



CRA's Analysis of the Costs of the Waxman-Markey Bill (H.R. 2454)

**Based on analysis documented in CRA's report prepared for
National Black Chamber of Commerce,
(Updated August 2009)**

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Background on CRA's Waxman-Markey Analysis

- Used CRA's computable general equilibrium model that is fully integrated with a bottom-up representation of electricity generation ("MRN-NEEM")
- Used EPA's offsets curves for physical potential of supply
- Represented all of the cap-related features of the WM Bill
 - Energy efficiency and renewable portfolio standard for electric sector
 - Free allowances to local distribution companies for electricity and natural gas
 - Redistribution of rest of allowances & auction revenues back into the economy
 - Banking/borrowing
 - Strategic Reserve Allowances assumed to be bought at market clearing prices (i.e., at a price lower than the reserve price floor will be)

Benefits of CRA's Methodology Compared to Others'

- Bottom up electric sector that is fully integrated into the macroeconomic model
 - Critically relevant for a WM analysis because vast majority of covered emissions reductions come from the electric sector under WM
 - NEMS/Global Insight (EIA, Heritage) runs a bottom up model for emissions, then feeds resulting energy price changes into an econometric macroeconomic model (sequential & not integrated)
 - EPA's macroeconomic models (Adage and IGEM) have no bottom up feature, and their results are not linked in any way with EPA's separate bottom up model (IPM)
- CRA's model has low and zero carbon fuel options for the transportation sector.
- CRA's baseline does not include the "implicit carbon limit" of a new coal plant "penalty" for carbon in the baseline
 - EPA and EIA's coal plant penalty shifts some of the costs of reducing carbon emissions into the baseline, making it a "costless" part of effort of meeting WM cap
- CRA's model captures productivity reductions that come from changes in energy supply and use
 - Global Insight (EIA, Heritage) only captures impacts from energy price increases (via restrictive monetary policy in response to the inflation)

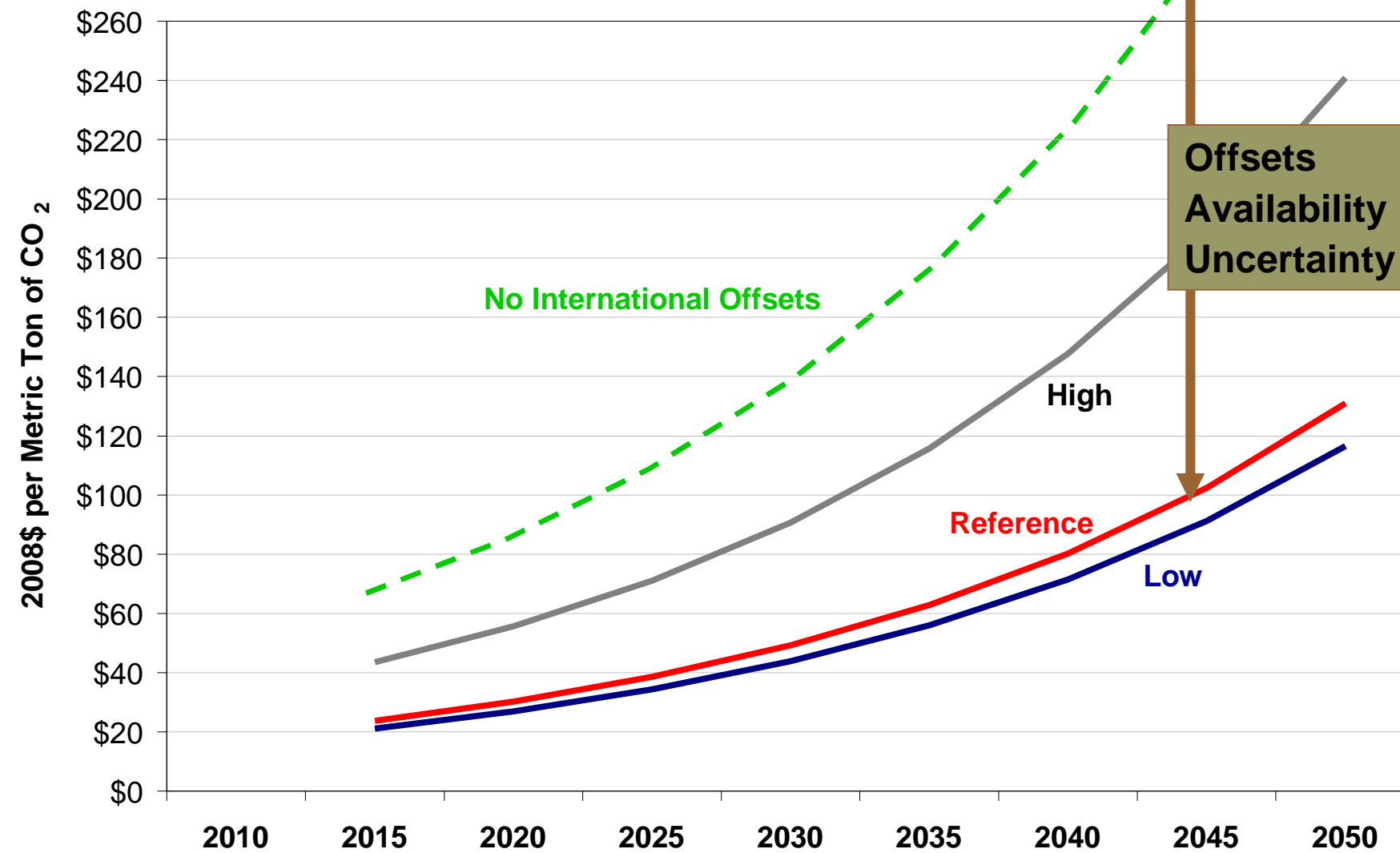
Key Findings – “It’s All About the Offsets”

- The range of uncertainty on what this Bill would mean to the US economy is enormous, and is almost entirely due to uncertainty about offsets costs
- Alternative views about offsets availability completely alter the estimates of WM’s costs and impacts
 - How much of physical potential will be available by 2015, or by 2020?
 - Will EPA rules actually allow all of the types of offsets being modeled?

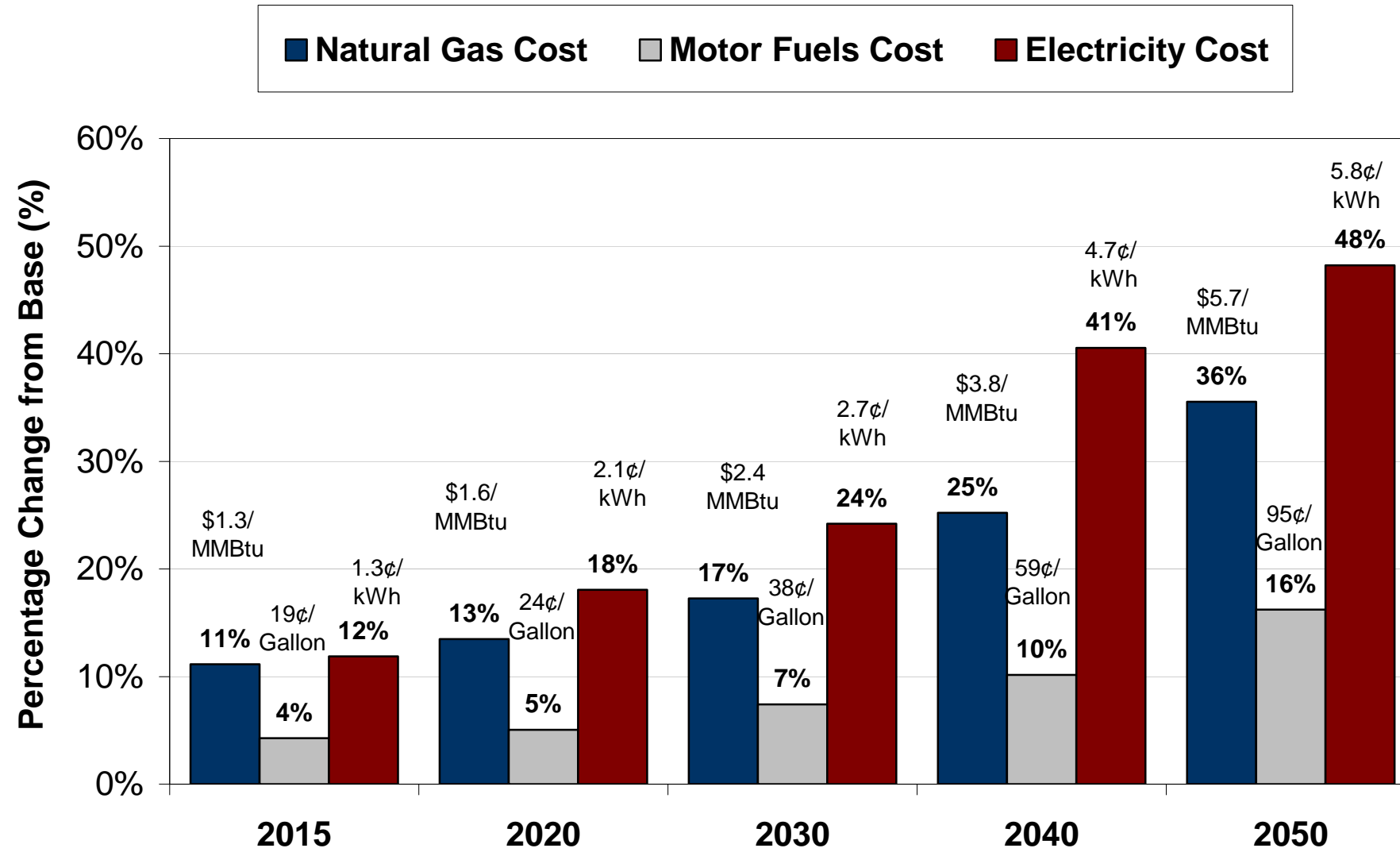
CRA Analysis Included 4 Scenarios

| | Low Cost | Reference | High Cost | No Internat Offsets |
|--|---|---|--|--------------------------------------|
| Electricity Demand | AEO 2009 April Release (0.90% 2010-2030 CAGR) | AEO 2009 Early Release (1.00% 2010-2030 CAGR) | AEO 2009 Early Release + Difference b/w Early & April Release | Same as Reference Case |
| Natural Gas Prices | Same as Reference | AEO 2009 Early Release through 2030, with a 2050 wellhead target of \$9/MMBtu (in 2003\$) | Same as reference | Same as Reference Case |
| Demand Elasticity | Higher demand elasticity | CRA Standard | Lower demand elasticity | Same as Reference Case |
| Low-Carbon Fuel Transportation Technology | Reduce zero- and low-carbon alternative fuels down to cost parity with motor gasoline | CRA Standard | Assume no zero-carbon fuel | Same as Reference Case |
| Capital Costs for New Generating Technologies | Same as reference | AEO 2009 Early Release, save for nuclear (public filings) and geothermal (EPA NEEDS 2006) | Flat-line costs at first-year AEO 2009 Early Release | Same as Reference Case |
| CCS Capacity Limits | 270 GW by 2050 | 180 GW by 2050 | Same as reference | Same as Reference Case |
| Nuclear Capacity Limits | EPA W-M (266 GW by 2050) | 206 GW by 2050 | Allow existing nuclear fleet (103 GW) to be replaced, but no more | Same as Reference Case |
| Offsets | Same as reference | Wealth transfers out of U.S. from international offset purchases priced at marginal cost of international offsets | Wealth transfers out of U.S. from international offset purchases priced at CO ₂ allowance price, no international avoided deforestation offsets | No international offsets of any type |

Allowance Prices Are Highly Uncertain – Mainly Due to Offsets Availability Uncertainty

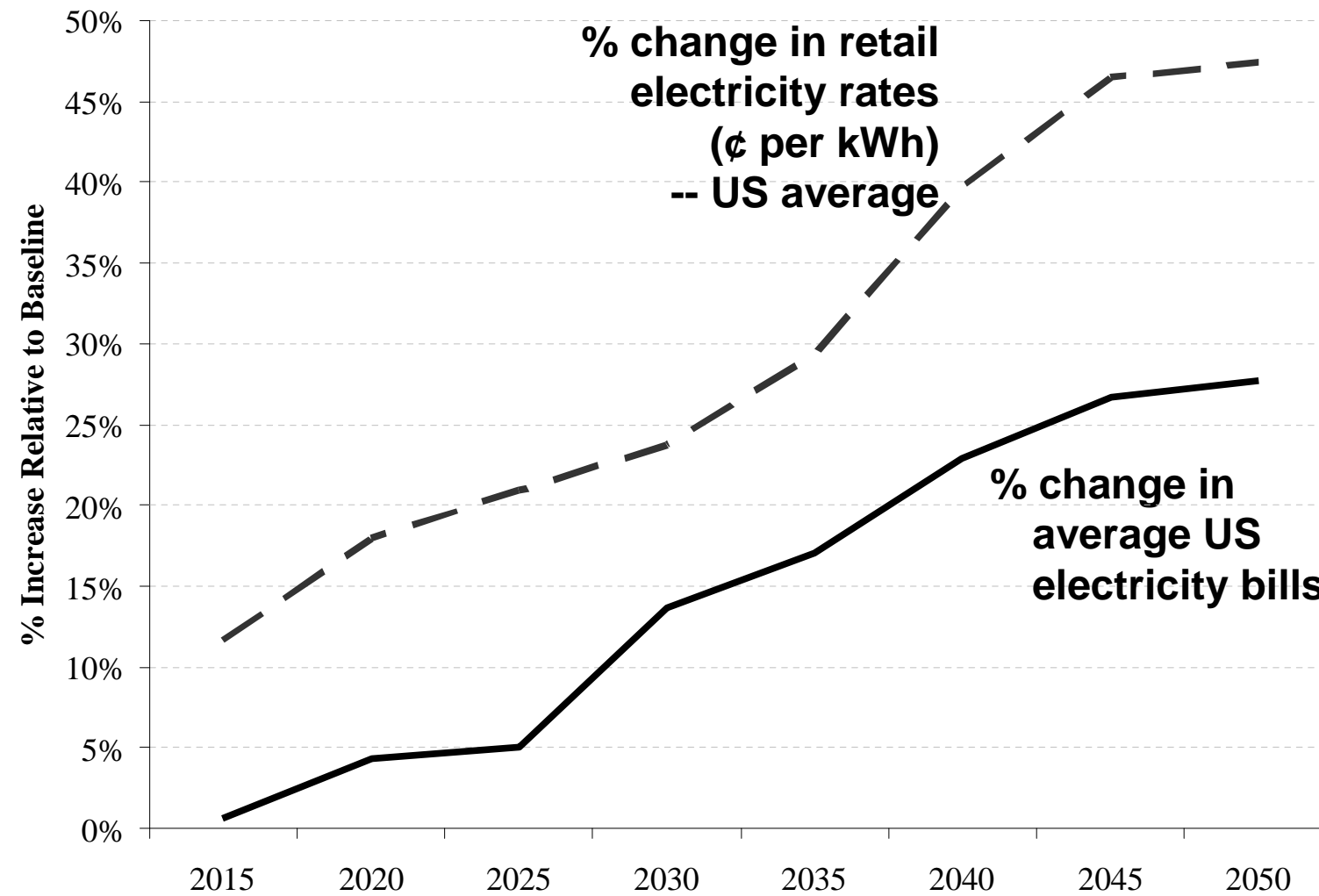


Impacts on Key Fuel Prices (Reference Case Results)

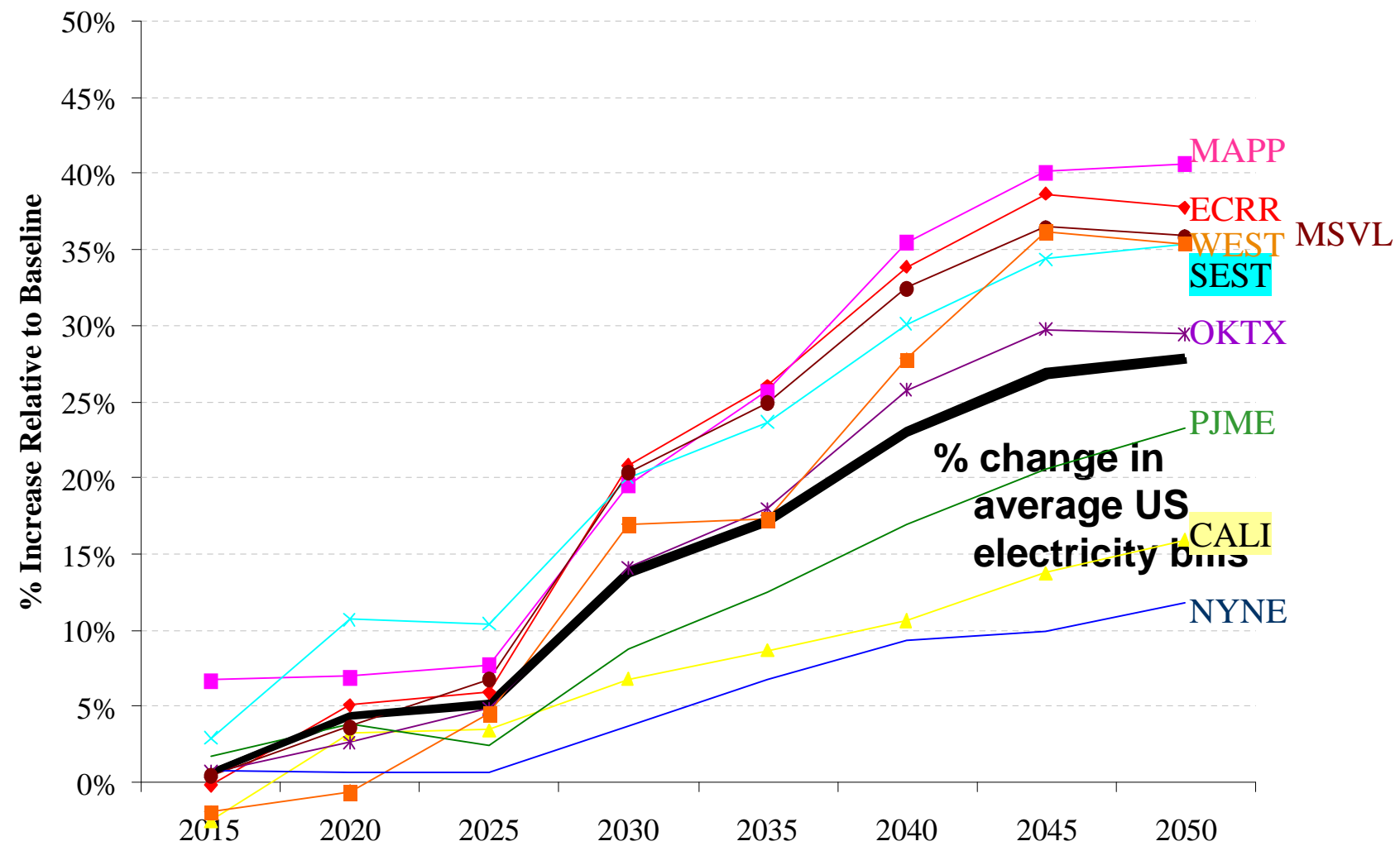


Electricity Bills Rise More Slowly Than the Electricity Rate per kWh Due to Free Allocations to Local Distribution Companies

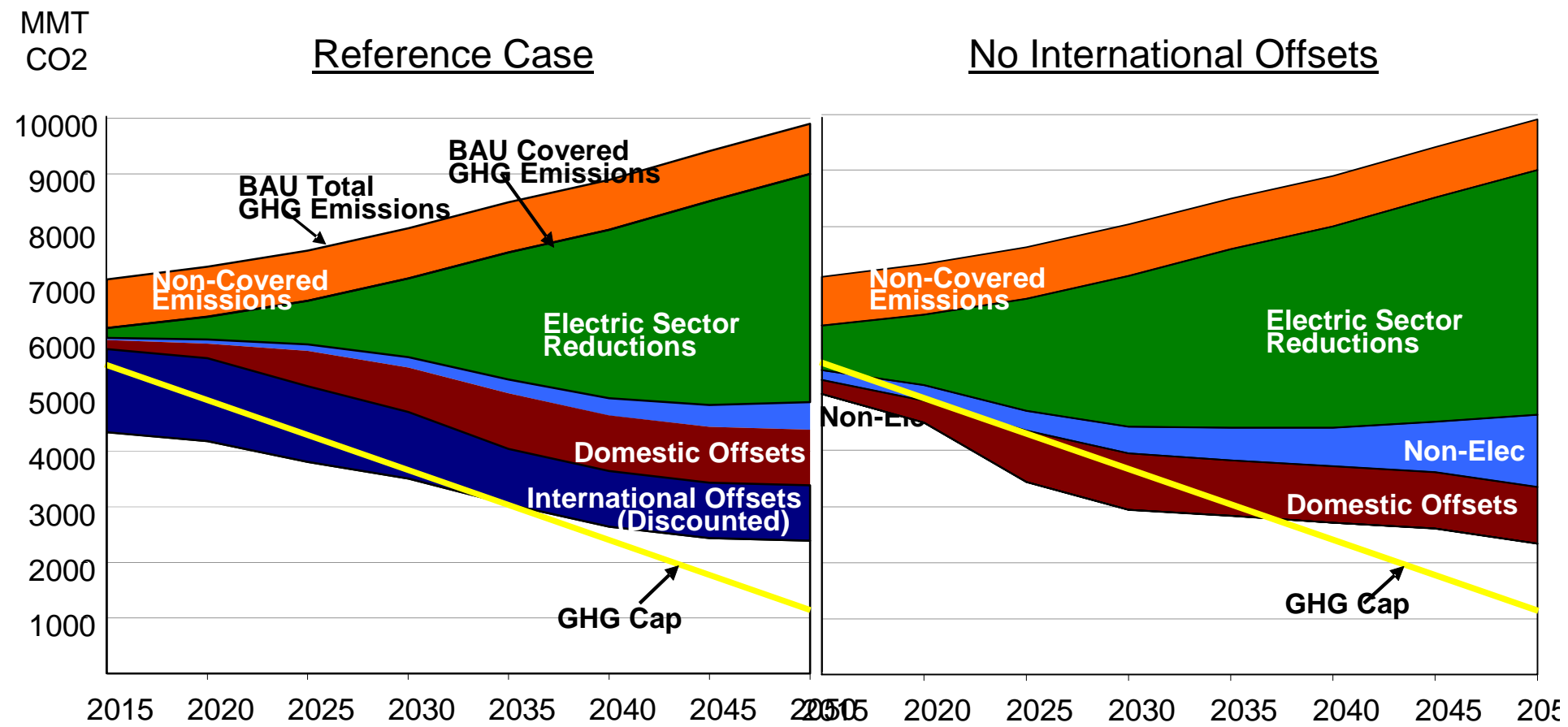
(Reference Case results. A similar effect occurs for natural gas bills and rates)



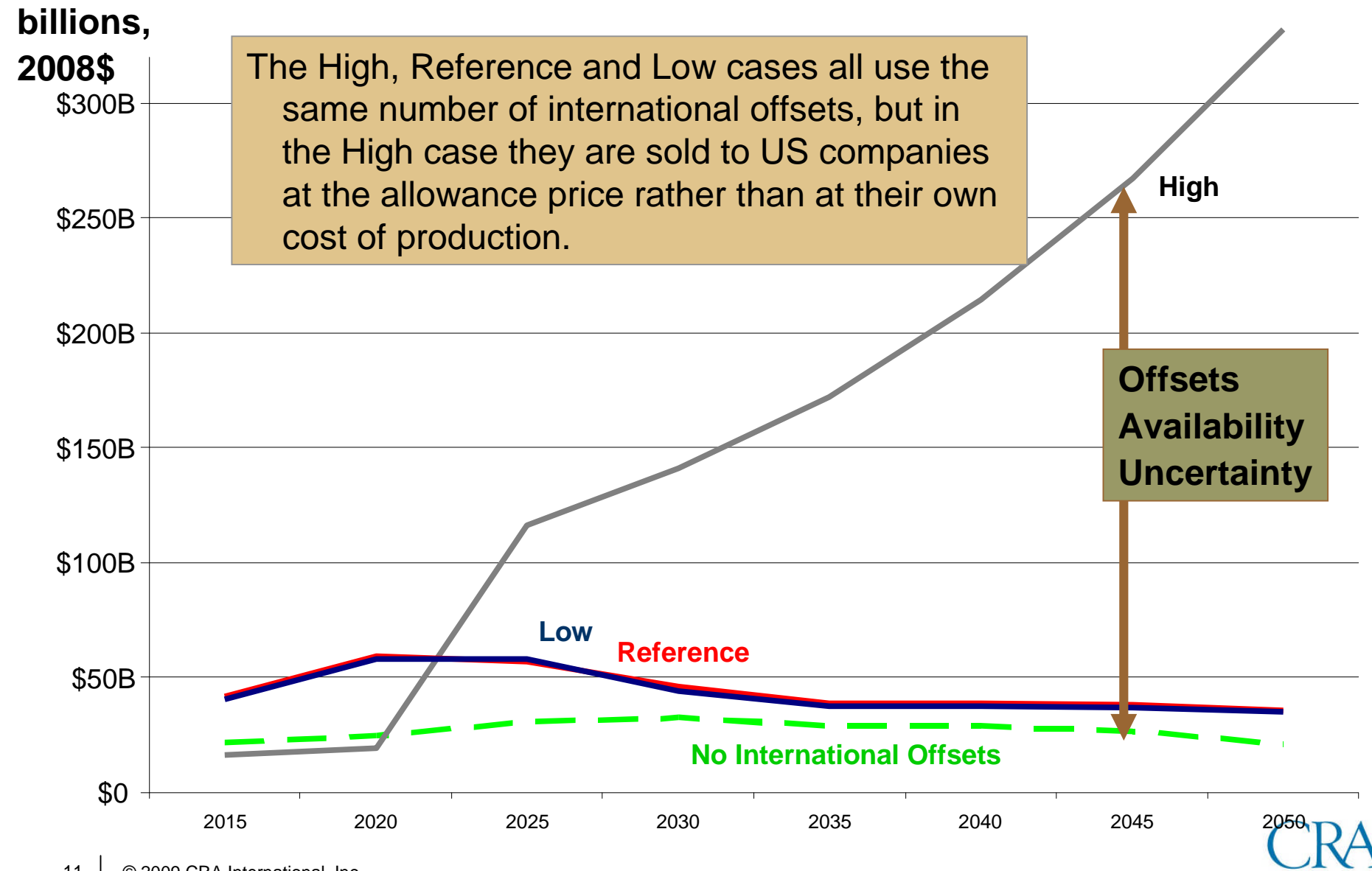
But the Impact of the Free Allocations on Electricity Bills Is Not Evenly Distributed Across the US (Reference Case Results)



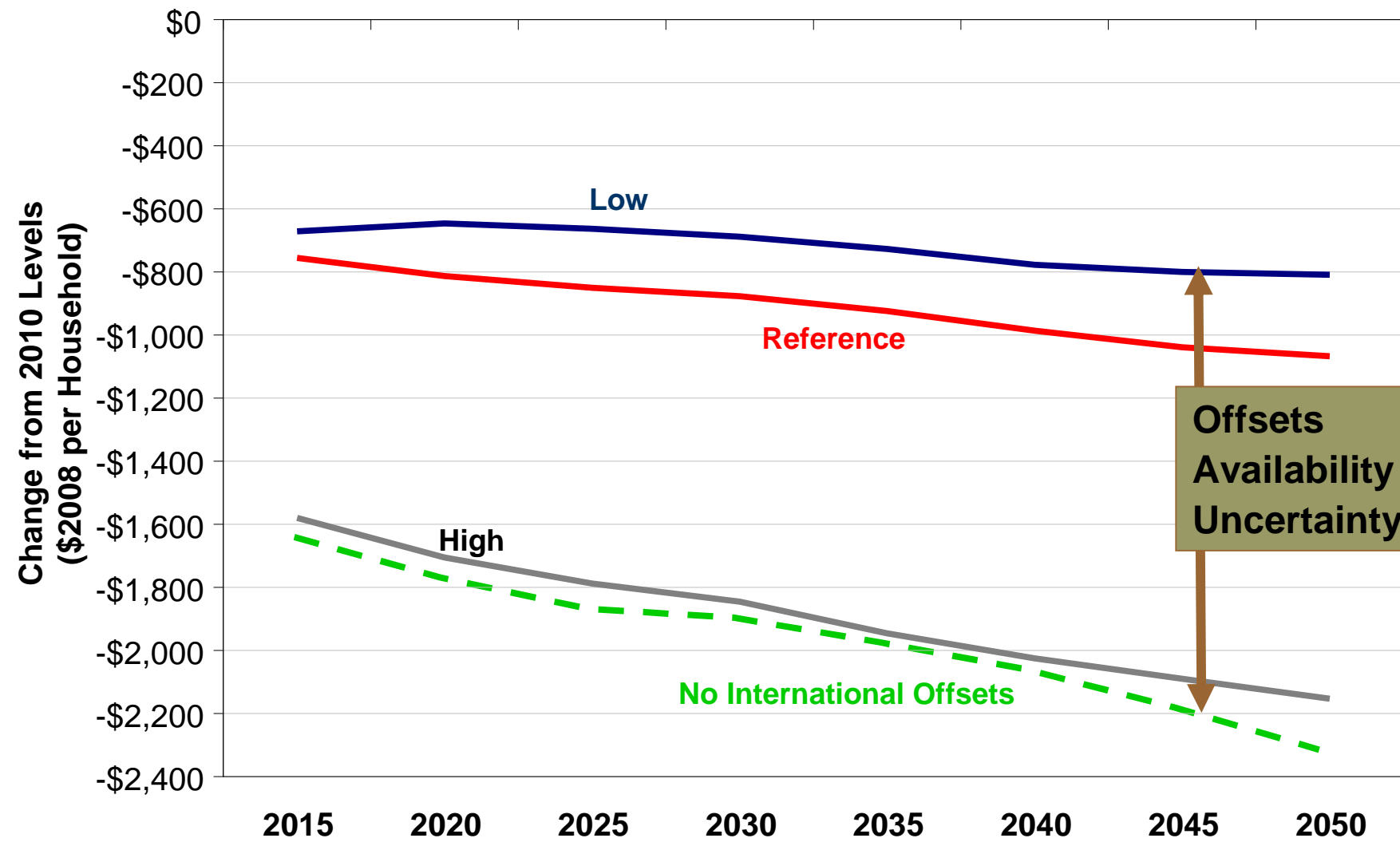
Sources of Emissions Reductions



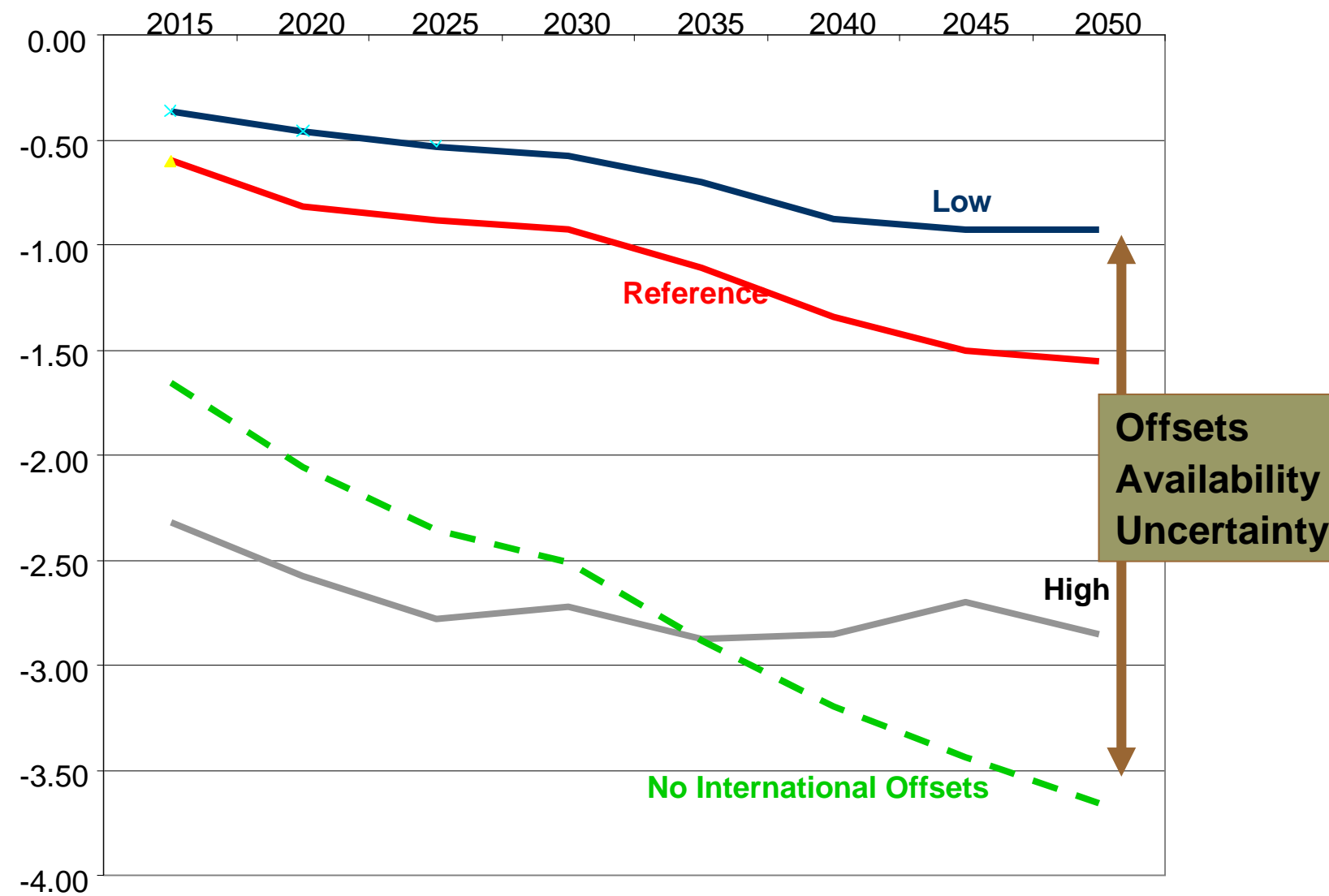
International Offsets & Allocations Under WM Imply Transfers of US Consumers' Wealth to Foreign Entities



Cost per Household, Including Losses of Wealth Due to International Transfers



Percentage Reduction in GDP (Relative to Future Baseline)



Bottom Line

- **WM could be a very expensive bill hiding behind a false promise of cheap and plentiful allowances from international sources,**

or,

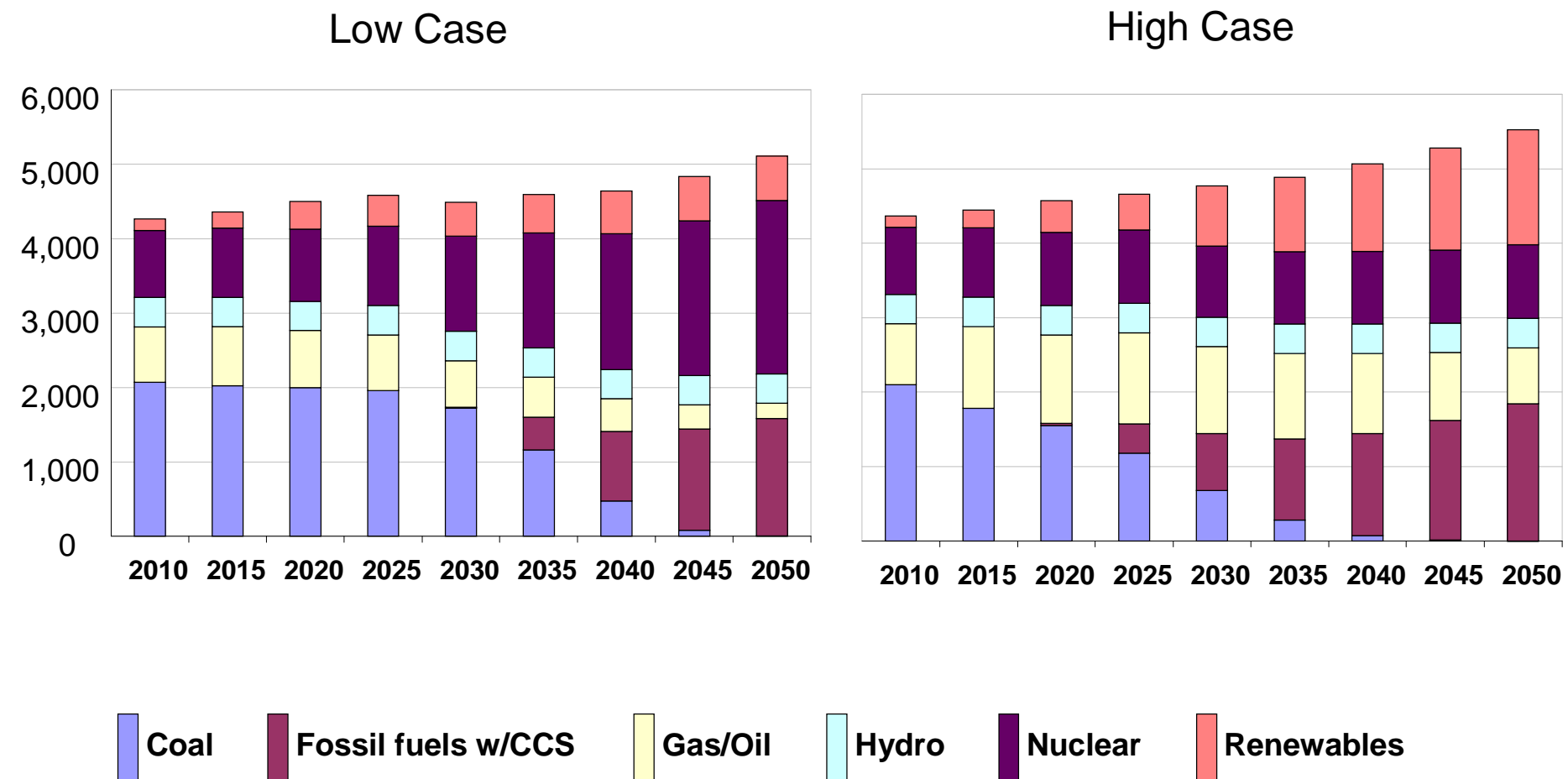
- **WM might require only moderate US emissions cuts, in return for giving billions of dollars to developing countries.**



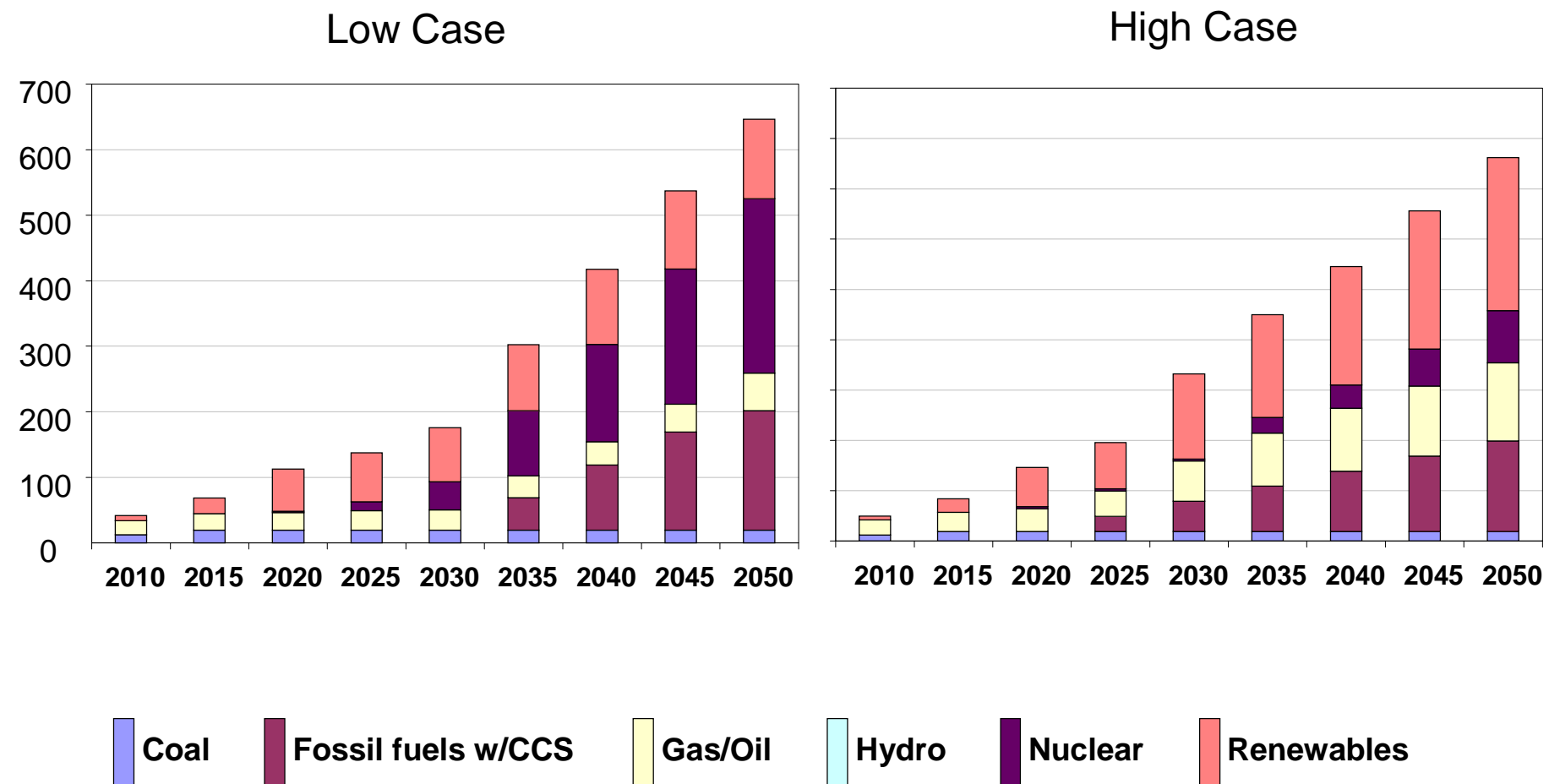
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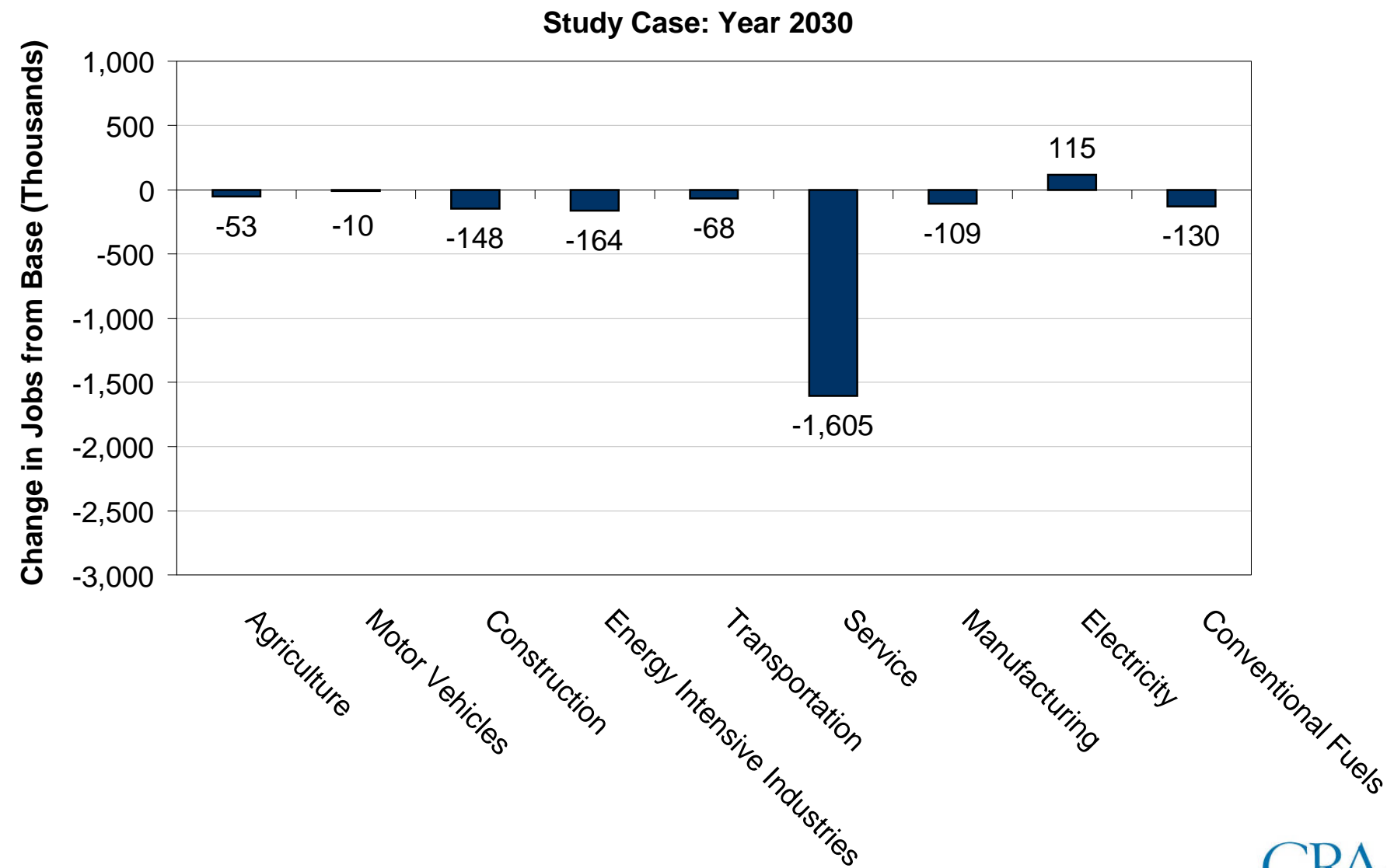
Mix of Electricity Generation (TWh per year)



Mix of Capacity Additions (cumulative GW over time)



Net Job Losses of ~2 Million Are Concentrated in Non-Energy Sectors, Due to Higher Costs of Living Generally (Ref. Case)



Jobs Losses by Region (Ref. Case)

