

# Clean Driving

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## **Editorial**

Version 2.0 of Clean Driving takes into account my heightened experience from driving various different types of vehicles (4L, Renault 19, Scenic, etc.) and from discussions on forums, with friends, etc.

Clean Driving does not only have the sole aim of saving the planet and your wallet, but also to reintroduce harmony and serenity in the driving experience. Simple advice that will help you meet this objective.

**N.B:** Don't print out this method unless absolutely necessary, and preferably only on "recycled" paper (paper that has already been used on the other side). Not printing this document on 90-gram A4 sheets will avoid a consumption of 62 grams of paper.

**N.B 2:** This method was conceived in such a way as to occupy the fewest number of pages possible to save paper. Initially 16 pages long, Clean Driving ultimately comes down to 11 pages, thereby saving on a third of paper (62g instead of 90g) that may possibly be used if this document is printed.

## **Introduction**

Most people think they are excellent drivers. In reality, this is untrue, given the number of road-related accidents, stress, pollution from cars etc.

Clean Driving is a manual that summarizes a new way of driving that will teach you how to:

- Drive comfortably
- Keep your gas consumption in check
- Save time on town journeys
- Drive economically
- Practice Zen driving
- Go to the cinema, restaurants, on vacation etc. more often.

## **Prerequisites**

Before driving off, please check that you meet the following prerequisites.

### **The car:**

Your car should always be in tip-top condition and equipped with quality tires, preferably the ecological ones from Michelin or any other tires of the same standard. Pump your tires up to the recommended maximum allowable limit; this will enable you to save up to 2 to 3% of gas.

Remove any roof racks that are not in use: such racks represent a useless 7.5% of additional fuel consumption. Don't store heavy items in your car.

This way, your car will consume 5 to 15% less than a car of the same size that has not been optimized.

### **You:**

When you take the car, always make an allowance of 10 to 15 minutes. This way, you can take it easy when driving without having to worry about being late, and driving more calmly means a lower accident risk, less pollution and less money spent.

You can always bring a newspaper to read if you arrive too early for your appointment. Bring stuff that you like in your car: food, (non-alcoholic) drinks, music, etc. Your car shouldn't just be a means of transportation; it should also be a place where you can relax; a place like home.

### When driving

#### Philosophy

Pamper yourself: your car is your second "home": Music, Food, Scents, interior decor... Drive the Zen way in your car. When you get stuck in a little jam, don't sound your horn. Enjoy the weather or send out text messages when you are at a complete standstill, and you won't even notice the time lost. Be friendly: welcome people into your car, help hitchhikers in need, let pedestrians cross (**especially since cars should stop to give way to pedestrians in the absence of pedestrian lights**), or give way to a car on its way out from a parking lot since everyone is being held up 50 meters ahead anyway.

#### Initial assessment

Your car is comfy, consumes about 10% less than before, you are warmer towards others and pedestrians. You practice Zen driving without running the risk of being late. You undergo less stress and live happier. After having read this article, would Pangloss from *Voltaire's Candide* be right in saying that we live in the best possible of worlds? No. This is only the start of the *Clean-Driving method*. Once you have assimilated the method, you will understand:

- How to save up to 80% on gas
- Go on restaurant outings or vacations more often (using gas savings)
- Waste less time on transport
- Limit your accident risk
- Limit your stress level. There is no point in adding stress from driving to the stress of work.
- Keep a smile on your face
- Respect nature

### The Clean Driving method

First of all, you must have met the above prerequisites: do all that you can to lighten and optimize your car (tires, roof racks, etc.) and adopt the Zen attitude when driving. This way, you would already have completed the first step towards smoother driving.

Here is the second step: it involves optimizing your driving behavior in every possible way: fuel savings, time savings, limiting stress, limiting accident risks, limiting car wear and tear.

### Reducing your fuel consumption

#### Introduction

Let's begin by learning how to limit one's fuel consumption

- Hey Daddy, could you buy me an ice cream? says a child
- No, you already had one. Besides, I don't have any more money, says the dad
- Why not?, asks the child
- I just had to gas up the car, and that's expensive, replies the dad
- Why do you have to do that? asks the child
- Without gas, the car can't run! replies the dad
- Use less gas, Daddy, and buy me an ice cream please..
- OK, son.

That's the whole point: **there's no use in consuming fuel**. Oh yes there is, you're likely to say, I need it to get the car going. OK, but when you use a car, you really just want it to move, it doesn't matter how nor by what means. Gas is just a means, not a goal. Reducing consumption won't harm your car, so cut down on your fuel consumption. Do you like enhancing the wealth of petroleum countries, oil refineries or petroleum exporting countries? Or would you rather treat your close ones to something nice? The less fuel you consume, the more you get to enjoy yourself, treat yourself to things and travel.

Question: How does a Toyota Prius manage to consume less fuel than a standard vehicle of the same size, and yet boast more power?

Answer: the Toyota Prius recovers energy that would otherwise be dissipated when braking occurs, and partially reconstitutes this energy in order to help the car reaccelerate thereafter. The Prius therefore optimizes the braking process, which previously only resulted in a loss in kinetic energy and the wearing down of brake pads.



*A Toyota Prius*

### Adopt an Eco-Attitude

#### Driving in urban/other areas (and other general advice)

#### Using your common sense

If you don't own a hybrid car (which is more than likely), you can nonetheless obtain very good results thanks to an Eco-Attitude. To do this, use your common sense. When you cycle, haven't you ever noticed that at 20 km/h in town areas, you actually go as fast as cars that go from 50km/h to 0 then from 0 to 50? And you probably would have noticed that it is less tiring to cycle at a constant speed rather than continually change speeds? Apply this same principle of using the least possible effort to your car: she too has the right to rest and consume less gas.

#### Drive at a constant speed

Drive at a constant speed whenever possible. This means that in dense traffic, avoid driving at 50 km/h since you would have to brake sooner or later; restrict your speed to 40-45 km/h instead. When in doubt, it is better to drive more slowly rather than too fast. Drive at 50 km/h only if the traffic flows freely and this speed can be maintained for a certain period.

#### Accelerate quickly

Bursts of acceleration cause an overconsumption of fuel. But when you move off at a green light, accelerate quickly in order to reach cruising speed. Indeed, given that a car consumes the least at 70 km/h on average, driving at 30 km/h rather than at 40 km/h pollutes more on average, and likewise when driving at 40 rather than at 50. Therefore it is better to accelerate quickly, but not fully, by pressing down on the accelerator just  $\frac{3}{4}$  of the way, for it is preferable to pollute a lot initially then drive in fourth gear at 45-50 km/h rather than accelerate slowly and remain in first or second gear, which consume a lot of fuel, for long periods.

**Question:** If driving at 40 rather than at 50 pollutes more, why did you previously say that it is better to drive at 40 than at 50?

**Answer:** It's because while it's better to drive at 60 than at 50, and at 50 than at 40, it has to be at constant speed. It is better to drive at a constant speed of 45 rather than vary one's speed around 50 in jammed-up areas.

#### Engine speed

Always drive in the appropriate gear and don't wait before moving up a gear; do it as soon as possible in order to consume less gas. While under-revving is not ideal, it is sometimes preferable to over-revving: it is better to take the risk of changing gears early rather than wait until the engine roars.

**N.B:** This does not apply when going uphill. When going up a steep slope, just like a cyclist, use the gears adapted for going uphill (second or third), which will pollute less than the fourth gear, for example.

### Choose an appropriate speed

When in town and your speed constantly changes, it is better to remain in third gear, which consumes less gas. However, if you can stay at 50 km/h for long periods at a stretch, use the fourth gear as it consumes even less gas.

### Anticipate red lights

Anticipate red lights by going into neutral once you see some less than 200 meters away (those of you who are more cautious would probably step lightly on the brake pedal to warn drivers behind of their deceleration). When in doubt (if you know that there is a light coming up but you can't see it), put your car into neutral at 35-40 km/h. If the light turns out to be green, reaccelerate: there would hardly have been any overconsumption due to this variation in speed. If the light is red, you would have driven for free over a few meters.

Anticipate green lights as well. Has the light been red for a long while? Do you see the red light come on in the next street? The light in yours is probably on the verge of turning green, so maintain your speed if possible so that you can start off quickly once it does turn green.

### Switch off your engine if possible

If you know how long a particular light remains red, and if it lasts for more than 30 seconds, it may be worth switching off the engine and turning it back on only when the light turns green. If you encounter an obstacle for a long period, it is preferable to switch off your engine.

### Make use of gravity

Gravity does serve a purpose. If there are "false flats", make use of them: put your car into neutral in anticipation of a light some distance away. If there are jams and traffic flow is (very) slow, make use of gravity to cruise along by virtue of your car's weight (what's the use of going from 0 to 20 km/h then having to brake 10 meters thereafter?).

### If you can't make use of gravity, use your engine in an intelligent way

When on level ground, or on a very slight uphill, if you lift the clutch ever so slightly, your car will move, as if by wonder, of its own accord, without you having to accelerate. In traffic jams, remove your foot completely from the accelerator and you will find yourself moving along smoothly without consuming any more than if you were at a standstill.

When the light turns green, start accelerating by simply lifting the clutch. If you're going to pollute when you stop, you might as well pollute less when accelerating.

### Drive with your windows shut

Drive with your windows shut on the freeway because by opening them, you reduce the aerodynamic performance of your car and restrict its capability while increasing its fuel consumption. If you need to ventilate your car, open the windows when driving at 110 km/h rather than at 130. However, in summer, it is always better to drive with the windows open than put on the air conditioning at full blast, especially in city areas, because air conditioning can result in an overconsumption of fuel of up to 25%, which is much more than leaving the windows open.

### Keep braking to a minimum

Braking is useful but definitely not ideal because:

- It wears down the brake pads, which implies having to change them more often (and therefore spend money more often).
- It increases the risk of being run in by the car behind sometime or other (safety risk and financial risk in having to pay for repairs).
- It's stressful to have to do emergency braking.
- Going from 50 km/h down to 0 on a 1.2 Tonne vehicle means 32 Wh wasted (the amount required to keep a PC running for an hour).

So avoid braking as far as possible, except in the event of unforeseen circumstances – a child who runs onto the road without warning, a light that suddenly turns red, an animal crossing the freeway, etc. Obviously, if there is a red light, you will have to brake some time or other. But if you cruise along and let your speed decrease naturally and gradually from 50 to 15 km/h, then brake from 15 to zero, that would mean meters of free driving and less wear on brake pads.

Consider braking to be the result of not having anticipated a red light or a slow-down in traffic, in other words as a result of poor driving. Do this for 3 reasons:

- Braking leads to acceleration and hence pollution.
- Braking leads to speed variations and hence discomfort for passengers and stress for the driver in the best of scenarios, accidents in the worst case scenario, *e.g. black ice, etc.*
- Braking is a waste of time. If the light goes to green, you have to accelerate once again. But if you had maintained some speed by "cruising" in neutral towards the light, you will be able to reaccelerate at once and overtake the line of cars at a standstill on your right.

To brake less, several simple techniques can be used:

-Don't tailgate. This way, if the vehicles in front of you slow down, you will only have to lift your foot off the accelerator. Never stay less than 50 meters behind the vehicle in front of you on the freeway; ideally, you should keep a 100-meter safety distance.

-When you brake as you approach a red light, even from a distance, release the clutch and put the car into neutral, or let your car slow down by itself by lifting your foot off the accelerator, and let the inertia bring you towards the red light. Contrary to the 90% of French people who drive aggressively – i.e. maintaining their speed right till the very end then braking at the last minute – this technique offers many advantages:

-Optimize your acceleration: when you know your route well, there is no use accelerating at the top of a hill if there is a descent thereafter, in order to slow down. Put your car into neutral/let up on the accelerator a little before the top of the hill. If you are familiar with the timing of the lights on your usual route, drive at the just the right speed necessary to arrive at the lights when they go back to green.

-On a highway, instead of braking from 90 to 50 km/h when you enter a village, put your car into neutral or use engine braking before arriving at the village until you reach 50 km/h: sometimes it is possible to drive 1km for free without even having to step on the accelerator a single time.

**NB:** Using these techniques, we can end up free wheeling about 30% of the time in town areas where there is level ground. In other words, you consume 0 litres/100 km on 30% of the journey whereas you would previously have consumed some fuel on this 30%. And it could be more: indeed, on a 13 km journey of which 8 km was composed of descents (change in altitude towards lower ground: 350 meters, downslope: 4% on average in the descent), I managed to let the engine rest for 10 km, i.e. 77% of the journey.

**Adopt an Eco-Attitude**

On the freeway

Anticipate the behavior of truck drivers so that you won't find yourself stuck behind a truck while cars stream away in the left lane, which is both a waste of time and money since you will have to accelerate hard when the opportunity to overtake the truck finally comes.

Anticipate when trucks will overtake so as not to be taken by surprise and either accelerate slightly to avoid being stuck behind the truck or lift your foot off the accelerator to stay behind it. Remember: Braking is an admission of failure in smooth driving– lack of anticipation, nervous driving, etc. - in addition to being a danger to yourself and others on the freeway.

Drive in a consistent manner on the freeway: don't step any harder on the accelerator when going uphill and don't brake unless it is absolutely **VITAL** – or necessary, at the very least. Be smooth in your driving, just as you would be when you cycle: remember how you used to gather speed going downhill before going back uphill, and climbed hills more slowly when you were little? Do the same with your car: gather speed before an ascent and when going uphill, don't step on the accelerator any more than you would on level ground, even if it means losing some speed.

**NB:** In any case, don't go under 80-90 km/h on the freeway, even in the event of a really steep and long ascent, so as not to be a danger to yourself and others.

Thus, when I drive at an average of 120km/h on the freeway, I can get up to 130 km/h in the descents, and slow down to 85-90km/h towards the top of a hill, not for the purpose of varying my speed but in order to avoid consuming too much in the ascents and to optimize the descents.



### Responsible and serene driving

#### The turn signal

Put on your turn signal to indicate your intentions to others: it doesn't cost anything and avoids unnecessary braking by other drivers in roundabouts, for example. It's nice to be able to save on one's fuel consumption, and even nicer to be able to help others do the same.

#### Biofuels

Drive on vegetable oil: if yours is a diesel engine, keep this to a maximum of 30% outside of engine modifications. Not only will this be less costly, but it's also ecological, works just as well and you get to enjoy the lovely smell of fries.

And it helps local farmers, while reducing the amount of money that goes to the State, petroleum companies and petroleum-exporting countries, which are rarely democracies. Similarly, if you own a gasoline engine, use ethanol even if the efficiency is fairly poor and the production of ethanol encroaches, to a certain extent, on that of food crops.

Biofuels are certainly not a durable solution because of the need to choose between food and biofuel production, but in my opinion, they are not as bad as consuming hydrocarbons, which are extremely harmful products that have caused death and turmoil in many exporting countries – *Nigeria, Darfur, Iraq, etc.* Besides, I am convinced that the second generation biofuels will enable us to drive cleanly without encroaching on the cultivation of food crops. Buying biofuels is an action in support of research on new biofuels that are more ecological than the current ones. And besides - not that we need to clear our conscience - the world food crisis stems more from food wastage than the production of ethanol at the expense of beetroot. Let us eat less meat and drive more on biofuels.

If you use biofuels, do check that they don't come from deforested areas – palm oil from Malaysia, certain types of ethanol from Brazil, etc. - and please be aware that although the use of crude vegetable oil is prohibited in France, it is authorized by Brussels in all EU countries (and therefore in France).



Sunflowers, from which vegetable oil can be extracted to be used as a biofuel

#### Car Pooling

Car pool as often as you can. It allows you to divide up the various costs of owning a car, for driving is indeed expensive. At an average price of \$0.45 to \$0.68/km, driving 100 km costs between \$45 and \$68. And don't forget that on top of fuel costs, you have to pay for insurance, the car itself, loan interests, mechanic's fees, registration papers, fines, a driver's license, toll charges, parking fees, cleaning fees, etc.

This is why I sometimes car pool with people whom I don't know and who simply responded to my internet ad. It's convivial and economical for both the car pooler and car poolee, while polluting less since fuel consumption is shared among more passengers and avoids the car poolees having to take their own car, which reduces the CO<sub>2</sub> emitted per passenger at the same time.

### Be courteous

Be courteous when driving: what's the point in not giving way to a car even if it doesn't have the right of way, if you are going to end up being stuck several meters ahead anyway? Be cool with people doing parallel parking, people who are desperately waiting for an opportunity to enter a lane, pedestrians who don't dare to step down at a crossing that is not equipped with lights when they do in actual fact have right of way in such a case. You'll see: you will definitely get a friendly wave in return, which is good for everyone's mood.

### Drive serenely

If you ever find yourself being tailgated on the freeway, don't stress out and don't accelerate just to please him/her. Don't slow down either to avoid being crashed into. Worst comes to the worst, bearing in mind that it does involve some risks, lift your foot very slightly off the accelerator so as to slow down. The best solution consists in driving at the same speed and not giving in to blackmail from feeling stressed. If he/she keeps on tailgating you, clean your rear windshield cheerfully so that the windshield liquid lands on the front windshield of the car that is tailgating you. If this doesn't suffice, flash your lights or sound your horn. All the while keeping your cool.

### Conclusion

Clean Driving is not just a driving method, but a Utopian ambition, one that aims for us all to live in a more serene and economical world of driving ... Given the high barrel prices, we have been presented with a remarkable opportunity to change our way of life. Since gas is more expensive than before, we should spend less money on fuel(!) thanks to smooth driving, car pooling, etc.

Thanks to Clean-Driving, you can easily consume 30% less fuel and increase your spending power while protecting the planet. This percentage can go up to 80% if you resort to biofuels, car pooling, public transport and limit the use of your car as much as possible.

If every one of the 30 million French cars were driven in this manner, and at a rate of 13 000km per vehicle annually and 8 liters per 100 km, that's some 364 liters per car, or \$819 saved, in other words the cost of a trip to Morocco, 45 CDs, or 15 restaurant meals. It's up to you to decide.



*A Moroccan Medina that you could visit using the Clean Driving method*

On a national scale, Clean Driving represents:

-7.8 billion liters that will not be burned, i.e. 49 million barrels

-A petroleum bill that is reduced by 4.41 billion dollars, or 3.27 billion euros (figures on October 8, 2008)

-A sum equivalent to 7% of public deficit, or 2/3 of the rise in the budget for universities.

-23 million tons less of co2 emitted by cars, i.e. the weight of 3000 Eiffel towers or 5 times the weight of Cheops Pyramid (5 million tons). It would help France greatly to honor its commitments towards the Kyoto Protocol.



We could save 5 times a year the weight of Cheops Pyramid in carbon dioxide with an efficient driving

Finally, it represents some 17.6 billion dollars (1 liter = \$2.25) that will not be spent by consumers at gas stations, i.e. the equivalent of the wealth of a city of 400.000 inhabitants (e.g similar to the city of Southampton...)

Therefore, Clean Driving is a new method that will enable the revival of spending power and job creation, while reducing the amount of pollution in the atmosphere and therefore the destruction of the environment as well as the number of cases of respiratory diseases. Thanks to a cool driving attitude, many road deaths can also be prevented.

Therefore, Clean Driving is synonymous with ecology, economy, job creation, road safety, conviviality (car pooling, courtesy on the road) and the Zen attitude.

**N.B:** If my advice has enabled you to drive more serenely, save some money and protect nature (even just a little), please feel free to make a donation to the website and help it grow, and/or suggest ways of improving this method. You may also choose to express your gratitude via our partner websites.