



U.S. Department
Of Transportation

National Highway
Traffic Safety Administration



PRELIMINARY REGULATORY EVALUATION

FMVSS No. 223 Rear Impact Guards and FMVSS No. 224 Rear Impact Protection

Office of Regulatory Analysis and Evaluation
National Center for Statistics and Analysis
September 2015

People Saving People

the average baseline miles per gallon (mpg) of a heavy truck is estimated to be 5.8 mpg.⁵³ Third, the projected price of diesel fuel was taken from reference case of the Annual Energy Outlook in 2013 dollars starting in 2017, the assumed effectiveness year in this Preliminary Regulatory Evaluation. The analysis uses a 3 percent and a 7 percent discount rate.

Adding 48.9 pounds changes the average fuel economy of that vehicle from 5.8 mpg to 5.7959 mpg. Over the life time of a heavy truck, the vehicle would use 418,545 gallons at 5.8 mpg and would use 418,843 gallons at 5.7959 mpg, so adding 48.9 pounds results in 298 additional gallons of diesel fuel used per vehicle for the life time of a vehicle. The estimated impact on a year to year basis is shown in Table 26.

⁵³ U.S. Department of Transportation Federal Highway Administration, Office of Highway Policy Information, Highway Statistics Series, <http://www.fhwa.dot.gov/policyinformation/statistics/2012/vm1.cfm>

**Table 26: Undiscounted Value of Lifetime Fuel Economy Impact
Per Vehicle in 2013 dollars**

*The survival rate is based on heavy truck data

Year	Survival Probability	Exposure VMT	Aggregate Exposure	Fuel Price	Fuel Economy		Fuel Consumption		Value of Fuel Consumption	
					base	new	base	new	base	new
1	1	240,737	240,737	\$3.55	5.8	5.7959	41,506	41,536	147,316	147,421
2	0.993	226,110	224,527	\$3.59	5.8	5.7959	38,712	38,739	138,840	138,939
3	0.981	212,378	208,343	\$3.66	5.8	5.7959	35,921	35,947	131,630	131,724
4	0.9642	199,486	192,344	\$3.73	5.8	5.7959	33,163	33,186	123,584	123,672
5	0.9432	187,381	176,738	\$3.80	5.8	5.7959	30,472	30,494	115,685	115,767
6	0.9181	176,017	161,601	\$3.87	5.8	5.7959	27,862	27,882	107,900	107,977
7	0.8894	165,346	147,059	\$3.93	5.8	5.7959	25,355	25,373	99,534	99,605
8	0.8575	155,327	133,193	\$3.98	5.8	5.7959	22,964	22,981	91,317	91,382
9	0.823	145,919	120,091	\$4.04	5.8	5.7959	20,705	20,720	83,572	83,632
10	0.786	137,085	107,749	\$4.08	5.8	5.7959	18,577	18,591	75,874	75,928
11	0.7473	128,789	96,244	\$4.14	5.8	5.7959	16,594	16,606	68,761	68,810
12	0.7071	120,999	85,558	\$4.18	5.8	5.7959	14,751	14,762	61,638	61,682
13	0.666	113,683	75,713	\$4.23	5.8	5.7959	13,054	13,063	55,157	55,196
14	0.6244	106,813	66,694	\$4.27	5.8	5.7959	11,499	11,507	49,063	49,098
15	0.5826	100,360	58,470	\$4.32	5.8	5.7959	10,081	10,088	43,512	43,543
16	0.5411	94,300	51,026	\$4.37	5.8	5.7959	8,798	8,804	38,431	38,458
17	0.5003	88,609	44,331	\$4.42	5.8	5.7959	7,643	7,649	33,809	33,833
18	0.4604	83,263	38,334	\$4.50	5.8	5.7959	6,609	6,614	29,710	29,731
19	0.4217	78,242	32,995	\$4.53	5.8	5.7959	5,689	5,693	25,791	25,809
20	0.3845	73,526	28,271	\$4.58	5.8	5.7959	4,874	4,878	22,307	22,323
21	0.349	69,096	24,115	\$4.61	5.8	5.7959	4,158	4,161	19,169	19,182
22	0.3152	64,935	20,468	\$4.65	5.8	5.7959	3,529	3,531	16,415	16,427
23	0.2835	61,026	17,301	\$4.72	5.8	5.7959	2,983	2,985	14,086	14,096
24	0.2537	57,354	14,551	\$4.80	5.8	5.7959	2,509	2,511	12,046	12,055
25	0.226	53,905	12,183	\$4.84	5.8	5.7959	2,100	2,102	10,156	10,163
26	0.2004	50,664	10,153	\$4.87	5.8	5.7959	1,751	1,752	8,523	8,529
27	0.1769	47,620	8,424	\$4.90	5.8	5.7959	1,452	1,453	7,121	7,126
28	0.1554	44,759	6,956	\$4.94	5.8	5.7959	1,199	1,200	5,921	5,925
29	0.1359	42,072	5,718	\$4.97	5.8	5.7959	986	986	4,901	4,905
30	0.1183	39,547	4,678	\$5.01	5.8	5.7959	807	807	4,039	4,041
31	0.1025	37,175	3,810	\$5.04	5.8	5.7959	657	657	3,312	3,315
32	0.0884	34,945	3,089	\$5.08	5.8	5.7959	533	533	2,704	2,706
33	0.0759	32,851	2,493	\$5.11	5.8	5.7959	430	430	2,198	2,199
34	0.0649	30,883	2,004	\$5.15	5.8	5.7959	346	346	1,779	1,780
35	0.0552	29,033	1,603	\$5.18	5.8	5.7959	276	277	1,433	1,434
Total			2,427,562				418,545		1,657,237	1,658,415