APPENDIX II TO PART 600—SAMPLE FUEL ECONOMY CALCULATIONS

(a) This sample fuel economy calculation is applicable to 1978 through 1987 model year automobiles.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

\[
\begin{align*}
HC &= 0.139 \text{ grams/mile} \\
CO &= 1.59 \text{ grams/mile} \\
CO_2 &= 317 \text{ grams/mile}
\end{align*}
\]

According to the procedure in §600.113–78, the city fuel economy or MPG\(_c\), for the vehicle may be calculated by substituting the HC, CO, and CO\(_2\) grams/mile values into the following equation:

\[
MPG_c = \frac{2421}{(0.866 \times HC) + (0.429 \times CO) + (0.273 \times CO_2)}
\]

\[
MPG_c = 27.7
\]

(2) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and calculation similar to that shown in paragraph (a) by this appendix resulted in a highway fuel economy or MPG\(_h\) of 36.9. According to the procedure in §600.113, the combined fuel economy (called MPG\(_{c/h}\)) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

\[
MPG_{c/h} = \frac{1}{\frac{0.55}{MPG_c} + \frac{0.45}{MPG_h}}
\]

\[
MPG_{c/h} = \frac{1}{\frac{0.55}{27.7} + \frac{0.45}{36.9}} = 31.2
\]
(b) This sample fuel economy calculation is applicable to 1988 and later model year automobiles.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

\[ \begin{align*} 
HC &= 0.139 \text{ grams/mile}. \\
CO &= 1.59 \text{ grams/mile}. \\
CO_2 &= 317 \text{ grams/mile}. 
\end{align*} \]

(2) Assume that the test fuel used for this test had the following properties:

\[ \begin{align*} 
SG &= 0.745. \\
CWF &= 0.868. \\
NHV &= 18,478 \text{ Btu/lb}. 
\end{align*} \]

(3) According to the procedure in §600.113-08, the city fuel economy or \( MPG_c \), for the vehicle may be calculated by substituting the HC, CO, and \( CO_2 \) gram/mile values and the SG, CWF, and NHV values into the following equation:

\[
MPG_c = \frac{5174 \times 10^4 \times CWF \times SG}{((CWF \times HC) + (0.429 \times CO + (0.273 \times CO_2)) \times (0.6 \times SG \times NHV) + 5471)}
\]

Example:

\[
MPG_c = \frac{5174 \times 10^4 \times 0.868 \times 0.745}{((0.868 \times 0.139) + 0.429 \times 1.59 + 0.273 \times 317)(0.6 \times 0.745 \times 18478 + 5471)} = 27.9
\]

(4) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and a calculation similar to that shown in (b)(3) of this section resulted in a highway fuel economy of \( MPG_h \), of 36.9. According to the procedure in §600.210(c), the combined fuel economy (called \( MPG_{comb} \)) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

\[
MPG_{comb} = \frac{1}{\frac{1}{MPG_c} + \frac{1}{MPG_h}}
\]

\[
MPG_{comb} = \frac{1}{\frac{1}{27.9} + \frac{1}{36.9}} = 31.3
\]