



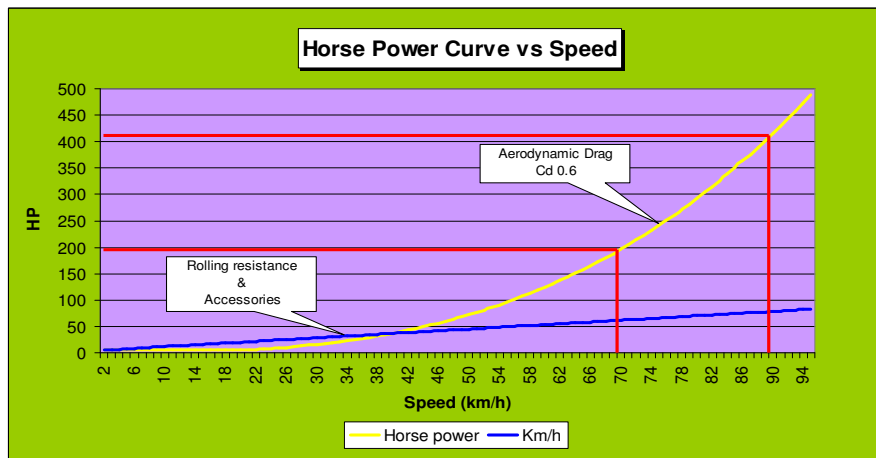
Horse Power versus Speed

Power required to overcome aerodynamic drag is the greatest at highway speeds.

The power required to overcome drag @ 70 km/h is 197 hp.
 The power required to overcome drag @ 80 km/h is 293 hp.
 The power required to overcome drag @ 90 km/h is 416 hp.

You need roughly the same power to increase your speed from 70 to 90 km/h, as what you need to reach 70 km/h ($416 - 197 = 219$ hp).

In other words your power consumption will *DOUBLE* from 70 to 90 km/h *



***** BOTTOM LINE *****
Reducing your maximum allowable speed from 90 km/h to 80 km/h will decrease your fuel consumption dramatically!



* Graph courtesy of Stanford University
 Advanced Transportation Workshop
 October 10-11, 2005
 Frances C. Arrillaga Alumni Center
 STANFORD UNIVERSITY
 GCEP

We measure, do you measure up?

$$\text{Road load power} = av + bv^2 + cv^3$$

The letter **v** represents the velocity of the vehicle

The letters **a, b and c** represent three different constants:

1. The **a** component comes mostly from the rolling resistance of the tires, and friction in the vehicles components, like drag from the brake pads, or friction in the wheel bearings.
2. The **b** component also comes from friction in components, and from the rolling resistance in the tires. But it also comes from the power used by the various pumps in the vehicle.
3. The **c** component comes mostly from things that affect aerodynamic drag like the frontal area, drag coefficient and density of the air.

Possible Fuel Savings

Fleet Size	100	Vehicles
Average distance per month	10,000	per Vehicle
Average fuel consumption	1.70	km/l
	0.5882	l/km
	58.82	l/100km
Total Diesel Consumption	588,235	litres per month
Diesel Price	R 6.00	per litre
Total Diesel Cost	R 3,529,412	per month
	R 42,352,941	per annum

Saving	8%	on Diesel per month
Saving	R 282,353	on Diesel per month
Saving per Vehicle	R 2,824	per month
Saving per Vehicle	R 33,882	per annum
Fleet Saving	R 3,388,235	per annum