



## **ITS Technology and Sustainable Transportation**

ITS America Position Statement, August 2012

### **What are the Elements of Sustainable Transportation and how can ITS Technology be a Part of it?**

Transportation is an essential and integral component of a sustainable society. ITS America has defined “sustainable transportation” as “*meeting, and sometimes re-defining, the mobility needs of the present without compromising the ability of future generations to meet their needs*”. There are several attributes associated with these mobility needs – a three-dimensional framework consisting of economic, social, and environmental considerations.

- *Economic* - Transportation is essential to economic development. Efficient and reliable movement of people and goods – that is, mobility – improves productivity and can promote economic growth.
- *Social* – The transportation network should provide all persons with options and choices, providing opportunities to work, learn and participate in society; including those individuals who are economically, socially, or physically disadvantaged. Related societal issues include the security and the safety of the transportation network.
- *Environmental* - On a global scale, the looming threat of climate change has focused attention on the environmental impacts of the transportation sector, which contributes nearly a quarter<sup>1</sup> of our nation’s greenhouse gas (GHG) emissions.

Moreover, the concept of sustainable transportation should be addressed in a holistic manner – a collective process whereby decision making and actions carefully evaluate and balance the potential impacts in terms of this “triple bottom line”.

Since its founding, ITS America has been a leading advocate for the development and deployment of Transportation Systems Management and Operations (TSMO) strategies

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<sup>1</sup> Per the USDOT’s April 2010 Report to Congress entitled “*Transportation’s Role in Reducing U.S. Greenhouse Gas Emissions*,” (and based on EPA data), in 2006, transportation emissions accounted for 29 percent of U.S. GHG emissions, and over 5 percent of global GHG emissions. This only includes “tailpipe” emissions from burning fossil fuels to power vehicles, and not greenhouse gases emitted through other transportation lifecycle processes, such as the manufacture of vehicles. Direct emissions from light-duty vehicles (i.e., passenger cars light duty trucks, sport utility vehicles and minivans) accounted for 59 percent of these U.S. transportation GHG emissions, while emissions from freight trucks accounted for 19 percent. The net total (78%) of the 29% equates to 22.6%

and the supporting technologies to improve the efficiency and reliability of the nation's surface transportation system (thereby promoting a vibrant economic sustainability ) and to enhance its safety and security (thereby promoting societal needs ). ITS America's mission is unchanged in this regard, and it will continue to promote new and developing TSMO strategies and technologies across all modes of transportation, including (as recent examples), the “connected vehicle” program and Active Transportation and Demand Management (ATDM).

These same technologies and strategies can also be applied to protect and preserve the environment by reducing Greenhouse Gas (GHG) emissions, a major cause of global warming. Sustainable transportation – from the environmental perspective – is generally thought of as consisting of four key elements:

- Vehicle Efficiency
- Alternative Fuels
- Travel Activity
- Transportation System Performance

Vehicle efficiency essentially translates as miles per gallon and is addressed by CAFE (corporate average fuel economy) standards that are mandated by the federal government. The Obama Administration recently approved higher CAFE standards for the next generation of gasoline vehicles<sup>2</sup>. Enhancements in vehicle technology, such as regenerative braking and automatic “start/stop technology,” are being deployed to increase the overall fuel efficiency.

Alternative fueled vehicles are generating significant interest and include all-electric vehicles, gas/electric hybrids (including plug-in hybrids), and internal combustion engine vehicles with start-stop and other technologies that can significantly improve fuel efficiency. The future may also include vehicles powered by hydrogen and natural gas.

The third element is travel activity in which travel patterns are altered and multimodal transportation alternatives are encouraged to reduce travel in cars. This may be accomplished via pricing measures, improvements in bicycle, pedestrian and transit service alternatives, and (in the long term) changes in land use.

The fourth element focuses on improving system performance through the use of operational strategies and ITS technologies. These include synchronized and adaptive signal timing at intersections; Active Traffic Management (ATM) systems providing variable speed limits and dynamic lane control; traffic incident and emergency management systems; transit signal priority systems; real-time traffic and multimodal travel information; dynamic routing; integrated corridor management; smart transit and parking systems; electronic and open road toll collection and more. ITS technologies are an integral part of the strategies and their successful operation.

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<sup>2</sup> An average 35.5 miles per gallon for vehicle fleets in 2016, and an average of 54.5 miles per gallon in 2025.

## **Why This Matters**

While meaningful climate change legislation is not currently on the federal agenda, several States, MPOs, and local jurisdictions have adopted sustainability principles and emission reduction targets, and have established climate change teams and / or sustainability coordinators within their respective Transportation Departments.

The solutions that ITS technology provides reduce congestion and improve the operational efficiency and reliability of the transportation network. There are also strategies (e.g., transit signal priority) that improve transit operations and help provide commuters with more efficient, accessible multimodal travel alternatives. ITS can help promote eco-driving via signal timing, variable speed limits, and “green” route guidance. ITS technologies are also an integral part of pricing solutions including mileage-based user fees to potentially replace the fuel tax. Performance metrics for ITS technologies must address traffic flow, delay, travel reliability, time savings, multimodal level of service, incident duration, vehicle emissions (including GHG), and energy conservation among others.

One potential problem moving forward is that some members of the environmental community believes that as much as 75% (if not more) of the improvements that ITS technology offers will be wiped out over time by induced demand. That is, additional traffic will start to use the roadway as a result of our good efforts to improve travel times and overall reliability. In the past this was not seen as an obstacle because traffic and VMT is highly correlated with economic growth. But if GHG reduction is one of goals for sustainable transportation, we need to address this concern. Moreover, the research and assumptions regarding induced demand (resulting from travel time improvements) have been based on capacity additions; something much different from improved efficiency of the existing infrastructure provided by transportation technology.

## **What ITS America Believes**

We believe that we have technologies and solutions that address the entire triple bottom line of sustainability – that can ease traffic flow and improve reliability in support of economic sustainability; that can reduce crashes and improve accessibility in support of social sustainability; and that can reduce GHG emissions in support of environmental sustainability. Moreover, we have technologies and solutions to promote “adaptation” to changes in climate (e.g., higher temperatures, more severe weather events) that can adversely impact the operation of the transportation infrastructure. To date, we have neither fully articulated that message nor delivered it effectively.

ITS America believes that the same transportation technologies that reduce congestion, improve reliability, and enhance safety can also play a significant role in GHG reduction strategies at the national, state, and local levels.

ITS America believes that a research effort to determine which ITS technologies and associated operational strategies will have the greatest long-term value in a GHG reduction strategy will produce valuable results. This effort should include both publicly funded research as well as tax credits for private firms.

ITS America believes that working with state and local governments to help them develop effective GHG reduction plans utilizing the best transportation technology and operational strategies will demonstrate the value of ITS in the next few years. Moreover, we believe our State Chapters can be a great asset in this regard.

### **What We All Can Do**

Articulate a clear message that ITS technology, in addition to promoting economic and social sustainability, can also promote environmental sustainability and is an important part of a climate change agenda, both as a means to reduce GHG emissions and to help transportation agencies adapt to the impacts of climate change.

Urge Congress and State legislatures to ensure that any climate change and/ or energy legislation recognizes the current and potential contributions to be made by transportation technology, and fund research into and deployment of these technologies and associated strategies.

Promote the development and use of performance measures that address all aspects of a sustainable transportation network.

Encourage the EPA and DOT to sponsor research (e.g., induced demand resulting from improved operations and reliability) and the EPA to certify transportation technology to reduce GHG emissions.

Assist state and local governments as they work to incorporate transportation technology in their GHG reduction plans.

Showcase ITS-related sustainability actions by ITSA members, including public, private, other institutions, and individuals.

Advocate for the widespread and uniform deployment of transportation technology.

Address one's own carbon footprint with respect to on-going transportation related activities, including operations, construction, maintenance, and manufacturing.