



# EPA Mobile Source Priorities

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Lori Stewart  
Associate Director  
Office of Transportation & Air Quality, EPA

# Recent Mobile Source Clean Air Rules: *Comprehensively Addressing Air Pollutants*

## ■ Clean Cars and Passenger Trucks

- Gasoline sulfur control (30 ppm avg / 80 ppm max, 2006 for most refiners)
- 77-95% lower light-duty vehicle standards (phased in from 2004-2009)
- Same standards for light trucks and cars; gasoline and diesel



## ■ Clean Heavy-Duty Trucks and Buses

- Diesel sulfur control (15 ppm maximum, phased in from 2006-2010)
- 90% lower heavy-duty gasoline & diesel vehicle standards
- PM filter forcing standards, NOx catalyst based standards



## ■ Clean Nonroad Diesel Engines and Equipment

- Diesel sulfur control (2 steps - 500 ppm in 2007, 15 ppm in 2010)
- Marine diesel sulfur control (15 ppm maximum) in 2012
- 90-95% lower emission standards – 2011-2014



## ■ Locomotive and Marine Diesel Standards

- Requiring same technologies as on-highway and nonroad, 2014-2016
- Reduces PM by 90% and NOx by 80 percent for newly-built locomotives and marine diesel engines



## ■ Small Engine Standards

- New exhaust emission standards take effect in 2011 or 2012 depending on engine size



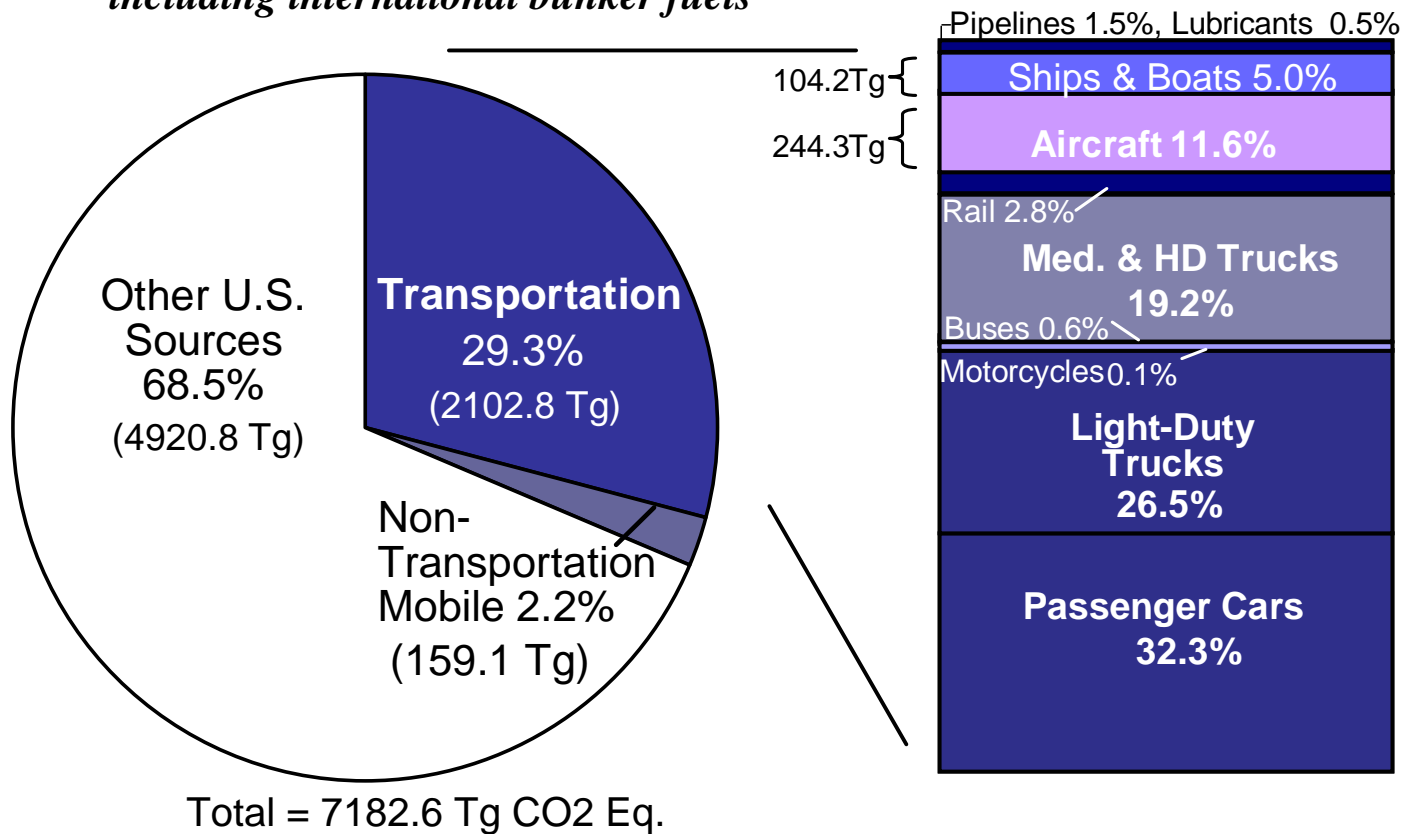
# Addressing Ocean-Going Vessels is also a High Priority

- By 2030 Ocean Going Vessels (OGVs) will contribute about 34% of NO<sub>x</sub> and 45% of PM emissions from mobile sources
  - Over 40 major ports are located in PM and NO<sub>x</sub> nonattainment areas.
- EPA drafted stringent new standards that were adopted by the International Maritime Organization (IMO) in October 2008, after several years of effort
  - New engines - 80% NO<sub>x</sub> reduction by 2016
  - Existing engines – 15-20% NO<sub>x</sub> reductions starting in 2010
  - Fuel Quality Standards - 97% fuel sulfur reduction by 2015
- On March 27, 2009, EPA submitted a joint U.S./Canada proposal for an Emission Control Areas designation.
  - Approved in July, 2009 IMO meeting – Final Adoption by March, 2010
- Also proposing rule under the CAA to implement new OGV standards.
- By 2030, the emission reductions associated with these combined efforts will annually prevent:
  - Between 13,000 and 32,000 PM-related, and 220 to 980 ozone-related premature deaths

# Mobile Sources Represent a Large and Growing Share of the Nation's GHGs

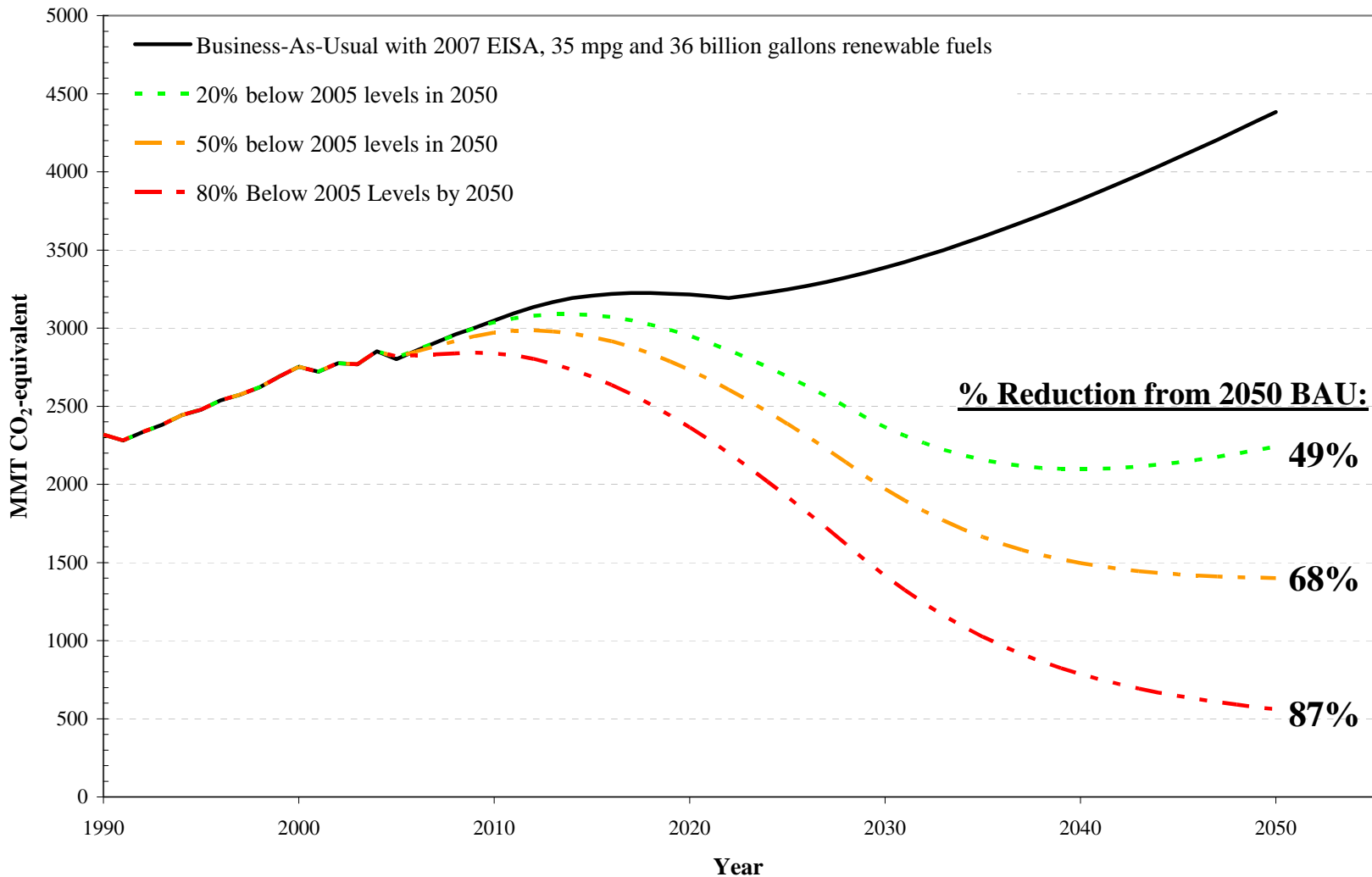
## 2006 U.S. GHG Emissions

*including international bunker fuels*



*Transportation is the fastest-growing source of GHGs in the U.S., accounting for 47 percent of the net increase in total U.S. emissions from 1990-2006.*

# U.S. Transportation Sector GHG Emissions



(Includes all IPCC categories + nonroad + upstream fuel GHG emissions)

# Recent History ...

- April 2007: In *Massachusetts vs EPA*, Supreme Court rules EPA improperly denied ICTA's petition
  - GHGs are air pollutants under CAA and EPA must decide whether to regulate using permissible criteria
  - 202(a) covers all on-highway vehicles including heavy-duty trucks
- October 2007 to January 2008 - EPA received 7 additional petitions requesting EPA to propose and adopt GHG standards for aircraft, OGVs, and nonroad engines and equipment.
- July, 2008: Advanced Notice of Proposed Rulemaking on GHGs
- April 2009: Proposed finding that greenhouse gas emissions endanger public health and welfare
  - Also proposed that motor vehicles cause or contribute to global climate change
- May 2009: President Obama announced first-ever federal emissions standards for GHGs
- June 2009: Granted California GHG Vehicle Waiver

# Current Climate Priorities

- Vehicle GHG Rule – Joint proposal with DOT CAFÉ
- Heavy Duty GHG standards
- Petitions on Nonroad GHG standards – marine, aviation, and other non-road engines
- Existing Fleet and Reducing Demand
- Renewable Fuel Standard

# Vehicle GHG Standards

- May 19 - President Obama announced a national policy to reduce greenhouse gases and improve fuel economy from new cars and trucks
- EPA and DOT signed a “Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards”
  - EPA will propose first federal GHG emission standards under Clean Air Act
  - NHTSA will propose CAFE standards under Energy Policy and Conservation Act
- Will allow auto manufacturers to produce a single vehicle fleet that meets both federal and California standards
- GHG standards will result in CO<sub>2</sub> reduction of over 900 mmt, and oil savings of about 1.8 billion barrels



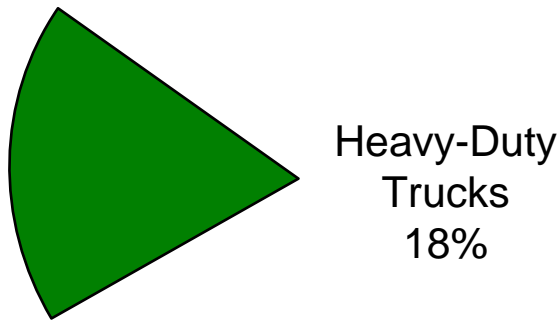
# Key Elements of Vehicle GHG Standards

- Fleetwide average standard of 250 grams/mile of CO<sub>2</sub> in model year (MY) 2016
  - Standards phased-in beginning in model year 2012
  - National GHG standard equivalent to California standards
- The 250 gram/mile CO<sub>2</sub> standard corresponds to 35.5 mpg
- Fleetwide CO<sub>2</sub> standard may be met partially through credits from improved air conditioner operation
  - Air conditioning (A/C) related emissions include both indirect CO<sub>2</sub> from increased load on engine, and direct HFC refrigerant leakage

# Key Elements of Vehicle GHG Standards

- Footprint based attribute with separate car and truck standards
- Flexibilities
  - Use of air conditioning credits under the EPA program
  - Flexible fueled vehicle credits
  - Early credit opportunities and incentives for advanced technologies
  - Temporary Lead-time Allowance Alternative Standard Program under the EPA program
  - Unlimited trading between a single firms car and truck fleets
- Compliance
  - Minimize duplication between EPA and DOT
  - EPA and DOT use same basic data
- Timing
  - Proposal: August 2009
  - Final Rule: March 2010

# Heavy-Duty Sector GHG Emissions

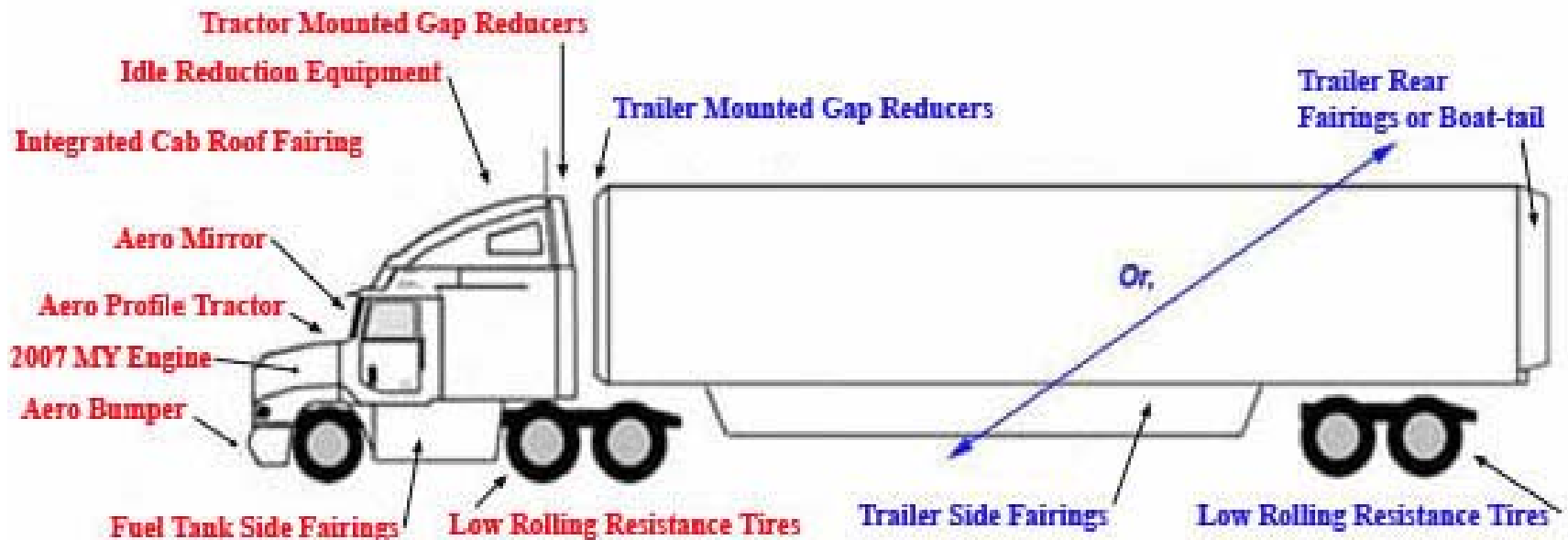


- CO<sub>2</sub> emissions expected to grow 29% between 2006 and 2030
- Diesel-powered trucks constitute 91% of the sector's GHG emissions
- Combination trucks "18-wheelers" emit 75% of the sector's GHG emissions

# SmartWay Certified Tractor and Trailer

**Tractor Strategies**  
~12% Reduction

**Trailer Strategies**  
~11% Reduction



# Goals of a HD GHG Regulatory Program

- Reduce GHG emissions through the introduction of GHG-efficient truck technology
- Encourage technology innovation and early introduction
- Build upon the successful SmartWay Program
- Maximize flexibility to truck buyer
- Means to ensure real world performance matches regulatory expectations (compliance program)
- Provide useful information to consumers

# Advancing Best Practices in the Existing Fleet through SmartWay

- SmartWay Transport Partnership program works with the freight industry to adopt sustainable transportation strategies that save fuel, reduce emissions, and protect the environment.
- Launched in 2004, SmartWay currently has over 1500 partners
  - On track to reduce over 7 MMTCO<sub>2</sub> and save the trucking industry over \$1.8 billion in fuel costs (620 million gallons) each year by 2011
- Program promotes cost-effective strategies
  - idle control, enhanced aerodynamics, PM/NO<sub>x</sub> after treatment devices, improved logistics, hybrids
- Innovative financing for truck upgrades
  - \$30 M in innovative financing grants in 2009 AARA funding (of total \$300 M)
- Also promote fuel efficient, SmartWay certified vehicles through Green Vehicle Guide

# Renewable Fuel Standard *Overview*

- RFS in Energy Independence & Security Act of 2007
  - NPRM completed, May 2009
  - Final Rule, December, 2009
  
- Modified first RFS program from Energy Policy Act of 2005
  - Volumes increase to 36 B gal/yr by 2022
    - Compared to 7.5 B gallons by 2012 under EPACT
  
  - Establishes new renewable fuel categories with GHG thresholds
    - No threshold for ethanol up to 15 B gallons, 20% for new production
    - 50% GHG reduction for advanced biofuels, including biomass diesel
    - 60% GHG reduction for cellulosic biofuel (16 B gallons)
  
  - EISA language permits EPA to adjust the lifecycle GHG thresholds by as much as 10%
  
  - Provides new waiver provisions if volumes can't be met

# Renewable Fuel Standard *Key Issues*

- The proposed rulemaking includes the first ever GHG lifecycle analysis, including both direct and indirect impacts.
  - EISA legislation required including significant direct and indirect impacts including land use impacts
  - EPA developed a technically sound methodology that greatly advanced state-of-the-art of lifecycle assessment
    - Input from USDA, DOE academics, researchers and other stakeholders
  - Proposal recognizes uncertainty in assessments and very transparent in presenting issues, options and seeking comment
  - Conducted public workshops and additional peer review of methodology
  
- Ethanol “blend wall” will occur when the market is saturated with E10. Estimates vary from 2010-2013.
  - Only E10 and E85 mixtures are approved for use in vehicles.
  - Other blends would require a waiver based on extensive vehicle testing.
  - Growth Energy requested a waiver to increase allowable ethanol content of gasoline to 15 percent.
  
- Cropland definition and implementation – to protect sensitive lands.



# The American Clean Energy and Security Act (ACES) Recognizes the Need for Transportation Measures

## **Heavy-duty Vehicles and Engines**

- Under CAA Sec. 202, standards issued by end of 2010, but rules would apply no sooner than 3 model years or 4 years after regulations are finalized

## **Nonroad Vehicles and Engines**

- Under CAA Sec. 213, standards issued by end of 2012 for classes/categories that both contribute significantly to total emissions of GHGs from nonroad engines and vehicles and provide the greatest potential for reductions

## **Expanded SmartWay Program**

- EPA financing program for the adoption of low-GHG strategies
- EPA to establish measurement protocols and verification criteria for low-GHG technologies and strategies

## **Transportation Efficiency - State & Local Programs**

- States/large MPOs must establish GHG reduction targets
- EPA to establish national-level targets and regulations on methods for MPO targets

## **Black carbon**

- Research report due to Congress within one year
- Within 18 months, propose regulations under existing CAA authorities to reduce BC emissions, OR a finding that existing regulations adequate

# In Conclusion...

- Air quality measures are still an important part of our portfolio – several new standards are still in the pipeline.
- Transportation measures are essential to reduce GHGs, even under a cap and trade scenario – due to weak price signal
- We are now moving forward on vehicle GHG standards under the CAA to implement the President's May 19 announcement, and finalizing the RFS standard, under EISA.
- Also need to address heavy-duty GHGs and respond to petitions to address nonroad engines.
- House climate legislation recognized the need for transportation measures.