

Abstract

Transportation demand or mobility is increasing day by day. It is expected that mobility will keep rising. Natural resource (fuel) and areas of land (road) are limited. Future traffic demands need to be managed with these limited resources. To overcome these problems new policy, regulation and ITS application are needed to develop for traffic control and management. This new application must be environment friendly for a sustainable transportation system. Network efficiency parameter like travel time, delay time and number of stops are important for smooth traffic flow. However, environmental impact of any ITS application should be assessed, as road transport is the major source of road emissions.

Balanced Priority is a newly developed application for the European research project eCoMove. The main aim of the application is to reduce fuel consumption, hence to reduce emissions by 20%. It has two functionalities named as balanced and priority. Balancing guides vehicles (switching traffic light) for approaching at intersection in a way that minimizes fuel consumption without affecting traffic safety. Priority functions deals with giving priority for a route or some special cars (able to communicate with infrastructure) of that route. Methodology and testing framework for the evaluation of application sensitivity is developed. Priority is tested in this thesis by running simulation in a small network. Balanced Priority application is configured and simulation is run through VISSIM.

Simulation is run for several scenarios depending on penetration rate. Simulation outputs are used to analyze impact of Balanced Priority application. It is shown within this research, that variations of penetration have significant effects on the overall traffic.