Sustainability and Transportation

As practitioners we must meet current transportation system needs while addressing issues that will impact transportation’s future...
Sustainability Benefits of Traffic Engineering and ITS
Dual Issues: Energy and Climate Change

- Oil demands are outstripping supplies
- Transportation accounts for 28% of US greenhouse gas emissions
- Climate change will affect all modes of transportation in every region
- Transportation infrastructure and funding challenges will require new solutions
The US has 5% of the world’s population and produces 20% of the world’s greenhouse gases.
Mitigating Impacts of Transportation
ITE National Sustainability Activities

1. White Paper
   - Transportation and the Environment
2. ITE Policy Statement
3. Task Forces
   - COCO Energy, Environment and Economy
   - IBOD Sustainability
4. Strategic Plan
ITE White Paper

Goals and Objectives

Reduce Vehicle Emissions

- Improve traffic efficiency to reduce congestion
- Promote alternative energy sources and fuel economy programs
Goals and Objectives (con’t)

Reduce Vehicle Miles Traveled

- Improve transit service/expand infrastructure
- Invest in Complete Streets
- Promote bicycling and walking
- Provide a well-connected network of streets
ITE’s Strategic Approach

ITE has adopted the issue of energy, the environment and economics as a primary focus area (MEGA Issue)
ITE Policy Statement

1. ITE supports accelerated research to better understand the impacts of transportation on climate change.

2. ITE urges the implementation of measures that can best mitigate these impacts, while at the same time enhancing the ability to meet other mobility and societal goals.
Task Force on Climate Change and Energy

As a cross-council effort, this task force is promoting both the development and communication of solutions to these challenges.
Task Force on Climate Change and Energy

Mission Statement
“to facilitate transportation solutions that incorporate global climate change and energy concerns spanning the range of ITE member interests.”

Chair: Daniel K. Hardy, Montgomery County MD Planning Department, Silver Spring, MD
Task Force Partner Agencies

• AASHTO
• TRB
• AMPO
• APA
• APTA
• ASCE
• FHWA

• FTA
• EPA
• APBP
• Complete Street Coalition
• Pew Center on Global Climate Change
Environment, Energy & Economy

ITE will be proactive in assuming a leadership role in the development of best practices related to the application of energy conservation and “going green” principles in the design, management and operations of traffic and transportation facilities.
Applying ITS Technology

Intelligent Transportation Systems (ITS) improves transportation efficiency, safety, and mobility through the application of advanced information and communications technologies.
ITS Applications Supporting Sustainability

Examples include:

• Traveler information systems
• Integrated corridor management
• Incident management programs
• Advanced traffic signal systems
• Open road tolling
Incident Management Programs

The Georgia DOT ITS incident management program (NaviGAtor):

- Reduced annual gasoline consumption by over 5.17 million gallons per year
- Resulted in an average 46-minute reduction in incident duration time
- Reduced secondary crashes in the coverage area by 69 percent
- Reduced carbon monoxide emissions by 2,457 tons
Incident Management Programs

• Florida Road Ranger
  – Saved 1.7 million gal of fuel per month

• Maryland’s CHART Program
  – Saved 6.4 million gal of fuel in 2005
  – Reduced NO emissions by 233 tons

• Maricopa County REACT Program
  – Reduced fuel consumption by 6%
  – Reduced vehicle emissions by 11%
Incident Management Programs

‘Smart Response’ Technologies

- CCTV
- AVL
- Real Time Traveler Information
- TMC Signal Control
- DMS
- Responder Communications
Traveler Information Systems

- Systems such as 511 advise motorists to avoid congested areas and provide alternative routes
- Motorists spend less time in congestion, leading to reduced fuel consumption and lower emissions
Traveler Information Systems

• Seattle, WA
  – Reduced CO emissions by 1.5 %
• Oakland County, MI
  – Reduced Co emissions by 2.5 %
• Kentucky/Cincinnati, OH
  – Reduced vehicle emissions by 3.7 to 4.6 %
Integrated Corridor Management

• Coordinates individual network operations between adjacent facilities using ITS to create an interconnected system capable of cross-network travel management

• Implementation has shown decreases in traffic delays, crashes and fuel consumption
Advanced Traffic Signal Systems

ITE National Signal Report Card

• 300,000 signals in US
• Current grade ‘D’
• Potential fuel reduction 10 %
• Potential emission reduction 22 %
Advanced Traffic Signal Systems

- Poor traffic signal timing accounts for 5 to 10% of all traffic delay
- Traffic signal timing improvements can reduce delays, save fuel and minimize air pollution
- Signal timing improvements can result in benefits of as much as $45 billion per year
Advanced Traffic Signal Systems

- **Syracuse, NY**
  - Reduced fuel consumption by 7-14 %
  - Reduced vehicle emissions by 9-13 %

- **Toronto, Canada**
  - Reduced fuel consumption by 4-7 %
  - Reduced vehicle emissions by 3-6 %

- **Los Angeles, CA**
  - Reduced fuel consumption by 13 %
  - Reduced vehicle emissions by 14 %
Open Road Tolling

• **Baltimore, MD**
  – Reduced vehicle emissions by 16-63 %

• **New Jersey Turnpike**
  – Reduced VOC emissions by 80 %

• **Colorado Pre-pass**
  – Reduced fuel consumption by 48,200 gal/month
LED Traffic Signals

• Portland, OR
  – Saved 4.9 kilowatt hours per year

• Our National Potential
  – 3 Billion kilowatt hours
LED Street Lighting

• Ann Arbor, MI

50 % energy savings
Solar Panels

- Salisbury, South Africa

53 solar lights save

7 tons of CO$_2$ annually
Tucson Full ITS Deployment Study

- Reduce CO by 10%
- Reduce NO\textsubscript{x} by 16%
- Reduce Hydrocarbons by 12%
- Reduce fuel consumption by 11%
Traffic Engineering Opportunities

• Roundabouts
  – CO and NO reductions of 20 %
  – HC reductions of 17 – 65 %
  – Fuel savings of 28 %
Traffic Engineering Opportunities

- Transit Enhancements
- Sidewalk Connectivity
- Bicycle Lanes
‘All of us might wish at times that we lived on a more tranquil world, but we don’t. And if our times are difficult and perplexing, so are they challenging and filled with opportunity.’

Robert Kennedy
The NEW Transportation Authorization Responsibility
As transportation professionals we truly have the responsibility and opportunity to improve the quality of life and environment of the World!
Together We Can Make a Difference!

Thank You