



Global Leader  
Green Racing

## KEY FORMULAS FOR CALCULATIONS

### Energy Used

Performance Efficiency Coefficient:

PEC = Total normalized observed fuel consumed during race divided by 1 million

$$\text{PEC} = \frac{\text{Total BTU's consumed}}{1,000,000}$$

Observed fuel consumed: Total fuel added at each pit stop + final stint fuel

Final stint fuel: Observed fuel consumption rate X distance after last stop

(Energy value and composition of each fuel used in the American Le Mans Series is verified by Argonne National Laboratory)

### GHG Emitted

Greenhouse Gas Coefficient:

$$\text{GGC} = 3X (\text{Upstream CO}_2 + \text{Downstream CO}_2)$$

Upstream CO<sub>2</sub> = Total energy consumed X GREET upstream factor

Downstream CO<sub>2</sub> = Total energy consumed X Carbon in the fuel used

### Petroleum Fuels Displaced

Petroleum Displacement Coefficient:

PDC = Y x (Upstream petroleum energy + Downstream petroleum energy)

(Wheel to Tank – WTT) (Tank to Wheels – TTW)

*“Y” to be determined*

Upstream petroleum energy = % of each fuel type used X GREET factors.

Downstream petroleum energy = Total energy consumed X % of petroleum in type of fuel used  
(see factors below)

Shell GTL = 95%      IMSA E10 = 91%      IMSA E85R = 34%

*(All upstream factors taken from the GREET model supplied by Argonne National Laboratory)*

*All formulas subject to adjustment*

The following is a hypothetical calculation of the criteria used for winning the *Green Challenge*<sup>™</sup>:

	<u>WTW (Well-to-Wheel) GHGs (Greenhouse Gases)</u>	<u>WTW Petroleum</u>	<u>Efficiency Quotient</u>	<u>Score</u>
Car A	0.268	2.596	2.587	5.451
Car B	0.412	3.990	3.977	8.379
Car C	0.417	3.768	4.331	8.516
Car D	0.432	4.187	4.173	8.792

The above calculation is the result of more than 30 separate pieces of data being gathered to create performance adjusted scores for well-to-wheel greenhouse gases, well-to-wheel petroleum usage and an efficiency quotient in order to achieve a final score

Because Car A has the lowest score of the race, it will have the equal number of race winning points (20, 25 or 30, depending on race distance) deducted from its season-beginning maximum (i.e. - 250 points in 2008).

Points for less than 4 hours: 20-16-13-10-8-6-4-3-2-1 (7 races in '08)

Points for 4 to less than 8 hours: 25-21-18-15-13-11-9-8-7-6 (2 races in '08)

Points for 8 hours or more: 30-26-23-20-18-16-14-13-12-11 (2 races in '08)