

# SmartWay

# Transport Partnership

## UN CSD 19

## Learning Center

Buddy Polovick

US Environmental Protection Agency

09 May 2011



# Outline

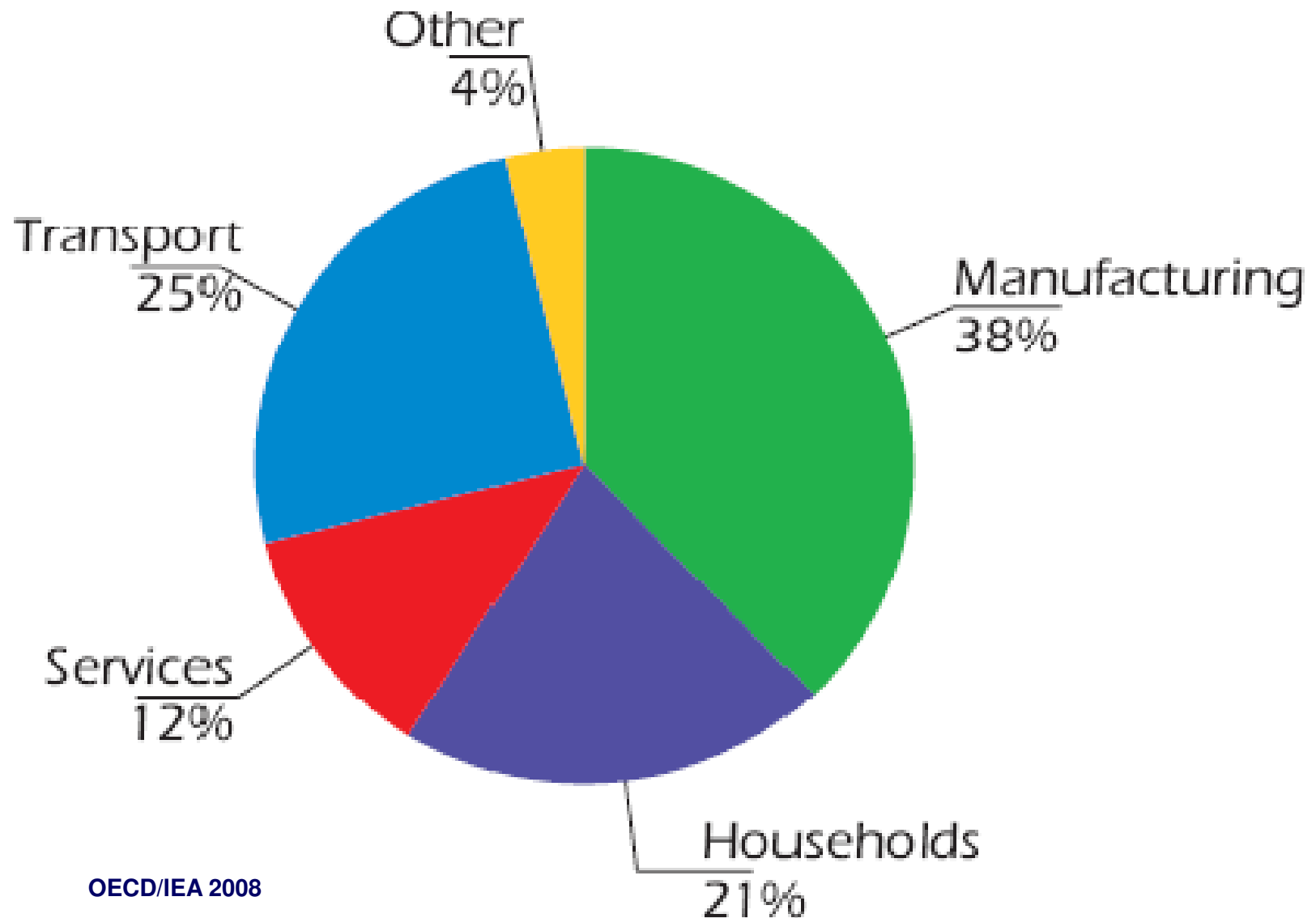
## Part 1

- Freight Sustainability Drivers and Challenges
- SmartWay Overview
- Questions

## Part 2

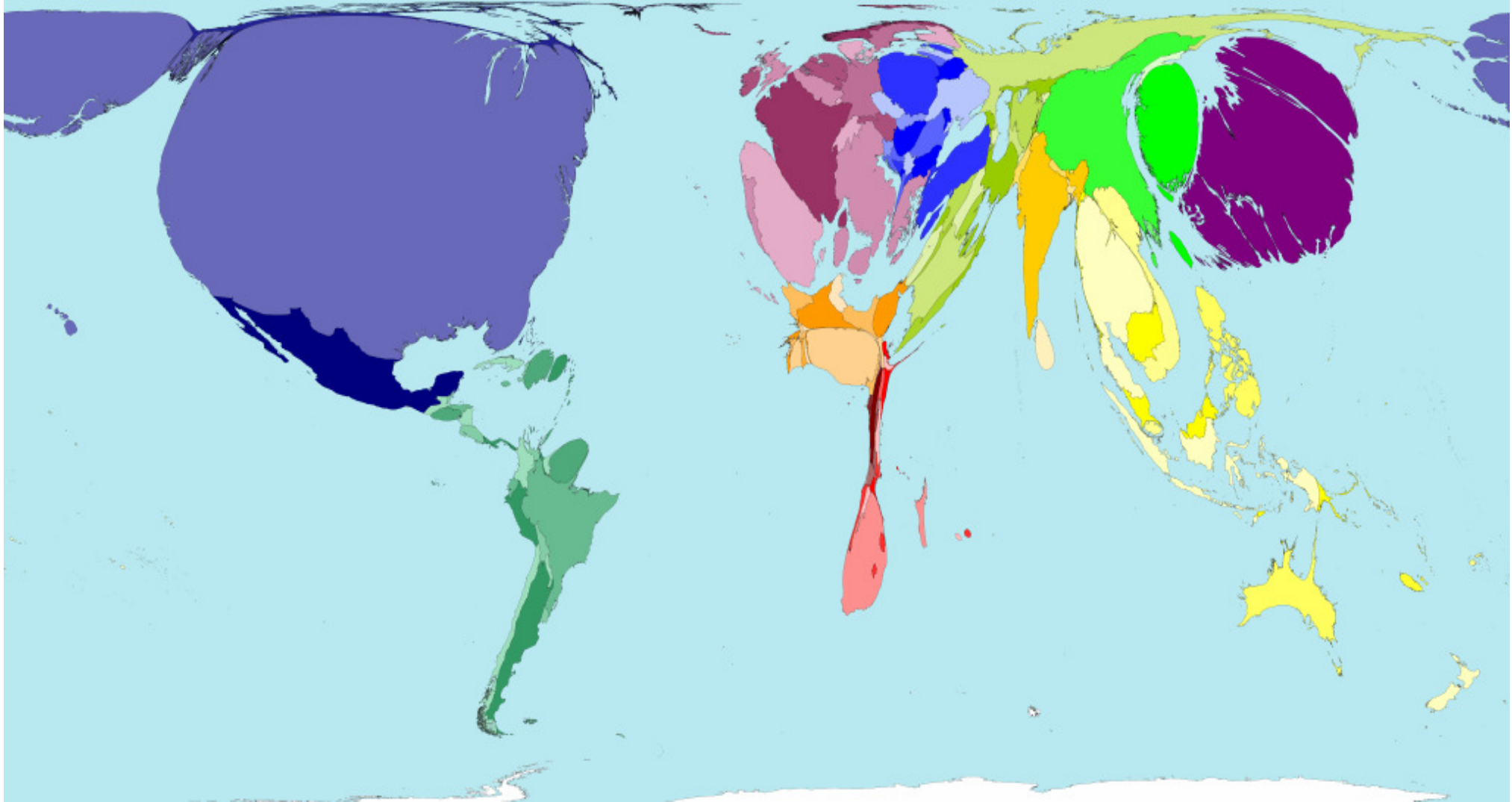
- Design, Build and Implement a Freight Sustainability Program
- Questions

# Global Share of CO2 by Sector

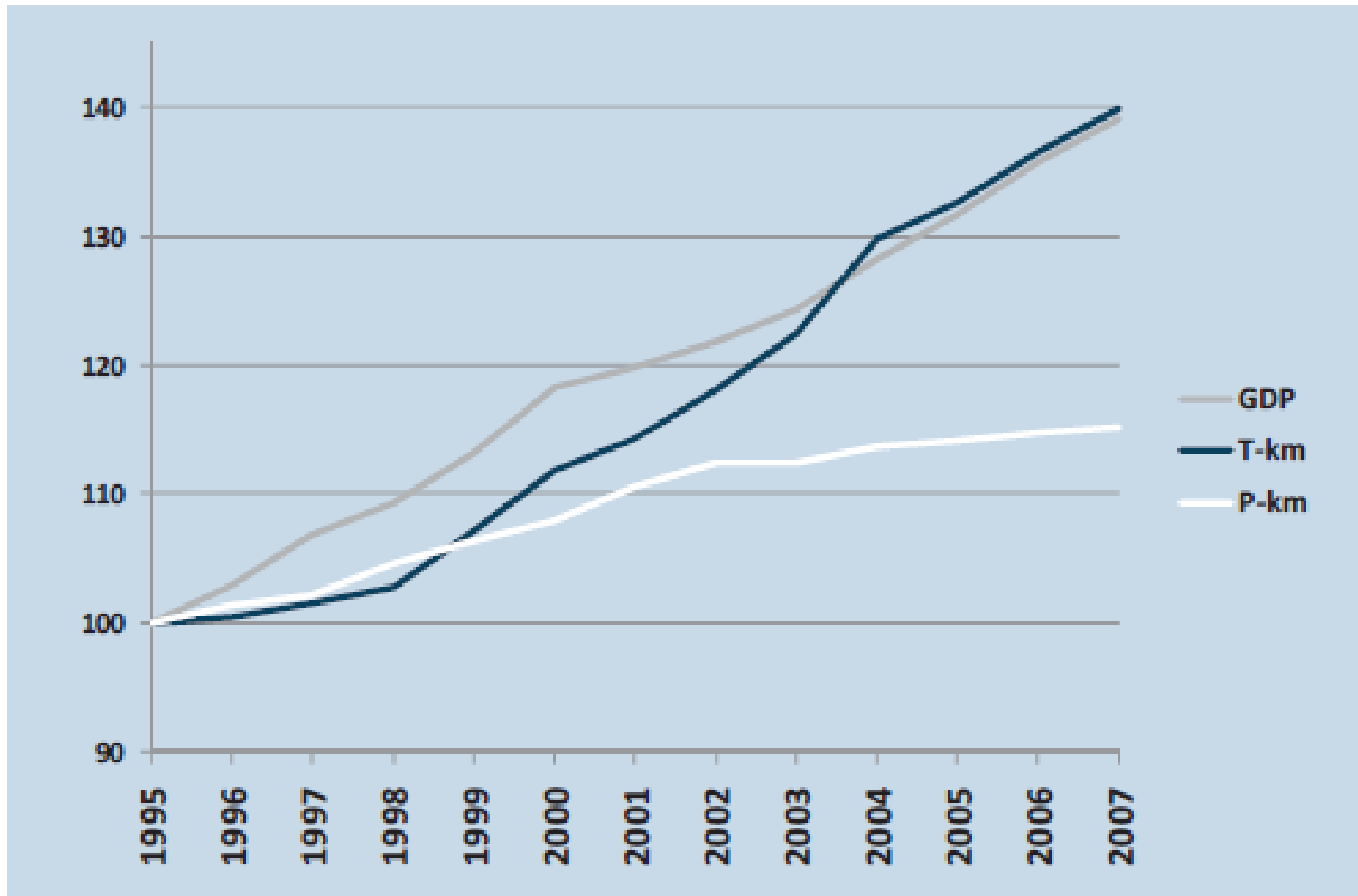


OECD/IEA 2008

# Vehicle Freight Miles



# Freight Mile Growth Outpaces Passengers

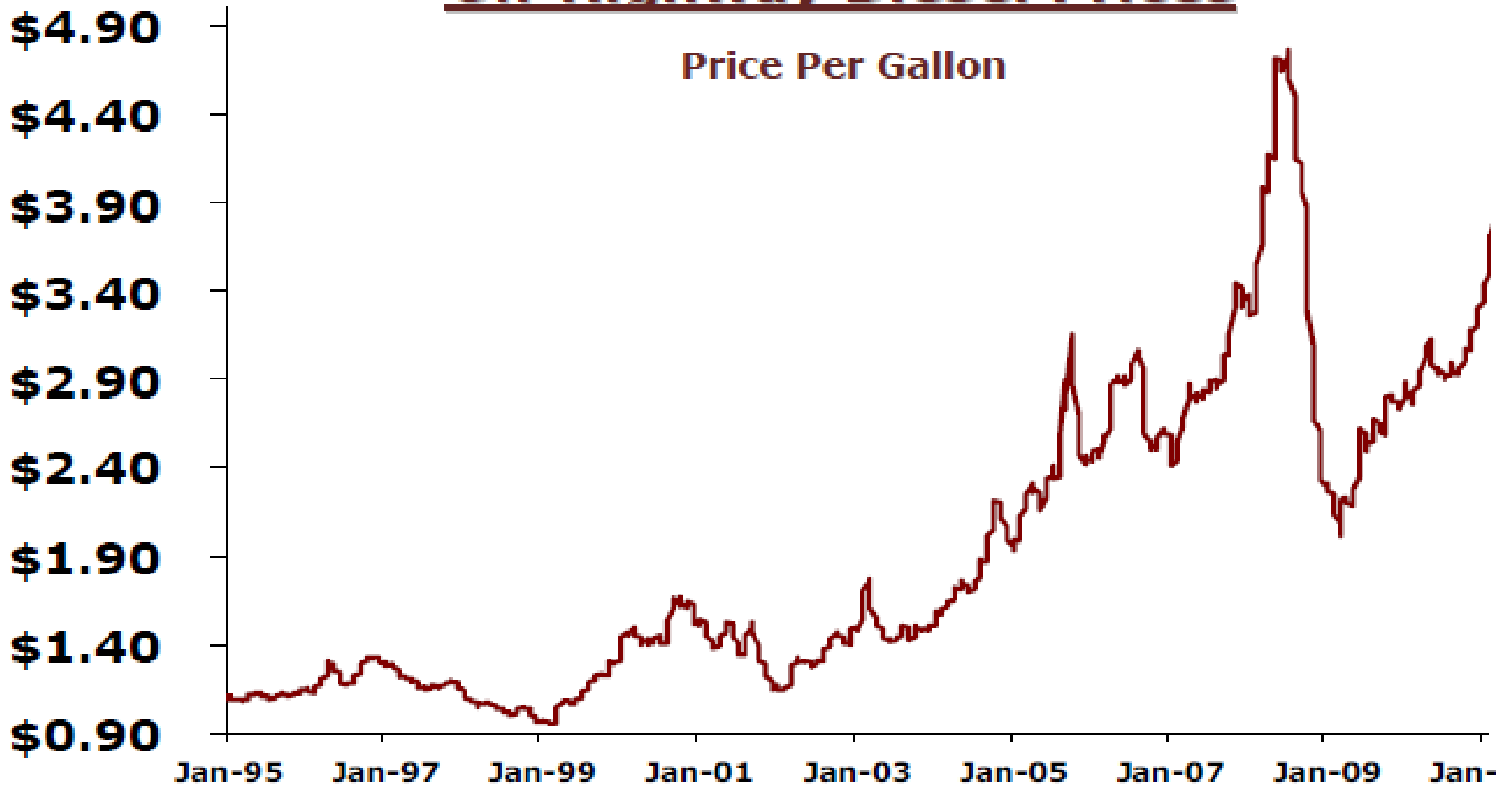


International Transport Forum member countries only  
ITF 2011

# Energy Volatility

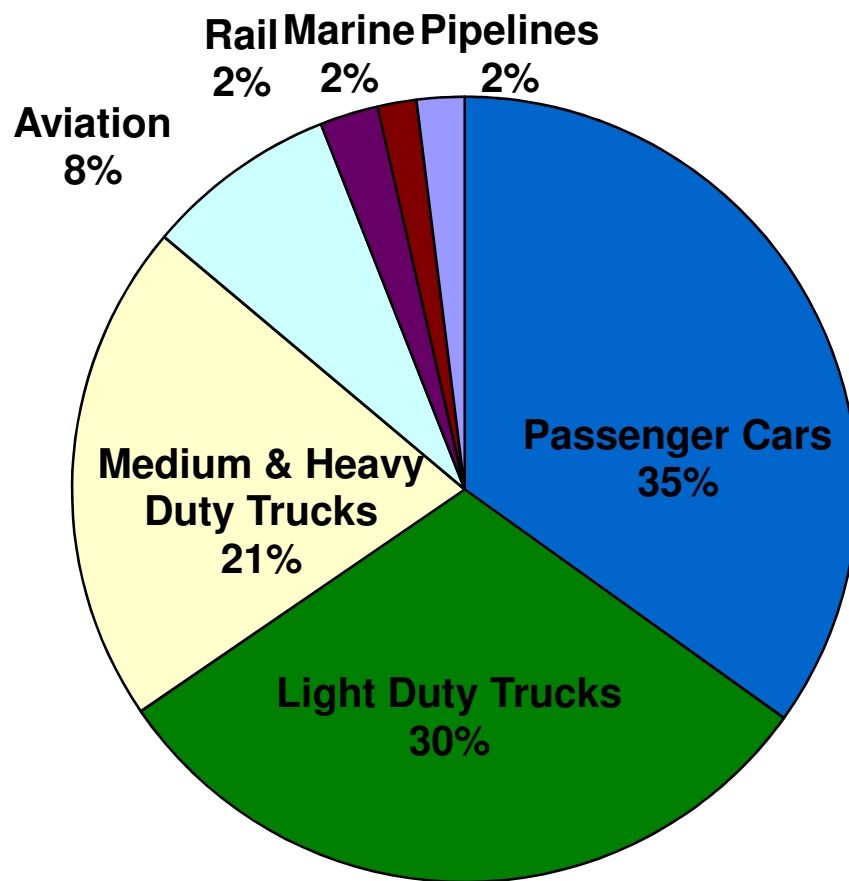
## On-Highway Diesel Prices

Price Per Gallon



Source: Energy Information Administration

# U.S. Transportation Sector GHG Emissions



GHG (1,820 mmt CO<sub>2</sub>-eq, 2009)

# SmartWay Program Components

## Partnership

- Assess, benchmark and track emissions of carriers, shippers, and logistics companies
- National idle reduction program
- New carbon assessment tools
- Partner support
- GHG and fuel savings

## Technology Program

- Test program
- SmartWay Tractor/Trailer
- SmartWay-verified technologies
- Test methods

## Finance Program

- Innovative finance programs (grant programs, banks, retailers)
- SmartWay Finance web site

## Light Duty Vehicles

- SmartWay certified vehicles
- Preferential leasing, purchasing
- Consumer education

## Outreach and Education

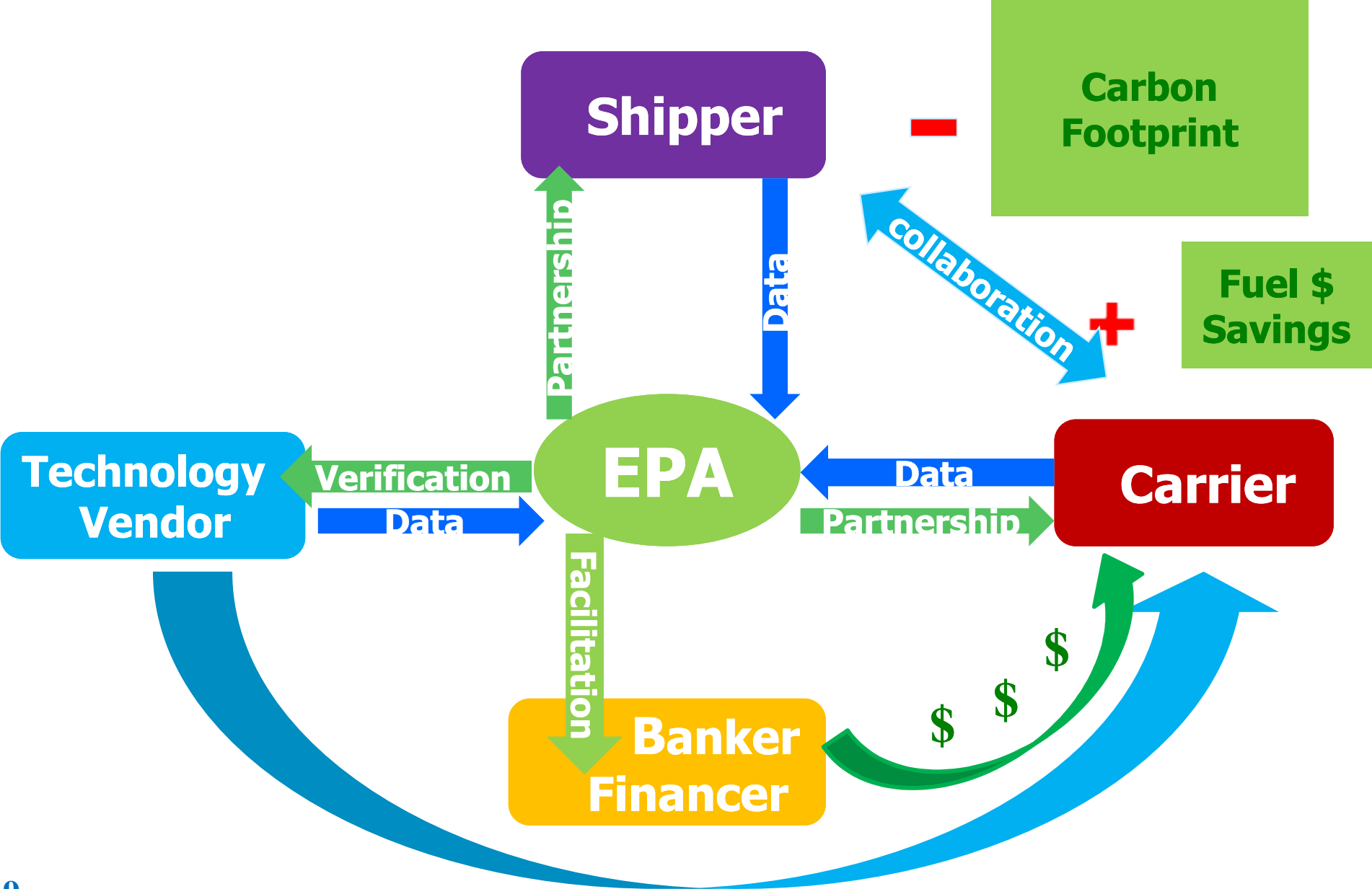
- Partner recognition - SmartWay web site, logo, and awards
- Partner education – webinars, fact sheets, e-update, web site, workshops, events
- Innovative pilot programs
- Brand marketing – PSAs, media campaigns, events

## International Activities

- Conferences, training, workshops
- Replicate public/private partnership
- Pilot projects
- Global supply chain



# How Does The Partnership Work?



# SmartWay Partner Results

## 2, 900+ Partners

- All 100 largest truck carriers and 1K+ medium-small carriers
- All Class 1 Rail lines
- Major logistics firms
- Fortune 500 (and Fortune 50) shippers from every sector

## Since 2004, SmartWay Partners saved

- 16.5 million metric tons of CO<sub>2</sub>
- 235,000 tons NO<sub>x</sub>
- 9,100 tons PM
- 5 million barrels of oil imports
- 6.1 billion dollars in fuel costs
- Equivalent to taking over 3 million cars off the road for 1 year

# SmartWay Global Partners



# Why is SmartWay successful?

## 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 & reduce emissions, for example:
  - Inter-modal Shipping
  - Full Truck Loads
  - Warehouse Improvements
  - Idle-Reduction at facilities
- 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, such as:
  - Idle Reduction
  - Improved Aerodynamics
  - Efficient Tire Systems
  - Driver Training
  - Renewable Fuels
  - Advanced Lubricants
- Get recognition and PR value with SmartWay brand

# SmartWay Tractors and Trailers

Specifications include 2007+ engine, idle reduction, low rolling resistance tires, and aerodynamic equipment

–10% to 20% reduction in fuel use, relative to a comparable truck without these fuel-saving features

– Limited to the equipment & truck types that EPA tests



# SmartWay Finance Center – For Smaller Fleets, Owner Operators

SMARTWAY FINANCE CENTER Call 1-877-767-8875 | Log-In |



**Available Technology:**

- Idle Reduction +
- Aerodynamics +
- Wheels / Tires +
- SmartWay Certified Tractors
- SmartWay Certified Trailers

**Navigate to:**

- SmartWay Clean Diesel Finance Program **NEW**
- Home
- Introduction
- About Us
- Lenders +
- Vendors +
- Contact Us

**Get a fast loan quote Now – truck , trailer, & equipment loans and leases**

**Start Your Loan Application Now:**

① Loan Type

② Amount \$

③ Location

**START** 

This World Wide Web site is provided as a public service by the U.S. Environmental Protection Agency (EPA), SmartWay Transport Partnership. The purpose of this site is to efficiently and conveniently disseminate information on financing that is available for purchasing cleaner trucks and trailers, and emissions reducing and fuel saving technologies (such as auxiliary power units). All loan information contained in this site represents private company loans. These are not Federal government loans. If you obtain a loan from any of the financial entities here you are subject to their contractual terms and conditions. The EPA does not endorse the products or

# Public Service Campaign for Shippers



**YOU'RE A CLICK AWAY  
FROM A SMARTER SUPPLY CHAIN**



Logistics managers are constantly looking for ways to reduce costs for their customers through customized solutions. SmartWay<sup>™</sup> Transport Partnership is one smart money-saving program grounded in innovative business strategies and new technologies. SmartWay Transport is about streamlined logistics operations that reduce fuel costs while reducing greenhouse gases and other emissions.

To find out more about this collaborative program, please call **1-734-214-4767** or visit [www.epa.gov/smartway](http://www.epa.gov/smartway).



An innovative program from the U.S. Environmental Protection Agency

Ad Concept 2.23.07

# Public Service Campaign for Carriers (TV, Radio, Print)

## These Manufacturers Are Hauling The Best Logo In The Business







Introducing SmartWay Certified Tractors & Trailers  
From These Manufacturers

Tractor makers:

-  Freightliner
-  International
-  Kenworth
-  Mack
-  Peterbilt
-  Volvo

Trailer makers:

-  Great Dane
-  Trailmobile
-  Utility
-  Wabash





# Public Service Campaign for Consumers

(TV, Radio, Print)

**Reflects Well On You.**

Driving a vehicle that is fuel-efficient, produces fewer greenhouse gases, and can save you money reflects well on its owner—especially these days, with growing concerns about climate change. The U.S. Environmental Protection Agency makes it easy to identify environmentally friendlier cars and trucks. Just look for the SmartWay® leaf. SmartWay will help change the way America drives.

For more on SmartWay certified cars and trucks, leaf through our website at [www.epa.gov/smartway](http://www.epa.gov/smartway).




**Reflects well.**  
(And helps keep the air clean, too.)

Let's face it, any time your fleet can boost fuel efficiency by 10 to 20%, it reflects well on you and your bottom line. U.S. EPA certified SmartWay Tractors and Trailers allow you to do just that. You can also display the SmartWay certification mark, a symbol of environmental distinction, which also reflects well on you. The SmartWay leaf indicates to both industry and the public that you operate the cleanest and most efficient trucks and equipment available today.



To learn more, visit [epa.gov/smartway](http://epa.gov/smartway)



# Partner Recognition

- Partner logo earned by top-performing SmartWay Partners
- SmartWay Annual Awards recognize the “best of the best”
- SmartWay partners compete for recognition

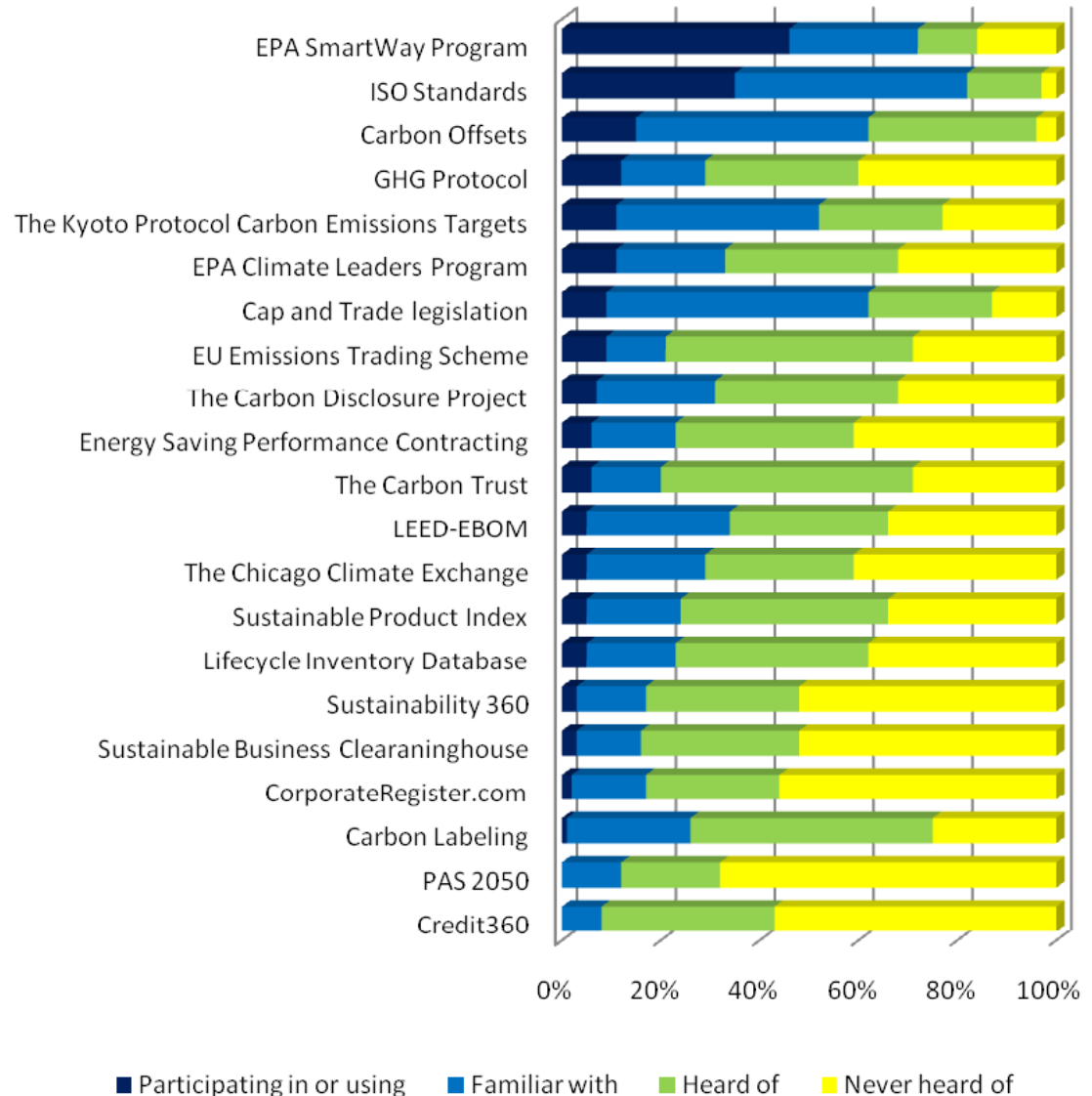


# SmartWay Industry Awareness



**Survey of supply chain executives shows SmartWay as leading industry sustainability program**  
 - Eye For Transport, June, 2010

## 3PL Awareness of Green Programs

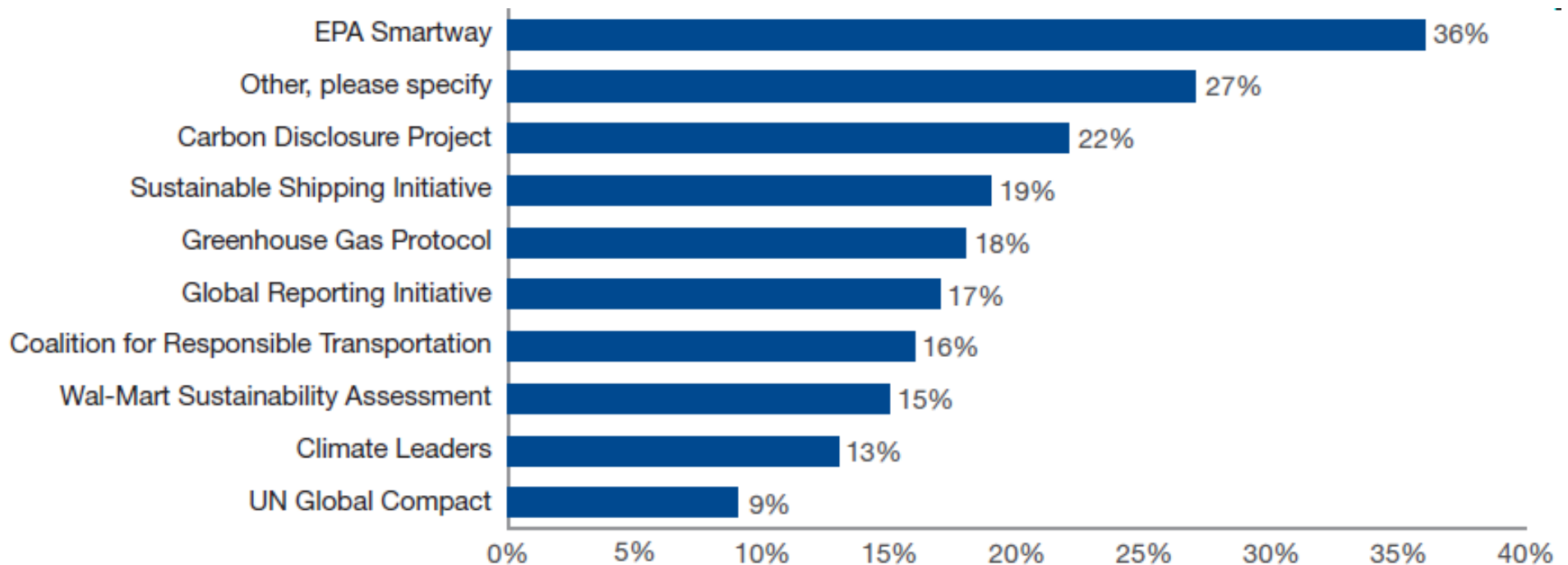


# SmartWay Industry Awareness



## Shipping executives survey shows SmartWay as leading industry sustainability program

- Environmental Sustainability Benchmark Study: Leaders Prepare for the "Greening" Supply Chain, Feb, 2011



# SmartWay International Projects

SmartWay International Workshop December, 2008

- Thirteen countries participated

“SmartWay” sister program developments

- Mexico launched Transporte Limpio
- Canada harmonizing Fleet Smart to SmartWay
- France, EU, Australia SmartWay platforms

**FleetSmart**



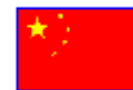
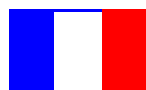
Commission for Environmental Cooperation

- Recommending strengthening and harmonizing the three programs to share data and emission factors

World Bank and Clean Air Initiative - Asia

- SmartWay technologies used for Green Trucks Pilot Project in Guangzhou, China
- Guangdong Demonstration project to include logistics, finance and capacity building

Green Freight China Program – National program development



# Creating a Freight Sustainability Program

## I. Exploratory Stage

- Market research

## II. Design and Development Stage

- Program components, tools materials

## III. Implementation Stage

- Marketing
- Recruiting and Partner management

## IV. Expansion and Refinement Stage

- Value added components
- Building program credibility

# Stage I - Exploratory Stage

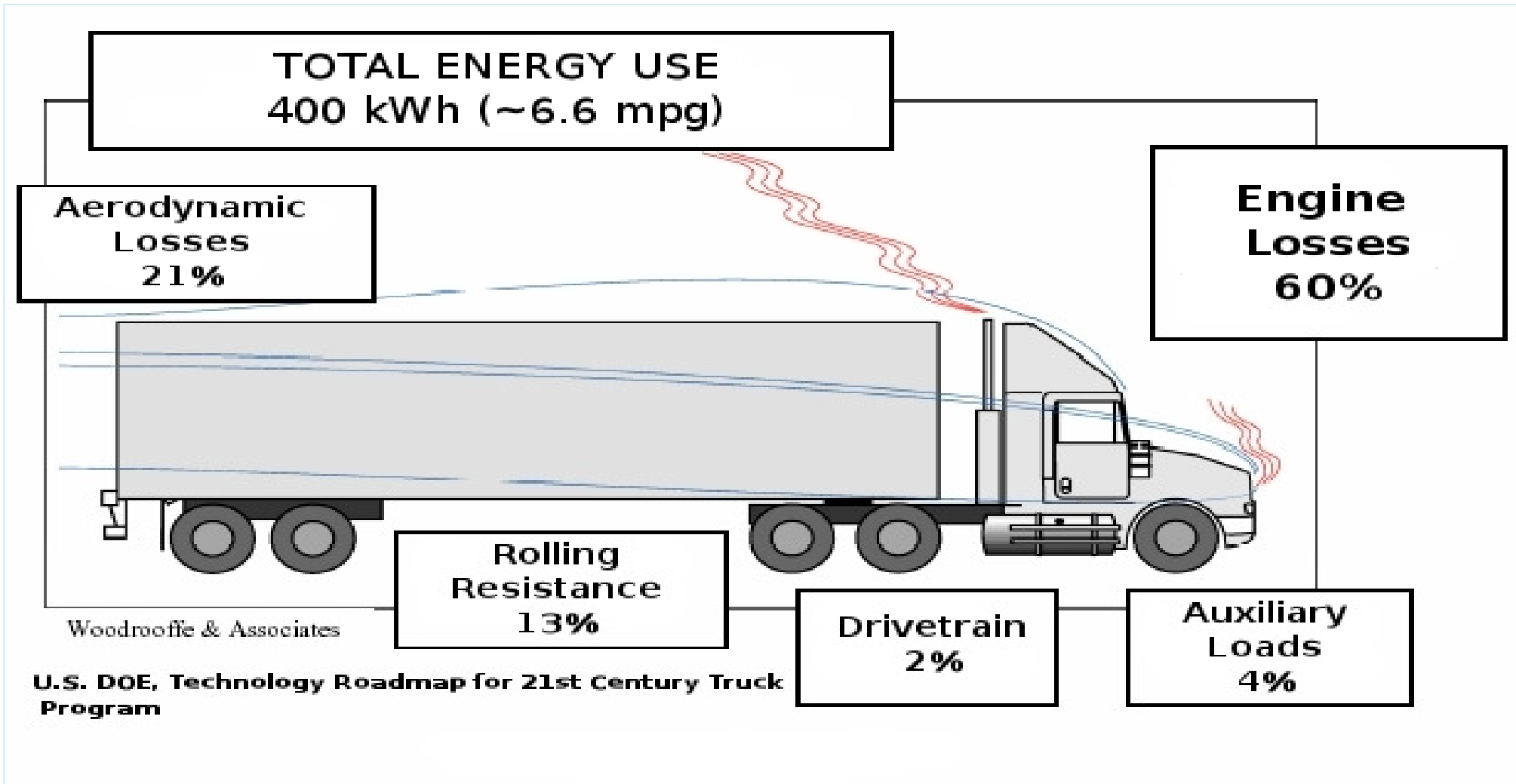
Before designing SmartWay (2001-2002), EPA conducted research on the current state of freight transportation

- Freight industry energy use
- Environmental impacts
- Trends and forecasts

Contractor created report on state of industry and potential for energy savings; found that freight sector:

- Accounted for 19.4% of total transportation energy use
- Contributed 50% of mobile source NO<sub>x</sub>
- Contributed 30% of mobile source PM
- Contributed 20% of the mobile source CO<sub>2</sub>
- Grew more rapidly than all transportation sectors except air travel

# Stage I - Exploratory Stage





# Stage I - Exploratory Stage

## Opportunities to Improve Efficiency

	<u>2010 Emission Reduction (MMTCE*)</u>
<b>Fuel Savings per truck (&lt;3%)</b>	
Automatic Tire Inflation	0.70
Tare Weight Reduction (3000 lbs.)	0.80
Low-Friction Drive Train Lubricants	0.50
Low-Friction Engine Lubricants	1.50
Reduced Rolling Resist. (Wide based tires)	2.30
<b>Fuel Savings per truck (3%&lt;x&lt;6%)</b>	
Improved Trailer Aerodynamics	1.90
Driver Training and Monitoring	1.80
Improved Tractor Aerodynamics	1.20
<b>Fuel Savings per truck (&gt;6%)</b>	
Speed Reduction (70 to 65 mph)	0.90
Speed Reduction (65 to 60 mph)	3.90
Idling Reduction (APU)	2.90
Total Maximum Benefit (current technologies)	18.4

# Advanced Truck Stop Electrification



# Advanced Truck Stop Electrification

## Night Light

Lighted On/Off Button for the screen, so you can find it easily in the dark

## 120V ShorePower

Inside and Outside your cab for appliances, block/fuel heaters and other accessories

## Internet

High-Speed Ethernet Port for Internet on your Computer - Wireless Internet also available

## Central Heat & Air

Thermostat controlled filtered air flow, recycled from your cab

## Card Reader

Slide your member Card and follow instructions

## Built-In Touch Screen Computer

Control your "Home-On-The-Road" and surf the Internet

## Help

Available 24x7. On-Screen Context-Sensitive Help or dial 611 from your cab phone or 800-738-7024 from any phone

## Go Buttons

One-Touch Access to Main Functions

## USB Ports

Use a keyboard, mouse or other USB devices

## Telephone

Plug in a regular phone for incoming and outgoing calls

## Television

Connect your TV with standard COAX cable for Premium Satellite TV



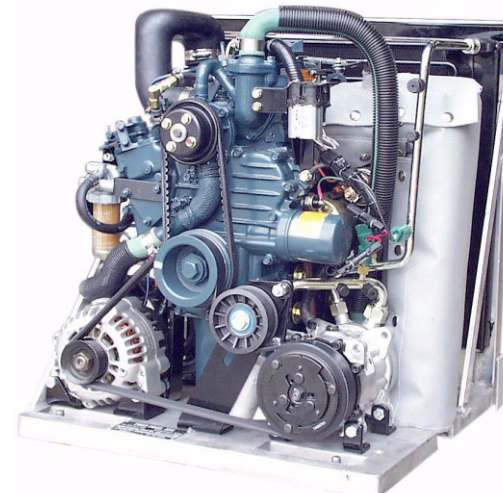
# Idle Reduction Technologies

## For Trucks and Locomotives

### Average fuel savings   Emissions Controlled

Trucks:     1 gal/hr                      CO<sub>2</sub>, NO<sub>x</sub>, 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%

CO<sub>2</sub>, NOx

- Single-wide tires
  - Reduced rolling resistance
  - Reduced weight
- Low rolling resistance dual tires



# Wheel and Tire Inflation Improvements

## Aluminum Wheels, Tire Pressure Monitoring and Inflation

### Average fuel savings   Emissions Controlled

Trucks:      3 - 5%

CO<sub>2</sub>, NOx

- Tire pressure monitoring and inflation
  - Ensure appropriate pressure for efficiency
  - Reduced maintenance and extended tire life
- Aluminum wheels save weight and inertia energy



# Trailer Aerodynamics

## Average fuel savings   Emissions Controlled

Trucks:     5%

CO<sub>2</sub>, NOx

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



# Exhaust After-Treatment Devices

## Average fuel savings   Emissions Controlled

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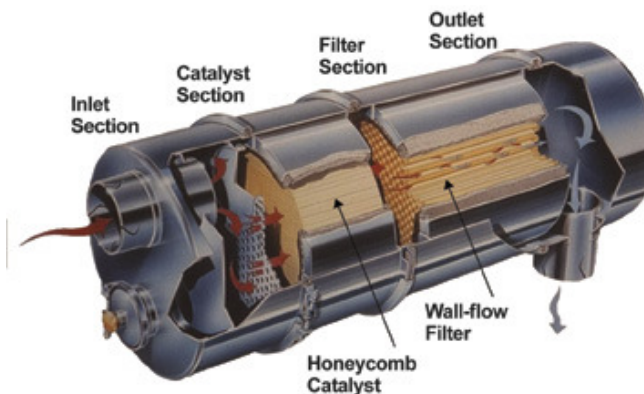
PM

### Diesel Oxidation Catalysts

- Estimated cost: \$1,000
- Reduce PM by 25% – 40%

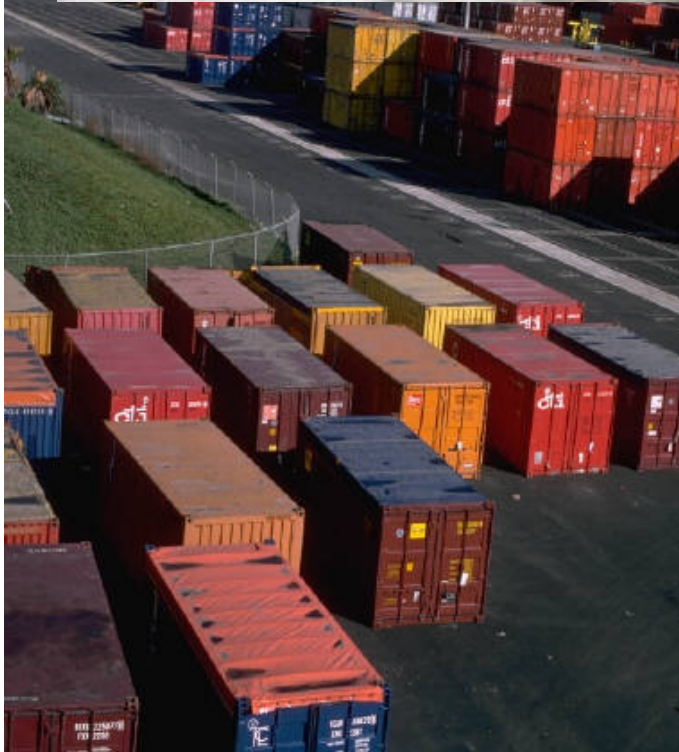
### Particulate Matter Filters

- Estimated cost \$6,000
- Reduce PM by 80% – 90%





# Intermodal Shipping



# Operational Strategies

Applan Logistics Software - Last Position

Dispatch Payroll Activity Customer Service Admin Logout

Home ==> Device Last Position Map

Map Satellite Terrain

Filter Search Auto Refresh

From: 07/22/2010 To: 07/22/2010 Submit

All devices

Show Traffic information

Seq	Dev_ID	Dev_ID	Dev_Name	Rt#	Trk_ID	Last_Pos	Heading	Speed	GPS Trail
1	SONNY	HDL2	HDL 2	HDL2	HDL2	07/22 14:17	na	0	View
2	DARYL	DARYL	DARYL	DARYL	DARYL	07/22 14:28	East	46	View
3	BOB	BOB	HDL BOB	BOB	BOB	07/22 14:27	West	6	View
4	JMT	JMT	JIM THOMPSON	JIM	JMT	07/22 14:27	West	94	View
5	JAME	JAME	JAME APPOINTE	JAME	JAME	07/22 14:06	East	0	View
6	AL	AL	AL	AL	AL	07/22 14:27	North West	0	View

3 device(s) found



Order list : C:\VALSCLNT\LISTS\LOAD1 Container 1 / 1

File Modify View Options ?

Container Type: 20' Sea Cont  
 Total weight : 21480.1 lb  
 Total items : 105  
 Load length : 234.000 In  
 Utilized : Volume Weight  
 86.66 % 67.13 %  
 CoG.: 133.625 49.125 51.000  
 Axle Pos.: 228.000 12.000  
 Axle Wt.: 12095.0 9385.1

Order list

No.	OrderNo	City	Qty
1	sample		30
2	sample		12
			1

# Stage II – Design & Development Stage

## Initial Stakeholder Outreach

- Carriers
  - Shippers
  - Industry Associations
  - Environmental Groups
- Key group of initial industry leaders in the initial planning stages
  - Enfranchised them to actively participate in the design process
  - Created buy-in from industry
  - Strengthened SmartWay as a true public-private partnership

## Charter Partnership

- Provided EPA with institutional knowledge of the industry
- Helped legitimize the program



# Stage II – Design & Development Stage

## Website

Includes information on Partners, news, funding opportunities, official program materials, technical reports, general SmartWay information

## Calculator Tools

- Help partners estimate CO<sub>2</sub>, NO<sub>x</sub>, and PM emissions
- Determines effectiveness of strategies used in the fleet
- Allows fleet to determine best strategies for them
- Projects and estimates cost savings and paybacks
- Measures their environmental footprint

## Database

- To organize Partnership contact and communication information

## Partner agreements

- To formalize commitments as a Memorandum of Understanding

# Stage III – Implementation Stage

## Step 1 - Program Launch and Marketing

- Education campaign
- Brand marketing tools
- Consumer education
  
- Recognize Charter Partners
- Demonstrate Calculator Tool
- Press Releases
- Press Conference



# Stage III – Implementation Stage

## Step 2 – Recruiting

- Leverage current relationships
  - Trucking and Shipping Associations
  - Shipper Partners (Logistics Partners)
  - Charter Partners
- Use industry resources
- Conferences and Events
  - Shipper and Carrier Conferences
- New strategic relationships
  - Regional Approach
  - Network through Partners
- Cold calls and warm calls
  - Leads from conferences/events
- Direct mailings
  - Associations' endorsements



# Stage III – Implementation Stage

## Step 3 - Partner Management

- General assistance with paperwork and data reporting
  - Calculator tool
  - Authorization to use logo
- Develop working relationships
- Technical Guidance
- Marketing assistance
  - Press Release
  - Case Studies
  - Logo Use
  - Authoring articles or internal memos
- Make the Partnership more valuable
  - Using Partner feedback to improve the process for them



# Stage III – Implementation Stage

## Step 4 - Partner Recognition and Awards

- High visibility industry events and conferences
- High ranking officials
- Award Winners publicize their own achievements





# Stage IV – Expansion & Refinement

## Value added components:

- Technology Testing and Verification Program
  - SmartWay verified Technologies
  - SmartWay verified Trucks (Tractors and Trailers)
- Online Driver Training E-Learning
- Online Calculator Tools
- Financing programs
  - Grants, loans and subsidies for Technology upgrades
  - Goal: Maximize deployment of fuel saving and emission reduction technologies in the market
- Enhancing the Brand
  - Mark of cleaner/sustainable transportation options

# Stage IV – Technology Verification

## SmartWay Strategies Costs vs. Fuel Savings



### Tractor (18% fuel savings)

Additional Costs per Tractor: \$20,025 - \$29,425  
Additional Weight: 850 lbs (approx)

### Trailer (16% fuel savings)

Additional Costs per Trailer: \$6,650 - \$9,100  
Additional Weight: 900 lbs (approx)

\* Fuels saving strategies are not cumulative. Conservative estimate of 25% overall savings yields ROI on all equipment = 1.8 yrs to 2.6 yrs. (Based on long-haul application, 120,000 annual VMT, 2,000 idle hours on APU, and \$3.00/gal.)

# Stage IV – SmartWay verified Trucks



# Stage IV – Driver Training E-Learning

**SmartDriver**  
*For HIGHWAY TRUCKING*

SmartDriver For Highway Trucking (00:24 / 79:47)

Outline

- 1. Introduction & Welcome
- 2. Video
- 3. Course Navigation
- 4. Why Is This Course Important?
- 5. How Can This Course Help You?
- 5. Course Objectives
- 7. Your Role
- 3. Video
- 3. Air Pollution
- 10. Knowledge Check
- 11. Diesel Fuel
- 12. Diesel Fuel – Cetane
- 13. Diesel Fuel – Winter and Summer Dies
- 14. Diesel Fuel
- 15. Video
- 16. The Diesel Engine
- 17. The Diesel Engine – Four Stroke Oper
- 18. Torque and Horsepower
- 19. Video
- 20. Transmission and Differential
- 21. Transmission and Differential - Video
- 22. Video
- 23. Payload
- 24. Knowledge Check
- ▶ 25. Module 1: Smart Planning for Fuel Efficien
- ▶ 51. Module 2: Advanced Technology

Welcome Welcome Welcome

**SmartDriver**  
*For HIGHWAY TRUCKING*

Fuel costs are one of the largest expenditures for fleets (and for owner-operators). In fact, fuel costs are the biggest expense after labour costs. As a driver, you have a significant role to play in reducing these costs through energy-efficient driving practices.

This program is designed to give you tools and tips for saving fuel on the road.

**Begin »**

SLIDE 1 OF 215 | CLICK NEXT TO ADVANCE | 00:24 / 00:24

FleetSmart

SmartDriver

U.S. ENVIRONMENTAL PROTECTION AGENCY

SmartWay™  
Transport Partnership  
U.S. ENVIRONMENTAL PROTECTION AGENCY

# Stage IV – Online Calculator Tools

## Calculator for single-owner (one truck):

### RESULTS:

Equipment	Cost	% Fuel Savings	Annual Fuel Savings	Monthly Fuel Savings	Monthly Loan Payment	Net Monthly Savings
APU, Tires, Aero	\$16500	17%	\$11371	\$948	(\$411)	\$537

#### STEP 1: ENTER YOUR TRUCK AND LOAN INFORMATION.

Enter your basic vehicle and loan numbers here **OR** Click the "Load Typical Values" button below for help with typical long haul truck numbers.

Annual Fuel Use  (Gallons)  
 Cost of Fuel \$   
 Annual Idling  (Hours)  
 Loan Period  (Months)  
 Loan Interest Rate  %  
 Yearly Fuel Cost \$ 68335  
 Monthly Fuel Cost \$ 5695

#### STEP 2: SELECT TECHNOLOGIES OF YOUR TRUCK.

Check the technology box below to test various combinations of technologies for your truck. You can check as many items as you want.

Technology	Cost
<input type="checkbox"/> <a href="#">Bunk Heater (Heater)</a>	\$ <input type="text" value="1500"/>
<input checked="" type="checkbox"/> <a href="#">Auxiliary Power Unit (APU)</a>	\$ <input type="text" value="8500"/>
<input checked="" type="checkbox"/> <a href="#">Aluminum Wheel Sets for Single Wide Tires (Tires)</a>	\$ <input type="text" value="5600"/>
<input checked="" type="checkbox"/> <a href="#">Trailer Aerodynamics (Aero)</a>	\$ <input type="text" value="2400"/>
<input type="checkbox"/> <a href="#">Automatic Tire Inflation (ATI)</a>	\$ <input type="text" value="900"/>
<input type="checkbox"/> <a href="#">Oxidation Catalyst (DOC)</a>	\$ <input type="text" value="1200"/>

"Savings Without Loan" button sets the loan period and interest rate to zero, to show you the results of buying this technology outright.

<http://www.epa.gov/smartway/transport/calculators/index.htm#single>

# Stage IV – Financing Programs

Cleaner Used Truck	2005 MY Truck on the Used Truck Market	
	Standard Truck	Same Truck with PM Filter Extend loan by 12 months & lower rate to 6%
Purchase Price:	\$40,000	\$50,000
60 Month Interest Rate:	12%	6%
Monthly Payment:	\$890	\$829 (\$61 less)
<b>Total Cost:</b>	<b>\$53,400</b>	<b>\$59,688</b>

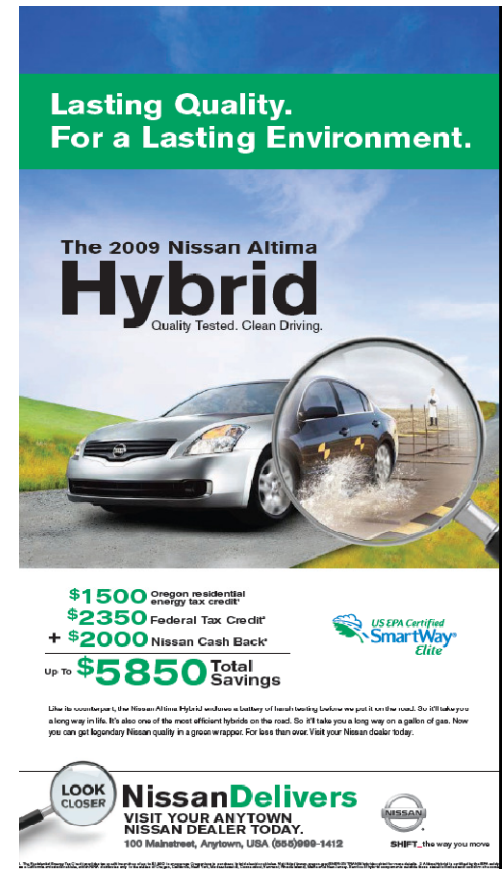
# Stage IV – Brand Enhancement

SmartWay on EPA's Green Vehicle Guide website



Automakers promoting their SmartWay vehicles:

- Chrysler
- Ford
- GM
- Hyundai
- Kia
- Mazda
- Nissan
- Subaru
- Toyota
- Volvo



Banks and credit unions offer discounted loans for SmartWay vehicles

# Package Labeling Pilot Program



**HP consumer electronics are carried exclusively by SmartWay Carrier Partners**





**[www.epa.gov/smartway](http://www.epa.gov/smartway)**

**[smartway\\_transport@epa.gov](mailto:smartway_transport@epa.gov)**

**SmartWay phone center (734) 214-4767**

**Buddy Polovick (734) 214-4928**

**[polovick.buddy@epa.gov](mailto:polovick.buddy@epa.gov)**