Wireless Communications Applications in Surface Transportation

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Communication systems enable effective and reliable traffic control and management applications to support mobility, safety and security. Although fiber optics and telephone lines have long been used for managing and controlling highway traffic systems, wireless communication technologies show great promise as a forthcoming solution in traffic management applications due to their flexibility in field deployment and cost-effectiveness in system expansion. While cellular-based communication through commercial carriers is widely used for online traffic management applications, public agencies have also begun to consider other technologies, such as Worldwide Interoperability for Microwave Access (WiMAX) and Wireless Fidelity (WiFi). A connected vehicle system, which enables real-time communications between vehicles, and between vehicles and infrastructure, is expected to contribute to a paradigm shift in surface transportation systems by facilitating improvements in data collection, driver advisories, safety warnings, roadway user pricing, traffic signal operations and in-vehicle energy management applications. For a connected vehicle system, Dedicated Short-Range Communications (DSRC) and WiMAX are viable options. This presentation will discuss performance and reliability of different wireless technologies for supporting communications in surface transportation applications, including serving as a backbone in a connected vehicle system.