

# Impacts of Climate and Renewables Policies on Power Markets & Generation Investments

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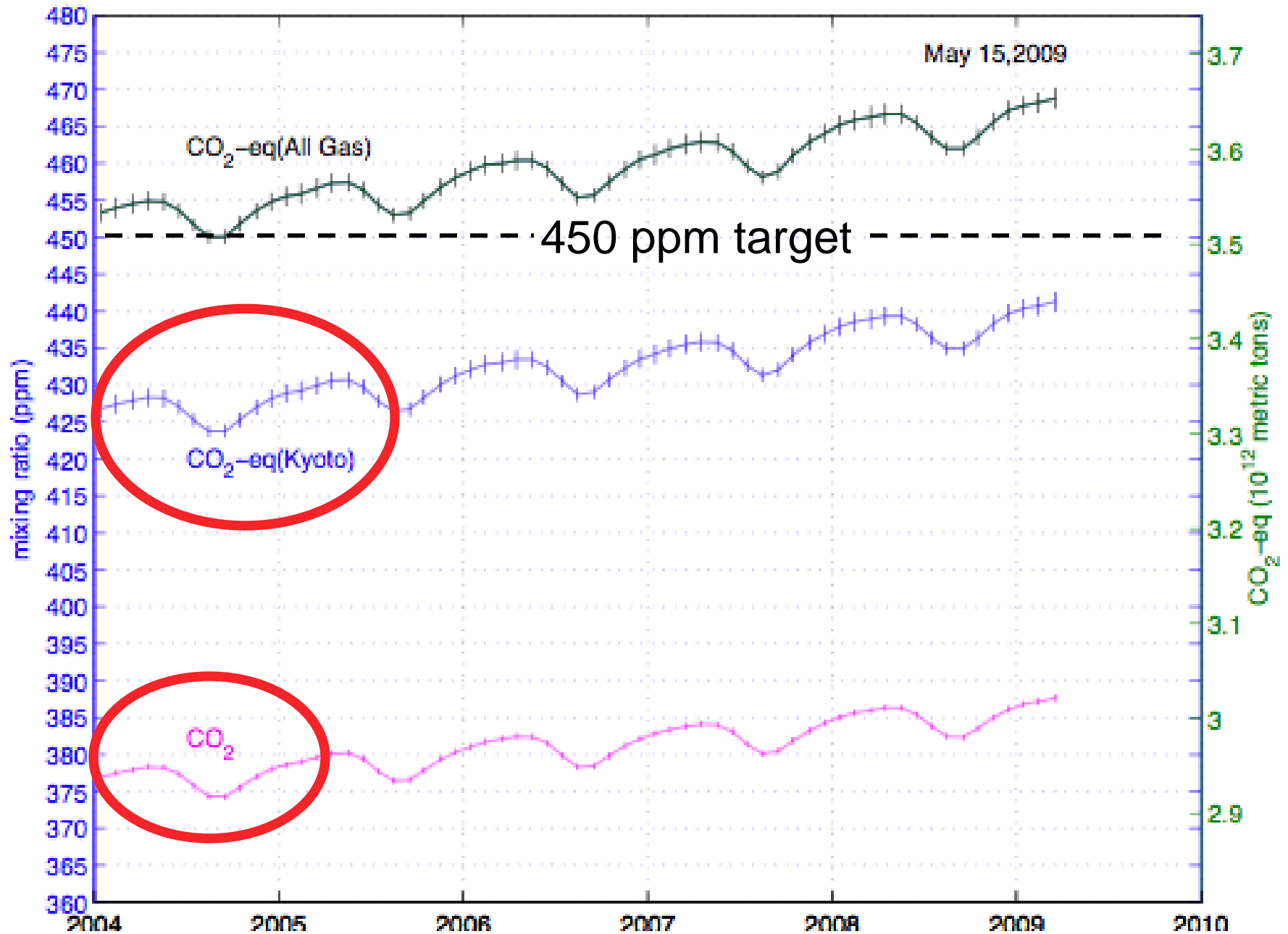
Joint Program on the Science and Policy of Global Change  
Massachusetts Institute of Technology

APEX Conference

12 October 2009

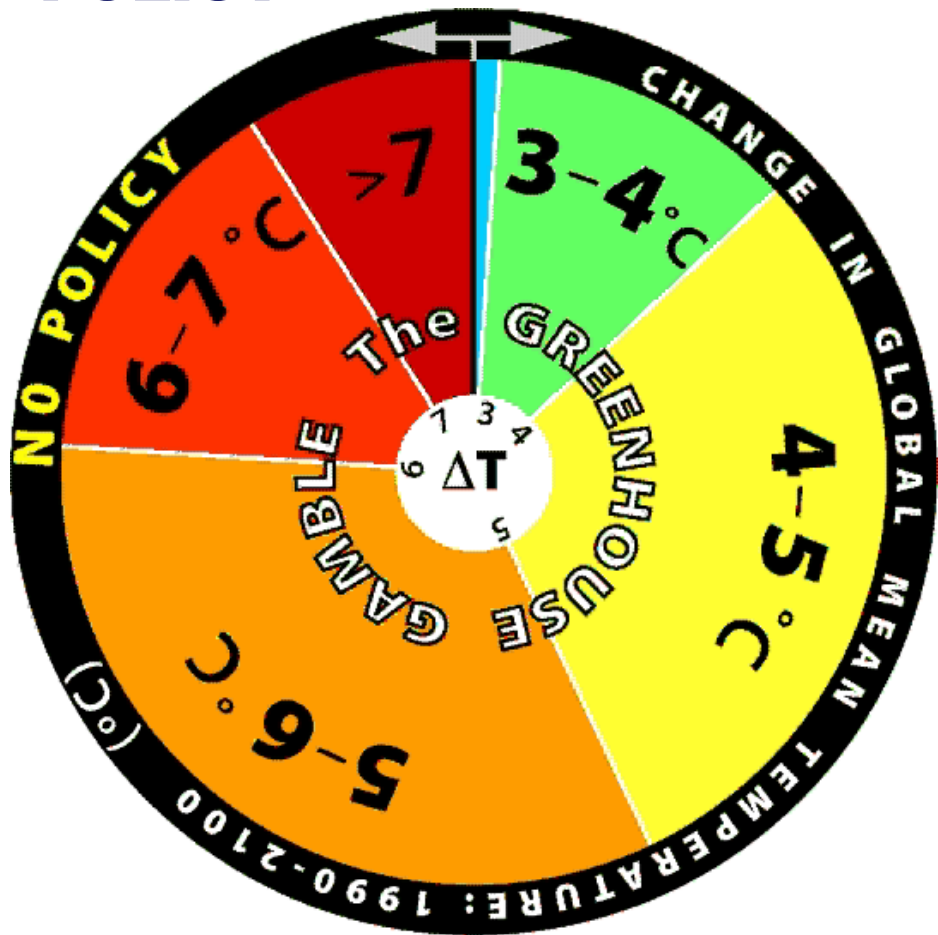


# Where We Are Now

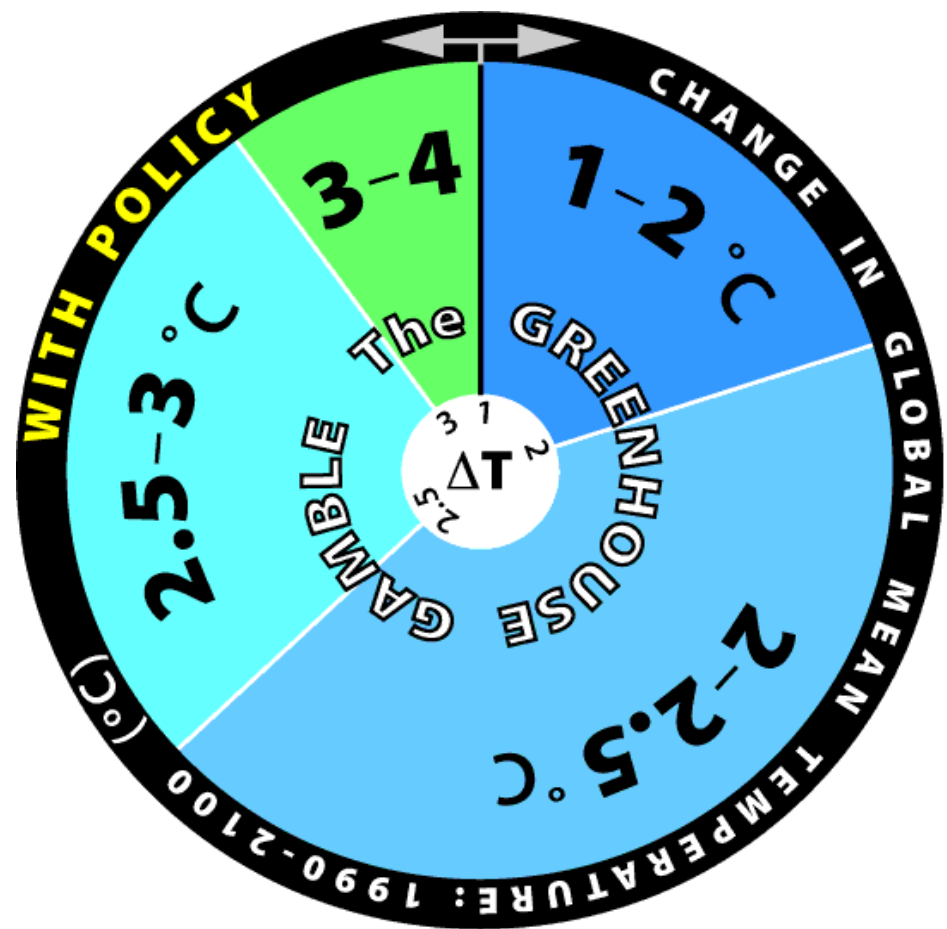


# Our Analysis of Climate Risk

**Compared  
with NO  
POLICY**



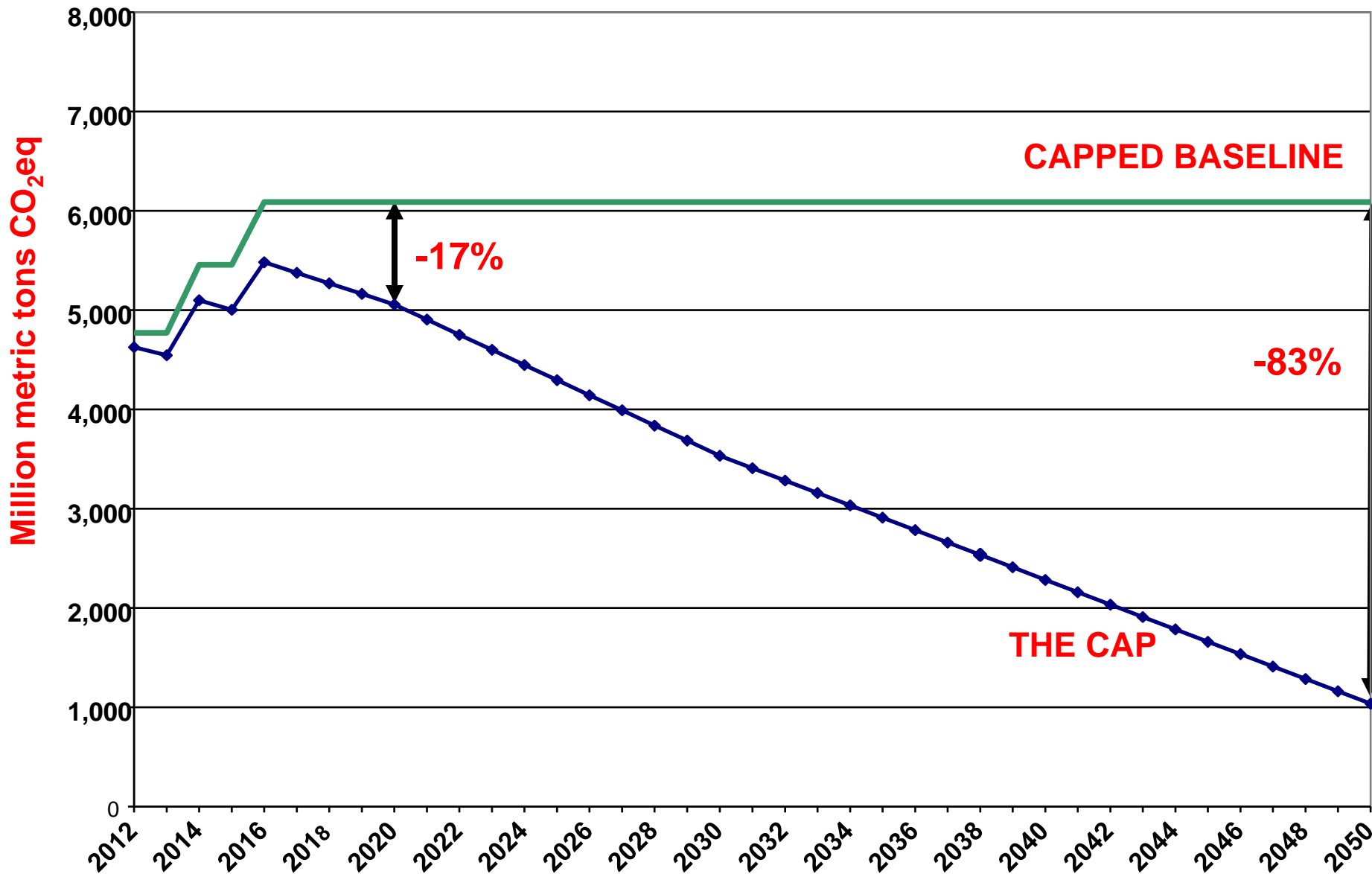
**Emissions policy  
can lower RISK**



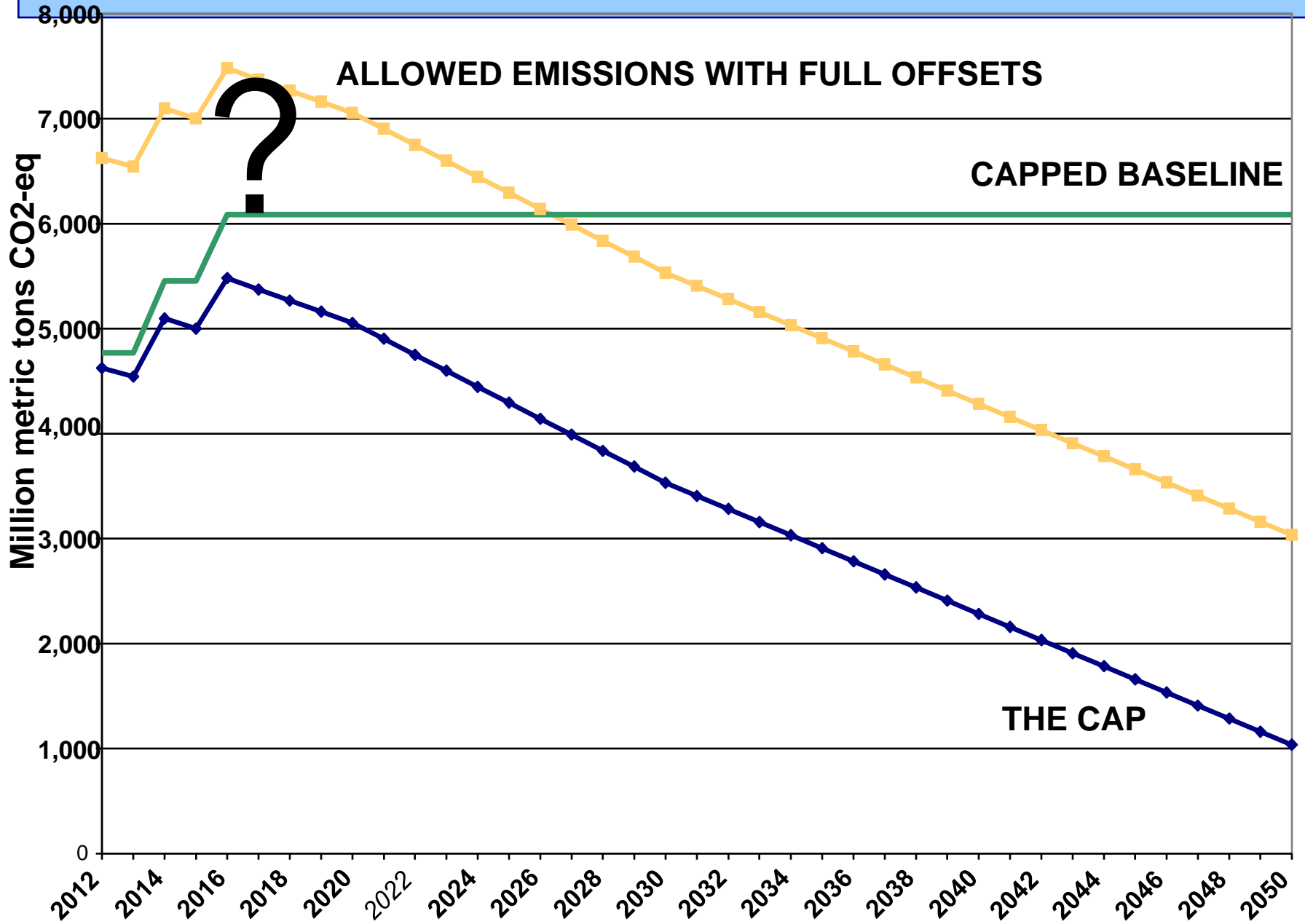
# Will We Do Better, Or Worse?

- Current Congressional Bills
  - Upstream cap-&-trade system
  - Regulatory add-ons & subsidies
    - Renewable portfolio standard
    - Low-carbon fuel standard (dropped in H.R. 2454)
    - Use efficiency mandates
    - R&D and technology/fuel subsidies
- Clean Air Act: NSR & Title V Permits
- Tort Actions

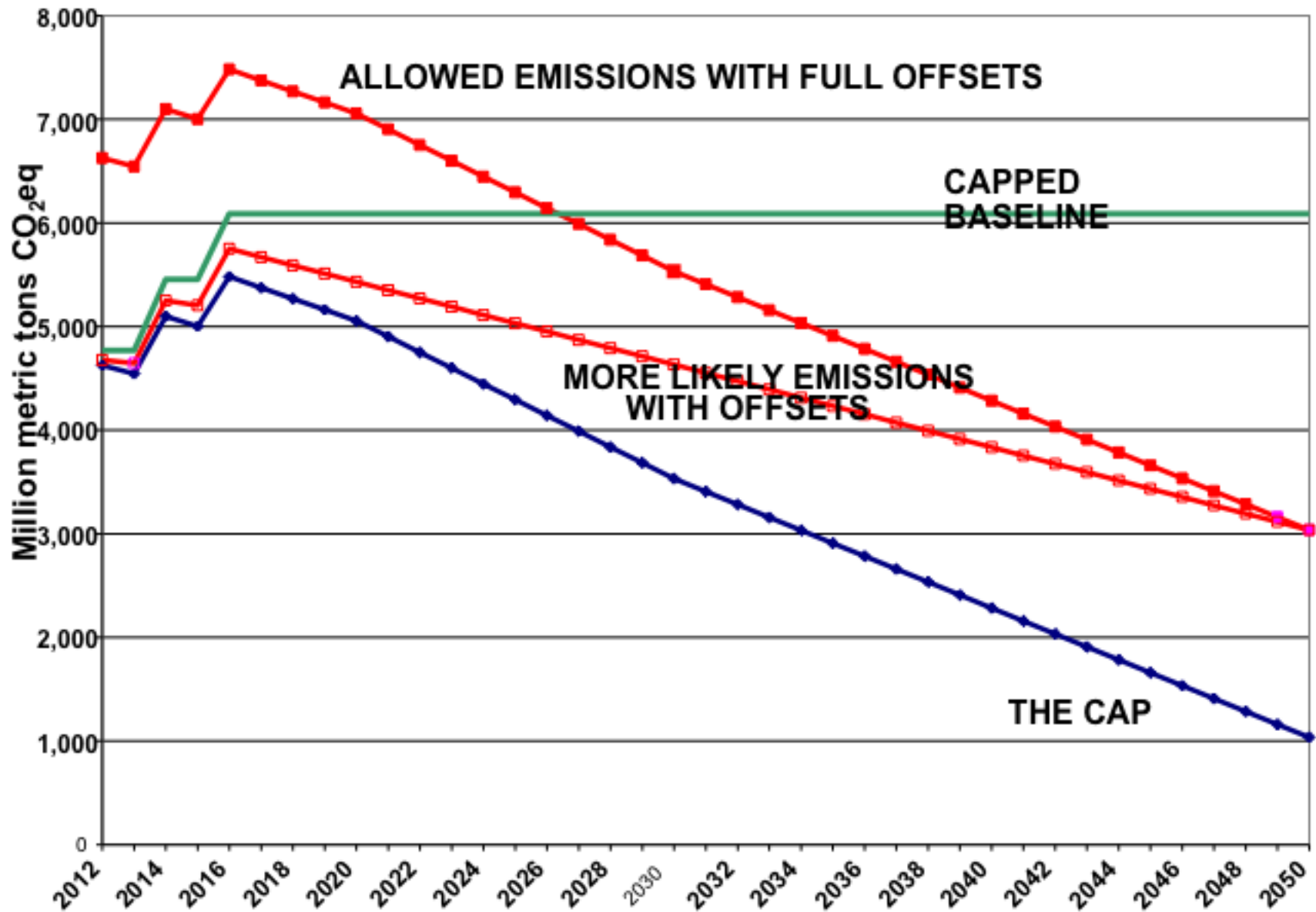
# Waxman-Markey Target



# Offsets Allowed



# Offsets: Allowed and Practical



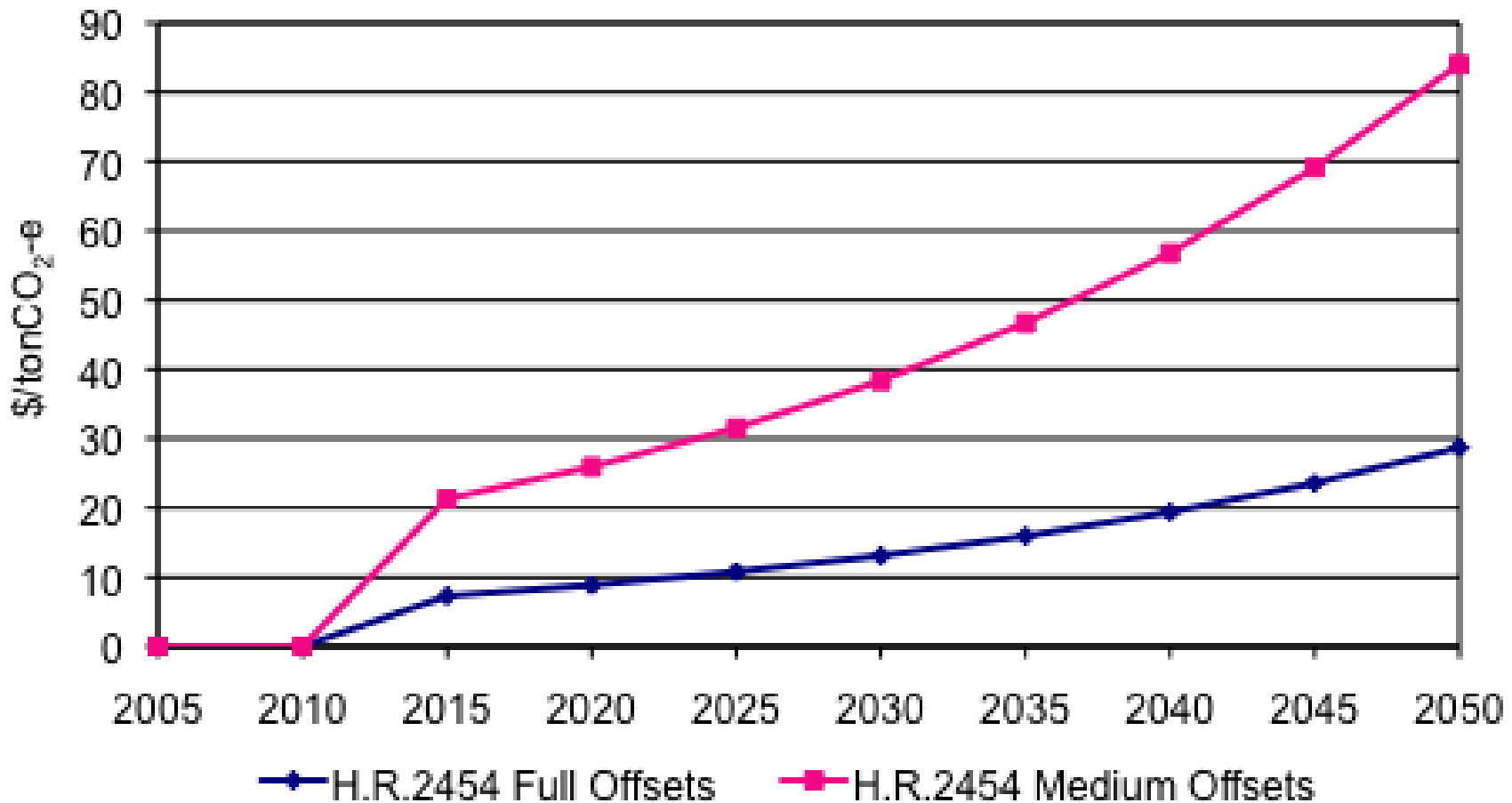
# Allowance Allocations 2016-2025

(% of Declining Cap with Rising Price)

- 45% Consumer Price Protection
  - Regulated electric & gas distribution companies
- 15% Low Income & Worker Assistance
- 25% New Expenditure Programs, e.g.,
  - CO<sub>2</sub> capture & storage, auto technology, efficiency, renewables
  - Tropical deforestation, international tech transfer
  - International & domestic adaptation
- 15% Free, to Industry
  - Trade exposed, energy intensive
  - Refinery processing energy
  - Merchant coal generators

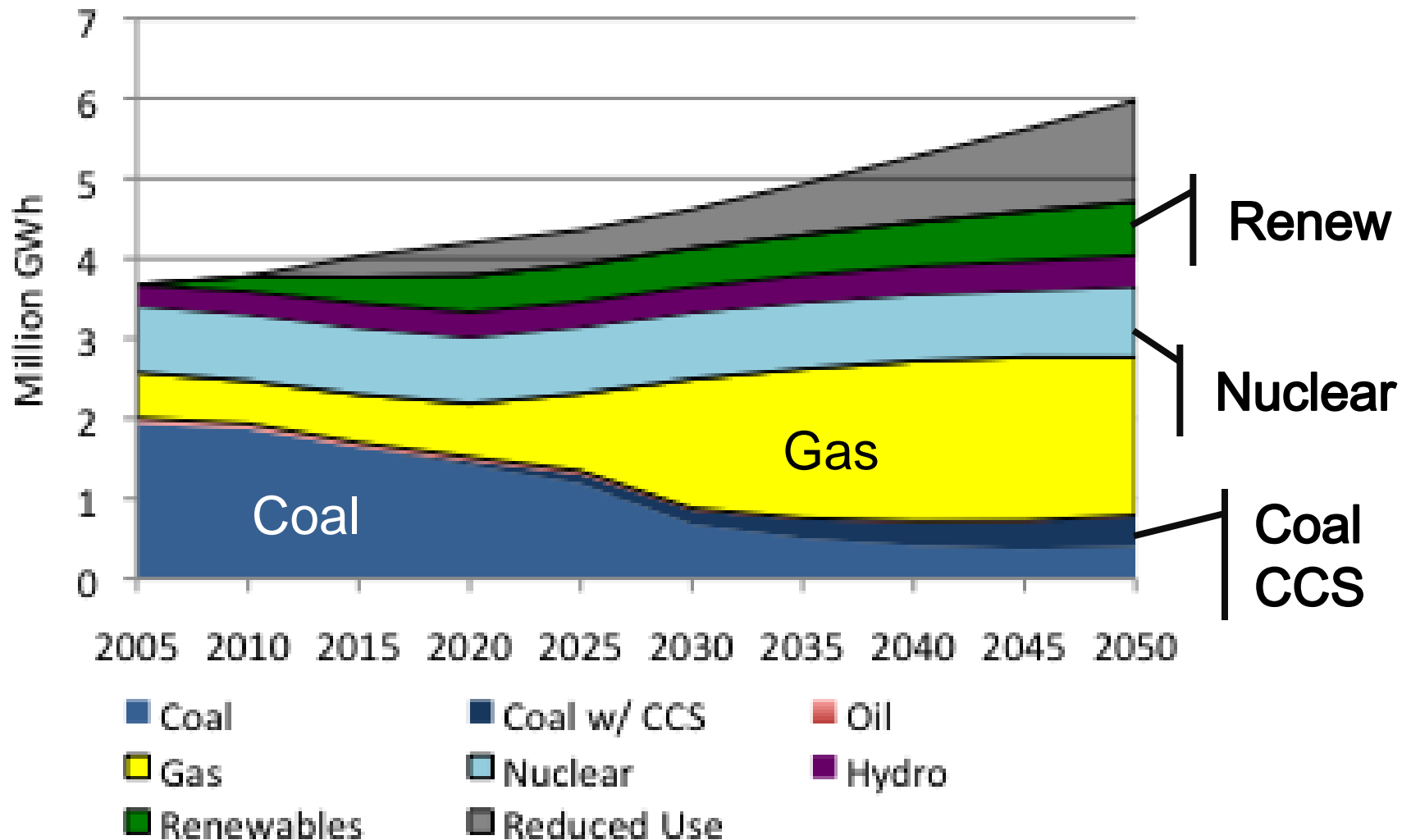
# CO<sub>2</sub>-equivalent Prices

Waxman-Markey - Full & Medium Offsets



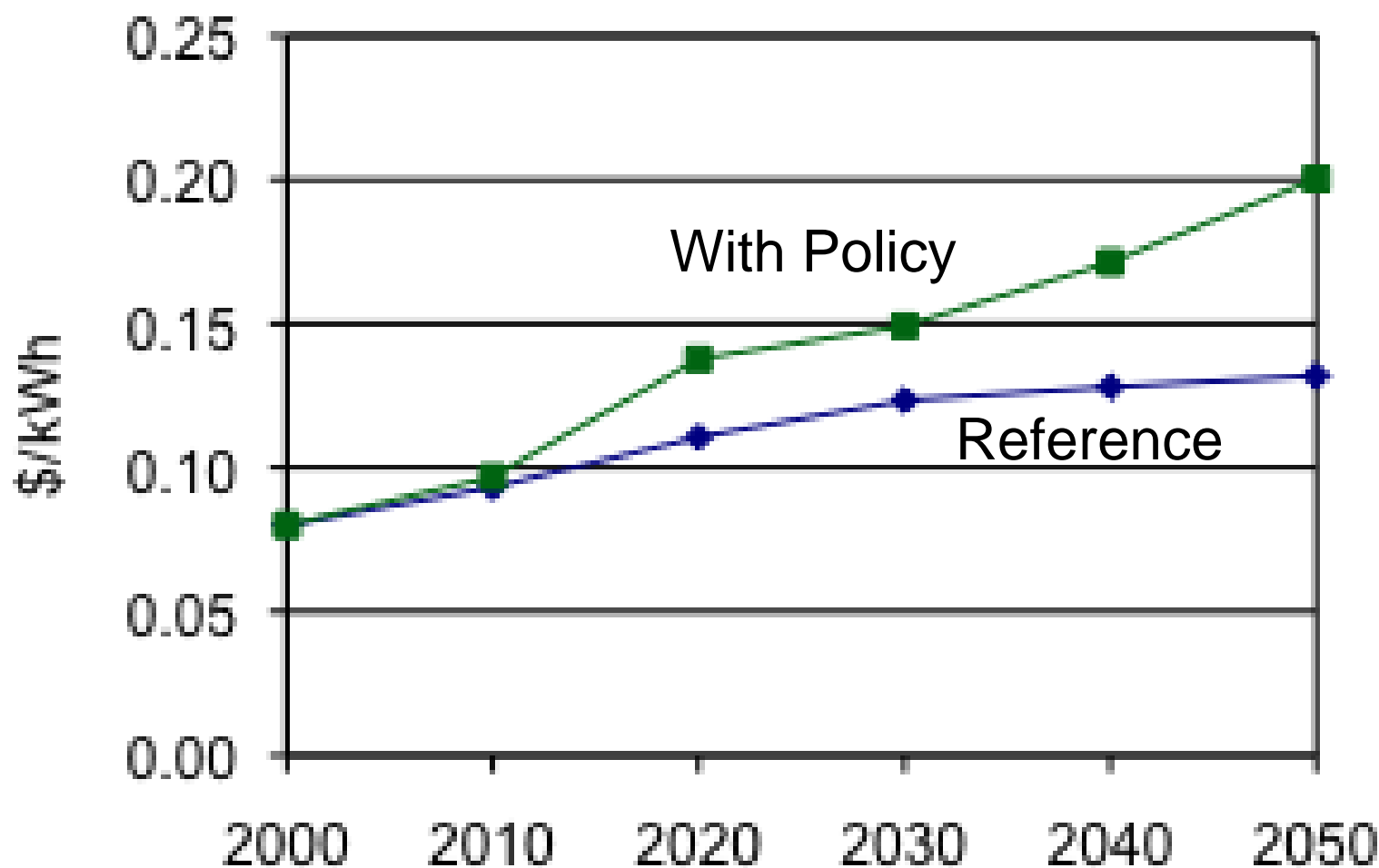
# Electric Generation

## Medium Offsets



# Electricity Price under H.P. 2454

## Medium Offsets



# Will We Do Better, Or Worse?

- **Potential** Congressional Bills
  - ~~Upstream cap- & -trade system~~
  - Regulatory add-ons & subsidies
    - Renewable portfolio standard
    - Low-carbon fuel standard
    - Use efficiency mandates
    - R&D and technology/fuel subsidies
- Clean Air Act: NSR & Title V Permits
- Tort Actions

# Thank You

(For more see  
[www.globalchange.edu](http://www.globalchange.edu))