Proposed Rulemaking to Establish U.S. 2014-18 Medium and Heavy Duty Vehicle Fuel Efficiency and GHG Standards and the SmartWay Transport Partnership

IEA Freight Truck Fuel Efficiency Workshop
Challenge Bibendum, Berlin, Germany
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Byron Bunker – US EPA
Cheryl L. Bynum – US EPA

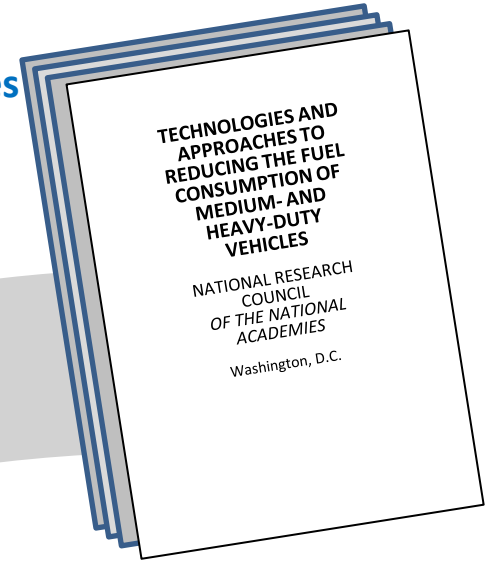
Overview

- Background
- Key Elements of the NPRM
- Costs and Benefits
- Next Steps
- SmartWay Transport Partnership

Reducing GHGs and Fuel Consumption in the U.S. Heavy-Duty Sector

March 2010

National Academy of Sciences issues its final report with recommendations for developing new standards



May 2010

President Obama directs EPA & NHTSA to develop a Joint National Program for medium- and heavy-duty vehicles

October 2010

EPA Administrator Jackson and Transportation Secretary LaHood announce proposal to reduce GHGs and fuel consumption upwards of 20%

Proposal Overview

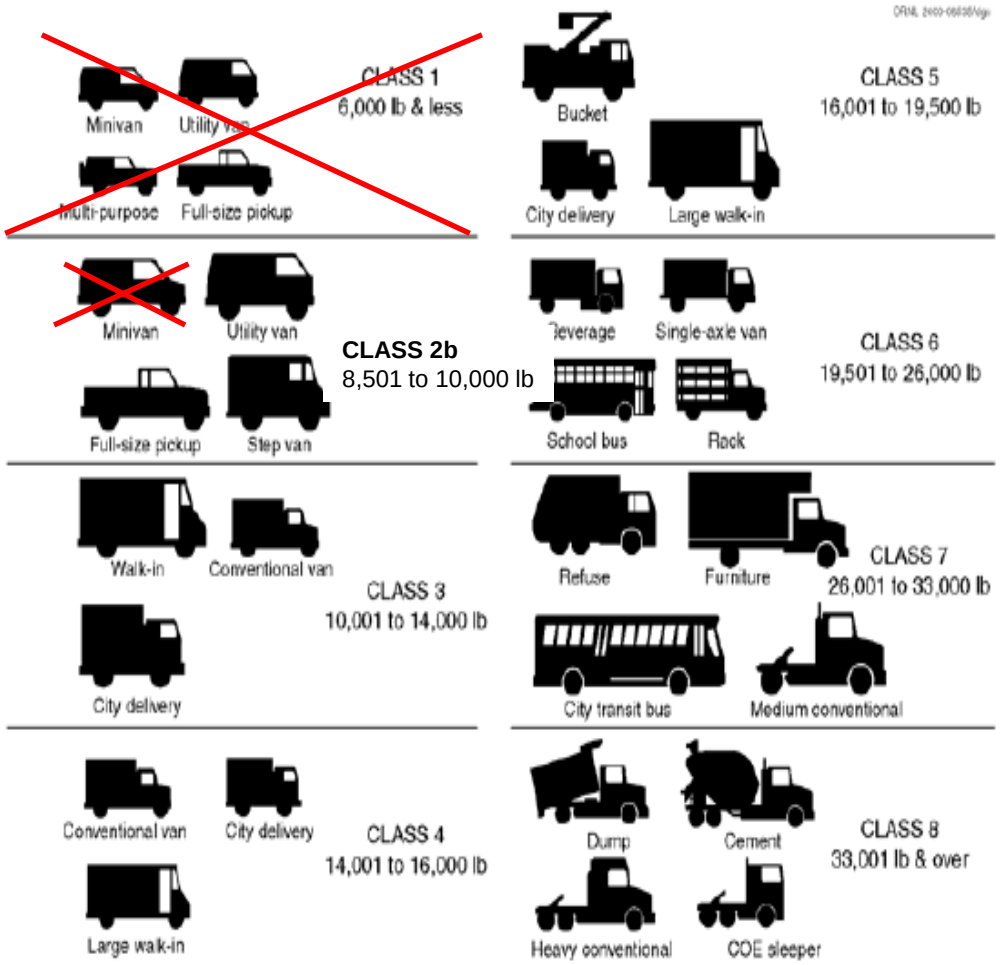
- NHTSA and EPA have issued a joint Notice of Proposed Rulemaking (NPRM) for closely-related standards to reduce fuel consumption and greenhouse gas emissions from medium and heavy duty vehicles
- Rule proposes strong and coordinated federal GHG and Fuel Efficiency standards
  - Consistent with President Obama's May 21, 2010 Presidential Memorandum
  - Coordinated national standards which provide regulatory certainty and consistency for the heavy duty vehicle industry
  - Proposal has been developed with the State of California, Industry and Environmental Stakeholders
  - Will allow for a single national fleet meeting NHTSA, EPA, and potential future California requirements
  - Takes into account the market structure of the trucking industry and the unique demands of heavy-duty vehicle applications
- Program will achieve substantial reductions in fuel consumption and GHG emissions

Proposal Builds on SmartWay Transport Partnership

- Non-regulatory program to improve the efficiency of freight transportation while reducing fuel consumption and emissions
- Launched in 2004 with full support of trucking industry and their freight shipping customers
- Encourages the benefits of key truck technologies including idle reduction, aerodynamics, efficient tires and operational strategies
- Every major truck maker now offers at least one EPA SmartWay-designated Tractor
- SmartWay experience helped guide development of the proposal

Vehicles Covered

- EPA GHG regulations begin with 2014 MY
  - Includes early credit options for 2013 MY engines and vehicles
- NHTSA Fuel Consumption regulations begin with 2016 MY
  - Includes early credit options for 2013 MY to 2015 MY engines and vehicles
- Program would set standards for all on-highway vehicles with GVWR >8,500lbs
- Excludes Medium-Duty Passenger Vehicles which are regulated with LD CAFE and GHG emission standards
- Excludes for vocational chassis, engines, and tractors that are manufactured by Small Businesses
  - Requires reporting to EPA for exclusion
- Excludes Trailers
- NHTSA's program would also exclude recreational vehicles (RVs) – since they're not "commercial" trucks



The U.S. Heavy-Duty Sector is Large and Diverse

full-size pickup trucks & work vans

vocational vehicles

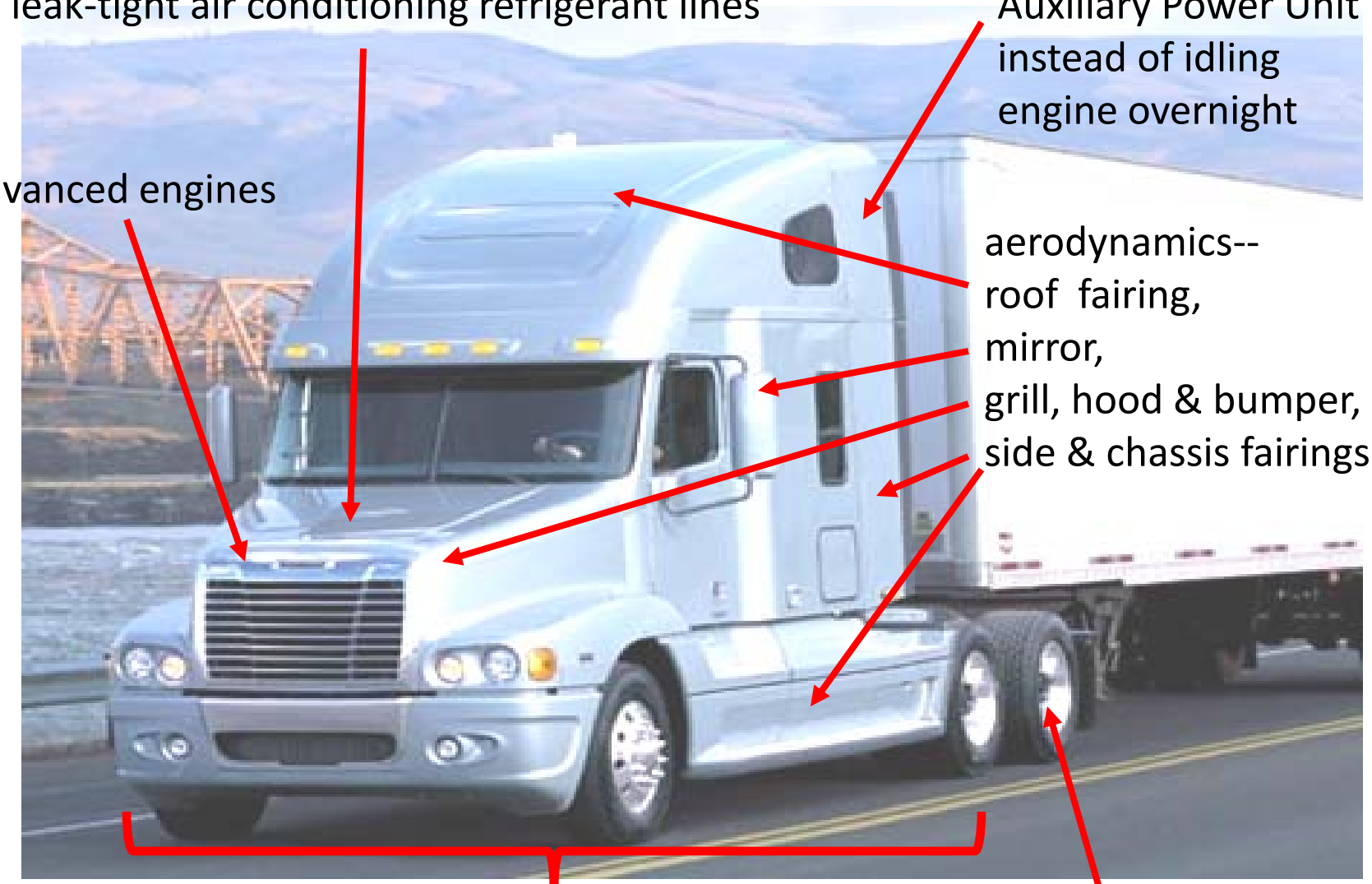
Semi Tractors

Semi-Trucks/Combination Tractors (Classes 7 and 8)

- Large tractors (Semi's) designed to pull a trailer
- Unique standards for 9 categories based on cab height, sleeper capacity (overnight idling), typical vehicle weight and typical driving patterns.

	Day Cab		Sleeper Cab
	Class 7	**Class 8**	**Class 8**
Low Roof			
Mid Roof	--	--	
High Roof			

Known Technologies Can Dramatically Reduce Truck GHGs

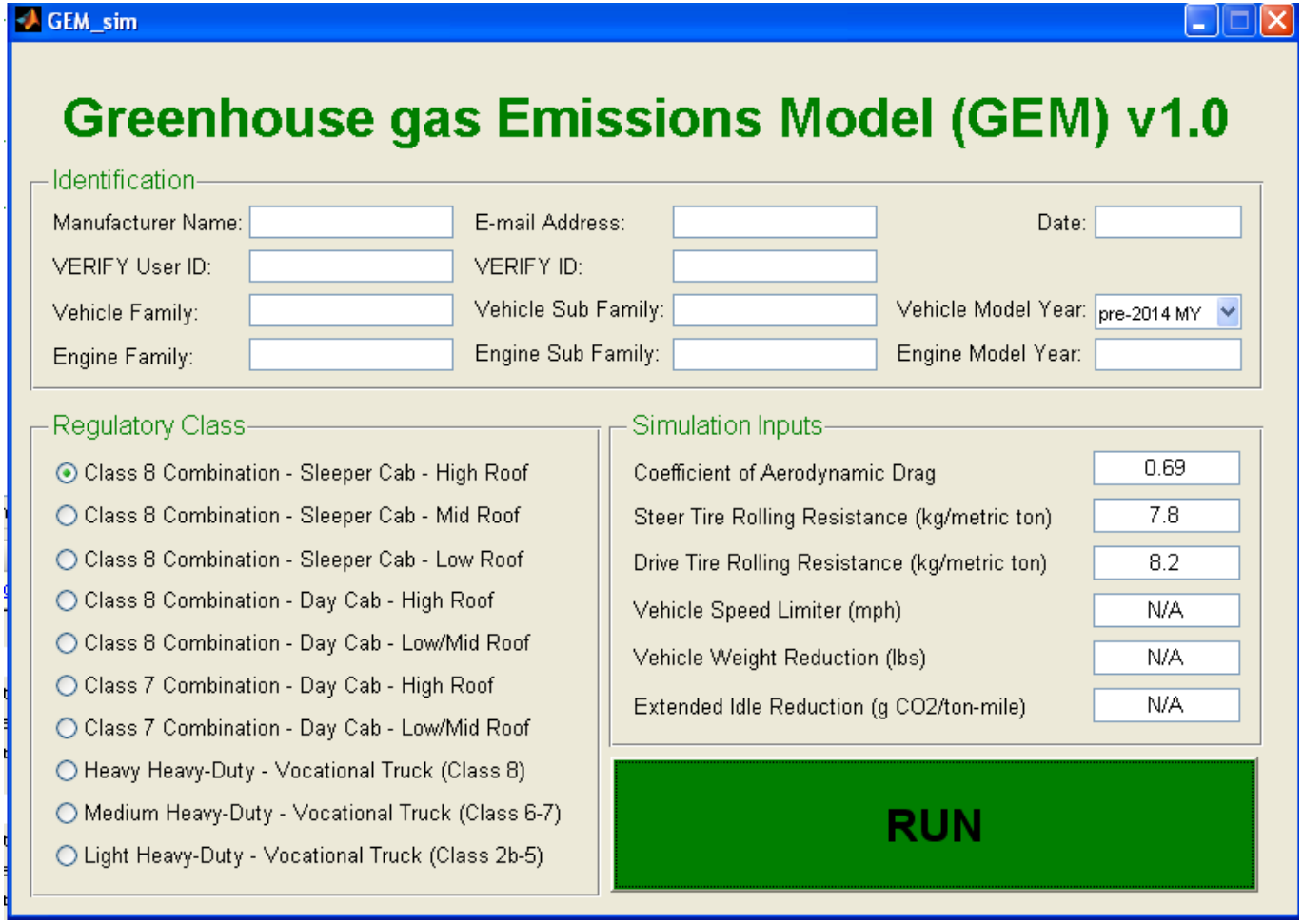


What Reductions Would the Proposed Standards Achieve?

- The proposed CO_2 and fuel consumption standards would achieve from 7% to 20% reduction (including reductions from the engine) from the 2010 baselines
  - Sleeper cabs would achieve the greatest reductions by combining vehicle/engine improvements with reduced idling

	Day Cab		Sleeper Cab
	Class 7	Class 8	Class 8
Low Roof	7%	7%	16%
Mid Roof	--	--	15%
High Roof	11%	10%	20%

Certification Inputs with a User Friendly GUI



GEM
Output Sample

```
------------------------------------------------------------
#     Class 8 Combination - Sleeper Cab - High Roof     #
------------------------------------------------------------
#           Vehicle Model Year: pre-2014 MY          #
------------------------------------------------------------

* Transient Cycle Simulation *
  Percent Time Missed by 2mph =   1.99 %
  Fuel Consumption (Total)    =   3.48 mpg
  CO2 Emission                = 153.94 g/ton-mile

* 55 mph Steady-State Cycle Simulation *
  Percent Time Missed by 2mph     =   0.30 %
  Fuel Consumption (Steady State) =   7.40 mpg
  CO2 Emission                    =  72.39 g/ton-mile

* 65 mph Steady-State Cycle Simulation *
  Percent Time Missed by 2mph     =   0.00 %
  Fuel Consumption (Steady State) =   6.19 mpg
  CO2 Emission                    =  86.53 g/ton-mile

* Cycle-Weighted Results *
  Weighted Fuel Consumption =   6.17 mpg
   >> equivalent to  8.71 gal/1000 ton-mile
  Weighted CO2 Emission     =  88.63 g/ton-mile
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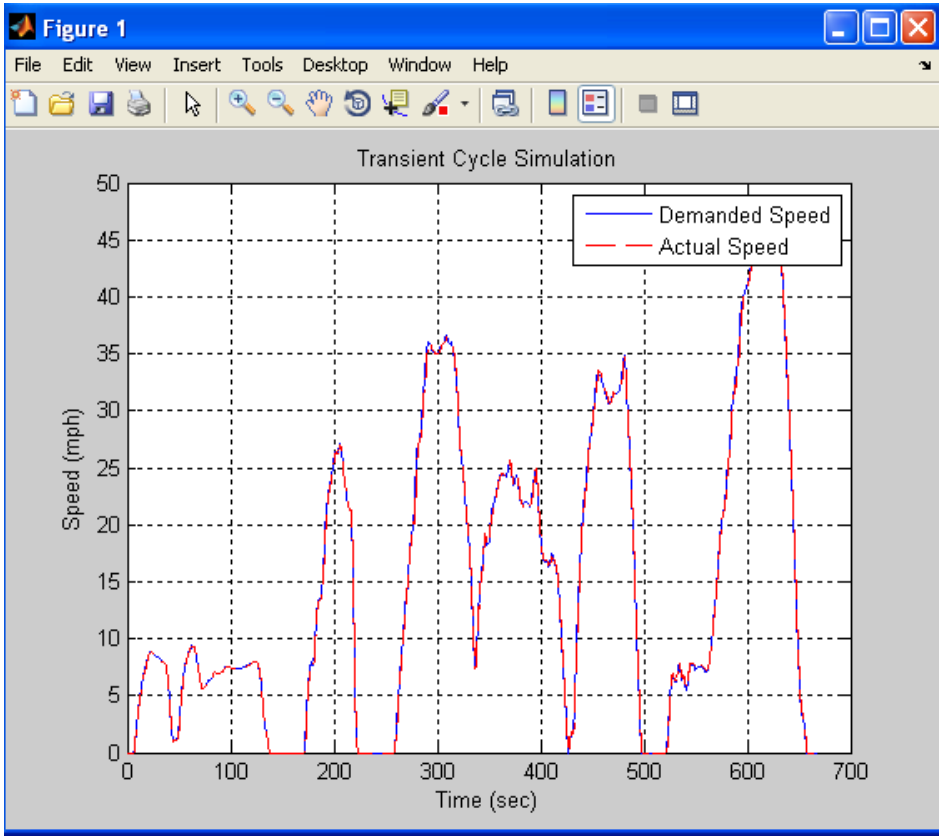
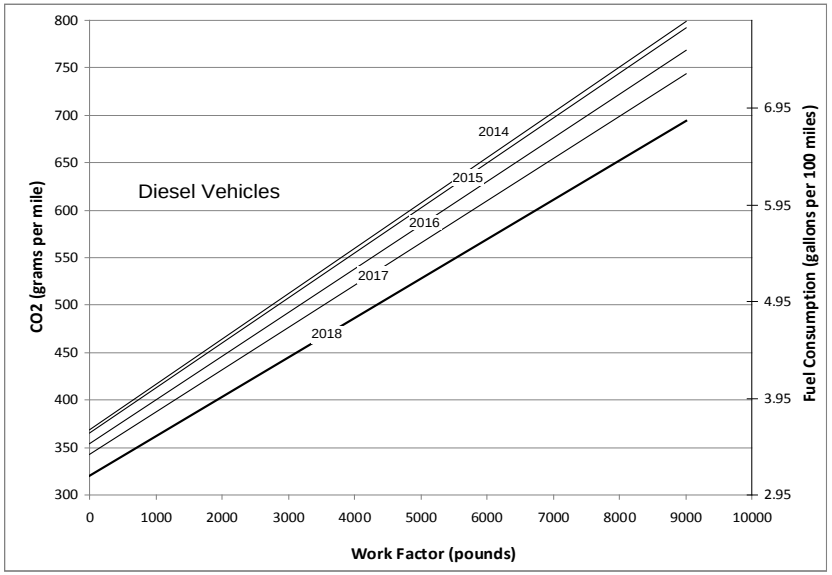


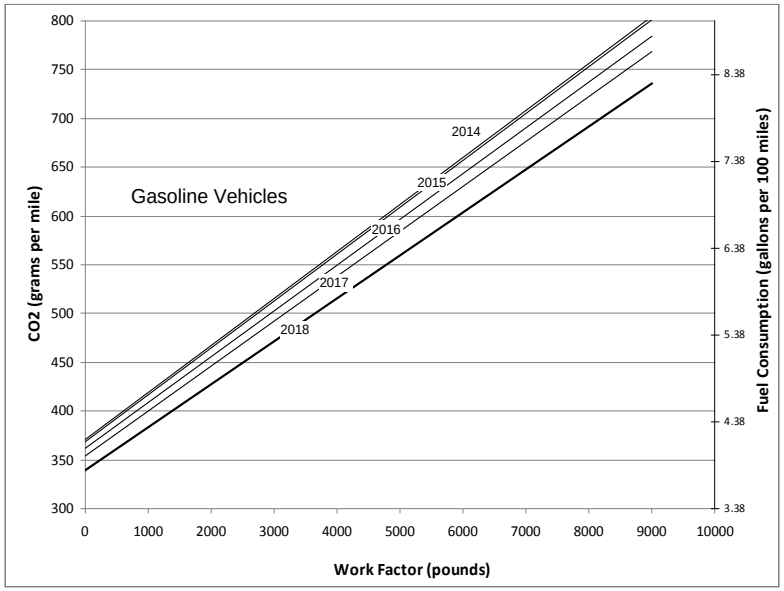
HD Pickups and Vans (Classes 2b and 3)

- Used for work trucks, work vans, heavy-trailer towing, shuttle vans
- Typically beefed up versions of light trucks covered by the light-duty GHG/CAFE program

- Examples:
  - Ford F-250, F-350, Dodge Ram 3500, Chevy Express 2500 cargo van
- Standards measured against an EPA/NHTSA defined vehicle attribute – work factor that reflects vehicle payload, towing capacity, and 2wd/4wd
- Standards are projected to achieve reductions of 10% for gasoline vehicles and 15% for diesel vehicles before additional GHG reductions (about 2% equivalent) through A/C leakage standards

HD Pickup & Van GHG and Fuel Consumption Standards





Work Factor = [0.75 x (Payload Capacity + xwd)] + [0.25 x Towing Capacity]
Payload Capacity = GVWR (lb) – Curb Weight (lb)
xwd = 500 lb if the vehicle is equipped with 4wd, otherwise equals 0 lb
Towing Capacity = GCWR (lb) – GVWR (lb)

N2O Standard = 0.05 g/mile
CH4 Standard = 0.05 g/mile

HD Pickup & Van Compliance

- Corporate average standard with one of two phase-in options
  - Between 2014 and 2018 MY at 15-20-40-60-100%
  - Between 2014 and 2019 MY at 15-20-67-67-67-100%

- Chassis test results
  - Similar to LD CAFE/GHG program
  - Also similar to complete HD pickup testing today for criteria pollutants, except:
    - New Reporting of CO2, N2O, CH4 (g/mile) and associated df values
    - Includes the addition of HWFEC for GHG emissions
    - Weighting = 55% FTP + 45% HWFEC

- NHTSA
  - Voluntary for 2013-15MY, expect most OEMs to participate to keep credit balances equal between two programs
  - Fuel consumption in gallon/100 mile

Vocational Trucks (Classes 2b through 8)

- The vocational truck category includes the wide range of remaining trucks and buses of all sizes and functions.
- Some of the primary applications for vocational trucks:
  - Delivery, refuse, utility, dump, and cement trucks
  - Transit, shuttle, and school buses
  - Emergency vehicles, motor homes*, tow trucks

* NHTSA's proposed fuel consumption standards would not apply to non-commercial vehicles like motor homes






Vocational Trucks
(Classes 2b through 8)

- Proposing to regulate the parts of these vehicles that all have in common (engines and tires) through separate engine standards and the GEM vehicle model.

What Reductions Would the Proposed Standards Achieve?

- The proposed CO_2 and fuel consumption standards would achieve reductions from 7% to 10% (including reductions from the engines), depending on the size of the truck

Light Heavy	Medium Heavy	Heavy Heavy
10%	10%	7%

Flexibilities

- Averaging, Banking and Trading provisions
- Early Credit Options (2013 MY)
- Advanced Technology Credit Options (hybrids, Rankine cycle engines, electric vehicles, fuel cells)
- Innovative Credit Option (similar to LD program)

Heavy-Duty Program Costs and Benefits

- Over the lifetime of the vehicles produced during the first 5 years of the program (2014-2018) we estimate
  - 250 MMT reduction in CO2 emissions
  - 500 million barrel reduction in oil consumption
  - $41 billion net benefits
  - $35 billion in net savings for truckers
  - Sizeable reductions in criteria pollutant emissions as well

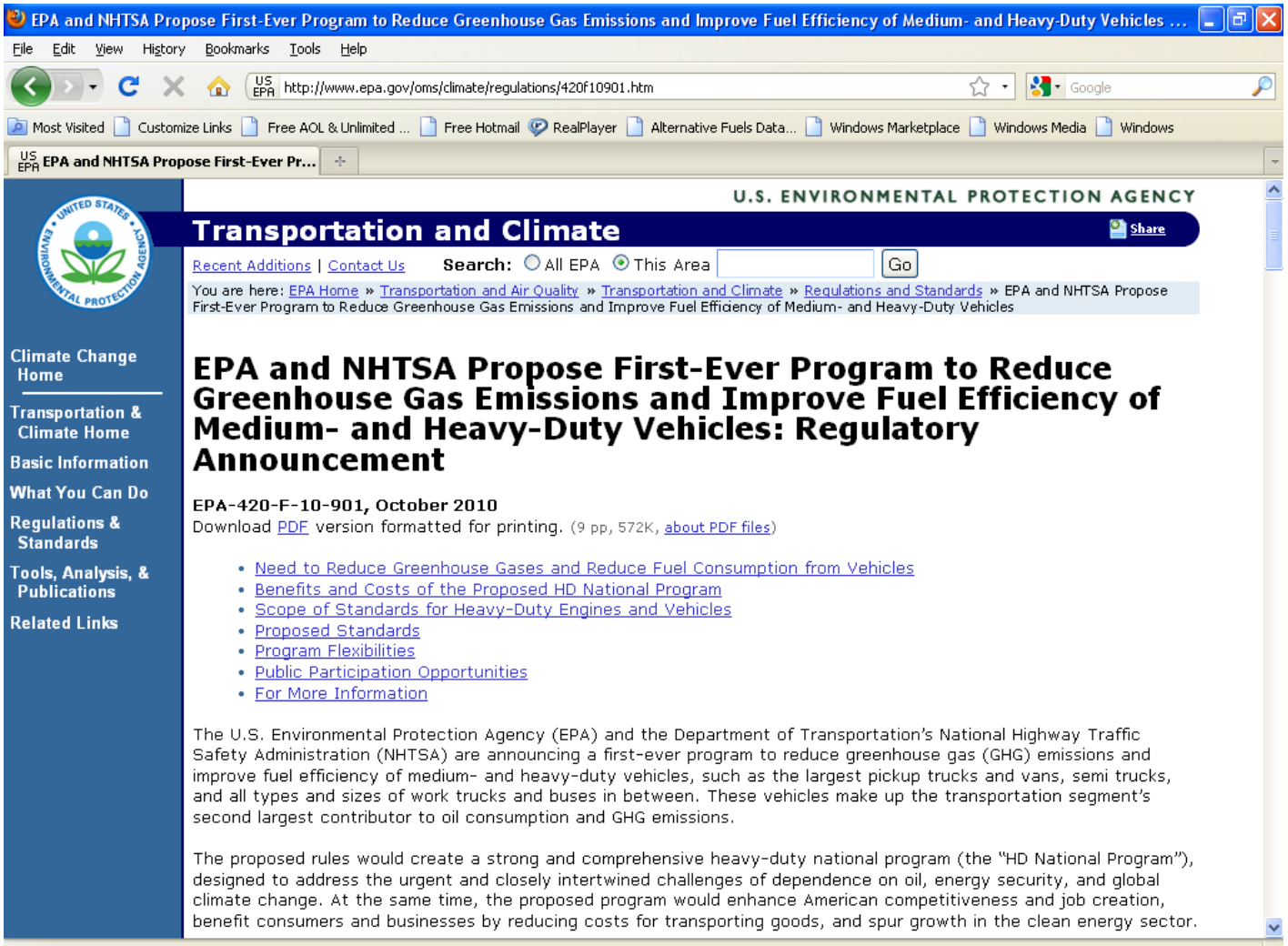
Estimated cost increase and fuel savings for 2018 vehicles

	Cost per Truck	Truck Lifetime Fuel Savings
Semi Trucks	$5,900	$79,700
HD Pick-ups/Vans	$1,400	$4,000
Vocational Trucks	$ 360	$4,400

Next Steps for the Heavy-Duty Program

- Public hearings held in Chicago and Boston November 15 & 18
  - Largely positive comments with specific recommendations to improve the program
- Written comment period closed January 31, 2011
  - Received over 3,000 comments the overwhelming majority of which supported the Agencies moving forward with this action
- Final rule planned for July 2011
- Proposed standards would phase in over 2014-2018

Information on Proposed Regulation



Addressing the Supply Chain

- EPA's SmartWay Transport Partnership promotes greenhouse gas reductions and energy efficiency in goods movement across the supply chain
- SmartWay provides:
  - Partner tools and resources to assess, track and reduce emissions and energy use
  - Innovative financial mechanisms to expand access to cleaner technologies
  - Testing and identification of lower carbon strategies and technologies
  - Recognition for top-performing partners

- Partners save money by reducing fuel use and emissions, which protects the environment, supports greener jobs and strengthens US competitiveness

SmartWay Highlights

- Over 2,900 Partners, including most of the largest US trucking companies and retail businesses
- Partners collectively operate over 680,000 trucks
  - > 10% of all commercial freight trucks in US
- SmartWay-designated trucks represent about 5% of new truck sales
- Since 2004, Partners have saved $50 million barrels of oil
- Slashed $6.1 billion in fuel costs
  - Fuel is second-highest expense, after the driver
- Cut CO2 emissions by 16.5 MMT
  - Helps shippers reduce carbon footprint from supply chains
  - Opens “green” business opportunities for trucking firms
- Cut 235,000 tons NOx and 9,000 tons PM
  - Emerging focus: port drayage trucks, DERA, environmental justice

SmartWay Enhancements

- This year, SmartWay will announce enhancements to the current program that will make it easier for partners to track and assess their carbon footprint

- These enhancements consist of new performance-based tools for shippers and carriers, a new data base for improved data management, and a fresh web site design so partners can access tools easier

- SmartWay also aims to improve and streamline how it delivers partner support services, by offering a broader range of web-based tools, tutorials and user guidance

Questions? Thank You!

Cheryl L. Bynum

bynum.cheryl@epa.gov

734-214-4844

www.epa.gov/smartway

734-214-4767