# **Reducing US Greenhouse Gas Emissions**

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### **Presentation Outline**

- Elements of economically efficient climate policy
- US proposals
- Kyoto without the US

# Key Considerations in Constructing an Economically Efficient Climate Change Policy

- Where
- When
- Who
- What

# Carbon Tax Required to Return Emissions to 1990 Levels in 2010



#### Alternative Emissions Profiles for Stabilizing Atmospheric CO<sub>2</sub> Concentrations at 550 ppmv



#### **Growth in Carbon Emissions by Region**



#### US Emissions in 2010 under Single-gas and Multi-gas Scenarios



2.5

#### US in 2010 -- Optimal Mix of Options for Meeting Illustrative Targets



0.7

#### **GDP Losses in 2010**



# **President Bush's Proposal**

- Near-term
  - Reduce greenhouse gas intensity
- Longer-term
  - Slow growth in emissions
  - Stop growth in emissions
  - Reverse growth in emissions

#### President's Proposal: Reduce GHG Emission Intensity 18% Over The Next Decade

### Marginal Abatement Curves for CO<sub>2</sub> in the USA and Total GHG's



# **Congressional Bills**

- Tend to focus on electric sector
- Focus on multiple pollutants
- Allow for domestic trading

# Kyoto Without the US

**Case 1.** US and all other Annex I countries adopt Kyoto Protocol – Annex I trading permitted

**Case 2.** US acts independently during first commitment period – Joins Protocol in 2020

Other Annex I countries adopt Kyoto Protocol

- Trading permitted among countries adopting Protocol
- Banking of emission credits disallowed

Case 3. Same as Case 2 but banking of emission credits is allowed

Note: Assumed that all participants reduce future emissions by 10% per decade beginning in 2020.

### Excess Emission Rights ("Hot Air") in Eastern Europe and the Former Soviet Union



# Exports of "Hot Air" in 2010 from Eastern Europe and the Former Soviet Union (EEFSU)



### **Value of Carbon Emission Rights**



#### **GDP Loss in 2010**



### GDP Losses for EEFSU -- assuming alternative levels of emission rights sold in 2010



#### **GDP Losses in 2010 -- with EEFSU as price taker** (Case 1 and 2) and price maker (Case 2a) 1.5 1.0 Case 1. All Annex I countries ratify Kyoto Protocol 0.5 Case 2. Kyoto Protocol loss ratified without US; banking 0.0 prohibited; EEFSU a price % OECDE Japan CANZ EEFSU US taker Case 2a. Kyoto Protocol -0.5 ratified without US; banking

prohibited; EEFSU exerts

market power

-1.0

-1.5