

Chapter 11: Intelligent Transportation System

Introduction

The Intelligent Transportation System (ITS) harnesses new technology to improve the safety, efficiency, and convenience of surface transportation, both for people and for goods. ITS improves transportation safety and mobility and enhances productivity through the use of advanced communications technologies. ITS encompass a broad range of wireless and wire line communications-based information and electronics technologies. When integrated into the transportation system's infrastructure, and in vehicles themselves, these technologies relieve congestion, improve safety and enhance American productivity. ITS is made up of 16 types of technology based systems. These systems are divided into intelligent infrastructure systems and intelligent vehicle systems.

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Goals and Objectives

Whereas historically, transportation plans might have focused solely on the addition of new roads and transit facilities, ITS technologies now permit improved system management through better surveillance and information dissemination to travelers. Typical types of ITS strategies might include traffic management centers, coordinated traffic signal systems, real-time traveler information systems, automated vehicle location devices, emergency response centers, automated fare and smart cards, and advance vehicle control and monitoring systems. The MPO have identified the following objectives:

1. Coordinate and implement intelligent transportation system investments funded with federal highway trust funds to achieve an integrated regional system.
2. Develop the integration strategy, which should include the development of a systems operations concept and an assessment of existing and future ITS systems.
3. Identify strategies that promote regional integration of system operations, and identification of resource commitments and the staging of projects over time.
4. Develop a “regional architecture,” which is the framework within which all the different ITS components work.
5. Focus on public-private cooperation. ITS America is helping foster the connection between public and private partners in the ongoing development of ITS.

Policy 1

Manage Congestion on MPO Streets

Traditionally, the solution to traffic congestion has been to construct more freeways and highways. But since 1991, federal legislation that funds highway construction recognizes that the nation cannot simply build its way out of urban congestion problems. Better

management of the existing system is necessary to reduce congestion. This management also means coordinating with other agencies in the MPO area to provide a seamless transportation network. Traffic flow can be smoothed in a variety of ITS methods. One key element is to manage incidents such as stalled cars, flat tires, and traffic crashes which delay traffic. The congestion caused by such incidents is called non-recurring congestion since it occurs at random locations and times. However, recurring congestion usually happens on a daily basis at a particular location because the roadway's capacity does not meet the demand of high numbers of vehicles. Traffic management deals with both types of congestion and offers cost benefits to the traveling public.

Policy 2

Optimize Return on Investment on the Freeways

It costs considerably more to build a new freeway in today's economy than to manage an existing one. Research has shown that implementing advanced transportation management techniques on existing freeways has yielded cost to benefit ratios from 4 to 20 percent, whereas the cost to benefit ratio of constructing new freeways is often lower.

Policy 3

Improved Safety

Applying effective management strategies can reduce the number of congestion-related crashes thereby increasing overall safety.

Policy 4

Reduce Energy Use and Negative Environmental Impact

Fewer traffic jams and gridlocks result by clearing incidents quicker and diverting motorists to other routes when incidents occur. As a result, traveling speeds of automobiles are maintained at a higher rate and vehicle emissions are decreased. This consistent movement contributes to an overall improvement in the region's air quality.

Policy 5

Increase Efficiency

Major highways can carry more vehicles with advanced management techniques. In fact, good traffic management has been known to increase a roadway's capacity by up to 30 percent, and this contributes to the overall efficiency of the entire transportation system.

Policy 6

Increased Coordination

Local agencies and governments are ready to coordinate a regional effort instead of working in isolation to solve traffic problems. The entire area benefits from the resulting sound decisions.