

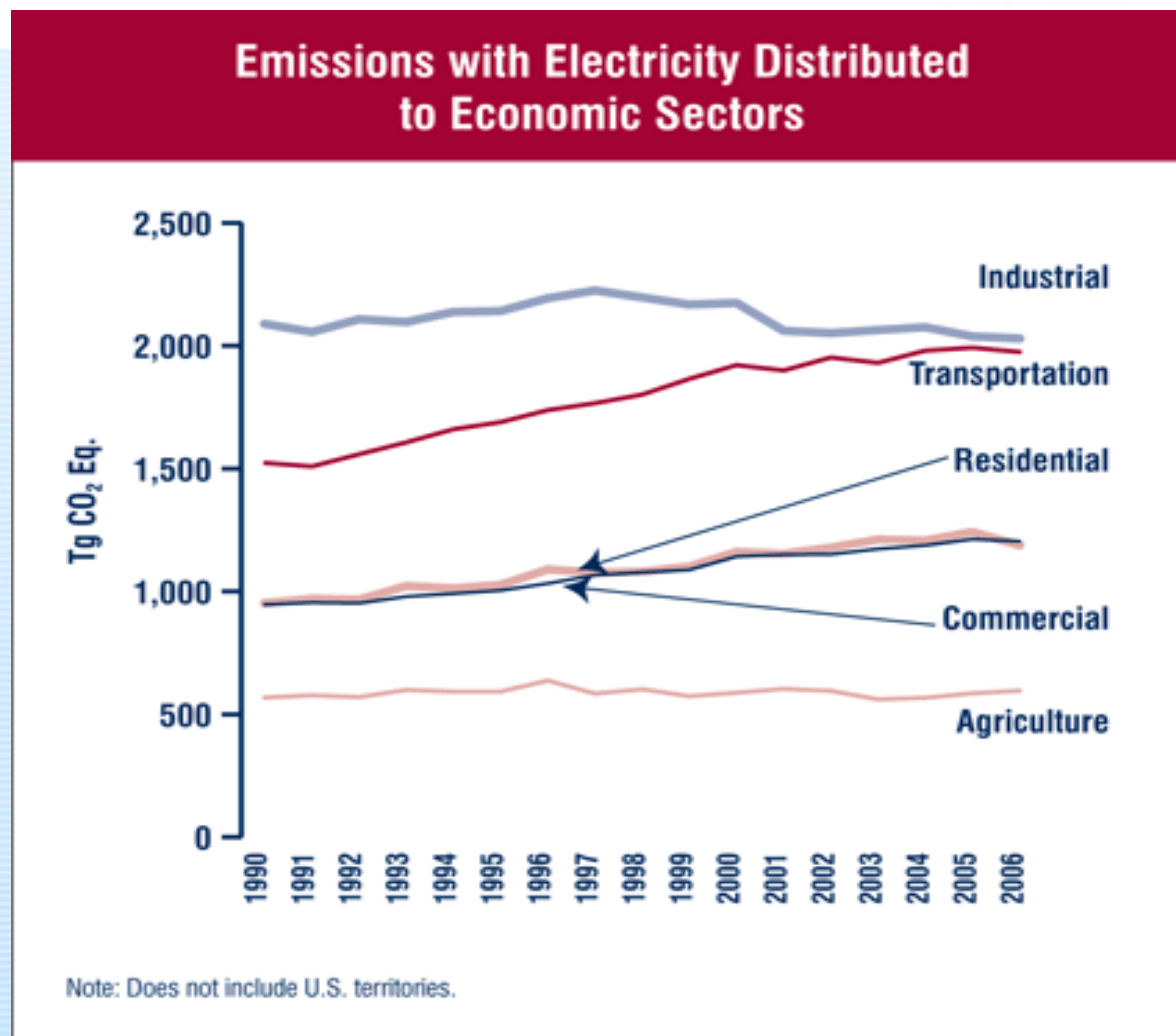
On the Horizon: The Potential Impacts of Climate Change Regulations on the Transportation Sector

June 24, 2009

Sandra Rennie
U.S. EPA Region 6



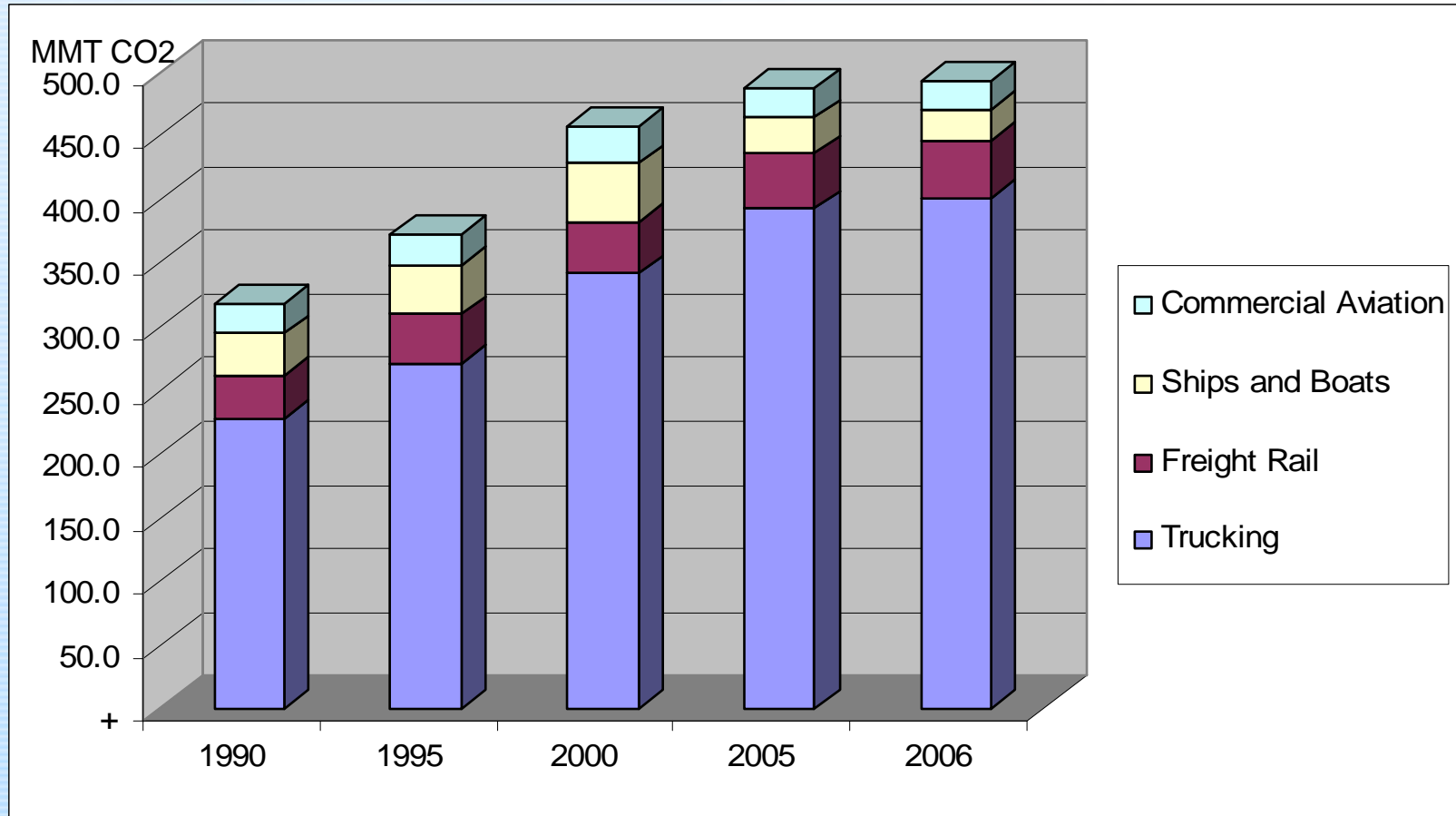
Rapid Increase in Transportation Greenhouse Gas Emissions



Source: US Emissions Inventory (April 2008) EPA 430-R-08-005



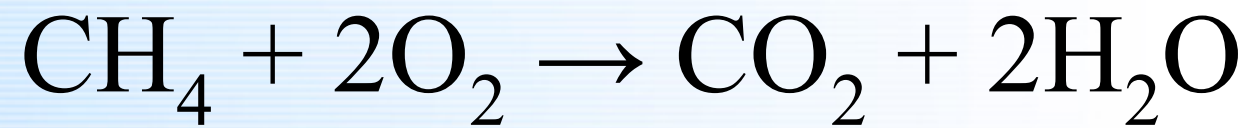
Greenhouse Gas Emissions from Domestic Freight Transportation



National Transportation Statistics 2008 and Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2006

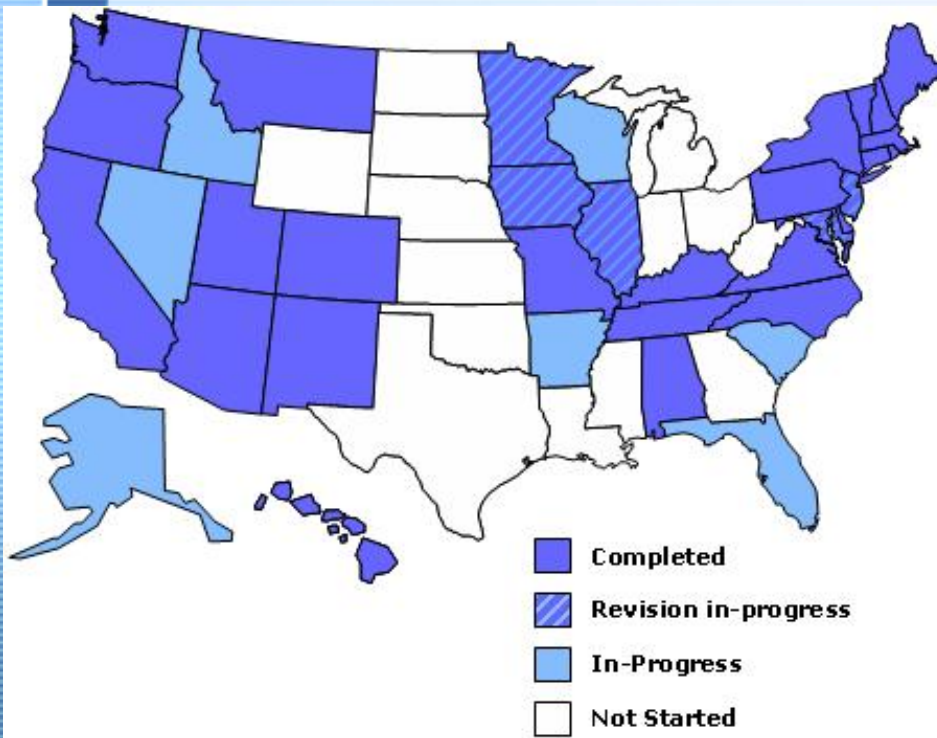


Fuel Combustion



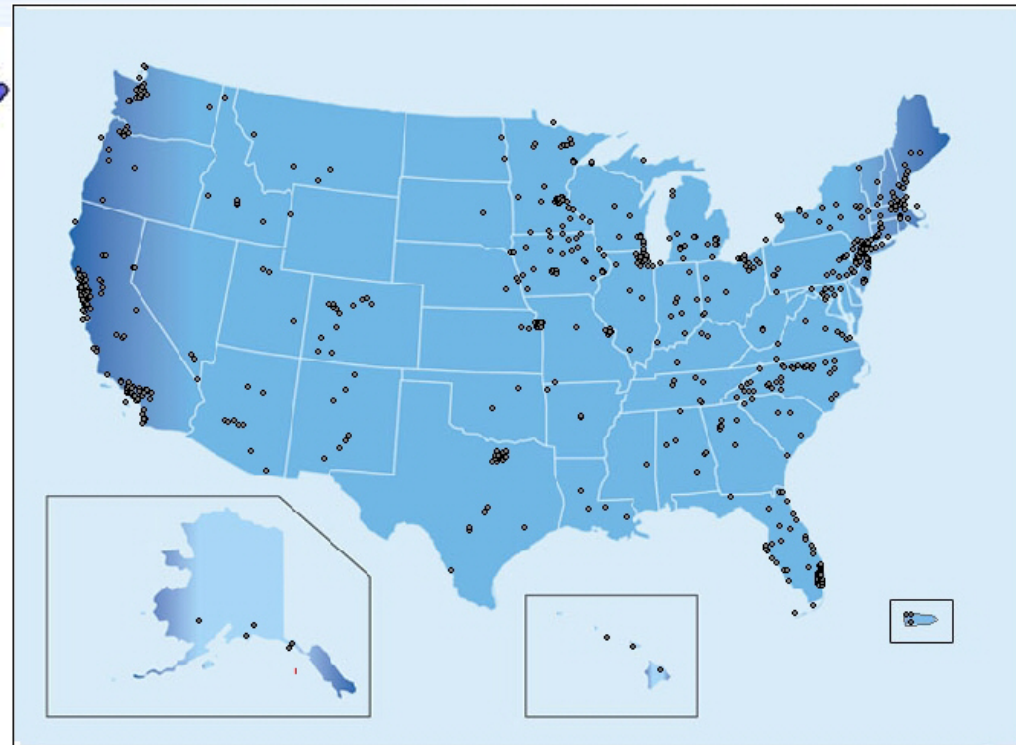
State Measures on Climate Change

States with Climate Action Plans



Source: <http://www.pewclimate.org>

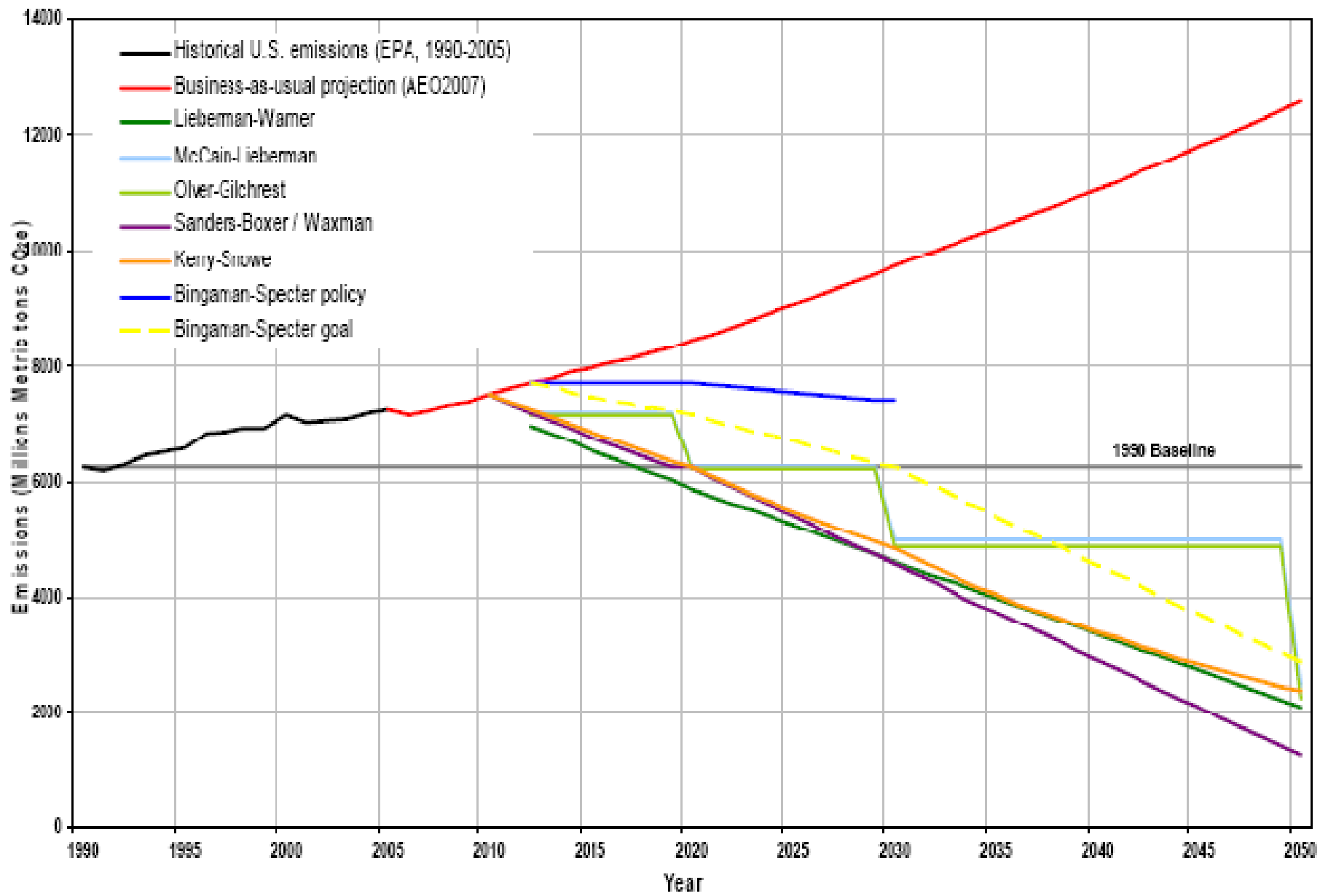
Cities Signed on as U.S. Conference of Mayors Climate Protection Agreement



<http://usmayors.org/climateprotection/ClimateChange.asp>



Pending Legislation on Climate Change



History of GHG in EPA

March 1998 Congressional Request for Legal Opinion

April 1998 EPA Legal Opinion

October 1999 Petition for Rulemaking

August 2003 Revised EPA Legal Opinion

April 2007 Supreme Court Decision on MA vs. EPA



April 2007 Supreme Court Decision

- Greenhouse gases are air pollutants covered by the Clean Air Act
- “EPA has offered no reasoned explanation for its refusal to decide whether greenhouse gases cause or contribute to climate change.”
- Court remanded the case back to EPA to re-examine whether GHGs from motor vehicles threaten public health or welfare



What We're Going to Cover

EPA's Proposed GHG Endangerment Finding

Proposed Federal Automobile Standards for Fuel Economy and Greenhouse Gas Emissions

Proposed Renewable Fuel Standard 2

EPA's SmartWay Transport Program



Proposed Endangerment Finding



Proposed Endangerment Finding

- Notice published April 24, 2009
- Comment period till June 23, 2009
- Proposed Finding of Endangerment
- Proposed Finding of Cause or Contribute



Proposed Endangerment Finding

Carbon dioxide (CO₂)

Methane (CH₄)

Nitrous oxide (N₂O)

Hydrofluorocarbons (HFCs)

Perfluorocarbons (PFCs)

Sulfur hexafluoride (SF₆)

- threaten the public health and welfare of current and future generations



Proposed Endangerment Finding

- Mobile source emissions can be controlled under section 202(a) of the Clean Air Act
 - CO₂ -- Carbon Dioxide (94%)
 - CH₄ -- Methane (0.11%)
 - N₂O – Nitrous Oxide (1.8%)
 - HFCs – Hydroflourocarbons (4.2%)
- CO₂ is dominant emission from
 - Passenger cars
 - Light-duty trucks
 - Motorcycles
 - Buses
 - Medium/Heavy-duty Trucks



Proposed Cause or Contribute Finding

- Emissions from new motor vehicles and motor vehicle engines contribute to the atmospheric concentrations of these key GHGs and hence to the threat of climate change
- CO2 emissions from these source categories grew by 32% between 1990-2006
 - Light-duty truck emissions grew 61%
 - Medium/heavy-duty truck emissions grew 76%



EPA's Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFÉ Standards



Joint Rulemaking

- Establish Vehicle GHG Emissions and CAFÉ Standards
 - EPA: standards for emissions of greenhouse gases under the Clean Air Act
 - DOT's National Highway Traffic and Safety Administration: standards for fuel economy under EPCA as amended in 2007
- Notice was published May 22, 2009



Joint Rulemaking

- Standards would apply in Model Years 2012- 2016
 - passenger cars
 - light-duty trucks
 - SUVs
 - Mini-vans
- Responsible for almost 60% of all U.S. transportation-related GHG emissions
- Will allow manufacturers to build a single light-duty national fleet.



Joint Rulemaking

- By 2016 the fleet average will be 35.5 miles per gallon, that is four years earlier than the CAFE law now requires.
- Projected reduction in oil consumption of approximately 1.8 billion barrels over the life of the program.
- Projected total reduction in GHG emissions of approximately 900 million metric tons.
- Incentives for manufacturers to produce flex-fuel vehicles and dedicated alt fuel vehicles.



Joint Rulemaking: Unanswered Questions

- What about Heavy-Duty vehicles and engines?
- What about the California Waiver Request?



Renewable Fuel Standard 2 Rule



Renewable Fuel Standard 2 Rule

- Proposal published May 26, 2009
- 60 day comment period closes on July 27
- EISA 2007 designed to reduce nation's reliance on foreign oil and address global climate change
 - 36 billion gallons (bg) in 2022
 - 11.1 bg in 2009
- Hope its in place by January 2010



Renewable Fuel Standard Rule 2

- Analyzed lifecycle greenhouse gas (GHG) emissions from increased renewable fuels use.
- RFs must achieve certain reductions in the levels of GHG emissions compared to the fuels they replace



Renewable Fuel Standard Rule 2

- EISA established other protective provisions
 - specifying where the feedstock can come from
 - defining the type of biomass that can be used to produce these fuels
- Developed a GHG lifecycle analysis using the most current science, peer reviewed models and data
- Breaks out the various sources of GHG emissions, such as impacts from indirect land-use



Renewable Fuel Standard 2 Rule

- Bottom line for transportation
 - Increased penetration of renewable fuels into the gasoline and diesel markets
 - Increased manufacture of flexfuel vehicles due to incentives
 - Potential increase in the volume of ethanol blended into gasoline to accommodate the mandate
 - Blend-wall question not yet answered.
 - Higher emissions from higher concentrations



Websites for more information

For the Endangerment Finding:

www.epa.gov/climatechange/endangerment.html

For the Joint Rulemaking:

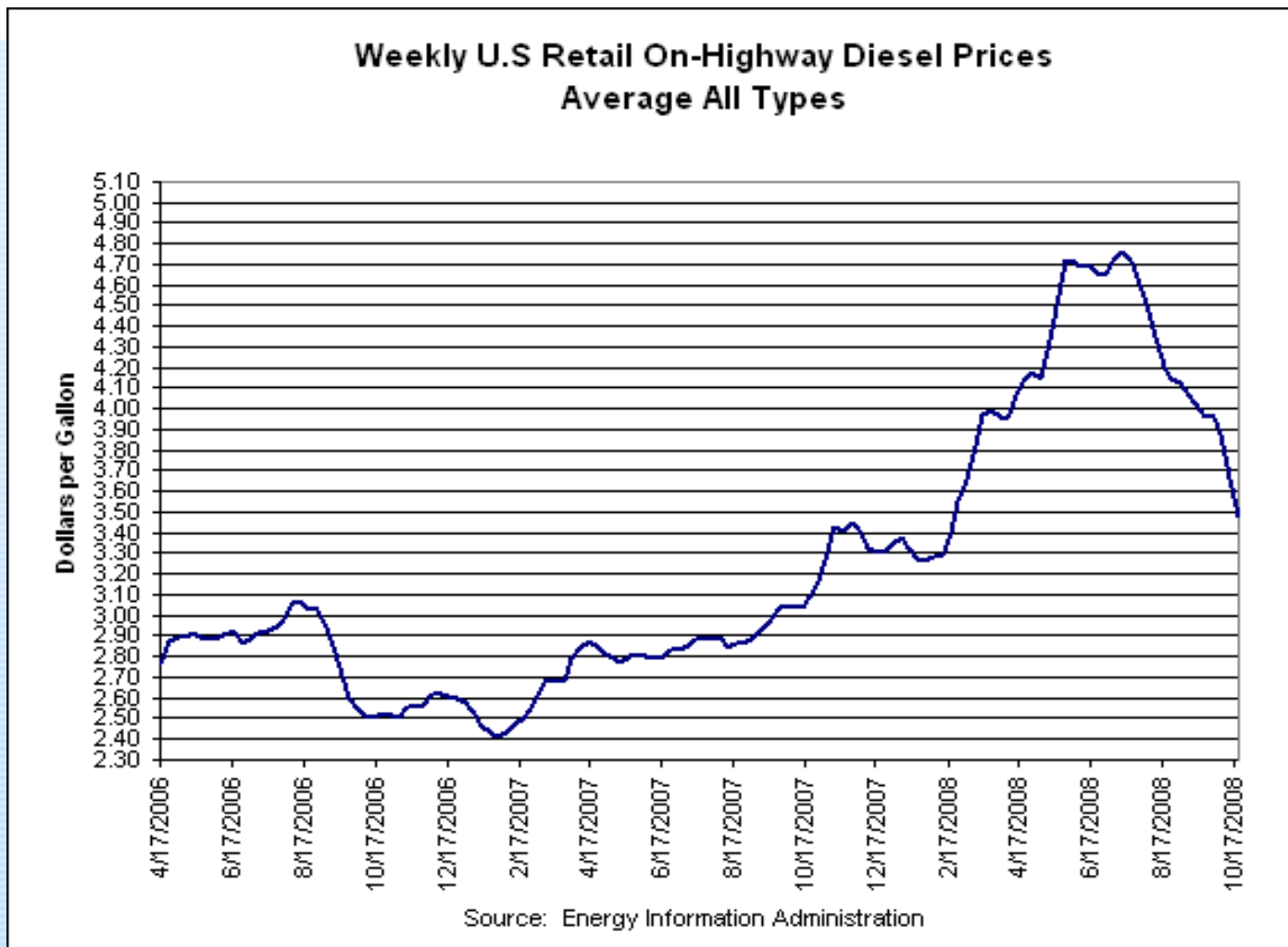
<http://www.epa.gov/omswww/climate/regulations.htm>

For the Renewable Fuel Standard 2 Rule:

<http://www.epa.gov/otaq/renewablefuels/index.htm>



Energy Costs



The Partnership



SmartWay Transport Partnership

- **What is SmartWay?**

- Successful government/industry collaboration
- Voluntarily achieves improved fuel efficiency
- Reduces environmental impacts from freight transport

- **Partnership Categories**

- Carriers
- Shippers
- Logistics
- Rail

- **Partners use models:**

- Benchmark freight operations
- Measure transportation footprint
- Identify technologies & strategies to reduce emissions
- Track emissions reductions and project improvement

- **Equipment Manufacturers**

- SmartWay certified vehicles
 - Auto manufacturers
 - Tractor manufacturers
 - Trailer manufacturers



How Does SmartWay work?

Shippers:

- Top of the supply chain, drive marketplace demand
- Give preferred status to SmartWay Carrier Partners
- Get better data to improve their own shipping operations
- Modify logistics operations to improve efficiency and reduce emissions
- Get recognition and PR value with SmartWay brand

Carriers:

- Gain competitive advantage:
 - Preferred status, plus
 - Fuel efficiency, savings
- Reduce emissions
- Integrate fuel saving technologies and strategies into fleets
- Get recognition and PR value with SmartWay brand



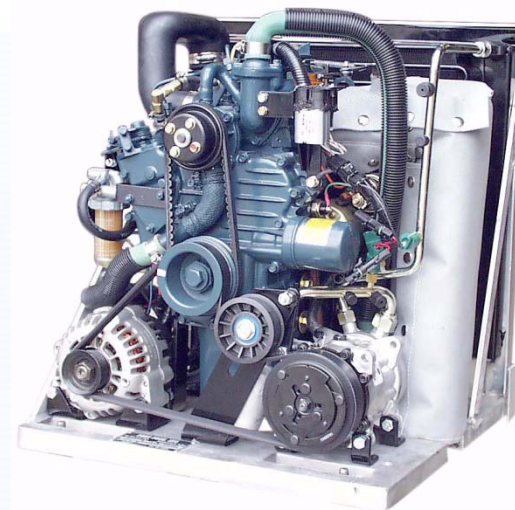
SmartWay Partner Results

- Over 1,400 partners as of March 2009
- Drive approximately 600,000 trucks (7% of industry)
- Travel over 51 billion miles per year (24% of industry)
- Consume over 12 billion gallons of fuel (24% of industry)
- Annual averages:
 - reduce greenhouse gas and pollutant emissions by:
 - 6 million tons of CO₂ (carbon dioxide);
 - 800 tons of PM (particulate matter);
 - 30,000 tons of NOx (oxides of nitrogen);
 - Save nearly 700 million gallons of diesel fuel;
 - Save the freight industry over \$2 billion in annual fuel and maintenance costs.



SmartWay Upgrade Kit Technologies

- **Fuel-Saving Technologies:**
 - Idling Reduction Technologies
 - Auxiliary Power Unit/Generator Set
 - Battery Powered Systems
 - Diesel Driven Heating System
 - Low Rolling Resistance Tires
 - Advanced Tractor/Trailer Aerodynamic



Idle Reduction Technologies

For Trucks and Locomotives

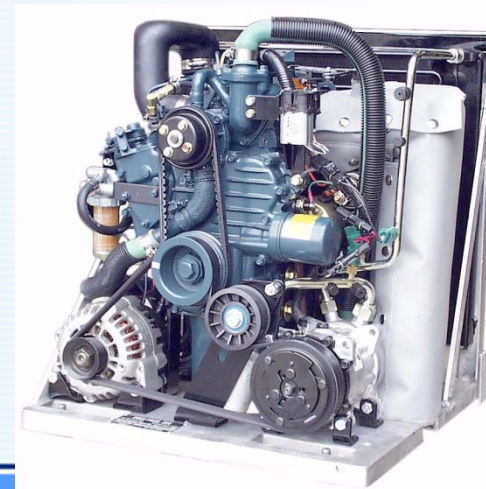
Average fuel savings Emissions Controlled

Trucks: 1 gal/hr

CO₂, NO_x, and PM

Rail: 4 - 12 gal/hr

- Automatic Shut-Down/Start Up System
- Battery Powered Systems
- Diesel Driven Heating System
- Auxiliary Power Unit/Generator Set
- Truck Stop Electrification



Low Rolling Resistance Tires

Single Wide Base and Improved Duals

Average fuel savings Emissions Controlled

Trucks: 4 - 5%

CO₂, NO_x

- Single-wide tires and aluminum wheels
 - Reduced rolling resistance
 - Reduced weight
- Low rolling resistance duals can be as effective as singles



Trailer Aerodynamics

Average fuel savings Emissions Controlled

Trucks: 5%

CO₂, NO_x

- Trailer Fairings, Side-skirts
- Nose Cone and Trailer Tail



Enclosed Auto Trailers



SmartWay Financing: Upgrade Kit Loan - Example

Device	Cost/Unit (Retrofit)	PM Reduction	NOx Reduction	FE/CO ₂ Change
Super Single Tires w/ alum. wheels	\$5,600	--	4%	4%
Trailer Aero Kit	\$2,400	--	5%	5%
APU	\$8,500	5% - 9%	9%	9%
Totals:	\$16,500	5 - 9%	17%	17%

For a truck traveling 100,000 miles/year @ 6 mpg (16,667 gallons /year)

- Fuel savings: 2,833 gallons @ \$4.50/gallon → \$12,748/year

- Payback period: \$16,500 / \$12,748 → ~1.3 years

- or a 5 year loan @ 12% APR:

Monthly Fuel Savings:	\$1080
Monthly Loan Payment:	(\$411)
Monthly Cash for Driver:	\$669





SmartWaySM

Transport Partnership

U.S. ENVIRONMENTAL PROTECTION AGENCY

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