CO_2 Emissions Reduction the USA's Path(s)

The Regulatory

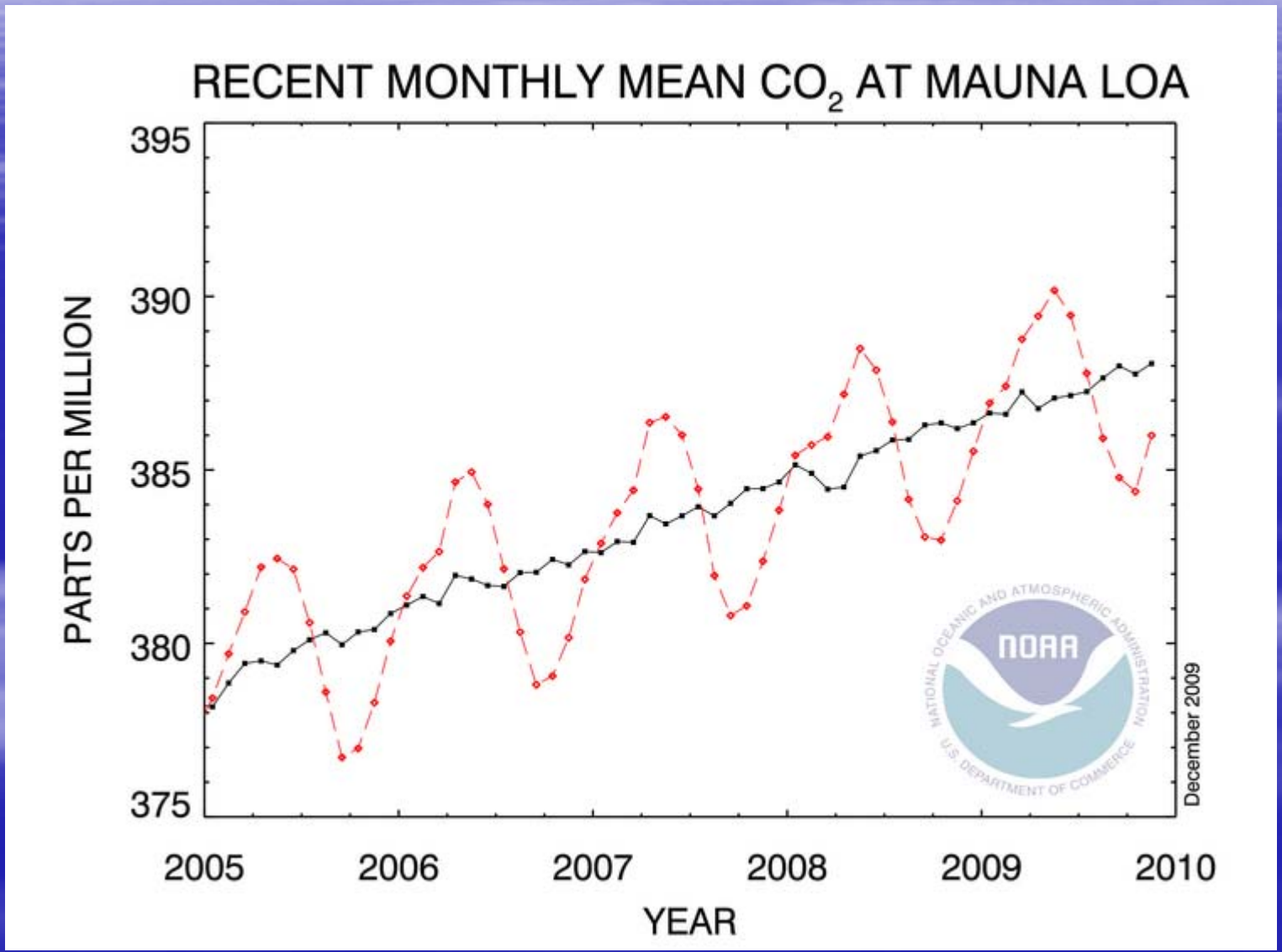
vs.

Legislative Approach

Why do we need to do anything ?

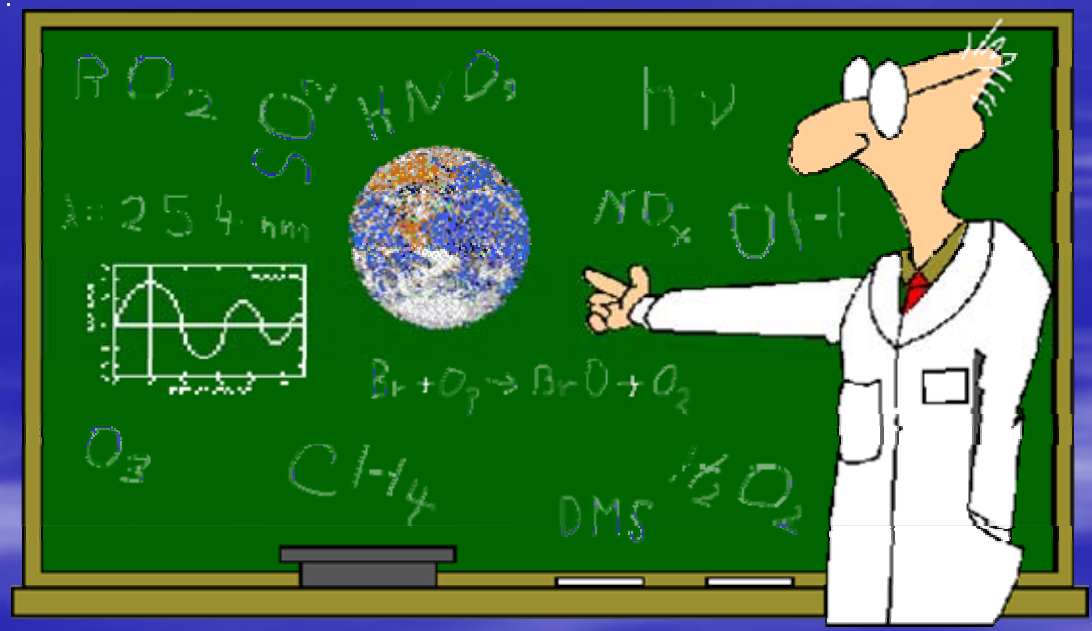
- For many hundreds of thousands of years, CO_2 from the atmosphere has been absorbed by plants and minerals to generate the ores and fuels we use today
- We are releasing this stored carbon at rates which do not appear in the fossil record
- Pre – industrial levels of CO_2 in atmosphere ~ 271 parts per million (PPM)

Where are we now ?



Atmospheric Chemistry 101

- Oxygen, Nitrogen
- Argon
- Carbon dioxide
- Water vapor
- Ozone
- NOx, SOx, CO
- Particulate matter
- Other stuff



Two Paths to the Future

- Supreme Court (Mass. vs. USEPA), GHG are pollutants under CAA
- USEPA has taken many steps down this path in the last year and a half including
  - GHG limits for new vehicles
- Congress is addressing the reduction of CO_2e from industrial and utility sources
- Congress may also be facing (in the not too distant future) a GHG Treaty for Ratification

USEPA Regulatory Approach

- GHG Reporting Rule
- Endangerment Finding
- Establishment of limits
  - NAAQS
- NSR – Tailoring Rule
- Determination of BACT
  - What is control
- Development of SIP
- Periodic review of progress

GHG Reporting Rule

- Requires stationary sources with potential emissions above 25,000 TPY CO_2e to submit inventories of GHG emissions to USEAP, annually.
- These inventories become the base line for *something . . .*

Endangerment Finding

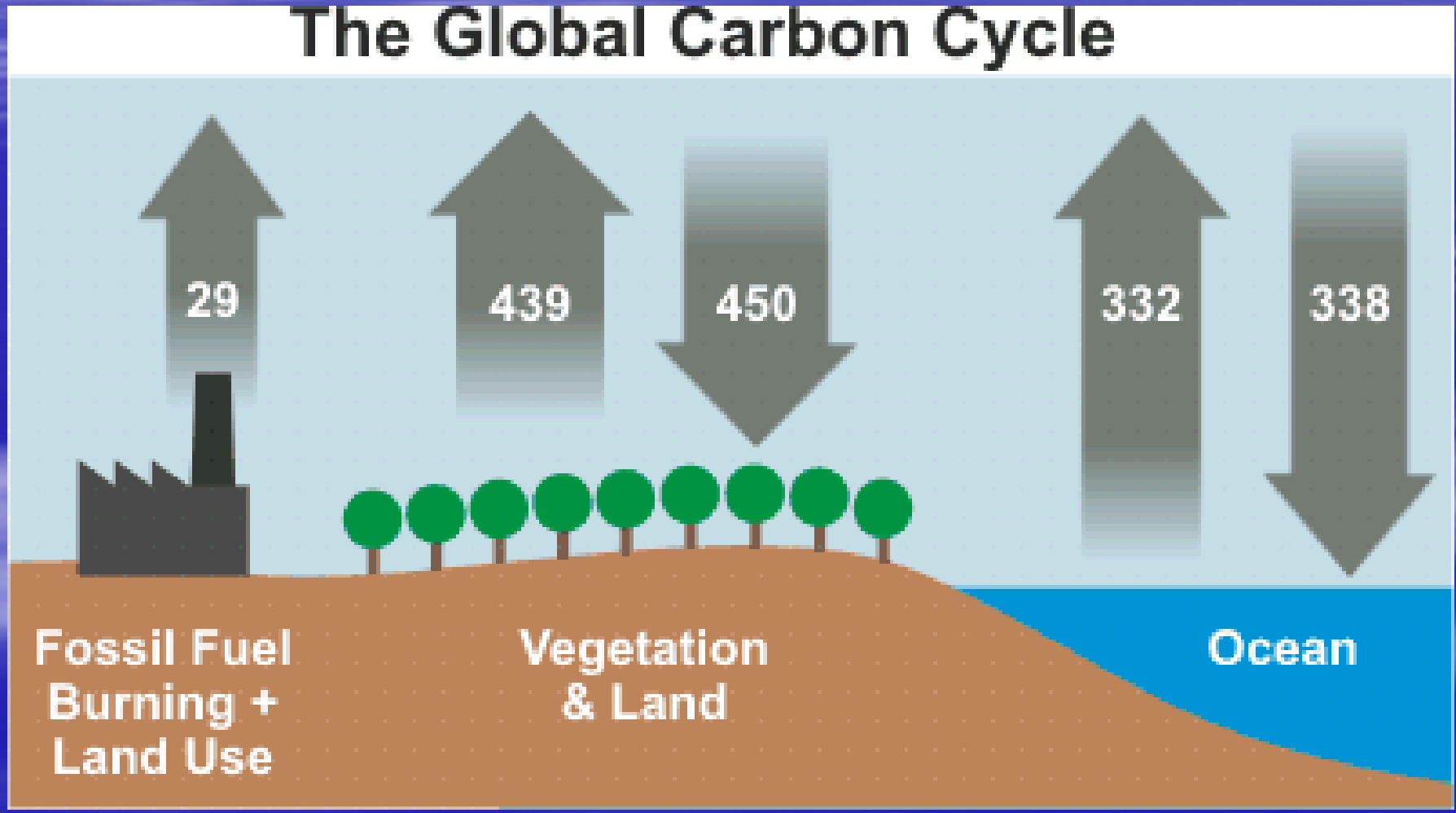
- Final Rule
  - 40 CFR Chapter I, Section 202(a) 12-14-09
  - Effective Date January 14, 2010
- Contains NO Regulatory Requirements
- "is about whether the current or projected future levels may reasonably be anticipated to endanger"

Establishment of Limits

- National Ambient Air Quality Standards

- “are about setting standards at a level requisite to protect public health and public welfare”

Local Emissions – Global Impact



State Implementation Plans

- Once NAAQS is established, the States are required to develop a plan on how they can apply pollutant controls to achieve the NAAQS
- The SIP Call is typically about a three year process

New Source Review

- PSD/Title V GHG Tailoring Rule
  - Proposed rule published 10-27-09
  - Public Comment Meetings Held
  - Comments due 12-28-09

- Tailoring Rule requires large facilities (25K TPY CO_2e) to obtain/revise permits which demonstrate best control practices and technology

Best Available Control Technology

- BACT Analysis utilizes data base of actual control systems to establish what controls are “cost effective” at reducing the emissions of the designated pollutant
- For CO_2e, this may be “good practices”
- CCS is not a proven, cost effective control technology

Periodic Review of Impact

- NAAQS are periodically reviewed based on the science and health aspects of the pollutant of concern
  - PM and O3 Stds revised
  - Pb Std revised in 2008
  - Lower SO_2 NAAQS proposal is out for public comment
  - Proposed NOx short term limits

So What ?

- By using the CAA to address Climate Change
  - USEPA is attacking a totally different type of pollutant
  - Attainment/Non-attainment areas will blur to non-existence
  - BACT/LAER will be case by case
- USEPA will have a big stick, offers no flexibility, no cross border reach

CO_2 - Pollutant or Commodity ?

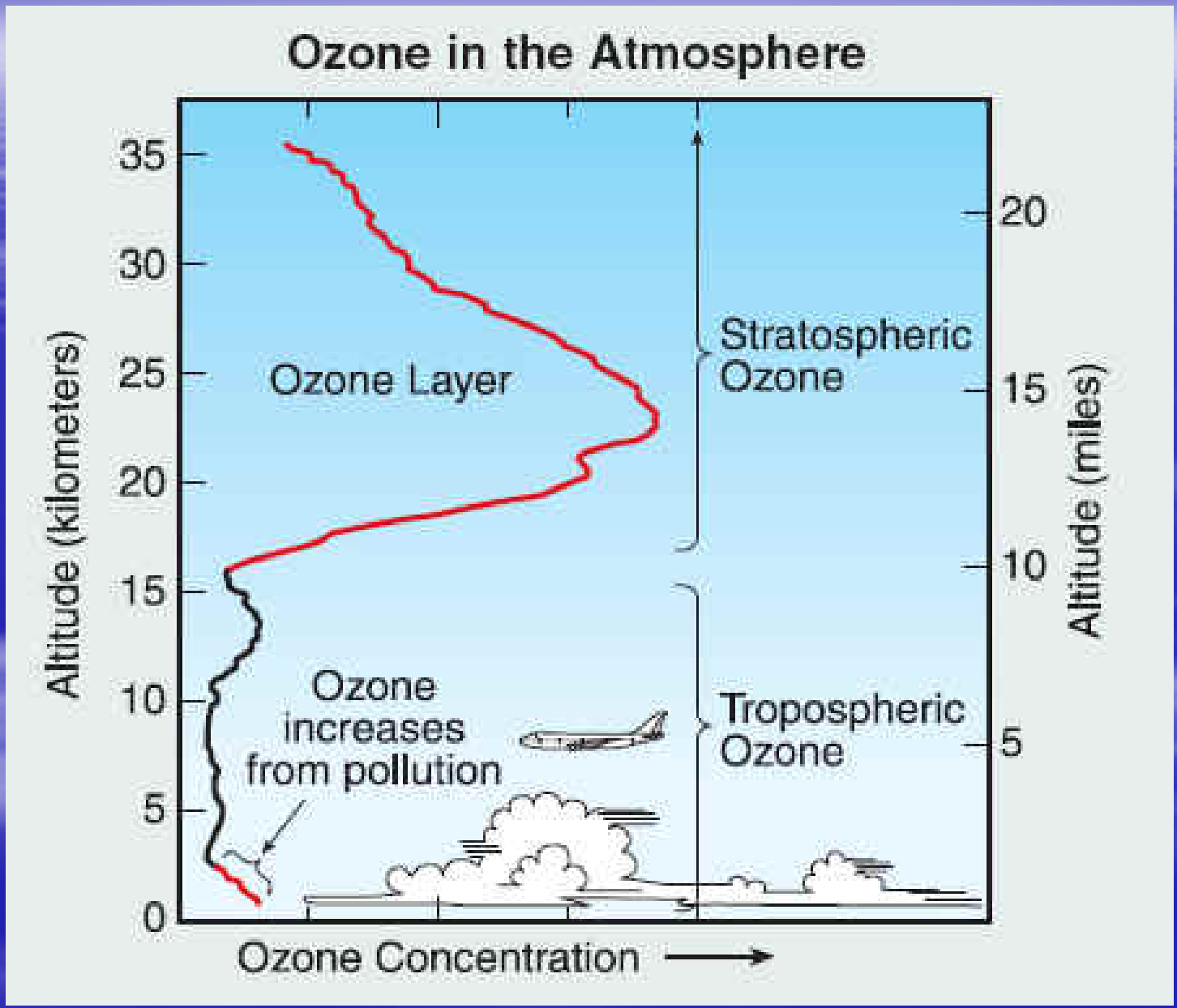
- As a pollutant -
  - CO_2 has an impact,
  - an acceptable ambient concentration
  - and a control strategy / mechanism
- As a commodity –
  - CO_2 has a value
  - a market and
  - *incentive* for reduced emissions

So What's Another Approach?

- Establish Caps - with real limits
  - Global Reach
  - Reduced Allowable Emissions
- Establish Carbon Equivalent Price Structure
  - Trading of Allowances
    - International bank
    - Free market
  - Direct Taxation of Carbon Use

Where there's a will . . .

- Ozone Hole
  - CFC's
  - Clearly perceived threat
  - Sound scientific explanation
  - Clear course of action
  - Montreal Protocols


Ozone in the Atmosphere
Altitude (kilometers)
35
30
25
20
15
10
5
0
Altitude (miles)
20
15
10
5
Ozone Layer
Stratospheric Ozone
Tropospheric Ozone
Ozone increases from pollution
Ozone Concentration

Making Sausage

- Congress has already held committee hearings, introduced bills and made a lot of noise about climate change legislation
- This has generated lots of sound bites and plenty of debate, some of it civil
- This has not reduced CO_2e one iota, nor will it do so in the near future

H.R. 2454: American Clean Energy and Security Act of 2009

- Title I – Clean Energy
  - A Combined Efficiency and Renewable Electricity Std
  - B Carbon Capture and Sequestration
  - C Clean Transportation
  - D State Energy and Environmental Development Accounts
  - E Smart Grid Advancement
  - F Transmission Planning
  - G Technical Corrections to Energy Laws
  - H Energy and Efficiency Centers and Research
  - I Nuclear and advanced Technologies
  - J Miscellaneous

H.R. 2454: American Clean Energy and Security Act of 2009

- Title I – Clean Energy

- Title II – Energy Efficiency
  - A Building Energy Efficiency Programs
  - B Lighting and Appliance Energy Efficiency Programs
  - C Transportation Efficiency
  - D Industrial Energy Efficiency Programs
  - E Improvements in Energy Savings Performance Contracting
  - F Public Institutions
  - G Miscellaneous
  - H Green Resources for Energy Efficient Neighborhoods

H.R. 2454: American Clean Energy and Security Act of 2009

- Title I – Clean Energy
- Title II – Energy Efficiency

- Title III – Reducing Global Warming Pollution
  - A Reducing Global Warming Pollution
  - B Disposition of Allowances
  - C Additional Greenhouse Gas Standards
  - D Carbon Market Assurance
  - E Additional Market Assurance

H.R. 2454: American Clean Energy and Security Act of 2009

- Title I – Clean Energy
- Title II – Energy Efficiency
- Title III – Reducing Global Warming Pollution

- Title IV – Transition to a Clean Energy Economy
  - A Ensuring Real Reductions in Industrial Emissions
  - B Green Jobs and Worker Transition
  - C Consumer Assistance
  - D Exporting Clean Technology
  - E Adapting to Climate Change
  - F Deficit Neutral Budgetary Treatment

H.R. 2454: American Clean Energy and Security Act of 2009

- Title I – Clean Energy
- Title II – Energy Efficiency
- Title III – Reducing Global Warming Pollution
- Title IV – Transition to a Clean Energy Economy

- Title V – Agricultural and Forestry Related Offsets
  - A Offset Credit Program From Domestic Agricultural and Forestry Sources
  - B USDA Greenhouse Gas Emission Reduction and Sequestration Advisory Committee
  - C Miscellaneous

Cap and Trade

- Allows industry time to ease into making any real reductions
- Provides opportunities for investors and brokers to “get in on the action”
- Allows certain facilities to “buy their way out” of making meaningful changes

EU Cap and Trade

- Caps not low enough nor rigid enough
- Trades for offsets in third world, one way to scam the system
  - Verification of “equivalence project”
  - Long term viability of project
- Trade price for carbon currently less than $1/Ton, collapsed from a high of over $30/Ton

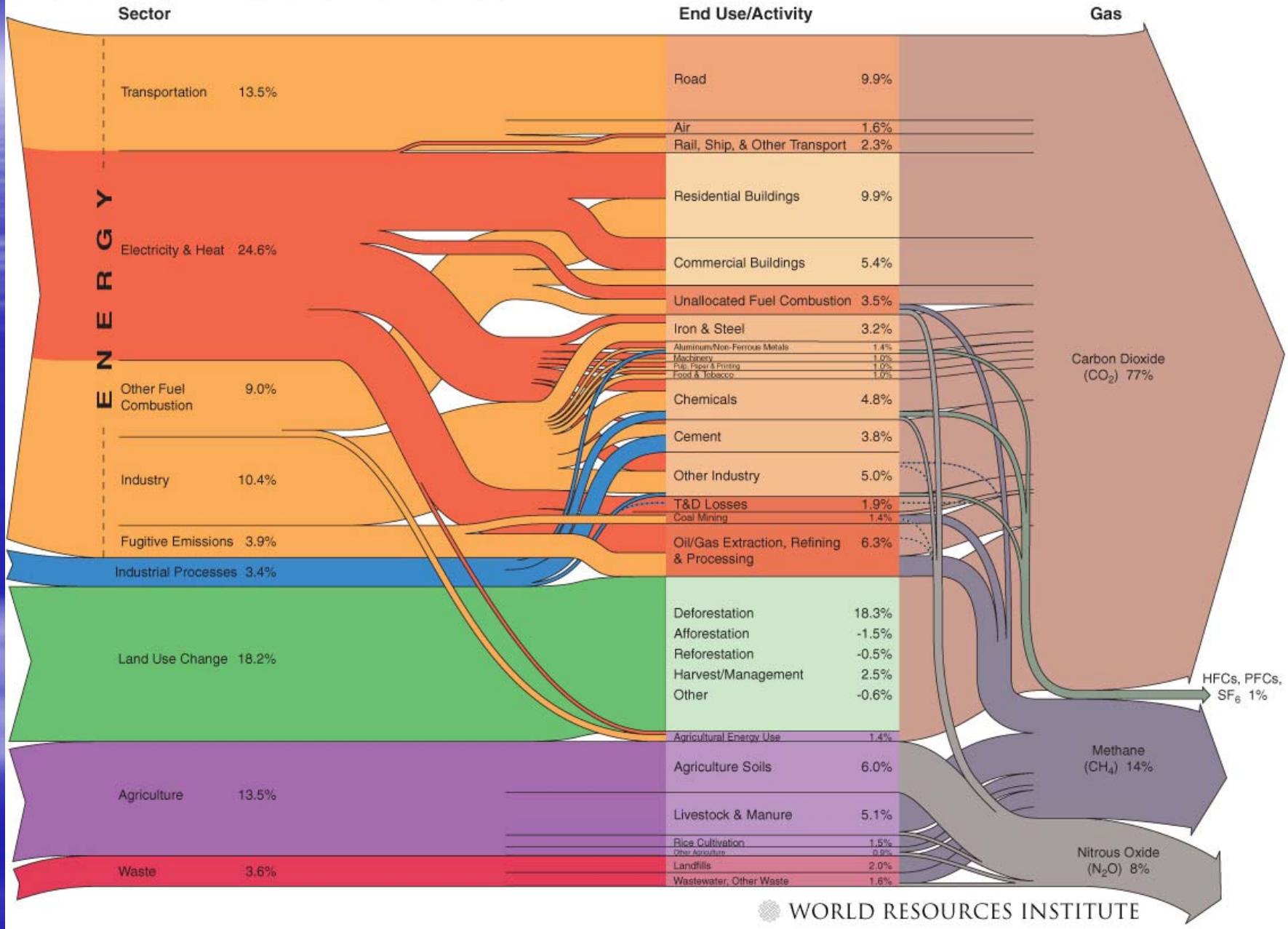
Carbon Tax

- Straight Tax on Carbon Usage
  - Revenue neutral ?
- Monies go to agency charged with developing alternative technologies, for instance…
  - Education
  - Technology Development
  - Subsidizing the needy
  - Carbon Sequestration
  - Desalinization projects

The 800 Pound Gorilla

- Changing the way of life for billions of people, who are happy being on top, will not be easy (it's easy to just say "no")
- Economic incentives will alter peoples behaviors, in a meaningful and direct way
- An appropriate *carbon price* must be established (2012 - $28/Allowance – proposed in Waxman)

World GHG Emissions Flow Chart



What can we do locally ?

- Support carbon reduction legislation and global treaties
- Lobby your representatives for implementation of a carbon control program
- Lobby your neighbors to do the same
- This effort needs to start down the “right” path, not *any* path will do

What Should We Be Asking For ?

- Local Issues
  - Greening of Mass Transit
  - Standardization and Propagation of Vehicle Charging Stations
  - Promotion of Renewable Energy Production on Small to Medium Scale
  - Organic Waste Digestion
- Agricultural Practices
  - Char Production and Application
  - Animal Waste Digestion
  - Low Carbon Tillage and Growing Practices

What Should NOT be Promoted

- Food Based Fuels