



### Green Wave?

A green wave is an intentionally induced phenomenon in which a series of traffic lights (usually three or more) are coordinated to allow continuous traffic flow over several intersections in one main direction.



But what do the commuters themselves think of this new initiative? (Comments provided by *Telegraph* readers regarding the elimination of traffic signals as on [www.telegraph.co.uk](http://www.telegraph.co.uk) forums):

"The experiment is essentially turning the lights off for two weeks while video-recording for six. Two weeks of light-free intersections may not be long enough to discern what happens to driving behavior as confidence builds, so will more aggressive driving?" - Valerie

"I disagree with the 'naked streets' concept. I think MORE technology is needed. I'm tired of waiting at red lights at intersections that probably don't need lights but had someone with political clout living nearby or a rare tragic accident. If these intersections had 'smart' lights that measured traffic volume, etc.; people wouldn't waste gas and time sitting at an empty intersection." - Larry

"Sure, everybody is cautious and nice when things are new and different and they're not sure how they work, but once people get used to it, people will be just the same, but now without rules." - Eric

"The problem is that pedestrians have to cross while cars are attempting to make right and left turns on a green light. This creates a lot of conflicts. Drivers, again, drive the fastest through signaled intersections trying to 'make' the light" -- Eric B.

"Uncontrolled intersections almost guarantee that drivers will need to slow down or stop at EVERY intersection, dramatically increasing fuel consumption. Wouldn't it be more efficient to be able to follow a 'green wave' of controlled signal lights that would allow drivers to keep rolling long distance without stopping if they were smart and disciplined enough to hold a constant speed?" - Ian

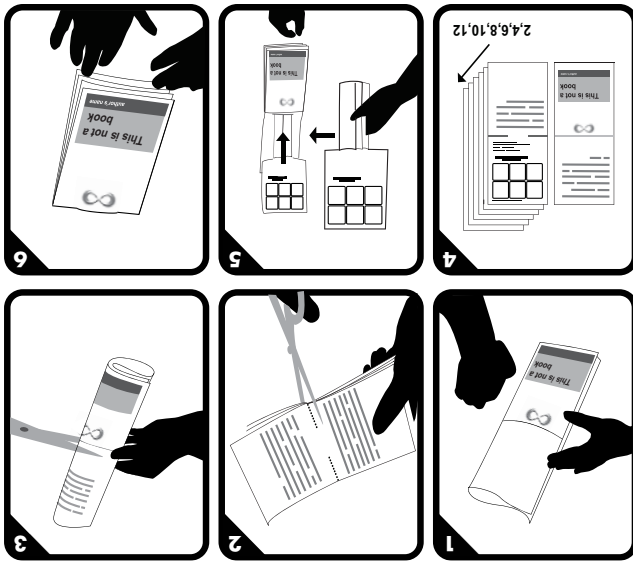


ITS LONDON: London's Green Wave



**ITS LONDON: Cutting across Central London (Driving's no fun here anyway)**

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With cities becoming more and more congested, journeys are now not necessarily faster by engine – It is quickly often becoming easier to get to places by simpler machines or by foot.

For motorists, commuters, locals, and city dwellers, growing up, living, and/or working within a city has created a unique modern commuting environment in which one’s sense of geographic and spatial distance is based on the amount of time it takes to reach a destination. No longer is space truly regarded by spatial distance (how far away a destination lies) but now calculated by the time it takes to reach a location by whatever mode of transport a commuter chooses to employ.

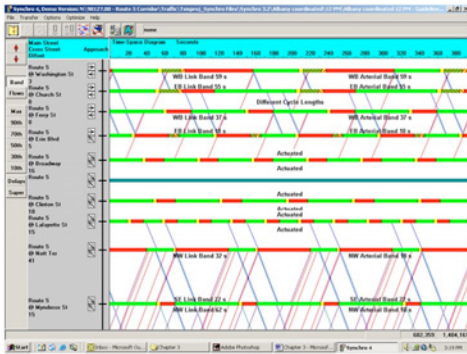
“These spatial perceptions traverse the city, providing an immaterial network of 'mental notes' which synchronise the veins of the metropolitan body.”

– Michael Pinsky, Contemporary artist and urban planner

So as cities become evermore congested and motoring becomes more time-consuming, it becomes a main interest of urban planners, commuters, environmentalists, and the city at large to negotiate traffic flow for optimization. Intelligent Transport Systems or ITS are the systems developed to use algorithms to attempt to reduce delays and the amount of time stopped and by connection to also reduce carbon emissions from these idling cars.



Many various optimization programs and computer software work toward creating these coordinated systems. Such programs have the possibility of existing because of the many control variables involved in making traffic run as smoothly as possible, which make for relatively simple mathematic calculation.



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[http://ops.fhwa.dot.gov/publications/fhwahop06/006/chapter\\_3pl.htm](http://ops.fhwa.dot.gov/publications/fhwahop06/006/chapter_3pl.htm)

[http://en.wikipedia.org/wiki/Traffic\\_signals](http://en.wikipedia.org/wiki/Traffic_signals)

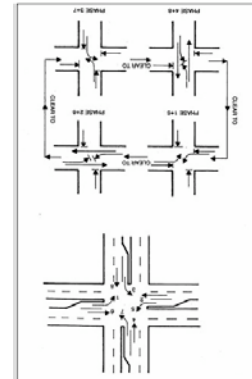
[http://en.wikipedia.org/wiki/Green\\_wave](http://en.wikipedia.org/wiki/Green_wave)

[www.michaelpinsky.com](http://www.michaelpinsky.com)

References Used:

The most obvious and controllable of these variables is the traffic signal timing. Other variables include the amount of cars on the road, the speed limit of the road, the amount of room for queue behind the traffic signal until the next signal, and how confusing or understandable the signage is.

After all, traffic flow = density x speed.



Apparently, the Department for Transport has discouraged green waves amidst London's traffic light operations as the Government feared that if motorists were not forced to start and stop repeatedly, but rather traveled more smoothly, would use up less fuel and therefore pay less to the treasury in tax as a result.

Websites like the [www.tfl.co.uk](http://www.tfl.co.uk) (Transport for London) and [www.mysociety.org](http://www.mysociety.org) provide maps and routes for traveling within and around the greater city of London. Mysociety.org actually provides really incredible, detailed, and well-researched travel maps for cars specifically. These maps include interactive sliding-scale maps indicating travel times from the center of London as well as housing prices for various London neighborhoods within specified commuting routes.

While these maps are very helpful for the commuters who know that they exist, if they remain lost to commuters and motorists within London at large they lose their potential as great tools for the community. Even if more people start using a route, as long as the lights on the route are programmed to a Green Wave and the prescribed speed limit is clearly posted, the route will allow the highest traffic load to pass through the intersections.

The coordination of the signals is sometimes done dynamically, according to sensor data of currently existing traffic flows - otherwise it is done statically, by the use of timers. Under certain circumstances, *green waves* can be interwoven with each other, but this increases their complexity and reduces usability, so only the roads and directions with the heaviest loads get this preferential treatment.

Any vehicle travelling along with the green wave (at an approximate speed decided upon by the traffic engineers) will see a progressive cascade of green lights, and not have to stop at intersections. This allows higher traffic loads, and reduces noise and energy use (because less acceleration and braking is needed).

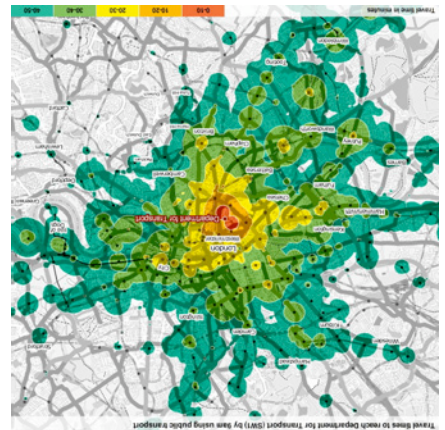
So the questions is:  
How many vehicles can optimally pass through the roadway during a specific time period?



Specific to London, however?:

**A little bit of history** --According to Wikipedia, on the 10<sup>th</sup> of December, 1868, the very first traffic lights were installed just outside of the British Houses of Parliament here in London.

**Currently?:** According to an incredibly recent Telegraph article, written by David Millward on 31 August, 2009, the city of London is seeking to reduce congestion by eliminating a number of traffic lights (at least 100 signals and stop signs!) in the heart of Central London as a safety experiment. Millward notes that "if the scheme is successful the [Westminster] Council could remove a many at 20 percent of the 400 traffic lights."



With a new "Smoothing Traffic Flow" policy initiated by the mayor, one of the pledges had been to cut out a number of the delays faced by motorists, as the congestion charge has shown. The idea behind stripping a number of traffic lights seems to be that the number of accidents and injuries has been observed to go down as road users are forced to take more care and caution of each other.