



# 2024 SmartWay Online Truck Tool: Short Form

For fleets with 20 or fewer trucks,  
one class, using diesel or gasoline fuel,  
with no brokered freight

## Technical Documentation

**U.S. Version 1.0  
(Data Year 2023)**

# 2024 SmartWay Online Truck Tool: Short Form

For fleets with 20 or fewer trucks,  
one class, using diesel or gasoline fuel, with no  
brokered freight

# Technical Documentation

**U.S. Version 1.0  
(Data Year 2023)**

Transportation and Climate Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

**EPA-420-B-24-003  
January 2024**

# Table of Contents

1.0	OVERVIEW.....	5
2.0	DATA INPUTS AND SOURCES.....	6
2.1	CO <sub>2</sub> Factors.....	6
2.2	NO <sub>x</sub> , PM and BC Factors.....	7
2.3	Derivation of Running Emission Factors by SmartWay Category.....	8
3.0	EMISSION AND ACTIVITY ESTIMATION.....	12
3.1	CO <sub>2</sub> .....	12
3.2	NO <sub>x</sub> , PM and BC.....	12
3.3	Data Validation.....	13
4.0	PERFORMANCE METRICS.....	21

# Appendices

Appendix A: NO <sub>x</sub> , PM & BC Emission Factors (g/mi) 2023 Calendar Year - MOVES3.1 Basis.....	A-1
Appendix B: NO <sub>x</sub> , PM & BC Idle Factors – g/hr 2023 Calendar Year, MOVES3.1 Basis.....	B-1

## List of Tables

Table 1. CO <sub>2</sub> Factors by Fuel Type* .....	6
Table 2. Weighted Average Reefer Fuel Factors (g/gallon).....	8
Table 3. Outliers Removed by SmartWay Category.....	10
Table 4. Operation Mode Weighting Factors by SmartWay Category .....	10
Table 5. Short Form Tool Validation Ranges by Parameter .....	14

## List of Figures

Figure 1. Percent Operation by Urban Mode (Normalized).....	9
---	---

## 1.0 Overview

This document provides detailed information on the data sources, calculation methods, and assumptions used within the 2024 SmartWay Online Truck Tool – Short Form (referred to as the Short Form Tool in this document), version 1.0. The Short Form Tool utilizes up-to-date emission factors, in combination with detailed vehicle activity data, to estimate emissions and associated performance metrics. The primary purpose of the Short Form Tool is to help fleets with 20 or fewer trucks (of a single truck class and using only diesel or gasoline fuel) easily input their fleet information, calculate pollutant emissions, and track their emissions performance over time.

The Short Form Tool allows users to evaluate their fleet's performance in terms of different mass-based metrics for CO<sub>2</sub>, NO<sub>x</sub>, PM (PM<sub>10</sub> and PM<sub>2.5</sub>), and black carbon (BC) including grams per mile and grams per average payload ton-mile. The Short Form Tool is restricted to fleets of 20 or fewer diesel or gasoline powered trucks of a single weight class (e.g., 6, 8b). Please use the all-carrier version of the tool, available through the SmartWay Partner Portal, to enter data for larger fleets and/or fleets using alternative fuels such as natural gas, LPG, and electricity.

The Short Form Tool also collects information on fleet operations and truck body types, allowing accurate assignment of Partner fleets to their appropriate SmartWay Category (e.g., Truckload Dry Van, Dray, Mixed, etc.).

## 2.0 Data Inputs and Sources

The Short Form Tool user provides vehicle characteristic, operational, and activity data needed for emissions performance estimation (see Section 3 for more information). The Short Form Tool calculates emissions by multiplying fleet activity data with EPA-approved emission rate factors that are stored in look-up tables.

The Short Form Tool contains different types of emission rate factors for different pollutants. CO<sub>2</sub> factors are expressed in grams of CO<sub>2</sub> per gallon of fuel.<sup>1</sup> NO<sub>x</sub>, PM, and BC factors are expressed in grams of pollutant per mile traveled for running emissions, and in grams per hour for idle emissions. The CO<sub>2</sub> factors are independent of the truck types, classes, and operational practices in a fleet. NO<sub>x</sub>, PM and BC factors, however, vary depending upon truck class and engine model year/emission certification standard.

PM and BC emissions will also vary with the application of PM control retrofits. However, SmartWay partners must use the online – all carrier version of the tool to account for these effects.

### 2.1 CO<sub>2</sub> FACTORS

The CO<sub>2</sub> factors used in the Short Form Tool are based on fuel consumption. These factors and their sources and are summarized below in Table 1.

**Table 1. CO<sub>2</sub> Factors by Fuel Type\***

	g/physical gallon	Source <sup>2</sup>
Gasoline	8,887	(i)
Ethanol	5,764	(ii)
Diesel	10,180	(iii)

\* 100% combustion (oxidation) assumed

Today's gasoline contains 10 percent ethanol, or E10. The CO<sub>2</sub> factors for E10 are based on a volumetric weighting of the gasoline and ethanol factors (8,575 g/gal).

<sup>1</sup> At this time other greenhouse gases such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) are not included in the current Short Form Tool.

<sup>2</sup> i) Final Rule on Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards (75 FR 25324, May 7, 2010). The gasoline factor used in this rule was sourced from the California Air Resources Board and is based on measurement of carbon from a gasoline test fuel (indolene).

ii) Final Rule on Mandatory Reporting of Greenhouse Gases (70 FR 56260, October 30, 2009). Full source documentation is available on pp. 31-32 in the Technical Support Document, *Petroleum Products and Natural Gas Liquids: Definitions, Emission Factors, Methods and Assumptions*, available at

<https://www.epa.gov/sites/production/files/2015-07/documents/subpartmmproductdefinitions.pdf>. Accessed 12-8-23.

iii) Fuel economy calculations in 40 C.F.R 600.113 available at [http://edocket.access.gpo.gov/cfr\\_2004/julqtr/pdf/40cfr600.113-93.pdf](http://edocket.access.gpo.gov/cfr_2004/julqtr/pdf/40cfr600.113-93.pdf). Accessed 12-8-23.






## 2.2 NO<sub>x</sub>, PM AND BC FACTORS

The Short Form Tool contains NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and BC<sup>3</sup> emission factors for running operation (i.e. gram per mile factors) derived from EPA's MOVES3.1 model for diesel and E10<sup>4</sup> for all heavy truck classes (2b – 8b) under national default temperature and fuel conditions, for model years 1992 onward, for the 2023 calendar year.<sup>5</sup> See Section 2.3 for a detailed discussion of how the MOVES gram per mile emission factors were developed for each SmartWay Category for use in the Tool.

Short-duration (less than 60 minutes) idle emission factors for NO<sub>x</sub>, PM and BC were developed separately by model year, truck class, and fuel type (diesel and gasoline). MOVES3.1 provides short duration idle in terms of grams and hours of off-network idle operation.

MOVES3.1 also provides emission factors for long-duration idle for long-haul diesel trucks. These factors are only applied for Class 8b trucks.<sup>6</sup> Short-duration factors are applied for all truck class types. The idle factors used in the Tool are presented in Appendix B.

The Short Form Tool also calculates the NO<sub>x</sub>, PM and BC emissions associated with transportation refrigeration (reefer) units. The MOVES3.1 emissions model was used to develop emission rates for these units for the 2023 calendar year, following these steps:

-  A national average model run was performed for the Industrial sector, including gasoline and diesel fueled equipment;
-  The A/C refrigeration (reefer) unit standard classification codes (SCCs) were extracted from the output files – 2265003060 (gasoline) and 2270003060 (diesel);
-  Grams per day outputs for weekdays and weekends for each of the 12 months were converted to grams per year by aggregating emissions over day types to arrive at an average day value, multiplying by the number of days in each month, and summing over month. This resulted in annual grams of emissions (of NO<sub>x</sub> and PM<sub>2.5</sub>) and grams of fuel consumed (in terms of brake specific fuel consumption or BSFC), for each fuel type;
-  BSFC was converted from grams to gallons fuel using the MOVES energy density values of 2,819 g/gal and 3,167 g/gal for gasoline and diesel, respectively.
-  Grams/gallon emission factors were then calculated for each pollutant by dividing the annual grams of emissions of NO<sub>x</sub> and PM<sub>2.5</sub> by the annual gallons of fuel consumed for gasoline and diesel.

<sup>3</sup> Black carbon factors are assumed to equal the elemental carbon gram per mile factors output by the MOVES model.

<sup>4</sup> All gasoline consumption in the United States and Canada is now assumed to consist of E10. References to "gasoline" in the Tool and the associated documentation refer to E10.

<sup>5</sup> Emission factors for model years prior to 1992 are assumed to equal the 1992 values, since 30 year old engines are assumed to be fully deteriorated by the MOVES model.

<sup>6</sup> NO<sub>x</sub> factors for long-term extended idling are higher than short-duration factors for late model engines, since engine operation temperatures and loads at idle are generally not high enough to activate late-model emission controls such as selective catalytic reduction and exhaust gas recirculation.

Black carbon emissions associated with reefer activity were scaled from PM<sub>2.5</sub> reefer emissions, applying conversion factors for nonroad equipment from the Commission for Environmental Cooperation (0.349 for diesel engines and 0.122 for gasoline engines).<sup>7</sup>

Table 2 provides the fuel factors used in the latest Short Form Tool.

**Table 2. Weighted Average Reefer Fuel Factors (g/gallon)**

Fuel	NOx	PM <sub>2.5</sub>	BC
Diesel	45.857	0.651	0.227
Gasoline	17.523	0.916	0.112

The above rates are multiplied by the gallons of reefer fuel entered by the user to estimate mass emissions for the above pollutants. CO<sub>2</sub> emissions associated with reefer fuel use are included in the total CO<sub>2</sub> estimate.

The next section describes the process followed to select and adjust the running emission factors from MOVES<sub>3.1</sub> for use in the Short Form Tool.

### 2.3 DERIVATION OF RUNNING EMISSION FACTORS BY SMARTWAY CATEGORY

The Short Form Tool requires MOVES running emission rates that are more aggregated than those used in the SmartWay Online Tool for all carriers (the “all carrier” Tool). The all-carrier Tool uses rates broken out by truck class (2b through 8b), model year, roadway type (highway, urban), hours of short-term and long-term idle (i.e., extended idle, hoteling), and mode of urban operation (deceleration, 0-25 mph, 25-50 mph, > 50 mph). The Short Form Tool does not require users to provide detail on roadway type or mode of operation, and only requires total hours of idling (not split by short or long term). For consistency with the all-carrier Tool, the MOVES-based gram per mile emission rates were generated for the Short Form Tool by aggregating the all-carrier Tool rates across roadway type<sup>8</sup> and mode of operation using the equation below, which applied to all pollutants except CO<sub>2</sub>. As shown, the resulting emissions rates are broken down by SmartWay Truck Category, truck weight class, and model year.

$$\text{Small Carrier } EF_{\text{Category, Class, MY}} = A_{\text{Category}} \times EF_{\text{Urban}<25, \text{Class, MY}} + B_{\text{Category}} \times EF_{\text{Urban } 25-50, \text{Class, MY}} + C_{\text{Category}} \times EF_{\text{Urban}>50, \text{Class, MY}} + D_{\text{Category}} \times EF_{\text{Highway, Class, MY}}$$

Where:

- A<sub>Category</sub>*** = weighting factor (mile fraction) for Urban operation <25 mph by SmartWay category
- B<sub>Category</sub>*** = weighting factor (mile fraction) for Urban operation 25-50 mph by SmartWay category
- C<sub>Category</sub>*** = weighting factor (mile fraction) for Urban operation >50 mph by SmartWay category

<sup>7</sup> Commission for Environmental Cooperation (CEC), 2015. North American Black Carbon Emissions Estimation Guidelines: Methods for Estimating Black Carbon Emissions. Prepared for the CEC by Eastern Research Group, Inc. Final Report, May 2015. <http://www.cec.org/files/documents/publications/11629-north-american-black-carbon-emissions-recommended-methods-estimating-black-en.pdf>. Accessed 12-8-32.

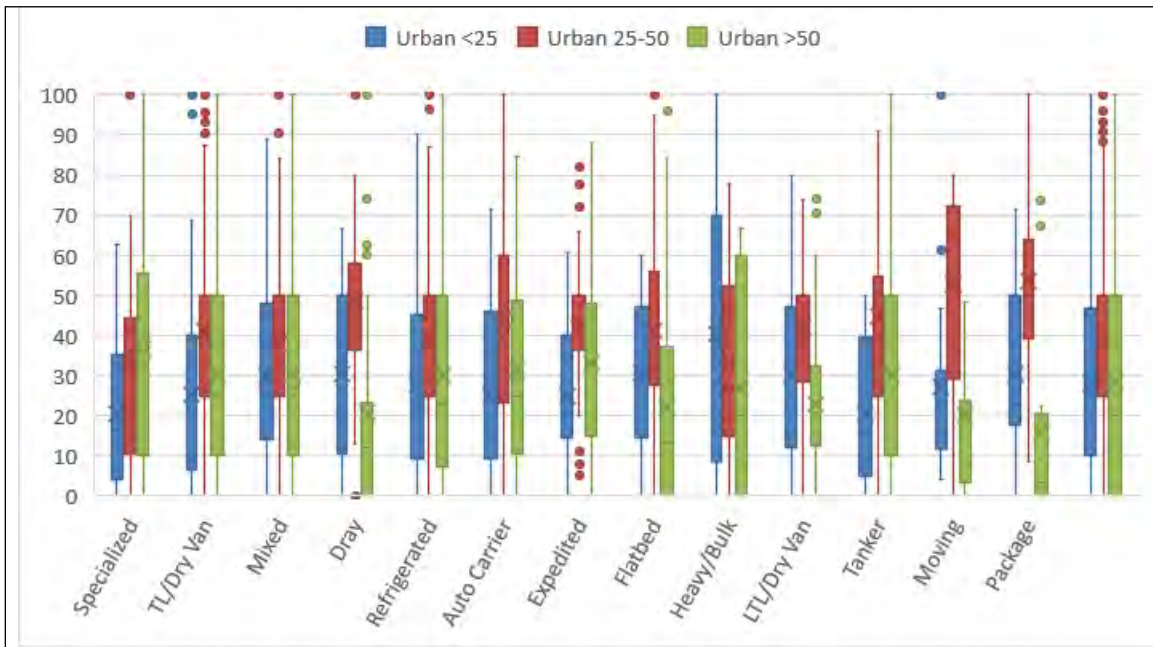
<sup>8</sup> Please refer to the Technical Documentation for the all-carrier Truck Tool for further details.



$D_{Category}$  = **weighting factor (mile fraction) for Highway operation, by SmartWay category**  
 $EF_{Operation, Class, MY}$  = **SmartWay tool emission factor for operation (urban operation <25 mph etc.) by weight class and model year**

The weighting factors for this aggregation were developed from operational data provided by SmartWay partners from the 2018 calendar year. The partner database was queried for each SmartWay Category to extract fuel type and weight class, total annual miles and the distribution of miles by mode of operation. This resulted in 12,357 data points, nearly half of which used the SmartWay operation mode distribution defaults. Records using default mode distributions were excluded, leaving a sample of 6,858 records for analysis. A check for outliers was performed on these data by looking at the relative (normalized) distribution of miles travelled within the three urban modes of operation only. A box plot showing the distribution of normalized percent operation values in each urban operating mode, by SmartWay category, is shown below.

**Figure 1. Percent Operation by Urban Mode (Normalized)**



The bottom and top of the boxes are the 25<sup>th</sup> and 75<sup>th</sup> percentiles respectively, which define the inter-quartile range (IQR). The median and mean are shown within the boxes as horizontal lines and "X's", respectively. The ends of the whiskers denote the sample range without outliers, which are shown as individual points. Outliers are defined as points that fall outside the 75<sup>th</sup> percentile + (1.5 × IQR), or 25<sup>th</sup> percentile - (1.5 × IQR). These outliers were removed from the sample used to calculate operational weighting factors. Since time-in-mode is not independent, for any given outlier point the entire record was removed from the sample including other modes of operation. Though there are only a few dozen outlier points shown in the chart, each point may represent several records, as some partners entered the same percent operation value for all weight classes in a given truck category. The total number of records removed is shown in the table below, by truck category.

**Table 3. Outliers Removed by SmartWay Category**

SmartWay Category	Total Records	Outliers Removed
Auto Carrier	124	0
Dray	239	56
Expedited	258	33
Flatbed	358	17
Heavy/Bulk	53	0
LTL/Dry Van	522	24
Mixed	1490	73
Moving	106	3
Package	74	2
Refrigerated	1270	95
Specialized	194	51
Tanker	172	0
TL / Dry Van	1,998	26

Weighting factors were developed by summing total VMT by SmartWay Category and mode of operation over the remaining records and dividing by total VMT for each Category. The resulting weighting factors are shown in the table below.

**Table 4. Operation Mode Weighting Factors by SmartWay Category**

SmartWay Category	A Urban < 25 mph	B Urban 25 50 mph	C Urban > 50 mph	D Highway
Auto Carrier	0.08	0.14	0.10	0.68
Dray	0.17	0.18	0.11	0.55
Expedited	0.07	0.09	0.09	0.75
Flatbed	0.07	0.09	0.09	0.75
Heavy/Bulk	0.24	0.08	0.05	0.62
LTL/Dry Van	0.14	0.15	0.08	0.63
Mixed	0.10	0.11	0.13	0.66
Moving	0.09	0.14	0.13	0.64
Package	0.69	0.13	0.05	0.14
Refrigerated	0.07	0.09	0.16	0.67
Specialized	0.51	0.03	0.05	0.41
Tanker	0.15	0.08	0.11	0.66
TL/Dry Van	0.09	0.10	0.10	0.71

By and large the weights for highway operation vary as expected for the truck categories. For example, package delivery trucks travel only 14 percent of total miles on highways, while expedited shippers travel 75 percent. Specialized truck weights were unusual with only 41 percent of miles on highway; an investigation revealed a small number of high mileage fleets with 25 percent of highway operation dominated this result.

The Short Form Tool multiplies the all-carrier Tool's short-term idle emission rates to the idle hours provided by carriers for truck classes 2b through 8a, since the MOVES long-duration idle rates apply only to Class 8b combination long-haul diesel trucks. For Class 8b trucks, a composite idle rate is estimated based on a weighting of short- and long-duration idle hours supplied by fleets using the all-carrier Tool. All-Carrier Tool data from Class 8b trucks indicate that 56 percent of idle hours are long-duration, and 44 percent are short-duration. This weighting was used to develop the composite idle emission factors for Class 8b diesels for use in the Short Form Tool.

## 3.0 Emission and Activity Estimation

The emission rates and weighting factors discussed in Section 2 are combined with activity data provided by Partners to calculate mass emissions at the fleet and/or partner level for CO<sub>2</sub>, NO<sub>x</sub>, PM, and BC as described below.

### 3.1 CO<sub>2</sub>

Mass emissions of CO<sub>2</sub> are calculated within the Short Form Tool utilizing emission factors expressed in *grams per gallon of fuel*, as discussed above. Reefer fuel is aggregated with vehicle fuel inputs in the Tool, with the reefer fuel type assumed to be the same as the vehicle fuel type.

### 3.2 NO<sub>x</sub>, PM AND BC

Unlike CO<sub>2</sub> emissions which only vary with fuel type, NO<sub>x</sub>, PM and BC emission rates also vary depending upon engine model year, vehicle class, and operation mode (running or idle). For this reason, EPA developed lookup tables for use in the Short Form Tool with emission factors corresponding to user-supplied inputs regarding their fleet activity. The NO<sub>x</sub>, PM and BC emission rates expressed in *grams per mile* were combined with total miles entries to estimate mass emissions. Emissions are calculated at the fuel type/truck class/model year level, following these steps:

1. Multiply total miles per truck per year by the corresponding gram per mile value. (See Appendix A for g/mile values for each SmartWay Category and fuel type (gas and diesel), by truck class group/model year group.) Then divide values by  $1.10231 \times 10^6$  to obtain short tons.
2. For Class 8b trucks, split reported idle hours into short and long duration components using the average ratios discussed above (44 percent short, 56 percent long). Then multiply the short and long duration idle hours per truck per year by the corresponding short and long duration gram per hour values. Idle factors are split by fuel type, truck class and model year. Convert to short tons.
3. For non-Class 8b trucks, multiply the idle hours entered by the partner by the short duration emission factors, as there are no long duration factors for these trucks. Convert to short tons.
4. If a body type of "Reefer" has been specified for a given fuel type/truck class, calculate NO<sub>x</sub> and PM emissions for reefers by multiplying the total gallons entered for reefer fuel<sup>9</sup> by the corresponding gram per gallon reefer engine emission factors (see Table 2 above). Convert to short tons.
5. Add tons for steps 1 through 4 to obtain total per truck emissions. Sum across fuel types if needed for the fleet total.

---

<sup>9</sup> If a partner does not have an estimate for their reefer fuel use, they may use a default value based on the average ratio of reefer to engine fuel consumption for SmartWay reefer partners (11%).

Finally, note that the PM factors output by the MOVES model for use in the Short Form Tool are expressed in terms of  $PM_{2.5}$ . The MOVES3.1 model assumes a fixed ratio of  $PM_{10} / PM_{2.5}$  for a given fuel type, as summarized below:

 Gasoline – 1.1304

 Diesel – 1.087

These factors are applied directly to the  $PM_{2.5}$  emission factors to obtain mass emission and performance metrics for  $PM_{10}$  within the Short Form Tool.

### 3.3 DATA VALIDATION

The Short Form Tool has a number of standard range and value checks that must be passed before Partners can submit their data to EPA. Many of these checks simply confirm the presence of required data (e.g., total gallons for each fuel type). There is also an implicit validation check on all numeric fields because the system will not accept any non-numeric characters (including minus signs) within these fields. Partners will not be able to finalize their fleet files until all associated errors have been resolved.

Rigorous validation checks of key data inputs are needed to ensure the overall quality of the performance metrics calculated by the Short Form Tool. Validation checks serve three purposes to this end. First, unusually high or low values can be identified and flagged for the user's attention before finalizing inputs. For example, a user may misplace a decimal, inadvertently add an extra zero, or utilize the wrong units (e.g. reporting pounds instead of tons for payload) upon data entry. By comparing these data entries to reliable industry averages and distributions, these values can be flagged allowing users to quickly correct such errors.







Second, under certain circumstances Partners may operate their fleets under atypical conditions, resulting in extreme (outlier) data values. For example, permitted heavy-haul operations may routinely exceed industry-average payload values by 10 or more tons. By flagging such data entries Partners have the opportunity to provide additional information regarding their unique operating conditions through use of the Tool's comment fields.

Finally, independent criteria can be established to ensure that data inputs are never allowed to exceed certain physically constrained absolute limits. For example, a truck cannot exceed roughly 500,000 miles per year, even with dual drivers and minimal maintenance time, simply due to the available hours per year and highway speed limits. Data values above these absolute maximum levels are not allowed by the Short Form Tool, and users are required to modify the associated inputs before proceeding.

The following presents the validation ranges used in the Short Form Tool. Validation ranges are of three types:

1. "Orange" values indicating that the input or derived performance value is notably lower/higher than the expected value. Partners may enter an explanation backing up such entries, but this is not mandatory.
2. "Red" values indicating that the input or derived performance value differs greatly from the expected value. In this case the partner must enter text explaining why this value is accurate. Once entered, the value will change from "Red" to "Orange" on the data entry screen.
3. "Absolute errors" exceed values deemed physically possible and must be changed to be accepted by the tool.

Validation ranges for the short form Tool are based on the corresponding values in the all-carrier Tool for the following parameters.

-  Distance per truck per year
-  Miles per gallon
-  Fraction of reefer to engine fuel use (Reefers only)
-  Payload
-  Idle hours per day
-  Service days per year

The following table summarizes the validation range values currently used in the Short Form Tool. These values may be updated in the future to be specific to small truck fleets (based on tool inputs).

**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
Mi/Yr per truck	2b	Expedited	0	9,698	16,183	63,029	90,800	500,000
Mi/Yr per truck	2b	Mixed	0	2,046	7,741	53,432	71,391	500,000
Mi/Yr per truck	2b	Package	0	5,247	11,565	47,936	65,500	500,000
Mi/Yr per truck	2b	Truckload	0	6,799	18,007	52,984	58,368	500,000
Mi/Yr per truck	3	Mixed	0	0	5,000	45,712	53,814	500,000
Mi/Yr per truck	4	Mixed	0	1,402	6,556	40,071	51,362	500,000
Mi/Yr per truck	5	Mixed	0	306	3,470	40,000	49,485	500,000
Mi/Yr per truck	6	LTL	0	9,631	11,696	49,080	60,950	500,000
Mi/Yr per truck	6	Mixed	0	2,036	10,931	51,916	67,014	500,000
Mi/Yr per truck	6	Moving	0	3,000	8,000	68,107	79,506	500,000
Mi/Yr per truck	6	Package	0	5,921	9,073	65,000	72,065	500,000
Mi/Yr per truck	6	Truckload	0	8,632	14,133	56,713	68,836	500,000

**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
Mi/Yr per truck	7	LTL	0	12,488	15,654	54,122	72,666	500,000
Mi/Yr per truck	7	Mixed	0	0	5,000	67,560	78,694	500,000
Mi/Yr per truck	7	Truckload	0	2,326	10,312	57,249	79,650	500,000
Mi/Yr per truck	8a	LTL	0	10,558	15,625	68,215	88,352	500,000
Mi/Yr per truck	8a	Mixed	0	6,271	13,039	85,890	102,000	500,000
Mi/Yr per truck	8a	Reefer	0	15,505	26,162	70,000	79,308	500,000
Mi/Yr per truck	8a	Truckload	0	10,069	13,877	97,567	128,406	500,000
Mi/Yr per truck	8b	Auto Carrier	0	43,112	51,769	103,710	112,367	500,000
Mi/Yr per truck	8b	Dray	0	6,985	18,413	86,984	98,413	500,000
Mi/Yr per truck	8b	Expedited	0	23,226	27,112	92,857	140,232	500,000
Mi/Yr per truck	8b	Flatbed	0	36,935	47,495	110,856	121,416	500,000
Mi/Yr per truck	8b	Heavy/Bulk	0	44,171	48,663	101,118	108,168	500,000
Mi/Yr per truck	8b	LTL	0	13,983	27,504	108,634	122,156	500,000
Mi/Yr per truck	8b	Mixed	0	12,029	27,477	120,168	135,616	500,000
Mi/Yr per truck	8b	Reefer	0	36,939	52,743	147,566	163,370	500,000
Mi/Yr per truck	8b	Specialty	0	20,765	39,854	105,338	117,433	500,000
Mi/Yr per truck	8b	Truckload	0	29,853	44,672	133,586	148,405	500,000
Mi/Yr per truck	8b	Tanker	0	36,503	47,076	110,517	121,090	500,000
Idle hrs/day	2b	Mixed	0	0	1	4	6	24
Idle hrs/day	2b	Package	0	0	1	6	10	24
Idle hrs/day	2b	Specialty	0	0	1	6	10	24
Idle hrs/day	3	Mixed	0	0	1	4	6	24
Idle hrs/day	3	Package	0	0	1	6	10	24
Idle hrs/day	3	Specialty	0	0	1	6	10	24
Idle hrs/day	4	Mixed	0	0	1	4	6	24
Idle hrs/day	4	Package	0	0	1	6	10	24
Idle hrs/day	4	Specialty	0	0	1	6	10	24
Idle hrs/day	5	Mixed	0	0	1	4	6	24
Idle hrs/day	5	Package	0	0	1	6	10	24
Idle hrs/day	5	Specialty	0	0	1	6	10	24
Idle hrs/day	6	Mixed	0	0	1	4	6	24
Idle hrs/day	6	Package	0	0	1	6	10	24
Idle hrs/day	6	Specialty	0	0	1	6	10	24
Idle hrs/day	7	Mixed	0	0	1	4	6	24
Idle hrs/day	7	Package	0	0	1	6	10	24
Idle hrs/day	7	Specialty	0	0	1	6	10	24
Idle hrs/day	8a	Mixed	0	0	1	4	6	24
Idle hrs/day	8a	Package	0	0	1	6	10	24

**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
Idle hrs/day	8a	Specialty	0	0	1	6	10	24
Idle hrs/day	8b	LTL	0	0	1	5	8	24
Idle hrs/day	8b	Mixed	0	0	1	24	24	24
Idle hrs/day	8b	Package	0	0	1	5	8	24
service days /yr	2b	Expedited	0	96	171	320	350	365
service days /yr	2b	Mixed	0	96	171	320	350	365
service days /yr	2b	Package	0	142	200	315	372	365
service days /yr	2b	Truckload	0	96	171	320	350	365
service days /yr	3	Mixed	0	96	171	320	350	365
service days /yr	4	Mixed	0	96	171	320	350	365
service days /yr	5	Mixed	0	96	171	320	350	365
service days /yr	6	LTL	0	96	171	320	350	365
service days /yr	6	Mixed	0	96	171	320	350	365
service days /yr	6	Moving	0	96	171	320	350	365
service days /yr	6	Package	0	142	200	315	372	365
service days /yr	6	Truckload	0	96	171	320	350	365
service days /yr	7	LTL	0	96	171	320	350	365
service days /yr	7	Mixed	0	96	171	320	350	365
service days /yr	7	Truckload	0	96	171	320	350	365
service days /yr	8a	LTL	0	96	171	320	350	365
service days /yr	8a	Mixed	0	96	171	320	350	365
service days /yr	8a	Reefer	0	96	171	320	350	365
service days /yr	8a	Truckload	0	96	171	320	350	365
service days /yr	8b	Auto Carrier	0	157	213	325	350	365
service days /yr	8b	Dray	0	157	213	325	350	365
service days /yr	8b	Expedited	0	157	213	325	350	365
service days /yr	8b	Flatbed	0	157	213	325	350	365
service days /yr	8b	Heavy/Bulk	0	157	213	325	350	365
service days /yr	8b	LTL	0	135	193	309	350	365
service days /yr	8b	Mixed	0	157	213	325	350	365
service days /yr	8b	Reefer	0	157	213	325	350	365
service days /yr	8b	Specialty	0	157	213	325	350	365
service days /yr	8b	Truckload	0	157	213	325	350	365
service days /yr	8b	Tanker	0	157	213	325	350	365
payload	2b	Auto Carrier	0	0	0	1	2	6
payload	2b	Dray	0	0	0	1	2	6
payload	2b	Expedited	0	0	0	1	2	6
payload	2b	Flatbed	0	0	1	2	3	6



**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
payload	2b	Heavy/Bulk	0	0	1	2	3	6
payload	2b	LTL	0	0	0	1	1	6
payload	2b	Mixed	0	0	0	1	2	6
payload	2b	Moving	0	0	0	1	2	6
payload	2b	Package	0	0	0	1	1	6
payload	2b	Reefer	0	0	0	1	2	6
payload	2b	Specialty	0	0	0	1	2	6
payload	2b	Truckload	0	0	0	1	2	6
payload	2b	Tanker	0	0	0	1	2	6
payload	3	Auto Carrier	0	0	0	2	3	9
payload	3	Dray	0	0	1	2	3	9
payload	3	Expedited	0	0	0	2	3	9
payload	3	Flatbed	0	0	0	2	3	9
payload	3	Heavy/Bulk	0	0	1	2	3	9
payload	3	LTL	0	0	1	2	2	9
payload	3	Mixed	0	0	0	2	3	9
payload	3	Moving	0	0	0	2	3	9
payload	3	Package	0	0	1	2	2	9
payload	3	Reefer	0	0	1	2	3	9
payload	3	Specialty	0	0	0	2	3	9
payload	3	Truckload	0	0	1	2	3	9
payload	3	Tanker	0	0	0	2	3	9
payload	4	Auto Carrier	0	0	1	3	4	12
payload	4	Dray	0	0	1	3	4	12
payload	4	Expedited	0	0	1	3	4	12
payload	4	Flatbed	0	0	1	4	6	12
payload	4	Heavy/Bulk	0	0	1	4	6	12
payload	4	LTL	0	0	1	2	3	12
payload	4	Mixed	0	0	1	3	4	12
payload	4	Moving	0	0	1	2	3	12
payload	4	Package	0	0	1	2	3	12
payload	4	Reefer	0	0	1	3	4	12
payload	4	Specialty	0	0	1	2	3	12
payload	4	Truckload	0	0	1	3	4	12
payload	4	Tanker	0	0	1	3	4	12
payload	5	Auto Carrier	0	1	2	4	5	16
payload	5	Dray	0	1	2	4	5	16
payload	5	Expedited	0	1	2	4	5	16

**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
payload	5	Flatbed	0	1	2	4	5	16
payload	5	Heavy/Bulk	0	1	2	4	5	16
payload	5	LTL	0	1	2	3	3	16
payload	5	Mixed	0	1	2	4	5	16
payload	5	Moving	0	1	2	4	5	16
payload	5	Package	0	1	2	3	3	16
payload	5	Reefer	0	1	2	4	5	16
payload	5	Specialty	0	1	2	4	5	16
payload	5	Truckload	0	1	2	4	5	16
payload	5	Tanker	0	1	2	4	5	16
payload	6	Auto Carrier	0	1	2	7	8	21
payload	6	Dray	0	1	3	6	7	21
payload	6	Expedited	0	1	2	7	8	21
payload	6	Flatbed	0	1	3	6	8	21
payload	6	Heavy/Bulk	0	1	3	7	8	21
payload	6	LTL	0	1	3	4	4	21
payload	6	Mixed	0	1	2	7	8	21
payload	6	Moving	0	1	3	6	7	21
payload	6	Package	0	1	3	4	4	21
payload	6	Reefer	0	1	3	7	8	21
payload	6	Specialty	0	1	3	6	7	21
payload	6	Truckload	0	1	3	6	7	21
payload	6	Tanker	0	1	2	7	8	21
payload	7	Auto Carrier	0	4	5	7	8	60
payload	7	Dray	0	2	4	7	9	60
payload	7	Expedited	0	2	4	8	9	60
payload	7	Flatbed	0	4	6	8	9	24
payload	7	Heavy/Bulk	0	6	7	8	9	60
payload	7	LTL	0	1	4	6	6	60
payload	7	Mixed	0	2	4	8	9	60
payload	7	Moving	0	2	4	7	8	60
payload	7	Package	0	1	4	6	6	60
payload	7	Reefer	0	2	5	7	9	60
payload	7	Specialty	0	2	4	7	8	60
payload	7	Truckload	0	2	4	7	9	60
payload	7	Tanker	0	6	7	8	9	60
payload	8a	Auto Carrier	0	8	13	23	29	111
payload	8a	Dray	0	3	4	17	22	60

**Table 5. Short Form Tool Validation Ranges by Parameter**



Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
payload	8a	Expedited	0	3	4	18	29	111
payload	8a	Flatbed	0	10	11	16	22	72
payload	8a	Heavy/Bulk	0	10	13	23	29	111
payload	8a	LTL	0	3	4	12	13	60
payload	8a	Mixed	0	3	4	18	29	111
payload	8a	Moving	0	4	8	17	20	111
payload	8a	Package	0	3	4	12	13	60
payload	8a	Reefer	0	4	6	14	18	83
payload	8a	Specialty	0	4	8	17	20	111
payload	8a	Truckload	0	3	4	17	22	60
payload	8a	Tanker	0	6	7	18	23	72
payload	8b	Auto Carrier	0	8	13	23	29	111
payload	8b	Dray	0	11	14	22	26	150
payload	8b	Expedited	0	7	11	36	44	150
payload	8b	Flatbed	0	14	18	27	31	100
payload	8b	Heavy/Bulk	0	15	22	36	44	150
payload	8b	LTL	0	7	12	18	20	150
payload	8b	Mixed	0	7	11	36	44	150
payload	8b	Moving	0	7	11	17	20	111
payload	8b	Package	0	7	12	18	20	150
payload	8b	Reefer	0	14	17	23	26	83
payload	8b	Specialty	0	5	11	17	20	111
payload	8b	Truckload	0	11	14	22	26	150
payload	8b	Tanker	0	19	22	28	31	104
% reefer fuel	All		0	0	0	19	26	50
MPG - Diesel	2b	All	0	5	8	21	23	38
MPG - Diesel	3	All	0	4	6	14	14	29
MPG - Diesel	4	All	0	6	7	12	13	24
MPG - Diesel	5	All	0	4	6	12	15	21
MPG - Diesel	6	All	0	5	6	11	12	17
MPG - Diesel	7	All	0	5	6	11	11	16
MPG - Diesel	8a	All	0	4	5	9	10	12
MPG - Diesel	8b	Auto Carrier	0	4	5	6	6	9
MPG - Diesel	8b	Dray	0	5	5	7	7	11
MPG - Diesel	8b	Expedited	0	6	6	7	7	10
MPG - Diesel	8b	Flatbed	0	4	5	7	7	11

**Table 5. Short Form Tool Validation Ranges by Parameter**

Data Element	Truck Class	SmartWay Category	Absolute Minimum	Low Red	Low Orange	High Orange	High Red	Absolute Max
MPG - Diesel	8b	Heavy/Bulk	0	3	4	6	6	10
MPG - Diesel	8b	LTL	0	6	6	7	8	12
MPG - Diesel	8b	Mixed	0	5	5	8	8	12
MPG - Diesel	8b	Package	0	6	6	7	8	12
MPG - Diesel	8b	Reefer	0	5	6	8	9	12
MPG - Diesel	8b	Specialty	0	3	4	6	7	10
MPG - Diesel	8b	Truckload	0	5	5	8	8	12
MPG - Diesel	8b	Tanker	0	4	4	7	7	11
MPG - Gasoline	2b	All	0	4	6	16	18	30
MPG - Gasoline	3	All	0	3	5	11	11	23
MPG - Gasoline	4	All	0	5	6	10	10	19
MPG - Gasoline	5	All	0	4	5	10	12	17
MPG - Gasoline	6	All	0	4	5	9	9	13
MPG - Gasoline	7	All	0	4	4	8	9	13
MPG - Gasoline	8a	All	0	3	4	7	8	10
MPG - Gasoline	8b	Auto Carrier	0	3	4	4	5	7
MPG - Gasoline	8b	Dray	0	4	4	5	6	8
MPG - Gasoline	8b	Expedited	0	5	5	6	6	8
MPG - Gasoline	8b	Flatbed	0	3	4	6	6	9
MPG - Gasoline	8b	Heavy/Bulk	0	2	3	5	5	8
MPG - Gasoline	8b	LTL	0	4	5	6	6	9
MPG - Gasoline	8b	Mixed	0	4	4	6	6	9
MPG - Gasoline	8b	Package	0	4	5	6	6	9
MPG - Gasoline	8b	Reefer	0	4	4	7	7	9
MPG - Gasoline	8b	Specialty	0	2	3	5	5	8
MPG - Gasoline	8b	Truckload	0	4	4	6	6	10
MPG - Gasoline	8b	Tanker	0	3	3	5	6	9

## 4.0 Performance Metrics

The Short Form Tool allows the user to calculate their emissions performance using different metrics. Available performance metrics include:

-  Grams per mile
-  Grams per Payload Ton-Mile

The following calculations are performed for these metrics:

$$\text{g/mile: } \sum E / M$$

where



E = Emissions, M = Miles Driven

$$\text{g/avg payload ton-mile: } \sum E / (M \times AP)$$

where

E = Emissions, M = Miles Driven, AP = Average Payload

For both calculations:

-  Emissions = grams of pollutant
-  Miles Driven = Total Miles

Summations are performed for the different metrics. Each of the metrics is automatically aggregated across model years (for NO<sub>x</sub>, PM and BC) for reporting purposes. Additional aggregation may be reported across fuel types as specified by the user.

# Appendix A: NO<sub>x</sub>, PM & BC Emission Factors (g/mi) 2023 Calendar Year - MOVES3.1 Basis

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NO <sub>x</sub> g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NO <sub>x</sub> g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	Pre-1993	2b	4.354	0.00519	0.03538	7.484	0.42969	0.55130
1	Pre-1993	3	5.640	0.00964	0.06580	8.936	0.49535	0.63304
1	Pre-1993	4	5.802	0.00979	0.06678	13.459	0.63831	0.80850
1	Pre-1993	5	5.811	0.00979	0.06682	15.157	0.67715	0.85737
1	Pre-1993	6	5.125	0.00920	0.06274	14.839	0.66507	0.84215
1	Pre-1993	7	5.125	0.00920	0.06274	16.174	0.66632	0.84355
1	Pre-1993	8a	7.826	0.01270	0.08663	24.800	0.72821	0.92050
1	Pre-1993	8b	7.826	0.01270	0.08663	29.944	0.77107	0.97372
1	1993	2b	4.354	0.00519	0.03538	7.484	0.42969	0.55130
1	1993	3	5.640	0.00964	0.06580	8.936	0.49535	0.63304
1	1993	4	5.802	0.00979	0.06678	13.459	0.63831	0.80850
1	1993	5	5.811	0.00979	0.06682	15.157	0.67715	0.85737
1	1993	6	5.125	0.00920	0.06274	14.839	0.66507	0.84215
1	1993	7	5.125	0.00920	0.06274	16.174	0.66632	0.84355
1	1993	8a	7.826	0.01270	0.08663	24.800	0.72821	0.92050
1	1993	8b	7.826	0.01270	0.08663	29.944	0.77107	0.97372
1	1994	2b	4.354	0.00519	0.03538	7.484	0.42969	0.55130
1	1994	3	5.640	0.00964	0.06580	8.936	0.49535	0.63304
1	1994	4	5.802	0.00979	0.06678	13.459	0.63831	0.80850
1	1994	5	5.811	0.00979	0.06682	15.157	0.67715	0.85737
1	1994	6	5.125	0.00920	0.06274	14.839	0.66507	0.84215
1	1994	7	5.125	0.00920	0.06274	16.174	0.66632	0.84355
1	1994	8a	7.826	0.01270	0.08663	24.800	0.72821	0.92050
1	1994	8b	7.826	0.01270	0.08663	29.944	0.77107	0.97372
1	1995	2b	4.440	0.00711	0.04854	7.174	0.40442	0.51901
1	1995	3	5.764	0.02209	0.15069	12.619	0.58930	0.74821
1	1995	4	5.858	0.02301	0.15701	14.915	0.64814	0.82125
1	1995	5	5.836	0.02281	0.15562	17.659	0.71313	0.90257

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	1995	6	5.129	0.01572	0.10727	18.176	0.69564	0.88039
1	1995	7	5.129	0.01572	0.10727	20.327	0.71147	0.90011
1	1995	8a	7.667	0.03382	0.23078	28.937	0.76631	0.96803
1	1995	8b	7.667	0.03382	0.23078	30.875	0.77982	0.98460
1	1996	2b	3.524	0.00503	0.03430	7.158	0.38584	0.49472
1	1996	3	5.827	0.01675	0.11428	14.531	0.64669	0.81934
1	1996	4	5.875	0.01716	0.11707	16.331	0.67180	0.85049
1	1996	5	5.872	0.01715	0.11700	17.380	0.71489	0.90491
1	1996	6	5.204	0.01128	0.07696	19.357	0.70795	0.89581
1	1996	7	5.204	0.01128	0.07696	20.403	0.71699	0.90710
1	1996	8a	7.667	0.02729	0.18620	28.834	0.76640	0.96820
1	1996	8b	7.667	0.02729	0.18620	30.965	0.78251	0.98797
1	1997	2b	3.323	0.00388	0.02644	5.898	0.32832	0.42426
1	1997	3	5.757	0.01308	0.08923	10.897	0.51357	0.65415
1	1997	4	5.879	0.01368	0.09334	14.051	0.65943	0.83514
1	1997	5	5.853	0.01356	0.09251	15.993	0.71756	0.90826
1	1997	6	5.181	0.01025	0.06994	15.954	0.68321	0.86494
1	1997	7	5.181	0.01025	0.06994	17.589	0.69458	0.87913
1	1997	8a	8.881	0.01051	0.07170	27.691	0.75514	0.95416
1	1997	8b	8.881	0.01051	0.07170	30.574	0.77603	0.97989
1	1998	2b	2.996	0.00344	0.02346	6.391	0.24382	0.31572
1	1998	3	3.846	0.01433	0.09779	13.439	0.34585	0.44144
1	1998	4	3.886	0.01566	0.10687	14.377	0.35965	0.45843
1	1998	5	3.837	0.01412	0.09637	15.141	0.33871	0.43228
1	1998	6	3.728	0.01040	0.07097	14.752	0.35072	0.44728
1	1998	7	3.728	0.01040	0.07097	15.617	0.35096	0.44756
1	1998	8a	4.311	0.02507	0.17108	25.227	0.48325	0.61244
1	1998	8b	4.311	0.02507	0.17108	28.551	0.52505	0.66418
1	1999	2b	2.297	0.00422	0.02882	5.964	0.24428	0.31626
1	1999	3	3.833	0.01400	0.09550	9.038	0.31934	0.40841
1	1999	4	3.994	0.01437	0.09807	9.737	0.33692	0.42993
1	1999	5	4.025	0.01420	0.09689	9.775	0.33767	0.43087
1	1999	6	4.027	0.01420	0.09692	9.861	0.33656	0.42952

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	1999	7	3.681	0.01358	0.09267	10.366	0.34566	0.44090
1	1999	8a	3.706	0.01462	0.09977	18.677	0.48465	0.61429
1	1999	8b	3.706	0.01462	0.09977	21.316	0.52989	0.67024
1	2000	2b	2.046	0.00383	0.02610	6.110	0.24806	0.32092
1	2000	3	3.893	0.01246	0.08500	9.105	0.32179	0.41133
1	2000	4	4.092	0.01110	0.07573	9.643	0.33502	0.42757
1	2000	5	4.141	0.01077	0.07347	9.719	0.33647	0.42940
1	2000	6	4.144	0.01075	0.07333	9.880	0.33964	0.43339
1	2000	7	3.742	0.01349	0.09205	11.078	0.35799	0.45629
1	2000	8a	3.742	0.01349	0.09205	17.275	0.45939	0.58280
1	2000	8b	3.742	0.01349	0.09205	21.136	0.52667	0.66625
1	2001	2b	0.683	0.00273	0.01866	5.827	0.24130	0.31259
1	2001	3	1.598	0.00948	0.06465	8.864	0.31446	0.40215
1	2001	4	1.671	0.00932	0.06358	9.313	0.32569	0.41583
1	2001	5	1.696	0.00927	0.06321	9.351	0.32644	0.41678
1	2001	6	1.698	0.00926	0.06319	10.109	0.34018	0.43399
1	2001	7	1.563	0.00955	0.06516	9.977	0.33792	0.43117
1	2001	8a	1.563	0.00955	0.06516	18.156	0.47349	0.60033
1	2001	8b	1.563	0.00955	0.06516	20.964	0.52309	0.66180
1	2002	2b	0.655	0.00240	0.01639	5.900	0.24304	0.31473
1	2002	3	1.630	0.00738	0.05034	8.668	0.30938	0.39593
1	2002	4	1.722	0.00665	0.04536	9.298	0.32492	0.41487
1	2002	5	1.748	0.00645	0.04398	9.298	0.32492	0.41487
1	2002	6	1.749	0.00643	0.04389	9.666	0.33353	0.42572
1	2002	7	1.570	0.00785	0.05354	10.207	0.34092	0.43489
1	2002	8a	1.570	0.00785	0.05354	15.725	0.43192	0.54867
1	2002	8b	1.570	0.00785	0.05354	20.613	0.51652	0.65365
1	2003	2b	0.567	0.00245	0.01670	4.219	0.20544	0.26609
1	2003	3	1.609	0.00784	0.05350	5.848	0.26844	0.34352
1	2003	4	1.689	0.00763	0.05201	6.227	0.28353	0.36200
1	2003	5	1.712	0.00756	0.05158	6.227	0.28353	0.36200
1	2003	6	1.714	0.00756	0.05156	6.666	0.29559	0.37722
1	2003	7	1.560	0.00798	0.05440	6.808	0.30468	0.38853



**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2003	8a	1.560	0.00797	0.05440	8.786	0.39967	0.50730
1	2003	8b	1.560	0.00797	0.05440	10.210	0.47207	0.59725
1	2004	2b	0.457	0.00151	0.01045	4.195	0.20405	0.26428
1	2004	3	1.625	0.00615	0.04192	5.903	0.26889	0.34409
1	2004	4	1.733	0.00586	0.03997	6.304	0.28459	0.36336
1	2004	5	1.763	0.00578	0.03943	6.304	0.28459	0.36336
1	2004	6	1.765	0.00578	0.03940	6.729	0.29889	0.38138
1	2004	7	1.555	0.00633	0.04320	6.863	0.30668	0.39106
1	2004	8a	1.555	0.00633	0.04320	8.762	0.39767	0.50479
1	2004	8b	1.555	0.00633	0.04320	10.214	0.47262	0.59795
1	2005	2b	0.379	0.00097	0.00677	4.094	0.19942	0.25839
1	2005	3	1.605	0.00456	0.03112	5.777	0.26388	0.33786
1	2005	4	1.669	0.00442	0.03016	6.275	0.28351	0.36199
1	2005	5	1.696	0.00436	0.02975	6.275	0.28351	0.36199
1	2005	6	1.698	0.00436	0.02972	6.626	0.29669	0.37859
1	2005	7	1.580	0.00462	0.03150	6.888	0.30938	0.39440
1	2005	8a	1.580	0.00462	0.03150	8.993	0.40892	0.51874
1	2005	8b	1.580	0.00462	0.03150	10.274	0.47533	0.60130
1	2006	2b	0.418	0.00111	0.00769	4.152	0.20256	0.26245
1	2006	3	1.611	0.00481	0.03282	5.729	0.26219	0.33577
1	2006	4	1.690	0.00461	0.03143	6.191	0.28009	0.35768
1	2006	5	1.719	0.00453	0.03093	6.191	0.28009	0.35768
1	2006	6	1.721	0.00453	0.03089	6.466	0.29114	0.37159
1	2006	7	1.574	0.00490	0.03346	6.747	0.30412	0.38778
1	2006	8a	1.574	0.00490	0.03346	8.883	0.40438	0.51307
1	2006	8b	1.574	0.00490	0.03346	10.254	0.47475	0.60058
1	2007	2b	0.359	0.00098	0.00682	2.245	0.00134	0.01142
1	2007	3	1.616	0.00479	0.03266	3.461	0.00181	0.01547
1	2007	4	1.685	0.00459	0.03128	3.712	0.00191	0.01633
1	2007	5	1.713	0.00450	0.03072	3.712	0.00191	0.01633
1	2007	6	1.715	0.00450	0.03068	3.882	0.00197	0.01687
1	2007	7	1.586	0.00487	0.03324	4.278	0.00212	0.01817
1	2007	8a	1.588	0.00488	0.03325	6.249	0.00291	0.02489

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NO <sub>x</sub> g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NO <sub>x</sub> g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2007	8b	1.588	0.00488	0.03325	7.190	0.00331	0.02830
1	2008	2b	0.274	0.00108	0.00738	2.174	0.00131	0.01118
1	2008	3	1.084	0.00472	0.03221	3.065	0.00164	0.01406
1	2008	4	1.034	0.00462	0.03154	3.288	0.00173	0.01480
1	2008	5	1.008	0.00457	0.03120	3.288	0.00173	0.01480
1	2008	6	1.006	0.00457	0.03117	3.442	0.00179	0.01529
1	2008	7	1.101	0.00475	0.03243	3.563	0.00183	0.01569
1	2008	8a	1.101	0.00475	0.03243	5.060	0.00242	0.02069
1	2008	8b	1.101	0.00475	0.03243	6.858	0.00316	0.02706
1	2009	2b	0.182	0.00121	0.00785	2.139	0.00130	0.01097
1	2009	3	0.727	0.00472	0.03222	3.578	0.00186	0.01591
1	2009	4	0.722	0.00470	0.03204	3.820	0.00196	0.01676
1	2009	5	0.719	0.00468	0.03194	3.820	0.00196	0.01676
1	2009	6	0.719	0.00468	0.03194	3.903	0.00199	0.01703
1	2009	7	0.729	0.00473	0.03227	4.363	0.00216	0.01852
1	2009	8a	0.729	0.00473	0.03227	6.289	0.00292	0.02503
1	2009	8b	0.729	0.00473	0.03227	7.169	0.00329	0.02820
1	2010	2b	0.069	0.00059	0.00334	0.936	0.00091	0.00752
1	2010	3	0.108	0.00174	0.01183	1.903	0.00171	0.01458
1	2010	4	0.108	0.00174	0.01184	2.090	0.00186	0.01590
1	2010	5	0.108	0.00174	0.01184	2.090	0.00186	0.01590
1	2010	6	0.108	0.00174	0.01184	2.175	0.00194	0.01659
1	2010	7	0.108	0.00174	0.01183	2.503	0.00175	0.01501
1	2010	8a	0.108	0.00174	0.01183	3.972	0.00116	0.00992
1	2010	8b	0.108	0.00174	0.01183	4.681	0.00081	0.00696
1	2011	2b	0.071	0.00073	0.00382	1.043	0.00092	0.00754
1	2011	3	0.116	0.00170	0.01158	1.639	0.00152	0.01297
1	2011	4	0.132	0.00163	0.01111	1.751	0.00163	0.01398
1	2011	5	0.140	0.00160	0.01089	1.751	0.00163	0.01398
1	2011	6	0.140	0.00159	0.01087	1.822	0.00168	0.01435
1	2011	7	0.111	0.00172	0.01174	1.985	0.00158	0.01355
1	2011	8a	0.111	0.00172	0.01174	3.098	0.00118	0.01010
1	2011	8b	0.111	0.00172	0.01174	3.923	0.00082	0.00703

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2012	2b	0.072	0.00079	0.00413	0.979	0.00094	0.00763
1	2012	3	0.117	0.00168	0.01145	1.639	0.00159	0.01351
1	2012	4	0.124	0.00165	0.01127	1.737	0.00168	0.01437
1	2012	5	0.127	0.00164	0.01118	1.737	0.00168	0.01437
1	2012	6	0.127	0.00164	0.01117	1.781	0.00169	0.01443
1	2012	7	0.115	0.00169	0.01150	2.017	0.00158	0.01350
1	2012	8a	0.115	0.00169	0.01150	3.188	0.00112	0.00957
1	2012	8b	0.115	0.00169	0.01150	3.835	0.00081	0.00695
1	2013	2b	0.070	0.00080	0.00352	1.173	0.00095	0.00753
1	2013	3	0.124	0.00154	0.01048	1.741	0.00160	0.01361
1	2013	4	0.135	0.00149	0.01019	1.828	0.00170	0.01454
1	2013	5	0.140	0.00147	0.01005	1.828	0.00170	0.01454
1	2013	6	0.141	0.00147	0.01004	1.866	0.00171	0.01465
1	2013	7	0.120	0.00155	0.01058	2.046	0.00156	0.01332
1	2013	8a	0.121	0.00155	0.01057	2.783	0.00101	0.00864
1	2013	8b	0.121	0.00155	0.01057	3.115	0.00073	0.00622
1	2014	2b	0.071	0.00101	0.00364	0.545	0.00050	0.00243
1	2014	3	0.124	0.00148	0.01013	1.170	0.00050	0.00410
1	2014	4	0.128	0.00147	0.01005	1.249	0.00050	0.00431
1	2014	5	0.130	0.00147	0.01000	1.249	0.00050	0.00431
1	2014	6	0.131	0.00146	0.01000	1.279	0.00051	0.00438
1	2014	7	0.123	0.00149	0.01016	1.441	0.00051	0.00434
1	2014	8a	0.123	0.00149	0.01016	2.238	0.00050	0.00430
1	2014	8b	0.123	0.00149	0.01016	2.697	0.00048	0.00409
1	2015	2b	0.061	0.00099	0.00325	0.430	0.00050	0.00224
1	2015	3	0.124	0.00148	0.01014	1.053	0.00050	0.00403
1	2015	4	0.127	0.00147	0.01006	1.150	0.00050	0.00431
1	2015	5	0.130	0.00147	0.01001	1.150	0.00050	0.00431
1	2015	6	0.130	0.00147	0.01001	1.182	0.00051	0.00437
1	2015	7	0.123	0.00149	0.01016	1.361	0.00051	0.00434
1	2015	8a	0.123	0.00149	0.01016	2.223	0.00050	0.00431
1	2015	8b	0.123	0.00149	0.01016	2.711	0.00048	0.00410
1	2016	2b	0.060	0.00106	0.00323	0.413	0.00052	0.00222

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2016	3	0.124	0.00149	0.01014	1.004	0.00051	0.00400
1	2016	4	0.127	0.00148	0.01007	1.110	0.00050	0.00431
1	2016	5	0.129	0.00147	0.01003	1.110	0.00050	0.00431
1	2016	6	0.129	0.00147	0.01002	1.137	0.00051	0.00436
1	2016	7	0.123	0.00149	0.01016	1.278	0.00051	0.00434
1	2016	8a	0.123	0.00149	0.01016	2.073	0.00051	0.00433
1	2016	8b	0.123	0.00149	0.01016	2.613	0.00048	0.00412
1	2017	2b	0.046	0.00103	0.00289	0.395	0.00051	0.00209
1	2017	3	0.123	0.00149	0.01014	0.959	0.00051	0.00396
1	2017	4	0.126	0.00148	0.01008	1.065	0.00050	0.00431
1	2017	5	0.128	0.00147	0.01005	1.065	0.00050	0.00431
1	2017	6	0.128	0.00147	0.01004	1.086	0.00051	0.00436
1	2017	7	0.122	0.00149	0.01016	1.196	0.00051	0.00434
1	2017	8a	0.122	0.00149	0.01016	1.855	0.00051	0.00434
1	2017	8b	0.122	0.00149	0.01016	2.335	0.00048	0.00414
1	2018	2b	0.044	0.00110	0.00298	0.299	0.00054	0.00208
1	2018	3	0.108	0.00148	0.01010	0.902	0.00051	0.00396
1	2018	4	0.119	0.00145	0.00991	1.015	0.00050	0.00431
1	2018	5	0.125	0.00144	0.00982	1.015	0.00050	0.00431
1	2018	6	0.125	0.00144	0.00981	1.067	0.00052	0.00443
1	2018	7	0.104	0.00149	0.01016	1.162	0.00051	0.00437
1	2018	8a	0.104	0.00149	0.01016	1.819	0.00051	0.00436
1	2018	8b	0.104	0.00149	0.01016	2.278	0.00048	0.00413
1	2019	2b	0.033	0.00101	0.00278	0.239	0.00050	0.00195
1	2019	3	0.088	0.00147	0.01006	0.842	0.00049	0.00379
1	2019	4	0.097	0.00145	0.00987	0.965	0.00049	0.00415
1	2019	5	0.102	0.00143	0.00977	0.965	0.00049	0.00415
1	2019	6	0.102	0.00143	0.00977	1.015	0.00050	0.00426
1	2019	7	0.085	0.00148	0.01012	1.116	0.00049	0.00422
1	2019	8a	0.085	0.00148	0.01012	1.798	0.00050	0.00425
1	2019	8b	0.085	0.00148	0.01012	2.271	0.00048	0.00408
1	2020	2b	0.029	0.00090	0.00254	0.203	0.00045	0.00183
1	2020	3	0.083	0.00147	0.01007	0.809	0.00048	0.00373

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2020	4	0.093	0.00145	0.00989	0.946	0.00049	0.00415
1	2020	5	0.098	0.00143	0.00979	0.946	0.00049	0.00415
1	2020	6	0.098	0.00143	0.00979	0.994	0.00050	0.00425
1	2020	7	0.080	0.00148	0.01012	1.092	0.00049	0.00421
1	2020	8a	0.080	0.00148	0.01012	1.772	0.00050	0.00425
1	2020	8b	0.080	0.00148	0.01012	2.265	0.00048	0.00408
1	2021	2b	0.020	0.00048	0.00142	0.138	0.00025	0.00107
1	2021	3	0.078	0.00089	0.00606	0.567	0.00030	0.00241
1	2021	4	0.087	0.00087	0.00596	0.664	0.00032	0.00271
1	2021	5	0.091	0.00087	0.00591	0.664	0.00032	0.00271
1	2021	6	0.092	0.00087	0.00590	0.696	0.00032	0.00277
1	2021	7	0.076	0.00089	0.00609	0.761	0.00032	0.00275
1	2021	8a	0.076	0.00089	0.00609	1.229	0.00033	0.00282
1	2021	8b	0.076	0.00089	0.00609	1.582	0.00032	0.00273
1	2022	2b	0.017	0.00049	0.00143	0.123	0.00025	0.00107
1	2022	3	0.074	0.00089	0.00606	0.556	0.00030	0.00241
1	2022	4	0.083	0.00087	0.00596	0.654	0.00032	0.00271
1	2022	5	0.088	0.00087	0.00591	0.654	0.00032	0.00271
1	2022	6	0.088	0.00087	0.00591	0.687	0.00032	0.00277
1	2022	7	0.071	0.00089	0.00609	0.754	0.00032	0.00275
1	2022	8a	0.071	0.00089	0.00609	1.231	0.00033	0.00282
1	2022	8b	0.071	0.00089	0.00609	1.583	0.00032	0.00273
1	2023	2b	0.015	0.00049	0.00141	0.120	0.00025	0.00106
1	2023	3	0.074	0.00089	0.00606	0.553	0.00030	0.00240
1	2023	4	0.083	0.00087	0.00596	0.654	0.00032	0.00271
1	2023	5	0.087	0.00087	0.00591	0.654	0.00032	0.00271
1	2023	6	0.088	0.00087	0.00591	0.686	0.00032	0.00277
1	2023	7	0.071	0.00089	0.00609	0.751	0.00032	0.00275
1	2023	8a	0.071	0.00089	0.00609	1.223	0.00033	0.00282
1	2023	8b	0.071	0.00089	0.00609	1.581	0.00032	0.00273
1	2024	2b	0.012	0.00049	0.00140	0.118	0.00025	0.00106
1	2024	3	0.074	0.00089	0.00606	0.550	0.00030	0.00239
1	2024	4	0.083	0.00087	0.00597	0.654	0.00032	0.00271

**Table A-1. SmartWay Category – Auto Carrier**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
1	2024	5	0.087	0.00087	0.00592	0.654	0.00032	0.00271
1	2024	6	0.087	0.00087	0.00591	0.685	0.00032	0.00277
1	2024	7	0.071	0.00089	0.00609	0.744	0.00032	0.00274
1	2024	8a	0.071	0.00089	0.00609	1.189	0.00032	0.00278
1	2024	8b	0.071	0.00089	0.00609	1.537	0.00031	0.00267
1	2025	2b	0.012	0.00049	0.00140	0.118	0.00025	0.00106
1	2025	3	0.074	0.00089	0.00606	0.550	0.00030	0.00239
1	2025	4	0.083	0.00087	0.00597	0.654	0.00032	0.00271
1	2025	5	0.087	0.00087	0.00592	0.654	0.00032	0.00271
1	2025	6	0.087	0.00087	0.00591	0.685	0.00032	0.00277
1	2025	7	0.071	0.00089	0.00609	0.744	0.00032	0.00274
1	2025	8a	0.071	0.00089	0.00609	1.189	0.00032	0.00278
1	2025	8b	0.071	0.00089	0.00609	1.537	0.00031	0.00267

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	Pre-1993	2b	4.462	0.00493	0.03363	8.006	0.49871	0.64076
2	Pre-1993	3	5.783	0.00929	0.06339	9.573	0.57086	0.73090
2	Pre-1993	4	5.948	0.00945	0.06449	14.511	0.72623	0.92135
2	Pre-1993	5	5.957	0.00946	0.06454	16.336	0.77236	0.97943
2	Pre-1993	6	5.260	0.00878	0.05993	15.952	0.75698	0.96002
2	Pre-1993	7	5.260	0.00878	0.05993	17.081	0.75278	0.95450
2	Pre-1993	8a	8.147	0.01249	0.08522	25.259	0.79748	1.00935
2	Pre-1993	8b	8.147	0.01249	0.08522	30.505	0.83066	1.04994
2	1993	2b	4.462	0.00493	0.03363	8.006	0.49871	0.64076
2	1993	3	5.783	0.00929	0.06339	9.573	0.57086	0.73090
2	1993	4	5.948	0.00945	0.06449	14.511	0.72623	0.92135
2	1993	5	5.957	0.00946	0.06454	16.336	0.77236	0.97943
2	1993	6	5.260	0.00878	0.05993	15.952	0.75698	0.96002
2	1993	7	5.260	0.00878	0.05993	17.081	0.75278	0.95450
2	1993	8a	8.147	0.01249	0.08522	25.259	0.79748	1.00935
2	1993	8b	8.147	0.01249	0.08522	30.505	0.83066	1.04994
2	1994	2b	4.462	0.00493	0.03363	8.006	0.49871	0.64076
2	1994	3	5.783	0.00929	0.06339	9.573	0.57086	0.73090
2	1994	4	5.948	0.00945	0.06449	14.511	0.72623	0.92135
2	1994	5	5.957	0.00946	0.06454	16.336	0.77236	0.97943
2	1994	6	5.260	0.00878	0.05993	15.952	0.75698	0.96002
2	1994	7	5.260	0.00878	0.05993	17.081	0.75278	0.95450
2	1994	8a	8.147	0.01249	0.08522	25.259	0.79748	1.00935
2	1994	8b	8.147	0.01249	0.08522	30.505	0.83066	1.04994
2	1995	2b	4.553	0.00718	0.04899	7.667	0.47053	0.60481
2	1995	3	5.910	0.02282	0.15573	13.606	0.67493	0.85832
2	1995	4	6.005	0.02384	0.16264	15.997	0.73804	0.93666
2	1995	5	5.983	0.02361	0.16112	18.948	0.81318	1.03070
2	1995	6	5.266	0.01587	0.10827	19.263	0.78604	0.99625
2	1995	7	5.266	0.01587	0.10827	21.267	0.79780	1.01075
2	1995	8a	7.951	0.03535	0.24117	29.533	0.82960	1.04905
2	1995	8b	7.951	0.03535	0.24117	31.517	0.83794	1.05890
2	1996	2b	3.590	0.00544	0.03710	7.643	0.44730	0.57465

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	1996	3	5.975	0.01865	0.12727	15.712	0.73784	0.93632
2	1996	4	6.022	0.01912	0.13048	17.483	0.76205	0.96620
2	1996	5	6.020	0.01911	0.13041	18.633	0.81484	1.03295
2	1996	6	5.351	0.01235	0.08427	20.310	0.79770	1.01084
2	1996	7	5.351	0.01235	0.08427	21.368	0.80436	1.01906
2	1996	8a	7.951	0.03003	0.20491	29.425	0.83023	1.04993
2	1996	8b	7.951	0.03003	0.20491	31.605	0.84070	1.06235
2	1997	2b	3.313	0.00382	0.02609	6.253	0.38240	0.49459
2	1997	3	5.903	0.01318	0.08993	11.606	0.58694	0.74877
2	1997	4	6.026	0.01381	0.09424	15.188	0.75272	0.95484
2	1997	5	6.000	0.01369	0.09338	17.182	0.81835	1.03742
2	1997	6	5.324	0.01021	0.06969	17.026	0.77555	0.98336
2	1997	7	5.324	0.01021	0.06969	18.538	0.78420	0.99407
2	1997	8a	9.176	0.01007	0.06867	28.227	0.82086	1.03837
2	1997	8b	9.176	0.01007	0.06867	31.193	0.83447	1.05462
2	1998	2b	2.970	0.00347	0.02367	6.879	0.25964	0.33800
2	1998	3	3.892	0.01477	0.10077	14.435	0.37604	0.48142
2	1998	4	3.929	0.01622	0.11065	15.456	0.39197	0.50102
2	1998	5	3.882	0.01454	0.09921	16.157	0.36551	0.46796
2	1998	6	3.780	0.01049	0.07159	15.801	0.38059	0.48681
2	1998	7	3.780	0.01049	0.07159	16.598	0.37898	0.48474
2	1998	8a	4.372	0.02657	0.18130	25.591	0.51671	0.65599
2	1998	8b	4.372	0.02657	0.18130	28.920	0.56264	0.71262
2	1999	2b	2.285	0.00444	0.03026	6.432	0.25991	0.33834
2	1999	3	3.889	0.01500	0.10233	9.706	0.34526	0.44311
2	1999	4	4.064	0.01544	0.10534	10.460	0.36547	0.46785
2	1999	5	4.098	0.01525	0.10408	10.497	0.36628	0.46887
2	1999	6	4.101	0.01526	0.10411	10.548	0.36346	0.46535
2	1999	7	3.723	0.01452	0.09906	11.035	0.37320	0.47752
2	1999	8a	3.748	0.01566	0.10687	19.012	0.51764	0.65727
2	1999	8b	3.748	0.01566	0.10687	21.722	0.56778	0.71906
2	2000	2b	2.036	0.00382	0.02607	6.587	0.26411	0.34351
2	2000	3	3.961	0.01250	0.08530	9.782	0.34770	0.44598



**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2000	4	4.180	0.01116	0.07616	10.357	0.36279	0.46449
2	2000	5	4.233	0.01084	0.07393	10.431	0.36434	0.46646
2	2000	6	4.236	0.01081	0.07379	10.591	0.36722	0.47006
2	2000	7	3.794	0.01352	0.09224	11.681	0.38520	0.49245
2	2000	8a	3.794	0.01352	0.09224	17.604	0.48993	0.62279
2	2000	8b	3.794	0.01352	0.09224	21.522	0.56380	0.71414
2	2001	2b	0.686	0.00285	0.01943	6.287	0.25648	0.33411
2	2001	3	1.620	0.00958	0.06532	9.508	0.33906	0.43518
2	2001	4	1.700	0.00939	0.06404	9.992	0.35192	0.45084
2	2001	5	1.728	0.00932	0.06359	10.030	0.35272	0.45186
2	2001	6	1.730	0.00932	0.06356	10.748	0.36653	0.46913
2	2001	7	1.581	0.00967	0.06594	10.639	0.36465	0.46677
2	2001	8a	1.581	0.00967	0.06594	18.450	0.50449	0.64087
2	2001	8b	1.581	0.00967	0.06594	21.340	0.55972	0.70907
2	2002	2b	0.657	0.00248	0.01690	6.363	0.25843	0.33651
2	2002	3	1.655	0.00761	0.05189	9.297	0.33333	0.42817
2	2002	4	1.757	0.00687	0.04688	9.973	0.35109	0.44981
2	2002	5	1.786	0.00667	0.04549	9.973	0.35109	0.44981
2	2002	6	1.787	0.00666	0.04540	10.356	0.36033	0.46142
2	2002	7	1.589	0.00808	0.05511	10.829	0.36710	0.46981
2	2002	8a	1.589	0.00808	0.05511	16.045	0.46011	0.58588
2	2002	8b	1.589	0.00808	0.05511	20.968	0.55219	0.69975
2	2003	2b	0.571	0.00256	0.01745	4.458	0.21845	0.28451
2	2003	3	1.631	0.00823	0.05617	6.216	0.28937	0.37168
2	2003	4	1.720	0.00800	0.05455	6.629	0.30656	0.39273
2	2003	5	1.745	0.00793	0.05409	6.629	0.30656	0.39273
2	2003	6	1.747	0.00792	0.05406	7.130	0.31963	0.40922
2	2003	7	1.578	0.00838	0.05714	7.228	0.32788	0.41944
2	2003	8a	1.578	0.00838	0.05714	9.137	0.42533	0.54108
2	2003	8b	1.578	0.00838	0.05714	10.636	0.50501	0.63977
2	2004	2b	0.460	0.00156	0.01079	4.434	0.21697	0.28255
2	2004	3	1.650	0.00631	0.04305	6.285	0.28978	0.37218
2	2004	4	1.770	0.00597	0.04069	6.724	0.30761	0.39408

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2004	5	1.803	0.00587	0.04005	6.724	0.30761	0.39408
2	2004	6	1.805	0.00587	0.04001	7.209	0.32343	0.41400
2	2004	7	1.572	0.00654	0.04458	7.299	0.33020	0.42237
2	2004	8a	1.572	0.00654	0.04458	9.119	0.42298	0.53811
2	2004	8b	1.572	0.00654	0.04458	10.641	0.50561	0.64052
2	2005	2b	0.382	0.00100	0.00698	4.327	0.21198	0.27619
2	2005	3	1.629	0.00468	0.03192	6.144	0.28409	0.36512
2	2005	4	1.700	0.00451	0.03077	6.687	0.30632	0.39246
2	2005	5	1.730	0.00444	0.03029	6.687	0.30632	0.39246
2	2005	6	1.732	0.00443	0.03025	7.087	0.32100	0.41092
2	2005	7	1.602	0.00474	0.03237	7.301	0.33252	0.42522
2	2005	8a	1.602	0.00474	0.03237	9.347	0.43482	0.55275
2	2005	8b	1.602	0.00474	0.03237	10.707	0.50870	0.64434
2	2006	2b	0.422	0.00115	0.00797	4.387	0.21531	0.28053
2	2006	3	1.634	0.00497	0.03389	6.083	0.28213	0.36270
2	2006	4	1.723	0.00472	0.03223	6.583	0.30244	0.38756
2	2006	5	1.755	0.00464	0.03162	6.583	0.30244	0.38756
2	2006	6	1.757	0.00463	0.03158	6.897	0.31478	0.40310
2	2006	7	1.594	0.00508	0.03466	7.134	0.32667	0.41787
2	2006	8a	1.594	0.00508	0.03466	9.224	0.42980	0.54650
2	2006	8b	1.594	0.00508	0.03466	10.683	0.50802	0.64349
2	2007	2b	0.363	0.00101	0.00706	2.441	0.00142	0.01212
2	2007	3	1.641	0.00494	0.03373	3.757	0.00196	0.01674
2	2007	4	1.718	0.00470	0.03208	4.032	0.00207	0.01773
2	2007	5	1.748	0.00461	0.03141	4.032	0.00207	0.01773
2	2007	6	1.750	0.00460	0.03136	4.211	0.00214	0.01832
2	2007	7	1.608	0.00505	0.03442	4.574	0.00228	0.01955
2	2007	8a	1.610	0.00505	0.03443	6.546	0.00310	0.02651
2	2007	8b	1.610	0.00505	0.03443	7.565	0.00354	0.03032
2	2008	2b	0.275	0.00112	0.00764	2.364	0.00139	0.01186
2	2008	3	1.090	0.00486	0.03318	3.319	0.00177	0.01511
2	2008	4	1.042	0.00475	0.03240	3.561	0.00186	0.01595
2	2008	5	1.016	0.00469	0.03199	3.561	0.00186	0.01595

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2008	6	1.015	0.00469	0.03196	3.728	0.00193	0.01651
2	2008	7	1.107	0.00490	0.03345	3.832	0.00197	0.01686
2	2008	8a	1.106	0.00490	0.03345	5.294	0.00256	0.02193
2	2008	8b	1.106	0.00490	0.03345	7.196	0.00338	0.02891
2	2009	2b	0.182	0.00125	0.00812	2.324	0.00138	0.01165
2	2009	3	0.727	0.00486	0.03318	3.885	0.00202	0.01725
2	2009	4	0.722	0.00483	0.03296	4.151	0.00213	0.01824
2	2009	5	0.720	0.00481	0.03284	4.151	0.00213	0.01824
2	2009	6	0.720	0.00481	0.03283	4.236	0.00216	0.01852
2	2009	7	0.728	0.00487	0.03325	4.664	0.00233	0.01995
2	2009	8a	0.728	0.00487	0.03325	6.595	0.00312	0.02670
2	2009	8b	0.728	0.00487	0.03325	7.546	0.00353	0.03023
2	2010	2b	0.069	0.00061	0.00343	1.058	0.00098	0.00807
2	2010	3	0.112	0.00182	0.01240	2.187	0.00192	0.01640
2	2010	4	0.112	0.00182	0.01240	2.406	0.00210	0.01795
2	2010	5	0.112	0.00182	0.01241	2.406	0.00210	0.01795
2	2010	6	0.112	0.00182	0.01241	2.502	0.00220	0.01881
2	2010	7	0.112	0.00182	0.01240	2.821	0.00200	0.01714
2	2010	8a	0.112	0.00182	0.01240	4.405	0.00134	0.01145
2	2010	8b	0.112	0.00182	0.01240	5.244	0.00091	0.00778
2	2011	2b	0.072	0.00075	0.00395	1.170	0.00098	0.00805
2	2011	3	0.121	0.00178	0.01216	1.870	0.00168	0.01434
2	2011	4	0.136	0.00172	0.01172	2.003	0.00181	0.01551
2	2011	5	0.144	0.00169	0.01150	2.003	0.00181	0.01551
2	2011	6	0.144	0.00168	0.01149	2.087	0.00187	0.01599
2	2011	7	0.115	0.00181	0.01232	2.247	0.00177	0.01515
2	2011	8a	0.115	0.00181	0.01232	3.456	0.00134	0.01149
2	2011	8b	0.115	0.00181	0.01232	4.449	0.00092	0.00786
2	2012	2b	0.074	0.00082	0.00427	1.103	0.00101	0.00817
2	2012	3	0.122	0.00176	0.01204	1.879	0.00176	0.01501
2	2012	4	0.128	0.00174	0.01187	1.996	0.00187	0.01601
2	2012	5	0.132	0.00173	0.01178	1.996	0.00187	0.01601
2	2012	6	0.132	0.00173	0.01177	2.045	0.00188	0.01610

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2012	7	0.120	0.00177	0.01209	2.283	0.00177	0.01515
2	2012	8a	0.120	0.00177	0.01209	3.576	0.00127	0.01091
2	2012	8b	0.120	0.00177	0.01209	4.364	0.00091	0.00776
2	2013	2b	0.070	0.00082	0.00362	1.308	0.00102	0.00808
2	2013	3	0.128	0.00162	0.01103	1.989	0.00180	0.01528
2	2013	4	0.139	0.00158	0.01076	2.093	0.00191	0.01638
2	2013	5	0.144	0.00156	0.01062	2.093	0.00191	0.01638
2	2013	6	0.145	0.00155	0.01061	2.139	0.00193	0.01654
2	2013	7	0.125	0.00163	0.01113	2.322	0.00177	0.01516
2	2013	8a	0.125	0.00163	0.01112	3.158	0.00116	0.00994
2	2013	8b	0.125	0.00163	0.01112	3.573	0.00081	0.00696
2	2014	2b	0.072	0.00103	0.00374	0.625	0.00052	0.00253
2	2014	3	0.129	0.00156	0.01068	1.399	0.00055	0.00451
2	2014	4	0.133	0.00155	0.01060	1.496	0.00056	0.00476
2	2014	5	0.135	0.00155	0.01055	1.496	0.00056	0.00476
2	2014	6	0.135	0.00154	0.01055	1.532	0.00057	0.00483
2	2014	7	0.127	0.00157	0.01070	1.694	0.00056	0.00479
2	2014	8a	0.127	0.00157	0.01070	2.575	0.00055	0.00471
2	2014	8b	0.127	0.00157	0.01070	3.138	0.00052	0.00446
2	2015	2b	0.061	0.00101	0.00333	0.498	0.00051	0.00233
2	2015	3	0.128	0.00156	0.01068	1.273	0.00055	0.00444
2	2015	4	0.132	0.00155	0.01061	1.394	0.00056	0.00476
2	2015	5	0.134	0.00155	0.01056	1.394	0.00056	0.00476
2	2015	6	0.134	0.00155	0.01056	1.431	0.00056	0.00483
2	2015	7	0.127	0.00157	0.01070	1.610	0.00056	0.00478
2	2015	8a	0.127	0.00157	0.01070	2.560	0.00055	0.00472
2	2015	8b	0.127	0.00157	0.01070	3.154	0.00052	0.00447
2	2016	2b	0.061	0.00108	0.00331	0.478	0.00054	0.00230
2	2016	3	0.128	0.00156	0.01068	1.216	0.00055	0.00439
2	2016	4	0.132	0.00155	0.01061	1.348	0.00056	0.00476
2	2016	5	0.134	0.00155	0.01058	1.348	0.00056	0.00476
2	2016	6	0.134	0.00155	0.01057	1.379	0.00056	0.00482
2	2016	7	0.127	0.00157	0.01070	1.520	0.00056	0.00479

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2016	8a	0.127	0.00157	0.01070	2.389	0.00055	0.00475
2	2016	8b	0.127	0.00157	0.01070	3.042	0.00053	0.00450
2	2017	2b	0.046	0.00105	0.00297	0.457	0.00053	0.00217
2	2017	3	0.128	0.00156	0.01068	1.162	0.00055	0.00435
2	2017	4	0.131	0.00156	0.01063	1.294	0.00056	0.00476
2	2017	5	0.133	0.00155	0.01059	1.294	0.00056	0.00476
2	2017	6	0.133	0.00155	0.01059	1.319	0.00056	0.00481
2	2017	7	0.127	0.00157	0.01070	1.430	0.00056	0.00478
2	2017	8a	0.127	0.00157	0.01070	2.153	0.00056	0.00476
2	2017	8b	0.127	0.00157	0.01070	2.736	0.00053	0.00452
2	2018	2b	0.045	0.00113	0.00307	0.349	0.00055	0.00216
2	2018	3	0.112	0.00156	0.01064	1.098	0.00056	0.00435
2	2018	4	0.123	0.00153	0.01047	1.238	0.00056	0.00476
2	2018	5	0.129	0.00152	0.01038	1.238	0.00056	0.00476
2	2018	6	0.129	0.00152	0.01037	1.301	0.00057	0.00490
2	2018	7	0.108	0.00157	0.01070	1.395	0.00056	0.00483
2	2018	8a	0.108	0.00157	0.01070	2.119	0.00056	0.00478
2	2018	8b	0.108	0.00157	0.01070	2.676	0.00053	0.00452
2	2019	2b	0.033	0.00104	0.00286	0.280	0.00051	0.00202
2	2019	3	0.091	0.00155	0.01060	1.027	0.00053	0.00415
2	2019	4	0.101	0.00153	0.01042	1.179	0.00054	0.00458
2	2019	5	0.106	0.00151	0.01032	1.179	0.00054	0.00458
2	2019	6	0.106	0.00151	0.01032	1.240	0.00055	0.00471
2	2019	7	0.088	0.00156	0.01066	1.340	0.00054	0.00465
2	2019	8a	0.088	0.00156	0.01066	2.093	0.00054	0.00466
2	2019	8b	0.088	0.00156	0.01066	2.667	0.00052	0.00446
2	2020	2b	0.029	0.00092	0.00262	0.238	0.00046	0.00190
2	2020	3	0.087	0.00155	0.01061	0.988	0.00052	0.00409
2	2020	4	0.096	0.00153	0.01043	1.157	0.00054	0.00458
2	2020	5	0.101	0.00151	0.01034	1.157	0.00054	0.00458
2	2020	6	0.101	0.00151	0.01034	1.215	0.00055	0.00470
2	2020	7	0.084	0.00156	0.01066	1.312	0.00054	0.00465
2	2020	8a	0.084	0.00156	0.01066	2.061	0.00054	0.00466

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2020	8b	0.084	0.00156	0.01066	2.659	0.00052	0.00446
2	2021	2b	0.021	0.00050	0.00147	0.162	0.00026	0.00111
2	2021	3	0.082	0.00094	0.00639	0.693	0.00033	0.00265
2	2021	4	0.090	0.00092	0.00630	0.813	0.00035	0.00300
2	2021	5	0.095	0.00092	0.00625	0.813	0.00035	0.00300
2	2021	6	0.095	0.00092	0.00624	0.853	0.00036	0.00307
2	2021	7	0.079	0.00094	0.00642	0.917	0.00036	0.00305
2	2021	8a	0.079	0.00094	0.00642	1.435	0.00036	0.00309
2	2021	8b	0.079	0.00094	0.00642	1.866	0.00035	0.00300
2	2022	2b	0.018	0.00050	0.00147	0.145	0.00026	0.00111
2	2022	3	0.077	0.00094	0.00639	0.681	0.00033	0.00265
2	2022	4	0.086	0.00092	0.00630	0.802	0.00035	0.00300
2	2022	5	0.091	0.00092	0.00625	0.802	0.00035	0.00300
2	2022	6	0.091	0.00092	0.00624	0.842	0.00036	0.00307
2	2022	7	0.074	0.00094	0.00642	0.909	0.00036	0.00304
2	2022	8a	0.074	0.00094	0.00642	1.438	0.00036	0.00309
2	2022	8b	0.074	0.00094	0.00642	1.868	0.00035	0.00299
2	2023	2b	0.015	0.00050	0.00146	0.142	0.00026	0.00110
2	2023	3	0.077	0.00094	0.00639	0.677	0.00033	0.00264
2	2023	4	0.086	0.00092	0.00630	0.802	0.00035	0.00300
2	2023	5	0.091	0.00092	0.00625	0.802	0.00035	0.00300
2	2023	6	0.091	0.00092	0.00625	0.841	0.00036	0.00307
2	2023	7	0.074	0.00094	0.00642	0.906	0.00036	0.00304
2	2023	8a	0.074	0.00094	0.00642	1.429	0.00036	0.00309
2	2023	8b	0.074	0.00094	0.00642	1.865	0.00035	0.00299
2	2024	2b	0.013	0.00050	0.00144	0.140	0.00026	0.00110
2	2024	3	0.077	0.00094	0.00639	0.674	0.00033	0.00263
2	2024	4	0.086	0.00092	0.00630	0.802	0.00035	0.00299
2	2024	5	0.090	0.00092	0.00625	0.802	0.00035	0.00299
2	2024	6	0.091	0.00092	0.00625	0.840	0.00036	0.00306
2	2024	7	0.074	0.00094	0.00642	0.899	0.00035	0.00304
2	2024	8a	0.074	0.00094	0.00642	1.394	0.00036	0.00305
2	2024	8b	0.074	0.00094	0.00642	1.821	0.00034	0.00294

**Table A-2. SmartWay Category - Dray**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
2	2025	2b	0.013	0.00050	0.00144	0.140	0.00026	0.00110
2	2025	3	0.077	0.00094	0.00639	0.674	0.00033	0.00263
2	2025	4	0.086	0.00092	0.00630	0.802	0.00035	0.00299
2	2025	5	0.090	0.00092	0.00625	0.802	0.00035	0.00299
2	2025	6	0.091	0.00092	0.00625	0.840	0.00036	0.00306
2	2025	7	0.074	0.00094	0.00642	0.899	0.00035	0.00304
2	2025	8a	0.074	0.00094	0.00642	1.394	0.00036	0.00305
2	2025	8b	0.074	0.00094	0.00642	1.821	0.00034	0.00294

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	Pre-1993	2b	4.189	0.00517	0.03528	7.150	0.40127	0.51436
3	Pre-1993	3	5.489	0.00949	0.06476	8.564	0.46547	0.59413
3	Pre-1993	4	5.646	0.00961	0.06558	12.884	0.60611	0.76700
3	Pre-1993	5	5.655	0.00962	0.06561	14.468	0.64188	0.81200
3	Pre-1993	6	4.990	0.00911	0.06216	14.195	0.63076	0.79799
3	Pre-1993	7	4.990	0.00911	0.06216	15.622	0.63227	0.79974
3	Pre-1993	8a	7.517	0.01233	0.08410	24.273	0.68740	0.86826
3	Pre-1993	8b	7.517	0.01233	0.08410	29.164	0.72208	0.91126
3	1993	2b	4.189	0.00517	0.03528	7.150	0.40127	0.51436
3	1993	3	5.489	0.00949	0.06476	8.564	0.46547	0.59413
3	1993	4	5.646	0.00961	0.06558	12.884	0.60611	0.76700
3	1993	5	5.655	0.00962	0.06561	14.468	0.64188	0.81200
3	1993	6	4.990	0.00911	0.06216	14.195	0.63076	0.79799
3	1993	7	4.990	0.00911	0.06216	15.622	0.63227	0.79974
3	1993	8a	7.517	0.01233	0.08410	24.273	0.68740	0.86826
3	1993	8b	7.517	0.01233	0.08410	29.164	0.72208	0.91126
3	1994	2b	4.189	0.00517	0.03528	7.150	0.40127	0.51436
3	1994	3	5.489	0.00949	0.06476	8.564	0.46547	0.59413
3	1994	4	5.646	0.00961	0.06558	12.884	0.60611	0.76700
3	1994	5	5.655	0.00962	0.06561	14.468	0.64188	0.81200
3	1994	6	4.990	0.00911	0.06216	14.195	0.63076	0.79799
3	1994	7	4.990	0.00911	0.06216	15.622	0.63227	0.79974
3	1994	8a	7.517	0.01233	0.08410	24.273	0.68740	0.86826
3	1994	8b	7.517	0.01233	0.08410	29.164	0.72208	0.91126
3	1995	2b	4.279	0.00701	0.04781	6.844	0.37678	0.48306
3	1995	3	5.610	0.02176	0.14849	12.061	0.55668	0.70608
3	1995	4	5.701	0.02264	0.15450	14.278	0.61277	0.77569
3	1995	5	5.680	0.02245	0.15318	16.845	0.67374	0.85199
3	1995	6	4.994	0.01570	0.10714	17.459	0.65713	0.83094
3	1995	7	4.994	0.01570	0.10714	19.642	0.67172	0.84912
3	1995	8a	7.374	0.03200	0.21833	28.169	0.71837	0.90684
3	1995	8b	7.374	0.03200	0.21833	30.005	0.72903	0.91989
3	1996	2b	3.418	0.00466	0.03180	6.854	0.36072	0.46193



**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	1996	3	5.671	0.01560	0.10647	13.859	0.61090	0.77326
3	1996	4	5.717	0.01598	0.10901	15.640	0.63458	0.80267
3	1996	5	5.715	0.01597	0.10896	16.600	0.67597	0.85491
3	1996	6	5.061	0.01061	0.07240	18.711	0.66897	0.84577
3	1996	7	5.061	0.01061	0.07240	19.708	0.67680	0.85554
3	1996	8a	7.374	0.02429	0.16571	28.083	0.71867	0.90726
3	1996	8b	7.374	0.02429	0.16571	30.100	0.73166	0.92318
3	1997	2b	3.241	0.00378	0.02577	5.644	0.30559	0.39464
3	1997	3	5.602	0.01272	0.08677	10.502	0.48575	0.61811
3	1997	4	5.721	0.01329	0.09065	13.421	0.62461	0.79032
3	1997	5	5.696	0.01317	0.08987	15.284	0.68037	0.86044
3	1997	6	5.041	0.01004	0.06853	15.312	0.64686	0.81819
3	1997	7	5.041	0.01004	0.06853	16.978	0.65727	0.83118
3	1997	8a	8.589	0.01030	0.07027	27.019	0.70886	0.89503
3	1997	8b	8.589	0.01030	0.07027	29.740	0.72535	0.91531
3	1998	2b	2.922	0.00331	0.02260	6.079	0.23391	0.30185
3	1998	3	3.719	0.01377	0.09396	12.844	0.32848	0.41845
3	1998	4	3.757	0.01500	0.10233	13.721	0.34089	0.43373
3	1998	5	3.710	0.01359	0.09275	14.502	0.32344	0.41197
3	1998	6	3.608	0.01016	0.06929	14.103	0.33347	0.42448
3	1998	7	3.608	0.01016	0.06929	14.986	0.33459	0.42589
3	1998	8a	4.159	0.02306	0.15731	24.687	0.45782	0.57955
3	1998	8b	4.159	0.02306	0.15731	27.882	0.49462	0.62514
3	1999	2b	2.238	0.00396	0.02703	5.666	0.23451	0.30255
3	1999	3	3.708	0.01328	0.09062	8.703	0.30542	0.38972
3	1999	4	3.863	0.01362	0.09295	9.378	0.32155	0.40950
3	1999	5	3.893	0.01349	0.09201	9.416	0.32221	0.41033
3	1999	6	3.895	0.01349	0.09203	9.502	0.32167	0.40970
3	1999	7	3.561	0.01291	0.08809	10.010	0.33005	0.42018
3	1999	8a	3.585	0.01378	0.09401	18.324	0.45932	0.58150
3	1999	8b	3.585	0.01378	0.09401	20.847	0.49908	0.63073
3	2000	2b	1.993	0.00367	0.02505	5.810	0.23817	0.30706
3	2000	3	3.766	0.01212	0.08268	8.761	0.30775	0.39253

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2000	4	3.958	0.01079	0.07362	9.280	0.31986	0.40739
3	2000	5	4.005	0.01047	0.07141	9.353	0.32112	0.40900
3	2000	6	4.008	0.01045	0.07127	9.500	0.32399	0.41262
3	2000	7	3.620	0.01313	0.08956	10.745	0.34205	0.43516
3	2000	8a	3.620	0.01313	0.08956	16.959	0.43677	0.55338
3	2000	8b	3.620	0.01313	0.08956	20.686	0.49656	0.62761
3	2001	2b	0.662	0.00252	0.01717	5.529	0.23169	0.29906
3	2001	3	1.546	0.00898	0.06123	8.544	0.30151	0.38472
3	2001	4	1.616	0.00886	0.06044	8.980	0.31196	0.39748
3	2001	5	1.641	0.00882	0.06017	9.017	0.31261	0.39830
3	2001	6	1.642	0.00882	0.06015	9.777	0.32558	0.41454
3	2001	7	1.512	0.00903	0.06162	9.632	0.32312	0.41147
3	2001	8a	1.512	0.00903	0.06162	17.841	0.44995	0.56979
3	2001	8b	1.512	0.00903	0.06162	20.523	0.49346	0.62375
3	2002	2b	0.635	0.00230	0.01570	5.602	0.23339	0.30116
3	2002	3	1.576	0.00716	0.04883	8.356	0.29685	0.37900
3	2002	4	1.666	0.00645	0.04400	8.970	0.31134	0.39669
3	2002	5	1.690	0.00626	0.04267	8.970	0.31134	0.39669
3	2002	6	1.692	0.00624	0.04258	9.310	0.31885	0.40615
3	2002	7	1.519	0.00761	0.05192	9.887	0.32651	0.41569
3	2002	8a	1.519	0.00761	0.05192	15.454	0.41213	0.52275
3	2002	8b	1.519	0.00761	0.05192	20.196	0.48789	0.61684
3	2003	2b	0.550	0.00229	0.01560	3.995	0.19729	0.25463
3	2003	3	1.556	0.00751	0.05125	5.623	0.25754	0.32880
3	2003	4	1.634	0.00731	0.04989	5.994	0.27160	0.34604
3	2003	5	1.656	0.00726	0.04950	5.994	0.27160	0.34604
3	2003	6	1.657	0.00725	0.04947	6.404	0.28237	0.35963
3	2003	7	1.509	0.00763	0.05208	6.567	0.29179	0.37136
3	2003	8a	1.510	0.00763	0.05207	8.549	0.38107	0.48301
3	2003	8b	1.510	0.00763	0.05207	9.915	0.44542	0.56303
3	2004	2b	0.443	0.00144	0.01001	3.973	0.19596	0.25289
3	2004	3	1.572	0.00601	0.04097	5.672	0.25791	0.32926
3	2004	4	1.676	0.00576	0.03927	6.064	0.27251	0.34722

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2004	5	1.705	0.00569	0.03881	6.064	0.27251	0.34722
3	2004	6	1.706	0.00569	0.03878	6.460	0.28524	0.36324
3	2004	7	1.504	0.00617	0.04207	6.614	0.29347	0.37349
3	2004	8a	1.504	0.00617	0.04207	8.526	0.37942	0.48094
3	2004	8b	1.504	0.00617	0.04207	9.919	0.44593	0.56367
3	2005	2b	0.367	0.00093	0.00645	3.876	0.19150	0.24725
3	2005	3	1.553	0.00446	0.03043	5.551	0.25328	0.32351
3	2005	4	1.614	0.00434	0.02959	6.038	0.27160	0.34606
3	2005	5	1.640	0.00429	0.02923	6.038	0.27160	0.34606
3	2005	6	1.642	0.00428	0.02921	6.366	0.28332	0.36082
3	2005	7	1.529	0.00451	0.03076	6.651	0.29636	0.37708
3	2005	8a	1.529	0.00451	0.03076	8.756	0.38982	0.49386
3	2005	8b	1.529	0.00451	0.03076	9.975	0.44823	0.56652
3	2006	2b	0.404	0.00105	0.00732	3.930	0.19453	0.25113
3	2006	3	1.558	0.00468	0.03195	5.508	0.25188	0.32177
3	2006	4	1.635	0.00451	0.03075	5.962	0.26865	0.34235
3	2006	5	1.663	0.00444	0.03031	5.962	0.26865	0.34235
3	2006	6	1.664	0.00444	0.03028	6.219	0.27846	0.35469
3	2006	7	1.522	0.00477	0.03251	6.520	0.29173	0.37125
3	2006	8a	1.522	0.00477	0.03251	8.653	0.38581	0.48885
3	2006	8b	1.522	0.00477	0.03251	9.957	0.44776	0.56593
3	2007	2b	0.347	0.00093	0.00649	2.114	0.00129	0.01098
3	2007	3	1.563	0.00466	0.03181	3.310	0.00173	0.01478
3	2007	4	1.630	0.00449	0.03060	3.552	0.00182	0.01557
3	2007	5	1.656	0.00441	0.03010	3.552	0.00182	0.01557
3	2007	6	1.658	0.00441	0.03007	3.714	0.00187	0.01605
3	2007	7	1.534	0.00474	0.03232	4.126	0.00203	0.01736
3	2007	8a	1.536	0.00474	0.03233	6.065	0.00276	0.02365
3	2007	8b	1.536	0.00474	0.03233	6.947	0.00311	0.02665
3	2008	2b	0.265	0.00103	0.00703	2.045	0.00126	0.01076
3	2008	3	1.054	0.00460	0.03141	2.938	0.00158	0.01354
3	2008	4	1.005	0.00452	0.03082	3.158	0.00166	0.01424
3	2008	5	0.980	0.00447	0.03052	3.158	0.00166	0.01424

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2008	6	0.978	0.00447	0.03049	3.304	0.00171	0.01468
3	2008	7	1.071	0.00463	0.03160	3.432	0.00176	0.01509
3	2008	8a	1.070	0.00463	0.03160	4.930	0.00232	0.01987
3	2008	8b	1.070	0.00463	0.03160	6.643	0.00299	0.02559
3	2009	2b	0.177	0.00115	0.00748	2.017	0.00125	0.01055
3	2009	3	0.715	0.00461	0.03142	3.422	0.00178	0.01517
3	2009	4	0.710	0.00458	0.03127	3.654	0.00186	0.01595
3	2009	5	0.706	0.00457	0.03119	3.654	0.00186	0.01595
3	2009	6	0.706	0.00457	0.03119	3.734	0.00189	0.01619
3	2009	7	0.717	0.00461	0.03146	4.208	0.00206	0.01768
3	2009	8a	0.717	0.00461	0.03146	6.100	0.00278	0.02376
3	2009	8b	0.717	0.00461	0.03146	6.924	0.00310	0.02655
3	2010	2b	0.066	0.00057	0.00320	0.863	0.00087	0.00716
3	2010	3	0.104	0.00168	0.01147	1.787	0.00166	0.01417
3	2010	4	0.104	0.00168	0.01147	1.962	0.00181	0.01546
3	2010	5	0.104	0.00168	0.01147	1.962	0.00181	0.01546
3	2010	6	0.104	0.00168	0.01147	2.043	0.00189	0.01614
3	2010	7	0.104	0.00168	0.01147	2.378	0.00170	0.01453
3	2010	8a	0.104	0.00168	0.01147	3.806	0.00111	0.00950
3	2010	8b	0.104	0.00168	0.01147	4.459	0.00078	0.00671
3	2011	2b	0.068	0.00070	0.00367	0.962	0.00087	0.00716
3	2011	3	0.112	0.00164	0.01121	1.542	0.00148	0.01261
3	2011	4	0.128	0.00158	0.01075	1.649	0.00159	0.01361
3	2011	5	0.136	0.00154	0.01052	1.649	0.00159	0.01361
3	2011	6	0.136	0.00154	0.01051	1.715	0.00163	0.01397
3	2011	7	0.107	0.00167	0.01137	1.882	0.00154	0.01316
3	2011	8a	0.107	0.00167	0.01137	2.967	0.00113	0.00969
3	2011	8b	0.107	0.00167	0.01137	3.728	0.00079	0.00678
3	2012	2b	0.070	0.00076	0.00396	0.904	0.00090	0.00726
3	2012	3	0.113	0.00162	0.01108	1.540	0.00154	0.01314
3	2012	4	0.120	0.00160	0.01091	1.633	0.00164	0.01399
3	2012	5	0.123	0.00159	0.01081	1.633	0.00164	0.01399
3	2012	6	0.123	0.00158	0.01080	1.675	0.00164	0.01405

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2012	7	0.111	0.00163	0.01113	1.914	0.00153	0.01309
3	2012	8a	0.111	0.00163	0.01113	3.046	0.00107	0.00918
3	2012	8b	0.111	0.00163	0.01113	3.638	0.00078	0.00671
3	2013	2b	0.067	0.00077	0.00338	1.085	0.00091	0.00717
3	2013	3	0.120	0.00149	0.01014	1.635	0.00156	0.01323
3	2013	4	0.131	0.00144	0.00986	1.718	0.00165	0.01415
3	2013	5	0.136	0.00142	0.00972	1.718	0.00165	0.01415
3	2013	6	0.137	0.00142	0.00971	1.754	0.00167	0.01425
3	2013	7	0.116	0.00150	0.01023	1.936	0.00151	0.01290
3	2013	8a	0.117	0.00150	0.01023	2.642	0.00097	0.00829
3	2013	8b	0.117	0.00150	0.01023	2.944	0.00070	0.00600
3	2014	2b	0.069	0.00097	0.00351	0.505	0.00048	0.00233
3	2014	3	0.120	0.00144	0.00980	1.088	0.00048	0.00394
3	2014	4	0.124	0.00142	0.00972	1.160	0.00048	0.00413
3	2014	5	0.126	0.00142	0.00967	1.160	0.00048	0.00413
3	2014	6	0.127	0.00142	0.00967	1.189	0.00049	0.00419
3	2014	7	0.118	0.00144	0.00983	1.353	0.00049	0.00416
3	2014	8a	0.118	0.00144	0.00983	2.126	0.00048	0.00413
3	2014	8b	0.118	0.00144	0.00983	2.548	0.00046	0.00393
3	2015	2b	0.059	0.00095	0.00313	0.397	0.00047	0.00215
3	2015	3	0.120	0.00144	0.00981	0.977	0.00048	0.00387
3	2015	4	0.123	0.00143	0.00973	1.065	0.00048	0.00413
3	2015	5	0.126	0.00142	0.00968	1.065	0.00048	0.00413
3	2015	6	0.126	0.00142	0.00968	1.095	0.00049	0.00419
3	2015	7	0.118	0.00144	0.00983	1.277	0.00049	0.00416
3	2015	8a	0.118	0.00144	0.00983	2.114	0.00048	0.00414
3	2015	8b	0.118	0.00144	0.00983	2.562	0.00046	0.00394
3	2016	2b	0.058	0.00102	0.00311	0.381	0.00050	0.00213
3	2016	3	0.119	0.00144	0.00981	0.931	0.00049	0.00383
3	2016	4	0.123	0.00143	0.00974	1.026	0.00048	0.00413
3	2016	5	0.125	0.00142	0.00970	1.026	0.00048	0.00413
3	2016	6	0.125	0.00142	0.00969	1.052	0.00049	0.00418
3	2016	7	0.118	0.00144	0.00983	1.195	0.00049	0.00416

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2016	8a	0.118	0.00144	0.00983	1.971	0.00049	0.00416
3	2016	8b	0.118	0.00144	0.00983	2.468	0.00046	0.00397
3	2017	2b	0.045	0.00099	0.00279	0.363	0.00049	0.00201
3	2017	3	0.119	0.00144	0.00981	0.887	0.00048	0.00380
3	2017	4	0.122	0.00143	0.00975	0.984	0.00048	0.00413
3	2017	5	0.124	0.00142	0.00972	0.984	0.00048	0.00413
3	2017	6	0.124	0.00142	0.00971	1.004	0.00049	0.00418
3	2017	7	0.118	0.00144	0.00983	1.116	0.00049	0.00416
3	2017	8a	0.118	0.00144	0.00983	1.758	0.00049	0.00418
3	2017	8b	0.118	0.00144	0.00983	2.199	0.00047	0.00399
3	2018	2b	0.043	0.00106	0.00288	0.275	0.00051	0.00200
3	2018	3	0.104	0.00143	0.00977	0.835	0.00049	0.00380
3	2018	4	0.116	0.00140	0.00958	0.936	0.00048	0.00413
3	2018	5	0.121	0.00139	0.00949	0.936	0.00048	0.00413
3	2018	6	0.122	0.00139	0.00948	0.985	0.00050	0.00425
3	2018	7	0.101	0.00144	0.00983	1.083	0.00049	0.00419
3	2018	8a	0.101	0.00144	0.00983	1.720	0.00049	0.00419
3	2018	8b	0.101	0.00144	0.00983	2.142	0.00046	0.00397
3	2019	2b	0.032	0.00097	0.00268	0.221	0.00048	0.00187
3	2019	3	0.085	0.00143	0.00973	0.779	0.00047	0.00364
3	2019	4	0.094	0.00140	0.00955	0.889	0.00047	0.00398
3	2019	5	0.099	0.00138	0.00945	0.889	0.00047	0.00398
3	2019	6	0.099	0.00138	0.00944	0.937	0.00048	0.00408
3	2019	7	0.082	0.00144	0.00980	1.040	0.00047	0.00405
3	2019	8a	0.082	0.00144	0.00980	1.701	0.00048	0.00409
3	2019	8b	0.082	0.00144	0.00980	2.136	0.00046	0.00393
3	2020	2b	0.028	0.00086	0.00246	0.187	0.00043	0.00176
3	2020	3	0.081	0.00143	0.00974	0.749	0.00046	0.00359
3	2020	4	0.090	0.00140	0.00956	0.871	0.00047	0.00398
3	2020	5	0.095	0.00139	0.00947	0.871	0.00047	0.00398
3	2020	6	0.095	0.00139	0.00946	0.917	0.00048	0.00408
3	2020	7	0.078	0.00144	0.00979	1.016	0.00047	0.00404
3	2020	8a	0.078	0.00144	0.00979	1.676	0.00048	0.00409

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2020	8b	0.078	0.00144	0.00979	2.130	0.00046	0.00393
3	2021	2b	0.020	0.00046	0.00137	0.128	0.00024	0.00103
3	2021	3	0.076	0.00086	0.00586	0.524	0.00029	0.00231
3	2021	4	0.084	0.00084	0.00576	0.611	0.00030	0.00259
3	2021	5	0.088	0.00084	0.00571	0.611	0.00030	0.00259
3	2021	6	0.089	0.00084	0.00570	0.642	0.00031	0.00265
3	2021	7	0.073	0.00086	0.00589	0.707	0.00031	0.00264
3	2021	8a	0.073	0.00086	0.00589	1.160	0.00032	0.00271
3	2021	8b	0.073	0.00086	0.00589	1.484	0.00031	0.00263
3	2022	2b	0.017	0.00047	0.00138	0.113	0.00024	0.00103
3	2022	3	0.072	0.00086	0.00586	0.514	0.00029	0.00231
3	2022	4	0.080	0.00084	0.00576	0.602	0.00030	0.00259
3	2022	5	0.085	0.00084	0.00571	0.602	0.00030	0.00259
3	2022	6	0.085	0.00084	0.00571	0.633	0.00031	0.00265
3	2022	7	0.069	0.00086	0.00589	0.701	0.00031	0.00264
3	2022	8a	0.069	0.00086	0.00589	1.163	0.00032	0.00270
3	2022	8b	0.069	0.00086	0.00589	1.486	0.00031	0.00263
3	2023	2b	0.014	0.00047	0.00137	0.111	0.00024	0.00102
3	2023	3	0.072	0.00086	0.00586	0.511	0.00029	0.00230
3	2023	4	0.080	0.00085	0.00576	0.602	0.00030	0.00259
3	2023	5	0.085	0.00084	0.00571	0.602	0.00030	0.00259
3	2023	6	0.085	0.00084	0.00571	0.632	0.00031	0.00265
3	2023	7	0.069	0.00086	0.00589	0.698	0.00031	0.00264
3	2023	8a	0.069	0.00086	0.00589	1.155	0.00032	0.00270
3	2023	8b	0.069	0.00086	0.00589	1.484	0.00031	0.00263
3	2024	2b	0.012	0.00047	0.00135	0.109	0.00024	0.00101
3	2024	3	0.072	0.00086	0.00586	0.509	0.00029	0.00229
3	2024	4	0.080	0.00085	0.00577	0.602	0.00030	0.00259
3	2024	5	0.084	0.00084	0.00572	0.602	0.00030	0.00259
3	2024	6	0.085	0.00084	0.00571	0.631	0.00031	0.00265
3	2024	7	0.069	0.00086	0.00589	0.691	0.00031	0.00263
3	2024	8a	0.069	0.00086	0.00589	1.121	0.00031	0.00266
3	2024	8b	0.069	0.00086	0.00589	1.439	0.00030	0.00256

**Table A-3. SmartWay Category - Expedited**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
3	2025	2b	0.012	0.00047	0.00135	0.109	0.00024	0.00101
3	2025	3	0.072	0.00086	0.00586	0.509	0.00029	0.00229
3	2025	4	0.080	0.00085	0.00577	0.602	0.00030	0.00259
3	2025	5	0.084	0.00084	0.00572	0.602	0.00030	0.00259
3	2025	6	0.085	0.00084	0.00571	0.631	0.00031	0.00265
3	2025	7	0.069	0.00086	0.00589	0.691	0.00031	0.00263
3	2025	8a	0.069	0.00086	0.00589	1.121	0.00031	0.00266
3	2025	8b	0.069	0.00086	0.00589	1.439	0.00030	0.00256



**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	Pre-1993	2b	4.191	0.00517	0.03531	7.150	0.40109	0.51414
4	Pre-1993	3	5.491	0.00950	0.06482	8.564	0.46526	0.59386
4	Pre-1993	4	5.648	0.00962	0.06564	12.883	0.60582	0.76663
4	Pre-1993	5	5.656	0.00963	0.06568	14.467	0.64157	0.81161
4	Pre-1993	6	4.991	0.00912	0.06222	14.195	0.63046	0.79761
4	Pre-1993	7	4.991	0.00912	0.06222	15.622	0.63202	0.79942
4	Pre-1993	8a	7.519	0.01234	0.08418	24.276	0.68739	0.86824
4	Pre-1993	8b	7.519	0.01234	0.08418	29.171	0.72227	0.91149
4	1993	2b	4.191	0.00517	0.03531	7.150	0.40109	0.51414
4	1993	3	5.491	0.00950	0.06482	8.564	0.46526	0.59386
4	1993	4	5.648	0.00962	0.06564	12.883	0.60582	0.76663
4	1993	5	5.656	0.00963	0.06568	14.467	0.64157	0.81161
4	1993	6	4.991	0.00912	0.06222	14.195	0.63046	0.79761
4	1993	7	4.991	0.00912	0.06222	15.622	0.63202	0.79942
4	1993	8a	7.519	0.01234	0.08418	24.276	0.68739	0.86824
4	1993	8b	7.519	0.01234	0.08418	29.171	0.72227	0.91149
4	1994	2b	4.191	0.00517	0.03531	7.150	0.40109	0.51414
4	1994	3	5.491	0.00950	0.06482	8.564	0.46526	0.59386
4	1994	4	5.648	0.00962	0.06564	12.883	0.60582	0.76663
4	1994	5	5.656	0.00963	0.06568	14.467	0.64157	0.81161
4	1994	6	4.991	0.00912	0.06222	14.195	0.63046	0.79761
4	1994	7	4.991	0.00912	0.06222	15.622	0.63202	0.79942
4	1994	8a	7.519	0.01234	0.08418	24.276	0.68739	0.86824
4	1994	8b	7.519	0.01234	0.08418	29.171	0.72227	0.91149
4	1995	2b	4.281	0.00701	0.04782	6.845	0.37662	0.48285
4	1995	3	5.612	0.02177	0.14851	12.061	0.55641	0.70575
4	1995	4	5.702	0.02265	0.15452	14.278	0.61251	0.77536
4	1995	5	5.681	0.02245	0.15320	16.846	0.67345	0.85162
4	1995	6	4.995	0.01570	0.10715	17.460	0.65690	0.83066
4	1995	7	4.995	0.01570	0.10715	19.643	0.67155	0.84890
4	1995	8a	7.376	0.03202	0.21844	28.176	0.71851	0.90701
4	1995	8b	7.376	0.03202	0.21844	30.013	0.72925	0.92017
4	1996	2b	3.419	0.00466	0.03181	6.854	0.36056	0.46172

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	1996	3	5.672	0.01561	0.10648	13.858	0.61063	0.77292
4	1996	4	5.718	0.01598	0.10902	15.639	0.63434	0.80237
4	1996	5	5.716	0.01597	0.10897	16.600	0.67568	0.85453
4	1996	6	5.062	0.01061	0.07241	18.712	0.66876	0.84551
4	1996	7	5.062	0.01061	0.07241	19.709	0.67663	0.85532
4	1996	8a	7.376	0.02431	0.16585	28.089	0.71880	0.90742
4	1996	8b	7.376	0.02431	0.16585	30.108	0.73188	0.92346
4	1997	2b	3.243	0.00378	0.02579	5.645	0.30546	0.39448
4	1997	3	5.603	0.01273	0.08683	10.502	0.48553	0.61782
4	1997	4	5.723	0.01330	0.09072	13.420	0.62431	0.78994
4	1997	5	5.697	0.01318	0.08994	15.283	0.68004	0.86003
4	1997	6	5.042	0.01005	0.06857	15.312	0.64659	0.81785
4	1997	7	5.042	0.01005	0.06857	16.978	0.65703	0.83088
4	1997	8a	8.591	0.01031	0.07031	27.024	0.70895	0.89515
4	1997	8b	8.591	0.01031	0.07031	29.747	0.72557	0.91558
4	1998	2b	2.923	0.00331	0.02261	6.080	0.23394	0.30189
4	1998	3	3.721	0.01378	0.09401	12.844	0.32849	0.41846
4	1998	4	3.759	0.01501	0.10239	13.721	0.34090	0.43374
4	1998	5	3.712	0.01360	0.09280	14.503	0.32345	0.41198
4	1998	6	3.609	0.01016	0.06932	14.103	0.33347	0.42449
4	1998	7	3.609	0.01016	0.06932	14.987	0.33461	0.42590
4	1998	8a	4.161	0.02308	0.15744	24.693	0.45791	0.57965
4	1998	8b	4.161	0.02308	0.15744	27.890	0.49473	0.62529
4	1999	2b	2.240	0.00396	0.02704	5.666	0.23454	0.30259
4	1999	3	3.710	0.01329	0.09064	8.702	0.30541	0.38971
4	1999	4	3.865	0.01363	0.09298	9.377	0.32154	0.40948
4	1999	5	3.895	0.01349	0.09203	9.414	0.32220	0.41031
4	1999	6	3.897	0.01349	0.09206	9.502	0.32167	0.40970
4	1999	7	3.563	0.01291	0.08811	10.009	0.33005	0.42018
4	1999	8a	3.586	0.01378	0.09404	18.327	0.45941	0.58161
4	1999	8b	3.586	0.01378	0.09404	20.851	0.49920	0.63089
4	2000	2b	1.994	0.00367	0.02507	5.811	0.23820	0.30710
4	2000	3	3.767	0.01212	0.08272	8.760	0.30775	0.39252

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2000	4	3.959	0.01080	0.07366	9.279	0.31985	0.40739
4	2000	5	4.006	0.01047	0.07145	9.352	0.32112	0.40899
4	2000	6	4.009	0.01045	0.07132	9.499	0.32400	0.41262
4	2000	7	3.622	0.01313	0.08961	10.744	0.34206	0.43518
4	2000	8a	3.622	0.01313	0.08961	16.961	0.43684	0.55346
4	2000	8b	3.622	0.01313	0.08961	20.690	0.49667	0.62775
4	2001	2b	0.662	0.00252	0.01718	5.530	0.23172	0.29911
4	2001	3	1.547	0.00899	0.06131	8.543	0.30150	0.38470
4	2001	4	1.617	0.00887	0.06052	8.979	0.31195	0.39746
4	2001	5	1.641	0.00883	0.06024	9.016	0.31260	0.39829
4	2001	6	1.643	0.00883	0.06022	9.776	0.32557	0.41454
4	2001	7	1.513	0.00904	0.06170	9.631	0.32312	0.41147
4	2001	8a	1.513	0.00904	0.06170	17.843	0.45003	0.56989
4	2001	8b	1.513	0.00904	0.06170	20.527	0.49357	0.62389
4	2002	2b	0.635	0.00230	0.01570	5.602	0.23342	0.30120
4	2002	3	1.577	0.00716	0.04884	8.355	0.29684	0.37899
4	2002	4	1.666	0.00645	0.04401	8.969	0.31132	0.39667
4	2002	5	1.691	0.00626	0.04268	8.969	0.31132	0.39667
4	2002	6	1.692	0.00624	0.04259	9.309	0.31884	0.40614
4	2002	7	1.520	0.00761	0.05194	9.886	0.32650	0.41568
4	2002	8a	1.520	0.00761	0.05194	15.455	0.41218	0.52281
4	2002	8b	1.520	0.00761	0.05194	20.200	0.48800	0.61697
4	2003	2b	0.550	0.00229	0.01561	3.997	0.19732	0.25467
4	2003	3	1.557	0.00752	0.05128	5.623	0.25753	0.32878
4	2003	4	1.634	0.00732	0.04992	5.995	0.27158	0.34602
4	2003	5	1.657	0.00726	0.04953	5.995	0.27158	0.34602
4	2003	6	1.658	0.00726	0.04950	6.404	0.28237	0.35963
4	2003	7	1.510	0.00764	0.05210	6.568	0.29179	0.37136
4	2003	8a	1.510	0.00764	0.05210	8.550	0.38112	0.48308
4	2003	8b	1.510	0.00764	0.05210	9.916	0.44552	0.56316
4	2004	2b	0.443	0.00144	0.01001	3.974	0.19599	0.25293
4	2004	3	1.573	0.00601	0.04098	5.672	0.25790	0.32925
4	2004	4	1.677	0.00576	0.03928	6.064	0.27250	0.34720

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2004	5	1.705	0.00569	0.03882	6.064	0.27250	0.34720
4	2004	6	1.707	0.00569	0.03879	6.460	0.28524	0.36324
4	2004	7	1.505	0.00617	0.04208	6.614	0.29347	0.37349
4	2004	8a	1.505	0.00617	0.04208	8.527	0.37947	0.48100
4	2004	8b	1.505	0.00617	0.04208	9.920	0.44604	0.56380
4	2005	2b	0.367	0.00093	0.00645	3.877	0.19153	0.24728
4	2005	3	1.553	0.00446	0.03044	5.551	0.25327	0.32350
4	2005	4	1.615	0.00434	0.02960	6.038	0.27159	0.34605
4	2005	5	1.641	0.00429	0.02924	6.038	0.27159	0.34605
4	2005	6	1.643	0.00428	0.02921	6.366	0.28332	0.36081
4	2005	7	1.529	0.00451	0.03077	6.651	0.29636	0.37708
4	2005	8a	1.529	0.00451	0.03077	8.757	0.38987	0.49393
4	2005	8b	1.529	0.00451	0.03077	9.976	0.44833	0.56665
4	2006	2b	0.404	0.00105	0.00732	3.932	0.19455	0.25117
4	2006	3	1.559	0.00469	0.03196	5.508	0.25187	0.32176
4	2006	4	1.635	0.00451	0.03076	5.962	0.26863	0.34233
4	2006	5	1.663	0.00445	0.03032	5.962	0.26863	0.34233
4	2006	6	1.665	0.00444	0.03029	6.219	0.27845	0.35468
4	2006	7	1.523	0.00477	0.03251	6.520	0.29173	0.37125
4	2006	8a	1.523	0.00477	0.03251	8.654	0.38586	0.48892
4	2006	8b	1.523	0.00477	0.03251	9.958	0.44786	0.56606
4	2007	2b	0.347	0.00093	0.00649	2.114	0.00129	0.01098
4	2007	3	1.563	0.00466	0.03182	3.310	0.00173	0.01478
4	2007	4	1.631	0.00449	0.03061	3.552	0.00182	0.01557
4	2007	5	1.657	0.00441	0.03011	3.552	0.00182	0.01557
4	2007	6	1.659	0.00441	0.03008	3.714	0.00187	0.01605
4	2007	7	1.535	0.00474	0.03233	4.125	0.00203	0.01736
4	2007	8a	1.536	0.00474	0.03233	6.065	0.00276	0.02365
4	2007	8b	1.536	0.00474	0.03233	6.947	0.00311	0.02666
4	2008	2b	0.265	0.00103	0.00703	2.046	0.00126	0.01076
4	2008	3	1.055	0.00461	0.03141	2.938	0.00158	0.01354
4	2008	4	1.006	0.00452	0.03083	3.158	0.00166	0.01424
4	2008	5	0.980	0.00448	0.03053	3.158	0.00166	0.01424

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2008	6	0.979	0.00447	0.03050	3.303	0.00171	0.01468
4	2008	7	1.071	0.00463	0.03161	3.432	0.00176	0.01509
4	2008	8a	1.071	0.00463	0.03161	4.930	0.00232	0.01987
4	2008	8b	1.071	0.00463	0.03161	6.643	0.00299	0.02559
4	2009	2b	0.177	0.00115	0.00748	2.017	0.00125	0.01055
4	2009	3	0.715	0.00461	0.03143	3.422	0.00178	0.01517
4	2009	4	0.710	0.00459	0.03128	3.653	0.00186	0.01595
4	2009	5	0.707	0.00457	0.03120	3.653	0.00186	0.01595
4	2009	6	0.706	0.00457	0.03119	3.734	0.00189	0.01619
4	2009	7	0.717	0.00461	0.03147	4.208	0.00206	0.01768
4	2009	8a	0.717	0.00461	0.03147	6.100	0.00278	0.02376
4	2009	8b	0.717	0.00461	0.03147	6.925	0.00310	0.02655
4	2010	2b	0.066	0.00057	0.00320	0.863	0.00087	0.00716
4	2010	3	0.104	0.00168	0.01147	1.787	0.00166	0.01416
4	2010	4	0.104	0.00168	0.01147	1.961	0.00181	0.01545
4	2010	5	0.104	0.00168	0.01147	1.961	0.00181	0.01545
4	2010	6	0.104	0.00168	0.01147	2.042	0.00188	0.01612
4	2010	7	0.104	0.00168	0.01147	2.377	0.00170	0.01452
4	2010	8a	0.104	0.00168	0.01147	3.804	0.00111	0.00949
4	2010	8b	0.104	0.00168	0.01147	4.457	0.00078	0.00671
4	2011	2b	0.068	0.00070	0.00367	0.962	0.00087	0.00717
4	2011	3	0.112	0.00164	0.01121	1.541	0.00148	0.01260
4	2011	4	0.128	0.00158	0.01075	1.648	0.00159	0.01360
4	2011	5	0.136	0.00154	0.01052	1.648	0.00159	0.01360
4	2011	6	0.136	0.00154	0.01051	1.715	0.00163	0.01396
4	2011	7	0.107	0.00167	0.01138	1.881	0.00154	0.01315
4	2011	8a	0.107	0.00167	0.01138	2.966	0.00113	0.00969
4	2011	8b	0.107	0.00167	0.01138	3.726	0.00079	0.00678
4	2012	2b	0.070	0.00076	0.00396	0.904	0.00090	0.00726
4	2012	3	0.113	0.00162	0.01108	1.540	0.00154	0.01313
4	2012	4	0.120	0.00160	0.01091	1.632	0.00163	0.01398
4	2012	5	0.123	0.00159	0.01081	1.632	0.00163	0.01398
4	2012	6	0.123	0.00158	0.01080	1.674	0.00164	0.01404

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2012	7	0.111	0.00163	0.01113	1.914	0.00153	0.01308
4	2012	8a	0.111	0.00163	0.01113	3.045	0.00107	0.00918
4	2012	8b	0.111	0.00163	0.01113	3.636	0.00078	0.00671
4	2013	2b	0.067	0.00077	0.00338	1.086	0.00091	0.00717
4	2013	3	0.120	0.00149	0.01014	1.635	0.00156	0.01323
4	2013	4	0.131	0.00144	0.00986	1.717	0.00165	0.01414
4	2013	5	0.136	0.00142	0.00972	1.717	0.00165	0.01414
4	2013	6	0.137	0.00142	0.00971	1.753	0.00166	0.01424
4	2013	7	0.116	0.00150	0.01024	1.935	0.00151	0.01289
4	2013	8a	0.117	0.00150	0.01023	2.640	0.00097	0.00828
4	2013	8b	0.117	0.00150	0.01023	2.943	0.00070	0.00600
4	2014	2b	0.069	0.00097	0.00351	0.505	0.00048	0.00233
4	2014	3	0.120	0.00144	0.00980	1.088	0.00048	0.00393
4	2014	4	0.124	0.00142	0.00972	1.159	0.00048	0.00413
4	2014	5	0.126	0.00142	0.00967	1.159	0.00048	0.00413
4	2014	6	0.127	0.00142	0.00967	1.188	0.00049	0.00419
4	2014	7	0.118	0.00144	0.00983	1.352	0.00049	0.00416
4	2014	8a	0.118	0.00144	0.00983	2.125	0.00048	0.00413
4	2014	8b	0.118	0.00144	0.00983	2.546	0.00046	0.00393
4	2015	2b	0.059	0.00095	0.00313	0.397	0.00047	0.00215
4	2015	3	0.120	0.00144	0.00981	0.976	0.00048	0.00387
4	2015	4	0.123	0.00143	0.00973	1.064	0.00048	0.00413
4	2015	5	0.126	0.00142	0.00968	1.064	0.00048	0.00413
4	2015	6	0.126	0.00142	0.00968	1.094	0.00049	0.00419
4	2015	7	0.118	0.00144	0.00983	1.276	0.00049	0.00416
4	2015	8a	0.118	0.00144	0.00983	2.113	0.00048	0.00414
4	2015	8b	0.118	0.00144	0.00983	2.560	0.00046	0.00394
4	2016	2b	0.058	0.00102	0.00311	0.381	0.00050	0.00213
4	2016	3	0.119	0.00144	0.00981	0.930	0.00049	0.00383
4	2016	4	0.123	0.00143	0.00974	1.026	0.00048	0.00413
4	2016	5	0.125	0.00142	0.00970	1.026	0.00048	0.00413
4	2016	6	0.125	0.00142	0.00970	1.051	0.00049	0.00418
4	2016	7	0.118	0.00144	0.00983	1.194	0.00049	0.00416

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2016	8a	0.118	0.00144	0.00983	1.969	0.00049	0.00416
4	2016	8b	0.118	0.00144	0.00983	2.466	0.00046	0.00397
4	2017	2b	0.045	0.00099	0.00279	0.363	0.00049	0.00201
4	2017	3	0.119	0.00144	0.00981	0.887	0.00048	0.00380
4	2017	4	0.122	0.00143	0.00975	0.983	0.00048	0.00413
4	2017	5	0.124	0.00142	0.00972	0.983	0.00048	0.00413
4	2017	6	0.124	0.00142	0.00971	1.003	0.00049	0.00418
4	2017	7	0.118	0.00144	0.00983	1.115	0.00049	0.00416
4	2017	8a	0.118	0.00144	0.00983	1.756	0.00049	0.00418
4	2017	8b	0.118	0.00144	0.00983	2.198	0.00047	0.00399
4	2018	2b	0.043	0.00106	0.00288	0.275	0.00051	0.00200
4	2018	3	0.104	0.00143	0.00977	0.834	0.00049	0.00380
4	2018	4	0.116	0.00140	0.00958	0.935	0.00048	0.00413
4	2018	5	0.121	0.00139	0.00949	0.935	0.00048	0.00413
4	2018	6	0.122	0.00139	0.00948	0.984	0.00050	0.00425
4	2018	7	0.101	0.00144	0.00983	1.082	0.00049	0.00419
4	2018	8a	0.101	0.00144	0.00983	1.719	0.00049	0.00418
4	2018	8b	0.101	0.00144	0.00983	2.141	0.00046	0.00397
4	2019	2b	0.032	0.00097	0.00268	0.220	0.00048	0.00187
4	2019	3	0.085	0.00143	0.00973	0.778	0.00047	0.00364
4	2019	4	0.094	0.00140	0.00955	0.889	0.00047	0.00398
4	2019	5	0.099	0.00138	0.00945	0.889	0.00047	0.00398
4	2019	6	0.099	0.00138	0.00944	0.936	0.00048	0.00408
4	2019	7	0.082	0.00144	0.00980	1.039	0.00047	0.00404
4	2019	8a	0.082	0.00144	0.00980	1.700	0.00048	0.00409
4	2019	8b	0.082	0.00144	0.00980	2.135	0.00046	0.00393
4	2020	2b	0.028	0.00086	0.00246	0.187	0.00043	0.00176
4	2020	3	0.081	0.00143	0.00974	0.748	0.00046	0.00358
4	2020	4	0.090	0.00140	0.00956	0.871	0.00047	0.00398
4	2020	5	0.095	0.00139	0.00947	0.871	0.00047	0.00398
4	2020	6	0.095	0.00139	0.00946	0.916	0.00048	0.00408
4	2020	7	0.078	0.00144	0.00980	1.016	0.00047	0.00404
4	2020	8a	0.078	0.00144	0.00980	1.675	0.00048	0.00409

**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2020	8b	0.078	0.00144	0.00980	2.129	0.00046	0.00393
4	2021	2b	0.020	0.00046	0.00137	0.127	0.00024	0.00103
4	2021	3	0.076	0.00086	0.00586	0.523	0.00029	0.00231
4	2021	4	0.084	0.00084	0.00576	0.611	0.00030	0.00259
4	2021	5	0.088	0.00084	0.00571	0.611	0.00030	0.00259
4	2021	6	0.089	0.00084	0.00570	0.641	0.00031	0.00265
4	2021	7	0.073	0.00086	0.00589	0.707	0.00031	0.00264
4	2021	8a	0.073	0.00086	0.00589	1.159	0.00032	0.00270
4	2021	8b	0.073	0.00086	0.00589	1.483	0.00031	0.00263
4	2022	2b	0.017	0.00047	0.00138	0.113	0.00024	0.00103
4	2022	3	0.072	0.00086	0.00586	0.513	0.00029	0.00231
4	2022	4	0.080	0.00084	0.00576	0.601	0.00030	0.00259
4	2022	5	0.085	0.00084	0.00571	0.601	0.00030	0.00259
4	2022	6	0.085	0.00084	0.00571	0.632	0.00031	0.00265
4	2022	7	0.069	0.00086	0.00589	0.701	0.00031	0.00264
4	2022	8a	0.069	0.00086	0.00589	1.162	0.00032	0.00270
4	2022	8b	0.069	0.00086	0.00589	1.484	0.00031	0.00262
4	2023	2b	0.014	0.00047	0.00137	0.111	0.00024	0.00102
4	2023	3	0.072	0.00086	0.00586	0.510	0.00029	0.00230
4	2023	4	0.080	0.00085	0.00576	0.601	0.00030	0.00259
4	2023	5	0.085	0.00084	0.00571	0.601	0.00030	0.00259
4	2023	6	0.085	0.00084	0.00571	0.632	0.00031	0.00265
4	2023	7	0.069	0.00086	0.00589	0.698	0.00031	0.00264
4	2023	8a	0.069	0.00086	0.00589	1.154	0.00032	0.00270
4	2023	8b	0.069	0.00086	0.00589	1.483	0.00031	0.00262
4	2024	2b	0.012	0.00047	0.00135	0.109	0.00024	0.00101
4	2024	3	0.072	0.00086	0.00586	0.508	0.00029	0.00229
4	2024	4	0.080	0.00085	0.00577	0.601	0.00030	0.00259
4	2024	5	0.084	0.00084	0.00572	0.601	0.00030	0.00259
4	2024	6	0.085	0.00084	0.00571	0.630	0.00031	0.00265
4	2024	7	0.069	0.00086	0.00589	0.690	0.00031	0.00263
4	2024	8a	0.069	0.00086	0.00589	1.120	0.00031	0.00266
4	2024	8b	0.069	0.00086	0.00589	1.438	0.00030	0.00256



**Table A-4. SmartWay Category - Flatbed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
4	2025	2b	0.012	0.00047	0.00135	0.109	0.00024	0.00101
4	2025	3	0.072	0.00086	0.00586	0.508	0.00029	0.00229
4	2025	4	0.080	0.00085	0.00577	0.601	0.00030	0.00259
4	2025	5	0.084	0.00084	0.00572	0.601	0.00030	0.00259
4	2025	6	0.085	0.00084	0.00571	0.630	0.00031	0.00265
4	2025	7	0.069	0.00086	0.00589	0.690	0.00031	0.00263
4	2025	8a	0.069	0.00086	0.00589	1.120	0.00031	0.00266
4	2025	8b	0.069	0.00086	0.00589	1.438	0.00030	0.00256

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	Pre-1993	2b	4.025	0.00429	0.02925	7.608	0.50032	0.64242
5	Pre-1993	3	5.427	0.00758	0.05172	9.245	0.57712	0.73829
5	Pre-1993	4	5.575	0.00766	0.05229	14.206	0.74337	0.94268
5	Pre-1993	5	5.583	0.00767	0.05231	15.821	0.78933	1.00054
5	Pre-1993	6	4.957	0.00732	0.04993	15.497	0.77268	0.97952
5	Pre-1993	7	4.957	0.00732	0.04993	16.654	0.76238	0.96626
5	Pre-1993	8a	7.537	0.01015	0.06927	24.218	0.76376	0.96621
5	Pre-1993	8b	7.537	0.01015	0.06927	28.635	0.75836	0.95799
5	1993	2b	4.025	0.00429	0.02925	7.608	0.50032	0.64242
5	1993	3	5.427	0.00758	0.05172	9.245	0.57712	0.73829
5	1993	4	5.575	0.00766	0.05229	14.206	0.74337	0.94268
5	1993	5	5.583	0.00767	0.05231	15.821	0.78933	1.00054
5	1993	6	4.957	0.00732	0.04993	15.497	0.77268	0.97952
5	1993	7	4.957	0.00732	0.04993	16.654	0.76238	0.96626
5	1993	8a	7.537	0.01015	0.06927	24.218	0.76376	0.96621
5	1993	8b	7.537	0.01015	0.06927	28.635	0.75836	0.95799
5	1994	2b	4.025	0.00429	0.02925	7.608	0.50032	0.64242
5	1994	3	5.427	0.00758	0.05172	9.245	0.57712	0.73829
5	1994	4	5.575	0.00766	0.05229	14.206	0.74337	0.94268
5	1994	5	5.583	0.00767	0.05231	15.821	0.78933	1.00054
5	1994	6	4.957	0.00732	0.04993	15.497	0.77268	0.97952
5	1994	7	4.957	0.00732	0.04993	16.654	0.76238	0.96626
5	1994	8a	7.537	0.01015	0.06927	24.218	0.76376	0.96621
5	1994	8b	7.537	0.01015	0.06927	28.635	0.75836	0.95799
5	1995	2b	4.143	0.00677	0.04620	7.237	0.47059	0.60449
5	1995	3	5.542	0.02202	0.15022	13.221	0.68705	0.87318
5	1995	4	5.627	0.02294	0.15653	15.509	0.74760	0.94831
5	1995	5	5.607	0.02274	0.15517	18.164	0.82341	1.04323
5	1995	6	4.970	0.01563	0.10662	18.511	0.78662	0.99656
5	1995	7	4.970	0.01563	0.10662	20.403	0.78928	0.99951
5	1995	8a	7.348	0.03090	0.21081	27.782	0.76540	0.96728
5	1995	8b	7.348	0.03090	0.21081	29.426	0.75799	0.95725
5	1996	2b	3.297	0.00479	0.03267	7.305	0.44947	0.57695

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	1996	3	5.600	0.01721	0.11745	15.254	0.74763	0.94825
5	1996	4	5.642	0.01764	0.12033	16.920	0.76639	0.97127
5	1996	5	5.640	0.01763	0.12031	17.903	0.82645	1.04721
5	1996	6	5.044	0.01150	0.07844	19.625	0.79604	1.00829
5	1996	7	5.044	0.01150	0.07844	20.508	0.79576	1.00770
5	1996	8a	7.348	0.02413	0.16465	27.725	0.76741	0.96989
5	1996	8b	7.348	0.02413	0.16465	29.526	0.76063	0.96055
5	1997	2b	2.988	0.00332	0.02265	5.877	0.38196	0.49381
5	1997	3	5.535	0.01121	0.07647	11.337	0.59777	0.76205
5	1997	4	5.646	0.01171	0.07989	14.817	0.76864	0.97460
5	1997	5	5.622	0.01161	0.07920	16.611	0.83672	1.06027
5	1997	6	5.017	0.00886	0.06044	16.513	0.78545	0.99549
5	1997	7	5.017	0.00886	0.06044	17.955	0.78763	0.99799
5	1997	8a	8.595	0.00881	0.06014	26.740	0.76511	0.96731
5	1997	8b	8.595	0.00881	0.06014	29.198	0.75528	0.95394
5	1998	2b	2.650	0.00305	0.02084	6.499	0.24520	0.31800
5	1998	3	3.486	0.01306	0.08910	13.900	0.35899	0.45875
5	1998	4	3.513	0.01426	0.09732	14.843	0.37357	0.47675
5	1998	5	3.478	0.01290	0.08802	15.504	0.34974	0.44697
5	1998	6	3.407	0.00952	0.06494	15.165	0.36324	0.46386
5	1998	7	3.407	0.00952	0.06494	15.919	0.36176	0.46194
5	1998	8a	3.894	0.02172	0.14819	24.226	0.48113	0.61014
5	1998	8b	3.894	0.02172	0.14819	27.016	0.51731	0.65463
5	1999	2b	2.045	0.00384	0.02622	6.066	0.24559	0.31848
5	1999	3	3.503	0.01369	0.09343	9.556	0.33349	0.42708
5	1999	4	3.676	0.01399	0.09548	10.324	0.35311	0.45128
5	1999	5	3.711	0.01388	0.09468	10.355	0.35371	0.45203
5	1999	6	3.713	0.01388	0.09470	10.342	0.34969	0.44694
5	1999	7	3.339	0.01337	0.09122	10.810	0.35836	0.45776
5	1999	8a	3.361	0.01411	0.09630	18.250	0.48194	0.61126
5	1999	8b	3.361	0.01411	0.09630	20.594	0.52179	0.66024
5	2000	2b	1.820	0.00326	0.02224	6.232	0.24999	0.32392
5	2000	3	3.582	0.01101	0.07514	9.609	0.33538	0.42930

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2000	4	3.800	0.00979	0.06681	10.180	0.34966	0.44692
5	2000	5	3.854	0.00949	0.06478	10.242	0.35082	0.44838
5	2000	6	3.857	0.00948	0.06466	10.336	0.35174	0.44947
5	2000	7	3.416	0.01194	0.08146	11.440	0.36901	0.47098
5	2000	8a	3.416	0.01194	0.08146	16.979	0.45910	0.58289
5	2000	8b	3.416	0.01194	0.08146	20.436	0.51896	0.65675
5	2001	2b	0.612	0.00221	0.01510	5.908	0.24195	0.31397
5	2001	3	1.458	0.00712	0.04859	9.378	0.32858	0.42085
5	2001	4	1.538	0.00702	0.04788	9.882	0.34147	0.43669
5	2001	5	1.566	0.00698	0.04764	9.913	0.34206	0.43745
5	2001	6	1.568	0.00698	0.04762	10.571	0.35327	0.45139
5	2001	7	1.419	0.00717	0.04893	10.449	0.35133	0.44896
5	2001	8a	1.419	0.00717	0.04893	17.771	0.47172	0.59854
5	2001	8b	1.419	0.00717	0.04893	20.277	0.51569	0.65270
5	2002	2b	0.587	0.00223	0.01523	5.993	0.24409	0.31662
5	2002	3	1.494	0.00710	0.04844	9.172	0.32324	0.41428
5	2002	4	1.596	0.00642	0.04380	9.877	0.34108	0.43623
5	2002	5	1.624	0.00623	0.04251	9.877	0.34108	0.43623
5	2002	6	1.626	0.00622	0.04243	10.165	0.34713	0.44375
5	2002	7	1.428	0.00754	0.05142	10.673	0.35440	0.45279
5	2002	8a	1.428	0.00754	0.05142	15.595	0.43488	0.55301
5	2002	8b	1.428	0.00754	0.05142	19.969	0.51001	0.64569
5	2003	2b	0.509	0.00214	0.01463	4.026	0.20639	0.26777
5	2003	3	1.468	0.00727	0.04957	5.964	0.28082	0.35989
5	2003	4	1.557	0.00705	0.04807	6.403	0.29794	0.38104
5	2003	5	1.582	0.00698	0.04764	6.403	0.29794	0.38104
5	2003	6	1.584	0.00698	0.04762	6.890	0.30780	0.39341
5	2003	7	1.415	0.00740	0.05047	6.999	0.31642	0.40411
5	2003	8a	1.415	0.00740	0.05047	8.827	0.40082	0.50924
5	2003	8b	1.415	0.00740	0.05047	10.218	0.46548	0.58915
5	2004	2b	0.411	0.00139	0.00961	4.005	0.20497	0.26591
5	2004	3	1.489	0.00589	0.04015	6.034	0.28074	0.35977
5	2004	4	1.609	0.00558	0.03807	6.497	0.29832	0.38151

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2004	5	1.642	0.00550	0.03750	6.497	0.29832	0.38151
5	2004	6	1.644	0.00549	0.03747	6.968	0.31079	0.39715
5	2004	7	1.410	0.00608	0.04150	7.069	0.31803	0.40614
5	2004	8a	1.410	0.00608	0.04150	8.817	0.39898	0.50694
5	2004	8b	1.410	0.00608	0.04150	10.224	0.46598	0.58978
5	2005	2b	0.341	0.00088	0.00614	3.900	0.20008	0.25969
5	2005	3	1.471	0.00437	0.02980	5.890	0.27537	0.35308
5	2005	4	1.541	0.00422	0.02880	6.461	0.29734	0.38029
5	2005	5	1.571	0.00416	0.02837	6.461	0.29734	0.38029
5	2005	6	1.573	0.00416	0.02834	6.851	0.30912	0.39505
5	2005	7	1.443	0.00443	0.03020	7.076	0.32067	0.40941
5	2005	8a	1.443	0.00443	0.03020	9.038	0.40916	0.51950
5	2005	8b	1.443	0.00443	0.03020	10.281	0.46831	0.59265
5	2006	2b	0.376	0.00101	0.00700	3.953	0.20324	0.26378
5	2006	3	1.473	0.00461	0.03148	5.825	0.27401	0.35142
5	2006	4	1.561	0.00440	0.03003	6.358	0.29444	0.37665
5	2006	5	1.594	0.00433	0.02950	6.358	0.29444	0.37665
5	2006	6	1.596	0.00432	0.02947	6.664	0.30440	0.38914
5	2006	7	1.432	0.00471	0.03215	6.912	0.31618	0.40378
5	2006	8a	1.432	0.00471	0.03215	8.921	0.40520	0.51459
5	2006	8b	1.432	0.00471	0.03215	10.260	0.46785	0.59209
5	2007	2b	0.323	0.00089	0.00619	2.270	0.00134	0.01147
5	2007	3	1.479	0.00459	0.03132	3.669	0.00189	0.01613
5	2007	4	1.557	0.00438	0.02989	3.949	0.00200	0.01708
5	2007	5	1.587	0.00430	0.02932	3.949	0.00200	0.01708
5	2007	6	1.589	0.00429	0.02928	4.113	0.00205	0.01756
5	2007	7	1.447	0.00468	0.03193	4.486	0.00219	0.01875
5	2007	8a	1.448	0.00468	0.03193	6.350	0.00289	0.02478
5	2007	8b	1.448	0.00468	0.03193	7.267	0.00325	0.02786
5	2008	2b	0.246	0.00099	0.00671	2.193	0.00132	0.01122
5	2008	3	0.989	0.00453	0.03090	3.264	0.00173	0.01477
5	2008	4	0.945	0.00443	0.03021	3.527	0.00183	0.01565
5	2008	5	0.923	0.00438	0.02986	3.527	0.00183	0.01565

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2008	6	0.922	0.00437	0.02983	3.678	0.00188	0.01610
5	2008	7	1.003	0.00456	0.03113	3.790	0.00192	0.01646
5	2008	8a	1.003	0.00456	0.03113	5.205	0.00245	0.02098
5	2008	8b	1.003	0.00456	0.03113	6.946	0.00312	0.02675
5	2009	2b	0.164	0.00110	0.00715	2.171	0.00131	0.01103
5	2009	3	0.684	0.00453	0.03092	3.797	0.00194	0.01660
5	2009	4	0.680	0.00450	0.03072	4.062	0.00205	0.01752
5	2009	5	0.677	0.00449	0.03061	4.062	0.00205	0.01752
5	2009	6	0.677	0.00449	0.03060	4.141	0.00207	0.01776
5	2009	7	0.686	0.00454	0.03098	4.575	0.00223	0.01912
5	2009	8a	0.686	0.00454	0.03098	6.393	0.00291	0.02492
5	2009	8b	0.686	0.00454	0.03098	7.247	0.00324	0.02776
5	2010	2b	0.062	0.00054	0.00307	0.985	0.00091	0.00753
5	2010	3	0.105	0.00176	0.01199	2.202	0.00205	0.01745
5	2010	4	0.105	0.00176	0.01199	2.427	0.00225	0.01926
5	2010	5	0.105	0.00176	0.01199	2.427	0.00225	0.01926
5	2010	6	0.105	0.00176	0.01199	2.524	0.00237	0.02028
5	2010	7	0.105	0.00176	0.01199	2.865	0.00215	0.01839
5	2010	8a	0.105	0.00176	0.01199	4.487	0.00141	0.01208
5	2010	8b	0.105	0.00176	0.01199	5.327	0.00095	0.00811
5	2011	2b	0.065	0.00067	0.00356	1.077	0.00090	0.00743
5	2011	3	0.113	0.00173	0.01177	1.876	0.00176	0.01497
5	2011	4	0.129	0.00167	0.01136	2.022	0.00191	0.01634
5	2011	5	0.136	0.00164	0.01116	2.022	0.00191	0.01634
5	2011	6	0.137	0.00163	0.01115	2.110	0.00198	0.01692
5	2011	7	0.108	0.00175	0.01191	2.282	0.00187	0.01598
5	2011	8a	0.108	0.00175	0.01191	3.552	0.00140	0.01201
5	2011	8b	0.108	0.00175	0.01191	4.575	0.00095	0.00816
5	2012	2b	0.067	0.00074	0.00388	1.026	0.00094	0.00764
5	2012	3	0.115	0.00171	0.01164	1.892	0.00185	0.01576
5	2012	4	0.121	0.00168	0.01149	2.017	0.00198	0.01693
5	2012	5	0.124	0.00167	0.01141	2.017	0.00198	0.01693
5	2012	6	0.124	0.00167	0.01140	2.068	0.00199	0.01705

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2012	7	0.113	0.00171	0.01169	2.325	0.00187	0.01601
5	2012	8a	0.113	0.00171	0.01169	3.680	0.00133	0.01142
5	2012	8b	0.113	0.00171	0.01169	4.491	0.00094	0.00807
5	2013	2b	0.063	0.00073	0.00326	1.203	0.00095	0.00758
5	2013	3	0.121	0.00156	0.01068	1.989	0.00191	0.01625
5	2013	4	0.132	0.00153	0.01043	2.106	0.00205	0.01754
5	2013	5	0.137	0.00151	0.01030	2.106	0.00205	0.01754
5	2013	6	0.137	0.00151	0.01029	2.154	0.00207	0.01775
5	2013	7	0.118	0.00158	0.01077	2.354	0.00189	0.01621
5	2013	8a	0.118	0.00158	0.01076	3.243	0.00123	0.01049
5	2013	8b	0.118	0.00158	0.01076	3.680	0.00085	0.00726
5	2014	2b	0.065	0.00092	0.00340	0.605	0.00047	0.00234
5	2014	3	0.121	0.00152	0.01034	1.456	0.00055	0.00449
5	2014	4	0.125	0.00150	0.01027	1.558	0.00056	0.00475
5	2014	5	0.128	0.00150	0.01023	1.558	0.00056	0.00475
5	2014	6	0.128	0.00150	0.01023	1.596	0.00056	0.00483
5	2014	7	0.120	0.00152	0.01037	1.773	0.00056	0.00478
5	2014	8a	0.120	0.00152	0.01037	2.708	0.00055	0.00472
5	2014	8b	0.120	0.00152	0.01037	3.294	0.00052	0.00448
5	2015	2b	0.055	0.00090	0.00303	0.485	0.00046	0.00214
5	2015	3	0.121	0.00152	0.01034	1.337	0.00054	0.00441
5	2015	4	0.125	0.00151	0.01028	1.464	0.00056	0.00475
5	2015	5	0.127	0.00150	0.01024	1.464	0.00056	0.00475
5	2015	6	0.127	0.00150	0.01024	1.503	0.00056	0.00482
5	2015	7	0.120	0.00152	0.01036	1.697	0.00056	0.00478
5	2015	8a	0.120	0.00152	0.01036	2.699	0.00055	0.00473
5	2015	8b	0.120	0.00152	0.01036	3.312	0.00052	0.00449
5	2016	2b	0.055	0.00096	0.00301	0.462	0.00048	0.00211
5	2016	3	0.121	0.00152	0.01035	1.277	0.00055	0.00437
5	2016	4	0.124	0.00151	0.01029	1.416	0.00056	0.00475
5	2016	5	0.126	0.00150	0.01025	1.416	0.00056	0.00475
5	2016	6	0.126	0.00150	0.01025	1.449	0.00056	0.00481
5	2016	7	0.120	0.00152	0.01036	1.602	0.00056	0.00478

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2016	8a	0.120	0.00152	0.01036	2.521	0.00056	0.00475
5	2016	8b	0.120	0.00152	0.01036	3.196	0.00053	0.00452
5	2017	2b	0.042	0.00094	0.00271	0.441	0.00047	0.00198
5	2017	3	0.121	0.00152	0.01035	1.219	0.00054	0.00433
5	2017	4	0.124	0.00151	0.01030	1.358	0.00056	0.00475
5	2017	5	0.125	0.00150	0.01027	1.358	0.00056	0.00475
5	2017	6	0.125	0.00150	0.01026	1.385	0.00056	0.00481
5	2017	7	0.120	0.00152	0.01036	1.505	0.00056	0.00478
5	2017	8a	0.120	0.00152	0.01036	2.273	0.00056	0.00477
5	2017	8b	0.120	0.00152	0.01036	2.879	0.00053	0.00454
5	2018	2b	0.041	0.00100	0.00281	0.341	0.00049	0.00198
5	2018	3	0.105	0.00151	0.01031	1.157	0.00055	0.00433
5	2018	4	0.116	0.00149	0.01015	1.302	0.00056	0.00475
5	2018	5	0.122	0.00148	0.01007	1.302	0.00056	0.00475
5	2018	6	0.122	0.00147	0.01006	1.369	0.00057	0.00490
5	2018	7	0.102	0.00152	0.01036	1.471	0.00056	0.00483
5	2018	8a	0.102	0.00152	0.01036	2.236	0.00056	0.00478
5	2018	8b	0.102	0.00152	0.01036	2.815	0.00053	0.00453
5	2019	2b	0.030	0.00093	0.00264	0.276	0.00046	0.00185
5	2019	3	0.086	0.00150	0.01027	1.085	0.00052	0.00413
5	2019	4	0.095	0.00148	0.01011	1.241	0.00053	0.00457
5	2019	5	0.100	0.00147	0.01002	1.241	0.00053	0.00457
5	2019	6	0.100	0.00147	0.01001	1.306	0.00055	0.00471
5	2019	7	0.083	0.00151	0.01033	1.414	0.00054	0.00465
5	2019	8a	0.083	0.00151	0.01033	2.209	0.00055	0.00467
5	2019	8b	0.083	0.00151	0.01033	2.806	0.00052	0.00448
5	2020	2b	0.027	0.00083	0.00244	0.235	0.00042	0.00174
5	2020	3	0.082	0.00151	0.01028	1.046	0.00051	0.00408
5	2020	4	0.091	0.00148	0.01012	1.218	0.00053	0.00457
5	2020	5	0.096	0.00147	0.01004	1.218	0.00053	0.00457
5	2020	6	0.096	0.00147	0.01003	1.281	0.00055	0.00470
5	2020	7	0.079	0.00151	0.01033	1.385	0.00054	0.00465
5	2020	8a	0.079	0.00151	0.01033	2.176	0.00055	0.00467



**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2020	8b	0.079	0.00151	0.01033	2.798	0.00052	0.00448
5	2021	2b	0.019	0.00045	0.00137	0.161	0.00023	0.00102
5	2021	3	0.077	0.00091	0.00619	0.734	0.00033	0.00264
5	2021	4	0.085	0.00090	0.00610	0.857	0.00035	0.00299
5	2021	5	0.089	0.00089	0.00606	0.857	0.00035	0.00299
5	2021	6	0.090	0.00089	0.00605	0.899	0.00036	0.00307
5	2021	7	0.074	0.00091	0.00621	0.968	0.00036	0.00304
5	2021	8a	0.074	0.00091	0.00621	1.515	0.00036	0.00309
5	2021	8b	0.074	0.00091	0.00621	1.962	0.00035	0.00300
5	2022	2b	0.016	0.00045	0.00138	0.145	0.00023	0.00102
5	2022	3	0.073	0.00091	0.00619	0.722	0.00033	0.00264
5	2022	4	0.081	0.00090	0.00610	0.846	0.00035	0.00299
5	2022	5	0.086	0.00089	0.00606	0.846	0.00035	0.00299
5	2022	6	0.086	0.00089	0.00606	0.888	0.00036	0.00307
5	2022	7	0.070	0.00091	0.00621	0.961	0.00036	0.00304
5	2022	8a	0.070	0.00091	0.00621	1.518	0.00036	0.00309
5	2022	8b	0.070	0.00091	0.00621	1.964	0.00035	0.00300
5	2023	2b	0.014	0.00045	0.00137	0.142	0.00023	0.00101
5	2023	3	0.073	0.00091	0.00619	0.718	0.00033	0.00263
5	2023	4	0.081	0.00090	0.00611	0.846	0.00035	0.00299
5	2023	5	0.086	0.00089	0.00606	0.846	0.00035	0.00299
5	2023	6	0.086	0.00089	0.00606	0.887	0.00036	0.00306
5	2023	7	0.070	0.00091	0.00621	0.957	0.00036	0.00304
5	2023	8a	0.070	0.00091	0.00621	1.508	0.00036	0.00309
5	2023	8b	0.070	0.00091	0.00621	1.961	0.00035	0.00300
5	2024	2b	0.012	0.00045	0.00135	0.139	0.00023	0.00101
5	2024	3	0.073	0.00091	0.00619	0.715	0.00033	0.00262
5	2024	4	0.081	0.00090	0.00611	0.845	0.00035	0.00298
5	2024	5	0.085	0.00089	0.00606	0.845	0.00035	0.00298
5	2024	6	0.086	0.00089	0.00606	0.886	0.00036	0.00306
5	2024	7	0.070	0.00091	0.00621	0.949	0.00035	0.00303
5	2024	8a	0.070	0.00091	0.00621	1.471	0.00036	0.00305
5	2024	8b	0.070	0.00091	0.00621	1.913	0.00034	0.00294

**Table A-5. SmartWay Category – Heavy-Bulk**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
5	2025	2b	0.012	0.00045	0.00135	0.139	0.00023	0.00101
5	2025	3	0.073	0.00091	0.00619	0.715	0.00033	0.00262
5	2025	4	0.081	0.00090	0.00611	0.845	0.00035	0.00298
5	2025	5	0.085	0.00089	0.00606	0.845	0.00035	0.00298
5	2025	6	0.086	0.00089	0.00606	0.886	0.00036	0.00306
5	2025	7	0.070	0.00091	0.00621	0.949	0.00035	0.00303
5	2025	8a	0.070	0.00091	0.00621	1.471	0.00036	0.00305
5	2025	8b	0.070	0.00091	0.00621	1.913	0.00034	0.00294

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	Pre-1993	2b	4.336	0.00485	0.03309	7.704	0.46662	0.59908
6	Pre-1993	3	5.643	0.00889	0.06067	9.243	0.53657	0.68631
6	Pre-1993	4	5.802	0.00902	0.06154	14.047	0.68820	0.87238
6	Pre-1993	5	5.811	0.00902	0.06157	15.782	0.73083	0.92604
6	Pre-1993	6	5.138	0.00849	0.05792	15.437	0.71690	0.90847
6	Pre-1993	7	5.138	0.00849	0.05792	16.669	0.71474	0.90554
6	Pre-1993	8a	7.903	0.01189	0.08111	24.943	0.76331	0.96544
6	Pre-1993	8b	7.903	0.01189	0.08111	29.971	0.79702	1.00688
6	1993	2b	4.336	0.00485	0.03309	7.704	0.46662	0.59908
6	1993	3	5.643	0.00889	0.06067	9.243	0.53657	0.68631
6	1993	4	5.802	0.00902	0.06154	14.047	0.68820	0.87238
6	1993	5	5.811	0.00902	0.06157	15.782	0.73083	0.92604
6	1993	6	5.138	0.00849	0.05792	15.437	0.71690	0.90847
6	1993	7	5.138	0.00849	0.05792	16.669	0.71474	0.90554
6	1993	8a	7.903	0.01189	0.08111	24.943	0.76331	0.96544
6	1993	8b	7.903	0.01189	0.08111	29.971	0.79702	1.00688
6	1994	2b	4.336	0.00485	0.03309	7.704	0.46662	0.59908
6	1994	3	5.643	0.00889	0.06067	9.243	0.53657	0.68631
6	1994	4	5.802	0.00902	0.06154	14.047	0.68820	0.87238
6	1994	5	5.811	0.00902	0.06157	15.782	0.73083	0.92604
6	1994	6	5.138	0.00849	0.05792	15.437	0.71690	0.90847
6	1994	7	5.138	0.00849	0.05792	16.669	0.71474	0.90554
6	1994	8a	7.903	0.01189	0.08111	24.943	0.76331	0.96544
6	1994	8b	7.903	0.01189	0.08111	29.971	0.79702	1.00688
6	1995	2b	4.429	0.00703	0.04795	7.370	0.43955	0.56452
6	1995	3	5.766	0.02201	0.15014	13.138	0.63711	0.80952
6	1995	4	5.857	0.02294	0.15652	15.485	0.69819	0.88535
6	1995	5	5.836	0.02273	0.15511	18.303	0.76863	0.97350
6	1995	6	5.146	0.01558	0.10633	18.712	0.74514	0.94370
6	1995	7	5.146	0.01558	0.10633	20.766	0.75795	0.95955
6	1995	8a	7.726	0.03381	0.23070	29.010	0.79502	1.00474
6	1995	8b	7.726	0.03381	0.23070	30.899	0.80416	1.01569
6	1996	2b	3.505	0.00516	0.03521	7.369	0.41888	0.53758

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	1996	3	5.828	0.01744	0.11898	15.162	0.69737	0.88423
6	1996	4	5.874	0.01787	0.12191	16.935	0.72155	0.91414
6	1996	5	5.872	0.01786	0.12184	18.009	0.77048	0.97597
6	1996	6	5.224	0.01168	0.07967	19.839	0.75692	0.95845
6	1996	7	5.224	0.01168	0.07967	20.855	0.76398	0.96719
6	1996	8a	7.726	0.02811	0.19178	28.914	0.79555	1.00547
6	1996	8b	7.726	0.02811	0.19178	30.988	0.80688	1.01910
6	1997	2b	3.256	0.00373	0.02546	6.026	0.35696	0.46146
6	1997	3	5.759	0.01243	0.08484	11.268	0.55458	0.70690
6	1997	4	5.878	0.01300	0.08872	14.675	0.71199	0.90243
6	1997	5	5.853	0.01289	0.08794	16.613	0.77439	0.98092
6	1997	6	5.198	0.00976	0.06658	16.519	0.73470	0.93082
6	1997	7	5.198	0.00976	0.06658	18.078	0.74401	0.94239
6	1997	8a	8.951	0.01014	0.06921	27.784	0.78603	0.99370
6	1997	8b	8.951	0.01014	0.06921	30.603	0.80063	1.01133
6	1998	2b	2.922	0.00338	0.02307	6.590	0.24864	0.32259
6	1998	3	3.796	0.01412	0.09636	13.926	0.35904	0.45883
6	1998	4	3.832	0.01546	0.10546	14.903	0.37395	0.47722
6	1998	5	3.786	0.01391	0.09491	15.623	0.34979	0.44700
6	1998	6	3.685	0.01019	0.06951	15.256	0.36358	0.46425
6	1998	7	3.685	0.01019	0.06951	16.075	0.36275	0.46317
6	1998	8a	4.254	0.02513	0.17144	25.206	0.49754	0.63101
6	1998	8b	4.254	0.02513	0.17144	28.405	0.54083	0.68450
6	1999	2b	2.245	0.00425	0.02901	6.153	0.24898	0.32300
6	1999	3	3.790	0.01420	0.09692	9.391	0.33085	0.42372
6	1999	4	3.956	0.01454	0.09923	10.128	0.35002	0.44724
6	1999	5	3.989	0.01436	0.09796	10.165	0.35078	0.44821
6	1999	6	3.991	0.01436	0.09798	10.213	0.34824	0.44503
6	1999	7	3.632	0.01382	0.09432	10.707	0.35774	0.45692
6	1999	8a	3.657	0.01488	0.10155	18.729	0.49878	0.63266
6	1999	8b	3.657	0.01488	0.10155	21.320	0.54581	0.69073
6	2000	2b	2.000	0.00373	0.02543	6.306	0.25304	0.32800
6	2000	3	3.856	0.01209	0.08247	9.458	0.33314	0.42644

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2000	4	4.063	0.01075	0.07333	10.018	0.34743	0.44400
6	2000	5	4.114	0.01042	0.07110	10.091	0.34890	0.44587
6	2000	6	4.117	0.01040	0.07096	10.234	0.35140	0.44899
6	2000	7	3.699	0.01310	0.08941	11.381	0.36983	0.47198
6	2000	8a	3.699	0.01310	0.08941	17.353	0.47251	0.59994
6	2000	8b	3.699	0.01310	0.08941	21.139	0.54229	0.68637
6	2001	2b	0.671	0.00268	0.01829	6.010	0.24569	0.31893
6	2001	3	1.579	0.00876	0.05978	9.208	0.32537	0.41672
6	2001	4	1.655	0.00860	0.05866	9.684	0.33765	0.43171
6	2001	5	1.682	0.00854	0.05827	9.721	0.33840	0.43267
6	2001	6	1.683	0.00854	0.05824	10.443	0.35179	0.44941
6	2001	7	1.542	0.00884	0.06032	10.321	0.34975	0.44687
6	2001	8a	1.542	0.00884	0.06032	18.204	0.48681	0.61772
6	2001	8b	1.542	0.00884	0.06032	20.967	0.53852	0.68169
6	2002	2b	0.643	0.00241	0.01641	6.086	0.24759	0.32127
6	2002	3	1.612	0.00740	0.05044	9.004	0.31996	0.41008
6	2002	4	1.709	0.00666	0.04542	9.670	0.33693	0.43083
6	2002	5	1.736	0.00646	0.04404	9.670	0.33693	0.43083
6	2002	6	1.737	0.00644	0.04395	10.023	0.34526	0.44129
6	2002	7	1.550	0.00787	0.05366	10.537	0.35259	0.45039
6	2002	8a	1.550	0.00787	0.05366	15.838	0.44426	0.56491
6	2002	8b	1.550	0.00787	0.05366	20.619	0.53161	0.67313
6	2003	2b	0.558	0.00244	0.01664	4.278	0.20930	0.27165
6	2003	3	1.590	0.00772	0.05269	6.005	0.27777	0.35599
6	2003	4	1.674	0.00749	0.05109	6.406	0.29418	0.37613
6	2003	5	1.698	0.00742	0.05063	6.406	0.29418	0.37613
6	2003	6	1.699	0.00742	0.05060	6.874	0.30618	0.39127
6	2003	7	1.539	0.00787	0.05366	6.996	0.31510	0.40235
6	2003	8a	1.540	0.00787	0.05366	8.926	0.41090	0.52204
6	2003	8b	1.540	0.00787	0.05366	10.367	0.48597	0.61517
6	2004	2b	0.450	0.00150	0.01041	4.255	0.20788	0.26978
6	2004	3	1.608	0.00609	0.04153	6.067	0.27806	0.35635
6	2004	4	1.721	0.00577	0.03937	6.492	0.29506	0.37726

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2004	5	1.752	0.00569	0.03878	6.492	0.29506	0.37726
6	2004	6	1.754	0.00568	0.03875	6.945	0.30962	0.39560
6	2004	7	1.534	0.00629	0.04293	7.059	0.31713	0.40491
6	2004	8a	1.534	0.00629	0.04293	8.906	0.40871	0.51928
6	2004	8b	1.534	0.00629	0.04293	10.371	0.48653	0.61588
6	2005	2b	0.373	0.00097	0.00673	4.151	0.20308	0.26367
6	2005	3	1.588	0.00452	0.03081	5.932	0.27271	0.34969
6	2005	4	1.654	0.00436	0.02977	6.459	0.29392	0.37583
6	2005	5	1.683	0.00430	0.02933	6.459	0.29392	0.37583
6	2005	6	1.685	0.00429	0.02930	6.834	0.30746	0.39287
6	2005	7	1.561	0.00458	0.03122	7.074	0.31977	0.40818
6	2005	8a	1.562	0.00458	0.03122	9.134	0.42020	0.53351
6	2005	8b	1.562	0.00458	0.03122	10.433	0.48937	0.61939
6	2006	2b	0.412	0.00110	0.00766	4.209	0.20628	0.26781
6	2006	3	1.593	0.00478	0.03257	5.877	0.27097	0.34754
6	2006	4	1.676	0.00455	0.03107	6.364	0.29041	0.37141
6	2006	5	1.706	0.00447	0.03052	6.364	0.29041	0.37141
6	2006	6	1.708	0.00447	0.03048	6.658	0.30181	0.38575
6	2006	7	1.554	0.00488	0.03327	6.919	0.31442	0.40144
6	2006	8a	1.554	0.00488	0.03327	9.019	0.41553	0.52769
6	2006	8b	1.554	0.00488	0.03327	10.411	0.48877	0.61864
6	2007	2b	0.354	0.00098	0.00679	2.324	0.00136	0.01163
6	2007	3	1.598	0.00475	0.03241	3.608	0.00187	0.01603
6	2007	4	1.671	0.00453	0.03093	3.874	0.00198	0.01697
6	2007	5	1.700	0.00445	0.03032	3.874	0.00198	0.01697
6	2007	6	1.702	0.00444	0.03028	4.045	0.00205	0.01751
6	2007	7	1.568	0.00484	0.03304	4.427	0.00219	0.01879
6	2007	8a	1.569	0.00485	0.03305	6.382	0.00299	0.02559
6	2007	8b	1.569	0.00485	0.03305	7.345	0.00341	0.02915
6	2008	2b	0.269	0.00108	0.00735	2.250	0.00134	0.01138
6	2008	3	1.069	0.00469	0.03196	3.198	0.00170	0.01453
6	2008	4	1.020	0.00458	0.03125	3.437	0.00179	0.01534
6	2008	5	0.995	0.00453	0.03088	3.437	0.00179	0.01534

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2008	6	0.994	0.00452	0.03085	3.594	0.00185	0.01585
6	2008	7	1.085	0.00472	0.03220	3.708	0.00190	0.01623
6	2008	8a	1.085	0.00472	0.03220	5.181	0.00248	0.02126
6	2008	8b	1.085	0.00472	0.03220	7.003	0.00325	0.02785
6	2009	2b	0.178	0.00120	0.00782	2.215	0.00133	0.01118
6	2009	3	0.720	0.00469	0.03198	3.731	0.00193	0.01651
6	2009	4	0.715	0.00466	0.03178	3.987	0.00204	0.01743
6	2009	5	0.713	0.00464	0.03166	3.987	0.00204	0.01743
6	2009	6	0.712	0.00464	0.03165	4.070	0.00207	0.01770
6	2009	7	0.722	0.00470	0.03204	4.515	0.00224	0.01917
6	2009	8a	0.722	0.00470	0.03204	6.426	0.00301	0.02575
6	2009	8b	0.722	0.00470	0.03204	7.324	0.00339	0.02905
6	2010	2b	0.068	0.00059	0.00333	0.991	0.00094	0.00770
6	2010	3	0.109	0.00177	0.01209	2.059	0.00183	0.01564
6	2010	4	0.109	0.00177	0.01209	2.264	0.00200	0.01711
6	2010	5	0.109	0.00177	0.01209	2.264	0.00200	0.01711
6	2010	6	0.109	0.00177	0.01209	2.355	0.00209	0.01791
6	2010	7	0.109	0.00177	0.01209	2.684	0.00190	0.01625
6	2010	8a	0.109	0.00177	0.01209	4.228	0.00126	0.01077
6	2010	8b	0.109	0.00177	0.01209	5.009	0.00087	0.00743
6	2011	2b	0.070	0.00072	0.00383	1.097	0.00094	0.00769
6	2011	3	0.118	0.00174	0.01184	1.766	0.00161	0.01375
6	2011	4	0.133	0.00167	0.01139	1.891	0.00174	0.01486
6	2011	5	0.141	0.00164	0.01118	1.891	0.00174	0.01486
6	2011	6	0.141	0.00164	0.01116	1.970	0.00179	0.01530
6	2011	7	0.112	0.00176	0.01200	2.135	0.00169	0.01447
6	2011	8a	0.112	0.00176	0.01200	3.316	0.00127	0.01087
6	2011	8b	0.112	0.00176	0.01200	4.240	0.00088	0.00750
6	2012	2b	0.072	0.00079	0.00414	1.035	0.00096	0.00781
6	2012	3	0.119	0.00172	0.01171	1.772	0.00169	0.01437
6	2012	4	0.125	0.00169	0.01155	1.881	0.00179	0.01532
6	2012	5	0.129	0.00168	0.01145	1.881	0.00179	0.01532
6	2012	6	0.129	0.00168	0.01144	1.929	0.00180	0.01540

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2012	7	0.117	0.00172	0.01177	2.171	0.00169	0.01445
6	2012	8a	0.117	0.00172	0.01177	3.425	0.00121	0.01031
6	2012	8b	0.117	0.00172	0.01177	4.154	0.00087	0.00741
6	2013	2b	0.069	0.00080	0.00352	1.230	0.00098	0.00772
6	2013	3	0.125	0.00157	0.01073	1.876	0.00171	0.01458
6	2013	4	0.136	0.00153	0.01045	1.975	0.00183	0.01562
6	2013	5	0.141	0.00151	0.01032	1.975	0.00183	0.01562
6	2013	6	0.142	0.00151	0.01031	2.018	0.00184	0.01576
6	2013	7	0.122	0.00159	0.01083	2.204	0.00168	0.01439
6	2013	8a	0.122	0.00159	0.01082	3.009	0.00110	0.00937
6	2013	8b	0.122	0.00159	0.01082	3.392	0.00078	0.00664
6	2014	2b	0.070	0.00100	0.00364	0.586	0.00050	0.00245
6	2014	3	0.125	0.00152	0.01038	1.305	0.00053	0.00430
6	2014	4	0.129	0.00151	0.01030	1.395	0.00053	0.00453
6	2014	5	0.132	0.00150	0.01026	1.395	0.00053	0.00453
6	2014	6	0.132	0.00150	0.01025	1.429	0.00054	0.00460
6	2014	7	0.124	0.00152	0.01041	1.594	0.00053	0.00456
6	2014	8a	0.124	0.00152	0.01041	2.450	0.00053	0.00451
6	2014	8b	0.124	0.00152	0.01041	2.971	0.00050	0.00429
6	2015	2b	0.060	0.00099	0.00325	0.465	0.00050	0.00226
6	2015	3	0.125	0.00152	0.01039	1.185	0.00053	0.00423
6	2015	4	0.129	0.00151	0.01031	1.296	0.00053	0.00453
6	2015	5	0.131	0.00150	0.01027	1.296	0.00053	0.00453
6	2015	6	0.131	0.00150	0.01027	1.331	0.00054	0.00459
6	2015	7	0.124	0.00152	0.01041	1.514	0.00053	0.00455
6	2015	8a	0.124	0.00152	0.01041	2.436	0.00053	0.00452
6	2015	8b	0.124	0.00152	0.01041	2.986	0.00050	0.00430
6	2016	2b	0.059	0.00105	0.00323	0.446	0.00052	0.00223
6	2016	3	0.125	0.00152	0.01039	1.131	0.00053	0.00418
6	2016	4	0.128	0.00151	0.01032	1.252	0.00053	0.00453
6	2016	5	0.130	0.00151	0.01028	1.252	0.00053	0.00453
6	2016	6	0.131	0.00151	0.01028	1.282	0.00054	0.00458
6	2016	7	0.124	0.00152	0.01041	1.426	0.00053	0.00455



**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2016	8a	0.124	0.00152	0.01041	2.274	0.00053	0.00454
6	2016	8b	0.124	0.00152	0.01041	2.880	0.00051	0.00433
6	2017	2b	0.045	0.00102	0.00289	0.427	0.00051	0.00210
6	2017	3	0.125	0.00152	0.01039	1.080	0.00053	0.00415
6	2017	4	0.128	0.00151	0.01033	1.202	0.00053	0.00453
6	2017	5	0.129	0.00151	0.01030	1.202	0.00053	0.00453
6	2017	6	0.130	0.00151	0.01030	1.225	0.00054	0.00458
6	2017	7	0.124	0.00152	0.01041	1.338	0.00053	0.00455
6	2017	8a	0.124	0.00152	0.01041	2.044	0.00053	0.00456
6	2017	8b	0.124	0.00152	0.01041	2.585	0.00051	0.00435
6	2018	2b	0.044	0.00110	0.00299	0.325	0.00053	0.00209
6	2018	3	0.109	0.00152	0.01035	1.020	0.00053	0.00415
6	2018	4	0.120	0.00149	0.01017	1.148	0.00053	0.00453
6	2018	5	0.126	0.00148	0.01008	1.148	0.00053	0.00453
6	2018	6	0.126	0.00148	0.01007	1.208	0.00054	0.00466
6	2018	7	0.105	0.00152	0.01041	1.304	0.00054	0.00460
6	2018	8a	0.105	0.00152	0.01041	2.008	0.00053	0.00457
6	2018	8b	0.105	0.00152	0.01041	2.525	0.00051	0.00434
6	2019	2b	0.033	0.00101	0.00279	0.261	0.00050	0.00196
6	2019	3	0.089	0.00151	0.01031	0.954	0.00051	0.00396
6	2019	4	0.098	0.00148	0.01013	1.093	0.00051	0.00436
6	2019	5	0.103	0.00147	0.01003	1.093	0.00051	0.00436
6	2019	6	0.103	0.00147	0.01003	1.150	0.00052	0.00448
6	2019	7	0.086	0.00152	0.01037	1.253	0.00052	0.00443
6	2019	8a	0.086	0.00152	0.01037	1.984	0.00052	0.00446
6	2019	8b	0.086	0.00152	0.01037	2.517	0.00050	0.00428
6	2020	2b	0.029	0.00090	0.00255	0.221	0.00045	0.00184
6	2020	3	0.084	0.00151	0.01031	0.917	0.00050	0.00390
6	2020	4	0.094	0.00149	0.01014	1.073	0.00051	0.00436
6	2020	5	0.099	0.00147	0.01005	1.073	0.00051	0.00436
6	2020	6	0.099	0.00147	0.01004	1.127	0.00052	0.00447
6	2020	7	0.081	0.00152	0.01037	1.226	0.00052	0.00443
6	2020	8a	0.081	0.00152	0.01037	1.955	0.00052	0.00446

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2020	8b	0.081	0.00152	0.01037	2.510	0.00050	0.00429
6	2021	2b	0.020	0.00048	0.00143	0.151	0.00025	0.00108
6	2021	3	0.079	0.00091	0.00621	0.643	0.00032	0.00252
6	2021	4	0.088	0.00090	0.00612	0.754	0.00033	0.00285
6	2021	5	0.092	0.00089	0.00607	0.754	0.00033	0.00285
6	2021	6	0.093	0.00089	0.00606	0.790	0.00034	0.00292
6	2021	7	0.077	0.00092	0.00624	0.856	0.00034	0.00289
6	2021	8a	0.077	0.00092	0.00624	1.358	0.00035	0.00296
6	2021	8b	0.077	0.00092	0.00624	1.758	0.00034	0.00287
6	2022	2b	0.017	0.00049	0.00144	0.135	0.00025	0.00107
6	2022	3	0.075	0.00091	0.00621	0.631	0.00032	0.00252
6	2022	4	0.084	0.00090	0.00612	0.743	0.00033	0.00285
6	2022	5	0.089	0.00089	0.00607	0.743	0.00033	0.00285
6	2022	6	0.089	0.00089	0.00606	0.780	0.00034	0.00292
6	2022	7	0.072	0.00092	0.00624	0.849	0.00034	0.00289
6	2022	8a	0.072	0.00092	0.00624	1.361	0.00035	0.00296
6	2022	8b	0.072	0.00092	0.00624	1.759	0.00034	0.00287
6	2023	2b	0.015	0.00049	0.00142	0.132	0.00025	0.00107
6	2023	3	0.075	0.00091	0.00621	0.628	0.00032	0.00251
6	2023	4	0.084	0.00090	0.00612	0.743	0.00033	0.00285
6	2023	5	0.088	0.00089	0.00607	0.743	0.00033	0.00285
6	2023	6	0.089	0.00089	0.00607	0.779	0.00034	0.00292
6	2023	7	0.072	0.00092	0.00624	0.846	0.00034	0.00289
6	2023	8a	0.072	0.00092	0.00624	1.353	0.00035	0.00296
6	2023	8b	0.072	0.00092	0.00624	1.757	0.00034	0.00287
6	2024	2b	0.012	0.00049	0.00141	0.130	0.00025	0.00106
6	2024	3	0.075	0.00091	0.00621	0.625	0.00032	0.00250
6	2024	4	0.084	0.00090	0.00612	0.743	0.00033	0.00284
6	2024	5	0.088	0.00089	0.00607	0.743	0.00033	0.00284
6	2024	6	0.088	0.00089	0.00607	0.778	0.00034	0.00291
6	2024	7	0.072	0.00092	0.00624	0.838	0.00034	0.00288
6	2024	8a	0.072	0.00092	0.00624	1.317	0.00034	0.00292
6	2024	8b	0.072	0.00092	0.00624	1.712	0.00033	0.00281

**Table A-6. SmartWay Category - LTL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
6	2025	2b	0.012	0.00049	0.00141	0.130	0.00025	0.00106
6	2025	3	0.075	0.00091	0.00621	0.625	0.00032	0.00250
6	2025	4	0.084	0.00090	0.00612	0.743	0.00033	0.00284
6	2025	5	0.088	0.00089	0.00607	0.743	0.00033	0.00284
6	2025	6	0.088	0.00089	0.00607	0.778	0.00034	0.00291
6	2025	7	0.072	0.00092	0.00624	0.838	0.00034	0.00288
6	2025	8a	0.072	0.00092	0.00624	1.317	0.00034	0.00292
6	2025	8b	0.072	0.00092	0.00624	1.712	0.00033	0.00281

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	Pre-1993	2b	4.323	0.00538	0.03669	7.438	0.43232	0.55473
7	Pre-1993	3	5.649	0.01027	0.07009	8.862	0.49848	0.63711
7	Pre-1993	4	5.814	0.01044	0.07125	13.237	0.64218	0.81353
7	Pre-1993	5	5.823	0.01045	0.07130	14.906	0.68141	0.86290
7	Pre-1993	6	5.126	0.00974	0.06645	14.597	0.66876	0.84695
7	Pre-1993	7	5.126	0.00974	0.06645	15.922	0.66777	0.84552
7	Pre-1993	8a	7.756	0.01336	0.09112	24.506	0.71616	0.90535
7	Pre-1993	8b	7.756	0.01336	0.09112	29.667	0.74802	0.94460
7	1993	2b	4.323	0.00538	0.03669	7.438	0.43232	0.55473
7	1993	3	5.649	0.01027	0.07009	8.862	0.49848	0.63711
7	1993	4	5.814	0.01044	0.07125	13.237	0.64218	0.81353
7	1993	5	5.823	0.01045	0.07130	14.906	0.68141	0.86290
7	1993	6	5.126	0.00974	0.06645	14.597	0.66876	0.84695
7	1993	7	5.126	0.00974	0.06645	15.922	0.66777	0.84552
7	1993	8a	7.756	0.01336	0.09112	24.506	0.71616	0.90535
7	1993	8b	7.756	0.01336	0.09112	29.667	0.74802	0.94460
7	1994	2b	4.323	0.00538	0.03669	7.438	0.43232	0.55473
7	1994	3	5.649	0.01027	0.07009	8.862	0.49848	0.63711
7	1994	4	5.814	0.01044	0.07125	13.237	0.64218	0.81353
7	1994	5	5.823	0.01045	0.07130	14.906	0.68141	0.86290
7	1994	6	5.126	0.00974	0.06645	14.597	0.66876	0.84695
7	1994	7	5.126	0.00974	0.06645	15.922	0.66777	0.84552
7	1994	8a	7.756	0.01336	0.09112	24.506	0.71616	0.90535
7	1994	8b	7.756	0.01336	0.09112	29.667	0.74802	0.94460
7	1995	2b	4.412	0.00723	0.04933	7.131	0.40679	0.52211
7	1995	3	5.775	0.02301	0.15698	12.447	0.59269	0.75261
7	1995	4	5.871	0.02400	0.16372	14.686	0.65029	0.82408
7	1995	5	5.849	0.02378	0.16225	17.371	0.71587	0.90616
7	1995	6	5.126	0.01621	0.11059	17.901	0.69496	0.87965
7	1995	7	5.126	0.01621	0.11059	20.038	0.70788	0.89567
7	1995	8a	7.592	0.03368	0.22978	28.649	0.74575	0.94206
7	1995	8b	7.592	0.03368	0.22978	30.605	0.75468	0.95283
7	1996	2b	3.513	0.00491	0.03350	7.113	0.38816	0.49777

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	1996	3	5.839	0.01692	0.11543	14.298	0.64909	0.82250
7	1996	4	5.888	0.01733	0.11827	16.072	0.67234	0.85129
7	1996	5	5.886	0.01733	0.11822	17.109	0.71799	0.90896
7	1996	6	5.200	0.01132	0.07723	19.066	0.70649	0.89408
7	1996	7	5.200	0.01132	0.07723	20.116	0.71351	0.90279
7	1996	8a	7.592	0.02583	0.17622	28.549	0.74624	0.94273
7	1996	8b	7.592	0.02583	0.17622	30.704	0.75733	0.95615
7	1997	2b	3.312	0.00392	0.02673	5.870	0.33026	0.42679
7	1997	3	5.767	0.01395	0.09521	10.785	0.51658	0.65806
7	1997	4	5.893	0.01462	0.09975	13.821	0.66328	0.84016
7	1997	5	5.866	0.01449	0.09885	15.739	0.72230	0.91441
7	1997	6	5.180	0.01083	0.07389	15.710	0.68522	0.86761
7	1997	7	5.180	0.01083	0.07389	17.330	0.69451	0.87917
7	1997	8a	8.805	0.01015	0.06924	27.406	0.73697	0.93123
7	1997	8b	8.805	0.01015	0.06924	30.310	0.75108	0.94837
7	1998	2b	2.985	0.00341	0.02327	6.363	0.24638	0.31928
7	1998	3	3.830	0.01463	0.09983	13.287	0.34532	0.44089
7	1998	4	3.868	0.01600	0.10918	14.198	0.35846	0.45701
7	1998	5	3.821	0.01445	0.09858	14.967	0.33967	0.43365
7	1998	6	3.718	0.01060	0.07233	14.575	0.35045	0.44706
7	1998	7	3.718	0.01060	0.07233	15.442	0.35096	0.44770
7	1998	8a	4.294	0.02447	0.16697	25.071	0.47398	0.60074
7	1998	8b	4.294	0.02447	0.16697	28.451	0.51235	0.64813
7	1999	2b	2.288	0.00413	0.02820	5.941	0.24696	0.31998
7	1999	3	3.823	0.01421	0.09699	8.981	0.32000	0.40940
7	1999	4	3.989	0.01472	0.10042	9.664	0.33680	0.42989
7	1999	5	4.021	0.01460	0.09964	9.703	0.33748	0.43076
7	1999	6	4.023	0.01461	0.09968	9.802	0.33708	0.43034
7	1999	7	3.666	0.01369	0.09340	10.303	0.34542	0.44073
7	1999	8a	3.691	0.01461	0.09968	18.613	0.47504	0.60216
7	1999	8b	3.691	0.01461	0.09968	21.289	0.51688	0.65379
7	2000	2b	2.038	0.00378	0.02576	6.087	0.25072	0.32461
7	2000	3	3.888	0.01274	0.08691	9.050	0.32257	0.41248

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2000	4	4.094	0.01142	0.07792	9.578	0.33520	0.42792
7	2000	5	4.144	0.01110	0.07573	9.654	0.33652	0.42959
7	2000	6	4.147	0.01108	0.07560	9.826	0.34003	0.43403
7	2000	7	3.731	0.01374	0.09374	11.011	0.35716	0.45537
7	2000	8a	3.731	0.01374	0.09374	17.204	0.45167	0.57307
7	2000	8b	3.731	0.01374	0.09374	21.106	0.51400	0.65023
7	2001	2b	0.679	0.00270	0.01844	5.805	0.24405	0.31641
7	2001	3	1.593	0.01027	0.07007	8.806	0.31551	0.40365
7	2001	4	1.669	0.01014	0.06917	9.244	0.32631	0.41676
7	2001	5	1.695	0.01009	0.06885	9.282	0.32699	0.41762
7	2001	6	1.697	0.01009	0.06883	10.044	0.34037	0.43438
7	2001	7	1.557	0.01034	0.07051	9.913	0.33802	0.43143
7	2001	8a	1.557	0.01034	0.07051	18.087	0.46478	0.58936
7	2001	8b	1.557	0.01034	0.07051	20.931	0.51065	0.64607
7	2002	2b	0.651	0.00237	0.01618	5.877	0.24577	0.31852
7	2002	3	1.626	0.00740	0.05049	8.612	0.31060	0.39766
7	2002	4	1.722	0.00671	0.04576	9.227	0.32554	0.41579
7	2002	5	1.749	0.00652	0.04446	9.227	0.32554	0.41579
7	2002	6	1.750	0.00651	0.04437	9.606	0.33410	0.42658
7	2002	7	1.564	0.00785	0.05352	10.138	0.34098	0.43512
7	2002	8a	1.564	0.00785	0.05352	15.640	0.42599	0.54124
7	2002	8b	1.564	0.00785	0.05352	20.574	0.50462	0.63860
7	2003	2b	0.564	0.00241	0.01642	4.174	0.20774	0.26929
7	2003	3	1.604	0.00824	0.05620	5.829	0.26943	0.34492
7	2003	4	1.687	0.00805	0.05491	6.211	0.28396	0.36267
7	2003	5	1.711	0.00799	0.05453	6.211	0.28396	0.36267
7	2003	6	1.713	0.00799	0.05451	6.654	0.29591	0.37775
7	2003	7	1.554	0.00835	0.05698	6.792	0.30441	0.38830
7	2003	8a	1.554	0.00835	0.05698	8.754	0.39340	0.49942
7	2003	8b	1.554	0.00835	0.05698	10.185	0.46084	0.58305
7	2004	2b	0.455	0.00151	0.01044	4.151	0.20635	0.26746
7	2004	3	1.622	0.00633	0.04315	5.886	0.26997	0.34562
7	2004	4	1.734	0.00606	0.04131	6.291	0.28514	0.36418

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2004	5	1.764	0.00598	0.04080	6.291	0.28514	0.36418
7	2004	6	1.766	0.00598	0.04077	6.718	0.29914	0.38181
7	2004	7	1.548	0.00650	0.04435	6.848	0.30642	0.39084
7	2004	8a	1.548	0.00650	0.04435	8.732	0.39169	0.49728
7	2004	8b	1.548	0.00650	0.04435	10.189	0.46139	0.58375
7	2005	2b	0.377	0.00097	0.00673	4.050	0.20169	0.26154
7	2005	3	1.601	0.00470	0.03203	5.758	0.26507	0.33953
7	2005	4	1.667	0.00456	0.03109	6.261	0.28407	0.36283
7	2005	5	1.696	0.00450	0.03069	6.261	0.28407	0.36283
7	2005	6	1.698	0.00450	0.03067	6.614	0.29689	0.37897
7	2005	7	1.575	0.00475	0.03240	6.871	0.30887	0.39387
7	2005	8a	1.575	0.00475	0.03240	8.963	0.40220	0.51030
7	2005	8b	1.575	0.00475	0.03240	10.250	0.46387	0.58681
7	2006	2b	0.416	0.00110	0.00766	4.107	0.20487	0.26565
7	2006	3	1.606	0.00496	0.03380	5.709	0.26345	0.33752
7	2006	4	1.689	0.00476	0.03246	6.175	0.28074	0.35864
7	2006	5	1.719	0.00469	0.03197	6.175	0.28074	0.35864
7	2006	6	1.721	0.00468	0.03194	6.452	0.29145	0.37210
7	2006	7	1.568	0.00505	0.03442	6.728	0.30375	0.38742
7	2006	8a	1.568	0.00505	0.03442	8.852	0.39789	0.50493
7	2006	8b	1.568	0.00505	0.03442	10.230	0.46333	0.58614
7	2007	2b	0.357	0.00098	0.00678	2.226	0.00135	0.01154
7	2007	3	1.612	0.00493	0.03366	3.449	0.00181	0.01550
7	2007	4	1.684	0.00473	0.03229	3.700	0.00191	0.01633
7	2007	5	1.713	0.00465	0.03174	3.700	0.00191	0.01633
7	2007	6	1.715	0.00465	0.03170	3.871	0.00197	0.01685
7	2007	7	1.581	0.00502	0.03424	4.261	0.00211	0.01809
7	2007	8a	1.583	0.00502	0.03424	6.217	0.00285	0.02442
7	2007	8b	1.583	0.00502	0.03424	7.159	0.00322	0.02760
7	2008	2b	0.272	0.00108	0.00735	2.154	0.00133	0.01130
7	2008	3	1.079	0.00486	0.03313	3.045	0.00165	0.01415
7	2008	4	1.030	0.00476	0.03248	3.267	0.00174	0.01486
7	2008	5	1.005	0.00471	0.03214	3.267	0.00174	0.01486

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2008	6	1.003	0.00471	0.03211	3.424	0.00179	0.01534
7	2008	7	1.095	0.00489	0.03335	3.541	0.00184	0.01572
7	2008	8a	1.095	0.00489	0.03335	5.026	0.00239	0.02046
7	2008	8b	1.095	0.00489	0.03335	6.826	0.00309	0.02644
7	2009	2b	0.181	0.00121	0.00782	2.122	0.00132	0.01108
7	2009	3	0.721	0.00485	0.03311	3.567	0.00186	0.01591
7	2009	4	0.717	0.00483	0.03296	3.808	0.00195	0.01674
7	2009	5	0.714	0.00482	0.03287	3.808	0.00195	0.01674
7	2009	6	0.714	0.00482	0.03286	3.891	0.00198	0.01699
7	2009	7	0.723	0.00486	0.03316	4.345	0.00215	0.01841
7	2009	8a	0.723	0.00486	0.03315	6.258	0.00287	0.02455
7	2009	8b	0.723	0.00486	0.03315	7.139	0.00321	0.02750
7	2010	2b	0.068	0.00059	0.00330	0.926	0.00092	0.00755
7	2010	3	0.106	0.00172	0.01176	1.908	0.00176	0.01499
7	2010	4	0.106	0.00172	0.01176	2.095	0.00191	0.01638
7	2010	5	0.106	0.00172	0.01176	2.095	0.00191	0.01638
7	2010	6	0.106	0.00172	0.01176	2.180	0.00200	0.01712
7	2010	7	0.106	0.00172	0.01176	2.503	0.00181	0.01550
7	2010	8a	0.106	0.00172	0.01176	3.958	0.00120	0.01022
7	2010	8b	0.106	0.00172	0.01176	4.666	0.00083	0.00709
7	2011	2b	0.070	0.00072	0.00379	1.031	0.00092	0.00755
7	2011	3	0.115	0.00169	0.01150	1.639	0.00155	0.01325
7	2011	4	0.131	0.00162	0.01104	1.752	0.00167	0.01430
7	2011	5	0.138	0.00159	0.01082	1.752	0.00167	0.01430
7	2011	6	0.139	0.00158	0.01080	1.824	0.00172	0.01471
7	2011	7	0.110	0.00171	0.01167	1.984	0.00162	0.01389
7	2011	8a	0.110	0.00171	0.01167	3.085	0.00121	0.01036
7	2011	8b	0.110	0.00171	0.01167	3.906	0.00084	0.00716
7	2012	2b	0.072	0.00078	0.00409	0.969	0.00095	0.00765
7	2012	3	0.116	0.00167	0.01137	1.640	0.00162	0.01383
7	2012	4	0.122	0.00164	0.01120	1.739	0.00172	0.01473
7	2012	5	0.126	0.00163	0.01111	1.739	0.00172	0.01473
7	2012	6	0.126	0.00163	0.01110	1.783	0.00173	0.01480



**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2012	7	0.114	0.00168	0.01143	2.016	0.00162	0.01385
7	2012	8a	0.114	0.00168	0.01143	3.174	0.00115	0.00982
7	2012	8b	0.114	0.00168	0.01143	3.818	0.00083	0.00708
7	2013	2b	0.069	0.00079	0.00348	1.161	0.00096	0.00756
7	2013	3	0.123	0.00153	0.01041	1.740	0.00165	0.01399
7	2013	4	0.134	0.00148	0.01013	1.828	0.00175	0.01497
7	2013	5	0.139	0.00146	0.00999	1.828	0.00175	0.01497
7	2013	6	0.139	0.00146	0.00998	1.866	0.00176	0.01509
7	2013	7	0.119	0.00154	0.01051	2.043	0.00161	0.01374
7	2013	8a	0.119	0.00154	0.01051	2.769	0.00104	0.00890
7	2013	8b	0.119	0.00154	0.01051	3.098	0.00074	0.00634
7	2014	2b	0.071	0.00100	0.00360	0.542	0.00050	0.00241
7	2014	3	0.123	0.00148	0.01007	1.174	0.00051	0.00417
7	2014	4	0.127	0.00146	0.00999	1.252	0.00051	0.00439
7	2014	5	0.129	0.00146	0.00994	1.252	0.00051	0.00439
7	2014	6	0.129	0.00146	0.00994	1.282	0.00052	0.00445
7	2014	7	0.121	0.00148	0.01010	1.441	0.00052	0.00441
7	2014	8a	0.121	0.00148	0.01010	2.231	0.00051	0.00434
7	2014	8b	0.121	0.00148	0.01010	2.689	0.00048	0.00410
7	2015	2b	0.060	0.00098	0.00321	0.427	0.00049	0.00223
7	2015	3	0.123	0.00148	0.01007	1.056	0.00051	0.00410
7	2015	4	0.126	0.00146	0.01000	1.153	0.00051	0.00439
7	2015	5	0.129	0.00146	0.00995	1.153	0.00051	0.00439
7	2015	6	0.129	0.00146	0.00995	1.184	0.00052	0.00445
7	2015	7	0.121	0.00148	0.01010	1.361	0.00051	0.00441
7	2015	8a	0.121	0.00148	0.01010	2.217	0.00051	0.00435
7	2015	8b	0.121	0.00148	0.01010	2.704	0.00048	0.00411
7	2016	2b	0.060	0.00104	0.00319	0.410	0.00052	0.00221
7	2016	3	0.122	0.00148	0.01008	1.007	0.00051	0.00406
7	2016	4	0.126	0.00147	0.01001	1.112	0.00051	0.00439
7	2016	5	0.128	0.00146	0.00997	1.112	0.00051	0.00439
7	2016	6	0.128	0.00146	0.00996	1.138	0.00052	0.00444
7	2016	7	0.121	0.00148	0.01010	1.277	0.00052	0.00441

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2016	8a	0.121	0.00148	0.01010	2.066	0.00051	0.00437
7	2016	8b	0.121	0.00148	0.01010	2.605	0.00048	0.00414
7	2017	2b	0.046	0.00102	0.00286	0.391	0.00051	0.00208
7	2017	3	0.122	0.00148	0.01008	0.960	0.00051	0.00402
7	2017	4	0.125	0.00147	0.01002	1.065	0.00051	0.00439
7	2017	5	0.127	0.00146	0.00998	1.065	0.00051	0.00439
7	2017	6	0.127	0.00146	0.00998	1.086	0.00052	0.00443
7	2017	7	0.121	0.00148	0.01009	1.195	0.00052	0.00441
7	2017	8a	0.121	0.00148	0.01009	1.848	0.00051	0.00439
7	2017	8b	0.121	0.00148	0.01009	2.326	0.00049	0.00416
7	2018	2b	0.044	0.00109	0.00295	0.297	0.00053	0.00207
7	2018	3	0.107	0.00147	0.01003	0.904	0.00052	0.00403
7	2018	4	0.118	0.00144	0.00985	1.015	0.00051	0.00439
7	2018	5	0.124	0.00143	0.00976	1.015	0.00051	0.00439
7	2018	6	0.124	0.00143	0.00975	1.068	0.00053	0.00451
7	2018	7	0.103	0.00148	0.01009	1.162	0.00052	0.00445
7	2018	8a	0.103	0.00148	0.01009	1.812	0.00051	0.00440
7	2018	8b	0.103	0.00148	0.01009	2.269	0.00048	0.00415
7	2019	2b	0.033	0.00100	0.00275	0.238	0.00049	0.00194
7	2019	3	0.087	0.00146	0.01000	0.845	0.00049	0.00384
7	2019	4	0.096	0.00144	0.00981	0.965	0.00049	0.00422
7	2019	5	0.101	0.00142	0.00972	0.965	0.00049	0.00422
7	2019	6	0.102	0.00142	0.00971	1.016	0.00051	0.00433
7	2019	7	0.084	0.00147	0.01006	1.116	0.00050	0.00429
7	2019	8a	0.084	0.00147	0.01006	1.791	0.00050	0.00429
7	2019	8b	0.084	0.00147	0.01006	2.263	0.00048	0.00410
7	2020	2b	0.029	0.00089	0.00252	0.202	0.00044	0.00182
7	2020	3	0.083	0.00147	0.01000	0.812	0.00049	0.00379
7	2020	4	0.092	0.00144	0.00983	0.946	0.00049	0.00422
7	2020	5	0.097	0.00143	0.00974	0.946	0.00049	0.00422
7	2020	6	0.097	0.00143	0.00973	0.995	0.00051	0.00432
7	2020	7	0.080	0.00147	0.01006	1.091	0.00050	0.00428
7	2020	8a	0.080	0.00147	0.01006	1.765	0.00050	0.00429

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2020	8b	0.080	0.00147	0.01006	2.256	0.00048	0.00410
7	2021	2b	0.020	0.00048	0.00141	0.138	0.00025	0.00106
7	2021	3	0.078	0.00088	0.00602	0.569	0.00031	0.00245
7	2021	4	0.086	0.00087	0.00593	0.664	0.00032	0.00276
7	2021	5	0.091	0.00086	0.00587	0.664	0.00032	0.00276
7	2021	6	0.091	0.00086	0.00587	0.697	0.00033	0.00282
7	2021	7	0.075	0.00089	0.00605	0.760	0.00033	0.00280
7	2021	8a	0.075	0.00089	0.00605	1.224	0.00033	0.00284
7	2021	8b	0.075	0.00089	0.00605	1.577	0.00032	0.00275
7	2022	2b	0.017	0.00048	0.00141	0.123	0.00025	0.00106
7	2022	3	0.074	0.00088	0.00602	0.558	0.00031	0.00245
7	2022	4	0.082	0.00087	0.00593	0.654	0.00032	0.00276
7	2022	5	0.087	0.00086	0.00588	0.654	0.00032	0.00276
7	2022	6	0.087	0.00086	0.00587	0.687	0.00033	0.00282
7	2022	7	0.071	0.00089	0.00605	0.754	0.00033	0.00280
7	2022	8a	0.071	0.00089	0.00605	1.227	0.00033	0.00284
7	2022	8b	0.071	0.00089	0.00605	1.578	0.00032	0.00274
7	2023	2b	0.015	0.00048	0.00140	0.120	0.00025	0.00105
7	2023	3	0.074	0.00088	0.00602	0.555	0.00031	0.00244
7	2023	4	0.082	0.00087	0.00593	0.654	0.00032	0.00276
7	2023	5	0.087	0.00086	0.00588	0.654	0.00032	0.00276
7	2023	6	0.087	0.00086	0.00587	0.687	0.00033	0.00282
7	2023	7	0.071	0.00089	0.00605	0.751	0.00033	0.00280
7	2023	8a	0.071	0.00089	0.00605	1.219	0.00033	0.00284
7	2023	8b	0.071	0.00089	0.00605	1.576	0.00032	0.00274
7	2024	2b	0.012	0.00048	0.00139	0.118	0.00025	0.00105
7	2024	3	0.073	0.00088	0.00602	0.552	0.00031	0.00243
7	2024	4	0.082	0.00087	0.00593	0.654	0.00032	0.00275
7	2024	5	0.086	0.00086	0.00588	0.654	0.00032	0.00275
7	2024	6	0.087	0.00086	0.00588	0.685	0.00033	0.00281
7	2024	7	0.071	0.00089	0.00605	0.743	0.00033	0.00279
7	2024	8a	0.071	0.00089	0.00605	1.185	0.00033	0.00280
7	2024	8b	0.071	0.00089	0.00605	1.532	0.00031	0.00268

**Table A-7. SmartWay Category - Mixed**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
7	2025	2b	0.012	0.00048	0.00139	0.118	0.00025	0.00105
7	2025	3	0.073	0.00088	0.00602	0.552	0.00031	0.00243
7	2025	4	0.082	0.00087	0.00593	0.654	0.00032	0.00275
7	2025	5	0.086	0.00086	0.00588	0.654	0.00032	0.00275
7	2025	6	0.087	0.00086	0.00588	0.685	0.00033	0.00281
7	2025	7	0.071	0.00089	0.00605	0.743	0.00033	0.00279
7	2025	8a	0.071	0.00089	0.00605	1.185	0.00033	0.00280
7	2025	8b	0.071	0.00089	0.00605	1.532	0.00031	0.00268

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	Pre-1993	2b	4.434	0.00539	0.03679	7.597	0.43928	0.56382
8	Pre-1993	3	5.732	0.01030	0.07030	9.033	0.50511	0.64584
8	Pre-1993	4	5.899	0.01048	0.07150	13.515	0.64790	0.82098
8	Pre-1993	5	5.908	0.01049	0.07155	15.251	0.68788	0.87130
8	Pre-1993	6	5.201	0.00975	0.06652	14.920	0.67532	0.85546
8	Pre-1993	7	5.201	0.00975	0.06652	16.218	0.67578	0.85586
8	Pre-1993	8a	7.942	0.01351	0.09220	24.885	0.73604	0.93070
8	Pre-1993	8b	7.942	0.01351	0.09220	30.212	0.77873	0.98363
8	1993	2b	4.434	0.00539	0.03679	7.597	0.43928	0.56382
8	1993	3	5.732	0.01030	0.07030	9.033	0.50511	0.64584
8	1993	4	5.899	0.01048	0.07150	13.515	0.64790	0.82098
8	1993	5	5.908	0.01049	0.07155	15.251	0.68788	0.87130
8	1993	6	5.201	0.00975	0.06652	14.920	0.67532	0.85546
8	1993	7	5.201	0.00975	0.06652	16.218	0.67578	0.85586
8	1993	8a	7.942	0.01351	0.09220	24.885	0.73604	0.93070
8	1993	8b	7.942	0.01351	0.09220	30.212	0.77873	0.98363
8	1994	2b	4.434	0.00539	0.03679	7.597	0.43928	0.56382
8	1994	3	5.732	0.01030	0.07030	9.033	0.50511	0.64584
8	1994	4	5.899	0.01048	0.07150	13.515	0.64790	0.82098
8	1994	5	5.908	0.01049	0.07155	15.251	0.68788	0.87130
8	1994	6	5.201	0.00975	0.06652	14.920	0.67532	0.85546
8	1994	7	5.201	0.00975	0.06652	16.218	0.67578	0.85586
8	1994	8a	7.942	0.01351	0.09220	24.885	0.73604	0.93070
8	1994	8b	7.942	0.01351	0.09220	30.212	0.77873	0.98363
8	1995	2b	4.516	0.00727	0.04960	7.292	0.41380	0.53128
8	1995	3	5.860	0.02288	0.15607	12.712	0.59931	0.76124
8	1995	4	5.956	0.02386	0.16282	15.006	0.65843	0.83462
8	1995	5	5.934	0.02365	0.16134	17.798	0.72486	0.91776
8	1995	6	5.201	0.01607	0.10967	18.291	0.70607	0.89391
8	1995	7	5.201	0.01607	0.10967	20.439	0.72146	0.91306
8	1995	8a	7.774	0.03479	0.23734	29.179	0.77432	0.97840
8	1995	8b	7.774	0.03479	0.23734	31.199	0.78755	0.99460
8	1996	2b	3.582	0.00513	0.03503	7.256	0.39422	0.50574

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	1996	3	5.925	0.01736	0.11843	14.625	0.65723	0.83304
8	1996	4	5.974	0.01779	0.12137	16.427	0.68219	0.86398
8	1996	5	5.972	0.01778	0.12130	17.514	0.72656	0.92002
8	1996	6	5.279	0.01160	0.07913	19.433	0.71827	0.90921
8	1996	7	5.279	0.01160	0.07913	20.517	0.72718	0.92031
8	1996	8a	7.774	0.02791	0.19039	29.068	0.77444	0.97861
8	1996	8b	7.774	0.02791	0.19039	31.292	0.79025	0.99798
8	1997	2b	3.378	0.00399	0.02724	5.997	0.33609	0.43441
8	1997	3	5.852	0.01399	0.09544	10.969	0.52212	0.66533
8	1997	4	5.979	0.01466	0.10001	14.125	0.66990	0.84875
8	1997	5	5.952	0.01452	0.09909	16.098	0.72899	0.92308
8	1997	6	5.257	0.01085	0.07403	16.039	0.69365	0.87849
8	1997	7	5.257	0.01085	0.07403	17.664	0.70472	0.89230
8	1997	8a	8.985	0.01049	0.07154	27.877	0.76320	0.96463
8	1997	8b	8.985	0.01049	0.07154	30.880	0.78377	0.98990
8	1998	2b	3.048	0.00351	0.02392	6.507	0.25004	0.32439
8	1998	3	3.921	0.01489	0.10161	13.574	0.35250	0.45035
8	1998	4	3.962	0.01631	0.11127	14.521	0.36643	0.46745
8	1998	5	3.911	0.01468	0.10018	15.288	0.34557	0.44147
8	1998	6	3.801	0.01072	0.07314	14.898	0.35754	0.45639
8	1998	7	3.801	0.01072	0.07314	15.764	0.35769	0.45657
8	1998	8a	4.401	0.02584	0.17632	25.444	0.48874	0.61972
8	1998	8b	4.401	0.02584	0.17632	28.906	0.53091	0.67184
8	1999	2b	2.337	0.00431	0.02941	6.078	0.25052	0.32498
8	1999	3	3.909	0.01450	0.09893	9.114	0.32515	0.41630
8	1999	4	4.075	0.01499	0.10224	9.808	0.34270	0.43771
8	1999	5	4.107	0.01483	0.10120	9.847	0.34346	0.43867
8	1999	6	4.109	0.01484	0.10124	9.949	0.34279	0.43791
8	1999	7	3.751	0.01398	0.09540	10.453	0.35173	0.44906
8	1999	8a	3.777	0.01504	0.10262	18.827	0.48991	0.62127
8	1999	8b	3.777	0.01504	0.10262	21.568	0.53573	0.67787
8	2000	2b	2.082	0.00390	0.02663	6.223	0.25431	0.32962
8	2000	3	3.972	0.01292	0.08813	9.188	0.32777	0.41943

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2000	4	4.178	0.01156	0.07889	9.725	0.34103	0.43565
8	2000	5	4.228	0.01123	0.07663	9.803	0.34249	0.43750
8	2000	6	4.231	0.01121	0.07649	9.984	0.34621	0.44220
8	2000	7	3.815	0.01395	0.09516	11.158	0.36394	0.46429
8	2000	8a	3.815	0.01395	0.09516	17.394	0.46451	0.58965
8	2000	8b	3.815	0.01395	0.09516	21.376	0.53240	0.67374
8	2001	2b	0.695	0.00285	0.01946	5.943	0.24758	0.32135
8	2001	3	1.629	0.01043	0.07116	8.933	0.32008	0.40981
8	2001	4	1.705	0.01027	0.07006	9.376	0.33125	0.42336
8	2001	5	1.731	0.01021	0.06967	9.415	0.33201	0.42432
8	2001	6	1.733	0.01021	0.06965	10.182	0.34605	0.44191
8	2001	7	1.593	0.01051	0.07170	10.057	0.34379	0.43909
8	2001	8a	1.593	0.01051	0.07170	18.283	0.47847	0.60698
8	2001	8b	1.593	0.01051	0.07170	21.196	0.52873	0.66919
8	2002	2b	0.666	0.00244	0.01665	6.014	0.24929	0.32346
8	2002	3	1.662	0.00752	0.05129	8.735	0.31495	0.40354
8	2002	4	1.758	0.00680	0.04638	9.356	0.33039	0.42227
8	2002	5	1.784	0.00660	0.04502	9.356	0.33039	0.42227
8	2002	6	1.786	0.00659	0.04493	9.751	0.33967	0.43397
8	2002	7	1.600	0.00798	0.05444	10.272	0.34659	0.44255
8	2002	8a	1.600	0.00798	0.05444	15.801	0.43673	0.55518
8	2002	8b	1.600	0.00798	0.05444	20.827	0.52201	0.66085
8	2003	2b	0.578	0.00252	0.01717	4.305	0.21071	0.27345
8	2003	3	1.640	0.00831	0.05669	5.931	0.27322	0.35004
8	2003	4	1.723	0.00810	0.05528	6.310	0.28824	0.36838
8	2003	5	1.747	0.00804	0.05487	6.310	0.28824	0.36838
8	2003	6	1.749	0.00804	0.05485	6.761	0.30098	0.38447
8	2003	7	1.590	0.00844	0.05755	6.894	0.30955	0.39510
8	2003	8a	1.590	0.00844	0.05754	8.870	0.40383	0.51292
8	2003	8b	1.590	0.00844	0.05754	10.328	0.47711	0.60385
8	2004	2b	0.465	0.00155	0.01071	4.281	0.20930	0.27159
8	2004	3	1.657	0.00635	0.04334	5.988	0.27381	0.35079
8	2004	4	1.769	0.00606	0.04135	6.391	0.28950	0.37000

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2004	5	1.800	0.00598	0.04081	6.391	0.28950	0.37000
8	2004	6	1.802	0.00598	0.04077	6.827	0.30446	0.38885
8	2004	7	1.585	0.00654	0.04464	6.951	0.31173	0.39787
8	2004	8a	1.585	0.00654	0.04464	8.846	0.40186	0.51045
8	2004	8b	1.585	0.00654	0.04464	10.332	0.47768	0.60458
8	2005	2b	0.387	0.00100	0.00693	4.179	0.20458	0.26560
8	2005	3	1.636	0.00471	0.03216	5.860	0.26871	0.34447
8	2005	4	1.703	0.00457	0.03117	6.360	0.28834	0.36854
8	2005	5	1.731	0.00451	0.03074	6.360	0.28834	0.36854
8	2005	6	1.733	0.00450	0.03071	6.721	0.30205	0.38580
8	2005	7	1.610	0.00477	0.03255	6.972	0.31417	0.40088
8	2005	8a	1.611	0.00477	0.03255	9.078	0.41307	0.52433
8	2005	8b	1.611	0.00477	0.03255	10.395	0.48045	0.60800
8	2006	2b	0.426	0.00113	0.00789	4.238	0.20781	0.26977
8	2006	3	1.642	0.00498	0.03400	5.810	0.26692	0.34224
8	2006	4	1.725	0.00477	0.03256	6.273	0.28473	0.36398
8	2006	5	1.755	0.00470	0.03204	6.273	0.28473	0.36398
8	2006	6	1.757	0.00469	0.03200	6.555	0.29620	0.37841
8	2006	7	1.604	0.00508	0.03466	6.826	0.30867	0.39394
8	2006	8a	1.604	0.00508	0.03466	8.965	0.40841	0.51851
8	2006	8b	1.604	0.00508	0.03466	10.374	0.47984	0.60724
8	2007	2b	0.366	0.00101	0.00700	2.291	0.00137	0.01170
8	2007	3	1.648	0.00496	0.03385	3.507	0.00184	0.01576
8	2007	4	1.720	0.00475	0.03240	3.760	0.00194	0.01663
8	2007	5	1.748	0.00466	0.03181	3.760	0.00194	0.01663
8	2007	6	1.750	0.00466	0.03177	3.934	0.00201	0.01718
8	2007	7	1.617	0.00505	0.03445	4.321	0.00215	0.01844
8	2007	8a	1.619	0.00505	0.03446	6.304	0.00294	0.02514
8	2007	8b	1.619	0.00505	0.03446	7.275	0.00334	0.02861
8	2008	2b	0.279	0.00111	0.00757	2.218	0.00134	0.01146
8	2008	3	1.102	0.00488	0.03331	3.094	0.00167	0.01430
8	2008	4	1.051	0.00478	0.03262	3.315	0.00176	0.01503
8	2008	5	1.025	0.00473	0.03226	3.315	0.00176	0.01503



**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2008	6	1.023	0.00473	0.03223	3.475	0.00182	0.01555
8	2008	7	1.118	0.00492	0.03354	3.591	0.00186	0.01592
8	2008	8a	1.118	0.00492	0.03354	5.086	0.00244	0.02089
8	2008	8b	1.118	0.00492	0.03354	6.929	0.00319	0.02734
8	2009	2b	0.185	0.00124	0.00805	2.180	0.00134	0.01124
8	2009	3	0.732	0.00488	0.03330	3.625	0.00190	0.01620
8	2009	4	0.727	0.00486	0.03313	3.870	0.00199	0.01706
8	2009	5	0.725	0.00484	0.03303	3.870	0.00199	0.01706
8	2009	6	0.724	0.00484	0.03302	3.955	0.00202	0.01733
8	2009	7	0.733	0.00489	0.03335	4.406	0.00220	0.01879
8	2009	8a	0.733	0.00489	0.03335	6.347	0.00295	0.02529
8	2009	8b	0.733	0.00489	0.03335	7.255	0.00333	0.02851
8	2010	2b	0.070	0.00060	0.00339	0.959	0.00094	0.00771
8	2010	3	0.109	0.00175	0.01194	1.937	0.00174	0.01484
8	2010	4	0.109	0.00175	0.01194	2.127	0.00189	0.01618
8	2010	5	0.109	0.00175	0.01194	2.127	0.00189	0.01618
8	2010	6	0.109	0.00175	0.01194	2.213	0.00197	0.01689
8	2010	7	0.109	0.00175	0.01194	2.533	0.00179	0.01531
8	2010	8a	0.109	0.00175	0.01194	4.001	0.00119	0.01016
8	2010	8b	0.109	0.00175	0.01194	4.724	0.00083	0.00707
8	2011	2b	0.072	0.00074	0.00389	1.069	0.00094	0.00773
8	2011	3	0.117	0.00171	0.01168	1.666	0.00155	0.01318
8	2011	4	0.133	0.00164	0.01121	1.778	0.00166	0.01419
8	2011	5	0.141	0.00161	0.01099	1.778	0.00166	0.01419
8	2011	6	0.141	0.00161	0.01097	1.851	0.00170	0.01458
8	2011	7	0.112	0.00174	0.01185	2.009	0.00161	0.01379
8	2011	8a	0.112	0.00174	0.01185	3.115	0.00121	0.01032
8	2011	8b	0.112	0.00174	0.01185	3.952	0.00084	0.00715
8	2012	2b	0.074	0.00081	0.00420	1.003	0.00097	0.00781
8	2012	3	0.119	0.00169	0.01155	1.666	0.00161	0.01373
8	2012	4	0.125	0.00167	0.01138	1.766	0.00171	0.01460
8	2012	5	0.128	0.00165	0.01128	1.766	0.00171	0.01460
8	2012	6	0.129	0.00165	0.01127	1.809	0.00171	0.01467

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2012	7	0.117	0.00170	0.01161	2.040	0.00161	0.01374
8	2012	8a	0.117	0.00170	0.01161	3.207	0.00114	0.00978
8	2012	8b	0.117	0.00170	0.01161	3.864	0.00083	0.00706
8	2013	2b	0.071	0.00082	0.00358	1.202	0.00098	0.00771
8	2013	3	0.125	0.00155	0.01058	1.771	0.00163	0.01385
8	2013	4	0.136	0.00151	0.01029	1.857	0.00173	0.01479
8	2013	5	0.141	0.00149	0.01015	1.857	0.00173	0.01479
8	2013	6	0.142	0.00148	0.01014	1.896	0.00174	0.01490
8	2013	7	0.122	0.00156	0.01067	2.071	0.00159	0.01358
8	2013	8a	0.122	0.00156	0.01067	2.803	0.00103	0.00885
8	2013	8b	0.122	0.00156	0.01067	3.139	0.00074	0.00632
8	2014	2b	0.072	0.00103	0.00370	0.557	0.00051	0.00247
8	2014	3	0.125	0.00150	0.01023	1.189	0.00052	0.00420
8	2014	4	0.129	0.00149	0.01014	1.268	0.00052	0.00441
8	2014	5	0.132	0.00148	0.01009	1.268	0.00052	0.00441
8	2014	6	0.132	0.00148	0.01009	1.299	0.00052	0.00448
8	2014	7	0.124	0.00150	0.01025	1.457	0.00052	0.00443
8	2014	8a	0.124	0.00150	0.01025	2.249	0.00051	0.00437
8	2014	8b	0.124	0.00150	0.01025	2.716	0.00048	0.00414
8	2015	2b	0.061	0.00101	0.00330	0.439	0.00050	0.00228
8	2015	3	0.125	0.00150	0.01023	1.069	0.00051	0.00413
8	2015	4	0.129	0.00149	0.01015	1.168	0.00052	0.00441
8	2015	5	0.131	0.00148	0.01011	1.168	0.00052	0.00441
8	2015	6	0.131	0.00148	0.01010	1.200	0.00052	0.00447
8	2015	7	0.124	0.00150	0.01025	1.374	0.00052	0.00443
8	2015	8a	0.124	0.00150	0.01025	2.233	0.00051	0.00438
8	2015	8b	0.124	0.00150	0.01025	2.730	0.00048	0.00415
8	2016	2b	0.061	0.00108	0.00328	0.422	0.00053	0.00226
8	2016	3	0.125	0.00150	0.01023	1.019	0.00052	0.00409
8	2016	4	0.128	0.00149	0.01016	1.126	0.00052	0.00441
8	2016	5	0.130	0.00148	0.01012	1.126	0.00052	0.00441
8	2016	6	0.130	0.00148	0.01012	1.153	0.00052	0.00446
8	2016	7	0.124	0.00150	0.01025	1.291	0.00052	0.00443

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2016	8a	0.124	0.00150	0.01025	2.082	0.00051	0.00440
8	2016	8b	0.124	0.00150	0.01025	2.630	0.00049	0.00417
8	2017	2b	0.047	0.00105	0.00294	0.403	0.00052	0.00213
8	2017	3	0.125	0.00150	0.01023	0.973	0.00052	0.00405
8	2017	4	0.128	0.00149	0.01017	1.080	0.00052	0.00441
8	2017	5	0.129	0.00149	0.01014	1.080	0.00052	0.00441
8	2017	6	0.129	0.00148	0.01014	1.102	0.00052	0.00446
8	2017	7	0.124	0.00150	0.01025	1.209	0.00052	0.00443
8	2017	8a	0.124	0.00150	0.01025	1.864	0.00052	0.00442
8	2017	8b	0.124	0.00150	0.01025	2.351	0.00049	0.00419
8	2018	2b	0.045	0.00112	0.00303	0.305	0.00054	0.00212
8	2018	3	0.109	0.00149	0.01019	0.916	0.00052	0.00405
8	2018	4	0.120	0.00147	0.01001	1.030	0.00052	0.00441
8	2018	5	0.126	0.00145	0.00991	1.030	0.00052	0.00441
8	2018	6	0.126	0.00145	0.00990	1.082	0.00053	0.00453
8	2018	7	0.105	0.00150	0.01025	1.175	0.00052	0.00447
8	2018	8a	0.105	0.00150	0.01025	1.829	0.00052	0.00443
8	2018	8b	0.105	0.00150	0.01025	2.294	0.00049	0.00418
8	2019	2b	0.033	0.00103	0.00281	0.244	0.00051	0.00199
8	2019	3	0.089	0.00149	0.01015	0.855	0.00050	0.00387
8	2019	4	0.098	0.00146	0.00997	0.979	0.00050	0.00425
8	2019	5	0.103	0.00145	0.00987	0.979	0.00050	0.00425
8	2019	6	0.103	0.00144	0.00986	1.030	0.00051	0.00436
8	2019	7	0.086	0.00150	0.01022	1.129	0.00050	0.00431
8	2019	8a	0.086	0.00150	0.01022	1.807	0.00051	0.00432
8	2019	8b	0.086	0.00150	0.01022	2.287	0.00048	0.00413
8	2020	2b	0.029	0.00091	0.00257	0.207	0.00046	0.00186
8	2020	3	0.084	0.00149	0.01016	0.821	0.00049	0.00381
8	2020	4	0.094	0.00146	0.00998	0.960	0.00050	0.00425
8	2020	5	0.099	0.00145	0.00989	0.960	0.00050	0.00425
8	2020	6	0.099	0.00145	0.00988	1.009	0.00051	0.00435
8	2020	7	0.081	0.00150	0.01022	1.104	0.00050	0.00431
8	2020	8a	0.081	0.00150	0.01022	1.780	0.00051	0.00433

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2020	8b	0.081	0.00150	0.01022	2.281	0.00048	0.00414
8	2021	2b	0.021	0.00049	0.00144	0.141	0.00025	0.00109
8	2021	3	0.079	0.00090	0.00612	0.575	0.00031	0.00246
8	2021	4	0.088	0.00088	0.00602	0.674	0.00032	0.00277
8	2021	5	0.092	0.00088	0.00597	0.674	0.00032	0.00277
8	2021	6	0.093	0.00087	0.00596	0.707	0.00033	0.00284
8	2021	7	0.077	0.00090	0.00615	0.769	0.00033	0.00282
8	2021	8a	0.077	0.00090	0.00615	1.236	0.00034	0.00287
8	2021	8b	0.077	0.00090	0.00615	1.595	0.00032	0.00277
8	2022	2b	0.017	0.00049	0.00144	0.125	0.00025	0.00109
8	2022	3	0.075	0.00090	0.00612	0.564	0.00031	0.00246
8	2022	4	0.084	0.00088	0.00602	0.664	0.00032	0.00277
8	2022	5	0.089	0.00088	0.00597	0.664	0.00032	0.00277
8	2022	6	0.089	0.00088	0.00596	0.697	0.00033	0.00284
8	2022	7	0.072	0.00090	0.00615	0.763	0.00033	0.00282
8	2022	8a	0.072	0.00090	0.00615	1.238	0.00033	0.00287
8	2022	8b	0.072	0.00090	0.00615	1.596	0.00032	0.00277
8	2023	2b	0.015	0.00050	0.00143	0.123	0.00025	0.00108
8	2023	3	0.075	0.00090	0.00612	0.561	0.00031	0.00245
8	2023	4	0.084	0.00088	0.00602	0.664	0.00032	0.00277
8	2023	5	0.088	0.00088	0.00597	0.664	0.00032	0.00277
8	2023	6	0.089	0.00088	0.00597	0.696	0.00033	0.00284
8	2023	7	0.072	0.00090	0.00615	0.760	0.00033	0.00281
8	2023	8a	0.072	0.00090	0.00615	1.230	0.00033	0.00286
8	2023	8b	0.072	0.00090	0.00615	1.594	0.00032	0.00277
8	2024	2b	0.012	0.00050	0.00141	0.121	0.00025	0.00107
8	2024	3	0.075	0.00090	0.00612	0.558	0.00031	0.00244
8	2024	4	0.083	0.00088	0.00602	0.663	0.00032	0.00277
8	2024	5	0.088	0.00088	0.00597	0.663	0.00032	0.00277
8	2024	6	0.088	0.00088	0.00597	0.695	0.00033	0.00283
8	2024	7	0.072	0.00090	0.00615	0.752	0.00033	0.00281
8	2024	8a	0.072	0.00090	0.00615	1.197	0.00033	0.00283
8	2024	8b	0.072	0.00090	0.00615	1.551	0.00032	0.00271

**Table A-8. SmartWay Category - Moving**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
8	2025	2b	0.012	0.00050	0.00141	0.121	0.00025	0.00107
8	2025	3	0.075	0.00090	0.00612	0.558	0.00031	0.00244
8	2025	4	0.083	0.00088	0.00602	0.663	0.00032	0.00277
8	2025	5	0.088	0.00088	0.00597	0.663	0.00032	0.00277
8	2025	6	0.088	0.00088	0.00597	0.695	0.00033	0.00283
8	2025	7	0.072	0.00090	0.00615	0.752	0.00033	0.00281
8	2025	8a	0.072	0.00090	0.00615	1.197	0.00033	0.00283
8	2025	8b	0.072	0.00090	0.00615	1.551	0.00032	0.00271

**Table A-9. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	Pre-1993	2b	4.034	0.00268	0.01825	9.426	0.80089	1.03159
9	Pre-1993	3	5.697	0.00478	0.03261	11.614	0.91057	1.16974
9	Pre-1993	4	5.841	0.00488	0.03331	18.284	1.14155	1.45316
9	Pre-1993	5	5.849	0.00489	0.03334	20.221	1.21902	1.55080
9	Pre-1993	6	5.237	0.00445	0.03039	19.676	1.18648	1.50967
9	Pre-1993	7	5.237	0.00445	0.03039	19.971	1.14520	1.45701
9	Pre-1993	8a	8.266	0.00738	0.05035	24.966	1.02053	1.29585
9	Pre-1993	8b	8.266	0.00738	0.05035	29.010	0.92773	1.17548
9	1993	2b	4.034	0.00268	0.01825	9.426	0.80089	1.03159
9	1993	3	5.697	0.00478	0.03261	11.614	0.91057	1.16974
9	1993	4	5.841	0.00488	0.03331	18.284	1.14155	1.45316
9	1993	5	5.849	0.00489	0.03334	20.221	1.21902	1.55080
9	1993	6	5.237	0.00445	0.03039	19.676	1.18648	1.50967
9	1993	7	5.237	0.00445	0.03039	19.971	1.14520	1.45701
9	1993	8a	8.266	0.00738	0.05035	24.966	1.02053	1.29585
9	1993	8b	8.266	0.00738	0.05035	29.010	0.92773	1.17548
9	1994	2b	4.034	0.00268	0.01825	9.426	0.80089	1.03159
9	1994	3	5.697	0.00478	0.03261	11.614	0.91057	1.16974
9	1994	4	5.841	0.00488	0.03331	18.284	1.14155	1.45316
9	1994	5	5.849	0.00489	0.03334	20.221	1.21902	1.55080
9	1994	6	5.237	0.00445	0.03039	19.676	1.18648	1.50967
9	1994	7	5.237	0.00445	0.03039	19.971	1.14520	1.45701
9	1994	8a	8.266	0.00738	0.05035	24.966	1.02053	1.29585
9	1994	8b	8.266	0.00738	0.05035	29.010	0.92773	1.17548
9	1995	2b	4.208	0.00672	0.04585	8.905	0.75691	0.97568
9	1995	3	5.811	0.02501	0.17062	16.978	1.07007	1.36502
9	1995	4	5.892	0.02626	0.17916	19.533	1.14563	1.45873
9	1995	5	5.873	0.02599	0.17735	22.747	1.26621	1.60979
9	1995	6	5.263	0.01634	0.11151	22.262	1.17605	1.49529
9	1995	7	5.263	0.01634	0.11151	23.398	1.15019	1.46182
9	1995	8a	7.923	0.03294	0.22471	28.418	0.96044	1.21763
9	1995	8b	7.923	0.03294	0.22471	29.931	0.91210	1.15506
9	1996	2b	3.283	0.00583	0.03980	9.032	0.71782	0.92546

**Table A-9. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	1996	3	5.870	0.02409	0.16438	19.732	1.15145	1.46592
9	1996	4	5.909	0.02474	0.16877	21.146	1.15970	1.47511
9	1996	5	5.906	0.02474	0.16881	22.390	1.27046	1.61544
9	1996	6	5.371	0.01529	0.10433	22.857	1.17988	1.49995
9	1996	7	5.371	0.01529	0.10433	23.618	1.16113	1.47567
9	1996	8a	7.923	0.02910	0.19857	28.393	0.96641	1.22534
9	1996	8b	7.923	0.02910	0.19857	30.045	0.91486	1.15851
9	1997	2b	2.614	0.00262	0.01790	7.012	0.61570	0.79760
9	1997	3	5.809	0.01028	0.07011	14.045	0.92647	1.18528
9	1997	4	5.911	0.01082	0.07380	19.193	1.18876	1.51299
9	1997	5	5.889	0.01071	0.07306	20.998	1.29218	1.64328
9	1997	6	5.326	0.00774	0.05279	20.455	1.19424	1.51925
9	1997	7	5.326	0.00774	0.05279	21.292	1.17691	1.49686
9	1997	8a	9.240	0.00542	0.03697	27.379	0.98061	1.24402
9	1997	8b	9.240	0.00542	0.03697	29.707	0.91161	1.15470
9	1998	2b	2.214	0.00276	0.01880	8.204	0.30070	0.39647
9	1998	3	3.268	0.01344	0.09171	17.558	0.47173	0.60802
9	1998	4	3.274	0.01493	0.10189	18.760	0.49365	0.63512
9	1998	5	3.260	0.01328	0.09063	19.116	0.45012	0.58069
9	1998	6	3.251	0.00907	0.06190	18.934	0.47448	0.61115
9	1998	7	3.251	0.00907	0.06190	19.353	0.46530	0.59947
9	1998	8a	3.669	0.02295	0.15656	24.331	0.58370	0.74432
9	1998	8b	3.669	0.02295	0.15656	26.647	0.62568	0.79490
9	1999	2b	1.747	0.00410	0.02800	7.702	0.30046	0.39630
9	1999	3	3.353	0.01686	0.11502	12.246	0.43386	0.56126
9	1999	4	3.590	0.01737	0.11854	13.252	0.46369	0.59809
9	1999	5	3.640	0.01731	0.11813	13.274	0.46429	0.59885
9	1999	6	3.643	0.01732	0.11817	13.056	0.45220	0.58347
9	1999	7	3.129	0.01633	0.11142	13.425	0.46205	0.59569
9	1999	8a	3.149	0.01705	0.11632	18.894	0.58215	0.74258
9	1999	8b	3.149	0.01705	0.11632	21.207	0.63062	0.80108
9	2000	2b	1.556	0.00265	0.01808	7.918	0.30683	0.40418
9	2000	3	3.492	0.00990	0.06757	12.316	0.43523	0.56270

**Table A-9. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2000	4	3.800	0.00891	0.06082	13.034	0.45629	0.58870
9	2000	5	3.875	0.00867	0.05918	13.076	0.45743	0.59014
9	2000	6	3.880	0.00866	0.05907	13.108	0.45538	0.58730
9	2000	7	3.257	0.01066	0.07270	13.751	0.46954	0.60474
9	2000	8a	3.257	0.01066	0.07270	17.728	0.55483	0.70900
9	2000	8b	3.257	0.01066	0.07270	20.998	0.62587	0.79527
9	2001	2b	0.549	0.00205	0.01399	7.498	0.29471	0.38918
9	2001	3	1.389	0.00564	0.03846	11.982	0.42482	0.54985
9	2001	4	1.503	0.00550	0.03752	12.651	0.44442	0.57400
9	2001	5	1.543	0.00545	0.03719	12.673	0.44502	0.57476
9	2001	6	1.546	0.00545	0.03717	13.104	0.45373	0.58532
9	2001	7	1.333	0.00571	0.03892	13.069	0.45327	0.58477
9	2001	8a	1.333	0.00571	0.03892	18.318	0.56689	0.72373
9	2001	8b	1.333	0.00571	0.03892	20.819	0.62138	0.78975
9	2002	2b	0.525	0.00229	0.01561	7.607	0.29792	0.39317
9	2002	3	1.441	0.00759	0.05177	11.719	0.41716	0.54046
9	2002	4	1.588	0.00697	0.04756	12.645	0.44422	0.57381
9	2002	5	1.628	0.00680	0.04640	12.645	0.44422	0.57381
9	2002	6	1.631	0.00679	0.04633	12.908	0.44977	0.58049
9	2002	7	1.346	0.00799	0.05448	13.152	0.45458	0.58639
9	2002	8a	1.346	0.00799	0.05448	16.472	0.52725	0.67564
9	2002	8b	1.346	0.00799	0.05448	20.480	0.61374	0.78047
9	2003	2b	0.459	0.00218	0.01484	4.599	0.25198	0.33259
9	2003	3	1.400	0.00825	0.05629	7.286	0.36311	0.47037
9	2003	4	1.526	0.00799	0.05450	7.897	0.38884	0.50222
9	2003	5	1.563	0.00791	0.05398	7.897	0.38884	0.50222
9	2003	6	1.565	0.00791	0.05395	8.644	0.39980	0.51584
9	2003	7	1.324	0.00841	0.05737	8.567	0.40476	0.52185
9	2003	8a	1.324	0.00841	0.05737	10.012	0.48280	0.61780
9	2003	8b	1.324	0.00841	0.05737	11.623	0.56059	0.71252
9	2004	2b	0.374	0.00143	0.00988	4.581	0.25019	0.33020
9	2004	3	1.434	0.00629	0.04291	7.420	0.36241	0.46943
9	2004	4	1.608	0.00579	0.03949	8.070	0.38858	0.50186



**Table A-9. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2004	5	1.656	0.00565	0.03856	8.070	0.38858	0.50186
9	2004	6	1.659	0.00564	0.03850	8.791	0.40407	0.52116
9	2004	7	1.320	0.00662	0.04515	8.709	0.40705	0.52471
9	2004	8a	1.320	0.00662	0.04515	10.033	0.48013	0.61445
9	2004	8b	1.320	0.00662	0.04515	11.634	0.56116	0.71324
9	2005	2b	0.312	0.00089	0.00621	4.448	0.24383	0.32204
9	2005	3	1.416	0.00465	0.03175	7.207	0.35454	0.45962
9	2005	4	1.516	0.00442	0.03012	8.004	0.38704	0.49994
9	2005	5	1.559	0.00431	0.02943	8.004	0.38704	0.49994
9	2005	6	1.562	0.00431	0.02938	8.594	0.40211	0.51874
9	2005	7	1.376	0.00475	0.03239	8.619	0.40819	0.52607
9	2005	8a	1.376	0.00475	0.03239	10.235	0.49074	0.62730
9	2005	8b	1.376	0.00475	0.03239	11.706	0.56426	0.71699
9	2006	2b	0.345	0.00104	0.00722	4.505	0.24768	0.32714
9	2006	3	1.412	0.00504	0.03437	7.078	0.35264	0.45736
9	2006	4	1.540	0.00469	0.03196	7.816	0.38317	0.49514
9	2006	5	1.587	0.00456	0.03108	7.816	0.38317	0.49514
9	2006	6	1.590	0.00455	0.03102	8.280	0.39610	0.51127
9	2006	7	1.353	0.00520	0.03549	8.349	0.40260	0.51913
9	2006	8a	1.353	0.00520	0.03548	10.066	0.48591	0.62140
9	2006	8b	1.353	0.00520	0.03548	11.673	0.56360	0.71620
9	2007	2b	0.296	0.00091	0.00631	2.930	0.00163	0.01393
9	2007	3	1.424	0.00501	0.03419	4.846	0.00246	0.02101
9	2007	4	1.536	0.00467	0.03184	5.233	0.00262	0.02247
9	2007	5	1.580	0.00453	0.03090	5.233	0.00262	0.02247
9	2007	6	1.583	0.00452	0.03084	5.428	0.00269	0.02305
9	2007	7	1.377	0.00516	0.03517	5.662	0.00279	0.02385
9	2007	8a	1.379	0.00516	0.03517	7.413	0.00347	0.02974
9	2007	8b	1.379	0.00516	0.03517	8.565	0.00393	0.03366
9	2008	2b	0.222	0.00101	0.00686	2.826	0.00159	0.01356
9	2008	3	0.911	0.00490	0.03345	4.291	0.00222	0.01901
9	2008	4	0.879	0.00474	0.03234	4.655	0.00238	0.02038
9	2008	5	0.863	0.00466	0.03177	4.655	0.00238	0.02038

**Table A-g. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2008	6	0.862	0.00465	0.03173	4.844	0.00245	0.02096
9	2008	7	0.922	0.00496	0.03381	4.893	0.00247	0.02114
9	2008	8a	0.921	0.00496	0.03381	6.101	0.00295	0.02523
9	2008	8b	0.921	0.00496	0.03381	8.130	0.00375	0.03214
9	2009	2b	0.145	0.00112	0.00733	2.806	0.00159	0.01340
9	2009	3	0.636	0.00490	0.03340	5.025	0.00254	0.02175
9	2009	4	0.636	0.00484	0.03305	5.390	0.00270	0.02314
9	2009	5	0.636	0.00482	0.03286	5.390	0.00270	0.02314
9	2009	6	0.636	0.00482	0.03285	5.473	0.00273	0.02340
9	2009	7	0.637	0.00491	0.03352	5.769	0.00285	0.02437
9	2009	8a	0.637	0.00491	0.03350	7.489	0.00351	0.03003
9	2009	8b	0.637	0.00491	0.03350	8.555	0.00393	0.03360
9	2010	2b	0.057	0.00054	0.00308	1.432	0.00113	0.00937
9	2010	3	0.116	0.00205	0.01397	3.442	0.00311	0.02660
9	2010	4	0.116	0.00205	0.01397	3.813	0.00348	0.02974
9	2010	5	0.116	0.00205	0.01397	3.813	0.00348	0.02974
9	2010	6	0.116	0.00205	0.01397	3.956	0.00370	0.03165
9	2010	7	0.116	0.00205	0.01397	4.282	0.00340	0.02911
9	2010	8a	0.116	0.00205	0.01397	6.422	0.00228	0.01951
9	2010	8b	0.116	0.00205	0.01397	7.825	0.00141	0.01208
9	2011	2b	0.061	0.00068	0.00368	1.525	0.00109	0.00902
9	2011	3	0.124	0.00203	0.01384	2.879	0.00254	0.02169
9	2011	4	0.139	0.00199	0.01357	3.127	0.00281	0.02400
9	2011	5	0.146	0.00197	0.01343	3.127	0.00281	0.02400
9	2011	6	0.146	0.00197	0.01342	3.275	0.00294	0.02514
9	2011	7	0.119	0.00204	0.01394	3.445	0.00280	0.02392
9	2011	8a	0.119	0.00204	0.01394	5.181	0.00219	0.01870
9	2011	8b	0.119	0.00204	0.01394	6.954	0.00142	0.01212
9	2012	2b	0.065	0.00076	0.00407	1.479	0.00116	0.00946
9	2012	3	0.126	0.00201	0.01373	2.940	0.00271	0.02316
9	2012	4	0.132	0.00200	0.01363	3.151	0.00294	0.02514
9	2012	5	0.135	0.00199	0.01358	3.151	0.00294	0.02514
9	2012	6	0.135	0.00199	0.01357	3.230	0.00297	0.02541

**Table A-g. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2012	7	0.124	0.00202	0.01376	3.511	0.00283	0.02420
9	2012	8a	0.124	0.00202	0.01376	5.447	0.00209	0.01787
9	2012	8b	0.124	0.00202	0.01376	6.884	0.00140	0.01197
9	2013	2b	0.059	0.00073	0.00330	1.675	0.00118	0.00948
9	2013	3	0.133	0.00185	0.01267	3.055	0.00289	0.02464
9	2013	4	0.142	0.00183	0.01248	3.261	0.00315	0.02691
9	2013	5	0.147	0.00181	0.01239	3.261	0.00315	0.02691
9	2013	6	0.147	0.00181	0.01238	3.343	0.00320	0.02739
9	2013	7	0.129	0.00186	0.01273	3.573	0.00298	0.02546
9	2013	8a	0.130	0.00186	0.01273	4.933	0.00196	0.01680
9	2013	8b	0.130	0.00186	0.01273	5.746	0.00127	0.01085
9	2014	2b	0.060	0.00089	0.00343	0.927	0.00049	0.00259
9	2014	3	0.133	0.00180	0.01231	2.499	0.00076	0.00629
9	2014	4	0.137	0.00179	0.01226	2.686	0.00079	0.00673
9	2014	5	0.139	0.00179	0.01223	2.686	0.00079	0.00673
9	2014	6	0.139	0.00179	0.01223	2.749	0.00080	0.00685
9	2014	7	0.132	0.00180	0.01232	2.942	0.00079	0.00676
9	2014	8a	0.132	0.00180	0.01232	4.290	0.00076	0.00653
9	2014	8b	0.132	0.00180	0.01232	5.343	0.00072	0.00612
9	2015	2b	0.052	0.00088	0.00308	0.763	0.00047	0.00233
9	2015	3	0.133	0.00180	0.01231	2.351	0.00075	0.00616
9	2015	4	0.136	0.00180	0.01226	2.585	0.00079	0.00673
9	2015	5	0.138	0.00179	0.01224	2.585	0.00079	0.00673
9	2015	6	0.138	0.00179	0.01224	2.648	0.00080	0.00684
9	2015	7	0.132	0.00180	0.01232	2.857	0.00079	0.00675
9	2015	8a	0.132	0.00180	0.01232	4.281	0.00076	0.00654
9	2015	8b	0.132	0.00180	0.01232	5.370	0.00072	0.00613
9	2016	2b	0.051	0.00093	0.00303	0.722	0.00049	0.00226
9	2016	3	0.133	0.00180	0.01231	2.251	0.00075	0.00608
9	2016	4	0.136	0.00180	0.01227	2.509	0.00079	0.00673
9	2016	5	0.138	0.00179	0.01225	2.509	0.00079	0.00673
9	2016	6	0.138	0.00179	0.01224	2.563	0.00080	0.00682
9	2016	7	0.132	0.00180	0.01232	2.728	0.00079	0.00675

**Table A-g. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2016	8a	0.132	0.00180	0.01232	4.010	0.00077	0.00658
9	2016	8b	0.132	0.00180	0.01232	5.192	0.00072	0.00618
9	2017	2b	0.040	0.00091	0.00276	0.692	0.00048	0.00213
9	2017	3	0.133	0.00180	0.01231	2.152	0.00074	0.00603
9	2017	4	0.135	0.00180	0.01227	2.411	0.00079	0.00673
9	2017	5	0.137	0.00179	0.01226	2.411	0.00079	0.00673
9	2017	6	0.137	0.00179	0.01225	2.454	0.00080	0.00681
9	2017	7	0.132	0.00180	0.01232	2.587	0.00079	0.00675
9	2017	8a	0.132	0.00180	0.01232	3.670	0.00077	0.00660
9	2017	8b	0.132	0.00180	0.01232	4.742	0.00073	0.00621
9	2018	2b	0.039	0.00097	0.00290	0.547	0.00050	0.00212
9	2018	3	0.115	0.00180	0.01228	2.060	0.00075	0.00604
9	2018	4	0.126	0.00178	0.01218	2.326	0.00079	0.00673
9	2018	5	0.131	0.00178	0.01213	2.326	0.00079	0.00673
9	2018	6	0.131	0.00177	0.01212	2.445	0.00082	0.00698
9	2018	7	0.112	0.00180	0.01232	2.548	0.00080	0.00685
9	2018	8a	0.112	0.00180	0.01232	3.637	0.00078	0.00663
9	2018	8b	0.112	0.00180	0.01232	4.661	0.00073	0.00622
9	2019	2b	0.029	0.00090	0.00276	0.447	0.00046	0.00197
9	2019	3	0.095	0.00179	0.01223	1.940	0.00071	0.00574
9	2019	4	0.104	0.00177	0.01211	2.225	0.00075	0.00646
9	2019	5	0.109	0.00176	0.01204	2.225	0.00075	0.00646
9	2019	6	0.109	0.00176	0.01204	2.338	0.00078	0.00668
9	2019	7	0.092	0.00180	0.01227	2.450	0.00077	0.00657
9	2019	8a	0.092	0.00180	0.01227	3.587	0.00075	0.00645
9	2019	8b	0.092	0.00180	0.01227	4.645	0.00072	0.00614
9	2020	2b	0.026	0.00081	0.00258	0.382	0.00042	0.00185
9	2020	3	0.091	0.00179	0.01223	1.875	0.00070	0.00565
9	2020	4	0.099	0.00177	0.01212	2.191	0.00075	0.00646
9	2020	5	0.104	0.00176	0.01206	2.191	0.00075	0.00646
9	2020	6	0.104	0.00176	0.01205	2.299	0.00078	0.00667
9	2020	7	0.088	0.00180	0.01227	2.407	0.00077	0.00656
9	2020	8a	0.088	0.00180	0.01227	3.532	0.00075	0.00645

**Table A-9. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2020	8b	0.088	0.00180	0.01227	4.629	0.00072	0.00614
9	2021	2b	0.019	0.00044	0.00147	0.263	0.00024	0.00111
9	2021	3	0.085	0.00109	0.00738	1.321	0.00045	0.00370
9	2021	4	0.094	0.00108	0.00733	1.545	0.00050	0.00425
9	2021	5	0.098	0.00107	0.00730	1.545	0.00050	0.00425
9	2021	6	0.098	0.00107	0.00730	1.619	0.00051	0.00439
9	2021	7	0.083	0.00109	0.00740	1.692	0.00051	0.00432
9	2021	8a	0.083	0.00109	0.00740	2.480	0.00050	0.00431
9	2021	8b	0.083	0.00109	0.00740	3.277	0.00048	0.00415
9	2022	2b	0.016	0.00045	0.00148	0.239	0.00024	0.00111
9	2022	3	0.081	0.00109	0.00738	1.303	0.00045	0.00370
9	2022	4	0.089	0.00108	0.00733	1.528	0.00050	0.00425
9	2022	5	0.094	0.00107	0.00730	1.528	0.00050	0.00425
9	2022	6	0.094	0.00107	0.00730	1.602	0.00051	0.00438
9	2022	7	0.078	0.00109	0.00740	1.679	0.00051	0.00432
9	2022	8a	0.078	0.00109	0.00740	2.485	0.00050	0.00430
9	2022	8b	0.078	0.00109	0.00740	3.281	0.00048	0.00415
9	2023	2b	0.014	0.00045	0.00147	0.234	0.00024	0.00110
9	2023	3	0.081	0.00109	0.00739	1.296	0.00045	0.00368
9	2023	4	0.089	0.00108	0.00733	1.528	0.00050	0.00425
9	2023	5	0.094	0.00107	0.00730	1.528	0.00050	0.00425
9	2023	6	0.094	0.00107	0.00730	1.600	0.00051	0.00438
9	2023	7	0.078	0.00109	0.00740	1.675	0.00051	0.00432
9	2023	8a	0.078	0.00109	0.00740	2.469	0.00050	0.00430
9	2023	8b	0.078	0.00109	0.00740	3.276	0.00048	0.00415
9	2024	2b	0.012	0.00045	0.00145	0.231	0.00024	0.00109
9	2024	3	0.081	0.00109	0.00738	1.290	0.00045	0.00367
9	2024	4	0.089	0.00108	0.00733	1.528	0.00050	0.00425
9	2024	5	0.093	0.00107	0.00730	1.528	0.00050	0.00425
9	2024	6	0.094	0.00107	0.00730	1.598	0.00051	0.00437
9	2024	7	0.078	0.00109	0.00740	1.667	0.00050	0.00431
9	2024	8a	0.078	0.00109	0.00740	2.427	0.00050	0.00427
9	2024	8b	0.078	0.00109	0.00740	3.224	0.00048	0.00408

**Table A-g. SmartWay Category - Package**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
9	2025	2b	0.012	0.00045	0.00145	0.231	0.00024	0.00109
9	2025	3	0.081	0.00109	0.00738	1.290	0.00045	0.00367
9	2025	4	0.089	0.00108	0.00733	1.528	0.00050	0.00425
9	2025	5	0.093	0.00107	0.00730	1.528	0.00050	0.00425
9	2025	6	0.094	0.00107	0.00730	1.598	0.00051	0.00437
9	2025	7	0.078	0.00109	0.00740	1.667	0.00050	0.00431
9	2025	8a	0.078	0.00109	0.00740	2.427	0.00050	0.00427
9	2025	8b	0.078	0.00109	0.00740	3.224	0.00048	0.00408

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	Pre-1993	2b	4.367	0.00575	0.03922	7.336	0.41308	0.52990
10	Pre-1993	3	5.695	0.01125	0.07674	8.689	0.47657	0.60890
10	Pre-1993	4	5.865	0.01145	0.07811	12.822	0.61458	0.77831
10	Pre-1993	5	5.874	0.01146	0.07818	14.479	0.65194	0.82532
10	Pre-1993	6	5.155	0.01061	0.07239	14.183	0.64015	0.81045
10	Pre-1993	7	5.155	0.01061	0.07239	15.555	0.64053	0.81077
10	Pre-1993	8a	7.746	0.01445	0.09860	24.386	0.69390	0.87700
10	Pre-1993	8b	7.746	0.01445	0.09860	29.719	0.72926	0.92076
10	1993	2b	4.367	0.00575	0.03922	7.336	0.41308	0.52990
10	1993	3	5.695	0.01125	0.07674	8.689	0.47657	0.60890
10	1993	4	5.865	0.01145	0.07811	12.822	0.61458	0.77831
10	1993	5	5.874	0.01146	0.07818	14.479	0.65194	0.82532
10	1993	6	5.155	0.01061	0.07239	14.183	0.64015	0.81045
10	1993	7	5.155	0.01061	0.07239	15.555	0.64053	0.81077
10	1993	8a	7.746	0.01445	0.09860	24.386	0.69390	0.87700
10	1993	8b	7.746	0.01445	0.09860	29.719	0.72926	0.92076
10	1994	2b	4.367	0.00575	0.03922	7.336	0.41308	0.52990
10	1994	3	5.695	0.01125	0.07674	8.689	0.47657	0.60890
10	1994	4	5.865	0.01145	0.07811	12.822	0.61458	0.77831
10	1994	5	5.874	0.01146	0.07818	14.479	0.65194	0.82532
10	1994	6	5.155	0.01061	0.07239	14.183	0.64015	0.81045
10	1994	7	5.155	0.01061	0.07239	15.555	0.64053	0.81077
10	1994	8a	7.746	0.01445	0.09860	24.386	0.69390	0.87700
10	1994	8b	7.746	0.01445	0.09860	29.719	0.72926	0.92076
10	1995	2b	4.451	0.00739	0.05043	7.049	0.38857	0.49859
10	1995	3	5.824	0.02367	0.16146	12.109	0.56658	0.71922
10	1995	4	5.923	0.02469	0.16847	14.299	0.62253	0.78866
10	1995	5	5.900	0.02447	0.16695	16.946	0.68534	0.86725
10	1995	6	5.150	0.01659	0.11317	17.538	0.66700	0.84400
10	1995	7	5.150	0.01659	0.11317	19.735	0.68105	0.86148
10	1995	8a	7.589	0.03413	0.23287	28.655	0.72589	0.91681
10	1995	8b	7.589	0.03413	0.23287	30.688	0.73655	0.92981
10	1996	2b	3.552	0.00485	0.03308	7.011	0.37084	0.47539

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	1996	3	5.890	0.01680	0.11463	13.871	0.62110	0.78678
10	1996	4	5.940	0.01721	0.11745	15.659	0.64447	0.81575
10	1996	5	5.938	0.01721	0.11741	16.695	0.68746	0.87004
10	1996	6	5.222	0.01122	0.07657	18.716	0.67865	0.85859
10	1996	7	5.222	0.01122	0.07657	19.806	0.68646	0.86833
10	1996	8a	7.589	0.02525	0.17231	28.547	0.72619	0.91724
10	1996	8b	7.589	0.02525	0.17231	30.792	0.73918	0.93310
10	1997	2b	3.382	0.00408	0.02784	5.828	0.31548	0.40763
10	1997	3	5.816	0.01504	0.10260	10.548	0.49419	0.62935
10	1997	4	5.946	0.01577	0.10761	13.389	0.63433	0.80323
10	1997	5	5.918	0.01563	0.10661	15.320	0.69119	0.87475
10	1997	6	5.206	0.01159	0.07906	15.320	0.65655	0.83105
10	1997	7	5.206	0.01159	0.07906	16.982	0.66659	0.84356
10	1997	8a	8.792	0.01030	0.07026	27.371	0.71623	0.90484
10	1997	8b	8.792	0.01030	0.07026	30.383	0.73283	0.92518
10	1998	2b	3.057	0.00348	0.02371	6.281	0.24684	0.31983
10	1998	3	3.898	0.01512	0.10315	12.995	0.33971	0.43360
10	1998	4	3.938	0.01654	0.11283	13.879	0.35203	0.44864
10	1998	5	3.888	0.01494	0.10195	14.680	0.33592	0.42873
10	1998	6	3.780	0.01095	0.07470	14.271	0.34521	0.44023
10	1998	7	3.780	0.01095	0.07470	15.170	0.34645	0.44181
10	1998	8a	4.372	0.02468	0.16839	25.157	0.46507	0.58931
10	1998	8b	4.372	0.02468	0.16839	28.702	0.50185	0.63472
10	1999	2b	2.341	0.00414	0.02822	5.867	0.24754	0.32067
10	1999	3	3.887	0.01438	0.09809	8.771	0.31537	0.40335
10	1999	4	4.053	0.01499	0.10225	9.423	0.33092	0.42221
10	1999	5	4.085	0.01491	0.10170	9.462	0.33158	0.42306
10	1999	6	4.087	0.01491	0.10175	9.597	0.33252	0.42436
10	1999	7	3.730	0.01375	0.09382	10.105	0.34033	0.43408
10	1999	8a	3.756	0.01464	0.09989	18.638	0.46604	0.59062
10	1999	8b	3.756	0.01464	0.09989	21.406	0.50619	0.64016
10	2000	2b	2.085	0.00387	0.02639	6.007	0.25112	0.32506
10	2000	3	3.950	0.01328	0.09059	8.844	0.31816	0.40670



**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2000	4	4.156	0.01196	0.08159	9.354	0.32996	0.42106
10	2000	5	4.206	0.01164	0.07940	9.432	0.33124	0.42269
10	2000	6	4.209	0.01162	0.07926	9.630	0.33555	0.42816
10	2000	7	3.794	0.01428	0.09743	10.834	0.35204	0.44868
10	2000	8a	3.794	0.01428	0.09743	17.195	0.44371	0.56283
10	2000	8b	3.794	0.01428	0.09743	21.216	0.50353	0.63688
10	2001	2b	0.692	0.00279	0.01904	5.736	0.24487	0.31741
10	2001	3	1.620	0.01140	0.07779	8.598	0.31127	0.39810
10	2001	4	1.696	0.01128	0.07695	9.013	0.32125	0.41013
10	2001	5	1.722	0.01124	0.07665	9.052	0.32191	0.41097
10	2001	6	1.724	0.01123	0.07663	9.842	0.33560	0.42813
10	2001	7	1.584	0.01146	0.07820	9.709	0.33307	0.42497
10	2001	8a	1.584	0.01146	0.07820	18.102	0.45638	0.57857
10	2001	8b	1.584	0.01146	0.07820	21.037	0.50032	0.63289
10	2002	2b	0.663	0.00238	0.01625	5.804	0.24648	0.31937
10	2002	3	1.653	0.00747	0.05093	8.409	0.30661	0.39241
10	2002	4	1.749	0.00679	0.04632	8.992	0.32039	0.40905
10	2002	5	1.775	0.00660	0.04505	8.992	0.32039	0.40905
10	2002	6	1.777	0.00659	0.04496	9.396	0.32946	0.42050
10	2002	7	1.591	0.00790	0.05389	9.934	0.33604	0.42865
10	2002	8a	1.591	0.00790	0.05389	15.583	0.41881	0.53196
10	2002	8b	1.591	0.00790	0.05389	20.667	0.49456	0.62576
10	2003	2b	0.575	0.00244	0.01663	4.167	0.20832	0.26998
10	2003	3	1.631	0.00864	0.05894	5.761	0.26581	0.34018
10	2003	4	1.714	0.00847	0.05781	6.130	0.27931	0.35657
10	2003	5	1.738	0.00843	0.05748	6.130	0.27931	0.35657
10	2003	6	1.740	0.00842	0.05746	6.560	0.29160	0.37211
10	2003	7	1.581	0.00874	0.05963	6.706	0.29982	0.38230
10	2003	8a	1.581	0.00874	0.05963	8.695	0.38655	0.49059
10	2003	8b	1.581	0.00874	0.05963	10.134	0.45151	0.57114
10	2004	2b	0.463	0.00153	0.01060	4.144	0.20693	0.26816
10	2004	3	1.648	0.00651	0.04440	5.815	0.26655	0.34113
10	2004	4	1.760	0.00626	0.04270	6.206	0.28074	0.35841

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2004	5	1.791	0.00619	0.04223	6.206	0.28074	0.35841
10	2004	6	1.793	0.00619	0.04220	6.620	0.29481	0.37615
10	2004	7	1.576	0.00667	0.04551	6.758	0.30191	0.38495
10	2004	8a	1.576	0.00667	0.04551	8.670	0.38505	0.48872
10	2004	8b	1.576	0.00667	0.04551	10.137	0.45207	0.57185
10	2005	2b	0.384	0.00098	0.00683	4.045	0.20234	0.26233
10	2005	3	1.627	0.00483	0.03296	5.692	0.26186	0.33531
10	2005	4	1.694	0.00470	0.03207	6.177	0.27966	0.35706
10	2005	5	1.722	0.00465	0.03168	6.177	0.27966	0.35706
10	2005	6	1.724	0.00464	0.03166	6.520	0.29243	0.37312
10	2005	7	1.601	0.00488	0.03331	6.786	0.30421	0.38778
10	2005	8a	1.602	0.00488	0.03331	8.904	0.39521	0.50130
10	2005	8b	1.602	0.00488	0.03331	10.199	0.45443	0.57477
10	2006	2b	0.424	0.00112	0.00777	4.102	0.20553	0.26645
10	2006	3	1.633	0.00510	0.03478	5.647	0.26023	0.33329
10	2006	4	1.716	0.00491	0.03350	6.097	0.27632	0.35284
10	2006	5	1.746	0.00484	0.03303	6.097	0.27632	0.35284
10	2006	6	1.748	0.00484	0.03300	6.365	0.28692	0.36617
10	2006	7	1.595	0.00519	0.03537	6.648	0.29906	0.38129
10	2006	8a	1.595	0.00518	0.03537	8.795	0.39098	0.49603
10	2006	8b	1.595	0.00518	0.03537	10.179	0.45391	0.57412
10	2007	2b	0.364	0.00099	0.00688	2.192	0.00136	0.01157
10	2007	3	1.639	0.00508	0.03464	3.371	0.00179	0.01528
10	2007	4	1.711	0.00488	0.03331	3.613	0.00188	0.01605
10	2007	5	1.739	0.00481	0.03278	3.613	0.00188	0.01605
10	2007	6	1.741	0.00480	0.03274	3.786	0.00194	0.01657
10	2007	7	1.608	0.00516	0.03520	4.179	0.00208	0.01779
10	2007	8a	1.609	0.00516	0.03521	6.148	0.00280	0.02397
10	2007	8b	1.609	0.00516	0.03521	7.092	0.00316	0.02703
10	2008	2b	0.277	0.00109	0.00746	2.121	0.00133	0.01134
10	2008	3	1.097	0.00499	0.03406	2.966	0.00163	0.01397
10	2008	4	1.046	0.00490	0.03342	3.176	0.00171	0.01463
10	2008	5	1.021	0.00485	0.03310	3.176	0.00171	0.01463

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2008	6	1.019	0.00485	0.03307	3.335	0.00176	0.01511
10	2008	7	1.113	0.00502	0.03427	3.453	0.00181	0.01548
10	2008	8a	1.113	0.00502	0.03427	4.950	0.00235	0.02013
10	2008	8b	1.113	0.00502	0.03427	6.757	0.00303	0.02592
10	2009	2b	0.184	0.00122	0.00793	2.088	0.00132	0.01109
10	2009	3	0.727	0.00499	0.03401	3.486	0.00183	0.01566
10	2009	4	0.722	0.00497	0.03388	3.719	0.00192	0.01643
10	2009	5	0.720	0.00496	0.03381	3.719	0.00192	0.01643
10	2009	6	0.720	0.00496	0.03381	3.803	0.00195	0.01668
10	2009	7	0.728	0.00499	0.03405	4.261	0.00211	0.01809
10	2009	8a	0.728	0.00499	0.03405	6.188	0.00281	0.02408
10	2009	8b	0.728	0.00499	0.03405	7.071	0.00315	0.02693
10	2010	2b	0.069	0.00059	0.00333	0.898	0.00092	0.00753
10	2010	3	0.106	0.00170	0.01162	1.822	0.00170	0.01451
10	2010	4	0.106	0.00170	0.01162	1.998	0.00185	0.01582
10	2010	5	0.106	0.00170	0.01162	1.998	0.00185	0.01582
10	2010	6	0.106	0.00170	0.01162	2.081	0.00193	0.01652
10	2010	7	0.106	0.00170	0.01162	2.397	0.00175	0.01494
10	2010	8a	0.106	0.00170	0.01162	3.799	0.00115	0.00984
10	2010	8b	0.106	0.00170	0.01162	4.465	0.00080	0.00686
10	2011	2b	0.071	0.00072	0.00381	1.005	0.00092	0.00754
10	2011	3	0.115	0.00167	0.01136	1.568	0.00151	0.01290
10	2011	4	0.130	0.00160	0.01089	1.673	0.00162	0.01389
10	2011	5	0.138	0.00156	0.01066	1.673	0.00162	0.01389
10	2011	6	0.138	0.00156	0.01065	1.740	0.00167	0.01427
10	2011	7	0.109	0.00169	0.01153	1.896	0.00157	0.01347
10	2011	8a	0.109	0.00169	0.01153	2.945	0.00117	0.01002
10	2011	8b	0.109	0.00169	0.01153	3.706	0.00081	0.00693
10	2012	2b	0.073	0.00079	0.00411	0.941	0.00094	0.00763
10	2012	3	0.116	0.00165	0.01123	1.566	0.00158	0.01344
10	2012	4	0.122	0.00162	0.01106	1.658	0.00167	0.01429
10	2012	5	0.125	0.00161	0.01096	1.658	0.00167	0.01429
10	2012	6	0.126	0.00161	0.01095	1.699	0.00168	0.01435

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2012	7	0.114	0.00165	0.01129	1.925	0.00157	0.01342
10	2012	8a	0.114	0.00165	0.01129	3.023	0.00111	0.00949
10	2012	8b	0.114	0.00165	0.01129	3.616	0.00080	0.00685
10	2013	2b	0.070	0.00080	0.00351	1.135	0.00095	0.00753
10	2013	3	0.122	0.00151	0.01028	1.665	0.00159	0.01355
10	2013	4	0.133	0.00146	0.00999	1.744	0.00169	0.01447
10	2013	5	0.138	0.00144	0.00985	1.744	0.00169	0.01447
10	2013	6	0.139	0.00144	0.00984	1.780	0.00170	0.01458
10	2013	7	0.119	0.00152	0.01038	1.949	0.00155	0.01325
10	2013	8a	0.119	0.00152	0.01037	2.625	0.00100	0.00857
10	2013	8b	0.119	0.00152	0.01037	2.922	0.00072	0.00613
10	2014	2b	0.072	0.00101	0.00362	0.520	0.00050	0.00242
10	2014	3	0.122	0.00146	0.00994	1.094	0.00050	0.00410
10	2014	4	0.126	0.00144	0.00985	1.165	0.00050	0.00431
10	2014	5	0.129	0.00144	0.00980	1.165	0.00050	0.00431
10	2014	6	0.129	0.00144	0.00980	1.193	0.00051	0.00437
10	2014	7	0.121	0.00146	0.00996	1.347	0.00051	0.00433
10	2014	8a	0.121	0.00146	0.00996	2.094	0.00050	0.00424
10	2014	8b	0.121	0.00146	0.00996	2.514	0.00047	0.00400
10	2015	2b	0.061	0.00099	0.00323	0.407	0.00049	0.00224
10	2015	3	0.122	0.00146	0.00994	0.977	0.00050	0.00403
10	2015	4	0.126	0.00144	0.00986	1.065	0.00050	0.00431
10	2015	5	0.128	0.00144	0.00982	1.065	0.00050	0.00431
10	2015	6	0.128	0.00144	0.00981	1.094	0.00051	0.00437
10	2015	7	0.121	0.00146	0.00996	1.266	0.00051	0.00432
10	2015	8a	0.121	0.00146	0.00996	2.078	0.00050	0.00425
10	2015	8b	0.121	0.00146	0.00996	2.528	0.00047	0.00400
10	2016	2b	0.061	0.00105	0.00321	0.392	0.00052	0.00221
10	2016	3	0.122	0.00146	0.00994	0.931	0.00051	0.00399
10	2016	4	0.125	0.00145	0.00987	1.025	0.00050	0.00431
10	2016	5	0.127	0.00144	0.00983	1.025	0.00050	0.00431
10	2016	6	0.127	0.00144	0.00983	1.050	0.00051	0.00436
10	2016	7	0.121	0.00146	0.00996	1.185	0.00051	0.00433

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2016	8a	0.121	0.00146	0.00996	1.935	0.00050	0.00427
10	2016	8b	0.121	0.00146	0.00996	2.433	0.00047	0.00403
10	2017	2b	0.046	0.00103	0.00288	0.374	0.00051	0.00208
10	2017	3	0.122	0.00146	0.00994	0.887	0.00050	0.00396
10	2017	4	0.125	0.00145	0.00988	0.982	0.00050	0.00431
10	2017	5	0.126	0.00144	0.00985	0.982	0.00050	0.00431
10	2017	6	0.126	0.00144	0.00985	1.001	0.00051	0.00435
10	2017	7	0.121	0.00146	0.00996	1.107	0.00051	0.00433
10	2017	8a	0.121	0.00146	0.00996	1.725	0.00050	0.00429
10	2017	8b	0.121	0.00146	0.00996	2.165	0.00047	0.00405
10	2018	2b	0.045	0.00110	0.00296	0.282	0.00053	0.00208
10	2018	3	0.106	0.00145	0.00990	0.833	0.00051	0.00396
10	2018	4	0.118	0.00142	0.00971	0.934	0.00050	0.00431
10	2018	5	0.123	0.00141	0.00962	0.934	0.00050	0.00431
10	2018	6	0.124	0.00141	0.00961	0.982	0.00052	0.00442
10	2018	7	0.103	0.00146	0.00996	1.073	0.00051	0.00436
10	2018	8a	0.103	0.00146	0.00996	1.690	0.00050	0.00430
10	2018	8b	0.103	0.00146	0.00996	2.111	0.00047	0.00404
10	2019	2b	0.033	0.00101	0.00276	0.226	0.00050	0.00195
10	2019	3	0.086	0.00145	0.00987	0.777	0.00049	0.00378
10	2019	4	0.096	0.00142	0.00968	0.887	0.00049	0.00415
10	2019	5	0.101	0.00140	0.00958	0.887	0.00049	0.00415
10	2019	6	0.101	0.00140	0.00957	0.933	0.00050	0.00425
10	2019	7	0.083	0.00145	0.00993	1.031	0.00049	0.00421
10	2019	8a	0.083	0.00145	0.00993	1.670	0.00049	0.00420
10	2019	8b	0.083	0.00145	0.00993	2.104	0.00047	0.00399
10	2020	2b	0.029	0.00090	0.00252	0.191	0.00045	0.00183
10	2020	3	0.082	0.00145	0.00987	0.746	0.00048	0.00373
10	2020	4	0.092	0.00142	0.00969	0.869	0.00049	0.00415
10	2020	5	0.096	0.00141	0.00960	0.869	0.00049	0.00415
10	2020	6	0.097	0.00140	0.00959	0.913	0.00050	0.00424
10	2020	7	0.079	0.00145	0.00993	1.007	0.00049	0.00420
10	2020	8a	0.079	0.00145	0.00993	1.645	0.00049	0.00420

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2020	8b	0.079	0.00145	0.00993	2.099	0.00047	0.00399
10	2021	2b	0.020	0.00048	0.00141	0.130	0.00025	0.00107
10	2021	3	0.077	0.00087	0.00594	0.522	0.00030	0.00241
10	2021	4	0.086	0.00086	0.00584	0.609	0.00032	0.00271
10	2021	5	0.090	0.00085	0.00579	0.609	0.00032	0.00271
10	2021	6	0.091	0.00085	0.00579	0.639	0.00032	0.00277
10	2021	7	0.075	0.00088	0.00597	0.701	0.00032	0.00275
10	2021	8a	0.075	0.00088	0.00597	1.140	0.00033	0.00278
10	2021	8b	0.075	0.00088	0.00597	1.464	0.00031	0.00267
10	2022	2b	0.017	0.00048	0.00141	0.116	0.00025	0.00106
10	2022	3	0.073	0.00087	0.00594	0.512	0.00030	0.00241
10	2022	4	0.082	0.00086	0.00584	0.600	0.00032	0.00271
10	2022	5	0.087	0.00085	0.00579	0.600	0.00032	0.00271
10	2022	6	0.087	0.00085	0.00579	0.630	0.00032	0.00277
10	2022	7	0.070	0.00088	0.00597	0.695	0.00032	0.00275
10	2022	8a	0.070	0.00088	0.00597	1.142	0.00032	0.00278
10	2022	8b	0.070	0.00088	0.00597	1.466	0.00031	0.00267
10	2023	2b	0.015	0.00049	0.00140	0.113	0.00025	0.00106
10	2023	3	0.073	0.00087	0.00594	0.509	0.00030	0.00240
10	2023	4	0.082	0.00086	0.00585	0.600	0.00032	0.00271
10	2023	5	0.086	0.00085	0.00579	0.600	0.00032	0.00271
10	2023	6	0.087	0.00085	0.00579	0.630	0.00032	0.00276
10	2023	7	0.070	0.00088	0.00597	0.692	0.00032	0.00274
10	2023	8a	0.070	0.00088	0.00597	1.135	0.00032	0.00278
10	2023	8b	0.070	0.00088	0.00597	1.464	0.00031	0.00267
10	2024	2b	0.012	0.00049	0.00139	0.111	0.00025	0.00105
10	2024	3	0.073	0.00087	0.00594	0.507	0.00030	0.00239
10	2024	4	0.082	0.00086	0.00585	0.600	0.00032	0.00270
10	2024	5	0.086	0.00085	0.00580	0.600	0.00032	0.00270
10	2024	6	0.086	0.00085	0.00579	0.628	0.00032	0.00276
10	2024	7	0.070	0.00088	0.00597	0.685	0.00032	0.00274
10	2024	8a	0.070	0.00088	0.00597	1.102	0.00032	0.00274
10	2024	8b	0.070	0.00088	0.00597	1.422	0.00031	0.00261

**Table A-10. SmartWay Category - Refrigerated**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
10	2025	2b	0.012	0.00049	0.00139	0.111	0.00025	0.00105
10	2025	3	0.073	0.00087	0.00594	0.507	0.00030	0.00239
10	2025	4	0.082	0.00086	0.00585	0.600	0.00032	0.00270
10	2025	5	0.086	0.00085	0.00580	0.600	0.00032	0.00270
10	2025	6	0.086	0.00085	0.00579	0.628	0.00032	0.00276
10	2025	7	0.070	0.00088	0.00597	0.685	0.00032	0.00274
10	2025	8a	0.070	0.00088	0.00597	1.102	0.00032	0.00274
10	2025	8b	0.070	0.00088	0.00597	1.422	0.00031	0.00261

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	Pre-1993	2b	3.784	0.00333	0.02274	8.271	0.65234	0.83906
11	Pre-1993	3	5.391	0.00587	0.04007	10.192	0.74817	0.95928
11	Pre-1993	4	5.531	0.00595	0.04060	15.886	0.95256	1.21061
11	Pre-1993	5	5.539	0.00595	0.04062	17.532	1.01439	1.28850
11	Pre-1993	6	4.945	0.00563	0.03841	17.135	0.98874	1.25609
11	Pre-1993	7	4.945	0.00563	0.03841	17.871	0.95814	1.21703
11	Pre-1993	8a	7.535	0.00817	0.05575	23.819	0.86393	1.09515
11	Pre-1993	8b	7.535	0.00817	0.05575	27.652	0.78658	0.99509
11	1993	2b	3.784	0.00333	0.02274	8.271	0.65234	0.83906
11	1993	3	5.391	0.00587	0.04007	10.192	0.74817	0.95928
11	1993	4	5.531	0.00595	0.04060	15.886	0.95256	1.21061
11	1993	5	5.539	0.00595	0.04062	17.532	1.01439	1.28850
11	1993	6	4.945	0.00563	0.03841	17.135	0.98874	1.25609
11	1993	7	4.945	0.00563	0.03841	17.871	0.95814	1.21703
11	1993	8a	7.535	0.00817	0.05575	23.819	0.86393	1.09515
11	1993	8b	7.535	0.00817	0.05575	27.652	0.78658	0.99509
11	1994	2b	3.784	0.00333	0.02274	8.271	0.65234	0.83906
11	1994	3	5.391	0.00587	0.04007	10.192	0.74817	0.95928
11	1994	4	5.531	0.00595	0.04060	15.886	0.95256	1.21061
11	1994	5	5.539	0.00595	0.04062	17.532	1.01439	1.28850
11	1994	6	4.945	0.00563	0.03841	17.135	0.98874	1.25609
11	1994	7	4.945	0.00563	0.03841	17.871	0.95814	1.21703
11	1994	8a	7.535	0.00817	0.05575	23.819	0.86393	1.09515
11	1994	8b	7.535	0.00817	0.05575	27.652	0.78658	0.99509
11	1995	2b	3.947	0.00664	0.04530	7.813	0.61454	0.79094
11	1995	3	5.502	0.02388	0.16293	14.745	0.88582	1.12811
11	1995	4	5.580	0.02498	0.17041	17.065	0.95147	1.20950
11	1995	5	5.562	0.02475	0.16883	19.799	1.05030	1.33333
11	1995	6	4.964	0.01628	0.11106	19.760	0.97935	1.24326
11	1995	7	4.964	0.01628	0.11106	21.209	0.96085	1.21926
11	1995	8a	7.269	0.02956	0.20170	26.978	0.81251	1.02843
11	1995	8b	7.269	0.02956	0.20170	28.402	0.77306	0.97750
11	1996	2b	3.135	0.00488	0.03333	7.955	0.58554	0.75343



**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	1996	3	5.557	0.02005	0.13678	17.047	0.95470	1.21345
11	1996	4	5.596	0.02056	0.14029	18.513	0.96395	1.22419
11	1996	5	5.594	0.02057	0.14034	19.532	1.05495	1.33941
11	1996	6	5.049	0.01299	0.08861	20.637	0.98421	1.24922
11	1996	7	5.049	0.01299	0.08861	21.376	0.96959	1.23030
11	1996	8a	7.269	0.02241	0.15288	26.966	0.81751	1.03486
11	1996	8b	7.269	0.02241	0.15288	28.523	0.77566	0.98076
11	1997	2b	2.631	0.00276	0.01882	6.227	0.49924	0.64614
11	1997	3	5.496	0.01051	0.07169	12.450	0.76865	0.98177
11	1997	4	5.599	0.01102	0.07517	16.606	0.98809	1.25557
11	1997	5	5.577	0.01092	0.07448	18.284	1.07567	1.36586
11	1997	6	5.015	0.00812	0.05539	18.003	0.99471	1.26340
11	1997	7	5.015	0.00812	0.05539	19.098	0.98223	1.24723
11	1997	8a	8.560	0.00620	0.04230	26.072	0.82862	1.04946
11	1997	8b	8.560	0.00620	0.04230	28.231	0.77199	0.97634
11	1998	2b	2.264	0.00268	0.01825	7.131	0.26767	0.34994
11	1998	3	3.163	0.01265	0.08631	15.317	0.40591	0.52094
11	1998	4	3.172	0.01391	0.09489	16.325	0.42289	0.54192
11	1998	5	3.155	0.01255	0.08561	16.821	0.39244	0.50394
11	1998	6	3.134	0.00898	0.06127	16.565	0.40949	0.52521
11	1998	7	3.134	0.00898	0.06127	17.134	0.40448	0.51884
11	1998	8a	3.529	0.01939	0.13231	23.463	0.50631	0.64379
11	1998	8b	3.529	0.01939	0.13231	25.797	0.53759	0.68153
11	1999	2b	1.770	0.00360	0.02455	6.674	0.26791	0.35030
11	1999	3	3.227	0.01480	0.10096	10.766	0.37793	0.48643
11	1999	4	3.435	0.01524	0.10399	11.646	0.40164	0.51574
11	1999	5	3.479	0.01524	0.10395	11.670	0.40208	0.51629
11	1999	6	3.481	0.01524	0.10399	11.534	0.39407	0.50611
11	1999	7	3.031	0.01435	0.09794	11.940	0.40214	0.51612
11	1999	8a	3.049	0.01478	0.10087	18.134	0.50561	0.64306
11	1999	8b	3.049	0.01478	0.10087	20.312	0.54170	0.68667
11	2000	2b	1.575	0.00264	0.01798	6.871	0.27337	0.35706
11	2000	3	3.343	0.00996	0.06793	10.818	0.37938	0.48806

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2000	4	3.612	0.00895	0.06105	11.451	0.39611	0.50872
11	2000	5	3.678	0.00870	0.05937	11.497	0.39695	0.50978
11	2000	6	3.682	0.00869	0.05926	11.537	0.39572	0.50805
11	2000	7	3.138	0.01072	0.07317	12.408	0.41005	0.52578
11	2000	8a	3.138	0.01072	0.07317	16.978	0.48458	0.61719
11	2000	8b	3.138	0.01072	0.07317	20.147	0.53877	0.68311
11	2001	2b	0.541	0.00179	0.01221	6.488	0.26318	0.34444
11	2001	3	1.339	0.00584	0.03983	10.555	0.37195	0.47891
11	2001	4	1.438	0.00578	0.03943	11.141	0.38780	0.49847
11	2001	5	1.473	0.00576	0.03929	11.164	0.38824	0.49902
11	2001	6	1.475	0.00576	0.03928	11.683	0.39660	0.50924
11	2001	7	1.290	0.00587	0.04003	11.598	0.39529	0.50760
11	2001	8a	1.290	0.00587	0.04003	17.645	0.49512	0.63012
11	2001	8b	1.290	0.00587	0.04003	19.987	0.53550	0.67909
11	2002	2b	0.517	0.00211	0.01441	6.589	0.26594	0.34786
11	2002	3	1.384	0.00711	0.04849	10.325	0.36580	0.47136
11	2002	4	1.511	0.00652	0.04447	11.141	0.38773	0.49843
11	2002	5	1.547	0.00636	0.04336	11.141	0.38773	0.49843
11	2002	6	1.549	0.00635	0.04329	11.379	0.39189	0.50343
11	2002	7	1.302	0.00749	0.05107	11.765	0.39777	0.51071
11	2002	8a	1.302	0.00749	0.05107	15.733	0.46302	0.59105
11	2002	8b	1.302	0.00749	0.05107	19.691	0.53022	0.67270
11	2003	2b	0.451	0.00192	0.01308	4.056	0.22493	0.29427
11	2003	3	1.349	0.00761	0.05190	6.477	0.31818	0.40996
11	2003	4	1.459	0.00740	0.05049	7.017	0.33906	0.43583
11	2003	5	1.491	0.00734	0.05008	7.017	0.33906	0.43583
11	2003	6	1.493	0.00734	0.05005	7.630	0.34777	0.44664
11	2003	7	1.283	0.00773	0.05276	7.649	0.35425	0.45462
11	2003	8a	1.283	0.00773	0.05276	9.233	0.42387	0.54044
11	2003	8b	1.283	0.00773	0.05276	10.684	0.48332	0.61294
11	2004	2b	0.367	0.00132	0.00915	4.039	0.22334	0.29217
11	2004	3	1.377	0.00603	0.04111	6.581	0.31763	0.40922
11	2004	4	1.528	0.00566	0.03860	7.151	0.33889	0.43559

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2004	5	1.570	0.00556	0.03792	7.151	0.33889	0.43559
11	2004	6	1.572	0.00555	0.03787	7.743	0.35092	0.45056
11	2004	7	1.279	0.00627	0.04275	7.754	0.35586	0.45662
11	2004	8a	1.279	0.00627	0.04275	9.244	0.42213	0.53826
11	2004	8b	1.279	0.00627	0.04275	10.693	0.48381	0.61356
11	2005	2b	0.304	0.00082	0.00572	3.921	0.21776	0.28504
11	2005	3	1.361	0.00447	0.03049	6.400	0.31126	0.40129
11	2005	4	1.448	0.00429	0.02927	7.101	0.33779	0.43423
11	2005	5	1.485	0.00421	0.02875	7.101	0.33779	0.43423
11	2005	6	1.488	0.00421	0.02871	7.586	0.34944	0.44874
11	2005	7	1.326	0.00454	0.03097	7.714	0.35770	0.45888
11	2005	8a	1.327	0.00454	0.03097	9.451	0.43106	0.54914
11	2005	8b	1.327	0.00454	0.03097	10.755	0.48595	0.61614
11	2006	2b	0.336	0.00095	0.00660	3.972	0.22121	0.28955
11	2006	3	1.358	0.00477	0.03254	6.301	0.30999	0.39979
11	2006	4	1.469	0.00451	0.03076	6.956	0.33498	0.43075
11	2006	5	1.510	0.00441	0.03011	6.956	0.33498	0.43075
11	2006	6	1.513	0.00441	0.03007	7.337	0.34492	0.44314
11	2006	7	1.307	0.00489	0.03337	7.497	0.35344	0.45362
11	2006	8a	1.307	0.00489	0.03337	9.310	0.42740	0.54467
11	2006	8b	1.307	0.00489	0.03337	10.728	0.48554	0.61565
11	2007	2b	0.288	0.00083	0.00578	2.496	0.00146	0.01246
11	2007	3	1.368	0.00475	0.03239	4.198	0.00214	0.01828
11	2007	4	1.465	0.00449	0.03063	4.534	0.00227	0.01943
11	2007	5	1.503	0.00439	0.02992	4.534	0.00227	0.01943
11	2007	6	1.506	0.00438	0.02987	4.706	0.00232	0.01989
11	2007	7	1.328	0.00486	0.03314	5.010	0.00243	0.02081
11	2007	8a	1.329	0.00486	0.03313	6.752	0.00303	0.02597
11	2007	8b	1.329	0.00486	0.03313	7.736	0.00338	0.02891
11	2008	2b	0.218	0.00092	0.00630	2.405	0.00143	0.01216
11	2008	3	0.895	0.00466	0.03181	3.730	0.00196	0.01678
11	2008	4	0.861	0.00454	0.03097	4.051	0.00209	0.01790
11	2008	5	0.843	0.00448	0.03054	4.051	0.00209	0.01790

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2008	6	0.842	0.00447	0.03051	4.215	0.00214	0.01834
11	2008	7	0.906	0.00470	0.03208	4.297	0.00217	0.01861
11	2008	8a	0.906	0.00470	0.03208	5.575	0.00262	0.02241
11	2008	8b	0.906	0.00470	0.03208	7.380	0.00325	0.02782
11	2009	2b	0.145	0.00103	0.00673	2.395	0.00142	0.01198
11	2009	3	0.635	0.00466	0.03178	4.353	0.00220	0.01883
11	2009	4	0.632	0.00462	0.03153	4.665	0.00233	0.01993
11	2009	5	0.631	0.00460	0.03141	4.665	0.00233	0.01993
11	2009	6	0.631	0.00460	0.03140	4.743	0.00235	0.02014
11	2009	7	0.635	0.00467	0.03186	5.107	0.00248	0.02121
11	2009	8a	0.635	0.00467	0.03184	6.808	0.00305	0.02615
11	2009	8b	0.635	0.00467	0.03184	7.720	0.00337	0.02883
11	2010	2b	0.056	0.00050	0.00287	1.162	0.00099	0.00819
11	2010	3	0.106	0.00186	0.01269	2.828	0.00268	0.02286
11	2010	4	0.106	0.00186	0.01269	3.129	0.00298	0.02552
11	2010	5	0.106	0.00186	0.01270	3.129	0.00298	0.02552
11	2010	6	0.106	0.00186	0.01270	3.249	0.00317	0.02710
11	2010	7	0.106	0.00186	0.01269	3.589	0.00289	0.02474
11	2010	8a	0.106	0.00186	0.01269	5.475	0.00191	0.01634
11	2010	8b	0.106	0.00186	0.01269	6.594	0.00121	0.01035
11	2011	2b	0.059	0.00063	0.00340	1.242	0.00096	0.00792
11	2011	3	0.114	0.00184	0.01253	2.376	0.00221	0.01885
11	2011	4	0.129	0.00179	0.01222	2.580	0.00244	0.02083
11	2011	5	0.136	0.00177	0.01207	2.580	0.00244	0.02083
11	2011	6	0.136	0.00177	0.01205	2.700	0.00254	0.02176
11	2011	7	0.109	0.00185	0.01264	2.876	0.00241	0.02062
11	2011	8a	0.109	0.00185	0.01264	4.396	0.00185	0.01581
11	2011	8b	0.109	0.00185	0.01264	5.804	0.00121	0.01039
11	2012	2b	0.062	0.00070	0.00375	1.203	0.00102	0.00829
11	2012	3	0.116	0.00182	0.01242	2.418	0.00235	0.02008
11	2012	4	0.121	0.00180	0.01230	2.591	0.00254	0.02176
11	2012	5	0.125	0.00179	0.01224	2.591	0.00254	0.02176
11	2012	6	0.125	0.00179	0.01223	2.657	0.00257	0.02198

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2012	7	0.114	0.00183	0.01245	2.932	0.00243	0.02079
11	2012	8a	0.114	0.00183	0.01245	4.596	0.00176	0.01509
11	2012	8b	0.114	0.00183	0.01245	5.726	0.00120	0.01027
11	2013	2b	0.058	0.00068	0.00306	1.374	0.00103	0.00829
11	2013	3	0.122	0.00167	0.01144	2.516	0.00249	0.02121
11	2013	4	0.132	0.00164	0.01123	2.684	0.00270	0.02313
11	2013	5	0.137	0.00163	0.01113	2.684	0.00270	0.02313
11	2013	6	0.137	0.00163	0.01112	2.750	0.00275	0.02351
11	2013	7	0.119	0.00168	0.01151	2.971	0.00253	0.02167
11	2013	8a	0.119	0.00168	0.01150	4.111	0.00165	0.01411
11	2013	8b	0.119	0.00168	0.01150	4.743	0.00109	0.00929
11	2014	2b	0.059	0.00084	0.00320	0.752	0.00045	0.00236
11	2014	3	0.123	0.00162	0.01110	2.004	0.00065	0.00543
11	2014	4	0.126	0.00162	0.01104	2.151	0.00068	0.00579
11	2014	5	0.128	0.00161	0.01101	2.151	0.00068	0.00579
11	2014	6	0.129	0.00161	0.01101	2.202	0.00069	0.00589
11	2014	7	0.121	0.00163	0.01111	2.392	0.00068	0.00581
11	2014	8a	0.121	0.00163	0.01111	3.553	0.00066	0.00565
11	2014	8b	0.121	0.00163	0.01111	4.381	0.00062	0.00531
11	2015	2b	0.050	0.00082	0.00287	0.613	0.00044	0.00213
11	2015	3	0.122	0.00162	0.01110	1.874	0.00065	0.00533
11	2015	4	0.126	0.00162	0.01105	2.056	0.00068	0.00579
11	2015	5	0.128	0.00161	0.01102	2.056	0.00068	0.00579
11	2015	6	0.128	0.00161	0.01102	2.109	0.00069	0.00588
11	2015	7	0.121	0.00163	0.01111	2.315	0.00068	0.00581
11	2015	8a	0.121	0.00163	0.01111	3.547	0.00066	0.00566
11	2015	8b	0.121	0.00163	0.01111	4.405	0.00062	0.00532
11	2016	2b	0.050	0.00087	0.00283	0.580	0.00045	0.00208
11	2016	3	0.122	0.00163	0.01110	1.793	0.00065	0.00526
11	2016	4	0.125	0.00162	0.01105	1.993	0.00068	0.00579
11	2016	5	0.127	0.00161	0.01103	1.993	0.00068	0.00579
11	2016	6	0.127	0.00161	0.01102	2.038	0.00069	0.00587
11	2016	7	0.121	0.00163	0.01111	2.200	0.00068	0.00581

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2016	8a	0.121	0.00163	0.01111	3.319	0.00067	0.00570
11	2016	8b	0.121	0.00163	0.01111	4.256	0.00063	0.00536
11	2017	2b	0.039	0.00085	0.00258	0.554	0.00044	0.00195
11	2017	3	0.122	0.00163	0.01110	1.712	0.00064	0.00522
11	2017	4	0.125	0.00162	0.01106	1.913	0.00068	0.00579
11	2017	5	0.126	0.00162	0.01104	1.913	0.00068	0.00579
11	2017	6	0.126	0.00162	0.01104	1.948	0.00068	0.00586
11	2017	7	0.121	0.00163	0.01111	2.078	0.00068	0.00581
11	2017	8a	0.121	0.00163	0.01111	3.019	0.00067	0.00572
11	2017	8b	0.121	0.00163	0.01111	3.866	0.00063	0.00539
11	2018	2b	0.038	0.00091	0.00270	0.438	0.00046	0.00195
11	2018	3	0.106	0.00162	0.01107	1.637	0.00065	0.00522
11	2018	4	0.117	0.00160	0.01095	1.842	0.00068	0.00579
11	2018	5	0.122	0.00159	0.01089	1.842	0.00068	0.00579
11	2018	6	0.122	0.00159	0.01088	1.937	0.00070	0.00600
11	2018	7	0.103	0.00163	0.01111	2.042	0.00069	0.00589
11	2018	8a	0.103	0.00163	0.01111	2.982	0.00067	0.00574
11	2018	8b	0.103	0.00163	0.01111	3.792	0.00063	0.00539
11	2019	2b	0.028	0.00085	0.00257	0.357	0.00043	0.00181
11	2019	3	0.087	0.00161	0.01103	1.540	0.00062	0.00497
11	2019	4	0.096	0.00159	0.01089	1.760	0.00065	0.00556
11	2019	5	0.100	0.00158	0.01082	1.760	0.00065	0.00556
11	2019	6	0.101	0.00158	0.01082	1.851	0.00067	0.00575
11	2019	7	0.084	0.00162	0.01107	1.964	0.00066	0.00566
11	2019	8a	0.084	0.00162	0.01107	2.943	0.00065	0.00559
11	2019	8b	0.084	0.00162	0.01107	3.779	0.00062	0.00532
11	2020	2b	0.025	0.00076	0.00240	0.306	0.00039	0.00170
11	2020	3	0.083	0.00161	0.01103	1.488	0.00061	0.00490
11	2020	4	0.092	0.00160	0.01090	1.732	0.00065	0.00556
11	2020	5	0.096	0.00159	0.01084	1.732	0.00065	0.00556
11	2020	6	0.097	0.00159	0.01083	1.818	0.00067	0.00573
11	2020	7	0.080	0.00162	0.01107	1.927	0.00066	0.00565
11	2020	8a	0.080	0.00162	0.01107	2.900	0.00065	0.00559

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2020	8b	0.080	0.00162	0.01107	3.767	0.00062	0.00533
11	2021	2b	0.018	0.00042	0.00137	0.210	0.00022	0.00102
11	2021	3	0.078	0.00098	0.00665	1.047	0.00039	0.00319
11	2021	4	0.086	0.00097	0.00658	1.220	0.00043	0.00365
11	2021	5	0.090	0.00096	0.00655	1.220	0.00043	0.00365
11	2021	6	0.091	0.00096	0.00655	1.279	0.00044	0.00376
11	2021	7	0.076	0.00098	0.00667	1.352	0.00043	0.00371
11	2021	8a	0.076	0.00098	0.00667	2.029	0.00043	0.00372
11	2021	8b	0.076	0.00098	0.00667	2.657	0.00042	0.00358
11	2022	2b	0.016	0.00042	0.00138	0.191	0.00022	0.00101
11	2022	3	0.074	0.00098	0.00665	1.032	0.00039	0.00319
11	2022	4	0.082	0.00097	0.00658	1.206	0.00043	0.00365
11	2022	5	0.087	0.00096	0.00655	1.206	0.00043	0.00365
11	2022	6	0.087	0.00096	0.00655	1.265	0.00044	0.00376
11	2022	7	0.071	0.00098	0.00667	1.342	0.00043	0.00371
11	2022	8a	0.071	0.00098	0.00667	2.033	0.00043	0.00372
11	2022	8b	0.071	0.00098	0.00667	2.660	0.00042	0.00358
11	2023	2b	0.014	0.00042	0.00136	0.187	0.00022	0.00100
11	2023	3	0.074	0.00098	0.00665	1.027	0.00039	0.00318
11	2023	4	0.082	0.00097	0.00659	1.206	0.00043	0.00365
11	2023	5	0.087	0.00096	0.00655	1.206	0.00043	0.00365
11	2023	6	0.087	0.00096	0.00655	1.264	0.00044	0.00376
11	2023	7	0.071	0.00098	0.00667	1.338	0.00043	0.00371
11	2023	8a	0.071	0.00098	0.00667	2.020	0.00043	0.00372
11	2023	8b	0.071	0.00098	0.00667	2.656	0.00042	0.00358
11	2024	2b	0.012	0.00042	0.00135	0.184	0.00022	0.00100
11	2024	3	0.074	0.00098	0.00665	1.022	0.00039	0.00317
11	2024	4	0.082	0.00097	0.00659	1.206	0.00043	0.00364
11	2024	5	0.086	0.00096	0.00655	1.206	0.00043	0.00364
11	2024	6	0.087	0.00096	0.00655	1.262	0.00044	0.00375
11	2024	7	0.071	0.00098	0.00667	1.330	0.00043	0.00370
11	2024	8a	0.071	0.00098	0.00667	1.979	0.00043	0.00368
11	2024	8b	0.071	0.00098	0.00667	2.605	0.00041	0.00352

**Table A-11. SmartWay Category - Specialized**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
11	2025	2b	0.012	0.00042	0.00135	0.184	0.00022	0.00100
11	2025	3	0.074	0.00098	0.00665	1.022	0.00039	0.00317
11	2025	4	0.082	0.00097	0.00659	1.206	0.00043	0.00364
11	2025	5	0.086	0.00096	0.00655	1.206	0.00043	0.00364
11	2025	6	0.087	0.00096	0.00655	1.262	0.00044	0.00375
11	2025	7	0.071	0.00098	0.00667	1.330	0.00043	0.00370
11	2025	8a	0.071	0.00098	0.00667	1.979	0.00043	0.00368
11	2025	8b	0.071	0.00098	0.00667	2.605	0.00041	0.00352



**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	Pre-1993	2b	4.202	0.00513	0.03500	7.416	0.44769	0.57451
12	Pre-1993	3	5.565	0.00969	0.06613	8.885	0.51676	0.66057
12	Pre-1993	4	5.725	0.00984	0.06715	13.344	0.66668	0.84476
12	Pre-1993	5	5.734	0.00985	0.06720	14.970	0.70743	0.89605
12	Pre-1993	6	5.056	0.00922	0.06289	14.667	0.69362	0.87863
12	Pre-1993	7	5.056	0.00922	0.06289	15.956	0.68933	0.87302
12	Pre-1993	8a	7.621	0.01260	0.08600	24.244	0.71899	0.90904
12	Pre-1993	8b	7.621	0.01260	0.08600	29.159	0.73544	0.92871
12	1993	2b	4.202	0.00513	0.03500	7.416	0.44769	0.57451
12	1993	3	5.565	0.00969	0.06613	8.885	0.51676	0.66057
12	1993	4	5.725	0.00984	0.06715	13.344	0.66668	0.84476
12	1993	5	5.734	0.00985	0.06720	14.970	0.70743	0.89605
12	1993	6	5.056	0.00922	0.06289	14.667	0.69362	0.87863
12	1993	7	5.056	0.00922	0.06289	15.956	0.68933	0.87302
12	1993	8a	7.621	0.01260	0.08600	24.244	0.71899	0.90904
12	1993	8b	7.621	0.01260	0.08600	29.159	0.73544	0.92871
12	1994	2b	4.202	0.00513	0.03500	7.416	0.44769	0.57451
12	1994	3	5.565	0.00969	0.06613	8.885	0.51676	0.66057
12	1994	4	5.725	0.00984	0.06715	13.344	0.66668	0.84476
12	1994	5	5.734	0.00985	0.06720	14.970	0.70743	0.89605
12	1994	6	5.056	0.00922	0.06289	14.667	0.69362	0.87863
12	1994	7	5.056	0.00922	0.06289	15.956	0.68933	0.87302
12	1994	8a	7.621	0.01260	0.08600	24.244	0.71899	0.90904
12	1994	8b	7.621	0.01260	0.08600	29.159	0.73544	0.92871
12	1995	2b	4.301	0.00712	0.04858	7.093	0.42101	0.54044
12	1995	3	5.688	0.02297	0.15674	12.519	0.61504	0.78112
12	1995	4	5.780	0.02396	0.16344	14.740	0.67262	0.85255
12	1995	5	5.759	0.02374	0.16199	17.369	0.74061	0.93767
12	1995	6	5.059	0.01620	0.11053	17.866	0.71427	0.90426
12	1995	7	5.059	0.01620	0.11053	19.935	0.72315	0.91516
12	1995	8a	7.451	0.03255	0.22206	28.186	0.73677	0.93074
12	1995	8b	7.451	0.03255	0.22206	30.042	0.73915	0.93319
12	1996	2b	3.431	0.00478	0.03260	7.103	0.40208	0.51571

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	1996	3	5.750	0.01687	0.11509	14.382	0.67178	0.85141
12	1996	4	5.797	0.01728	0.11791	16.114	0.69293	0.87753
12	1996	5	5.795	0.01728	0.11788	17.118	0.74320	0.94106
12	1996	6	5.131	0.01127	0.07692	19.024	0.72488	0.91751
12	1996	7	5.131	0.01127	0.07692	20.020	0.72898	0.92253
12	1996	8a	7.451	0.02438	0.16637	28.102	0.73785	0.93216
12	1996	8b	7.451	0.02438	0.16637	30.146	0.74178	0.93647
12	1997	2b	3.204	0.00375	0.02556	5.821	0.34174	0.44165
12	1997	3	5.680	0.01340	0.09145	10.839	0.53589	0.68273
12	1997	4	5.801	0.01404	0.09578	13.924	0.68853	0.87234
12	1997	5	5.775	0.01391	0.09492	15.787	0.75000	0.94968
12	1997	6	5.110	0.01043	0.07114	15.752	0.70817	0.89686
12	1997	7	5.110	0.01043	0.07114	17.322	0.71463	0.90482
12	1997	8a	8.673	0.00962	0.06564	27.016	0.73143	0.92429
12	1997	8b	8.673	0.00962	0.06564	29.775	0.73588	0.92915
12	1998	2b	2.874	0.00328	0.02238	6.341	0.24525	0.31780
12	1998	3	3.707	0.01419	0.09684	13.314	0.34615	0.44197
12	1998	4	3.741	0.01551	0.10583	14.214	0.35926	0.45806
12	1998	5	3.698	0.01403	0.09572	14.958	0.34031	0.43452
12	1998	6	3.607	0.01032	0.07041	14.578	0.35114	0.44798
12	1998	7	3.607	0.01032	0.07041	15.416	0.35132	0.44820
12	1998	8a	4.150	0.02317	0.15808	24.693	0.46883	0.59421
12	1998	8b	4.150	0.02317	0.15808	27.904	0.50465	0.63836
12	1999	2b	2.207	0.00398	0.02714	5.920	0.24583	0.31851
12	1999	3	3.709	0.01402	0.09566	9.070	0.32174	0.41164
12	1999	4	3.877	0.01450	0.09894	9.768	0.33883	0.43255
12	1999	5	3.911	0.01441	0.09833	9.804	0.33946	0.43335
12	1999	6	3.913	0.01442	0.09837	9.876	0.33837	0.43203
12	1999	7	3.549	0.01352	0.09227	10.367	0.34643	0.44208
12	1999	8a	3.573	0.01433	0.09775	18.432	0.46973	0.59543
12	1999	8b	3.573	0.01433	0.09775	21.008	0.50900	0.64381
12	2000	2b	1.965	0.00359	0.02448	6.071	0.24975	0.32333
12	2000	3	3.779	0.01229	0.08382	9.134	0.32413	0.41450

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2000	4	3.990	0.01101	0.07515	9.667	0.33684	0.43008
12	2000	5	4.041	0.01070	0.07304	9.738	0.33805	0.43160
12	2000	6	4.044	0.01069	0.07290	9.890	0.34089	0.43518
12	2000	7	3.618	0.01325	0.09041	11.056	0.35762	0.45601
12	2000	8a	3.618	0.01325	0.09041	17.066	0.44755	0.56787
12	2000	8b	3.618	0.01325	0.09041	20.833	0.50636	0.64055
12	2001	2b	0.655	0.00252	0.01718	5.778	0.24277	0.31473
12	2001	3	1.545	0.00956	0.06520	8.896	0.31741	0.40613
12	2001	4	1.622	0.00945	0.06445	9.347	0.32853	0.41967
12	2001	5	1.649	0.00941	0.06419	9.383	0.32915	0.42045
12	2001	6	1.651	0.00941	0.06417	10.117	0.34167	0.43611
12	2001	7	1.508	0.00961	0.06556	9.987	0.33937	0.43323
12	2001	8a	1.508	0.00961	0.06556	17.924	0.46006	0.58339
12	2001	8b	1.508	0.00961	0.06556	20.664	0.50318	0.63661
12	2002	2b	0.628	0.00231	0.01573	5.853	0.24459	0.31698
12	2002	3	1.579	0.00729	0.04971	8.701	0.31251	0.40013
12	2002	4	1.677	0.00661	0.04512	9.334	0.32789	0.41887
12	2002	5	1.705	0.00643	0.04385	9.334	0.32789	0.41887
12	2002	6	1.706	0.00642	0.04377	9.686	0.33555	0.42848
12	2002	7	1.516	0.00772	0.05266	10.214	0.34242	0.43702
12	2002	8a	1.516	0.00772	0.05266	15.556	0.42333	0.53791
12	2002	8b	1.516	0.00772	0.05266	20.323	0.49759	0.62970
12	2003	2b	0.545	0.00229	0.01564	4.081	0.20677	0.26801
12	2003	3	1.556	0.00804	0.05483	5.824	0.27117	0.34718
12	2003	4	1.641	0.00785	0.05357	6.222	0.28608	0.36544
12	2003	5	1.666	0.00780	0.05320	6.222	0.28608	0.36544
12	2003	6	1.667	0.00780	0.05318	6.674	0.29720	0.37945
12	2003	7	1.504	0.00815	0.05560	6.806	0.30559	0.38986
12	2003	8a	1.504	0.00815	0.05559	8.725	0.39041	0.49566
12	2003	8b	1.504	0.00815	0.05559	10.138	0.45414	0.57457
12	2004	2b	0.439	0.00146	0.01013	4.059	0.20537	0.26618
12	2004	3	1.574	0.00624	0.04254	5.884	0.27156	0.34767
12	2004	4	1.689	0.00597	0.04071	6.305	0.28705	0.36669

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2004	5	1.721	0.00590	0.04021	6.305	0.28705	0.36669
12	2004	6	1.723	0.00589	0.04018	6.741	0.30026	0.38330
12	2004	7	1.499	0.00641	0.04374	6.865	0.30744	0.39220
12	2004	8a	1.499	0.00641	0.04374	8.707	0.38882	0.49366
12	2004	8b	1.499	0.00641	0.04374	10.142	0.45467	0.57523
12	2005	2b	0.364	0.00094	0.00650	3.958	0.20067	0.26021
12	2005	3	1.555	0.00463	0.03158	5.752	0.26661	0.34153
12	2005	4	1.622	0.00449	0.03066	6.274	0.28604	0.36541
12	2005	5	1.651	0.00444	0.03026	6.274	0.28604	0.36541
12	2005	6	1.653	0.00443	0.03023	6.634	0.29821	0.38070
12	2005	7	1.528	0.00468	0.03195	6.885	0.30989	0.39523
12	2005	8a	1.528	0.00468	0.03195	8.935	0.39886	0.50608
12	2005	8b	1.528	0.00468	0.03195	10.202	0.45697	0.57807
12	2006	2b	0.402	0.00106	0.00740	4.013	0.20384	0.26430
12	2006	3	1.559	0.00489	0.03332	5.699	0.26514	0.33971
12	2006	4	1.644	0.00469	0.03199	6.185	0.28294	0.36151
12	2006	5	1.675	0.00462	0.03151	6.185	0.28294	0.36151
12	2006	6	1.677	0.00461	0.03147	6.467	0.29312	0.37430
12	2006	7	1.519	0.00498	0.03394	6.737	0.30509	0.38921
12	2006	8a	1.519	0.00498	0.03394	8.823	0.39481	0.50105
12	2006	8b	1.519	0.00498	0.03394	10.182	0.45649	0.57747
12	2007	2b	0.345	0.00094	0.00655	2.211	0.00135	0.01149
12	2007	3	1.565	0.00486	0.03318	3.482	0.00182	0.01558
12	2007	4	1.639	0.00467	0.03183	3.740	0.00192	0.01642
12	2007	5	1.668	0.00459	0.03128	3.740	0.00192	0.01642
12	2007	6	1.670	0.00458	0.03124	3.908	0.00198	0.01691
12	2007	7	1.533	0.00495	0.03375	4.294	0.00212	0.01812
12	2007	8a	1.535	0.00495	0.03376	6.213	0.00282	0.02416
12	2007	8b	1.535	0.00495	0.03376	7.140	0.00318	0.02718
12	2008	2b	0.263	0.00104	0.00710	2.137	0.00132	0.01125
12	2008	3	1.047	0.00479	0.03267	3.080	0.00167	0.01427
12	2008	4	1.000	0.00469	0.03202	3.312	0.00175	0.01501
12	2008	5	0.976	0.00465	0.03169	3.312	0.00175	0.01501

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2008	6	0.974	0.00464	0.03166	3.466	0.00181	0.01547
12	2008	7	1.063	0.00482	0.03288	3.583	0.00185	0.01584
12	2008	8a	1.062	0.00482	0.03288	5.044	0.00238	0.02040
12	2008	8b	1.062	0.00482	0.03288	6.814	0.00305	0.02609
12	2009	2b	0.175	0.00116	0.00756	2.110	0.00131	0.01103
12	2009	3	0.707	0.00479	0.03265	3.603	0.00187	0.01599
12	2009	4	0.703	0.00476	0.03249	3.848	0.00196	0.01681
12	2009	5	0.700	0.00475	0.03241	3.848	0.00196	0.01681
12	2009	6	0.700	0.00475	0.03240	3.930	0.00199	0.01706
12	2009	7	0.709	0.00479	0.03270	4.378	0.00215	0.01844
12	2009	8a	0.709	0.00479	0.03269	6.255	0.00284	0.02429
12	2009	8b	0.709	0.00479	0.03269	7.119	0.00316	0.02708
12	2010	2b	0.066	0.00057	0.00320	0.928	0.00091	0.00749
12	2010	3	0.105	0.00172	0.01174	1.973	0.00185	0.01575
12	2010	4	0.105	0.00172	0.01174	2.169	0.00202	0.01728
12	2010	5	0.105	0.00172	0.01174	2.169	0.00202	0.01728
12	2010	6	0.105	0.00172	0.01174	2.257	0.00212	0.01811
12	2010	7	0.105	0.00172	0.01174	2.585	0.00192	0.01639
12	2010	8a	0.105	0.00172	0.01174	4.076	0.00126	0.01078
12	2010	8b	0.105	0.00172	0.01174	4.811	0.00086	0.00738
12	2011	2b	0.068	0.00070	0.00368	1.027	0.00091	0.00746
12	2011	3	0.114	0.00169	0.01149	1.690	0.00161	0.01376
12	2011	4	0.129	0.00162	0.01105	1.812	0.00174	0.01492
12	2011	5	0.137	0.00159	0.01084	1.812	0.00174	0.01492
12	2011	6	0.137	0.00159	0.01082	1.888	0.00180	0.01538
12	2011	7	0.108	0.00171	0.01165	2.051	0.00170	0.01453
12	2011	8a	0.108	0.00171	0.01165	3.191	0.00127	0.01084
12	2011	8b	0.108	0.00171	0.01165	4.058	0.00087	0.00744
12	2012	2b	0.070	0.00076	0.00399	0.969	0.00094	0.00759
12	2012	3	0.115	0.00167	0.01137	1.695	0.00169	0.01441
12	2012	4	0.121	0.00164	0.01120	1.801	0.00180	0.01540
12	2012	5	0.124	0.00163	0.01111	1.801	0.00180	0.01540
12	2012	6	0.125	0.00163	0.01110	1.846	0.00181	0.01549

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2012	7	0.113	0.00167	0.01142	2.086	0.00170	0.01451
12	2012	8a	0.113	0.00167	0.01142	3.289	0.00120	0.01029
12	2012	8b	0.113	0.00167	0.01142	3.970	0.00086	0.00736
12	2013	2b	0.067	0.00077	0.00338	1.155	0.00095	0.00751
12	2013	3	0.121	0.00153	0.01041	1.793	0.00173	0.01469
12	2013	4	0.132	0.00149	0.01014	1.888	0.00184	0.01577
12	2013	5	0.137	0.00147	0.01001	1.888	0.00184	0.01577
12	2013	6	0.138	0.00146	0.01000	1.928	0.00186	0.01592
12	2013	7	0.118	0.00154	0.01050	2.111	0.00169	0.01450
12	2013	8a	0.118	0.00154	0.01050	2.875	0.00110	0.00937
12	2013	8b	0.118	0.00154	0.01050	3.228	0.00077	0.00660
12	2014	2b	0.069	0.00096	0.00351	0.552	0.00048	0.00237
12	2014	3	0.121	0.00148	0.01007	1.241	0.00052	0.00425
12	2014	4	0.125	0.00146	0.00999	1.324	0.00052	0.00449
12	2014	5	0.128	0.00146	0.00995	1.324	0.00052	0.00449
12	2014	6	0.128	0.00146	0.00995	1.357	0.00053	0.00455
12	2014	7	0.120	0.00148	0.01010	1.521	0.00053	0.00451
12	2014	8a	0.120	0.00148	0.01010	2.345	0.00052	0.00443
12	2014	8b	0.120	0.00148	0.01010	2.833	0.00049	0.00419
12	2015	2b	0.058	0.00095	0.00313	0.437	0.00048	0.00219
12	2015	3	0.121	0.00148	0.01008	1.124	0.00052	0.00418
12	2015	4	0.125	0.00147	0.01000	1.227	0.00052	0.00448
12	2015	5	0.127	0.00146	0.00996	1.227	0.00052	0.00448
12	2015	6	0.127	0.00146	0.00996	1.261	0.00053	0.00455
12	2015	7	0.120	0.00148	0.01010	1.442	0.00053	0.00450
12	2015	8a	0.120	0.00148	0.01010	2.332	0.00052	0.00444
12	2015	8b	0.120	0.00148	0.01010	2.848	0.00049	0.00420
12	2016	2b	0.058	0.00101	0.00311	0.418	0.00050	0.00216
12	2016	3	0.121	0.00148	0.01008	1.072	0.00052	0.00414
12	2016	4	0.124	0.00147	0.01001	1.184	0.00052	0.00448
12	2016	5	0.126	0.00146	0.00997	1.184	0.00052	0.00448
12	2016	6	0.126	0.00146	0.00997	1.213	0.00053	0.00454
12	2016	7	0.120	0.00148	0.01010	1.355	0.00053	0.00451

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2016	8a	0.120	0.00148	0.01010	2.175	0.00052	0.00446
12	2016	8b	0.120	0.00148	0.01010	2.745	0.00049	0.00423
12	2017	2b	0.044	0.00098	0.00279	0.399	0.00049	0.00203
12	2017	3	0.121	0.00148	0.01008	1.022	0.00052	0.00410
12	2017	4	0.124	0.00147	0.01002	1.135	0.00052	0.00448
12	2017	5	0.125	0.00146	0.00999	1.135	0.00052	0.00448
12	2017	6	0.125	0.00146	0.00999	1.157	0.00053	0.00453
12	2017	7	0.120	0.00148	0.01010	1.269	0.00053	0.00450
12	2017	8a	0.120	0.00148	0.01010	1.950	0.00052	0.00448
12	2017	8b	0.120	0.00148	0.01010	2.457	0.00050	0.00425
12	2018	2b	0.043	0.00105	0.00289	0.305	0.00051	0.00203
12	2018	3	0.106	0.00147	0.01004	0.965	0.00052	0.00411
12	2018	4	0.117	0.00145	0.00986	1.084	0.00052	0.00448
12	2018	5	0.122	0.00143	0.00978	1.084	0.00052	0.00448
12	2018	6	0.123	0.00143	0.00977	1.139	0.00054	0.00461
12	2018	7	0.102	0.00148	0.01009	1.236	0.00053	0.00455
12	2018	8a	0.102	0.00148	0.01009	1.913	0.00052	0.00449
12	2018	8b	0.102	0.00148	0.01009	2.398	0.00049	0.00423
12	2019	2b	0.032	0.00097	0.00270	0.245	0.00048	0.00190
12	2019	3	0.086	0.00147	0.01000	0.903	0.00050	0.00392
12	2019	4	0.095	0.00144	0.00982	1.031	0.00050	0.00432
12	2019	5	0.100	0.00143	0.00973	1.031	0.00050	0.00432
12	2019	6	0.100	0.00142	0.00972	1.085	0.00052	0.00443
12	2019	7	0.083	0.00147	0.01006	1.187	0.00051	0.00438
12	2019	8a	0.083	0.00147	0.01006	1.891	0.00051	0.00438
12	2019	8b	0.083	0.00147	0.01006	2.391	0.00049	0.00418
12	2020	2b	0.028	0.00086	0.00248	0.208	0.00043	0.00178
12	2020	3	0.082	0.00147	0.01001	0.869	0.00049	0.00387
12	2020	4	0.091	0.00144	0.00984	1.011	0.00050	0.00432
12	2020	5	0.096	0.00143	0.00975	1.011	0.00050	0.00432
12	2020	6	0.096	0.00143	0.00974	1.063	0.00052	0.00442
12	2020	7	0.079	0.00147	0.01006	1.161	0.00051	0.00438
12	2020	8a	0.079	0.00147	0.01006	1.863	0.00051	0.00439

**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2020	8b	0.079	0.00147	0.01006	2.384	0.00049	0.00419
12	2021	2b	0.020	0.00046	0.00139	0.142	0.00024	0.00104
12	2021	3	0.077	0.00088	0.00602	0.609	0.00031	0.00250
12	2021	4	0.085	0.00087	0.00593	0.710	0.00033	0.00282
12	2021	5	0.090	0.00086	0.00588	0.710	0.00033	0.00282
12	2021	6	0.090	0.00086	0.00588	0.745	0.00034	0.00289
12	2021	7	0.074	0.00089	0.00605	0.810	0.00033	0.00286
12	2021	8a	0.074	0.00089	0.00605	1.293	0.00034	0.00291
12	2021	8b	0.074	0.00089	0.00605	1.667	0.00033	0.00280
12	2022	2b	0.017	0.00047	0.00139	0.127	0.00024	0.00104
12	2022	3	0.073	0.00088	0.00602	0.598	0.00031	0.00250
12	2022	4	0.081	0.00087	0.00593	0.700	0.00033	0.00282
12	2022	5	0.086	0.00086	0.00588	0.700	0.00033	0.00282
12	2022	6	0.086	0.00086	0.00588	0.735	0.00034	0.00288
12	2022	7	0.070	0.00089	0.00605	0.803	0.00033	0.00286
12	2022	8a	0.070	0.00089	0.00605	1.296	0.00034	0.00290
12	2022	8b	0.070	0.00089	0.00605	1.669	0.00033	0.00280
12	2023	2b	0.015	0.00047	0.00138	0.125	0.00024	0.00103
12	2023	3	0.073	0.00088	0.00602	0.595	0.00031	0.00249
12	2023	4	0.081	0.00087	0.00593	0.700	0.00033	0.00282
12	2023	5	0.086	0.00086	0.00589	0.700	0.00033	0.00282
12	2023	6	0.086	0.00086	0.00588	0.734	0.00034	0.00288
12	2023	7	0.070	0.00089	0.00605	0.800	0.00033	0.00286
12	2023	8a	0.070	0.00089	0.00605	1.288	0.00034	0.00290
12	2023	8b	0.070	0.00089	0.00605	1.667	0.00033	0.00280
12	2024	2b	0.012	0.00047	0.00137	0.122	0.00024	0.00103
12	2024	3	0.073	0.00088	0.00602	0.592	0.00031	0.00248
12	2024	4	0.081	0.00087	0.00594	0.700	0.00033	0.00281
12	2024	5	0.085	0.00086	0.00589	0.700	0.00033	0.00281
12	2024	6	0.086	0.00086	0.00588	0.733	0.00034	0.00288
12	2024	7	0.070	0.00089	0.00605	0.793	0.00033	0.00285
12	2024	8a	0.070	0.00089	0.00605	1.253	0.00033	0.00286
12	2024	8b	0.070	0.00089	0.00605	1.622	0.00032	0.00274



**Table A-12. SmartWay Category - Tanker**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
12	2025	2b	0.012	0.00047	0.00137	0.122	0.00024	0.00103
12	2025	3	0.073	0.00088	0.00602	0.592	0.00031	0.00248
12	2025	4	0.081	0.00087	0.00594	0.700	0.00033	0.00281
12	2025	5	0.085	0.00086	0.00589	0.700	0.00033	0.00281
12	2025	6	0.086	0.00086	0.00588	0.733	0.00034	0.00288
12	2025	7	0.070	0.00089	0.00605	0.793	0.00033	0.00285
12	2025	8a	0.070	0.00089	0.00605	1.253	0.00033	0.00286
12	2025	8b	0.070	0.00089	0.00605	1.622	0.00032	0.00274

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	Pre-1993	2b	4.228	0.00522	0.03562	7.272	0.41738	0.53528
13	Pre-1993	3	5.546	0.00974	0.06644	8.698	0.48292	0.61679
13	Pre-1993	4	5.705	0.00988	0.06739	13.056	0.62591	0.79249
13	Pre-1993	5	5.714	0.00988	0.06743	14.670	0.66345	0.83971
13	Pre-1993	6	5.038	0.00930	0.06345	14.383	0.65147	0.82461
13	Pre-1993	7	5.038	0.00930	0.06345	15.759	0.65135	0.82429
13	Pre-1993	8a	7.600	0.01265	0.08633	24.332	0.70047	0.88512
13	Pre-1993	8b	7.600	0.01265	0.08633	29.301	0.73140	0.92328
13	1993	2b	4.228	0.00522	0.03562	7.272	0.41738	0.53528
13	1993	3	5.546	0.00974	0.06644	8.698	0.48292	0.61679
13	1993	4	5.705	0.00988	0.06739	13.056	0.62591	0.79249
13	1993	5	5.714	0.00988	0.06743	14.670	0.66345	0.83971
13	1993	6	5.038	0.00930	0.06345	14.383	0.65147	0.82461
13	1993	7	5.038	0.00930	0.06345	15.759	0.65135	0.82429
13	1993	8a	7.600	0.01265	0.08633	24.332	0.70047	0.88512
13	1993	8b	7.600	0.01265	0.08633	29.301	0.73140	0.92328
13	1994	2b	4.228	0.00522	0.03562	7.272	0.41738	0.53528
13	1994	3	5.546	0.00974	0.06644	8.698	0.48292	0.61679
13	1994	4	5.705	0.00988	0.06739	13.056	0.62591	0.79249
13	1994	5	5.714	0.00988	0.06743	14.670	0.66345	0.83971
13	1994	6	5.038	0.00930	0.06345	14.383	0.65147	0.82461
13	1994	7	5.038	0.00930	0.06345	15.759	0.65135	0.82429
13	1994	8a	7.600	0.01265	0.08633	24.332	0.70047	0.88512
13	1994	8b	7.600	0.01265	0.08633	29.301	0.73140	0.92328
13	1995	2b	4.319	0.00709	0.04835	6.964	0.39225	0.50316
13	1995	3	5.668	0.02230	0.15217	12.242	0.57611	0.73112
13	1995	4	5.760	0.02323	0.15849	14.466	0.63286	0.80154
13	1995	5	5.739	0.02303	0.15711	17.076	0.69624	0.88087
13	1995	6	5.041	0.01592	0.10864	17.647	0.67686	0.85631
13	1995	7	5.041	0.01592	0.10864	19.799	0.69006	0.87270
13	1995	8a	7.447	0.03255	0.22208	28.304	0.72891	0.92043
13	1995	8b	7.447	0.03255	0.22208	30.176	0.73774	0.93113
13	1996	2b	3.446	0.00475	0.03240	6.966	0.37502	0.48056

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	1996	3	5.730	0.01617	0.11034	14.065	0.63134	0.79955
13	1996	4	5.777	0.01656	0.11300	15.836	0.65449	0.82826
13	1996	5	5.775	0.01656	0.11296	16.825	0.69850	0.88383
13	1996	6	5.110	0.01091	0.07447	18.860	0.68842	0.87077
13	1996	7	5.110	0.01091	0.07447	19.871	0.69541	0.87947
13	1996	8a	7.447	0.02473	0.16871	28.214	0.72939	0.92108
13	1996	8b	7.447	0.02473	0.16871	30.274	0.74037	0.93442
13	1997	2b	3.255	0.00381	0.02600	5.735	0.31827	0.41115
13	1997	3	5.660	0.01317	0.08984	10.635	0.50241	0.63964
13	1997	4	5.781	0.01377	0.09398	13.613	0.64568	0.81741
13	1997	5	5.755	0.01365	0.09315	15.491	0.70327	0.88985
13	1997	6	5.090	0.01032	0.07042	15.493	0.66741	0.84462
13	1997	7	5.090	0.01032	0.07042	17.131	0.67687	0.85640
13	1997	8a	8.662	0.01015	0.06923	27.125	0.72028	0.90977
13	1997	8b	8.662	0.01015	0.06923	29.902	0.73415	0.92666
13	1998	2b	2.931	0.00333	0.02275	6.200	0.23918	0.30924
13	1998	3	3.748	0.01408	0.09604	13.043	0.33599	0.42846
13	1998	4	3.785	0.01536	0.10478	13.933	0.34872	0.44410
13	1998	5	3.739	0.01390	0.09484	14.705	0.33065	0.42161
13	1998	6	3.638	0.01030	0.07031	14.310	0.34102	0.43452
13	1998	7	3.638	0.01030	0.07031	15.182	0.34182	0.43552
13	1998	8a	4.194	0.02346	0.16009	24.794	0.46406	0.58777
13	1998	8b	4.194	0.02346	0.16009	28.042	0.50114	0.63362
13	1999	2b	2.247	0.00401	0.02737	5.783	0.23977	0.30994
13	1999	3	3.740	0.01366	0.09319	8.839	0.31209	0.39870
13	1999	4	3.900	0.01407	0.09598	9.521	0.32856	0.41886
13	1999	5	3.931	0.01394	0.09513	9.558	0.32922	0.41970
13	1999	6	3.933	0.01395	0.09516	9.646	0.32863	0.41901
13	1999	7	3.588	0.01322	0.09023	10.149	0.33695	0.42940
13	1999	8a	3.612	0.01410	0.09617	18.421	0.46535	0.58946
13	1999	8b	3.612	0.01410	0.09617	20.994	0.50560	0.63921
13	2000	2b	2.001	0.00369	0.02515	5.929	0.24350	0.31453
13	2000	3	3.801	0.01232	0.08402	8.901	0.31450	0.40159

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2000	4	4.000	0.01100	0.07505	9.425	0.32684	0.41674
13	2000	5	4.049	0.01068	0.07286	9.499	0.32812	0.41835
13	2000	6	4.052	0.01066	0.07272	9.653	0.33116	0.42218
13	2000	7	3.650	0.01331	0.09084	10.869	0.34875	0.44412
13	2000	8a	3.650	0.01331	0.09084	17.044	0.44263	0.56116
13	2000	8b	3.650	0.01331	0.09084	20.825	0.50295	0.63594
13	2001	2b	0.666	0.00257	0.01752	5.646	0.23689	0.30638
13	2001	3	1.559	0.00943	0.06430	8.674	0.30795	0.39341
13	2001	4	1.632	0.00931	0.06349	9.113	0.31861	0.40640
13	2001	5	1.657	0.00927	0.06320	9.150	0.31926	0.40723
13	2001	6	1.659	0.00926	0.06318	9.906	0.33227	0.42351
13	2001	7	1.524	0.00948	0.06470	9.767	0.32987	0.42051
13	2001	8a	1.524	0.00948	0.06470	17.922	0.45568	0.57739
13	2001	8b	1.524	0.00948	0.06470	20.658	0.49977	0.63199
13	2002	2b	0.638	0.00232	0.01583	5.718	0.23862	0.30851
13	2002	3	1.590	0.00725	0.04943	8.483	0.30318	0.38757
13	2002	4	1.683	0.00655	0.04467	9.100	0.31794	0.40556
13	2002	5	1.709	0.00636	0.04335	9.100	0.31794	0.40556
13	2002	6	1.710	0.00634	0.04327	9.453	0.32576	0.41541
13	2002	7	1.531	0.00769	0.05248	10.009	0.33308	0.42451
13	2002	8a	1.531	0.00769	0.05248	15.522	0.41777	0.53031
13	2002	8b	1.531	0.00769	0.05248	20.321	0.49407	0.62492
13	2003	2b	0.553	0.00232	0.01583	4.058	0.20171	0.26084
13	2003	3	1.569	0.00780	0.05319	5.712	0.26303	0.33623
13	2003	4	1.650	0.00760	0.05187	6.091	0.27736	0.35378
13	2003	5	1.673	0.00755	0.05148	6.091	0.27736	0.35378
13	2003	6	1.674	0.00754	0.05146	6.517	0.28851	0.36784
13	2003	7	1.521	0.00792	0.05400	6.668	0.29751	0.37904
13	2003	8a	1.521	0.00792	0.05399	8.634	0.38598	0.48959
13	2003	8b	1.521	0.00792	0.05399	10.026	0.45109	0.57042
13	2004	2b	0.445	0.00146	0.01015	4.036	0.20035	0.25906
13	2004	3	1.586	0.00613	0.04182	5.765	0.26345	0.33676
13	2004	4	1.694	0.00587	0.04006	6.165	0.27836	0.35506

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2004	5	1.724	0.00580	0.03958	6.165	0.27836	0.35506
13	2004	6	1.726	0.00580	0.03955	6.577	0.29151	0.37162
13	2004	7	1.516	0.00630	0.04297	6.719	0.29931	0.38131
13	2004	8a	1.516	0.00630	0.04297	8.612	0.38433	0.48751
13	2004	8b	1.516	0.00630	0.04297	10.029	0.45161	0.57108
13	2005	2b	0.369	0.00094	0.00653	3.937	0.19580	0.25329
13	2005	3	1.566	0.00455	0.03106	5.641	0.25869	0.33085
13	2005	4	1.630	0.00442	0.03018	6.138	0.27738	0.35383
13	2005	5	1.657	0.00437	0.02980	6.138	0.27738	0.35383
13	2005	6	1.659	0.00436	0.02977	6.478	0.28948	0.36905
13	2005	7	1.541	0.00460	0.03140	6.750	0.30201	0.38466
13	2005	8a	1.541	0.00460	0.03140	8.842	0.39470	0.50038
13	2005	8b	1.541	0.00460	0.03140	10.088	0.45396	0.57398
13	2006	2b	0.407	0.00107	0.00742	3.992	0.19889	0.25727
13	2006	3	1.571	0.00479	0.03268	5.595	0.25722	0.32903
13	2006	4	1.651	0.00461	0.03142	6.057	0.27430	0.34995
13	2006	5	1.680	0.00454	0.03096	6.057	0.27430	0.34995
13	2006	6	1.682	0.00453	0.03093	6.323	0.28442	0.36268
13	2006	7	1.534	0.00488	0.03327	6.613	0.29722	0.37863
13	2006	8a	1.535	0.00488	0.03327	8.735	0.39060	0.49527
13	2006	8b	1.535	0.00488	0.03327	10.069	0.45347	0.57338
13	2007	2b	0.350	0.00095	0.00658	2.161	0.00131	0.01122
13	2007	3	1.577	0.00477	0.03254	3.376	0.00177	0.01511
13	2007	4	1.646	0.00458	0.03126	3.623	0.00186	0.01592
13	2007	5	1.674	0.00451	0.03074	3.623	0.00186	0.01592
13	2007	6	1.676	0.00450	0.03071	3.789	0.00192	0.01641
13	2007	7	1.547	0.00485	0.03308	4.190	0.00207	0.01768
13	2007	8a	1.548	0.00485	0.03309	6.131	0.00280	0.02394
13	2007	8b	1.548	0.00485	0.03309	7.037	0.00315	0.02700
13	2008	2b	0.267	0.00105	0.00713	2.090	0.00129	0.01099
13	2008	3	1.060	0.00470	0.03208	2.991	0.00162	0.01383
13	2008	4	1.011	0.00461	0.03147	3.213	0.00170	0.01454
13	2008	5	0.986	0.00457	0.03115	3.213	0.00170	0.01454

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2008	6	0.984	0.00456	0.03113	3.363	0.00175	0.01499
13	2008	7	1.076	0.00473	0.03229	3.487	0.00180	0.01538
13	2008	8a	1.076	0.00473	0.03229	4.975	0.00235	0.02012
13	2008	8b	1.076	0.00473	0.03229	6.721	0.00303	0.02590
13	2009	2b	0.178	0.00117	0.00758	2.061	0.00128	0.01077
13	2009	3	0.716	0.00470	0.03208	3.491	0.00181	0.01551
13	2009	4	0.710	0.00468	0.03193	3.728	0.00190	0.01630
13	2009	5	0.707	0.00467	0.03185	3.728	0.00190	0.01630
13	2009	6	0.707	0.00467	0.03184	3.809	0.00193	0.01655
13	2009	7	0.717	0.00471	0.03213	4.273	0.00210	0.01800
13	2009	8a	0.717	0.00471	0.03213	6.169	0.00281	0.02406
13	2009	8b	0.717	0.00471	0.03213	7.015	0.00314	0.02690
13	2010	2b	0.067	0.00057	0.00323	0.891	0.00089	0.00732
13	2010	3	0.105	0.00170	0.01159	1.851	0.00172	0.01465
13	2010	4	0.105	0.00170	0.01159	2.032	0.00187	0.01601
13	2010	5	0.105	0.00170	0.01159	2.032	0.00187	0.01601
13	2010	6	0.105	0.00170	0.01159	2.116	0.00196	0.01673
13	2010	7	0.105	0.00170	0.01159	2.446	0.00177	0.01510
13	2010	8a	0.105	0.00170	0.01159	3.892	0.00116	0.00990
13	2010	8b	0.105	0.00170	0.01159	4.573	0.00081	0.00692
13	2011	2b	0.069	0.00070	0.00370	0.991	0.00089	0.00732
13	2011	3	0.113	0.00166	0.01134	1.593	0.00152	0.01297
13	2011	4	0.129	0.00160	0.01088	1.704	0.00164	0.01401
13	2011	5	0.137	0.00156	0.01066	1.704	0.00164	0.01401
13	2011	6	0.137	0.00156	0.01064	1.773	0.00168	0.01440
13	2011	7	0.108	0.00169	0.01150	1.938	0.00159	0.01358
13	2011	8a	0.108	0.00169	0.01150	3.036	0.00118	0.01006
13	2011	8b	0.108	0.00169	0.01150	3.831	0.00082	0.00699
13	2012	2b	0.071	0.00077	0.00400	0.932	0.00092	0.00742
13	2012	3	0.114	0.00164	0.01121	1.593	0.00159	0.01354
13	2012	4	0.121	0.00162	0.01104	1.690	0.00169	0.01442
13	2012	5	0.124	0.00160	0.01094	1.690	0.00169	0.01442
13	2012	6	0.124	0.00160	0.01093	1.733	0.00169	0.01449

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2012	7	0.112	0.00165	0.01126	1.970	0.00158	0.01353
13	2012	8a	0.112	0.00165	0.01126	3.121	0.00111	0.00954
13	2012	8b	0.112	0.00165	0.01126	3.742	0.00081	0.00692
13	2013	2b	0.068	0.00077	0.00341	1.117	0.00093	0.00733
13	2013	3	0.121	0.00150	0.01026	1.690	0.00161	0.01368
13	2013	4	0.132	0.00146	0.00998	1.776	0.00171	0.01464
13	2013	5	0.137	0.00144	0.00984	1.776	0.00171	0.01464
13	2013	6	0.137	0.00144	0.00983	1.813	0.00172	0.01475
13	2013	7	0.117	0.00152	0.01035	1.994	0.00156	0.01339
13	2013	8a	0.118	0.00152	0.01035	2.715	0.00101	0.00863
13	2013	8b	0.118	0.00152	0.01035	3.033	0.00072	0.00619
13	2014	2b	0.070	0.00098	0.00354	0.523	0.00048	0.00236
13	2014	3	0.121	0.00145	0.00992	1.137	0.00050	0.00405
13	2014	4	0.125	0.00144	0.00984	1.212	0.00050	0.00426
13	2014	5	0.127	0.00143	0.00979	1.212	0.00050	0.00426
13	2014	6	0.128	0.00143	0.00979	1.242	0.00051	0.00432
13	2014	7	0.119	0.00146	0.00995	1.405	0.00050	0.00428
13	2014	8a	0.119	0.00146	0.00995	2.191	0.00050	0.00424
13	2014	8b	0.119	0.00146	0.00995	2.633	0.00047	0.00402
13	2015	2b	0.059	0.00096	0.00315	0.412	0.00048	0.00218
13	2015	3	0.121	0.00145	0.00992	1.023	0.00050	0.00398
13	2015	4	0.124	0.00144	0.00985	1.115	0.00050	0.00426
13	2015	5	0.127	0.00144	0.00980	1.115	0.00050	0.00426
13	2015	6	0.127	0.00144	0.00980	1.147	0.00050	0.00432
13	2015	7	0.119	0.00146	0.00995	1.327	0.00050	0.00428
13	2015	8a	0.119	0.00146	0.00995	2.178	0.00050	0.00425
13	2015	8b	0.119	0.00146	0.00995	2.648	0.00047	0.00403
13	2016	2b	0.059	0.00102	0.00313	0.395	0.00050	0.00216
13	2016	3	0.120	0.00145	0.00992	0.975	0.00050	0.00395
13	2016	4	0.124	0.00144	0.00986	1.076	0.00050	0.00426
13	2016	5	0.126	0.00144	0.00982	1.076	0.00050	0.00426
13	2016	6	0.126	0.00144	0.00981	1.102	0.00050	0.00431
13	2016	7	0.119	0.00146	0.00994	1.244	0.00050	0.00428

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2016	8a	0.119	0.00146	0.00994	2.030	0.00050	0.00427
13	2016	8b	0.119	0.00146	0.00994	2.551	0.00047	0.00406
13	2017	2b	0.045	0.00100	0.00281	0.377	0.00049	0.00203
13	2017	3	0.120	0.00145	0.00993	0.929	0.00050	0.00391
13	2017	4	0.123	0.00145	0.00987	1.031	0.00050	0.00426
13	2017	5	0.125	0.00144	0.00983	1.031	0.00050	0.00426
13	2017	6	0.125	0.00144	0.00983	1.052	0.00050	0.00431
13	2017	7	0.119	0.00146	0.00994	1.163	0.00050	0.00428
13	2017	8a	0.119	0.00146	0.00994	1.814	0.00050	0.00428
13	2017	8b	0.119	0.00146	0.00994	2.276	0.00048	0.00408
13	2018	2b	0.043	0.00106	0.00290	0.286	0.00052	0.00202
13	2018	3	0.105	0.00145	0.00988	0.875	0.00050	0.00391
13	2018	4	0.116	0.00142	0.00970	0.982	0.00050	0.00426
13	2018	5	0.122	0.00141	0.00961	0.982	0.00050	0.00426
13	2018	6	0.123	0.00141	0.00960	1.033	0.00051	0.00438
13	2018	7	0.101	0.00146	0.00994	1.129	0.00050	0.00432
13	2018	8a	0.101	0.00146	0.00994	1.777	0.00050	0.00429
13	2018	8b	0.101	0.00146	0.00994	2.219	0.00047	0.00406
13	2019	2b	0.032	0.00098	0.00270	0.229	0.00048	0.00189
13	2019	3	0.085	0.00144	0.00985	0.817	0.00048	0.00374
13	2019	4	0.095	0.00142	0.00967	0.933	0.00048	0.00410
13	2019	5	0.100	0.00140	0.00957	0.933	0.00048	0.00410
13	2019	6	0.100	0.00140	0.00956	0.983	0.00049	0.00421
13	2019	7	0.082	0.00145	0.00991	1.085	0.00049	0.00417
13	2019	8a	0.082	0.00145	0.00991	1.757	0.00049	0.00419
13	2019	8b	0.082	0.00145	0.00991	2.213	0.00047	0.00402
13	2020	2b	0.028	0.00087	0.00248	0.195	0.00043	0.00178
13	2020	3	0.081	0.00144	0.00985	0.786	0.00047	0.00369
13	2020	4	0.091	0.00142	0.00968	0.915	0.00048	0.00410
13	2020	5	0.095	0.00140	0.00959	0.915	0.00048	0.00410
13	2020	6	0.096	0.00140	0.00958	0.962	0.00049	0.00420
13	2020	7	0.078	0.00145	0.00991	1.061	0.00049	0.00416
13	2020	8a	0.078	0.00145	0.00991	1.731	0.00049	0.00420



**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2020	8b	0.078	0.00145	0.00991	2.206	0.00047	0.00402
13	2021	2b	0.020	0.00047	0.00139	0.133	0.00024	0.00104
13	2021	3	0.076	0.00087	0.00593	0.550	0.00030	0.00238
13	2021	4	0.085	0.00086	0.00583	0.642	0.00031	0.00267
13	2021	5	0.089	0.00085	0.00578	0.642	0.00031	0.00267
13	2021	6	0.090	0.00085	0.00578	0.674	0.00032	0.00274
13	2021	7	0.074	0.00087	0.00596	0.739	0.00032	0.00272
13	2021	8a	0.074	0.00087	0.00596	1.199	0.00032	0.00278
13	2021	8b	0.074	0.00087	0.00596	1.540	0.00031	0.00269
13	2022	2b	0.017	0.00047	0.00139	0.118	0.00024	0.00104
13	2022	3	0.072	0.00087	0.00593	0.539	0.00030	0.00238
13	2022	4	0.081	0.00086	0.00584	0.632	0.00031	0.00267
13	2022	5	0.086	0.00085	0.00579	0.632	0.00031	0.00267
13	2022	6	0.086	0.00085	0.00578	0.664	0.00032	0.00274
13	2022	7	0.070	0.00087	0.00596	0.732	0.00032	0.00272
13	2022	8a	0.070	0.00087	0.00596	1.202	0.00032	0.00278
13	2022	8b	0.070	0.00087	0.00596	1.541	0.00031	0.00269
13	2023	2b	0.015	0.00047	0.00138	0.116	0.00024	0.00103
13	2023	3	0.072	0.00087	0.00593	0.537	0.00030	0.00237
13	2023	4	0.081	0.00086	0.00584	0.632	0.00031	0.00267
13	2023	5	0.085	0.00085	0.00579	0.632	0.00031	0.00267
13	2023	6	0.086	0.00085	0.00578	0.664	0.00032	0.00274
13	2023	7	0.070	0.00087	0.00596	0.729	0.00032	0.00272
13	2023	8a	0.070	0.00087	0.00596	1.194	0.00032	0.00277
13	2023	8b	0.070	0.00087	0.00596	1.539	0.00031	0.00269
13	2024	2b	0.012	0.00047	0.00137	0.114	0.00024	0.00103
13	2024	3	0.072	0.00087	0.00593	0.534	0.00030	0.00236
13	2024	4	0.081	0.00086	0.00584	0.632	0.00031	0.00267
13	2024	5	0.085	0.00085	0.00579	0.632	0.00031	0.00267
13	2024	6	0.085	0.00085	0.00579	0.663	0.00032	0.00273
13	2024	7	0.070	0.00087	0.00596	0.722	0.00032	0.00271
13	2024	8a	0.070	0.00087	0.00596	1.160	0.00032	0.00273
13	2024	8b	0.070	0.00087	0.00596	1.495	0.00031	0.00263

**Table A-13. SmartWay Category - TL/Dry Van**

Category ID	Engine Model Yr	Truck Class	Gas NOx g/mi	Gas BC g/mi	Gas PM <sub>2.5</sub> g/mi	Diesel NOx g/mi	Diesel BC g/mi	Diesel PM <sub>2.5</sub> g/mi
13	2025	2b	0.012	0.00047	0.00137	0.114	0.00024	0.00103
13	2025	3	0.072	0.00087	0.00593	0.534	0.00030	0.00236
13	2025	4	0.081	0.00086	0.00584	0.632	0.00031	0.00267
13	2025	5	0.085	0.00085	0.00579	0.632	0.00031	0.00267
13	2025	6	0.085	0.00085	0.00579	0.663	0.00032	0.00273
13	2025	7	0.070	0.00087	0.00596	0.722	0.00032	0.00271
13	2025	8a	0.070	0.00087	0.00596	1.160	0.00032	0.00273
13	2025	8b	0.070	0.00087	0.00596	1.495	0.00031	0.00263

# Appendix B: NO<sub>x</sub>, PM & BC Idle Factors – g/hr 2023 Calendar Year, MOVES3.1 Basis

**Table B-1. Short Duration Idle Emission Factors  
(< 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
BC	Diesel	Pre-1993	3.53160	3.53160	3.53159	3.30056	2.91867
BC	Diesel	1993	3.53160	3.53160	3.53159	3.30056	2.91867
BC	Diesel	1994	3.53160	3.53160	3.53159	3.30056	2.91867
BC	Diesel	1995	3.53159	3.53159	3.53159	3.30056	2.91868
BC	Diesel	1996	3.53159	3.53159	3.53159	3.30056	2.91868
BC	Diesel	1997	3.53159	3.53159	3.53160	3.30056	2.91867
BC	Diesel	1998	3.32161	3.32161	3.32160	3.13359	2.79127
BC	Diesel	1999	3.32161	3.32161	3.32161	3.13359	2.79127
BC	Diesel	2000	3.32161	3.32161	3.32161	3.13359	2.79127
BC	Diesel	2001	3.30843	3.30843	3.32162	3.13360	2.79127
BC	Diesel	2002	3.30844	3.30844	3.32161	3.13359	2.79127
BC	Diesel	2003	2.81408	2.81408	2.82528	2.82527	2.52257
BC	Diesel	2004	2.81408	2.81408	2.82528	2.82528	2.52257
BC	Diesel	2005	2.81408	2.81408	2.82527	2.82528	2.52257
BC	Diesel	2006	2.81407	2.81407	2.82528	2.82528	2.52257
BC	Diesel	2007	0.04544	0.04544	0.04544	0.03153	0.03122
BC	Diesel	2008	0.04544	0.04544	0.04544	0.03153	0.03122
BC	Diesel	2009	0.04544	0.04544	0.04544	0.03153	0.03122
BC	Diesel	2010	0.00541	0.00541	0.00613	0.06281	0.00210
BC	Diesel	2011	0.00541	0.00541	0.00613	0.06281	0.00210
BC	Diesel	2012	0.00541	0.00541	0.00613	0.06281	0.00210
BC	Diesel	2013	0.00541	0.00541	0.00541	0.05550	0.00186
BC	Diesel	2014	0.00067	0.00067	0.00067	0.00732	0.00277
BC	Diesel	2015	0.00067	0.00067	0.00067	0.00732	0.00277
BC	Diesel	2016	0.00067	0.00067	0.00067	0.00732	0.00277
BC	Diesel	2017	0.00067	0.00067	0.00067	0.00732	0.00277
BC	Diesel	2018	0.00067	0.00067	0.00067	0.00732	0.00277

**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
BC	Diesel	2019	0.00059	0.00059	0.00067	0.00683	0.00277
BC	Diesel	2020	0.00058	0.00058	0.00067	0.00683	0.00277
BC	Diesel	2021	0.00042	0.00042	0.00043	0.00463	0.00194
BC	Diesel	2022	0.00042	0.00042	0.00043	0.00463	0.00194
BC	Diesel	2023	0.00042	0.00042	0.00043	0.00463	0.00194
BC	Diesel	2024	0.00042	0.00042	0.00043	0.00463	0.00194
BC	Diesel	2025	0.00042	0.00042	0.00043	0.00463	0.00194
BC	E10	Pre-1993	0.00641	0.00641	0.00641	0.00641	0.00641
BC	E10	1993	0.00641	0.00641	0.00641	0.00641	0.00641
BC	E10	1994	0.00641	0.00641	0.00641	0.00641	0.00641
BC	E10	1995	0.00764	0.00764	0.00764	0.00764	0.00764
BC	E10	1996	0.01778	0.01778	0.01778	0.01778	0.01778
BC	E10	1997	0.01871	0.01871	0.01871	0.01871	0.01871
BC	E10	1998	0.01117	0.01117	0.01117	0.01117	0.01117
BC	E10	1999	0.00542	0.00542	0.00542	0.00542	0.00542
BC	E10	2000	0.00241	0.00241	0.00241	0.00241	0.00241
BC	E10	2001	0.00219	0.00219	0.00219	0.00219	0.00219
BC	E10	2002	0.00929	0.00929	0.00929	0.00929	0.00929
BC	E10	2003	0.00549	0.00549	0.00549	0.00549	0.00549
BC	E10	2004	0.01281	0.01281	0.01281	0.01281	0.01281
BC	E10	2005	0.00970	0.00970	0.00970	0.00970	0.00970
BC	E10	2006	0.00970	0.00970	0.00970	0.00970	0.00970
BC	E10	2007	0.00970	0.00970	0.00970	0.00970	0.00970
BC	E10	2008	0.00970	0.00970	0.00970	0.00970	0.00970
BC	E10	2009	0.00970	0.00970	0.00970	0.00970	0.00970
BC	E10	2010	0.00791	0.00791	0.00890	0.00297	0.00297
BC	E10	2011	0.00791	0.00791	0.00890	0.00297	0.00297
BC	E10	2012	0.00791	0.00791	0.00890	0.00297	0.00297
BC	E10	2013	0.00791	0.00791	0.00791	0.00297	0.00297
BC	E10	2014	0.00791	0.00791	0.00791	0.00297	0.00297
BC	E10	2015	0.00791	0.00791	0.00791	0.00297	0.00297
BC	E10	2016	0.00791	0.00791	0.00791	0.00297	0.00297
BC	E10	2017	0.00791	0.00791	0.00791	0.00297	0.00297

**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
BC	E10	2018	0.00791	0.00791	0.00791	0.00297	0.00297
BC	E10	2019	0.00791	0.00791	0.00791	0.00198	0.00198
BC	E10	2020	0.00791	0.00791	0.00791	0.00198	0.00198
BC	E10	2021	0.00494	0.00494	0.00494	0.00198	0.00198
BC	E10	2022	0.00494	0.00494	0.00494	0.00198	0.00198
BC	E10	2023	0.00494	0.00494	0.00494	0.00198	0.00198
BC	E10	2024	0.00494	0.00494	0.00494	0.00198	0.00198
BC	E10	2025	0.00494	0.00494	0.00494	0.00198	0.00198
NOx	Diesel	Pre-1993	121.100	121.100	121.100	140.253	140.253
NOx	Diesel	1993	121.100	121.100	121.100	140.253	140.253
NOx	Diesel	1994	121.100	121.100	121.100	140.253	140.253
NOx	Diesel	1995	121.100	121.100	121.100	140.253	140.253
NOx	Diesel	1996	121.100	121.100	121.100	140.253	140.254
NOx	Diesel	1997	121.100	121.100	121.100	140.253	140.253
NOx	Diesel	1998	96.880	96.880	96.880	117.769	117.769
NOx	Diesel	1999	96.880	96.880	96.880	96.880	155.358
NOx	Diesel	2000	96.880	96.880	96.880	96.880	155.358
NOx	Diesel	2001	96.783	96.783	96.880	96.880	155.358
NOx	Diesel	2002	96.783	96.783	96.880	96.880	155.358
NOx	Diesel	2003	22.000	22.000	22.022	45.975	57.149
NOx	Diesel	2004	22.000	22.000	22.022	45.975	57.148
NOx	Diesel	2005	22.000	22.000	22.022	45.975	57.149
NOx	Diesel	2006	22.000	22.000	22.022	45.975	57.148
NOx	Diesel	2007	20.381	20.381	20.381	22.935	53.518
NOx	Diesel	2008	20.381	20.381	20.381	22.935	53.518
NOx	Diesel	2009	20.381	20.381	20.381	22.935	53.518
NOx	Diesel	2010	17.283	17.283	19.720	35.913	47.276
NOx	Diesel	2011	22.762	22.762	25.971	34.851	41.910
NOx	Diesel	2012	19.936	19.936	22.747	34.929	41.362
NOx	Diesel	2013	31.209	31.209	31.209	21.065	35.652
NOx	Diesel	2014	14.205	14.205	14.205	29.132	49.226
NOx	Diesel	2015	10.042	10.042	10.042	27.988	49.007
NOx	Diesel	2016	10.042	10.042	10.042	27.999	49.748

**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
NOx	Diesel	2017	10.042	10.042	10.042	27.881	52.602
NOx	Diesel	2018	7.016	7.016	10.042	27.755	52.601
NOx	Diesel	2019	5.646	5.646	10.042	26.054	52.601
NOx	Diesel	2020	4.854	4.854	10.042	26.054	52.601
NOx	Diesel	2021	3.062	3.062	6.797	18.412	38.119
NOx	Diesel	2022	2.528	2.528	6.797	18.412	38.119
NOx	Diesel	2023	2.528	2.528	6.797	18.412	38.119
NOx	Diesel	2024	2.528	2.528	6.797	18.412	38.119
NOx	Diesel	2025	2.528	2.528	6.797	18.412	38.119
NOx	E10	Pre-1993	6.848	6.848	7.086	7.086	7.086
NOx	E10	1993	6.848	6.848	7.086	7.086	7.086
NOx	E10	1994	6.848	6.848	7.086	7.086	7.086
NOx	E10	1995	6.852	6.852	7.086	7.086	7.086
NOx	E10	1996	6.708	6.708	7.086	7.086	7.086
NOx	E10	1997	6.704	6.704	7.086	7.086	7.086
NOx	E10	1998	13.901	13.901	14.683	14.683	14.683
NOx	E10	1999	13.924	13.924	14.683	14.683	14.683
NOx	E10	2000	13.825	13.825	14.683	14.683	14.683
NOx	E10	2001	6.658	6.658	5.478	5.478	5.478
NOx	E10	2002	6.675	6.675	5.478	5.478	5.478
NOx	E10	2003	6.710	6.710	5.478	5.478	5.478
NOx	E10	2004	6.644	6.644	5.478	5.478	5.478
NOx	E10	2005	6.573	6.573	5.478	5.478	5.478
NOx	E10	2006	6.583	6.583	5.478	5.478	5.478
NOx	E10	2007	6.604	6.604	5.478	5.478	5.478
NOx	E10	2008	3.287	3.287	2.785	1.643	1.643
NOx	E10	2009	0.107	0.107	0.091	1.643	1.643
NOx	E10	2010	0.258	0.258	0.227	0.227	0.227
NOx	E10	2011	0.252	0.252	0.227	0.227	0.227
NOx	E10	2012	0.251	0.251	0.227	0.227	0.227
NOx	E10	2013	0.245	0.245	0.227	0.227	0.227
NOx	E10	2014	0.251	0.251	0.227	0.227	0.227
NOx	E10	2015	0.248	0.248	0.227	0.227	0.227

**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
NOx	E10	2016	0.250	0.250	0.227	0.227	0.227
NOx	E10	2017	0.250	0.250	0.227	0.227	0.227
NOx	E10	2018	0.229	0.229	0.227	0.227	0.227
NOx	E10	2019	0.097	0.097	0.124	0.124	0.124
NOx	E10	2020	0.070	0.070	0.124	0.124	0.124
NOx	E10	2021	0.052	0.052	0.124	0.124	0.124
NOx	E10	2022	0.033	0.033	0.124	0.124	0.124
NOx	E10	2023	0.033	0.033	0.124	0.124	0.124
NOx	E10	2024	0.033	0.033	0.124	0.124	0.124
NOx	E10	2025	0.033	0.033	0.124	0.124	0.124
PM2.5	Diesel	Pre-1993	11.1300	11.1300	11.1299	10.4018	9.1983
PM2.5	Diesel	1993	11.1300	11.1300	11.1299	10.4018	9.1983
PM2.5	Diesel	1994	11.1300	11.1300	11.1299	10.4018	9.1983
PM2.5	Diesel	1995	11.1299	11.1299	11.1299	10.4018	9.1983
PM2.5	Diesel	1996	11.1299	11.1299	11.1299	10.4018	9.1983
PM2.5	Diesel	1997	11.1299	11.1299	11.1299	10.4018	9.1983
PM2.5	Diesel	1998	10.4681	10.4681	10.4681	9.8756	8.7968
PM2.5	Diesel	1999	10.4682	10.4682	10.4682	9.8756	8.7968
PM2.5	Diesel	2000	10.4681	10.4681	10.4681	9.8756	8.7968
PM2.5	Diesel	2001	6.9972	6.9972	10.4682	9.8756	8.7968
PM2.5	Diesel	2002	6.9972	6.9972	10.4682	9.8756	8.7968
PM2.5	Diesel	2003	5.9516	5.9516	8.9039	8.9039	7.9500
PM2.5	Diesel	2004	5.9516	5.9516	8.9040	8.9040	7.9499
PM2.5	Diesel	2005	5.9516	5.9516	8.9039	8.9039	7.9500
PM2.5	Diesel	2006	5.9516	5.9516	8.9040	8.9039	7.9499
PM2.5	Diesel	2007	0.3889	0.3889	0.3889	0.2699	0.2672
PM2.5	Diesel	2008	0.3889	0.3889	0.3889	0.2699	0.2672
PM2.5	Diesel	2009	0.3889	0.3889	0.3889	0.2699	0.2672
PM2.5	Diesel	2010	0.0463	0.0463	0.0524	0.5374	0.0180
PM2.5	Diesel	2011	0.0463	0.0463	0.0524	0.5374	0.0180
PM2.5	Diesel	2012	0.0463	0.0463	0.0524	0.5374	0.0180
PM2.5	Diesel	2013	0.0463	0.0463	0.0463	0.4748	0.0159
PM2.5	Diesel	2014	0.0057	0.0057	0.0057	0.0626	0.0237

**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
PM2.5	Diesel	2015	0.0057	0.0057	0.0057	0.0626	0.0237
PM2.5	Diesel	2016	0.0057	0.0057	0.0057	0.0626	0.0237
PM2.5	Diesel	2017	0.0057	0.0057	0.0057	0.0626	0.0237
PM2.5	Diesel	2018	0.0057	0.0057	0.0057	0.0626	0.0237
PM2.5	Diesel	2019	0.0051	0.0051	0.0057	0.0584	0.0237
PM2.5	Diesel	2020	0.0050	0.0050	0.0057	0.0584	0.0237
PM2.5	Diesel	2021	0.0036	0.0036	0.0037	0.0396	0.0166
PM2.5	Diesel	2022	0.0036	0.0036	0.0037	0.0396	0.0166
PM2.5	Diesel	2023	0.0036	0.0036	0.0037	0.0396	0.0166
PM2.5	Diesel	2024	0.0036	0.0036	0.0037	0.0396	0.0166
PM2.5	Diesel	2025	0.0036	0.0036	0.0037	0.0396	0.0166
PM2.5	E10	Pre-1993	0.0437	0.0437	0.0437	0.0437	0.0437
PM2.5	E10	1993	0.0437	0.0437	0.0437	0.0437	0.0437
PM2.5	E10	1994	0.0437	0.0437	0.0437	0.0437	0.0437
PM2.5	E10	1995	0.0521	0.0521	0.0521	0.0521	0.0521
PM2.5	E10	1996	0.1212	0.1212	0.1212	0.1212	0.1212
PM2.5	E10	1997	0.1275	0.1275	0.1275	0.1275	0.1275
PM2.5	E10	1998	0.0762	0.0762	0.0762	0.0762	0.0762
PM2.5	E10	1999	0.0369	0.0369	0.0369	0.0369	0.0369
PM2.5	E10	2000	0.0164	0.0164	0.0164	0.0164	0.0164
PM2.5	E10	2001	0.0150	0.0150	0.0150	0.0150	0.0150
PM2.5	E10	2002	0.0634	0.0634	0.0634	0.0634	0.0634
PM2.5	E10	2003	0.0374	0.0374	0.0374	0.0374	0.0374
PM2.5	E10	2004	0.0901	0.0901	0.0874	0.0874	0.0874
PM2.5	E10	2005	0.0681	0.0681	0.0662	0.0662	0.0662
PM2.5	E10	2006	0.0681	0.0681	0.0662	0.0662	0.0662
PM2.5	E10	2007	0.0682	0.0682	0.0662	0.0662	0.0662
PM2.5	E10	2008	0.0680	0.0680	0.0662	0.0662	0.0662
PM2.5	E10	2009	0.0679	0.0679	0.0662	0.0662	0.0662
PM2.5	E10	2010	0.0530	0.0530	0.0595	0.0198	0.0198
PM2.5	E10	2011	0.0529	0.0529	0.0595	0.0198	0.0198
PM2.5	E10	2012	0.0528	0.0528	0.0595	0.0198	0.0198
PM2.5	E10	2013	0.0526	0.0526	0.0519	0.0180	0.0180



**Table B-1. Short Duration Idle Emission Factors  
( < 60 minutes per idle event) (g/hr)**

Pollutant	Fuel	Model Year	Class 2b	Class 3	Class 4 5	Class 6 7	Class 8a/b
PM2.5	E10	2014	0.0528	0.0528	0.0519	0.0180	0.0180
PM2.5	E10	2015	0.0527	0.0527	0.0519	0.0180	0.0180
PM2.5	E10	2016	0.0528	0.0528	0.0519	0.0180	0.0180
PM2.5	E10	2017	0.0528	0.0528	0.0519	0.0180	0.0180
PM2.5	E10	2018	0.0529	0.0529	0.0519	0.0180	0.0180
PM2.5	E10	2019	0.0529	0.0529	0.0519	0.0160	0.0160
PM2.5	E10	2020	0.0527	0.0527	0.0519	0.0160	0.0160
PM2.5	E10	2021	0.0316	0.0316	0.0312	0.0113	0.0113
PM2.5	E10	2022	0.0316	0.0316	0.0312	0.0113	0.0113
PM2.5	E10	2023	0.0316	0.0316	0.0312	0.0113	0.0113
PM2.5	E10	2024	0.0316	0.0316	0.0312	0.0113	0.0113
PM2.5	E10	2025	0.0316	0.0316	0.0312	0.0113	0.0113

**Table B-2: Extended Idle Emission Factors (Class 8b Diesel Only) (g/hr)**

Model Year	NOx	PM <sub>2.5</sub>	BC
Pre-1993	144.455	4.91821	1.12709
1993	144.455	2.77407	1.12709
1994	144.455	2.77407	1.12709
1995	144.455	2.77407	1.12709
1996	144.455	2.77408	1.12709
1997	144.455	2.77409	1.12709
1998	144.455	2.77408	1.12709
1999	144.455	2.77408	1.12710
2000	144.455	2.77408	1.12709
2001	144.455	2.77407	1.12710
2002	144.455	2.77409	1.12709
2003	144.455	2.77408	1.12709
2004	144.455	2.77408	1.12709
2005	144.456	2.77408	1.12709
2006	144.455	2.77407	1.12709
2007	106.666	0.09682	0.01488
2008	106.666	0.09682	0.01488
2009	106.666	0.09682	0.01488
2010	45.501	0.05172	0.01100
2011	45.501	0.05172	0.01100
2012	45.501	0.05172	0.01100
2013	45.501	0.03173	0.00733
2014	45.504	0.04045	0.00934
2015	45.506	0.04052	0.00935
2016	45.507	0.04055	0.00936
2017	45.508	0.04062	0.00938
2018	45.504	0.04045	0.00934
2019	45.507	0.04059	0.00937
2020	45.507	0.04059	0.00937
2021	45.508	0.04060	0.00937
2022	45.508	0.04060	0.00937
2023	45.508	0.04061	0.00937
2024	45.508	0.04061	0.00938
2025	45.508	0.04061	0.00938



U. S. Environmental Protection Agency  
Office of Transportation and Air Quality  
1200 Pennsylvania Ave. NW  
Washington, DC 20460  
(734) 214-4333

<https://www.epa.gov/>



U. S. Environmental Protection Agency  
National Vehicle and Fuel Emissions Laboratory  
2565 Plymouth Rd.  
Ann Arbor, MI 48105 (734) 214-4200

<https://www.epa.gov/transportation-air-pollution-and-climate-change>