

The indicative effects of inefficient urban traffic flow on fuel cost and exhaust air pollutant emissions

Madumetja Moselakgomo, Mogesh Naidoo, Mosimanegape O. Letebele

ABSTRACT:

Poor urban traffic management such as poor intersection controls, congestions, illegal roadway blockages and construction works causes “stop-go” driving conditions with excessive idling resulting in wasted fuel and increased air pollutant emissions (CO₂, CO, NO_x, HC, etc.) during idling conditions and acceleration from a stop position due to more energy required to move vehicles from a halt.

In this study the effects of traffic signal coordination on fuel cost and gas emissions were investigated by comparing the amount of idling time on streets with coordinated signals to those with uncoordinated signals during the off peak period. It was found that signal coordination can reduce the idling fuel cost by more than 25 cents per kilometre in the CBDs.

The reductions in idling gas emissions were found to be 77% for both CO and HC and 80% CO₂. These are significant reductions if the whole CBD network and all the vehicles within the network per annum are taken in to account.