



Figure 3. Size-Based Standards

Figure 3. Size-Based Standards

Analogous to the weight-based standards shown in Figure 3, the size-based standards shown in Figure 3 would introduce a disincentive to reduce the size of most vehicles of size less than approximately 110 square feet. Because of the relationships between size, weight, and fuel economy, NHTSA expects that this would provide a more positive safety incentive than a constant-value function due to the fact that, given similar height and weight, a larger vehicle usually provides greater occupant self-protection than the smaller vehicle.

A size-based standard would also entail similar concerns regarding the potential that fuel savings would be lower than expected because manufacturers would increase the size of many smaller vehicles (below 110 square feet). As under either a constant-value or weight-based standard, though, NHTSA would address this concern through the normal process of regularly updating light truck standards.

3. Mixed Attribute-Based Standards

Because weight-based and size-based standards would likely have different safety and economic implications, we also considered standards defined by

functions of both weight and size. The first approach we considered was based on a functional form suggested in a recent report by Argonne National Laboratory.¹² This form begins with a linear dependence of fuel consumption (in gallons per mile, or gpm) on curb weight, but then provides “extra credit” for “weight-efficient” vehicles—that is, vehicles with curb weights that are not unusually heavy relative to their sizes. Table 3 and Figure 4 show how such a mixed standard might appear if applied to the light truck fleet at a level of overall stringency equivalent to a 20.7 mpg constant-value CAFE standard.¹³

TABLE 3.—WEIGHT-BASED STANDARD (MPG) WITH “EXTRA CREDIT” FOR “WEIGHT EFFICIENCY”

Curb weight (lb)	Area (square feet)									
	60	70	80	90	100	110	120	130	140	150
2000	33.5	32.7	32.2	31.9	31.6	31.3	31.1	30.9	30.8	30.7
2500	30.3	29.5	28.9	28.4	28.1	27.8	27.6	27.4	27.2	27.1
3000	27.9	27.0	26.3	25.8	25.4	25.1	24.9	24.7	24.5	24.3
3500	26.1	25.0	24.3	23.8	23.3	23.0	22.7	22.5	22.3	22.2

¹² Argonne National Laboratory, “Examining the Potential for voluntary Fuel Economy Standards in the United States and Canada” Argonne, IL, October 2002.

¹³ The standard shown is of the following form: $gpm = a * (b * CW - c) * [d - e * CW / (f * A - g)]$, where CW is curb weight, A is area, and a, b, c, d, e, f, and g are constants.