SmartWay Transport Partnership
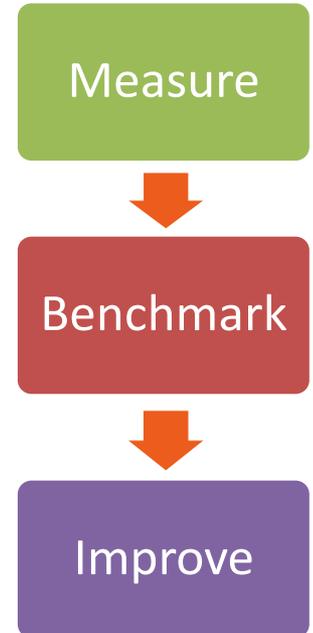
Talking Freight Webinar

US Environmental Protection Agency

September 19, 2012

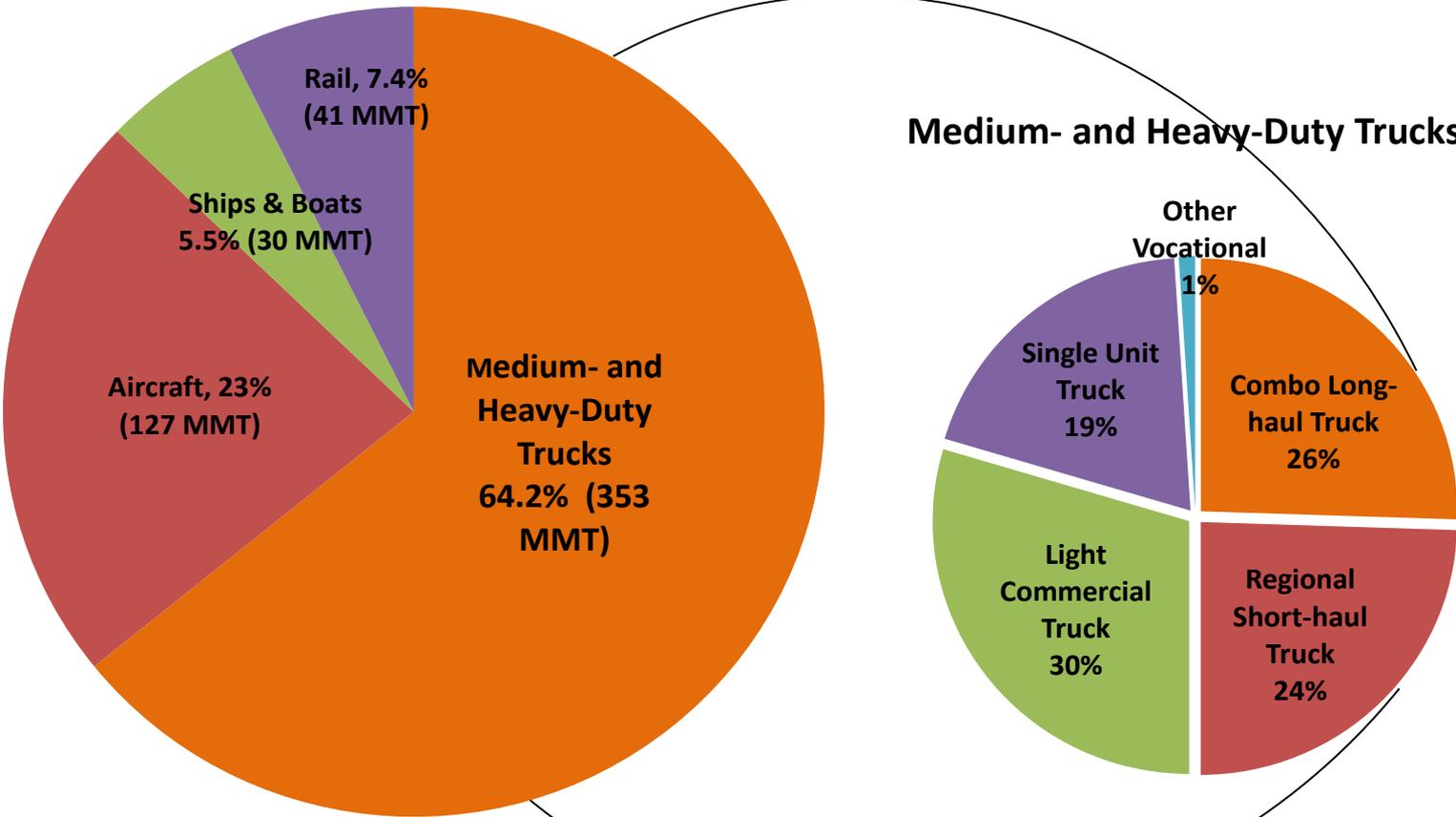# SmartWay

- **Goals**
  - Reduce CO2, NOx and PM emissions
  - Save millions of gallons of fuel
  - Improve supply chain efficiencies
  - Assist companies to become more cost effective

- **SmartWay can accomplish these goals by:**
  - Providing the freight transportation with i**nformation** so companies can make informed emission optimization choices:
  - Providing **standardized** system of data collection and calculation
  - Creating a **market based system** to incentivize good performers
  - Providing calculation **tools**, a **data management** system, and informational materials

Measure

Benchmark

Improve

Supply Chain Goods Movement – CO_2

Medium- and Heavy-Duty Trucks

Rail, 7.4% (41 MMT)

Ships & Boats 5.5% (30 MMT)

Aircraft, 23% (127 MMT)

Medium- and Heavy-Duty Trucks 64.2% (353 MMT)

Other Vocational 1%

Single Unit Truck 19%

Combo Long-haul Truck 26%

Light Commercial Truck 30%

Regional Short-haul Truck 24%

**MMT = Million Metric Ton = Teragram (Tg)**

* 2009 Data - Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2009 (EPA 2011)

SmartWay Components

- Carrier Data Collection tools
    - Truck Tool, Logistics Tool, Rail Tool, Multimodal Suite
    - All industry and academically peer reviewed
    - Data collected: gallons, miles, payload, volume, vehicle class and model year, and operational characteristics

- Shipper Tool
    - Industry and academically peer reviewed
    - Calculates emission inventories and efficiencies based on carrier mix

- SmartWay Database
    - Stores and manages all SmartWay data

- SmartWay Website
    - Contains downloadable versions of all tools, user guides, technical documentation, webinars, program descriptions
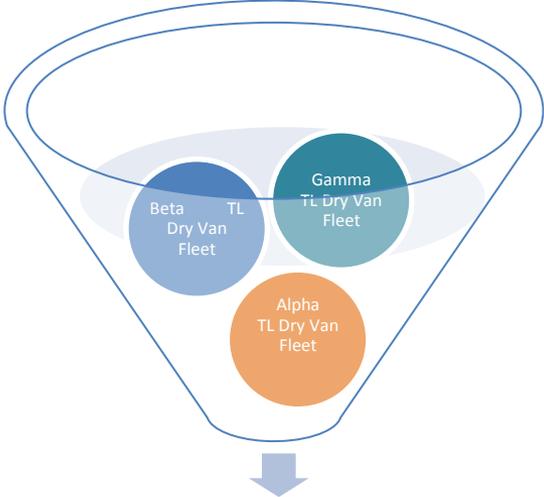
8 Emission Metrics

CO2	PM10
Grams/ Mile	
NOx	PM2.5

CO2	PM10
Grams/ Ton-Mile	
NOx	PM2.5
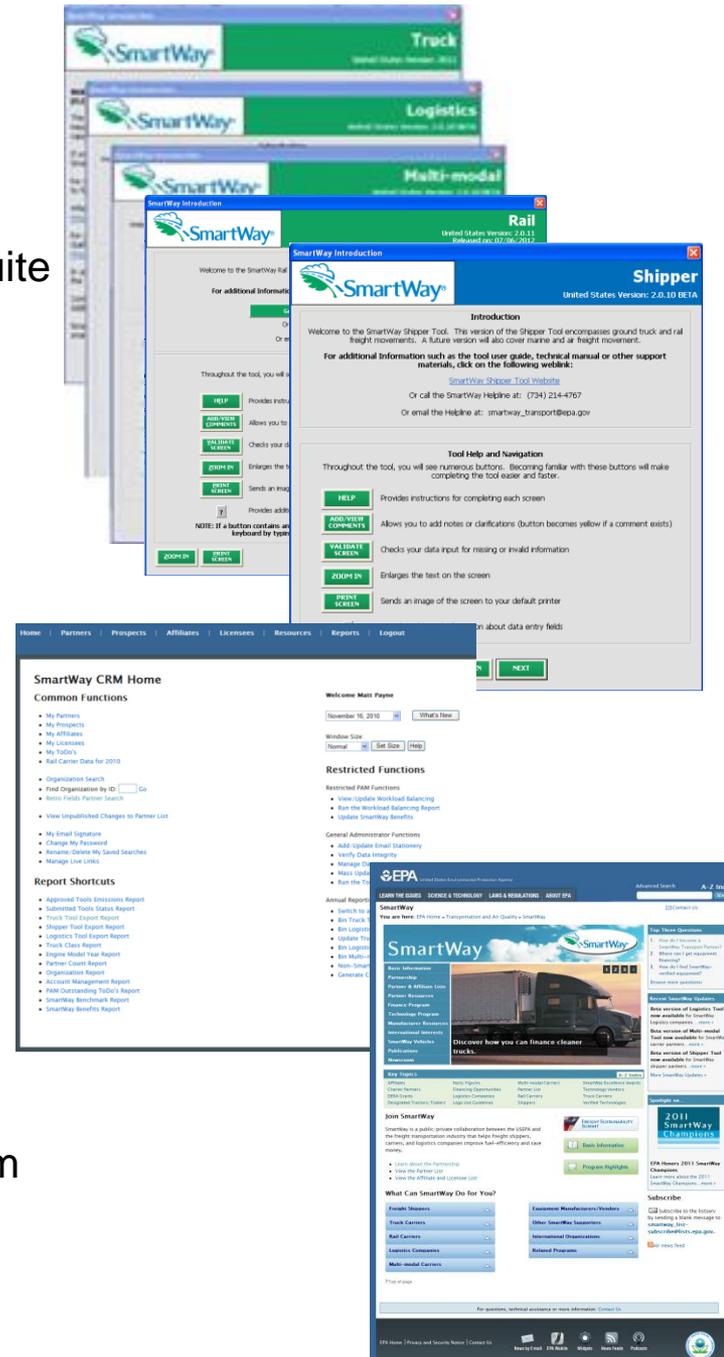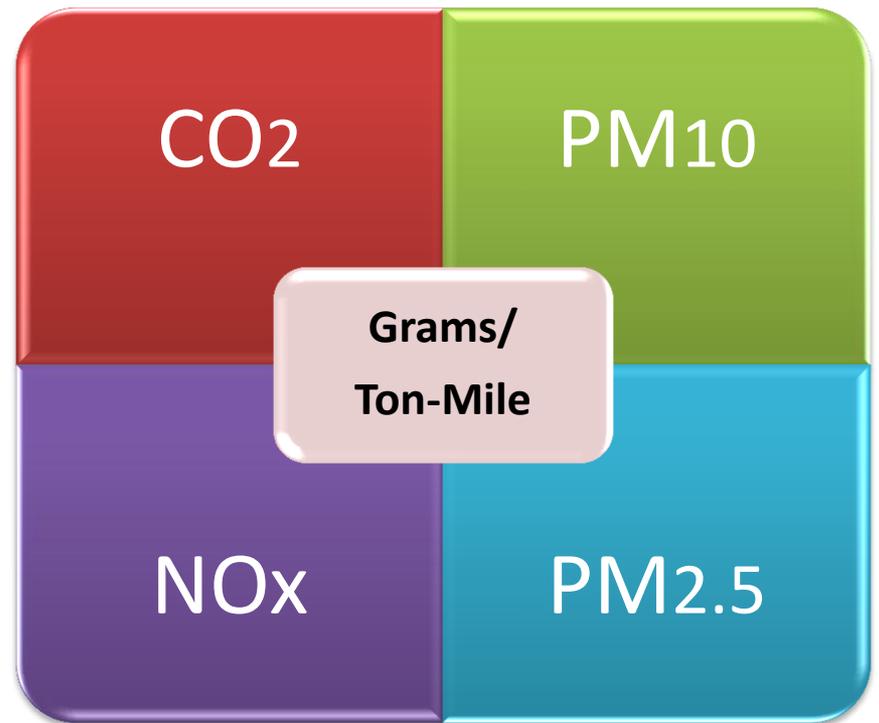
SmartWay Separates All Fleets into their Carrier Categories

- 15 Categories based on operational characteristics

  – All truckload (TL) dry-van fleets are evaluated together
    - "apples to apples"

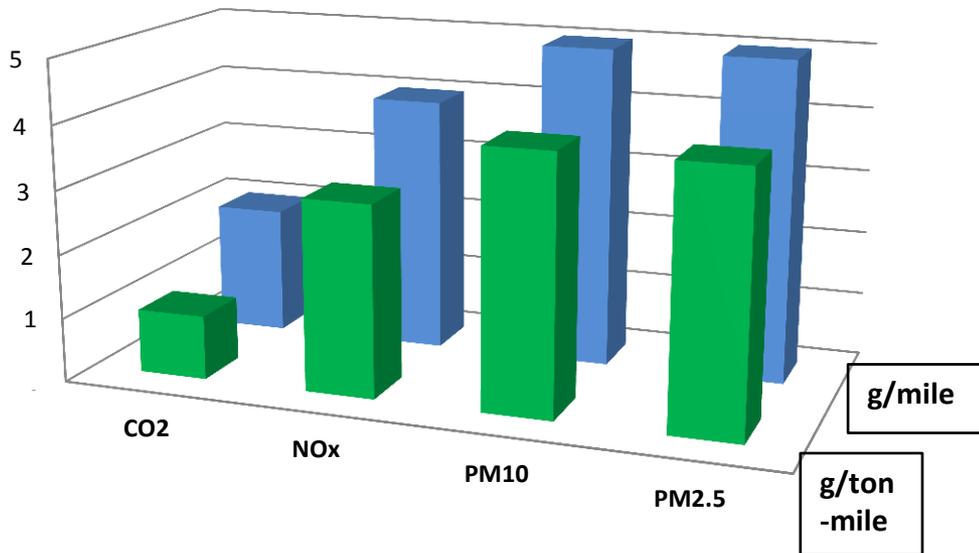 – TL dry-van fleets are NOT evaluated with flatbed truck fleets
    - "apples to oranges"

All Truckload Dry Van Fleets
Submitted to SmartWay

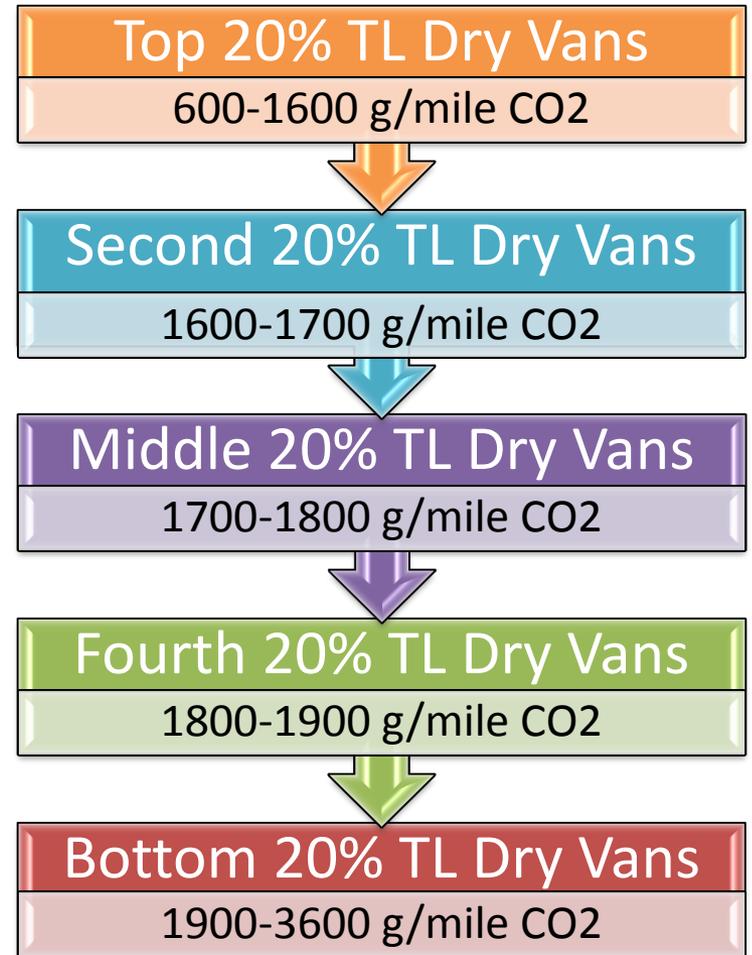| SmartWay Truck Categories 2011 Data Year									
	Dry Van/Chassis	Reefer	Flatbed	Tanker	Heavy/ Bulk	Auto Carrier	Moving	Specialized /Utility	Mixed
TL									
LTL									
PD									
Expedited									
Dray									
Mixed									
Logistics									
Multimodal									

Partner Ranking

- All Fleets in a category are ranked based on emissions results and placed into one of five ranges for each of the 8 emission metrics

- Performance ranges are set from <u>lowest emissions</u> (best performance) to <u>highest emissions</u> (worst performance)

SmartWay Rating System
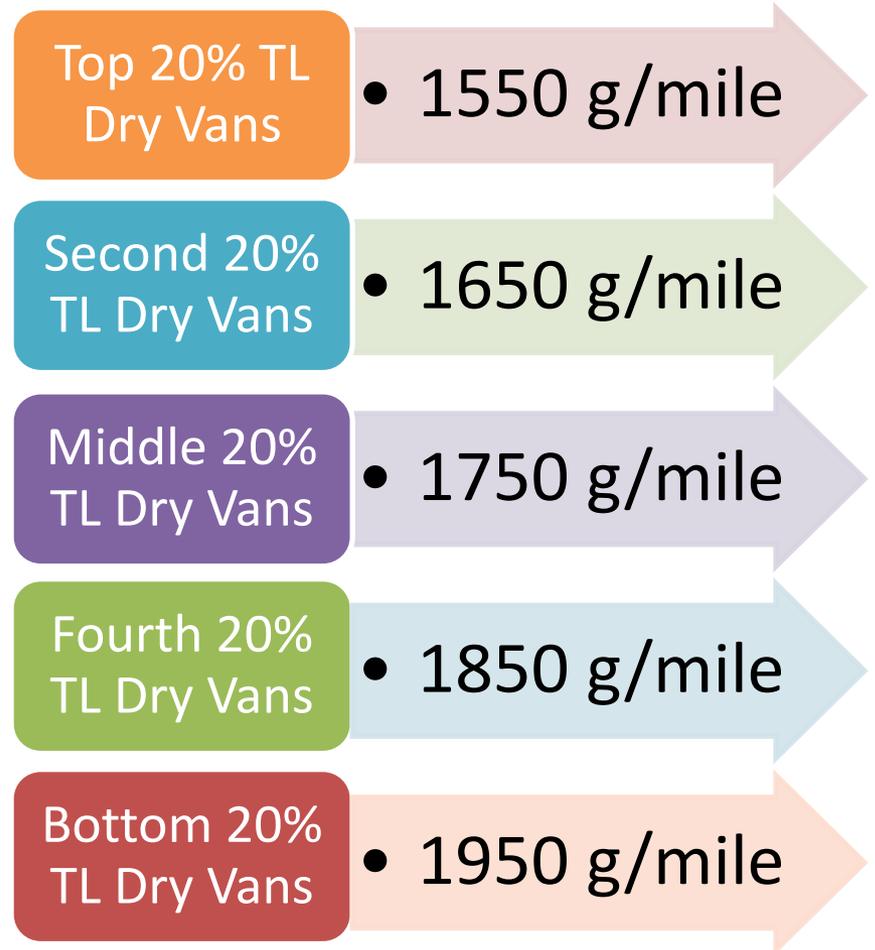**Metric and Pollutant Specific Performance Levels**

TL Dry Van Example

Top 20% TL Dry Vans
600-1600 g/mile CO2

Second 20% TL Dry Vans
1600-1700 g/mile CO2

Middle 20% TL Dry Vans
1700-1800 g/mile CO2

Fourth 20% TL Dry Vans
1800-1900 g/mile CO2

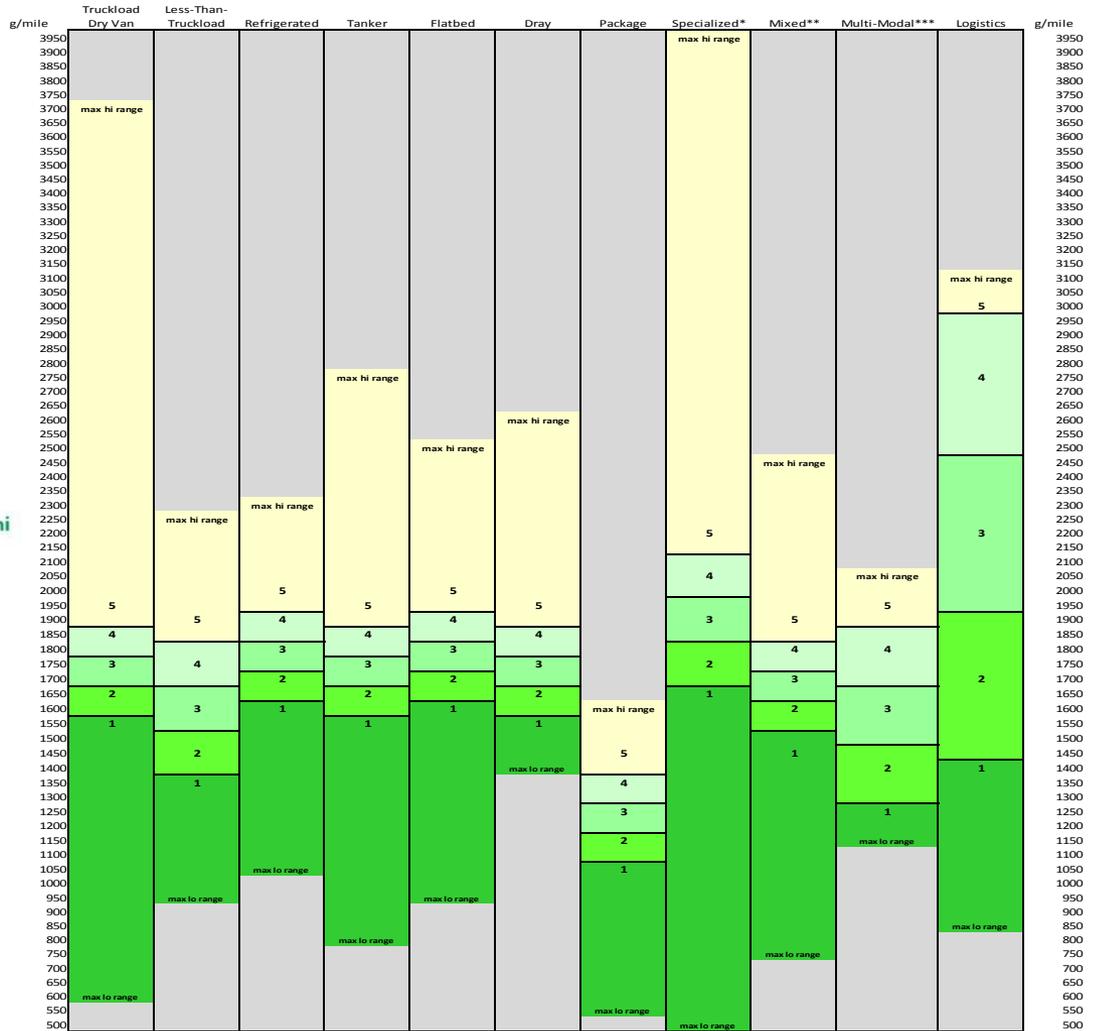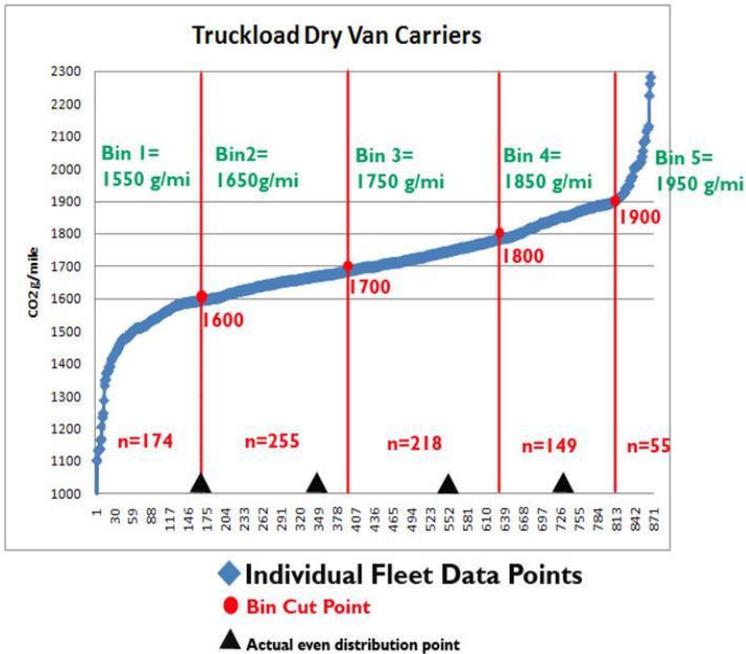**Bottom 20% TL Dry Vans**
1900-3600 g/mile CO2

All Fleets in a Range are Assigned a Performance Level

- Fleets are assigned a performance level that allows relative performance comparison to other fleets in that category
- Provides enough information to differentiate, but doesn't reveal sensitive business information

  - The performance level for ranges 2-4 are based on the MIDPOINT of the performance range
  - The performance levels for Range 1 is based on the standard deltas between the midpoints of ranges 2-4, subtracted from the midpoint of range 2. (1650 -100)
  - The performance levels for Range 5 is based on the standard deltas between the midpoints of ranges 2-4, added to the midpoint of range 4. (1850+100)

|	
Top 20% TL Dry Vans	• 1550 g/mile
Second 20% TL Dry Vans	• 1650 g/mile
Middle 20% TL Dry Vans	• 1750 g/mile
Fourth 20% TL Dry Vans	• 1850 g/mile
Bottom 20% TL Dry Vans	• 1950 g/mile

Developing SmartWay Emission Factors

Truckload Dry Van Carriers

Bin 1 = 1550 g/mi
Bin 2 = 1650 g/mi
Bin 3 = 1750 g/mi
Bin 4 = 1850 g/mi
Bin 5 = 1950 g/mi

1600
1700
1800
1900

n=174   n=255   n=218   n=149   n=55

CO2 g/mile

◆ Individual Fleet Data Points
● Bin Cut Point
▲ Actual even distribution point

CO2 g/mile Category Ranges

g/mile	Truckload Dry Van	Less-Than-Truckload	Refrigerated	Tanker	Flatbed	Dray	Package	Specialized*	Mixed**	Multi-Modal***	Logistics
max hi range	3700	5 (1900)	4 (1900)	max hi range (2750)	max hi range (2300)	max hi range (2600)	max hi range (1650)	max hi range (3900)	max hi range (2450)	max hi range (2050)	max hi range (3100)

Specialized: 5 (2200), 4 (2050), 3 (1900), 2 (1750), 1 (1650)
Logistics: 5 (3000), 4 (2750), 3 (2200), 2 (1700), 1 (1400)
Truckload Dry Van: 5 (1950), 4 (1850), 3 (1750), 2 (1650), 1 (1550)
Less-Than-Truckload: 5 (1900), 4 (1750), 3 (1600), 2 (1450), 1 (1350)
Refrigerated: 5 (2000), 4 (1900), 3 (1800), 2 (1700), 1 (1600)
Tanker: 5 (1950), 4 (1850), 3 (1750), 2 (1650), 1 (1550)
Flatbed: 5 (2000), 4 (1900), 3 (1800), 2 (1700), 1 (1600)
Dray: 5 (1950), 4 (1850), 3 (1750), 2 (1700), 1 (1550)
Package: 5 (1450), 4 (1350), 3 (1250), 2 (1150), 1 (1050)
Mixed: 5 (1900), 4 (1800), 3 (1700), 2 (1600), 1 (1400)
Multi-Modal: 5 (1950), 4 (1800), 3 (1600), 2 (1400), 1 (1250)

	g/mile											
	g/ton-mile											
	CO2	NOx	PM10	PM2.5
Truckload Dry Van	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Less-than-Truckload	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Refrigerated	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Flatbed	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Tanker	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Drayage	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Package Delivery	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Mixed	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Specialized	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Logistics	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Multi-modal	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Shippers use Performance Levels to Assess Relative Carrier Performance
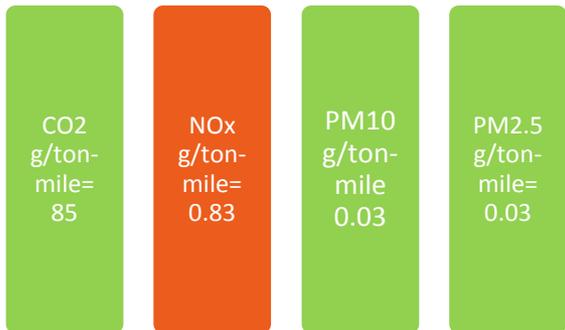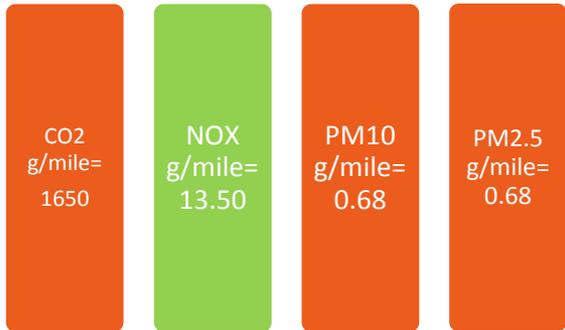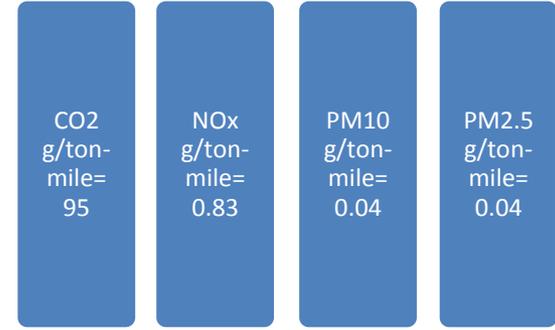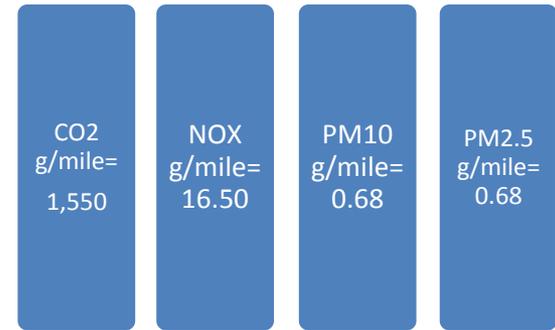
Alpha performs better than Beta for NOx g/mile and CO2, PM10 and PM2.5 g/ton-mile

Demonstration:
SmartWay Performance Report for Carriers

| Performance Rankings | | TRUCKLOAD/DRY VAN | | | | | | | | | | |

Click down arrows ▾ to filter data by column categories. Select one or more items in the dropdown checklists.
To seach by name, SCAC or MCN, click CTRL + F to bring up the search dialogue box, then type in the 4 letter SCAC , the 8 digit MCN, or all or part of the company name.
Performance Ranking=midpoint of the performance range for the metric

Company Division Name	Category	FleetType	SCAC	MCN	CO2 g/m metric	NOx g/m metric	PM10 g/m metric	PM2.5 g/m metric	CO2 g/ton-m metric	NOx g/ton-m metric	PM10 g/ton-m metric	PM2.5 g/ton-m metric
1625443 Ontario Inc. dba TVM	TL/Dry Van	For-Hire	OSTG	MC564999	1,101	16.50	0.68	0.68	95	0.83	0.04	0.043
1st Express Inc.	TL/Dry Van	For-Hire	FSEP	MC181440	1,101	10.50	0.53	0.53	61	0.53	0.02	0.023
2010 KKW Trucking Inc.	TL/Dry Van	For-Hire	KKWQ	MC151877	1,101	3.00	0.08	0.08	61	0.15	0.00	0.004
24:7 Expedite, Inc.	TL/Dry Van	For-Hire	TWFJ	MC690675	1,101	16.50	0.68	0.68	115	0.83	0.04	0.043
A & S Services Group, LLC	TL/Dry Van	For-Hire	ANSW	MC164166	1,101	3.00	0.23	0.23	115	0.53	0.01	0.013
A.C.S. LOGISTICS TRANSPORTATION INC.	TL/Dry Van	For-Hire	OFNS	MC548067	1,101	10.50	0.38	0.38	115	0.83	0.04	0.043
A.R.K.B. Xpress,LLC	TL/Dry Van	For-Hire	AKBP	MC659939	1,101	7.50	0.38	0.38	85	0.38	0.01	0.013
All Truck Transportation Company	TL/Dry Van	Private	ALLC	MC163455	1,101	13.50	0.53	0.53	115	0.83	0.04	0.043
Apollo Express, Inc	TL/Dry Van	For-Hire	AOXE	MC366984	1,101	10.50	0.53	0.53	85	0.68	0.03	0.033
ARI Mail	TL/Dry Van	For-Hire	RAIL	MC0023010	1,101	10.50	0.53	0.53	61	0.53	0.03	0.033
Army and Air Force Exchange Service	TL/Dry Van	Private	AYAF		1,101	7.50	0.38	0.38	115	0.68	0.03	0.023
Arnold Transportation Services, Inc	TL/Dry Van	For-Hire	ANTT	MC148974	1,101	10.50	0.68	0.53	85	0.53	0.03	0.033
ASL Transportation Group, Inc.	TL/Dry Van	For-Hire	AXGN	MC644828	1,101	7.50	0.38	0.38	105	0.53	0.02	0.023
Astral Carrier, Inc.	TL/Dry Van	For-Hire	AQCI	MC195809	1,101	16.50	0.68	0.68	61	0.83	0.04	0.043
Autobahn Freight Lines Ltd.	TL/Dry Van	For-Hire	AUBA	MC361296	1,101	10.50	0.53	0.53	85	0.68	0.03	0.033
B & D MOTORS, INC.	TL/Dry Van	For-Hire	BDMW	MC185907	1,101	16.50	0.68	0.68	95	0.83	0.04	0.043
Baylor Trucking, Inc.	TL/Dry Van	For-Hire	BYLR	MC109154	1,101	3.00	0.23	0.23	61	0.15	0.00	0.004
Bear Trucking, Inc	TL/Dry Van	For-Hire	BERO	MC367467	1,101	13.50	0.53	0.53	61	0.53	0.02	0.023
Bilbo Transports Inc. - BoxTruck	TL/Dry Van	Private	BIBT	MC134547	1,101	16.50	0.68	0.68	61	0.83	0.04	0.043
Bridgestone Americas Tire Operations, LLC (Team	TL/Dry Van	Private	BGFI	MC309557	1,101	3.00	0.08	0.08	61	0.15	0.00	0.004
Cardinal Health, Inc.	TL/Dry Van	Private	CHWK	MC654731	1,101	7.50	0.38	0.38	115	0.83	0.04	0.043
Cargo Transporters	TL/Dry Van	For-Hire	CGOR	MC257768	1,101	7.50	0.23	0.23	115	0.68	0.02	0.023
CDN LOGISTICS, INC.	TL/Dry Van	For-Hire	CQDN	MC332177	1,101	13.50	0.53	0.53	95	0.68	0.03	0.033

Shipper Applications

- The shipper tool pulls in the emission factor data from the SmartWay website.

- Shippers are then able to input their miles and ton-miles to calculate their inventory, as well as estimate savings from shipper strategies

Company/Division Name	Mode	SubMode	Fleet Type	g/mile			g/ton-mile		
				CO2	NOx	PM	CO2	NOx	PM
A & S Services Group, LLC	Truck	TL/Dry Van	For-Hire	1550	4.5	0.225	115	0.525	0.013
A&I Transport Inc.	Truck	Refrigerated	For-Hire	1700	11.5	0.425	82.5	0.5	0.023
A&I Transport Inc. Express Division	Truck	Refrigerated	For-Hire	1700	5.5	0.025	82.5	0.3	0.0015
A&M Transport / Dry Van	Truck	TL/Dry Van	For-Hire	1750	10.5	0.525	85	0.525	0.023
A&M Transport / Flatbed	Truck	Flatbed	For-Hire	1700	16	0.725	87.5	0.825	0.069
A&M Transport / Tauntliner	Truck	Specialized	For-Hire	1775	6.5	0.15	90	0.275	0.008
A&R Transport	Truck	Tanker	For-Hire	1650	7	0.375	82.5	0.55	0.0225

Shipper Tool Output Screens

- Shippers can calculate their freight carbon inventory for their entire company, divisions, product lines, etc.
- Shippers can compare modal, and carrier efficiencies in many different ways.

Shipper Tool Output Screens

SmartWay Shipper Tool: Example Corporation

| Select Carrier(s) | Emissions or % SmartWay | Activity Data | % SmartWay | Emissions Summary | Carrier Performance | Shipper Strategies | Modal Shift |

This display shows a summary of your carrier's performance based on the selected pollutant -- CO2, NOx, or PM. Select a different option below to view a summary for that pollutant. A more detailed presentation of your performance is shown on the next tab: Carrier Performance.

Selected Pollutant: ⦿ CO2 [?] ○ NOx [?] ○ PM10 [?] ○ PM2.5 [?]

Selected Carriers	Carrier Mode	Bin [?] Category	Inv Calc Metric	Carrier Performance - CO2				CO2 Mass Emissions [?] (tons/year)
				g/mile [?]	Bin Ranking	g/ton-mile [?]	Bin Ranking	
Composite [?]	All	All	--	1,746	--	145	--	1,437.6
Schneider National Carriers	Truck	TL/Dry Van	g/mile	1,550	1	95	3	341.7
J.B. Hunt Transport, Inc. Truck Divi...	Truck	TL/Dry Van	g/ton-mile	1,650	2	85	2	187.4
YRCW - YRC Inc.	Truck	LTL/Dry Van	g/ton-mile	1,625	3	75	1	165.3
BNSF Railway Company	Rail		g/ton-mile	1,163	--	1	--	1.1
Norfolk Southern Corporation	Rail		g/ton-mile	1,087	--	1	--	1.1
Drayage Express LLC	Truck	Dray	g/mile	1,650	2	70	1	36.4
C.R. England, Inc.	Truck	Refrigerated	g/mile	1,600	1	68	1	352.7
non-SmartWay Truck Carrier	Truck		g/mile	3,191	--	887	--	351.7

[BACK] [NEXT]　[ZOOM IN] [PRINT SCREEN]　[HOME]　[VALIDATE SCREEN] [VALIDATE COMPANY] [ADD/VIEW COMMENTS]　[HELP]

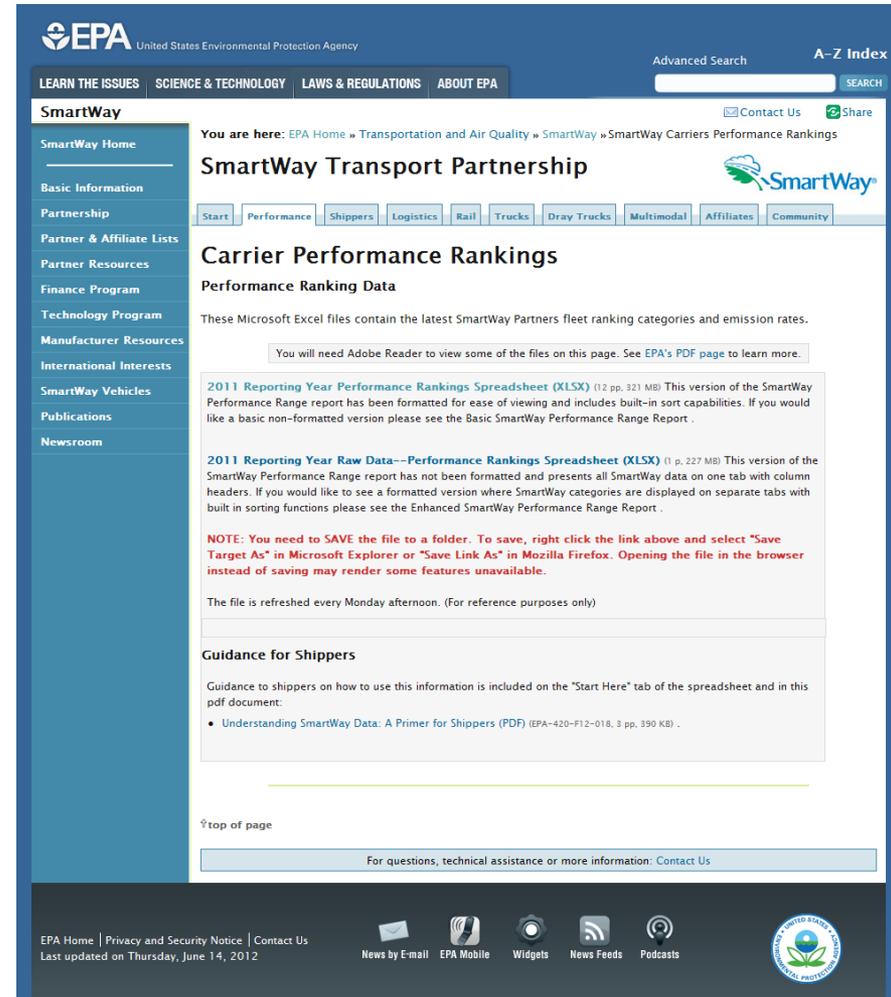# Carriers can Benchmark their Performance

- SmartWay can develop distribution curves by aggregating any data collected within SmartWay. Carriers can then see where they fall on that curve.
- This will be a powerful tool to help carriers to improve.

MPG Range: All SmartWay Class 8B Trucks/ All Fuel Types

SmartWay Miles by Fuel Type

Diesel 98.3134%
Other 1.6866%
Gasoline 1.6377%
CNG 0.0344%
LPG 0.0005%
LNG 0.0141%

Diesel   Gasoline   LPG   LNG   CNG

SmartWay Average Payload By Class

SmartWay Empty Miles by Category as a Percentage of Total

Package 6%, LTL 8%, Refrigerated 11%, Truckload Dry Van 13%, Mixed 14%, Flatbed 18%, Specialized 22%, Dray 27%, Tanker 39%

Access for TMS Software Providers

- TMS providers can import this data into their systems from a simple .xlsx spreadsheet on the SmartWay website

- http://epa.gov/smartway/partnership/performance.htm

- Free, but please identify the source of the data in your software using the SmartWay Data Logo

For more information:

EPA.GOV/SMARTWAY