

2012 ITSTN Scholarship Essay
“The Role of ITS in a Sustainable Future”

By:
Kevin E. Comstock

A non-traditional student pursuing a Bachelor of Professional Studies with a
concentration in Organizational Leadership

Middle Tennessee State University

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The Role of ITS in a Sustainable Future

The City of Franklin has a long standing tradition of innovation and leadership in the field of Intelligent Transportation and Sustainability. As early as 1999, City staff had met with Federal Highway Administrators seeking traffic congestion mitigation that did not require additional right-of-way for capacity improvements. The Franklin Transportation Operations Center (TOC) is the result of that effort. Opening in April of 2002, the TOC became the embodiment of the ITS efforts in the City of Franklin. Most would say the story ends there, but in fact ITS is not considered a static technology. It is a scalable technology in many ways and can be adapted to an individual agency's needs. The City recognized that through the infrastructure and proper program management ITS technologies could become part of the growing call for sustainability. Building upon the need the City of Franklin passed two amendments to the City's Major Thoroughfare Plan Update in early 2006. The first was the ITS Master Plan and the second was the Congestion Management Amendment. These two actions put into motion a programming policy in the City of Franklin to further utilize this burgeoning technology to provide much of the infrastructure needed to effectively manage and operate the transportation network.

The ITS Master Plan identified locations within the City where projects were to construct the ITS infrastructure. The ITS Master plan includes items such as closed circuit television, permanent count stations, sampling detection stations, remote weather monitoring stations and the communications network to monitor each device.

The Congestion Management Plan included activities to be performed during development projects and as an annual data collection effort. This included developers

indicating traffic modeling to gauge the impact of a development and required them to install spot improvements or traffic signal timing plans to help mitigate the impact of that development. The City was also going to embark on a data collection effort to provide turning movement counts at each signalized intersection every three years. This count data is then used to develop new traffic signal coordination plans for the various traffic signal systems. The Congestion Management Program then requires before and after studies to quantify travel time delays, fuel efficiency improvement and air quality improvements. Each year the City of Franklin reports these results in our annual budget to indicate to our elected officials and citizens the level of improvements realized.

A 2009 effort in the Cool Springs Retail and Commercial sections of the City resulted in a 45.8% reduction in total project delay and a 14.3% reduction in fuel consumption. We were also able to realize reductions of 19,900 pound of hydrocarbons (HC) and 174,000 pounds of carbon monoxide (CO). (Kimley Horn, 2009, 2-4) A more recent signal optimization was performed in the Central Business District (CBD) and resulted in a 17.4% reduction in PM delays and 16.6% reductions in emissions and fuel consumption. (RPM, 2012, 13)

There are additional benefits to ITS which are more difficult to quantify such as potential delay savings. These are the effects of our public outreach. The City of Franklin provides live television coverage of traffic conditions in Franklin during the AM and PM commute hours. The TOC is manned from 6 AM to 6 PM posting traffic affecting incident information to a web page and through the social media outlet "Twitter." The use of these technologies provides the TOC with the ability to

communicate directly with motorist allowing them to make a choice regarding their route.

In a further effort to indicate the role of ITS in a sustainable future is the concept of “center-to-center” communications. This topic is currently being worked toward in the City of Franklin to develop protocols and procedures between the City of Franklin and the Tennessee Department of Transportation’s Region 3 Traffic Management Center to share ITS resources. We are also working with the City of Brentwood to our north on a similar effort. These inter-agency cooperative efforts will promote a regional ability to jointly monitor and manage the individual transportation networks within a corridor. These discussions were initially laid out in the Nashville Area Metropolitan Planning Organization’s Regional ITS Architecture Master Plan.

Other applications of ITS promoting a sustainable future is the ability to work with Transit agencies to improve the reliability of arrival times making transit more appealing to the general public. This is accomplished through the use of transit priority systems installed at traffic signals along the routes. These units can extend or expedite the green on the transit route phase to provide a larger green-band during coordination to reduce transit delay.

ITS technologies are also being used in support of other initiatives such as the National Unified Goal (NUG) which brings together the ITS community with that of First Responders. We here in Franklin have converted our analog communications network to a digital network that directly interfaces with our Police and Fire Departments in the City’s IT network. PD and Fire can utilize our CCTV system in incident response scenarios. This technology allows for the First Responders to start formulating action

plans before they arrive on scene, effectively shortening the impact of the incident on traffic flow.

In closing, ITS technologies role in a sustainable future is relatively self-evident. As indicated throughout this paper ITS theory is no longer theory. The City of Franklin is utilizing practical applications scaled to the individual needs of the community yet is consistent with the overall potential connectivity with other agencies. Sustainability efforts are being realized currently and providing are tremendous benefits through the reductions in delay, fuel usage and emissions. It is the future of ITS lies in the cooperative initiatives between local and state agencies to advance the implementation and use of these technologies. These technologies are no longer a “novel idea”, but a real solution to real problems and should be considered the model for sustainability.

Works Cited:

Kimley Horn and Associates; 2009 *"Traffic Signal Optimization Study for the Cool Springs area of the City of Franklin"*, Nashville, TN; pgs. 2-4

RPM Transportation Consultants, 2012 *"Downtown Franklin Signal Timing Study: Travel Time Comparison Report"*, Nashville, TN; pg. 13