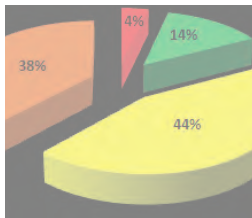
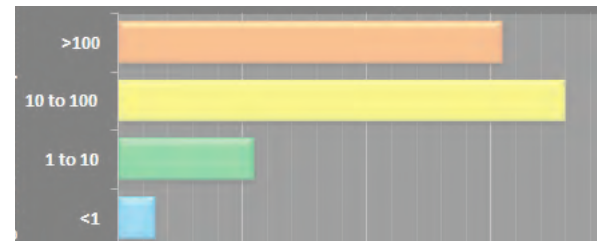
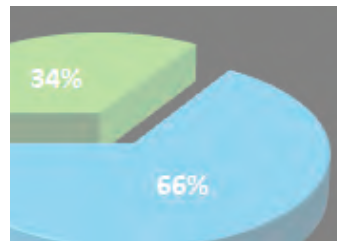


# SmartWay

## TIPS:



Trends, Indicators, and Partner Statistics



*Selected TIPS Summarizing SmartWay Partner Data*



# Welcome to SmartWay TIPS: Trends, Indicators, and Partner Statistics

*EPA SmartWay is a public-private partnership program of the US EPA and freight movement companies that share EPA's goals of reduced emissions and increased energy efficiency in the goods movement sector.*

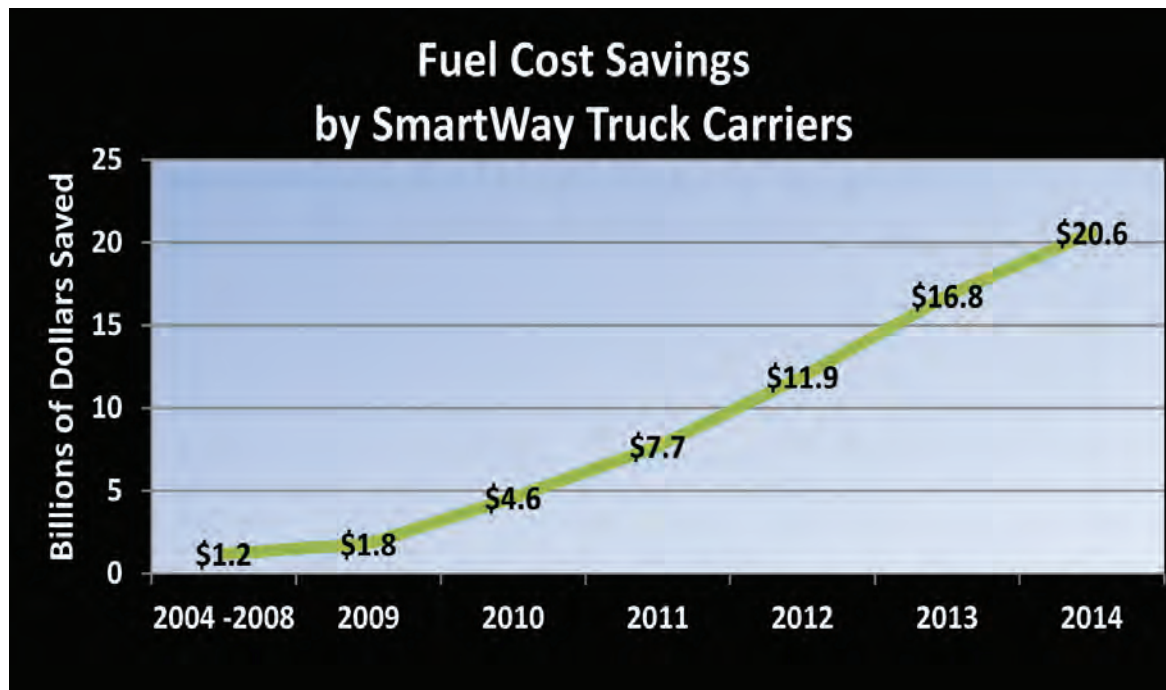
*As part of the program, SmartWay Partners annually submit data to EPA on their operations and activity, allowing EPA to provide them with emissions data and ranking information. With this knowledge, Carrier Partners can benchmark their performance and compare their emissions rankings—including CO<sub>2</sub>, a direct indicator of fuel consumption—with similar companies. In addition, Shipper and Logistics Partners interested in freight sustainability are a driving force toward carrier efficiency because they can match the greenest carriers and modes to each shipping need across their supply chains.*

*This booklet displays a selection of recent SmartWay TIPS charts posted in 2013-2015 with explanatory text, and are derived from data submitted by Partners to EPA as part of their annual updates. To preserve Partner data confidentiality, no fleet name is associated with any data point. While SmartWay Partners include diverse carrier modes, the greatest single source of SmartWay data comes from Truck Partners.*

*SmartWay participants—EPA, Partners, and non-Partner Affiliates alike—are convinced that the power of this data lies in providing another tool for businesses to evaluate their options and make informed decisions towards increased efficiency in goods movement.*

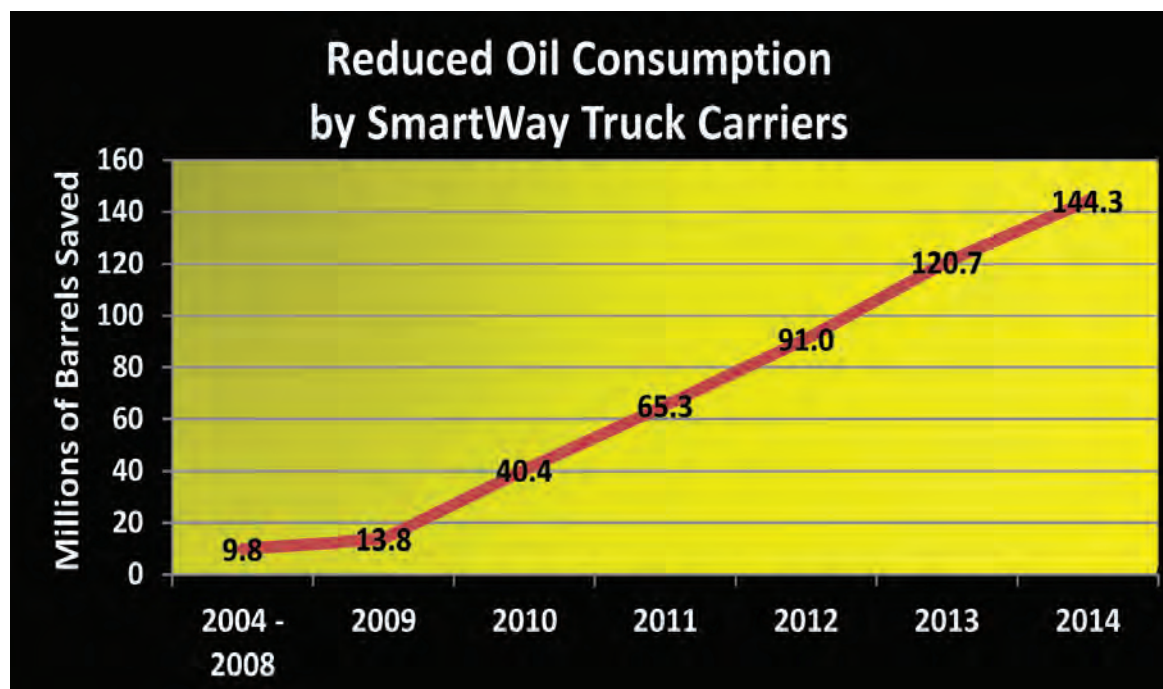
# Contents

- 1 Fuel Cost Savings by SmartWay Truck Carriers
- 2 Reduced Oil Consumption by SmartWay Truck Carriers
- 3 Reduction in CO<sub>2</sub> Emissions by SmartWay Truck Carriers
- 4 Biofuel Use by Truck Carrier Partners, 2011-2014
- 5 Percent Change in Biofuel Use by Truck Carrier Partners, 2011-2014
- 6 Consumption of Biofuel and Biodiesel by the U.S. Transportation Sector, 2005-2012
- 7 Average Annual Idle Hours per Truck for SmartWay Carriers, 2009-2014
- 8 Average Annual Idle Hours per Truck for SmartWay Carriers by Class, 2009 vs. 2014
- 9 Number of Trucks Operated by SmartWay Truck Carriers by Class, 2009 vs. 2014
- 10 SmartWay Average Truck MPG by Class
- 11 MPG Range for SmartWay Class 8A Fleets
- 12 MPG Range for SmartWay Class 8B Fleets
- 13 Distribution of SmartWay Diesel Truck Fleets by Reported Percent Revenue Miles
- 14 Distribution of SmartWay Diesel Truck Fleets by Reported Percent Empty Miles
- 15 Percent Revenue and Empty Miles in Private vs. For-Hire SmartWay Truck Fleets
- 16 Average Percentage of SmartWay Carriers Used by SmartWay Logistics Companies
- 17 Percentage of SmartWay Logistics Companies by Ranges of Total Carrier Miles
- 18 Average Percentage of SmartWay Carriers Used by Shippers
- 19 Percentage of SmartWay Shippers by Ranges of Total Carrier Miles
- 20 Average Percent Capacity Volume Utilization for SmartWay Fleets, by Category
- 21 Average Percent Capacity Volume Utilization for SmartWay Fleets, by Class
- 22 Average Percent Capacity Volume Utilization across SmartWay Class 8B Fleets

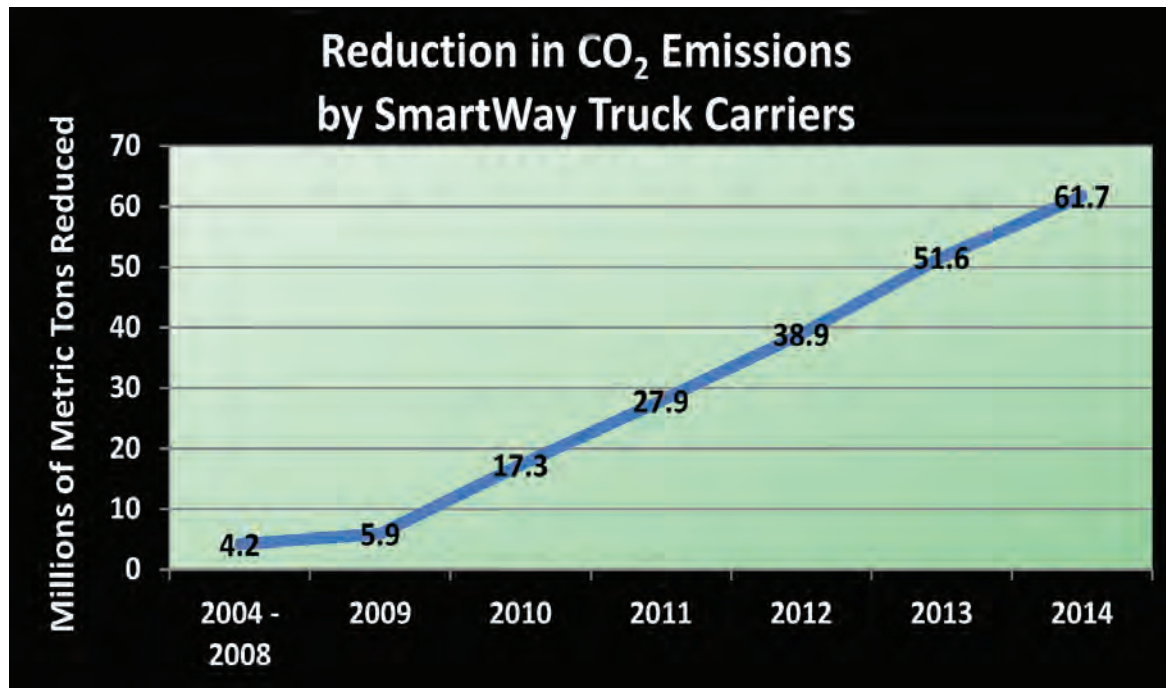


SmartWay Truck Carrier Partners have saved a total of \$20.6 billion cumulatively through 2014 data (reported in 2015), due to reductions in fuel consumption by using fuel-conserving technology and strategies showcased by EPA SmartWay. This information comes from data submitted annually by SmartWay Partners.

(To see more SmartWay Program Highlights information, go to:  
[www3.epa.gov/smartway/about/documents/basics/420f15031.pdf](http://www3.epa.gov/smartway/about/documents/basics/420f15031.pdf).)

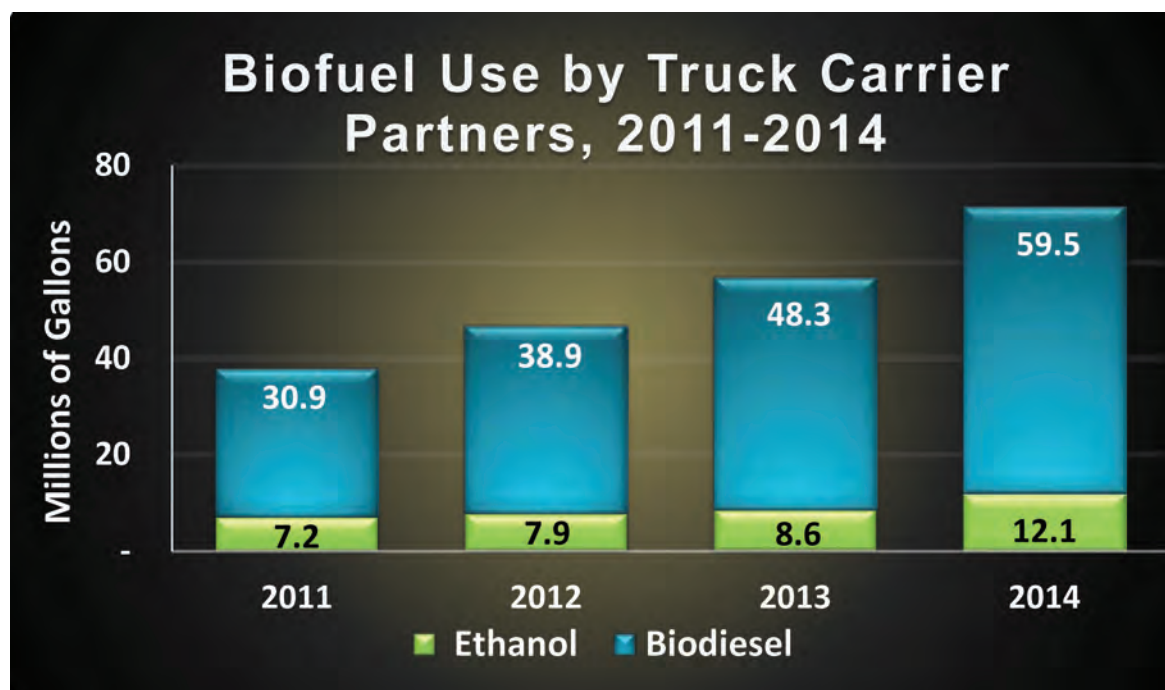


From SmartWay Partners' first data reports through 2014 data (reported in 2015), SmartWay Truck Carriers have collectively been responsible for reducing oil consumption by a total of over 144 million barrels. These Partners have avoided consuming fuel through the use of fuel-conserving technology and strategies promoted by SmartWay, using a variety of approaches ranging from aerodynamic vehicle features and low rolling resistance tires to anti-idling measures, like driver training and remote monitoring. Data collected from Partners in their annual updates to SmartWay comprise the basis for this information. (To see more SmartWay Program Highlights information, go to: [www3.epa.gov/smartway/about/documents/basics/420f15031.pdf](http://www3.epa.gov/smartway/about/documents/basics/420f15031.pdf).)



According to Partner reports from the first data collections through 2014 data (reported in 2015), SmartWay Truck Carriers have cumulatively saved nearly 62 million metric tons of carbon dioxide (CO<sub>2</sub>). Since CO<sub>2</sub> emissions are proportional to fuel consumption, this graph shows the same trend as that seen in the preceding graph for reduced oil consumption over the same time period. CO<sub>2</sub> makes up the highest proportion of emissions volume from internal combustion engines. Because CO<sub>2</sub> is a greenhouse gas, when the freight sector reduces CO<sub>2</sub> emissions, it reduces the contribution of freight movement to global climate change.

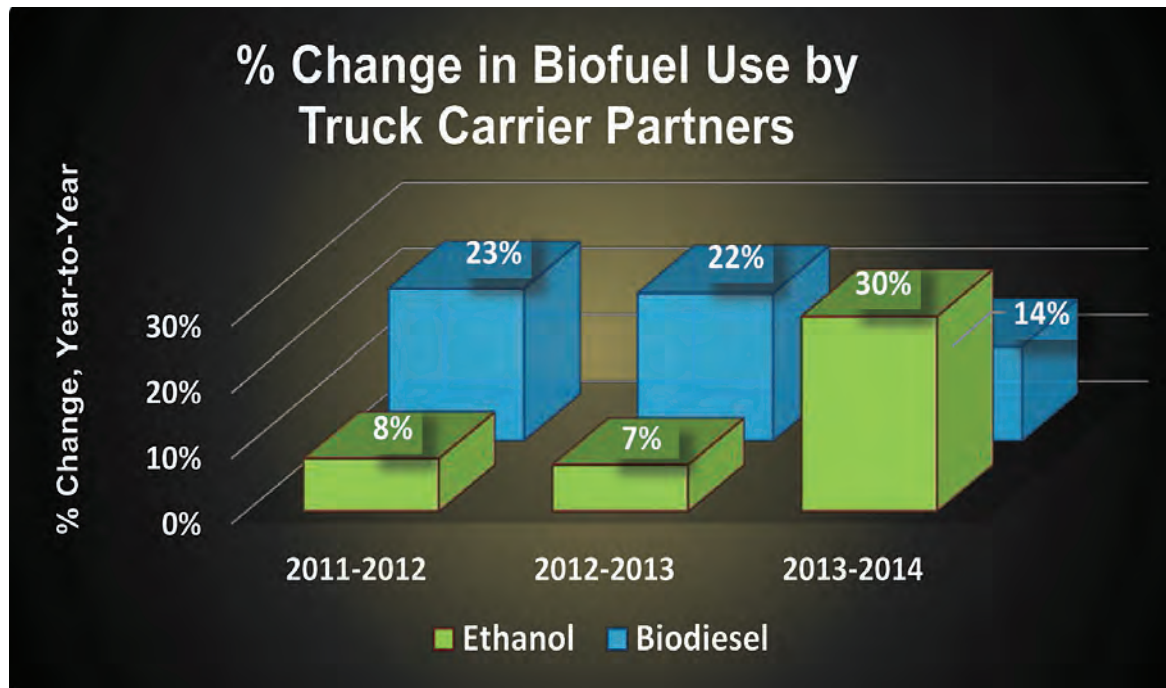
(To see more SmartWay Program Highlights information, go to: [www3.epa.gov/smartway/about/documents/basics/420f15031.pdf](http://www3.epa.gov/smartway/about/documents/basics/420f15031.pdf).)



This chart shows increasing biofuel use as reported by Truck Carrier Partners using the performance-based SmartWay Truck Tool for all classes of trucks, over each of the past four years. From the 2011 to 2014 reporting years overall, biodiesel consumption has increased by 93%, and ethanol by 69%.

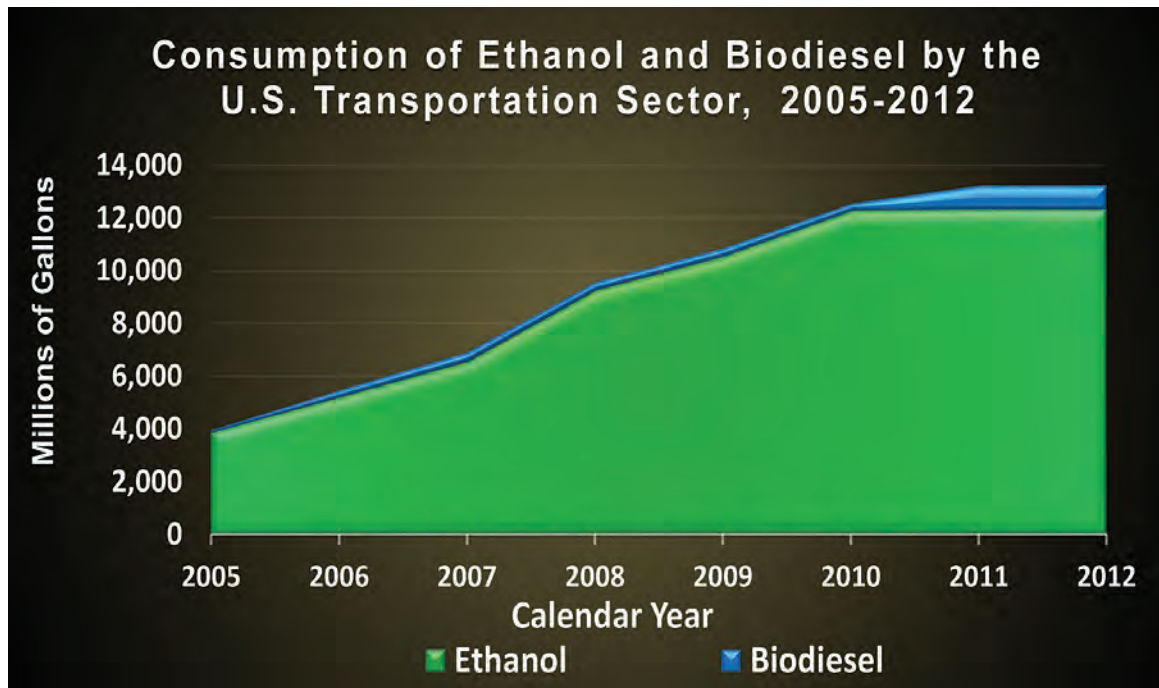
The term “biofuels” refers to fuel that derives from a renewable biomass resource (typically derived from plants or from animal fats). “Biodiesel” is a biofuel produced for use in diesel engines and is typically blended at 5%-20%, with the remainder being conventional diesel fuel. In the U.S., ethanol is typically blended with gasoline to create E85 fuel, consisting of 85% ethanol and 15% gasoline. Using renewable content in fuel has a number of advantages, including reduced lifecycle greenhouse gas generation, reduced particulate matter emissions due to lower sulfur content, and improved U.S. energy security.





To highlight the trend seen among Truck Carrier Partners in the SmartWay program, this graph shows the annual rate of change in biodiesel and ethanol consumption, rather than the change in the overall amount consumed. In this chart, the rate of increase is adjusted to the number of trucks operated by Truck Carrier Partners. Scaling the biofuel consumption to the number of trucks for each year reveals that consumption increases are not simply due to partnership growth, but rather that Partners are increasingly choosing to use biofuel.

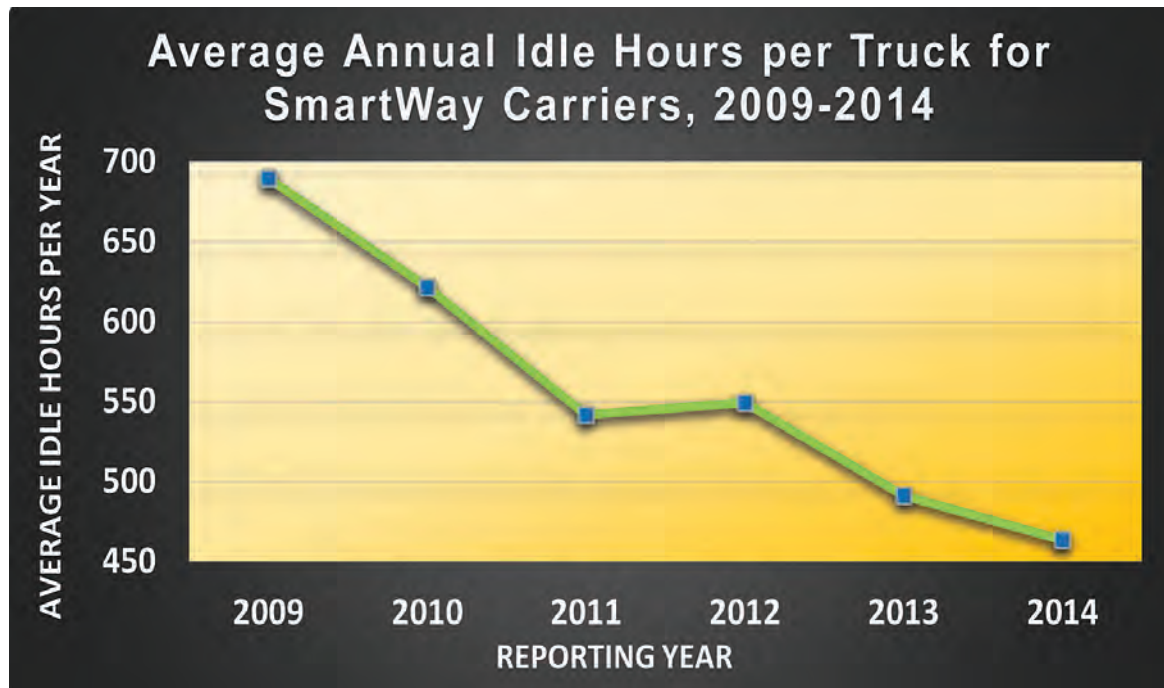
Biofuels utilize biomass feedstocks that are renewable; that is, they derive from sources that will not “run out,” in contrast with fossil fuels, the supply of which is limited to whatever remains in known and undiscovered reserves. In the U.S., corn is commonly used for ethanol production, and soybeans and canola for biodiesel. Other sources of biofuels, including less carbon-intensive crops and vegetative or agricultural wastes, are increasingly a part of the biofuel picture.



This chart is not based upon SmartWay Partner data, but instead upon data from the entire U.S. transportation sector,\* which includes data from earlier years than the current platform of the SmartWay Truck Tool. The overall trend toward increased use of biofuels in the transportation sector increases until the last two to three calendar years of data, which show some leveling off.

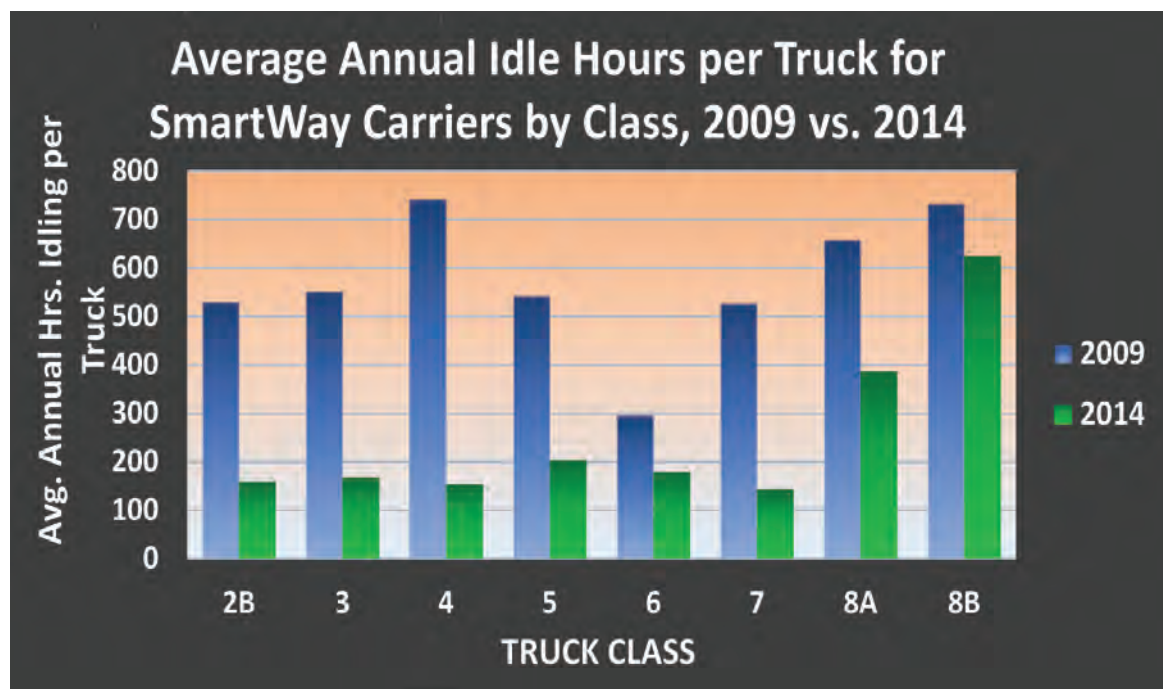
While information from a different set of sources, using different methods for collection and analysis, should only be compared with care, the subset of the national transportation sector comprised by SmartWay Truck Carrier Partners continued to show increased consumption of biofuels in the 2011-2014 reporting years (corresponding to the 2010 – 2013 calendar years, which overlap the last three years of the national data).

\* U.S. EPA. Inventory of U.S. GHG Emissions and Sinks: 1990-2012. 15 April 2014 <<http://www3.epa.gov/climatechange/ghgemissions/usinventoryreport.html>>.



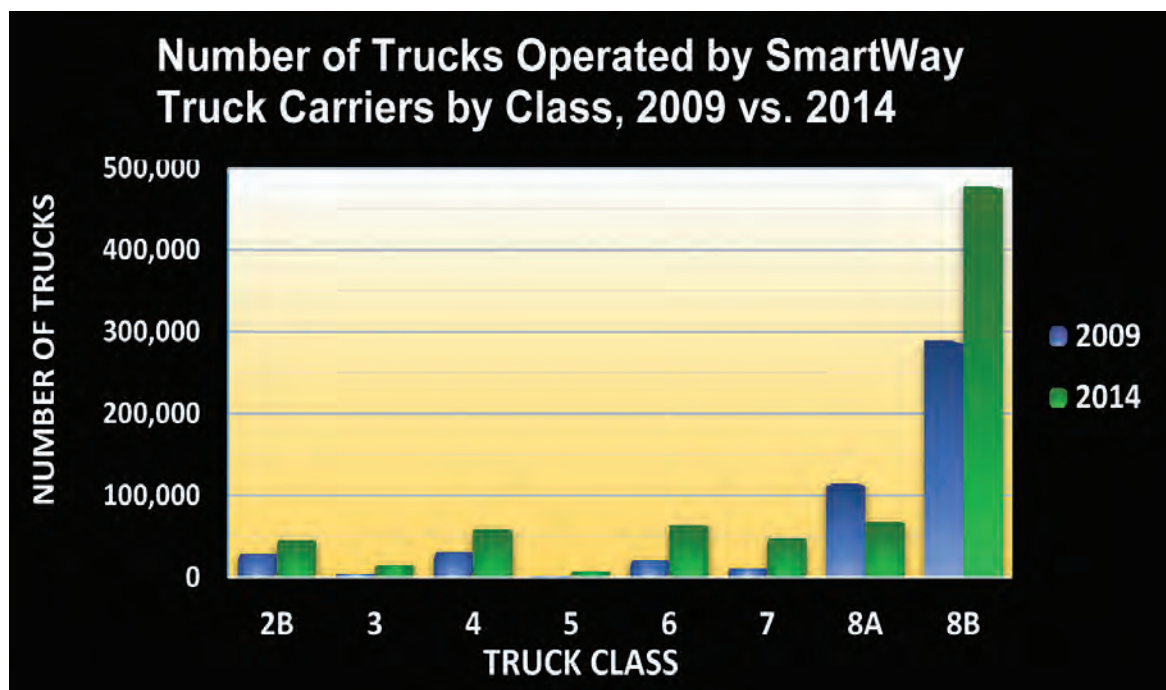
This chart shows the decreasing trend for annual idling time per truck reported by SmartWay Truck Carriers over the past six years. Taken across all truck classes, reported average hours of idling by Partners' trucks—including both long and short duration idling--were reduced by 33% during this period. (Computed average annual hours spent idling by trucks was weighted by fleet size.)

Reducing unnecessary idling results in lower fuel consumption, which shrinks operational costs and reduces unhealthy emissions. Idle emissions reduction can contribute to higher SmartWay performance rankings.

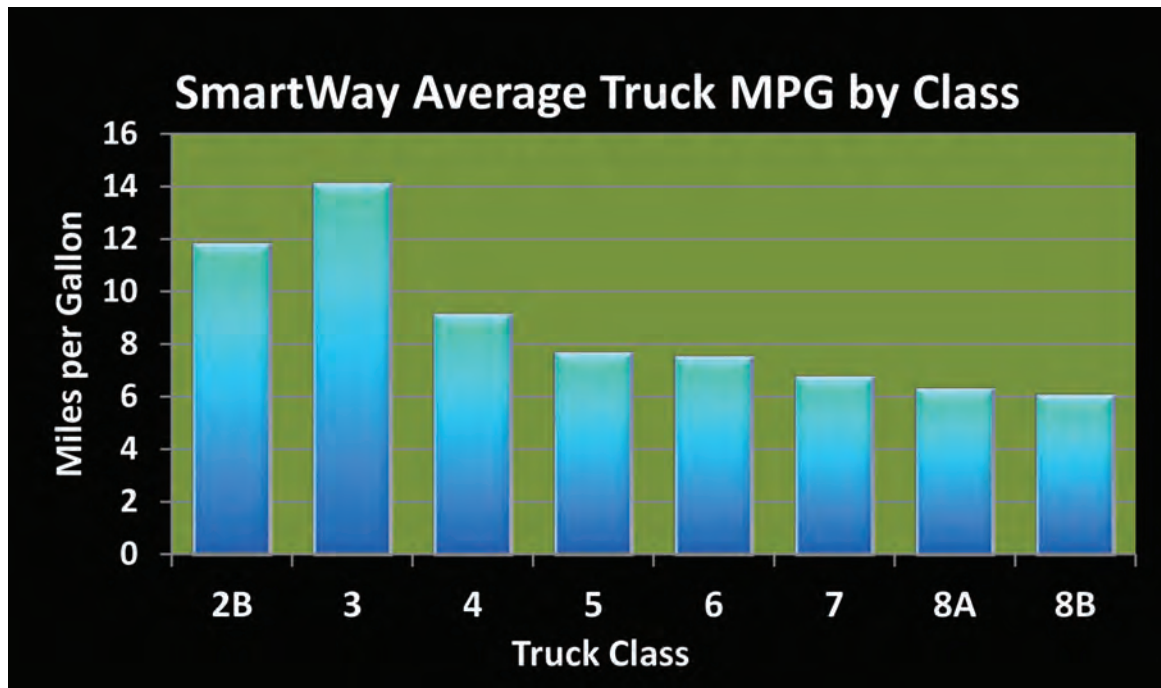


SmartWay Truck Carriers have reduced their fleets' average idle hours, including both long and short duration idling, between the 2009 and 2014 reporting years. While the reductions have not been uniform across classes, overall, the drop in time spent idling represents significant progress in reducing fuel consumption and emissions.

SmartWay carrier performance rankings, which allow comparisons between carriers on the basis of emissions, are available on the SmartWay website at: [www3.epa.gov/smartway/forpartners/performance.htm](http://www3.epa.gov/smartway/forpartners/performance.htm).

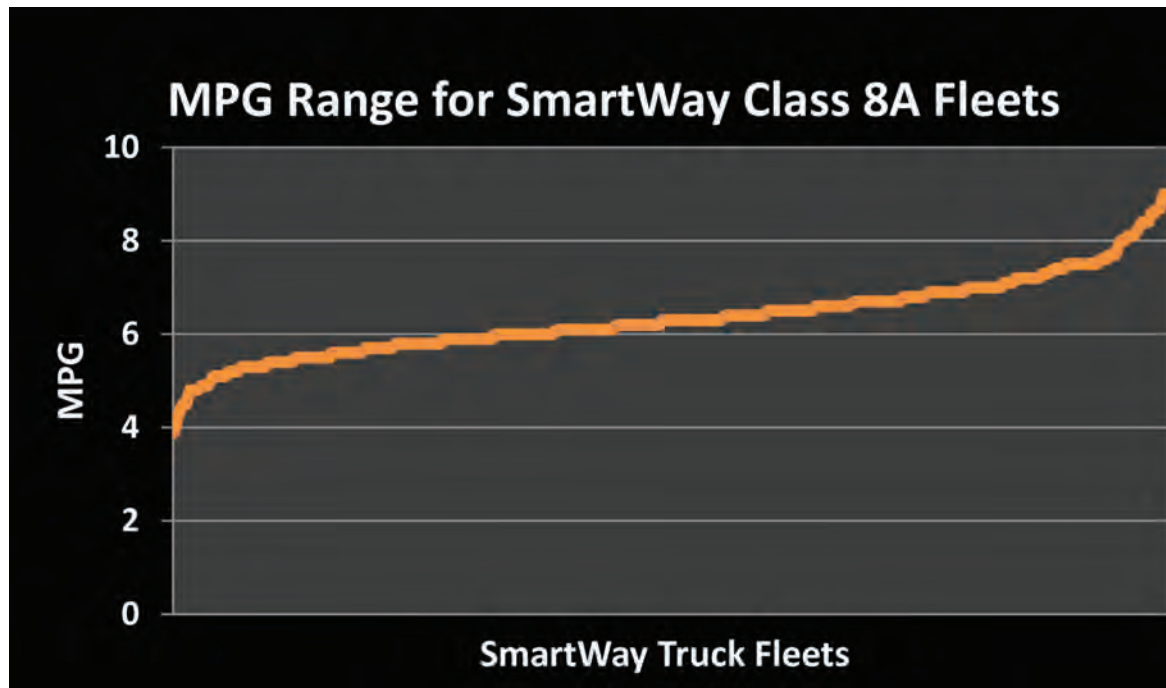


This graph portrays the total number of trucks operated by SmartWay Truck Carriers in the 2009 reporting year, as compared with the number five years later in the 2014 reporting year, shown by truck class. During the most recent years that Truck Carrier Partners have been submitting data to EPA SmartWay on their operations, the number of trucks and fleets has increased overall. In classes 3, 5, 6, and 7, numbers of trucks in SmartWay fleets have approximately doubled, tripled, or quadrupled. While the increase is not quite so dramatic in Class 8B, numbers have still increased by 65% in that class.



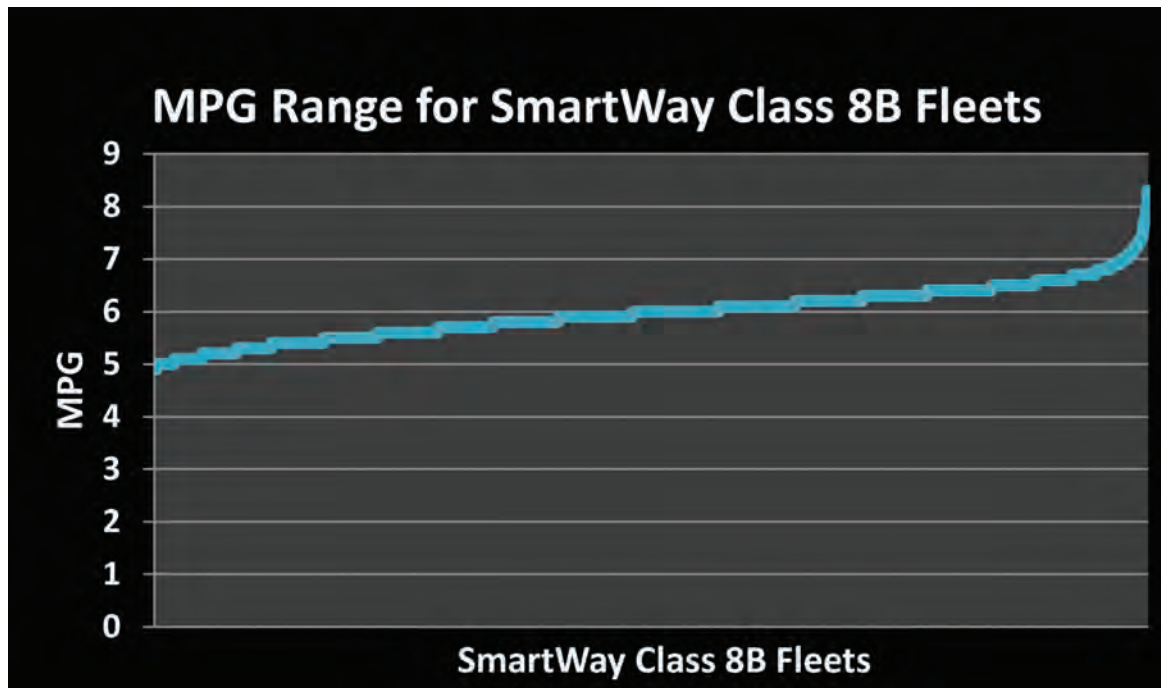
This chart, based on SmartWay Truck Carrier data reported in 2013, shows the average fuel efficiency of SmartWay trucks, segmented by class from 2B through 8B. For each class, company fleet average MPG was multiplied by the number of trucks in each fleet. These fleet numbers were totaled for the class, then divided by the total number of trucks in the class to create the class average.





Class 8 trucks comprise the largest over-the-road truck class used for freight transport. They are heavy-duty trucks that span a wide range of operations, ranging from straight trucks, like fire engines, city buses, and garbage trucks, to cement mixers, to combination tractor-trailer trucks, and many others. They can be further divided into Class 8A and Class 8B. Class 8A and Class 8B trucks may cover the same range of operational types, but Class 8B trucks are built to transport heavier loads (including the truck itself and whatever it may carry).

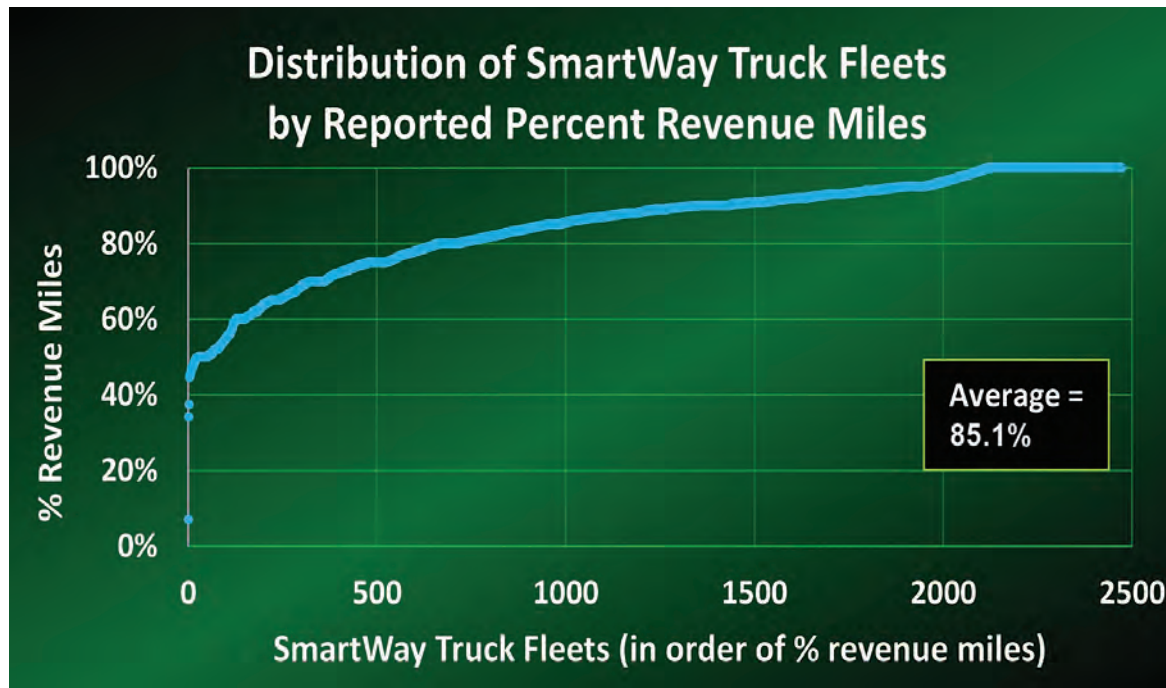
This chart is based on Carrier Partner data reported in 2013 for Class 8A trucks, and covers all fuel types. The line is made up of individual points, each of which corresponds to a fleet's performance. The chart shows that an overwhelming majority of SmartWay Class 8A truck fleets ranged in fuel efficiency from 5 to 8 miles per gallon.



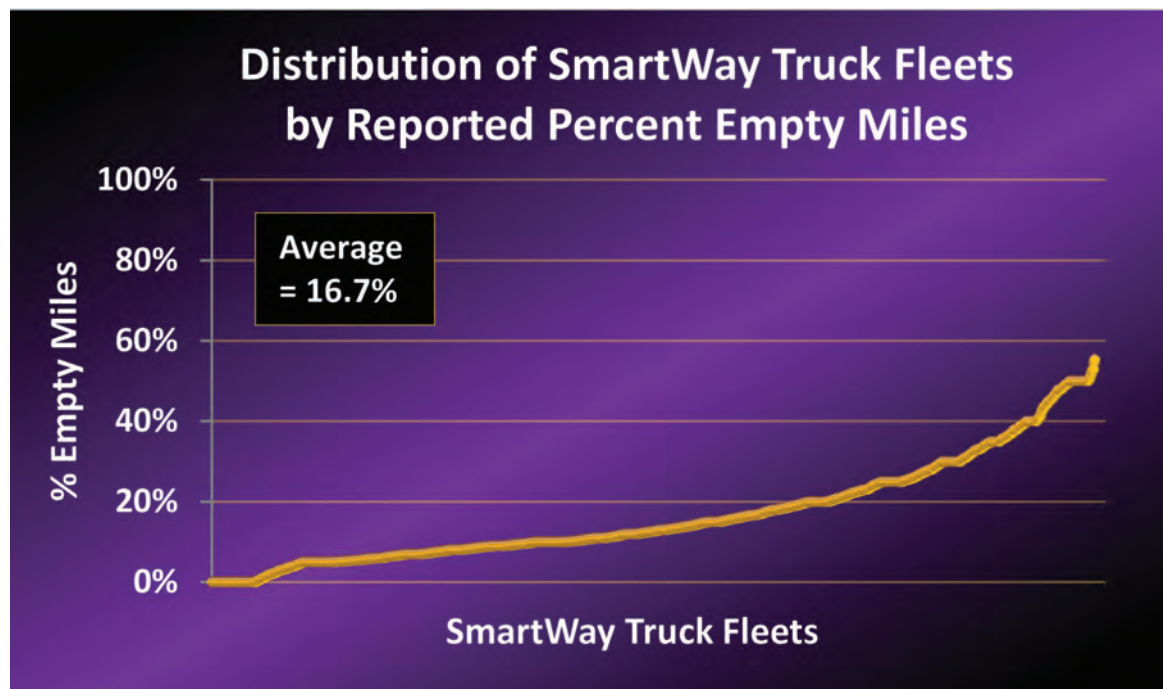
This chart is based on Truck Carrier Partner fuel consumption data reported in 2013 for Class 8B trucks. Among the diverse heavy-duty truck types in Class 8 are combination tractor-trailers. Both Class 8A and 8B combination tractor-trailers carry a wide variety of freight in different types of trailers, including box vans, tankers, flatbeds, car carriers, etc. Class 8B trucks, which are built carry more weight than Class 8A, are often used for long-haul transport of America's over-the-road freight.

The vast majority of Class 8B truck fleets in SmartWay ranged from 5MPG to 7MPG, with a few averaging over 8MPG. (Note that average payload varies across these fleets, which affects MPG. Each point on the graph represents an individual fleet's performance.)



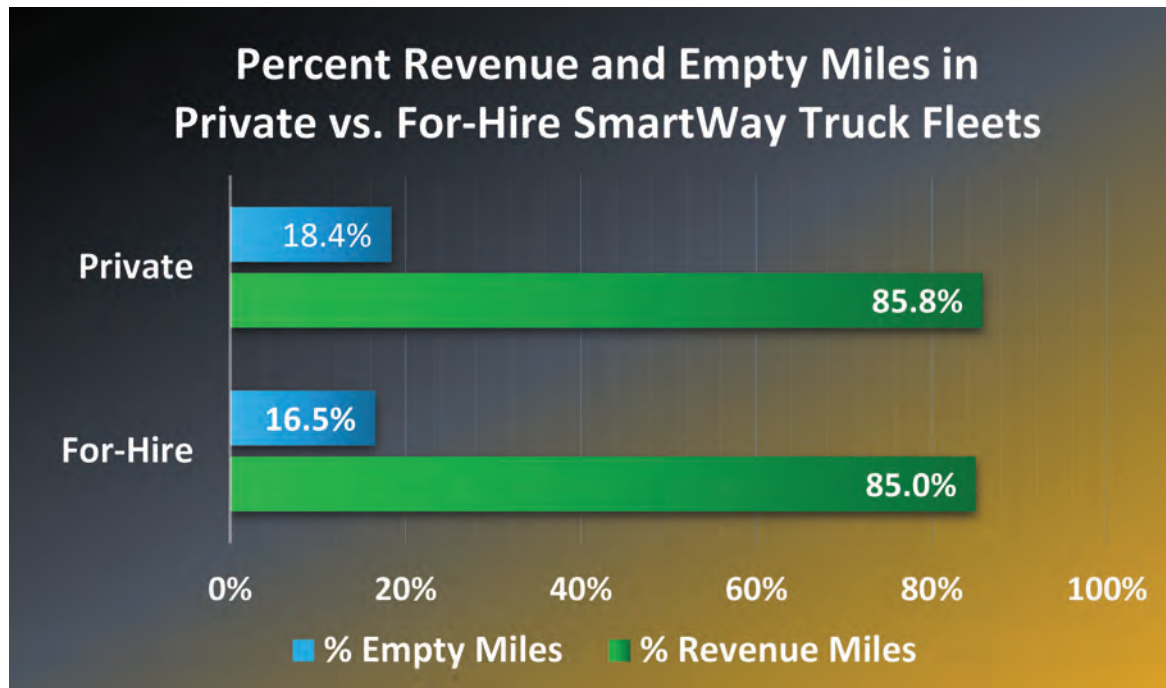


Based on data reported in 2014 by SmartWay Truck Carriers, this chart shows the range of the percentages of revenue miles traveled for SmartWay truck fleets (across all truck classes). Revenue miles are the mileage traveled for which the carrier is being paid. The line is made up of individual points, each of which corresponds to a single fleet's average percentage of revenue miles.



This graph shows the distribution of empty miles for SmartWay truck fleets (all truck classes), based on Truck Carrier Partner data reported in 2014. The line is made up of individual points, each of which corresponds to a single fleet's average percentage of empty miles.

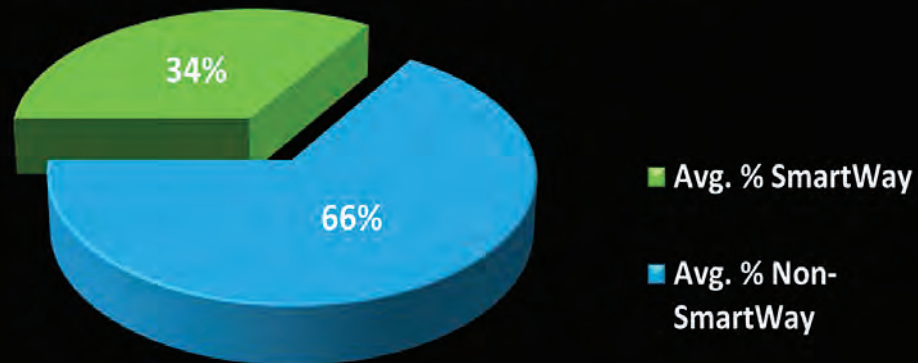
Note that not all empty miles are non-revenue miles; for example, a contract may include payment for return miles after freight delivery. However, it is usually both more cost effective and energy efficient to contract for freight to be carried in the backhaul, rather than have trucks return empty. For some operations, such as tanker trucks or specialized haul, backhauls are not as feasible due to the nature of the products carried and the specialized equipment used.



This graph shows the percentage of total miles that are revenue and empty miles for SmartWay private and for-hire diesel truck fleets (all truck classes), based on data reported by Truck Carrier Partners in 2014. (Fleets indicated here as “Private” include those that are owned by the shipper, but a few of these are actually dedicated fleets that are devoted to one or a few shippers but are not owned by them. “For-hire” fleets are available to be hired by shippers, logistics companies, and multimodal companies.)

As mentioned in the previous slide, it is usually both more cost effective and energy efficient to contract for freight to be carried in the backhaul, rather than have trucks return empty. However, for some operations, such as tanker trucks or specialized haul, backhauls are not as feasible due to the nature of the products carried and the specialized equipment used. Note that because not all empty miles are non-revenue miles, the percentages for revenue and empty miles within a category add up to more than 100%.

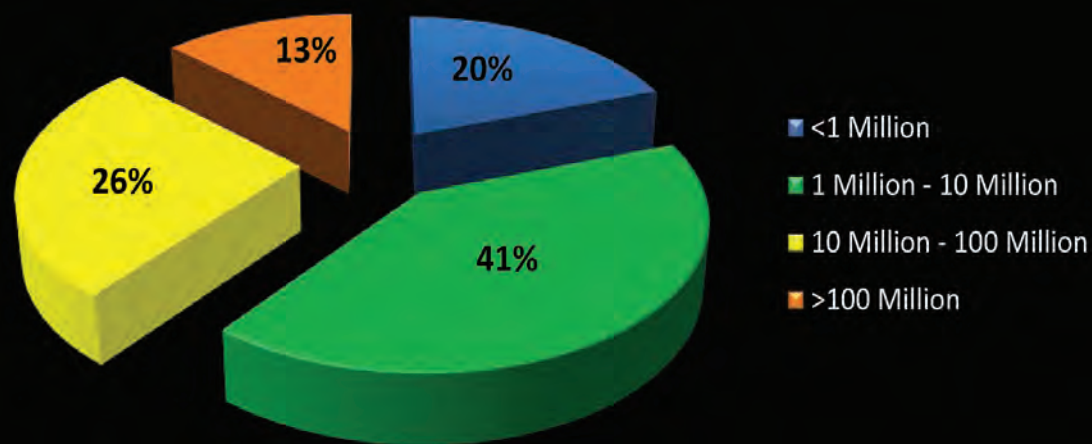
## Average Percentage of SmartWay Carriers Used by SmartWay Logistics Companies



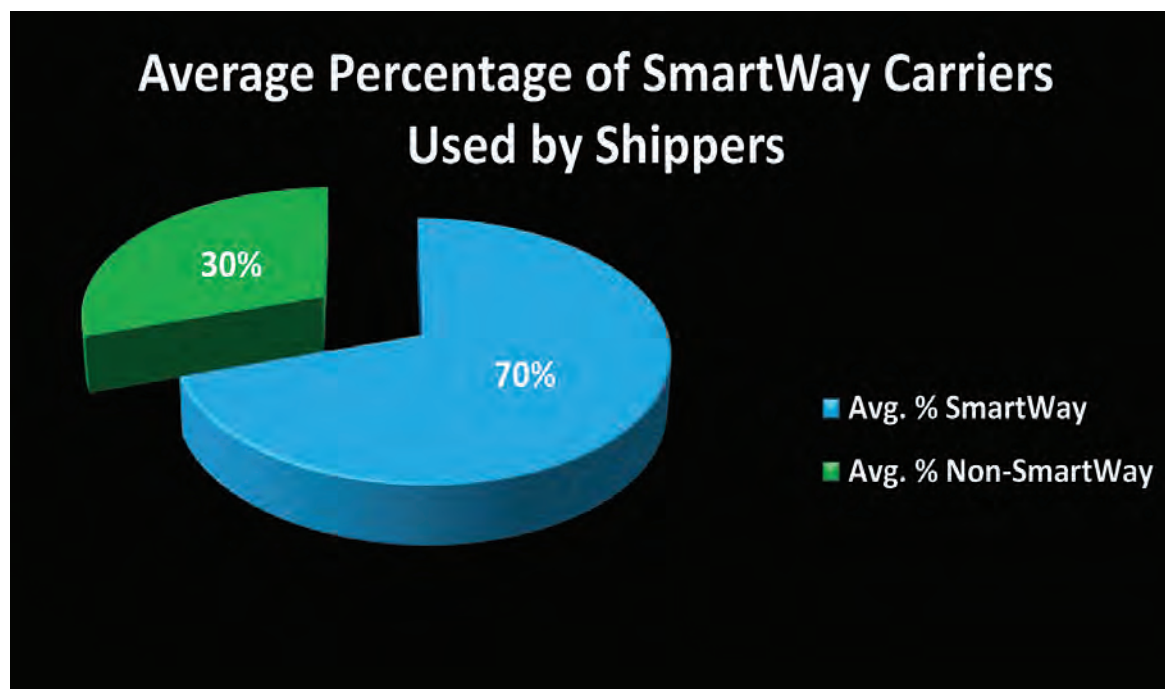
Based on Partner data reported in 2012, this chart shows the averaged percentages of SmartWay carriers (among all SmartWay Partner carrier categories available in that year--truck, rail, and multimodal) used by SmartWay Logistics Company Partners versus percentages of non-SmartWay carriers used. This proportion is based on the reported numbers of SmartWay and non-SmartWay carriers for each Logistics Company Partner, averaged across all SmartWay Logistics Companies.

This chart demonstrates that SmartWay Logistics Company Partners use SmartWay carriers in greater numbers than non-SmartWay carriers.

### Percentage of SmartWay Logistics Companies by Ranges of Total Carrier Miles



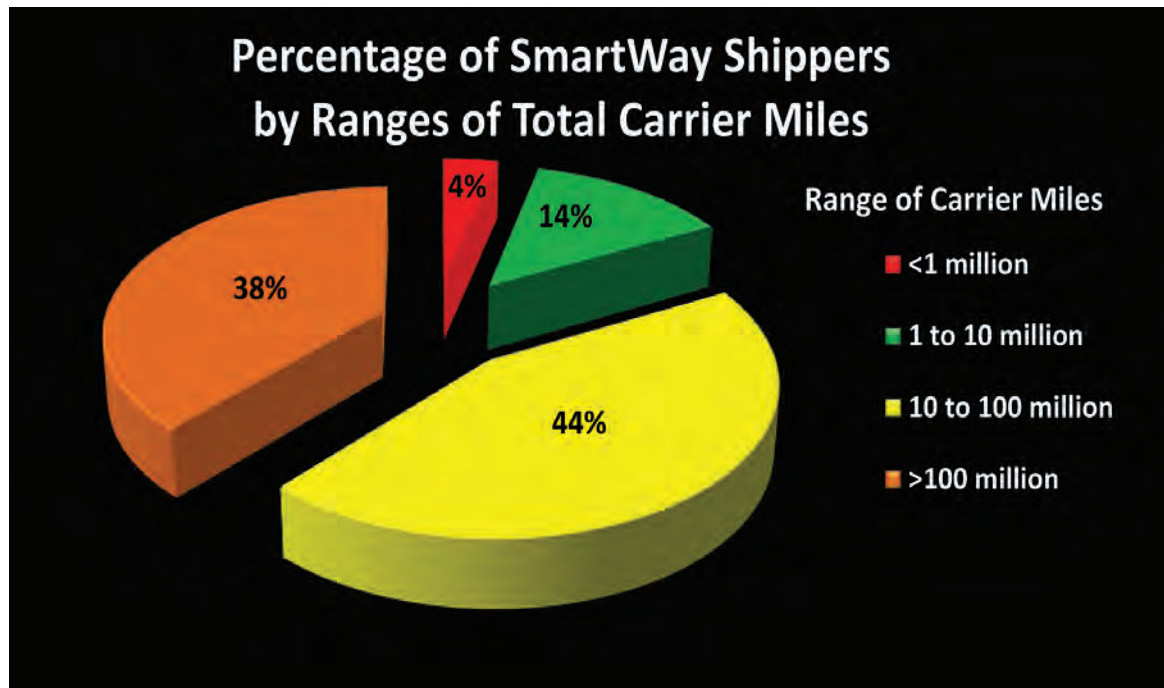
This pie chart represents the proportion of SmartWay Logistics Companies whose total carrier mileage correspond to each of the given ranges. Based on Partner data reported in 2012, each wedge of the pie diagram corresponds to the percentage of SmartWay Logistics Companies whose carriers' cumulative mileage falls within a defined range of miles. This mileage includes all mileage contracted by individual Logistics Company Partners with their carriers, including intermodal miles. While about 61% of SmartWay Logistics Companies reported total carrier mileage under 10 million miles in that year, the uppermost 13% of Logistics Company Partners reported total carrier mileage over 100 million miles. This distribution demonstrates that SmartWay Logistics Companies range from those with relatively low reported carrier mileage, to those with the highest carrier mileage and having very large transportation footprints.



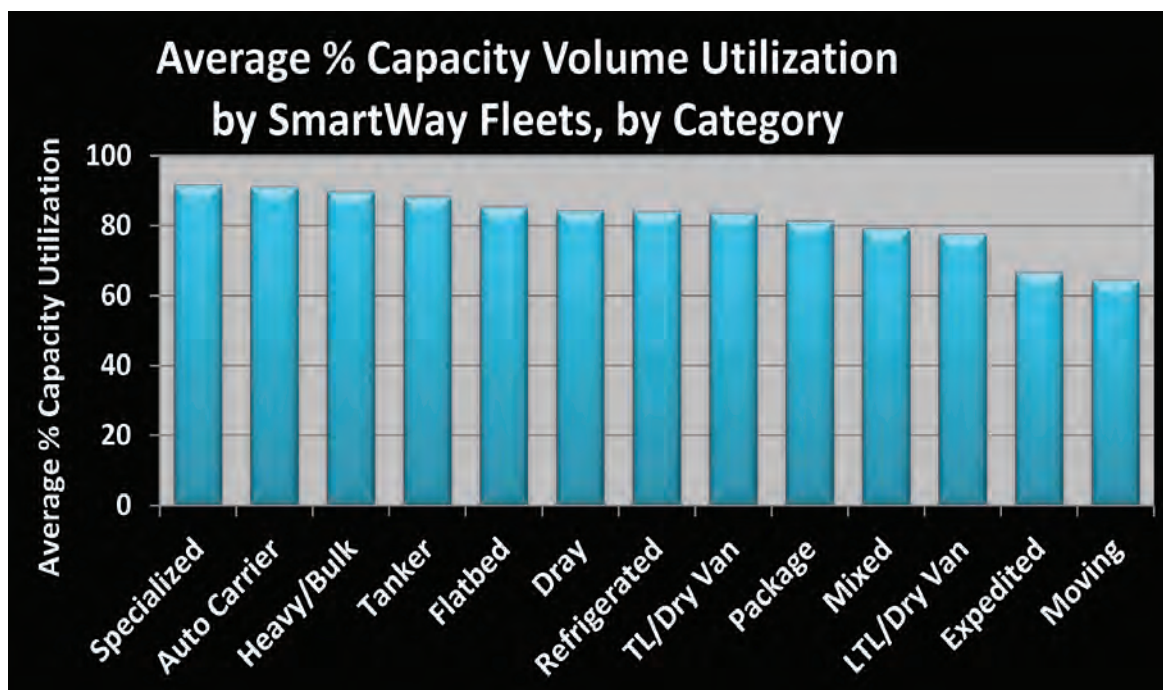
Based on Partner data reported in 2012, this chart shows the averaged percentages of SmartWay carriers (among all SmartWay Partner carrier categories available in that year -- truck, rail, and multimodal) used by SmartWay Shipper Partners versus non-SmartWay carriers used. This proportion is based on the reported numbers of SmartWay and non-SmartWay carriers for each shipper company, averaged across all SmartWay Shipper Partners.

This chart demonstrates that SmartWay Shipper Partners use SmartWay carriers in greater numbers than non-SmartWay carriers.





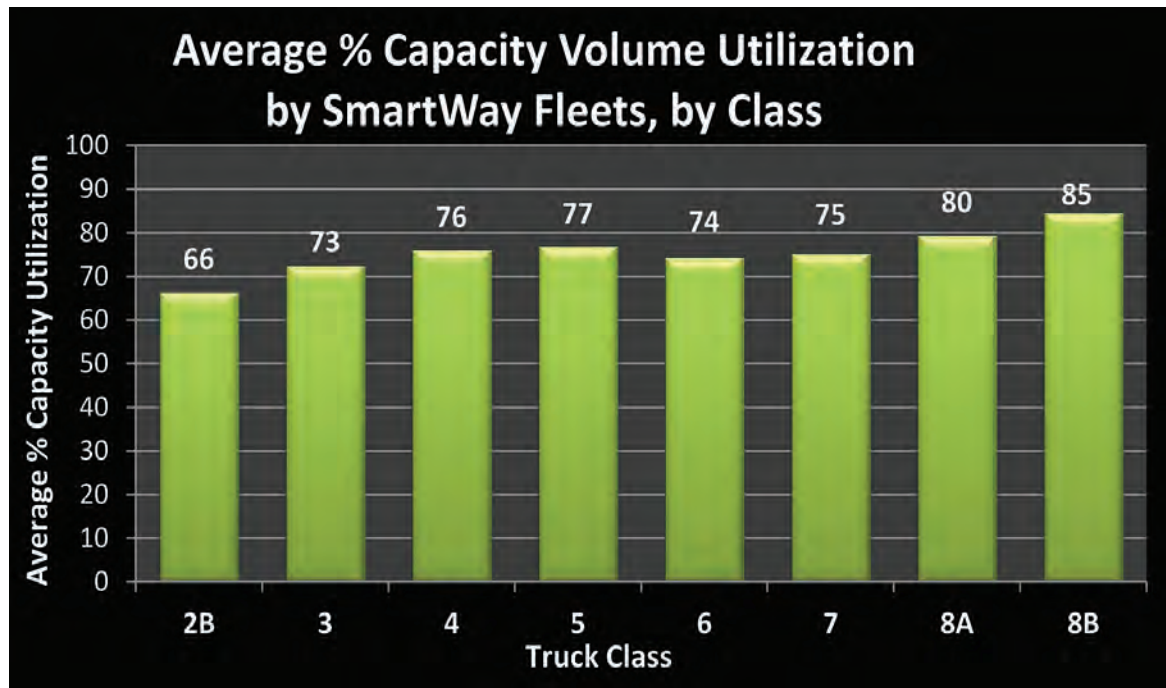
This chart represents the proportion of SmartWay Shippers whose total carrier mileage correspond to each of the given ranges. Based on Shipper Partner data reported in 2012, each wedge of the pie diagram corresponds to the percentage of SmartWay Shippers whose carriers' cumulative mileage for those shippers falls within a defined range of miles. This mileage includes all mileage contracted by individual SmartWay Shippers with their carriers, whether loaded or empty, and does not include carrier mileage undertaken for other companies, including intermodal miles. (Note that the mileage ranges progress by orders of magnitude, not increments of the same number of miles.)



Based on Carrier Partner data reported in 2013, this chart shows the average percent capacity volume utilization for SmartWay trucks, segregated by operational category. Capacity volume is a measure of the cargo-carrying capacity of the vehicle. Since the capacity volume when loaded to legal limits may be less than the total volume (i.e., maximum weight within allowable limits may be reached before the vehicle “cubes out”), the remaining volume is left unused. The percent capacity volume utilization is the percent of available capacity that is actually used when the vehicle is loaded. The capacity volume varies with the vehicle type.

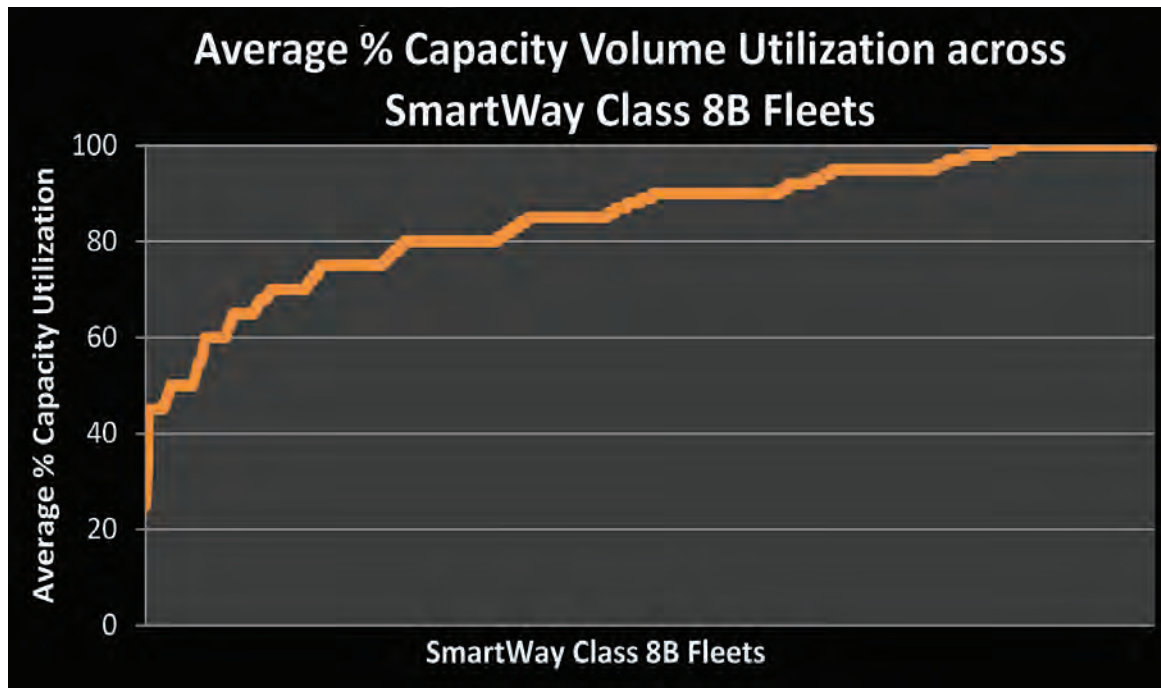
The data represent averaged fleet percentages of capacity volume utilization within each truck category when loaded, and include all SmartWay operational category types across the truck classes (2B through 8B).





This chart, based on Truck Carrier Partner data reported in 2012, shows the average percent capacity volume utilization for SmartWay trucks, segregated by truck class. Capacity volume is a measure of the cargo-carrying capacity of the vehicle and varies with the vehicle type. The average percent capacity volume utilization is a relative indicator of efficiency.

The data represent averaged fleet percentages of capacity volume utilization when loaded, for each class of SmartWay trucks.



This chart shows the average percent capacity volume utilization across SmartWay Class 8B fleets, based on data reported in 2012 by Truck Carrier Partners. Capacity volume is a measure of the cargo-carrying capacity of the vehicle, and the average percent capacity volume utilization is a relative indicator of efficiency. The capacity volume varies with the vehicle type. Class 8B trucks are equipped to carry very heavy loads and may reach weight limits before volume limits.



EPA SmartWay offers additional TIPS, data, technical information, and resources to help businesses save money and cut carbon from their transportation supply chains.

For more information, visit [www3.epa.gov/smartway/](http://www3.epa.gov/smartway/).



United States

Environmental Protection Agency

Office of Transportation and Air Quality

1200 Pennsylvania Ave., NW

Washington, DC 20160

EPA-420-K-15-002

October 2015

For more information, visit [www3.epa.gov/smartway/](http://www3.epa.gov/smartway/).



Printed on processed chlorine-free, 100% recycled paper with a minimum 50% post-consumer fiber using vegetable-based ink.