**Using Municipal Vehicles as Sensor Platforms to Monitor the Health and Performance of the Traffic Control System**

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Motivation: Improper traffic signal-timing accounts for 5% to 10% of all traffic delay on major US roadways, or 295 million veh-hr of delay annually. This congestion wastes fuel and time for travelers and freight movements, as well as increases vehicle emissions. However, a well-timed signal system has been very costly to achieve, requiring either labor intensive studies or even more expensive permanent vehicle detectors.

Approach: This project will consider a viable, on-going monitoring program for signalized intersections in a metropolitan area and the prioritization of those signals and corridors in greatest need of retiming. The ultimate goal is to make better-informed resource allocations to determine when and where to deploy conventional traffic studies and advanced signal controls, i.e., to develop a new tool to improve the efficiency of the existing infrastructure.

Traffic volumes on approaches to signalized intersections are fundamental inputs when designing a signal timing plan or evaluating existing plans. Permanent traffic volume detectors only cover a small fraction of approaches to signalized intersections in urban areas. Furthermore, the deployment of temporary sensors is costly and allows volume observations spanning a few days every few years. To evaluate and improve signal timings on a consistent and systematic basis, an ability to regularly measure traffic volumes on a large proportion of signalized intersection approaches is essential. Therefore, a critical aspect of this research will be developing, demonstrating, and evaluating an approach to determine traffic volumes in urban areas from sensors mounted on municipal vehicles. Since video cameras are increasingly being mounted on transit buses for liability and safety reasons, determining traffic volumes from these sensors and platforms will be investigated.