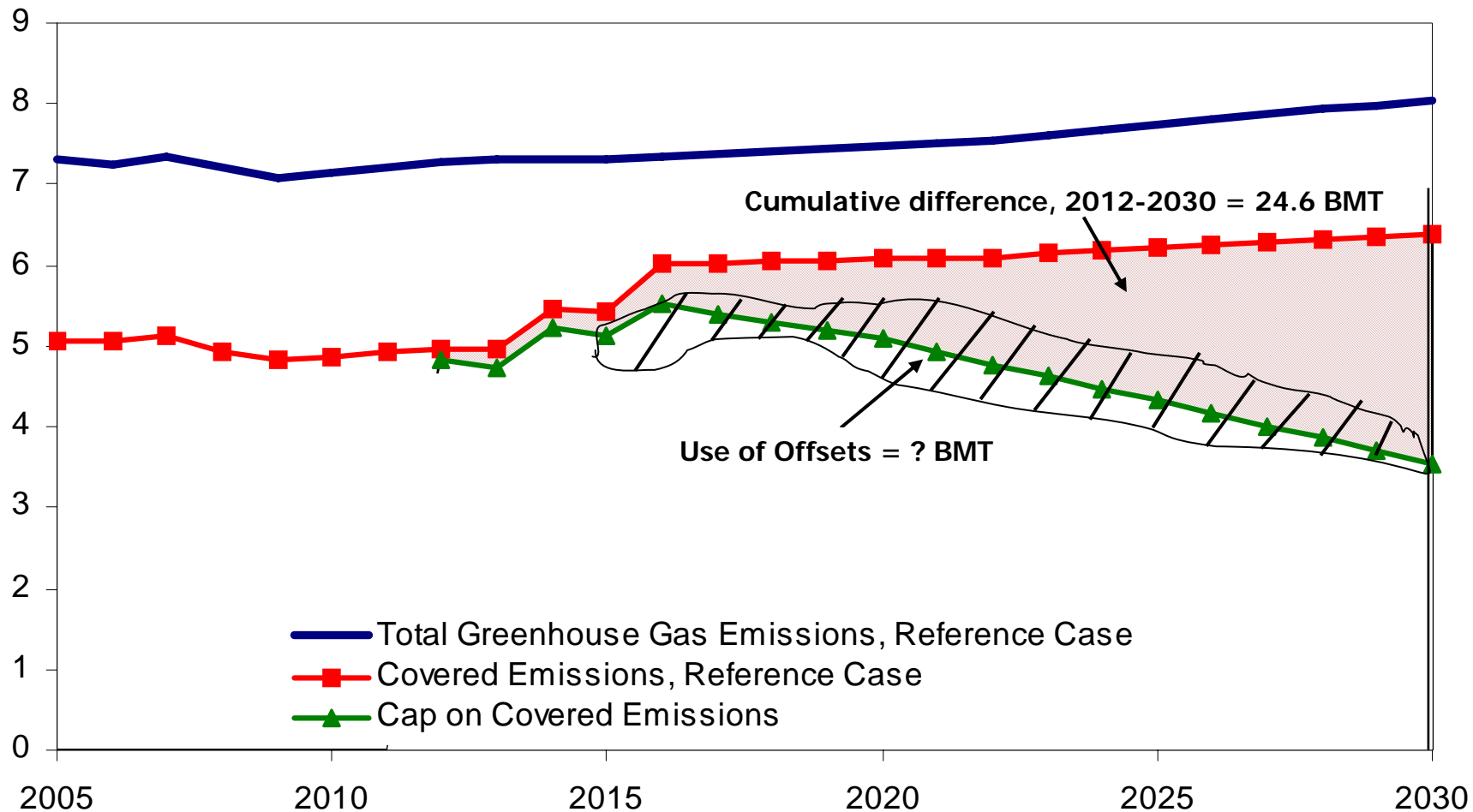
- Based on the Updated *Annual Energy Outlook 2009* Reference case
 - Impacts of a 25-percent Renewable Electricity Standard as Proposed in the American Clean Energy Security Act Discussion (April 2009)
 - **Energy Market and Economic Impacts of HR 2454, the American Clean Energy and Security Act of 2009 (ACESA) (August 2009)**
- Based on the *Annual Energy Outlook 2010* Reference case
 - Energy Market and Economic Impacts of the American Power Act of 2010 (APA) (May 2010)
 - Analysis of Selected Provisions of the Domestic Manufacturing and Energy Jobs Act of 2010 (October 2010)

EIA's analysis of ACESA focuses on key provisions

- Cap and trade program for GHG's other than hydro-fluorocarbons, including provisions for allowance allocation
- Combined efficiency and renewable energy standard for electricity sellers
- Carbon capture and storage (CCS) demonstration and early deployment program
- Federal building code updates for residential and commercial buildings and Federal efficiency standards for lighting and other appliances
- Smart grid peak savings program

ACESA requires 24.6- billion-metric-ton reduction in covered GHG emissions over 2012-2030; actual reductions depend on offset use and banking behavior

CO₂-equivalent emissions, billion metric tons

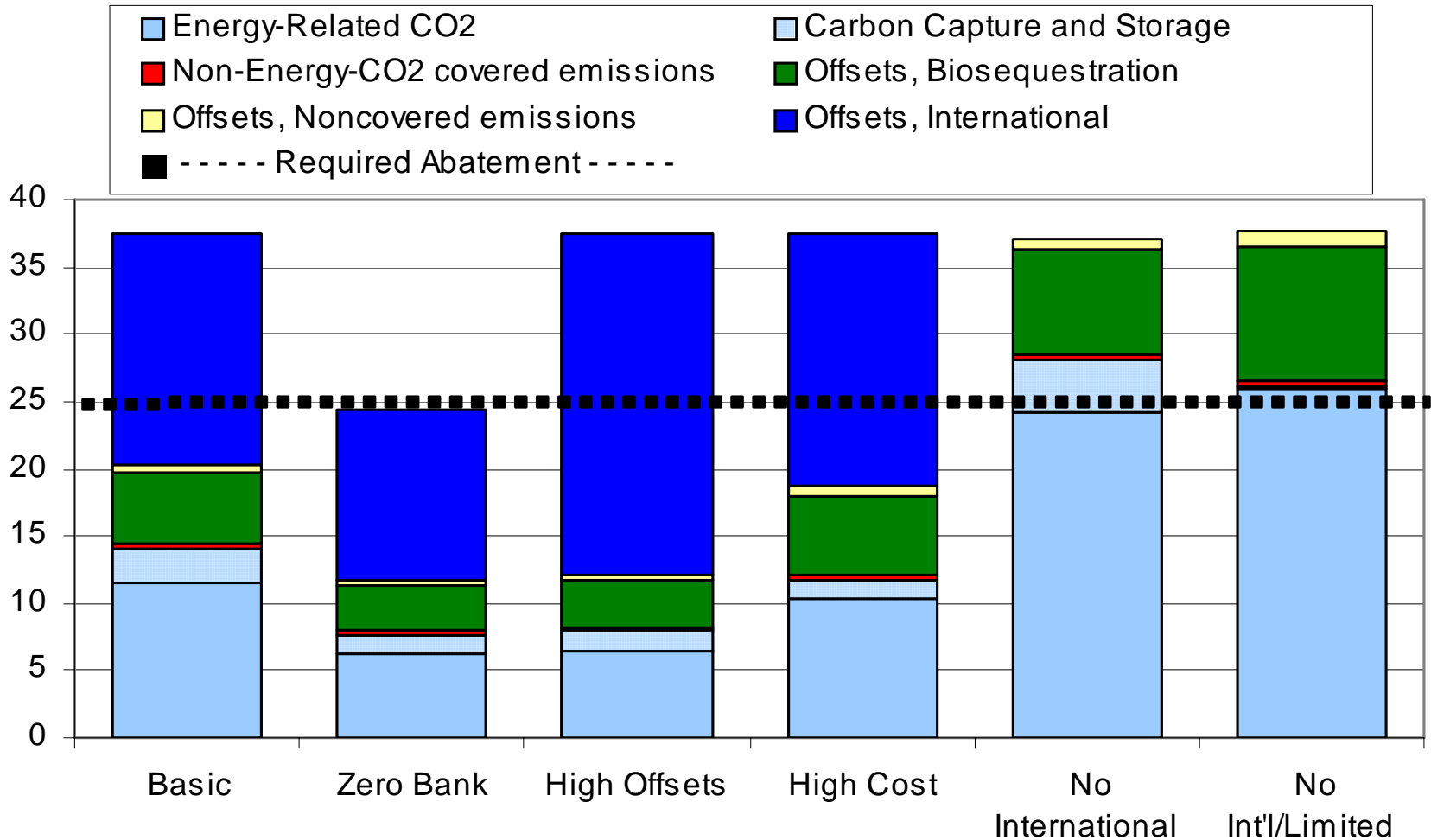


EIA's analysis cases are designed to address important uncertainties

Case Name	Assumptions
Reference	<i>Updated AEO2009 Reference Case, which includes the provisions of the American Recovery and Reinvestment Act (ARRA).</i>
Illustrative Policy Cases	
Basic	Integrated analysis of all of the modeled provisions of Hr. 2454(ACESA). Build allowance bank through 2030 to use thereafter.
No International Offsets	Same as Basic but assumes international offsets are too expensive or unable to meet the certification requirements for use.
No International / Limited Tech	Same as Basic but limits additions of new nuclear, fossil with CCS and biomass gen to reference case levels. Also no international offsets.

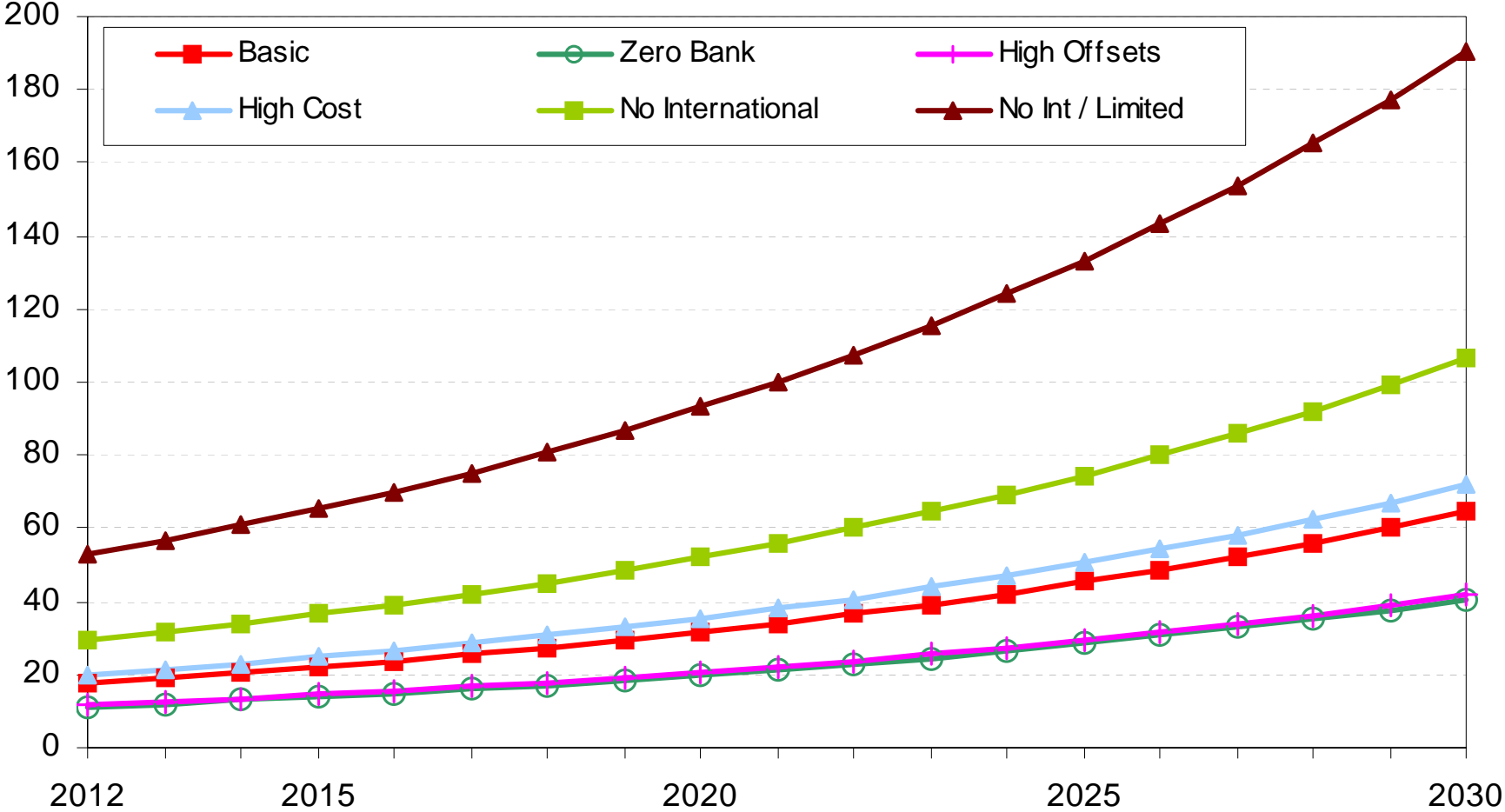
Offsets comprise the majority of compliance with the ACESA cap, except in cases where their availability is limited

Cumulative compliance, 2012-2030 (billion metric tons)



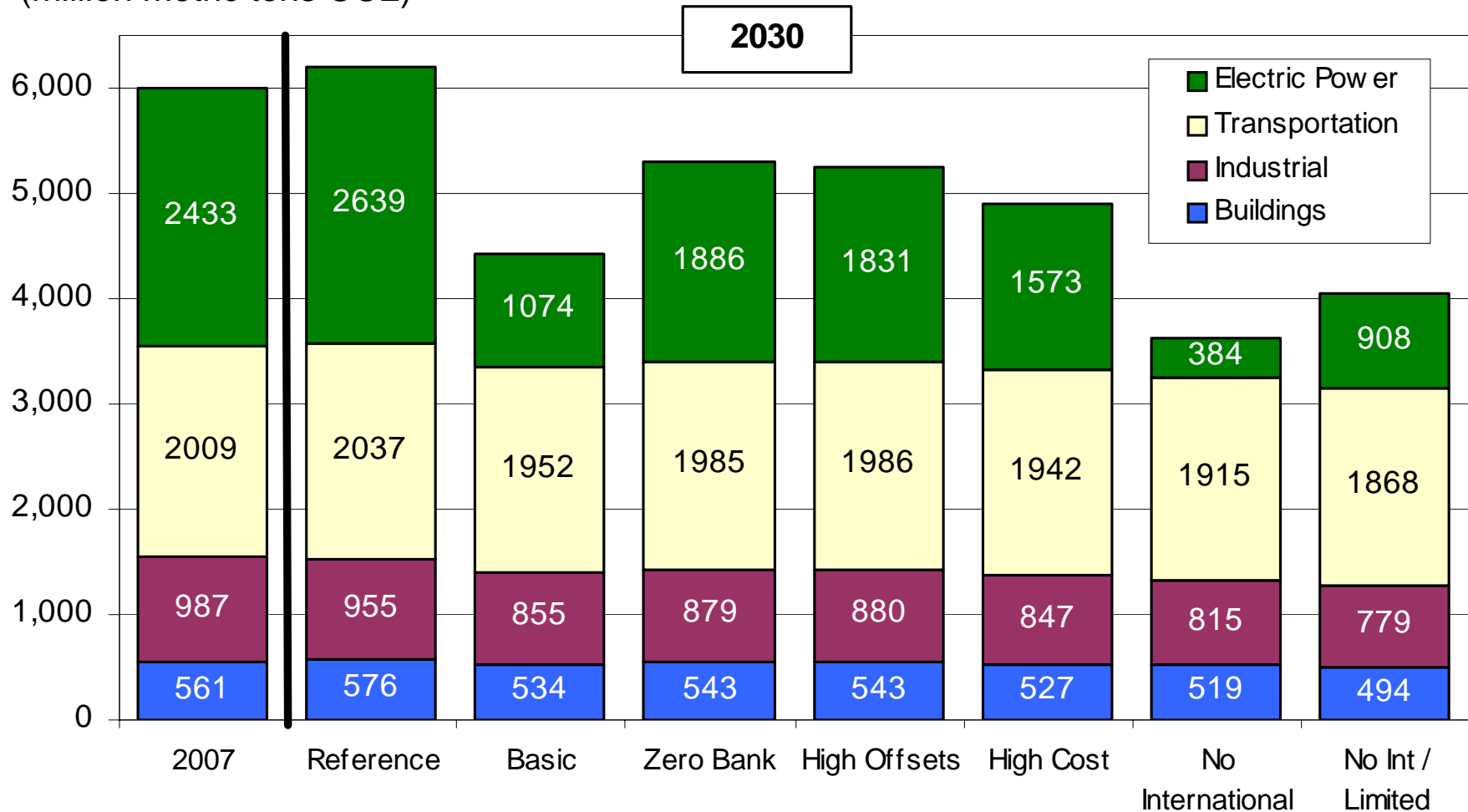
Allowance prices depend on the availability and cost of offsets and low/no carbon electricity generation technologies

(2007 dollars per metric ton CO₂-equivalent)



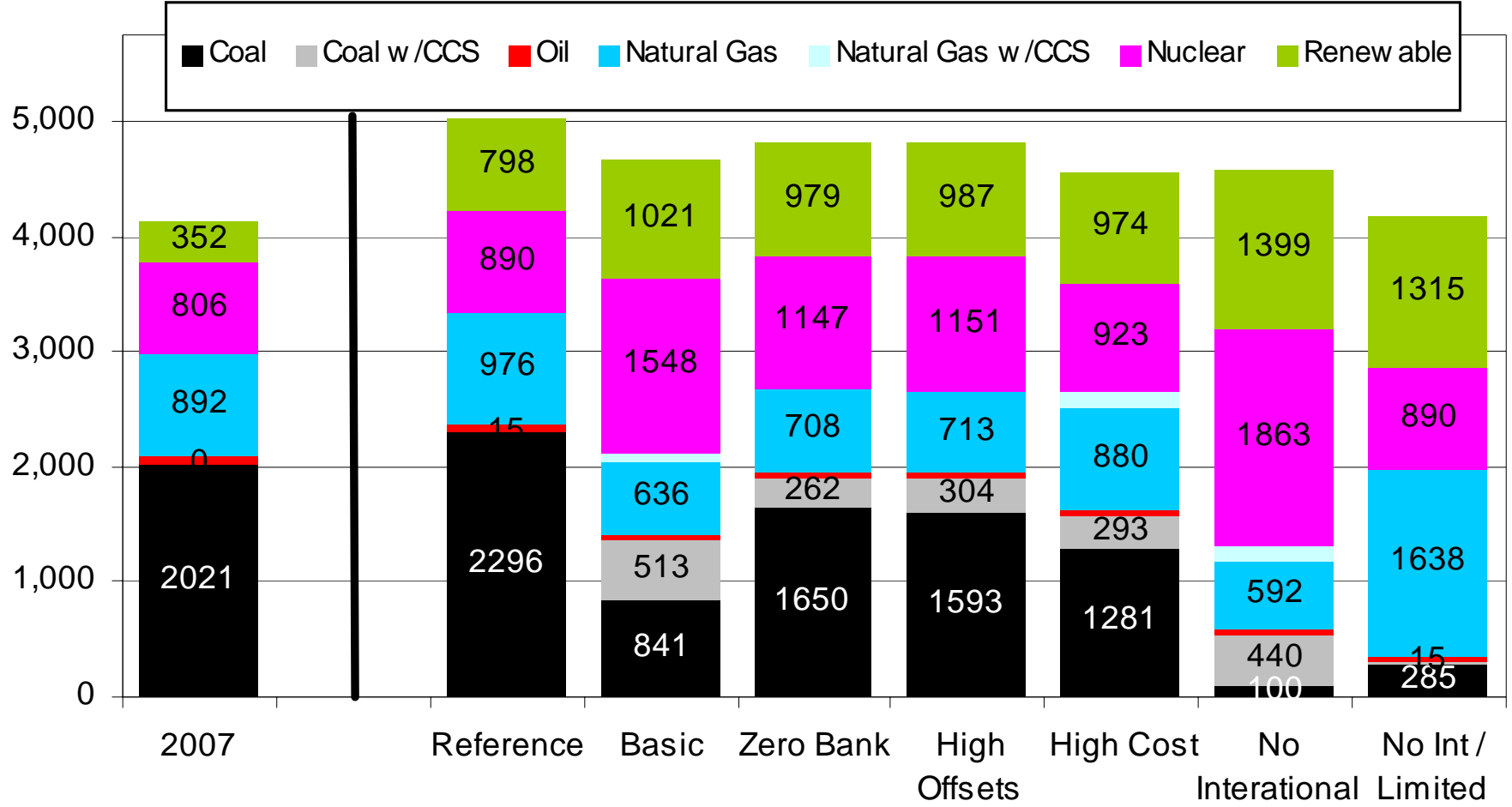
The electricity sector dominates projected reductions in energy-related CO₂ emissions

(million metric tons CO₂)



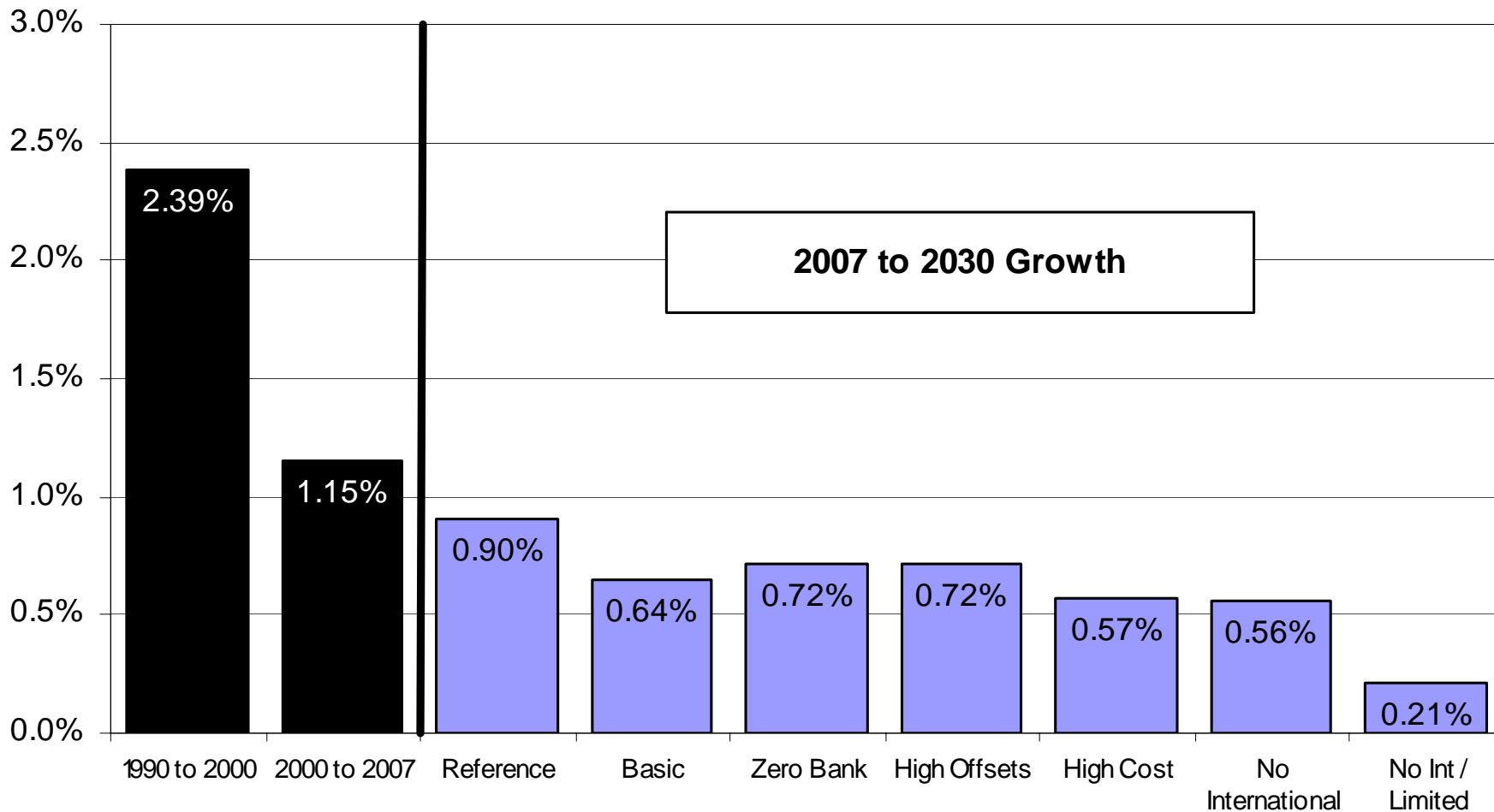
Generation shifts from coal to nuclear, renewable, and fossil+CCS; natural gas use dominates if options are limited

(billion kilowatthours)



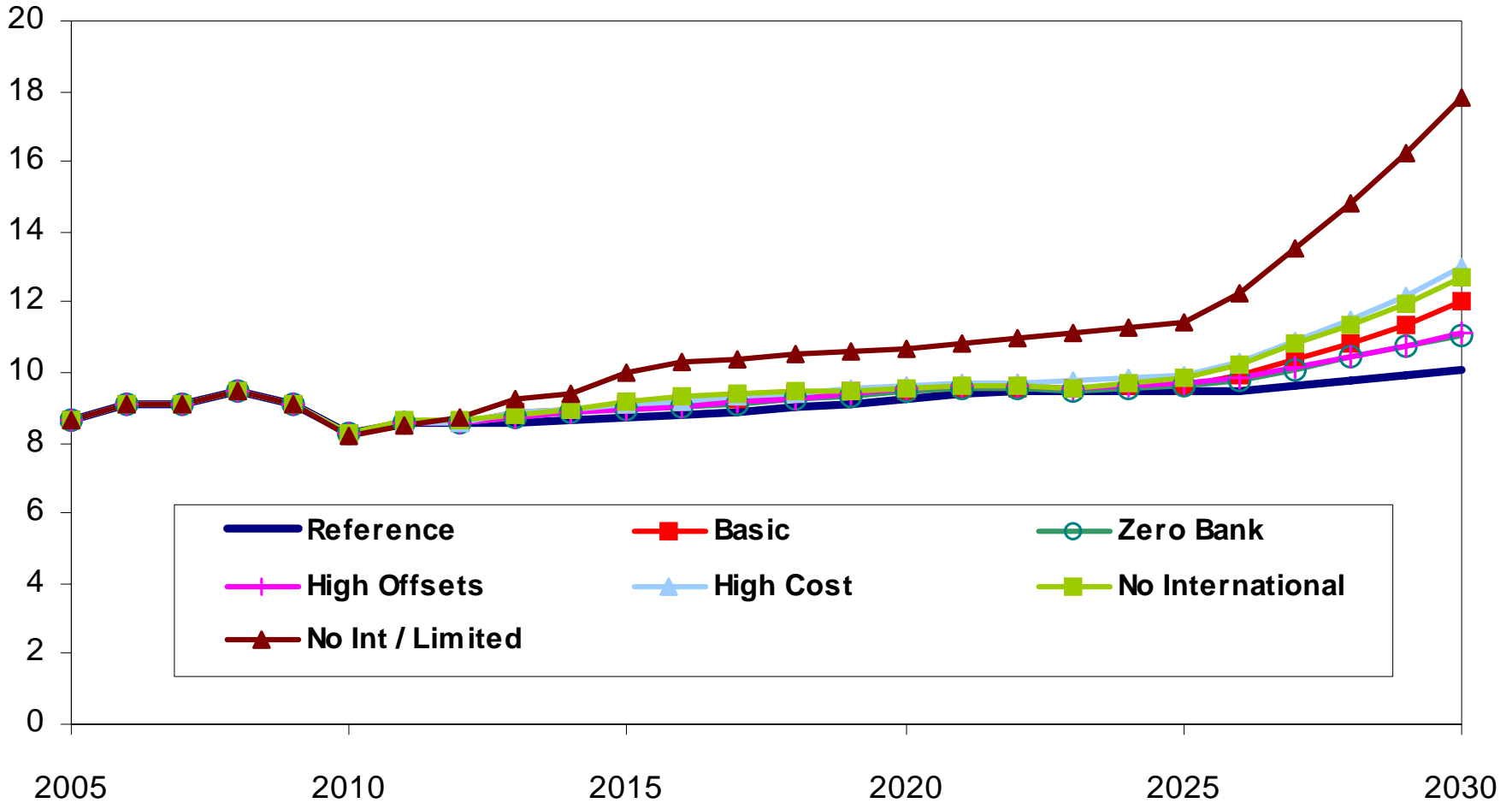
Efficiency programs and higher electricity prices reduce electricity demand growth

Annual percent growth in electricity use



Electricity prices stay near baseline through 2025 in all but one case, then rise to higher levels through 2030

(2007 cents per kilowatthour, all sectors average)



EIA strives to present summary economic impacts in a neutral manner, letting others do the “framing

- Estimates of cap-and-trade program impacts have been shown using consumption measures
 - ACESA analysis: Consumption impacts per household provided in particular years – “In 2030, household consumption is reduced by \$339 [2007 dollars] in the ACESA Basic Case, with a range of \$157 to \$850 per household across all main ACESA cases.”
 - American Power Act (APA) analysis: Improved expression of impacts on household consumption based on an annualized concept “The annualized value of household consumption losses from 2013 to 2035 is \$206 (2008 dollars) in the Basic case, with a range of \$153 to \$336 across five of the six APA cases.”
- For other studies, estimating macroeconomic cost is more difficult; cost impacts of non-price policies such as standards and regulations are not adequately reflected in the model

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/mer/contents.html

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