

Chapter 1

Introduction

1.1 INTRODUCTION

This report presents the results of the Intelligent Transportation System (ITS) Early Deployment Study for the Wichita metropolitan area. This study identifies the ITS user services appropriate for Wichita and develops a Strategic Deployment Plan based on the recommended user services. This plan discusses the existing transportation characteristics, analyzes the ITS user services, identifies the appropriate user services for Wichita, and documents the system architecture, alternative technologies and the implementation plan for an intelligent transportation system in the Wichita metropolitan area.

1.2 PARTICIPATING AGENCIES

This study is a project administered by the City of Wichita Department of Public Works (DPW). A project advisory committee provided suggestions and feedback throughout the study. This committee included representatives from the City DPW, Kansas Department of Transportation (KDOT) district and main offices, Sedgwick County Bureau of Public Services (BOPS), Wichita Metropolitan Transit Authority (WMTA), the Metropolitan Area Planning Department (MAPD), the Kansas Turnpike Authority (KTA), the Federal Highway Administration, and state and local emergency responders.

1.3 INTELLIGENT TRANSPORTATION SYSTEMS

The United States has one of the most extensive and best transportation systems in the world. However, increasing vehicle miles of travel have resulted in increased congestion and decreased mobility in many urban areas. Highway travel delays in urban areas total more than two billion hours annually, costing billions of dollars in productivity and lost working hours¹. This situation, if left unchecked, is expected to get even worse. According to a study by the Federal Highway Administration, delays on urban freeways are expected to increase by 360 percent in the central cities and by 433 percent in outlying areas in the twenty years between 1985 and the 2005².

The increasing demand for transportation comes at a time when there are limited opportunities to build more roadway lanes. Construction and reconstruction activities are often physically constrained by urban development. The addition of roadway capacity is also limited by environmental regulations which discourage (or in some cases do not allow) the construction of additional facilities for single occupancy vehicles, and by social opposition to roadway projects which facilitate low density development and urban sprawl.

¹ US Department of Transportation, *Moving America, New Directions, New Opportunities - A Statement of National Transportation Policy, Strategies for Action* February 1990

² Federal Highway Administration, "Urban and Suburban Highway Congestion " Working Paper No 10, Washington, DC, December 1987

In response to the need to address increasing congestion and increasing demand without building additional facilities, and in response to the need to better utilize the existing facilities, more and more urban areas are turning to advanced technologies. These advanced technologies are generally components of an intelligent transportation system (ITS).

As a general definition, intelligent transportation systems are systems that utilize advanced technologies, including computer and process control technologies, to enhance the safety and efficiency of the transportation system. Although there is no distinct origin of ITS, activities can be traced to a number of projects that began in the 1970's and 1980's³. These activities were initiated in a number of different countries, and involved government, industry, academic institutions, and trade and professional organizations. The various activities gradually merged into a single concept, evolving to focus on the transportation system, and not merely on discrete system components.

In the United States, individual cities and states undertook early activities. Federal involvement was formally initiated with the Intermodal Surface Transportation Efficiency Act (ISTEA), which was passed in December, 1991. This legislation authorized \$660 million of federal funds to support ITS activities over a six-year period. This funding was subsequently increased and has been used for early deployment planning studies such as this and other ITS projects.

In June 1998, the Transportation Equity Act for the 21st Century, TEA-21, was signed into law. This act reauthorized the federal surface transportation program until the year 2003. Current calculations put the new law's funding totals at \$217.5 billion over six years. This funding bill will achieve a 90.5% return to each state on receipts into the Highway Trust Fund and average annual spending will reach just under \$26 billion across all programs.⁴

1.4 FOCUS OF ITS STUDY

This ITS Early Deployment Study is focused on the existing transportation facilities, infrastructure, and operations within the Wichita metropolitan area.

1.5 FOCUS OF STRATEGIC DEPLOYMENT PLAN

The focus of the intelligent transportation system described in this Strategic Deployment Plan reflects the priority user services identified in the earlier stages of the Early Deployment Study. The primary component of the Strategic Deployment Plan is a freeway surveillance and advanced traffic management system as well as an arterial traffic control system. These systems address the highest priority user services: Traffic Control, Emergency Vehicle Management, Hazardous Material Incident Response, Incident Management, and Highway-Rail Intersection. These and all of the other user services are discussed in Chapter 3.

The Strategic Deployment Plan also contains provisions for the implementation of intelligent transportation technologies related to transit. This component addresses the highest priority transit related user services: Personalized Public Transit and Public Transportation Management. This component also encourages alternatives to the single occupancy vehicle.

³ Discussion based on *Smart Highways, Smart Cars*, Richard Whelan, Antech House, Inc , 1995

⁴ *Show Me (How to Get) the Money*, ITS America's Symposium on ITS and TEA-21, 1998