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National Capital Area
Umbrella
ITS Early
Deployment Study

SMART CARD

Apogee Research, Inc.
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Executive Summary

The "Umbrella" Study is a region-wide ITS early deployment study focusing on ITS initiatives, opportunities for ITS applications, and the agencies that make ITS happen. The study is managed by the ITS Task Force, which comprises various local transportation agencies involved in ITS. It is these agencies--through this Task Force-that are responsible for keeping abreast of the region's ITS activities, identifying ITS opportunities, and providing a forum for communication and coordination of ongoing efforts between the agencies.

Currently, there are 40 ongoing, planned, or proposed ITS activities in the region. The level of interagency involvement and the-status of these projects varies dramatically. The Washington D.C. Regional ITS Project Matrix (at the end of this executive summary) summarizes graphically the potential resource- and information-sharing opportunities that exist today. The matrix thus identifies linkages across ITS projects that can be used to maximize the effectiveness of a particular project.

However, the resource- and information-sharing process is constrained. The Washington metropolitan area covers a complex region. There are multiple local agencies, two state governments with dramatically different methods of managing and conducting business, and the District of Columbia (home to the Federal government). With so many political entities and activities in this region, the Task Force is in an important position to advance the region's transportation goals through technology. The objective of this report is to help identify efforts to streamline the ITS decision-making process in the region by presenting a catalog of information on projects, agencies, stakeholders, opportunities, and other factors important to regional ITS initiatives.

Drawing on the findings the results of surveys, interviews, and a special workshop that sought to explore options for the Task Force's role in the Washington D.C. region, this study recommends four sets of activities that can be implemented by the Task Force membership without a major financial commitment:

> **Develop a Vision/Integration Plan--**Two studies commissioned by the Task Force, the "Umbrella" Study and the Vision Statements, provide the preliminary framework needed to create a vision/integration plan. Such a plan would help direct the region's efforts and would benefit the Task Force in defining its next steps.

> **Identify Goal Leaders for Education and Planning-To** advance the key goals of education and planning, the Task Force should nominate goal leaders for these two areas. These leaders would be charged with ensuring that tours, speakers, seminars, presentations, project planning, and other activities are scheduled, are added to the agenda, or are addressed by the Task Force. Each goal leader, with the assistance of the Task Force, would set annual priorities for the Task Force. These priorities should be reviewed and redefined annually to ensure that the direction taken by the Task Force is consistent with its goals. Although the goal leader would be responsible for advancing the activities before the Task Force, the involvement of committee members or support staff would likely be necessary to realize the full benefit.

Hold Focused ITS Sessions-One of the primary goals of the Task Force is to facilitate the exchange of information and to encourage cross-fertilization of ideas on ITS projects. The findings of this project demonstrate that agencies are eager to connect or to improve existing and future ITS projects. Focused sessions provide one key device to advance that objective. For example, a session on traffic management could detail new technologies, practices, and upcoming opportunities, after which Task Force members could explore ideas and opportunities that relate to traffic management. This activity will ensure that the two goals--educating the Task Force on ITS and encouraging the discussion of new ideas-are routinely met.

Take Advantage of the-Access to the Transportation Planning Board-The Task Force has a direct connection to the key leaders in the region, because it reports directly to the Transportation Planning Board of the Metropolitan Council of Governments. The Task Force should capitalize on this position to educate leaders on the benefits and opportunities that transportation technology offers today.

These sets of activities have been designed to minimize institutional barriers that can compromise the implementation and effectiveness of ITS projects, to ensure the realization of opportunities for resource and information sharing, and thereby to facilitate the achievement of transportation objectives across the region.

Organization of Report

This report is organized into five chapters:

Chapter 1 Overview--describes the "Umbrella" project, the Transportation Planning Board goals at Metropolitan Washington Council of Governments, the regional context, and the Task Force.

Chapter 2 Regional ITS Projects and Opportunities-identifies current, planned, and potential ITS projects throughout the region.

Chapter 3 Stakeholders and Institutions-identifies key regional stakeholders and agencies involved in transportation and ITS.

Chapter 4 Regional Institutional Issues-based on surveys, interviews, and the Task Force workshop, this chapter identifies issues, goals, and activities for the Task Force to consider, including a cross-section of institutional issues that have arisen in this new environment.

Chapter 5 Recommendations-outlines options for accomplishing Task Force goals based on current activity in the region, institutional considerations and Task Force membership objectives for the Task Force itself.

Washington DC Regional ITS Projects Coordination Matrix

Row categories and projects (left axis):

FREEWAY & INCIDENT MANAGEMENT
- Aerial Video Surveillance - I
- Aerial Video Surveillance - II
- CHART
- MdSHA TOC
- NOVA TOC & Safety Patrol
- VDOT TMS
- Montgomery County TOC
- Montgomery County ATMS
- 411-T for I-DOT and police fleets
- Regional TOC information exchange
- 411-T, or Maryland DOT and WMATA fleets
- Truck Rollover projects
- Capital Beltway Ramp metering, Maryland
- Partial Traffic Management
- Road Weather Sensors in DC

TRAFFIC CONTROL
- Arlington County SCOOT
- NOVA TSS
- Fairfax City TSS
- DC Signal System Upgrade
- WMATIS

TRAVELER INFORMATION
- Fairfax City Info Program
- MWCOG Kiosk Project
- Arlington County Kiosk Project
- VRE Trip
- WMATA Kiosk Demonstration Program
- Fairfax County Kiosk Project
- Redskins Stadium

ELECTRONIC PAYMENT
- Fastoll ETC
- MWAA AVI
- NVTC Smart Card
- WMATA Go-Card
- WB ETC

APTS
- PRTC
- Montgomery County
- Dynamic Signing for Transit and Park-n-Ride, MD

CVO
- CVISN
- Motor Carrier Information Services

COMMUNICATIONS INFRASTRUCTURE
- Balt/Wash Surveillance Infrastructure
- Maryland Telecommunications
- Virginia Resource Sharing

PLANNING
- MWCOG Regional Planning
- NV EDP
- I-95 Corridor Coalition
- DC EDP
- Umbrella Study
- Montgomery County ATMS Data

Column categories (top axis):

FREEWAY AND INCIDENT MANAGEMENT — Aerial Video Surveillance - I, Aerial Video Surveillance - II, CHART, MdSHA TOC, NOVA TOC & Safety Patrol, VDOT TMS, Montgomery County TOC, Montgomery County ATMS, 411-T for I-DOT and police fleets, Regional TOC information exchange, 411-T, or Maryland DOT and WMATA fleets, Truck Rollover projects, Capital Beltway Ramp metering, Maryland, Partial Traffic Management, Road Weather Sensors in DC

TRAFFIC CONTROL — DC Signal System Upgrade, Fairfax City TSS, NOVA TSS, Arlington County SCOOT, WMATIS

TRAVELER INFORMATION — WMATIS, Fairfax City Info Program, MWCOG Kiosk Project, Arlington County Kiosk Project, VRE Trip, WMATA Kiosk Demonstration Program, Fairfax County Kiosk Project, Redskins Stadium

ELECTRONIC PAYMENT — Fastoll ETC, MWAA AVI, NVTC Smart Card, WMATA Go-Card, WB ETC

APTS — PRTC, Montgomery County, Dynamic Signing for Transit and Park-n-Ride, MD

CVO — CVISN, Motor Carrier Information Services

COMMUNICATIONS INFRASTRUCTURE — Balt/Wash Surveillance Infrastructure, Maryland Telecommunications, Virginia Resource Sharing

PLANNING — MWCOG Regional Planning, NV EDP, I-95 Corridor Coalition, DC EDP, Umbrella Study, Montgomery County ATMS Data

Legend:

X = Existing resource and information sharing coordination
O = Opportunities for resource and information sharing coordination

Normal Text = Existing Project
Italicized text = Planned projects

1. Overview

1.1 Study Background and Goals

The National Capital Metropolitan Area "Umbrella" ITS Early Deployment Planning Study is unique among early deployment studies undertaken across the U.S. because beyond a n assessment of the technological issues and opportunities associated with ITS, it seeks to consider *the institutional* issues as well. In this context, "institutional issues" are those non-technical issues related to project implementation, especially those pertaining to inter-jurisdictional coordination, such as planning, standards, funding, management, and authority. The study focuses in particular on the relationship between these institutional issues and technology, with special emphasis on those strategies that can enhance the long-term success of region-wide ITS applications.

The study organization and process are built around the three study goals:

1. Identify regional transportation improvements and other opportunities that can be reasonably and appropriately addressed with ITS technologies,

2. Identify effective mechanisms for interjurisdictional cooperation to ensure ITS program development and projects are compatible and coordinated, and

3. Identify methods for area decision-makers and political leaders to endorse ITS on a regional basis.

The need for such an undertaking is clear. Although many ITS projects can be implemented and managed in limited geographic regions-that is, with minimal inter-jurisdictional coordination-those that will ultimately yield the greatest benefits for the region are those for which the design and implementation are coordinated more broadly. Examples of such projects include regional transit fare payment systems (like the "Go-Card"), integrated traffic management systems (such as Maryland State Highway's CHART or VDOT's Northern Virginia TMC), and integrated (cross-jurisdictional) signal control systems.

This chapter provides an overview of the context within which this study fits. It describes

- **Problems and** needs: the issues motivating this study;

- ITS **Task Force:** an organization that has grown from an informal group to an important coordinating force for transportation technology in the region.

This chapter concludes with an overview of the report as well as a glossary of ITS terms relevant to regional ITS planning.

1.2 Problems and Needs

The Transportation Planning Board (TPB) has identified the following problems and needs for the region:

- Maintaining, operating, and managing the transportation system
- Limiting traffic growth and reducing automobile emissions
- Serving diverse markets
- Sewing dispersed population and employment centers
- Moving towards intermodalism

To address these problems and needs, TPB has identified six goals:

- Promote sustainable, concentrated development
- Minimize adverse effects on the environment
- Manage congestion
- improve transportation for persons with limited mobility
- Promote and coordinate inter-regional transportation options
- Develop and fund an inter-modal transportation system that meets regional goals

These goals are challenging in any environment. In the Washington, D.C. metropolitan area, they are even more so. The region straddles two states and the District of Columbia, encompassing dozens of counties, cities, and towns as well as a variety of transportation agencies. Each has its own methods of managing transportation systems and each has different levels of understanding regarding how technology can help in managing transportation systems generally and addressing these problems in particular.

Historically, these agencies have worked together on regional planning (through the Metropolitan Washington Council of Governments, or MWCOG) or on individual transportation projects. But planning and implementing ITS projects means developing a new institutional construct-one that is flexible enough to allow for individual agency autonomy and yet ensures that, where appropriate, planning, investment, and operations are all managed on a coordinated basis.
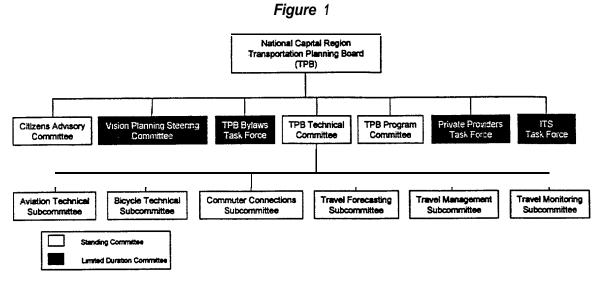
1.3 ITS Task Force

For the past three years, agency representatives from across the region have met to begin to address these problems. This committee, now known as the ITS Task Force, was initially brought together to address needs associated with the Capital Beltway. At that time, the need for a larger vision of how to manage ITS across the region became apparent. As a result, the committee (then called the Capital Beltway Safety Team), initiated this Umbrella study. Over time the technological and geographic breadth of the committee has expanded. Today, the Task Force is the overseeing committee responsible for the Washington area Traveler Information Services (TIS) Project and the Umbrella study. The Umbrella study has explored options for Task Force responsibilities and activities to support regional ITS.

As a natural next step in the Task Force evolution, the Task Force was officially established under the TPB in January 1997.

Unlike other MWCOG committees, the ITS Task Force is considered a free-standing informal group that can meet at MWCOG and rely on MWCOG's services. In addition, on a periodic basis, the ITS Task Force will report back to the TPB on its activities. The Task Force is not a

permanent MWCOG committee, and indeed it will reevaluate its utility in three years. At that time, the Task Force may decide to disband.

Figure 1 depicts the relation of the ITS Task Force to MWCOG's other committees.

Figure 1

The Task Force meets on the fourth Friday of each month at MWCOG, and its primary near-term focus will remain the TIS project.

1.4 ACRONYM Glossary

AASHTO	American Association of State and Highway Transportation Officials
AOC	Authority Operations Center
APTA	American Public Transit Association
APTS	Advance Public Transportation Systems
ATIS	Advanced Traveler Information Service
ATMS	Advanced Transportation Management System
AVI	Automatic Vehicle Identification
AVL	Automated Vehicle Location
BATA	Ballston-Rosslyn Area Transportation Association
CATSTNE	Coalition to Advance Transportation Science and Technology in the Northeast
cctv	Closed Circuit Television
CHART	Chesapeake Highway Advisories Routing Traffic
CLRP	Commonwealth Long Range Plan
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CTB	Commonwealth Transportation Board
CVISN	Commercial Vehicle Transportation Systems
cvo	Commercial Vehicle Operations
DCDPW	District of Columbia Department of Public Works
DOT	Department of Transportation
DSRC	Dedicated Short Range Communications

EDP	Early Deployment Study
EPA	Environmental Protection Agency
ETC	Electronic Toll Collection
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
GPS	Global Positioning Satellite
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HOV	High Occupancy Vehicle
ISP	Independent Service Providers
ISTEA	Intermodal System Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems
IVHS	Intelligent Vehicle Highway Systems
JDTMA	Jefferson Davis Corridor Transportation Management Association
MDOT	Maryland Department of Transportation
MdSHA	Maryland State Highway Administration
MIS	Major Investment Studies
MNCPPC	Maryland-National Capital Park and Planning Commission
MPO	Metropolitan Planning Organization
MSP	Maryland State Police
MWAA	Metropolitan Washington Airports Authority
MWCOG	Metropolitan Washington Council of Governments
MTA	Maryland Mass Transit Administration
NVTC	Northern Virginia Transportation Commission
PRTC	Potomac and Rappahannock Transportation Commission
RF	Radio Frequency - SCOOT Split Cycle and Official Optimization Technique
SIB	State Infrastructure Bank
SOC	Statewide Operations Center
SOV	Single Occupancy Vehicle
TIP	Transportation Improvement Program
TIS	Traveler Information Services
TMC	Traffic Management Center
TMS	Traffic Management System
TOC	Traffic Operations Center
TPB	Transportation Planning Board
TRIP	Train Information Provider
TSS	Traffic Signal System
UPWP	Unified Planning Work Program
VDOT	Virginia Department of Transportation
VDRPT	Virginia Department of Rail and Public Transportation
VMS	Variable Message Sign

VRE	Virginia Railway Express
WMATA	Washington Metropolitan Area Transit Authority
WMTIS	Washington Metropolitan Traveler information Services
WWB	Woodrow Wilson Bridge

2. Regional ITS Projects and Opportunities

2. 1 Introduction

Based on a thorough inventory of ITS activity in the region, this study covers over 40 major ITS initiatives that are now complete or are in planning for this region. These projects vary widely in terms of several characteristics:

- Technology,
- Links to other systems, and
- Potential to address problems across the region.

This inventory helps define the extent of ITS applications and the potential opportunities for resource and information sharing.

Of the inventory of funded projects, each project or program listing includes a statement of project needs, provides a project description, details the schedule and funding, and provides a statement of benefits. The inventory also lists the tools or infrastructure used, details the data inputs and outputs as well as services provided, and recommends opportunities for resource and information sharing.

The inventory reviews all ITS projects in the Washington, D.C. metropolitan area as of January 1997. These projects are categorized by functional characteristics: Freeway and Incident Management (Section 2.2), Traffic Control (Section 2.3), Traveler Information (Section 2.4), Electronic Payment (Section 2.5), Advanced Public Transportation Systems (Section 2.6), Commercial Vehicle Operations (Section 2.7), Communication Infrastructure (Section 2.8), and Planning (Section 2.9).

Two summary tables at the front of this section provide at-a-glance views of the projects with key information pertaining to them. Table A provides the status of current projects. Thirty projects or programs in the region are summarized in terms of their characteristics. Many of these projects are operational or under development. The projects are categorized by the function of service they provide.

Table B provides a summary of current projects. This table summarizes the same projects under the same categories, but highlights the project lead agency and the location it is affecting. Although projects or programs are generally found throughout the region, they are primarily designed as sub-regional or local solutions.'

| A "regional" ITS project is defined as encompassing the entire metropolitan region, a "sub-regional" project is in either a single state or multiple counties in a single state. A "local" project is in an individual jurisdiction.

Table A - Status of Current ITS Projects

	Operational	Under Development	Research 8 Planning
Freeway and Incident Management			
Aerial Video Surveillance Phase I	X		
Aerial Video Surveillance Phase II	**X**		
Chesapeake Highway Advisories Routing Traffic	X		X
MdSHA Traffic Operations Center	X		
NOVA Traffic Operations Center	X		X
VDOT ATMS	X		X
Montgomery County Traffic Operations Center	X		
Montgomery County ATMS	X		
Traffic Signal System			
Arlington County "Scoot" System		X	
NOVA Traffic Signal System		X	
Fairfax City Traffic Signal System		X	
Traveler Information			
Metropolitan Washington Traveler Information Services			
Fairfax City TDM Information Program			
MWCOG Regional Kiosk Project			
Arlington County Kiosk Project			
VRE TRIP			
Electronic Payment Systems			
Fastoll	X		X
Metropolitan Washington Airports Authority AVI Study			X
WMATA Go-Card	X		
Advanced Public Transportation Systems			
PRTC OmniLlnk		X	
Montgomery County Ride-On	X		
Commercial Vehicle Operations			
CVISN		**X**	
Communications Infrastructure			
Balt & Wash. Surveillance Infrastructure		X	
Maryland Telecommunications Requirements			X
Virginia Wireless Resource Shanng			X
Planning			
MWCOG Transportatron Planning			X
Northern Virginia EDP			X
I-95 Corndor Coalition			X
Washington DC EDP			X
Umbrella Study			X

Table B - Summary of Current ITS Projects

	Location			Project Lead	Location of Project
	Regional	Sub-Regional	Local		
Freeway Management					
Aerial Video Surveillance Phase I			X	VDOT	Fairfax County
Aerial Video Surveillance Phase II			X	MdSHA	Montgomery County
Chesapeake Highway Advisories Routing Traffic		X		MdSHA	Maryland
MdSHA Traffic Operations Center		X		MdSHA	Maryland
NOVA Traffic Operations Center		X		VDOT	Fairfax/Prince William County
VDOT ATMS		X		VDOT	Northern Virginia
Montgomery County Traffic Operations Center			X	Montgomery County	DOT Montgomery County
Montgomery County ATMS			X	Montgomery County	DOT Montgomery County
Traffic Signal System					
Arlington County "Scoot" System			X	Arlington County DPW	Arlington County
NOVA Traffic Signal System		X		VDOT	Northern Virginia
Fairfax City Traffic Signal System			X	City of Fairfax	City of Fairfax
Traveler Information					
Metropolitan Washington Traveler Information Services	X			FHWA VDOT	DC Metro Area
Fairfax City TDM Information Program			X	City o f Fairfax	City of Fairfax
MWCOG Regional Kiosk Project				MWCOG	DC Metro Area
Arlington County Kiosk Project	X			Arlington County DPW	Arlington County
VRE TRIP		X		VRE	Northern Virginia except Loudoun County
Electronic Payment Systems					
Fastoll		X		VDOT	Fairfax/Loudoun County
Metropolitan Washington Airports Authority AVI Study			X	MWAA	National and Duller Airport
WMATA Go - Card	X			WMATA	DC Metro Area except Loudoun County
Advanced Public Transportation Systems					
PATC OmniLink		X		PRTC	Prince William County/Manassas/Manassas Park
Montgomery County Ride-On			X	Montgomery County DOT	Montgomery County
Commercial Vehicle Operations					
CVISN	X			FHWA	Maryland/Virginia
Communications Infrastructure					
Balt. & Wash Surveillance Infrastructure		X		FHWA	Maryland
Maryland Telecommunications Requirements		X		MdSHA	Maryland
Virginia Wireless Resource Sharing		X		VDOT	Virginia
Planning					
MWCOG Transportation Planning	X			MWCOG	DC Metro Area
Northern Virginia EDP		X		VDOT	Northern Virginia
I-95 Corridor Coalition	X			FHWA	DC Metro Area
Washington DC EDP			X	Washington DC	DPW Washington DC
Umbrella Study	X			VDOT	Metro Area

Note:
Maryland includes Montgomery and Prince Georges County
Virginia includes Fairfax, Arlington, Prince William, and Loudoun Counties ; Fairfax City, Falls Church. Manassas, Manassas Park, and City of Alexandria
DC Metro Area includes Maryland. Virginia, and Washington, DC

Project Coordination

The relationships between projects were investigated. Each project provides distinct tools for ITS application. These tools are the infrastructure needed for the operation of the technology. Along with the tools are the data flows and services provided. If one project can use or build upon another project's tools, data flows or services, a connection may be possible. In some cases these connections already exist. In many cases the opportunity exists but has not yet been explored.

Two products have been produced to start the educational process of explaining how and why some ITS projects within this region need to form such linkages. A matrix and a poster graphic illustrate the projects and their potential project relationships. The matrix matches project to project and shows existing cooperation or opportunities for cooperation. The connection from project to project is not defined, but at this level it is important to understand simply whether a connection exists. The links represent the potential for resource and information sharing, which will yield expanded opportunities in developing regional connectivity in ITS applications. The matrix shows both currently funded projects and proposed projects to date. The poster graphic shows the project-to-project relationship, overlaid on the region. Although physical locations of the ITS projects are not exact, the relationship lines are the important feature. For each project, a box highlights the tools used and the services offered. Solid line connections represent existing project-to-project connections, while dashed lines represent opportunities for cooperation and connection.

2.2 Freeway and Incident Management Systems

2.2.1 Aerial Video Surveillance System, Phase I

Overview of Need

Fairfax County is the fastest growing county in the Washington, D.C. metropolitan area. Along with growth has come congested highways. To better manage congestion and ease long commutes for travelers, the Virginia Department of Transportation (VDOT) and the Fairfax County Police entered into a project designed to find and pinpoint traffic incidents across the County.

Description of Project

The aerial video surveillance system study provided for the procurement, installation, and evaluation of live video transmission from a gyro-stabilized camera mounted on a Fairfax County Police helicopter. The system was designed to help find and pinpoint traffic accidents, and to observe, evaluate, and properly manage incidents on interstates and major arterials throughout the County. It provides a view of incidents that mounted cameras cannot provide. The system also provides operations managers with a "bird's-eye" view of an accident to assist police and DOT officials in managing the incident.

Project Participants and Funding

The project participants in this operational test included the Federal Highway Administration (FHWA), VDOT, and the Fairfax county Police. Most of the funding came through Federal

funds. The Fairfax County Police provided the helicopter and manpower to operate the gyro-stabilized camera.

Benefits, Realized and Potential

The benefits of the aerial video surveillance system realized to date include the ability of VDOT and Fairfax County Police to gain a real-time, comprehensive view of major traffic incidents. This information allows both VDOT and Fairfax County Police to manage traffic incidents more efficiently and effectively.

Tools (Infrastructure) in Use

Fairfax County Police helicopter
gyro-stabilized camera

Data Inputs and Outputs

video feed from camera
assessment of traffic incident
recommendations made by agencies

Opportunities for Coordination

Both the Fairfax County Police helicopter and the video feed from the camera could be used and shared by other agencies. In addition, public dissemination of the resulting operational recommendations would be useful. The results of the assessment made by the operating agencies could be sent to area traffic operations centers, or the live video feed could be sent to Traffic Operations Center (TOC) staff to make their own assessment. The potential exists to broaden the use of the aerial camera by obtaining traffic accident information from other agencies and dispatching the helicopter to the incident site.

2.2.2 Aerial Video Surveillance System, Phase II

Overview of Need

Montgomery County, located to the northwest of Washington, D.C., is one of the many growing counties within the Washington, D.C. metropolitan region. The Montgomery County DOT is responsible for maintaining many of the county's transportation networks and managing congestion on numerous state roads and interstate highways, which form one of the most congested road networks in the United States. Congestion on roads throughout Montgomery County occurs regularly in both the morning and evening rush hours. Montgomery County transportation officials have identified traffic incidents as a primary cause of congestion during these periods. As a result, the Montgomery County DOT has established a number of programs and projects aimed at identifying, reporting, and clearing traffic incidents. One of these solutions utilizes aerial video surveillance to pinpoint traffic incident locations.

Description of Project

Montgomery County participated in the second phase of a Federally funded aerial video surveillance project that evaluated the benefits of live aerial video transmission to county and state traffic management centers. The County evaluated the surveillance system on the hypothesis that by providing a live video picture of current traffic conditions directly to the transportation management center, managers on the ground could make better-informed traffic management decisions.

The Montgomery County Aerial Video Surveillance Project utilized a camera attached to a fixed-wing aircraft to obtain the live video images. The system also included portable receivers that are being used by Maryland State Highway Administration (MdSHA), the Montgomery County DOT, and Montgomery County's Police/Fire and Rescue Command Bus.

Preliminary testing indicates that the system performs well under conditions where the RF signal, carrying the video data, is strong. The tests indicate that the video signal can be received from the airplane while flying over any point in Montgomery County at an altitude of 1,000 feet, although interference has been detected from other microwave signals in certain areas. County officials have found that the interference effects can be mitigated by transmitting on a different frequency. County officials have also found that portable receivers allow personnel on the ground to track the aircraft's location successfully.

Benefits, Realized and Potential

The benefits realized to date arc reported to include more effective management of traffic incidents that occur on Montgomery County roads through better-informed decision making at the TOC.

Project Participants and Funding

The project was initiated in July 1991 by Montgomery County and FHWA. In April 1993, after completion of the detailed design of the video system, a contract to install the system hardware and design the system software was awarded to N-Systems, Inc. Permanent installation of the hardware was completed in January 1994.

Participants in the Montgomery County Aerial Video Surveillance Project include FHWA, MdSHA, Montgomery County, and N-Systems, Inc. Federal funds and County funds were equally used for this project.

Tools (Infrastructure) in Use

> fixed-wing aircraft
> video camera
> portable receivers

Data Inputs and Outputs

> video feed from camera
> assessment of traffic incident and traffic control recommendations made by State TMCs and Montgomery County TMC

Resource- and Infomation-sharing Opportunities

Both the airplane and the video feed from the camera utilized in this project could be used and shared with other agencies. Additional microwave ground stations would need to be deployed to ensure that the video data could be obtained in areas outside the county. In addition, the assessment of traffic incidents by Montgomery County as a result of utilizing the aerial video surveillance system could provide beneficial input to other agency TOCs and Traffic Management Systems (TMS). The results of incident assessments have the potential to be output directly to end users through the use of Variable Message Signs (VMS) and Highway Advisory Radio (HAR) broadcasts in the region.

2.2.3 Chesapeake Highway Advisories Routing Traffic Program

Overview of Need

MdSHA identified the need for a coordinated freeway and incident management program for a key regional area of the state. The Baltimore-Washington-Annapolis-Frederick regional area contains a majority of the interstate and major arterial roadways in the state and correspondingly produces the greatest number of traffic incidents. Incidents that occur on a roadway within this region often affect other routes within the network. As a result, the state highway administration developed the Chesapeake Highway Advisories Routing Traffic (CHART) Program, built on a hub-and-satellite topology. The program was developed to provide traffic management in this key regional area.

Description

The CHART Program was developed for the Baltimore-Washington-Annapolis-Frederick regional area, encompassing approximately 550 miles of highways and major arterial roadways. The Program consists of a statewide operations center, supported by two smaller TOCs. The statewide operations center, located between Baltimore and Washington, can monitor and control weather sensors, travelers' advisory radio, variable message signs, and adaptive traffic signal systems deployed throughout the state. The two traffic operations centers, located at the Maryland State Police barracks and the Montgomery County Transportation Management Center, are predominantly used to provide motorists with traveler information during peak traffic periods.

The CHART Program incorporates closed-circuit television cameras, bi-directional overhead traffic detection sites, and interstate loop detectors to facilitate the assessment of traffic conditions. The state has deployed closed-circuit television cameras in 21 locations, enabling engineers to monitor congestion on several key routes. Nineteen pavement condition and weather sensors have been installed, predominantly on bridges and ramps that tend to freeze prior to other roadway surfaces. The program also initiated and incorporates a cellular call-in system which allows motorists to report traffic incidents. The call-in system logs more than 10,000 calls annually.

The operations centers currently disseminate traveler information utilizing the following media:

> Programmable variable message signs at 35 locations,
> Low-power traveler advisory radio which broadcasts on the AM band with 29 permanent stations and about half as many portable units, and

Provision of up-to-the-minute travel conditions by MdSHA to commercial radio and television stations.

MdSHA recently completed a planning study of the CHART Program. The study developed a strategic plan for the Program that placed primary focus for system operations on two key transportation areas: traffic management and communications alternatives. The study also evaluated current and future needs of the Program, including the application of other ITS technologies and services.

Project Participants and Funding

The CHART Program was established in 1989. In 1992 the first Statewide Operations Center was initiated, with construction being completed in 1994. The installation of the surveillance equipment was completed in 1996.

Participants in the CHART Program include FHWA, MdSHA, Montgomery County, and Prince George's County. Funding for the CHART Program has come from a mix of local, state, and Federal funds. The statewide operations center was funded entirely by the Federal government. A majority of all other equipment deployed in the program has been provided through state funds. The planning study was funded through Congestion Mitigation Funds.

Benefits, Realized and Potential

The CHART Program has provided motorists with both pre-trip and en-route real-time traffic conditions on interstates and major arterials. Traveler information has predominantly been provided during high-traffic periods and other adverse traffic conditions including:

- Rush hour,
- Major special events,
- Seasonal recreational peaks,
- Accidents,
- Severe weather, and
- Roadway construction.

Tools (Infrastructure) in Use

TOC(s)
CCTV cameras
VMS
bi-direction overhead traffic detection sites
pavement condition and weather sensors
#77 incident call-in system
loop detectors
traveler advisory radio

Data Inputs and Outputs

assessment of traffic conditions and incidents (traffic advisories)

> **loop data**
> video images
> special event information
> severe weather information

Resource- and Information-sharing Opportunities

There are potentially many agencies that could utilize the information gathered through the CHART program. The sharing of traffic data and information obtained from CHART CCTV cameras, loops, motorist call-ins, and traffic detection sites has the potential of developing a more complete assessment of traffic incidents by all agencies. The CHART Program could also benefit through coordination with other-agencies where incidents that affect the road network monitored by CHART are detected and assessed by these agencies.

2.2.4 MdSHA Traffic Operations Center-TOC-3

Overview of Need

Traffic congestion has become so severe on some of Maryland's highways that a single accident can affect traffic for hours, resulting in appreciably reduced travel speeds and increased travel times to motorists. The MdSHA has recognized the necessity of managing the state's highways to reduce congestion and improve travel time for motorists. One of the tools deployed by MdSHA to detect and manage traffic incidents along Maryland highways within Montgomery and Prince Georges Counties is the MdSHA Traffic Operations Center (TOC-3).

Description of Project

The MdSHA TOC-3, located in College Park, Maryland, is one of three operations centers located in Maryland as part of the CHART Program. TOC-3's current coverage includes the Capital Beltway, I-270, US-50, US-29, MD-295, and various arterials within the Washington, D.C. metropolitan area. The equipment now deployed for TOC-3 includes inductive loops, CCTV cameras, wide area radar detector, variable message signs, and highway advisory radio. The current communications infrastructure utilizes leased telephone lines to communicate between field equipment and the TOC building.

Current plans do not call for expansion of the coverage area. However, an increase in loop detection equipment deployment is currently planned to include l/2- l-mile spacing and 1-2 miles for CCTV spacing on major routes and interstates. The MdSHA also plans on deploying a fiber-optic backbone to replace the existing communications subsystem.

Project *Participants and Funding*

Participants in the successful deployment of TOC-3 include FHWA, MdSHA, Montgomery County, and Prince Georges County. Funding for the CHART program is identified in Section 2.2.3.

Benefits Realized and **Potential**

There have been a number of benefits realized from TOC-3's beginning operations. Maryland traffic engineers are better able to detect and pinpoint traffic incidents enabling them to clear these incidents from the roadway in a timely fashion. Also, motorists are now able to see current road conditions through the CCTV cameras; the signal is made available to local television stations and traffic reporting businesses such as Metro Traffic Control.

Tools (Infrastructure) in Use

> inductive loops
> HAR
> VMS
> wide area radar detector
> leased telephone lines communication links
> future communications via fiber-optic backbone (currently in design)
> future traffic detection through CCTV cameras (planned 1-to-2-mile spacing)

Data Inputs and Outputs

> traffic assessment by TOC staff
> traffic assessment by Metro Traffic Control Staff
> video Images
> data from inductive loops

Resource- and **Information-sharing** *Opportunities*

The potential exists to share the data collected, such as travel volumes determined through inductive loops, video images, and assessments, with other agencies such as VDOT. The TOC currently provides video images to both the media and Metro Traffic Control. Through coordination with VDOT (with VDOT sharing video feeds from the Virginia sections of the Beltway and other areas) a greater use of resources, and potentially better assessment of the cause of incidents and of methods to alleviate the congestion, could result.

2.2.5 Northern Virginia Traffic Operations Center

Overview of Need

VDOT, within its mission statement, has identified safety as its number one priority. VDOT understands that motorists want safe and reliable roadways that are free from congestion and potential traffic hazards. VDOT identified that when motorists' travel is affected by road construction, inclement weather or traffic incidents, a central location where information can be disseminated must be available. The Northern Virginia Traffic Operations Center (TOC) provides this central repository of travel-related information.

Description of Project

The Northern Virginia TOC, located at the VDOT District Office in Fair Oaks, monitors roads during inclement weather conditions, coordinates communication between media during emergencies, and oversees the dispatching of Safety Service Patrols. Future plans call for the

TOC to be responsible for the adjustment of the district signal system during emergencies, operation of a regional highway advisory radio system, and the coordination of road construction and maintenance. The TOC also maintains communication with the county emergency center.

As an extension of the TOC, VDOT has deployed Safety Service Patrols which utilize VDOT vehicles to patrol key highways. VDOT drivers participating in the Safety Service Patrol report traffic accidents and traffic conditions to the TOC, and when necessary to emergency response personnel.

Project Participants and Funding

The Northern Virginia TOC began operation in 1994. Participants include FHWA, Virginia VDOT, Virginia State Police, Fairfax County Police, and Alcatel, Inc. The TOC project is funded by the State of Virginia.

Benefits, Realized and Potential

The Northern Virginia TOC has helped Northern Virginia area residents cope with snow and ice removal during the winter months. The TOC has also provided the media with a central location for information dissemination and acts as a communications tool for VDOT, dispatching calls for removal of traffic impediments, pothole repair, and other traffic-related problems.

Tools (Infrastructure) in Use

    communications interface with media and public
    future control of District Signal System during emergencies
    future regional HAR

Data Inputs and Outputs

    assessment of traffic conditions via data from other sources
    road construction and other VDOT activity information
    inclement weather and state advisory information

Resource and Information-sharing Opportunities

The potential exists to combine the operations of the TOC with the Travel Management System (TMS) to provide better and coordinated operations and communications. In addition, the VDOT Safety Patrol vehicles could potentially be equipped with vehicle location devices used in other projects such as GPS or Dedicated Short Range Communications (DSRC) equipment, which would allow the vehicles to be used as probes for monitoring traffic speeds.

2.2.6 Virginia Department of Transportation Traffic Management System

Overview of Need

Northern Virginia, located to the south and west of Washington, D.C., has had a rapid growth in population since the mid 1980s. While the construction of houses and retail centers has kept up with the growth, the construction and improvements of new and existing highways has not kept up with demand.

Northern Virginia contains a number of major interstates and major arterials, including I-95, I-495,
I-395, I-66, and the Dulles Toll Road, which become moderately to highly congested during peak periods. To mitigate some of the congestion, many of these highways are designated, or have lanes designated, for the use of High Occupancy Vehicles (HOV) only. To effectively manage and operate the daily HOV operations and provide incident management on these highways, VDOT has developed a Traffic Management System (TMS).

Description of Project
The VDOT TMS, located on Columbia Pike in Arlington, conducts a majority of its activities in incident detection and HOV lane control. Activities include the operation of 100 VMS and ramp metering for a portion of interstate in Northern Virginia. The TMS monitors loop detectors and CCTV cameras on I-66, I-395, and 10 miles of the Capital Beltway, including the Woodrow Wilson Bridge. Although the present system's monitoring capabilities are extensive, there are plans to expand system coverage by 40 miles. The additional coverage will include 20 miles on I-66 and 20 miles on I-95. The increased coverage for these roadways will run concurrently with the extension of HOV facilities.

Project Participants and Funding
The participants in the VDOT TMS project include FHWA, VDOT, Fairfax County Police, and Alcatel, Inc. The VDOT TMS has been primarily funded through Federal monies; however, state funds have supplemented the Federal contribution.

Benefits, Realized and Potential
On a daily basis, the VDOT TMS provides live video feed via CCTV cameras to local television stations and traffic reporting companies such as Metro Traffic Control. The CCTV cameras also provide VDOT engineers with the video data to assess traffic conditions and provide travel information to motorists using facilities monitored by the TMS. With the video monitoring capabilities provided by the TMS, incident response times have improved on the associated roadways.

Tools (Infrastructure in Use)
        ramp meters
        VMS
        CCTV cameras
        TMS building and associated equipment
        loop detectors

Data Inputs and Outputs
        traffic conditions assessment on selected routes
        loop detector data
        video images

Resource- and Information-sharing Opportunities

The potential exists to share traffk detection data with other agencies to allow the dissemination of travel recommendations to drivers before they reach the congested roads monitored by the TMS. Additionally, information on traffk conditions outside of the TMS-managed roadways could be provided to the TMS and displayed on TMS-managed VMS.

2.2.7 Montgomery County Transportation Operations Center

Overview of Need

The Montgomery County DOT is responsible for the maintenance, management, and operation of many of the transportation modes throughout the County. The Montgomery County DOT recognized the need for and benefits associated with locating a multi-modal transportation operations center-where better coordination of traffic management plans could be generated--- under a single roof.

Description of Project

The Montgomery County Transportation Operations Center houses all the equipment necessary for the efficient operation of the County's Advanced Transportation Management System (ATMS). The Center caters to the dispatching operation for the County s Ride-On transit system. It also provides traffic engineering services for the control of VMS, signal timing, CCTV cameras, and highway advisory radios. The County placed both traffic engineering and transit services in the same building to ensure efficient utilization of transportation capacity.

A majority of the information dissemination equipment and traffic detection and surveillance equipment utilized by the TOC were purchased under separate Montgomery County projects. The TOC project provides the coordinated engineering services, at a single location, to utilize and integrate the tools.

Project Participants and Funding

Participants in the Montgomery County TOC include Automatic Signal/Eagle Signal, Orbital Sciences Corporation, and Montgomery County. Funding for the project was provided by Montgomery County.

Benefits, Realized and Potential

The transportation operations center provides a coordinated and more efficient operation of a multi-modal ATMS.

Tools (Infrastructure) in Use

> TOC building
> traffic and transit engineers
> monitoring equipment

Data *Inputs and Outputs*
engineers' analysis of traffic data

Resource- and Information-sharing Opportunities

Many agencies could utilize the information generated through this project. The assessment of conditions made by Montgomery County transportation engineers would also be a valuable tool to many end-users; thus projects which include the use of traffic information dissemination equipment could benefit from coordination.

2.2.8 Montgomery County ATMS

Overview of Need

Montgomery County has an extensive network of roadways, including major highways such as I-495 and I-270. The County also has a transit system consisting of the Ride-On bus fleet, several Metrorail lines, and a number of Metro Bus routes. The growing population of Montgomery County and the increased demand on area roadways has emphasized the need to improve the reliability, safety, convenience and travel time of the public transportation system, alter single occupancy vehicle (SOV) travel choices to HOV travel, and better manage the transportation system in the County. For these reasons the County has implemented an ATMS.

Description of Project

Upon completion, the Montgomery County ATMS will provide integrated transit operation and monitoring capabilities. The system will include AVL technology installed on the bus fleet; a two-way communications system; real-time graphic display of vehicle location and schedule adherence, monitoring, and control software; transit prioritization at traffic signals; and system information dissemination. Through the use of this enhanced information and control capability, the County will be able to more effectively manage the transportation system. The ATMS is operated from Montgomery County's Transportation Operations Center.

Project Participants and Funding

Project participants include the U.S. DOT, MdSHA, Montgomery County, Orbital Sciences Corporation, Automatic Signal/Eagle Signal, and XiCAD. Funding for the ATMS project is provided through the U.S. DOT, MdSHA, and Montgomery County.

Benefits, *Realized and Potential*

Once completed, the Montgomery County ATMS is expected to provide users with the following benefits:

- Increased safety in the use of highways and transit services,
- Reduced fuel consumption and delays through the dissemination of current traffic and transit information to motorists and transit users,
- Improved air quality through reduced congestion and improved incident response and management,

- Increased transportation system capacity through better management of the current system resources, and
- Improved regional transportation integration and ride-sharing information.

Tools (Infrastructure) in Use

AVL system for bus fleet

monitoring and control software for AVL system

software and hardware to allow prioritization of bus service at signals

information dissemination equipment

two-way communications system

Data inputs and Outputs

vehicle locations and travel times

real-time schedule updates

ride-sharing data

incident identification

Resource- and Information-sharing Opportunities

Many agencies could utilize the information gathered through this project. The data could provide a source of vehicle flow characteristics for specific routes if the penetration of the bus fleet is significant for those routes (i.e., vehicles as probes). Schedule adherence information and other transit-related data could be provided to other projects with information dissemination technologies deployed.

2.3 Traffic Control

2.3.1 Arlington County "SCOOT" System

Overview of Need

Arlington County, adjacent to Washington, D.C., Fairfax County, and the City of Alexandria, has, as a result of its geographic location, become a very desirable place to live and work. The predominant mode of transportation for Arlington County residents is the automobile, As a result of high population density and the use of the thoroughfares that traverse the County into Washington D.C., the streets and highways within the County have become very congested.

Arlington has a number of traffic signals that control many of the traffic intersections in the County. The current traffic signal system is based on "time of day" cycle times and coordination. The time of day operation of the signal system has a number of drawbacks, including the inability to modify cycle times to better manage traffic when incidents occur.

Description of Project

The Arlington County Department of Public Works has procured a new traffic signal system, based on adaptive traffic algorithms, that will give traffic engineers the ability to control signals to a greater degree and improve traffic flow. The new system will provide the signalized

intersections with real-time signals that are better able to adapt to current traffic conditions than the current "time of day" signal system. Based on the Transit Computer System, the Split, Cycle and Offset Optimization Technique (SCOOT) system will involve the installation of 70 adaptive controllers at intersections, with the remaining signals using the current time of day signal system. In the future, it is hoped that this system will be integrated with other traffic signal systems to allow for a seamless transition between counties and cities.

Development of the Arlington County SCOOT system began in 1994 when the preliminary design was initiated. In July 1996, the SCOOT contract went out for bid with contract award occurring in late 1996. The SCOOT system is scheduled to be operational in early 1998.

Project Participants and Funding

Participants in the SCOOT system include FHWA and the Arlington County Department of Public Works. The project was Federally funded through funds provided under the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ). The funds were used to design and study the SCOOT system. Installation and integration of field and central control system hardware and software was also included.

Benefits, Realized and Potential

Potential benefits to be derived after completion of the SCOOT system installation include better coordination of traffic signal cycle times between signalized intersections, improved traffic flow during peak and off-peak periods, and greater control of all signals by traffic engineers.

Tools (Infrastructure) in Use

> central processor unit (VAX)
> signal controller
> system loops

Data Inputs and Outputs

> input: system loops
> output: adaptive split, cycle, and offset times

Resource- and Information-sharing Opportunities

The Arlington County SCOOT system could be integrated and coordinated with adjacent signal systems. Coordination with traffic detection projects may provide valuable information, allowing traffic signal timings to be altered and thus improving the traffic flow characteristics. In addition, other local agencies could potentially use the loop data and traffic counts to assess and report traffic flow characteristics.

2.3.2 Northern Virginia Traffic Signal Management System

Overview of Need

A majority of the traffic signals throughout Northern Virginia are controlled by "time of day" cycle timing. The "'time of day" cycle timing is not responsive to actual traffic conditions and has proven to be extremely ineffective when an incident changes the traffic patterns upon which the cycle times for the system have been developed. In addition, many of the cycle time programs cannot be modified by VDOT engineers from remote locations. VDOT recognizes the problems associated with "time of day" signals and has initiated a project to implement technologies which will improve the capabilities of the existing system.

Description of Project

VDOT has developed a new traffic signal management system that will automate many of the signals currently operational in Fairfax, Prince William, and Loudoun Counties. The new system will encompass modifications to approximately 800 traffic signals. The system will provide VDOT traffic engineers with the capability of modifying individual and combined traffic signal cycle times to more effectively meet the current traffic conditions, time of day, or unusual occurrences on the roadways. The signal system will also provide a fully and semi-actuated control of signals during peak and off-peak traffic periods.

The Northern Virginia Traffic Signal Management System will be a fully automated system operated under a central processing station in a multi-tasking environment. Communication to the signals will take place over leased digital telephone lines.

Project Participants and Funding

The Northern Virginia Traffic Signal Management System was initiated by VDOT in 1993; an initial project study was completed in July 1995. A contract was subsequently awarded for the design and testing of the new signal system in late 1995. Completion of the system installation is anticipated in September 1997. Participants in the project include FHWA, VDOT, and Alcatel, Inc. Funding for the project is provided through both Federal and State funds.

Benefits, Realized and Potential

No benefits have yet been realized from the new traffic signal management system. Expected benefits include decreased congestion during morning and evening rush hours, improved traffic flow through signalized intersections, and better control of signals during unusual occurrences. Other benefits might include an integrated signal system with adjacent counties and cities and up-to-date information about current traffic conditions on non-arterial interstates.

Tools (Infrastructure) in Use

>
> new coordinated traffic signal system
> loops
> computer hardware and graphic display units

Data Inputs and Outputs
> loop data
> traffic signal cycle times

Resource- and Information-sharing Opportunities
Resource- and information-sharing opportunities include the development of an integrated signal system with adjacent county and city signal systems and the potential for improving the implementation of the coordinated signal system through receiving current traffic conditions on surrounding roadways.

2.3.3 Fairfax City Traffic Signal System

Overview of Need
Fairfax City is at the crossroads of some of the most heavily traveled highways within Fairfax County. These roads include Routes 236,123, and 50. These highways are used daily by commuters traveling to and from western Fairfax County, Arlington County, and Washington, D.C. The highways become congested on a daily basis due to the high number of vehicles and signalized intersections. In order to improve congestion on these highways and others, Fairfax City traffic engineers will be installing a new coordinated traffic signal system.

Description of Project
The City of Fairfax will upgrade their current signal system within the next few years. The city hopes that the new traffic signal system will provide travelers with improved traffic flows during both the morning and evening rush hours. The new upgraded system will incorporate a centrally monitored distributed system with traffic-responsive capabilities. The system uses an open client/server-based architecture system. Future expansion of the system will include traffic surveillance via inductive loops, emergency vehicle preemption, CCTV surveillance, and VMS.

Project Participants and Funding
Planning for the new traffic signal system was initiated in early 1995 and culminated in the completion of a conceptual design plan in August 1995. The signal system upgrade contract was awarded in July 1996 to Frederick R. Harris and the system is anticipated to become operational in 1997. Participants in the project include the City of Fairfax and Frederick R. Harris. Funding for the system is being provided by the City of Fairfax and CMAQ funds.

Benefits, Realized and Potential
Anticipated benefits include reduced congestion during morning and evening rush hours and improved signal timing coordination.

Tools (infrastructure) in Use
> traffic responsive signal system
> client/server-based computer system
> future hardware and software for emergency vehicle signal preemption

future CCTV cameras
future VMS

Data Inputs and Outputs
future video
loop data
future traffic reports and analysis

Resource- and Information-sharing Opportunities
The Fairfax City Traffic Signal System could be coordinated with other signal systems in adjacent areas. In addition, the future video surveillance and VMS installations could be shared with local and regional TOCs and TMS.

2.4 Traveler Information

2.4.1 Washington Metropolitan Traveler information Services (WMTIS)

Statement of Need
The Washington, D.C. region, like many regions across America, has a number of operating agencies that collect and disseminate traffic information in various forms. Traveler information systems are being implemented in regions as an attempt to provide one consistent and comprehensive, real-time message to travelers. This region is said to be the second most congested region in the country. Because of this congestion, travelers pay as a result of lost time and operating agencies pay as a result of an increased demand for more roadways and transit. And in this region, the forecast only gets worse, because budgets are stretched beyond their limits.

The WMTIS will till the need to collect transportation data from many sources, to provide a comprehensive real-time picture of transportation conditions, and to distribute the information to travelers and operating agencies for their use. The project will help travelers make smarter travel decisions, with the expectation of reducing the cost of lost time and also lessening the burden on existing roadways and transit.

Project Description
The traveler information services offered will be a state-of-the-art information network that will provide real-time information on all modes (i.e., highway, bus, rail, and air) of travel in the metropolitan area.

The project will have an audio text system that allows anyone with telephone access to obtain transit and road conditions (i.e., weather-related, congestion, incidents, travel times, schedules, etc.). An Internet page will also provide similar travel information. These systems will be followed by a host of independent service provider (ISP) products for purchase by travelers. Devices may include in-vehicle systems, pagers, in-home interactive TV, or cable channels. The project team anticipates operating the systems as a business requiring no public sector funding by the turn of the century.

The system will be up and running in spring 1997. The traveler information will be available by free telephone and web service. Transportation reports throughout the region will be updated every 10 minutes. As the initiative matures, the transportation information will be spread to other media outlets, including kiosks, cable TV, pagers, and in-vehicle devices.

Project Participants and Funding

A consortium of agencies have been working together on the Traveler Information Services (TIS) project since 1995. The agencies include FHWA, the Federal Transit Administration (FTA), VDOT, MdSHA, District of Columbia Department of Public Works (DCDPW), Metropolitan Washington Airports Authority (MWAA), Maryland Transit Authority (MTA), Montgomery County, Arlington County, Fairfax County, Loudoun County, City of Alexandria, Prince Georges County, the Metropolitan Washington Council of Governments (MWCOG), Virginia Railway Express (VRE), Potomac and Rappahannock Transportation Commission (PRTC), and Washington Metropolitan Area Transit Authority (WMATA).

Private sector participants include the Battelle Memorial Institute and their partners. Firms supporting Battelle include Castle Rock Consultants, PTG, ETAK, Global Exchange, Scientex, Smart Route Systems, Street Smarts, System Resources, TransCore, 'IRS, and TRW.

One third of the funding for this project is to be provided by the private sector. Federal funds have been secured for the project.

Benefits to be Realized

One of the primary benefits expected includes the ability to collect accurate and timely transportation information and to distribute the information to travelers. Another large benefit will be the ability to distribute area-wide transportation information to participating operation agencies. Many other secondary benefits are expected from both the travelers' and public agencies' viewpoints.

Tools (Infrastructure)
    central data servers
    audio text
    web
    surveillance cameras

Input and Output Data
    multi-modal travel times
    route and mode transportation options
    traffic and transit conditions
    schedule and fare information
    TOC and agency data
    special event information
    weather and construction information

Services and Opportunities

The TIS will provide transportation information to travelers and operating agencies. Use of the information will be for personal travel decisions and for decision making on the public sector side. This traveler information service project offers an opportunity to share data, resources, and expertise with every transportation information provider service or public service in the region. In many cases, this service could act as a regional transportation clearinghouse, providing a central location to view the operation and condition of the entire regional transportation system as a whole.

2.4.2 Fairfax City Transportation Demand Management Information Program

Statement of Need

The City of Fairfax has experienced rapid growth over the last decade and transportation demand exceeds the design capacity of city roadways. In order to help residents and business commuters, the City has embarked on a traveler information system to help travelers by providing information on transportation options.

Project Description

The City of Fairfax has begun a demonstration program referred to as the Transportation Demand Management Information Program. The project will focus on two areas: development and establishment of an information program to serve City travelers, and the evaluation of the effectiveness of various media in providing information about travel choices. The development and establishment of the program will be oriented to changing travel patterns and behavior from reliance on SOV use.

The project began in 1994 as a grant proposal. In 1996, after a consultant was hired, baseline conditions were established and the information program was developed. The program is currently being implemented and is expected to be evaluated in late 1997.

Benefits

It is expected that specific area travel information will serve this community, by providing specific information on travel conditions, and alternative modes of transportation beyond the SOV.

Project Participants and Funding

The City of Fairfax is solely responsible for this project. Funding for the program is being provided by the City.

Tools, Data and Services

Tools used for this project include a central communications infrastructure, relying on data from traffic sensors, police and traveler reports, transit reports, and information on HOV rideshare. The service will provide voice and computer information dissemination on transportation conditions and alternatives to City residents and commuters.

Opportunities

The opportunity exists to tie this system in with the other emerging regional and local traveler information services, thereby broadening the program's services.

2.4.3 Washington Metropolitan Council of Governments (MWCOG) Regional Kiosk Project

Statement of Need

In a region growing as fast as the Washington, D.C. metropolitan area, transit services are essential to meeting the travel demands on the region. Limited coordination currently exists between the different transit operators in the region, making it somewhat difficult for patrons to get regional transit information. Making transit information more easily accessible to the public is a necessity.

Project Description

MWCOG is planning a regional kiosk system to provide transit schedules, park-and-ride, and rideshare information. Consisting initially of five or six kiosks, the project will eventually deploy kiosks at strategic locations throughout the metropolitan area. The kiosk information will be put on a web server for access over the Internet.

Startup for this project occurred in 1996, with preliminary selection of sites occurring in September 1996. By the end of the year, the first site in Arlington was established with the intent to develop and implement a monitoring and evaluation program for the initiative.

Benefits

The intent of this project is to provide improved information accessibility for persons interested in regional transit information. The potential benefits of this project includes increased transit ridership and reduced roadway congestion resulting in a reduction in harmful auto emissions.

Project Participants and Funding

MWCOG is the lead participant, with cooperation from the local jurisdictions around the metropolitan area. Funding for this project is being provided by MWCOG, in cooperation with the State of Maryland, the District of Columbia, and the Commonwealth of Virginia.

Tools, Data, and Services

Kiosks are the central tools to be used, along with a static information database. The database provided will include bus and rail fare and schedule information. The service provided to transit patrons is a comprehensive regional interactive information outlet and display.

Opportunities

Kiosks are multi-functional tools. This project could connect to the traveler information systems in the region, providing a richer source of traveler information. The kiosks could also be used to

transfer funds for electronic payment of transit and tolling systems such as Go-Card and Fastoll. The system could also be used for other information and directional aids for persons interested in "yellow page" directories of services, special events, and tourist destinations.

2.4.4 Arlington County Kiosk Project

Statement *of Need*

Arlington County has a good network of transit and HOV corridors, providing alternatives for residents and commuters to the single-occupant auto. Information for users and potential users of this system is scattered and sometimes requires local knowledge to access. To spread the word about transportation alternatives and to better inform existing transit users of options, Arlington County will became the first site for the MWCOG kiosk deployment.

Project Description

Arlington County will install two kiosks in Summer 1997. These kiosks provide users with basic static transit and ridesharing information. The kiosks will be placed at two shopping malls, Pentagon City and Ballston Commons. Retail information is also proposed to be available through the kiosks.

Benefits

The benefits of this project include providing an accessible outlet of information on transit and ridesharing to transit patrons.

Project Participation and Funding

Arlington County and MWCOG are the primary project participants. Funding for the kiosk project is provided by MWCOG.

Tools, Data, and Services

Kiosks are the central tools to be used, along with a static information database. The database provided will include bus and rail fare and schedule information. The service provided to commuters and residents is a comprehensive interactive information outlet and display on transit and ridesharing.

Opportunities

This project should connect to the traveler information service projects, providing a richer source of traveler information. The system could also be used for other informational and directional aids for persons interested in "yellow page" directories of services, such as the retail information within the mall sites.

2.4.5 Virginia Railway Express {VRE) Train Information Provider

Overview of Need

Accurate schedule information is important to commuter train users. Missing a commuter train can cause inconvenience and frustration for rail riders. Patrons desire access to real-time schedule information, so they can adjust their travel plans and reduce unnecessary wait time for the trains. Appropriate fare and schedule information is also important for soliciting new riders for commuter rail use. The more reliable and accurate the information, the more attractive the train becomes to the commuter.

Description of Project

VRE currently disseminates train travel information through its automated phone system. The system is called Train Information Provider (TRIP). A rider can dial a telephone number and receive current information about fare rates, delays, and tickets. An enhancement to the TRIP system will be to design and implement a VRE information and public announcement system. The system will most likely include the use of GPS and AVL technologies. Proposals for the enhanced system were due in the fall of 1996. Installation of the enhanced system is proposed for 1997.

Benefits

Benefits to this system include improved customer satisfaction and increased ridership. These results contribute to the regional goals of promoting transit, reducing congestion, and decreasing reliance on the single-occupant auto for commuting.

Project Participants

Participants in this project include VRE and the Northern Virginia Transportation Commission.

Tools, Data, and Services

The tools for this project include Geographic Information Systems (GIS) and the related schedule monitoring hardware and software. AVL systems may also be used. Video and audio display units, as well as a voice information system, are part of this project. The data flow includes train schedules, departure and arrival times, and fare information. Services provided by this system include patron access to real-time train schedule, fare, and location information.

Opportunities

Opportunities exist for this project to coordinate with other existing traveler information projects in the region, including the WMTIS. VRE TRIP data could support the regional traveler information services initiative, through providing a source of data for commuter options. The VRE information should also connect to other transit information services and kiosk projects in the region, informing transit and auto users about the options with VRE transportation.

2.5 Electronic Payment

2.5.1 Fastoll

Overview of Need

The traffic volumes on the Dulles Toll Road have been steadily increasing since its construction. This has led to traffic backups and unsafe driving conditions during peak travel times, particularly at the toll plazas, which form bottlenecks in the traffic flow. Additionally, cash toll collection is costly and difficult to audit. There is a need to improve the processing time as well as the convenience of toll payments for users, to improve the efficiency and accuracy of fare management, and to increase toll plaza throughput and improve traffic safety.

Description of Project

Fastoll utilizes an electronic toll collection system on the Dulles Toll Road and Dulles Greenway in Northern Virginia. Fast011 uses AVI transponders and wireless communications to automatically deduct tolls from a prepaid AVI account. The transponders were developed by Mark IV Technologies of Ontario, Canada. Currently, all the toll booths on the Dulles Toll Road and Dulles Greenway are equipped for electronic transactions. As of February 1997, 45,000 transponders had been issued to users of the Dulles Toll Road and Dulles Greenway. The system utilizes a fiber-optic backbone along the length of the Dulles Toll Road along with toll lane-based vehicle detectors, and a central computer system. Accounts are maintained by a customer service center located in Reston, Virginia.

Project Participants and Funding

The project participants include VDOT, Castle Rock Consultants, TransCore, and Toll Road Investors Partnership II (TRIP II). Funding is provided by transaction fees from the toll revenues of the different agencies participating.

Benefits, Realized and Potential

Toll plaza throughput has dramatically increased due to the penetration of Fastoll. Fastoll-only lanes at the Dulles Toll Road handle over 1,400 vehicles per hour, as compared with 700 for a coin machine lane. This has resulted in shorter queues. Additional lanes are being added to the Dulles Toll Road without expansion of the toll plazas. Fastoll will help ensure that the additional traffic generated can be handled by the existing plazas. Fastoll users cite many benefits due to the convenience of automatically paying tolls and maintaining a central account with automatic credit card debiting.

Tools (Infrastructure) in Use

    transponders
    readers
    fiber-optic backbone
    automated account management and transaction processing system

Data Inputs and Outputs

> traffic throughput
>
> potential for travel time information

Resource and information Sharing

The potential exists to deploy AVI readers in other geographic locations to enable vehicles to be utilized as probes. In the future, transponders could be enhanced to provide information to the drivers through RF communication with the readers. This link could be used for applications such as in-vehicle signing or as a means of transferring traveler information into the vehicle. Transaction data could be used to generate travel time data for input to traffic management and traveler information systems. The Fastoll system could also be easily adapted to handle other types of financial transactions, including low-value transactions. Spare capacity is available on the fiber-optic backbone to support other traffic monitoring activities.

2.5.2 Metropolitan Washington Airports Authority Automatic Vehicle Identification Technology Study

Overview of Need

With the current emphasis on airport safety and the increased traffic volumes at area airports, the need for continually improving access control and traffic management is evident. The Metropolitan Washington Airports Authority (MWAA) handles two major airports, each of which incorporates large volumes of specialized airport landside vehicle traffic, such as, private automobiles, shuttle buses, rental cars, and taxis. There are also a significant number of airport vehicles that travel between airports within the area. MWAA needs a method of access control and vehicle tracking in order to optimize the throughput of regular airport users. Reduction of bottlenecks at access and parking payment points will help to improve overall airport roadway systems. The ability to provide accurate information on the condition of the landside network will improve customer service.

AVI technology offers the opportunity to provide automated access control without delays and to provide traffic information on travel times and vehicle locations could help facilitate better traffic and fleet management. This technology will allow the airport to effectively control and help improve flow in the terminal area and throughout landside areas and ration the curbside time of airport service vehicles to help improve traffic flow through the landside areas.

Description of project

MWAA is currently pursuing a study to determine the benefits that can be provided by ITS and AVI technologies, which include available systems, scheduling, and funding issues.

Project Participants and Funding

Project participants and funding sources include FHWA, the FAA, and MWAA.

Benefits, Realized and Potential

The potential benefits of future deployments include more efficient use of the landside infrastructure, improved fee collection and management, improved information provided to airport customers, and smoother throughput of landside traffic.

Tools (Infrastructure) in use

> airport information terminals
> AVI transponder equipped vehicles
> AVI readers
> central computer system

Data Inputs and Outputs

> current airport landside network status (travel and access times)
> travel times between airports

Resource- and Information-sharing Opportunities

If equipment is installed that is compatible with other area AVI systems, then current deployments can be leveraged to increase participation and reduce costs for an airport deployment. Use of this technology may also permit sharing of customer service and financial transaction resources. Information dissemination facilities that may be provided under this project could be utilized to provide broader traveler information than that collected solely through future airport deployments. Information collected can also be made available to other traveler information systems in the area.

2.5.3 Go-Card

Overview of Need

The Washington Metropolitan Area Transit Authority's (WMATA's) system interfaces with transit systems in six counties and two states. The area transportation demands include commutes from neighboring suburbs into Washington, D.C., commutes between regional suburbs, and park-and-ride transportation services. The area is served by Menorail, light-rail, and bus transportation modules. One of the biggest challenges in coordinating service is fare payment management, both within a single mode and operator and between modes and operators.

Description of project

The Go-Card system uses a contactless smart card technology. The card contains a microprocessor and memory which electronically stores a monetary value and decrements this value as the card is used to gain access to WMATA services. The system has been under demonstration at 29 WMATA Metrorail stations, on 21 Metro buses, and at 5 parking lots. Go-Cards were issued to 1,000 customers and 500 WMATA employees for the demonstration.

Project Participants and Funding

Participants in this project include WMATA, the Commonwealth Transportation Board (C'IB), Northern Virginia Transportation Commission (NVTC), VRE, and the Virginia Department of Rail and Public Transportation (VDRPT). Much of the funding for the project was provided by WMATA with several grants currently under consideration for expanding the scope to incorporate a broader network of transit systems. This funding is being sought form Virginia Department of Rail and Public Transportation, the PTA, and the CTB.

Benefits, Realized and Potential

The Go-Card provides improved financial management, the ability to implement more innovative payment options, and increased convenience and quicker fare processing time for patrons.

Tools (infrastructure) in use

Go-Cards carried by patrons
Go-Card readers at payment points
Go-card refilling stations that accept cash and add monetary value to the cards

Data Inputs and Outputs

transit and associated parking facility usage patterns
real-time facility usage information

Resource- and Information-sharing Opportunities

The Go-Card payment system could be expanded to a number of facilities and systems that collect payment and could make use of a stored value proximity card. Information collected on transit and parking facility usage could be utilized within area traveler information systems.

2.5.4 NVTC Smart Card

Overview of Need

The Northern Virginia Transportation Commission (NVTC) is sponsoring a proposal for a Pilot implementation of Smart Card technology on a number of transit systems serving Northern Virginia. This project is aimed at achieving seamless transit trips in Northern Virginia and involves a regional integration of Smart Card technology and transit fares.

Description of project

This project was initiated by NVTC to create an extensive and flexible network of public transit systems in Northern Virginia by linking them with the WMATA's Go-Card system. This project will be compatible with the WMATA Go-Card system. The NVTC Smart Card project will provide funding for transfer discounts on buses feeding Virginia Railway Express (VRE) stations and for VRE passengers transferring to or from Metrorail. Under this project, customers would simply scan their Smart Cards at each transfer and appropriate values would automatically be

Description

The Baltimore-Washington Corridor Surveillance Infrastructure Project consists of CCTV cameras, overhead-mounted radars, and the communications infrastructure required to take the equipment from the roadway to MdSHA's Statewide Operations Center to gather real-time traffic data. The overhead mounted radars are used for roadway speed monitoring and not for enforcement.

Project Participants and Funding

The project participants are FHWA, MdSHA, Alcatel, and N.C. Dean. Funding is provided by Federal and state funds.

Benefits, Realized and Potential

Surveillance infrastructure can improve traffic monitoring capabilities and improve traveler information services, highway research and planning and law enforcement activities.

Tools (Infrastructure) in Use

> remote video cameras
> remote radars
> communications infrastructure

Data Inputs and Outputs

> images of traffic conditions along Baltimore/Washington major corridors
> traffic speeds
> video displays to regional TMCs
> video displays to local TV stations

Resource and Information Sharing

Video images could also be used to support road/weather information services such as visibility advisories or surface condition advisories. The surveillance images could also be dissimulated to state winter weather control centers to support maintenance services.

2.8.2 Maryland Telecommunications Requirements

Overview of Need

Telecommunications technologies are rapidly advancing and offer new opportunities for information channeling and coordination. It is important to establish long-term infrastructure planning and cost analysis to ensure that the infrastructure will support the communications needs of the region.

Description

Maryland conducted a detailed study to define the telecommunications requirements for deployment of its ITS freeway management system on state highways. This project provides two specific design options for a telecommunications system. Based on these designs, a detailed life-

cycle cost analysis has been conducted to evaluate the options of installing and owning or leasing the required telecommunication capacity. The output of this project is being used as guidance for states desiring to acquire telecommunications capacity for their highway ITS.

The results of the study showed that it would be much better for Maryland to lease fiber-optic cable than to install and own it. The study also showed that a short-term lease is more desirable than a long-term one.

Project Participants and Funding

Project participants include FHWA, the State of Maryland, and the MdSHA

Benefits, Realized and Potential

A long-term telecommunications in&structure plan will maximize the utility funding resources as well as set the guidelines for ITS and other regional planning.

Input and Output Data

Communications infrastructure needs assessment and plan for the state of Maryland.

Resource and Information Sharing

Information on available and planned communications infrastructure **will** support transportation and ITS planning for the region.

2.8.3 Virginia Wireless Resource Sharing

Overview of Need

The Commonwealth of Virginia holds the right-of-way on all roadways in the state. The demand for cellular service, especially in Northern Virginia, is expanding faster than current industry can provide consistent reliable service. The Commonwealth of Virginia to date has restricted telecommunications providers from using this prime real estate for their cellular networks. Recent advances in cellular communications capabilities that better facilitate digital data transfers offer VDOT the opportunity to utilize cellular technology for roadside ITS equipment such as VMS, integrated traffic signal control, and CCTV cameras.

Description

VDOT is beginning to examine the possibility of sharing its rights-of-way with telecommunications firms. The telecommunications firms would use the rights-of-way to install a cellular communications tower or link. The rights-of-way being examined are only on interstate and primary roads, and the cellular towers/links would need to be integrated with or into street lights, CCTV cameras, antennas, and VMS. Also, all of the proposals would need to be coordinated with other vendors.

Project Participants and Funding

Funding for this project is provided initially by VDOT. A shared development is anticipated as telecommunication companies begin fiber and network installation.

Benefits, Realized and Potential

Exchanging right-of-way rights for communications resources will allow VDOT to expand its communications capabilities without a major capital investment.

Data Inputs and Outputs

An agreement has been formed between VDOT and local communications companies to exchange right-of-way for communications and system integration services.

Resource and Information Sharing

Communications resources from this agreement could be used to support other development in the region.

2.9 Planning

2.9.1 Metropolitan Washington Council of Governments Transportation Planning

Overview of Need

The Metropolitan Washington, D.C. region comprises several heavily populated suburbs in addition to the District of Columbia. Each district is dependent on transportation resources and impacted by development in other jurisdictions. Coordinated planning and a centralized regional information resource are essential to optimizing regional transportation use.

Description

The Metropolitan Washington, D.C. area set up a central organization, MWCOG, to coordinate a wide range of activities among counties, cities, and states. MWCOG, along with the TPB, collects a variety of planning-related data, such as information on vehicle occupancy, total movement across cordon lines, bicycle usage, regional household travel characteristics, and other data upon the request of its member agencies. Additionally, MWCOG creates comprehensive sets of demographic, land use, and travel forecasts for the region, currently to the horizon year 2020. MWCOG and TPB are also developing a Regional Transportation Data Clearinghouse, being implemented on a GIS. In the system, MWCOG and TPB compile data collected by member transportation agencies and format it in such a way to be useful for regional planning purposes.

Benefits, Realized and Potential

Coordinated regional development planning and centralized data resources have helped to direct project planning throughout the region. Continued planning coordination will ensure that one district is not adversely impacted by development in other districts.

2.9.2 Northern Virginia ITS Early Deployment Study

Overview of Need

Northern Virginia is one of the fastest-growing regions in the Washington, DC metropolitan **area.** Businesses and residents are moving into the region at such a rate that many of the area's transportation systems cannot keep up with the demand. The Virginia Department of Transportation (VDOT) has tried to improve traffic congestion in the area by constructing HOV lanes on many of the interstates and encouraging the use of transit. While many people are switching to car pools and using public transportation, these systems do not lend themselves to all users. There is a growing need for alternative solutions to traffic congestion in the region.

Description

In May 1995, VDOT began work on developing a "road map" for the Commonwealth to deploy intelligent transportation system technologies. The plan, known as "An Intelligent Transportation Systems Vision for Virginia," is the first step in examining the current state of transportation in Virginia and seeking ways to improve safety and mitigate congestion through the employment of cost-effective and efficient intelligent transportation system technologies. The comprehensive plan examines the use of intelligent transportation systems in two general areas: statewide initiatives and urban initiatives. Specific areas such as maintenance, public safety, and traffic operations are addressed by the plan as well.

Through an examination of the User Services Plan, defined as part of the national intelligent transportation system program planning process, VDOT has narrowed the list of deployment objectives from 22 to 6. The objectives address the infrastructure requirements for the region: a common interagency communications framework to provide coordinated management; improved information processing to enhance system credibility; automated inter-jurisdictional information exchange; integration of independent geographic information system developments; development of supporting integrated, multi-jurisdictional database(s) as a regional resource; and providing expert or predictive capabilities for decision support.

VDOT has defined the various modes that will be supported through the user services. They include highways, expressways, major arterial and other important corridors; rapid transit/commuter rail service; local transit; commuter support services (park-and-ride, transit, etc.); regional, local transit; local traffic and emergency centers.

Work began on the Early Deployment Study in May 1995. By January 1996, the interim report and the user services plan were issued. The final report was finished in May 1996 entitled Strategic Deployment Plan.

Project Participants and Funding

Participants in the Northern Virginia ITS Early Deployment Study include the FHWA, VDOT, DeLeuw Cather and Company, and George Mason University. Funding was provided through Federal monies.

Benefits, Realized and Potential

This regional ITS Early Deployment Study has coordinated and prioritized ITS development in the region. While direct benefits have not yet been realized, it is anticipated that implementation of study recommendations will result in improved traveler information services, integration of systems with other cities, counties and states, decreased congestion and improved traffic safety.

2.9.3 I-95 Corridor Coalition

Overview of Need

The Northeast Corridor consists of a complex network of interstate highways, primary highways, and railways, and is one of the heaviest-used transportation corridors in the United States. Interstate 95 runs through a number of states including Virginia and Maryland and at times is the most congested highway within these states. The Northeast Corridor has reached a point where one incident can tie up transportation movement for hours or even days and impact traffic in multiple districts and sometimes in multiple states. Due to the high use of the transportation facilities and the limited room for expansion, northeastern states and companies have formed a coalition designed to help improve the safety and efficiency of travel within the Northeast Corridor and along I-95.

Description

The I-95 Corridor Coalition, formed in 1990 as the Coalition to Advance Transportation Science and Technology in the Northeasf serves as a unifying organization for its member agencies, focused on a seamless, state-of-the-art, multi-modal transportation network benefiting both travelers and goods movement throughout the Northeast Corridor. Through communication and cooperation, this partnership will serve as a clearinghouse for information regarding operational management and ITS implementation, in order to promote mobility, safety, environmental quality, and movement in the Corridor.

The I-95 Corridor Coalition has its origins rooted in an informal working groups, the Coalition to Advance Transportation Science and Technology in the Northeast (CATSTNE), beginning in 1990 under the direction of Howard Yerusalim, the Pennsylvania DOT Secretary. With the passing of ISTEA in 1991, the IVHS Strategic Plan Report submitted to Congress in 1992, and the provision to form a "Priority Corridor" program, the I-95 Corridor, from Virginia to Maine, was considered to meet the criteria of high traffic density, severe or extreme pollution problems, constrained expansion possibilities, and multi-modal transportation facilities. Thus the I-95 Corridor Coalition was formed with Federal funding and a myriad of supporting members, two of which are Maryland and Virginia.

Project Participants and Funding

There are a number of participants who are members of the I-95 Corridor Coalition. Local participants include the FHWA, MDOT, VDOT, MTA, AMTRAK, and the I-95 Corridor Coalition Consultants. Funding for the coalition is provided through all of the participating member agencies and from the Federal government.

Benefits, Realized and Potential

The coordinated efforts of regional stakeholders have prioritized corridor needs and emphasized ITS solutions that impact the overall region. It is anticipated that these solutions will improve transportation safety and efficiency along the corridor.

2.9.4 District of Columbia ITS Early Deployment Plan (EDP) Study

Overview of Needs

The transportation corridors within the District of Columbia have undergone limited maintenance or ITS deployment in comparison to the neighboring states of Virginia and Maryland. The high volume of commuter traffic and links to relatively sophisticated ITS regions create unique transportation problems and provides unique coordination opportunities.

Description

This planned EDP study will allow Washington, D.C. to assess the transportation needs of the District with respect to ITS. The study will develop a set of user services that are appropriate to the needs of the District. Specific applications of ITS will follow from those user service designations.

Project Participants and Funding

The current project participants in this study are FHWA and the Washington, D.C. Department of Public Works. The study will be funded with Federal monies.

Benefits, Realized and Potential

An ITS plan for the District of Columbia will identify the unique ITS needs and coordination opportunities for the region and will prioritize deployments.

2.9.5 Using Montgomery County ATMS Data for Planning

Overview of Needs

The Montgomery County travel demand forecasting model (Montgomery County model) is currently used in conjunction with growth management efforts to assess the traffic and transit impacts of new transportation and development scenarios. Like other models, the Montgomery County model needs to be calibrated and validated against actual traffic volumes and other traffic performance measures on a regular basis. A study was initiated by Maryland-National Capital Park and Planning Commission (MNCPPC) to investigate the feasibility of using traffic data collected by the Montgomery County Advanced Transportation Management System (ATMS) to support calibration and validation of the Montgomery County model in order to better account for the travel benefits of an operational ATMS.

Description

The Montgomery County ATMS collects data from detectors, sensors, and probes and stores them in central databases. These databases are then made available for access by MNCPPC staff using any of a number of communication options. Once the data reaches the MNCPPC computer system, it would be processed through data filtering algorithms which would provide traffic volume data in a form compatible with the database that supports the Montgomery County model. The model would then be calibrated, validated, and run, as necessary, to support growth management decision making at MNCPPC. Additional model runs also could be performed to support ATMS decision making and background information requirements.

Project Participants and Funding

The project participants associated with this study include the MNCPPC, Montgomery County, and the MdSHA. Funding for this study was provided through the MNCPPC.

Benefits, Realized and Potential

While direct benefits have not yet been realized, it is anticipated that the Montgomery County model could be used to support various ATMS efforts within the county. For example, the model could be used to develop traffic bypass pattern maps to help Montgomery County ATMS staff understand the desired and most efficient patterns to reroute traffic in the event of a closure, begin planning signal timing and transit/routing schedule modifications in response to a new facility or service long before it opens, and assess the implications of a new traffic demand and determine what new traffic operations improvements would be most effective in dealing with the new traffic.

3. Institutions and Stakeholders

3.1 Introduction

This section identifies key ITS and transportation stakeholders across the region and summarizes the roles of regional transportation agencies. It includes three sections:

- Section 3.2 Regional Stakeholders
- Section 3.3 Agencies Interviewed
- Section 3.4 Agency Roles

3.2 Regional Stakeholders

A list of all stakeholders in the region appears in Appendix A. The list includes all levels of government (Federal, state, and local), associations, advocacy groups, elected representatives, private sector providers, a sampling of regional ITS firms, and large employers. Because ITS affects any group involved in transportation, the list of stakeholders is extensive.

Two shorter lists of local agencies involved in ITS were created. The fast includes agencies that are likely to be participants in ITS projects and the second identifies agencies that are currently involved in ITS projects.

Stakeholders Likely to Participate in ITS Projects

This list suggests a potential group of agencies to be involved when planning or implementing an ITS project; it is not exhaustive. Because ITS applies to a wide range of transportation services, the list includes planning and operating as well as law enforcement agencies.

Stakeholders Active in ITS Projects

The list of agencies actively involved in ITS projects is organized into Federal, regional, and state categories. Local agencies appear under the appropriate state. These stakeholders are currently involved in the planning or operation of ITS projects. For more specifics, please see the ITS inventory in Appendix A.

Key Agencies for ITS in the Washington Metropolitan Region

Area	Regional/State	County	City
		Transportation Agencies	
Regional	Metropolitan Washington Council of Governments (MWCOG) Metropolitan Washington Airports Authority (MWAA) Washington Metropolitan Transit Authority (WMATA) Washington Suburban Transit Commission I-95 Corridor Coalition		
D.C.	DC Department of Public Works DC Office of Mass Transit		
Maryland	Maryland Department of Transportation • State Highway Administration • Mass Transit Authority • Transportation Authority (MdTA) • Office of Systems Planning & Evaluation Maryland National Capital Parks and Planning Commission Baltimore Metropolitan Council	Montgomery County • Transportation Department • Office of Traffic Prince George's County • Department of Public Works and Transportation	Rockville • Planning Department
Virginia	Virginia Department of Transportation (VDOT) Virginia Department of Rail and Public Transportation (VDRPT) Regional Northern Virginia Planning District Commission (NVPDC) Northern Virginia Transportation Commission (NVTC)) Northern Virginia Transportation Coordinating Council (TCC) Potomac and Rappahannock Transportation Commission (PRTC) Route 28 Transportation District Tidewater Transportation District (TDD) Virginia Assoc. Planning Districts	Arlington • Planning Office • Department of Public Works Planning and Engineering Division Prince William • Public Works Fairfax • Office of Transportation Loudoun • Transportation Dept.	Alexandria • Dept. of Trans. • Planning and Zoning Falls Church • Dept. of Public Works • Planning Dept. Fairfax • Dept. of Public Works • Transportation Division Manassas • Department of Public Works Manassas park Herndon Dept. of Public Works Leesburg Airport Vienna • Planning & Zoning • Public Works

Key Agencies for ITS in the Washington Metropolitan Region

Area	Public Transit Operators	Transportation Partnerships & Associations	Emergency & Enforcement Services
Regional	Amtrak DASH Metrorail Metrobus Greyhound/Trailways Ride On MetroAccess		
D.C.	Washington National Airport	Committee to Promote Washington DC	DC Police DC Fire DC Emergency Services
Maryland	Kiss & Ride Baltimore Washington Intl. Airport MARC	ITS Maryland North Bethesda Transportation Action Partnership	Prince George's County Fire Dept. Prince George's County Police Dept. Maryland State police Maryland State Highway Patrol
Virginia	Arlington Trolley City Wheels CUE Dulles International Airport Fairfax Connector Fare Wheels FasTrans Loudoun Rideshare PRTC/OmniRide RIBS Tyson Shuttle Fleet VanStart Virginia Railway Express (VRE)	Dulles Area Transportation Association ITS Virginia Northern Virginia Transportation Association The Ride Finder's Network Toll Road Investors Partnership (TRIP) Tyson's Transportation Association (TYRAN)	Arlington Emergency Communications Center (Police/Fire/Rescue Emergency) County of Arlington Fire Department County of Arlington Police Department Alexandria Police Falls Church Fire and Emerg. Ambulance Alexandria Fire County of Fairfax County Police Department Fairfax County Police, Fire and Emerg. Loudoun County Fire & Rescue Services Town of Herndon Police Virginia State Police VA State Highway Patrol

Stakeholders Active in ITS Projects

Federal
Federal Highway Administration
Federal Transit Administration

Regional
AMTRAK
Metropolitan Washington Airports Authority
Metropolitan Washington Council of Govemments
Washington Metropolitan Area Transit Authority

District of Columbia
D.C. Department of Public Works

Virginia
Arlington Department of Public Works
City of Fairfax
Commonwealth Transportation Board
Fairfax County Police
Northern Virginia Transportation Commission
Potomac and Rappahannock Transportation Commission
Virginia Department of Transportation
Virginia Department of Rail and Public Transportation
Virginia Railway Express
Virginia State Police

Maryland
Maryland State Highway Administration
Maryland Transportation Authority
Montgomery County
Prince Georges County

3.3 Agencies Interviewed

A key task of the "Umbrella" study was meeting with the individual agencies active in ITS and members of the Task Force to explore the issues, problems and opportunities that each saw in ITS. The team met with all of the agencies listed below at least once and in some cases twice.

City of Alexandria
Arlington County

Maryland State Highway Administration
Metropolitan Washington Airports Authority
Metropolitan Washington Council of Governments
Montgomery County Department of Transportation
Northern Virginia Transportation Commission
Potomac Rappahannock Transportation Commission
Virginia DOT Richmond Office
Virginia DOT Northern Virginia Office
Virginia Railway Express
Washington Metropolitan Area Transit Authorii

3.4 Agency Roles

In the Washington, D.C. metropolitan area, over 40 public agencies could be involved in ITS projects. While this section is not exhaustive, it does highlight a few of the key agencies currently involved in ITS projects likely to play a prominent role in the future. For each agency, there is a general description of responsibilities, a description of the type of services provided by the agency, a description of the ITS activities, and the name of an individual(s) responsible for coordinating ITS projects.

Arlington County

Arlington County provides transportation services in concert with other agencies, such as the Virginia Department of Transportation (VDOT) and Washington Metropolitan Area Transit Authority (WMATA). The County maintains its secondary road system and manages the traffic signal system, and is partially reimbursed by VDOT. The new SCOOT signal system, which is currently being implemented, will be maintained by Arlington County and will be capable of providing incident detection, transit vehicle priority, traffic management, traffic monitoring, data collection, and various other applications. WMATA provides the major bus services that feed into Metrorail stations, while the County complements it with a paratransit service and runs a trolley loop through Crystal City. Also, private providers offer a wide range of other bus services. In addition, three transit stores provide information on transportation services throughout the region and sell Metro passes, other fare media, and novelties. Arlington County and WMATA maintain and manage park-and-ride lots in Arlington, plus the private sector offers parking on temporary lots.

Arlington County's planning and traffic engineering offices are active in ITS and participate in the regional ITS projects. Arlington County is working with the Ballston-Rosslyn Area Transportation Association (BATA), Jefferson Davis Corridor Transportation Management Association (JD TMA), and Metropolitan Washington Council of Governments (MWCOG) on a regional kiosk project. The County launched an Internet page called "The Commuter Page" on March 4, 1997 to provide transportation information.

Contact: Amy Tang, (703-358-4019, fax 703-358-3594)

District of Columbia Department of Public Works

The District of Columbia Department of Public Works (DCDPW) is responsible for providing service to the city in the following areas: transportation planning, design and construction, public transit, traffic management, parking management and enforcement, fleet management (except police and fire trucks), maintenance of public buildings, construction of other agencies (except public housing), solid waste collection and disposal, and the management of the capital improvements programs of other agencies including budgeting, design, and construction. In addition, DCDPW is responsible for energy conservation and assistance, conducting land surveys, and maintaining survey records. Agencies that DCDPW currently coordinates its activities with are MWCOG, VDOT, National Capital Planning Commission, FHWA, EPA, and many others.

DCDPW splits its responsibilities for different ITS projects. John Payne is responsible for the Umbrella ITS EDP Study representation and participation. Maurice Keys is responsible for the D.C. Early Deployment Study. The Umbrella Study is expected to establish a "regional" ITS architecture which will link the ITS and TPB planning process and push public transit and tolls in the D.C. area. There are many opportunities for ITS Deployment in D.C., such as MCI Arena (traffic management system and parking management system), telecommunications (wireless/PCS), and a traffic signal system. Expectations for synergies or oppdrtunities for regional cooperation and coordination include GIS (National Capital Plan Commission), emissions testing and mitigation, traffic signal systems, and inclement weather/incident management (e.g., snow emergencies).

Contact: Maurice Keys, (202-939-80 IO, fax 202-939-7 179) or John Payne, (202-939-8092, fax 202-939-3039)

Maryland Department of Transportation-State Highway Administration

The Maryland Department of Transportation (MDOT) is responsible for the planning, construction, operation, and maintenance of all transportation modes, including transit, aviation, toll roads, ports, and highways. For each mode, MDOT has an administration that manages all projects and programs.

MDOTs State Highway Administration (MdSHA), in partnership with the Maryland Transportation Authority (MTA) and Maryland State Police (MSP), manages the Chesapeake Highway Advisories Routing Traffic (CHART) program. CHART, a statewide program, consists of two Baltimore/Washington regional traffic operations centers overseen by a single statewide operations center (SOC). The SOC handles highway traffic management, traffic signal management, emergency management, and maintenance, while the regional centers address traffic management and travel advisory needs for their jurisdictions. In addition, two seasonal traffic operation centers aid Western Maryland and beach-bound travelers. CHART actively coordinates with Federal, state, and local transportation and law enforcement agencies.

At MdSHA, ITS initiatives are organized by Mike Zezeski, CHART Program Manager, within the Office of Traffic & Safety. MdSHA is also involved in other ITS initiatives, including a project currently under research to assess Maryland's telecommunication requirements. MdSHA supports ITS and regional initiatives and works with other state and local governments. MdSHA actively works with Montgomery County's Advanced Transportation Management System

(ATMS). MdSHA is working with Montgomery County to begin developing the transportation management resources in Prince George's County. Other coordination activities include MdSHA's exchange of traffic management information with MTA's Authority Operations Center (AOC). MdSHA is also an active participant in the I-95 Corridor Coalition. MDOT is also interested in working with other states and with local governments on joint ITS initiatives. MDOT is currently engaging in a public outreach and participation initiative.

Contact: Glenn McLaughlin, Chief of ITS Division, (410-787-5884, fax 410-582-9469)

Metropolitan Washington Council of Governments

The Metropolitan Washington Council of Governments (MWCOG) is the Washington, D.C. area's regional organization of local governments. The MWCOG region includes Washington, D.C., and surrounding suburbs in the States of Maryland and Virginia, a total of 18 local or state governments. The Transportation Planning Board (TPB) at MWCOG is the officially designated metropolitan planning organization (MPO) for the region. Like many such organizations, MWCOG and TPB undertake a number of activities relating to the creation of metropolitan long-range transportation plans and programs. Among these activities are demographic forecasting, travel forecasting, air quality analysis (mobile source emissions and emissions mitigation), and congestion management.

The TPB develops the long-range regional transportation plans for metropolitan Washington, as well as producing on an annual basis the region's shorter-term (six-year) Transportation Improvement Program (TIP) of transportation projects to be implemented given the current budgets and fiscal constraints of transportation agencies in the region. In addition, to look beyond these financially constrained documents, the TPB is in the process of creating a regional Vision Plan, including extensive input from the public. This plan will look over a longer time frame (50-plus years from now) to what the region might create for itself given more time and more funds. Vision Plan development began in 1994, and is expected to be completed in late 1997 or early 1998.

MWCOG has one operational component, the regional Commuter Connections Program. Commuter Connections includes the operation of the region's ridesharing/carpool matching program, support for telecommuting centers, and support for the marketing of these and other alternatives to driving alone. Commuter Connections also manages the Regional Kiosk Project for transit and transportation alternatives information, working with a number of local and regional communities and agencies.

MWCOG helps coordinate the region's ITS activities through the Washington Region ITS Task Force, a coordinative body which officially began meeting in January 1997.

Contact: Andrew Meese, ITS Division, (202-962-3789, fax 202-962-3202)

Montgomery County

Montgomery County provides a host of transportation services, starting with an ATMS that is integrated with Maryland's CHART system. In 1996, the County enhanced its existing Transportation Management Center, creating the ATMS, which integrates transit and traffic

management systems. The ATMS manages the Ride-On fleet of 250 buses, giving the buses priority at traffic signals to ensure prompt service. Other capabilities include video surveillance, aerial surveillance with real-time video, detection systems, broadcasts on cable television and radio advisory service, weather monitoring, and a web site. The County has funded the ATMS through partnerships with private providers, Federal grants, and County funds. County funds helped cover operational costs for upgrades or enhancements to the existing systems. Other services within the County include carpools and vanpools and park-and-ride lots. As in Arlington County, the park-and-ride lots are managed by a host of agencies, including WMATA, MdSHA, and Montgomery County.

Montgomery County is extremely active in ITS initiatives. The ATMS is the first system in the nation that integrates traffic management with transit management. Montgomery County has taken the perspective that many of the ITS features are operational, not capital, in nature, and that funding these enhancements to the operational system is easier at the county level. When large capital systems have been proposed, the County has been less likely to fund the request, whereas incremental enhancements are almost always funded. Montgomery County is also interested in sharing its information and gaining access to other counties' information using such media as the Internet.

Contact: Gene Donaldson, Chief Transportation Systems Management Section, (301-2 17-2 190, fax 301-217-2011)

Northern Virginia Transportation Commission

The Northern Virginia Transportation Commission (NVTC) is a body of elected officials, political appointees, and transportation officials that leads, plans, organizes, promotes, and sometimes operates public transportation services in Northern Virginia. NVTC staff manage the activities the board chooses to pursue and NVTC co-own VRE with PRTC. NVTC appoints three principals to the VRE board and two board members to WMATA. The commission members also sit on the Transportation Coordinating Council, another policy-making body in Northern Virginia that is also closely tied to the TPB at MWCOG.

NVTC supports ITS initiatives and is currently involved in its own ITS project, the NVTC Smart Card.

Contact: Heather Wallenstrom, Transportation Analyst, (703-524-3322, fax 703-524- 1756)

Potomac and Rappahannock Transportation Commission (PRTC)

The Potomac and Rappahannock Transportation Commission (PRTC) plans and manages a number of public transportation services. They include OmniRide, a commuter bus service from eastern Prince William and Manassas areas serving D.C., the Pentagon, Crystal City, and the Vienna Metro; OmniLink Local, an innovative, customer-based, local bus service that customizes its routes to allow deviations up to 3/4 of a mile off the route; OmniLink Feeder, service from area neighborhoods to several VRE stations; and OmniMatch, a car and vanpool matching service that provides computerized matching services for citizens interested in private car and/or Vanpools. In addition, PRTC and its sister agency, NVTC, co-own the VRE commuter rail service.

PRTC is active in numerous regional issues including ITS projects. The OmniLink ITS project will use global positioning satellite (GPS) based automated vehicle location (AVL) and real-time call intake, scheduling, and dispatching software. In addition to overall improved efficiency through the ITS project, customers will also be able to place same day deviation reservations, rather than the 24-48 advance notice now required. PRTC has expressed interest in the use of smart cards and mapping systems on transit vehicles and is currently involved in a regional smart card technology project and the regional Traveler Information Showcase project. PRTC maintains a planning office from which additional information may be obtained on any of the services PRTC provides.

Contact: Jennifer Sloan or Eric Marx, (703-490-4811, fax 703-490-5254)

Virginia Department of Transportation

VDOT is responsible for the planning, construction, and maintenance, of Virginia's ground transportation system. That system includes highways, bridges, tunnels, toll facilities, sidewalks, signals, etc. Total statewide mileage includes: 1,105 miles of Interstates, 7,974 miles of primary roads, and 46,347 miles of secondary roads.

VDOT has a Central Office in Richmond whose basic role is to make policy and budget decisions and coordinate the various activities among its nine Construction Districts. One of the nine Construction Districts is the Northern Virginia District, which encompasses the Counties of Arlington, Fairfax, Prince William, and Loudoun. This District is responsible for operating and maintaining 1,337 lane miles of Interstates, 2,250 lane miles of Primaries, and 9,650 lane miles of Secondaries. This District is also responsible for operating and maintaining in excess of 800 traffic signals, 54 miles of HOV lanes, 140,000 street signs, 800 overhead sign structures, 6 Interstate Rest Areas, 14 commuter parking lots, approximately 4,000 miles of sidewalks, and a Traffic Management System that will encompass most of NOVA's Interstate System in the near future (100 CCTVs, 200 VMS, 200 loop detectors).

The District's Assistant District Engineer for Operations, Kenneth Wester, is responsible for coordinating all VDOT efforts for ITS in Northern Virginia. He is responsible for planning, constructing, maintaining, and operating VDOTs ITS initiatives. Current ITS projects include Electronic Toll Collection on the Dulles Toll Road, Computerized Signal System encompassing over 800 signals, expansion and upgrades to the Traffic Management System, completion of an Early Deployment Study for the Northern Virginia region, demonstration of AVL technology for snow plows and other VDOT operations, and a new State-of-the-Art Telephone System. Coordination with other jurisdictions and region-wide projects are the responsibility of the Assistant District Engineer for Operations.

A six-year ITS plan is currently being prepared for the Northern Virginia District, utilizing recommendations from the Northern Virginia District Early Deployment Study. These initiatives will be integrated as appropriated into the Commonwealth's Six-Year Transportation Plan.

Contact: Kenneth W. Wester, Assistant District Engineer - Operations, (703-383-2457, fax 703-383-2470) or James R. Robinson, Statewide Director ITS Programs, Central Office (Richmond), (804-786-6677, fax 804-225-4978)

Virginia Railway Express

The Virginia Railway Express (VRE) is a transportation partnership of the Northern Virginia-Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC), providing commuter rail service from the Northern Virginia suburbs to the Washington, D.C. area. An Operations Board consisting of seven commissioners, three each from NVTC and PRTC, and the Director of the Virginia Department of Rail and Public Transportation (VDRPT), oversees all operating aspects of the Virginia Railway Express. Reporting to the Board is the VRE Operations Group, which handles the daily operations of the VRE.

VRE is a participant in the Metropolitan Washington Traveler Information Service and is currently in the process of procuring a new communications system that will enable VRE to provide customized and broadly dispersed traveler information through multiple media sources. They are hoping to offer this information directly to the public by fax, e-mail or beepers for specified trains and schedule times.

VRE is interested in implementing joint ITS projects within the region. In particular, they offered ideas on how transit authorities and highway agencies can be more fully integrated which will ultimately benefit the users of these systems and help to reduce the number of SOVs. VRE supports the smart card idea but described barriers to this system that need to be resolved.

Contact: Howard Shock, Manager of Communication Services, (703-642-3808, fax 703-642-3820) or Corey Hill, Executive Assistant to the Director, (703-642-3808, fax 703-642-3820)

Washington Metropolitan Transit Authority

Washington Metropolitan Transit Authority (WMATA) plans, constructs, and operates the Metrorail, Metro bus, and Metro Access systems. Metrorail, the subway for the Washington metropolitan area, maintains five lines that extend upward of 20 miles into Virginia and Maryland. Metro bus operates 1,400 buses within the District of Columbia, and Metro Access provides paratransit service to disabled District residents through a fleet of vans. WMATA has one central office in the District and a number of regional offices scattered throughout the area.

Karen Lamb, in WMATA's Marketing Department, is the lead contact for the ITS project. WMATA is active in the WMATA Go Card project, which eventually will enable users to connect a Metrorail pass with Metro bus and Metro parking lot access. In addition, WMATA participates in the regional ITS projects, the Advance Traveler Information System, and the Umbrella Study.

Contact: Karen Lamb, Marketing Department, (202-962-2790, fax 202-962-6103)

4. Regional Institutional Issues

4.1 Introduction

The team used three methods to catalog and evaluate institutional issues: surveys; interviews with local agencies; and a special workshop convened with the Task Force to explore issues, options, and opportunities.

The survey covered the broadest range of issues with regard to ITS deployment. The types of issues covered in the survey included those issues with which other regions have struggled in implementing ITS. This chapter reviews the institutional issues and summarizes the findings from the surveys, the interviews, and the workshop. At the culmination of the process, the workshop sought to identify both new issues and actions for the Task Force to take to address institutional issues in regional ITS projects.

4.2 Types of Institutional Issues

A review of 18 Early Deployment Plans undertaken across the U.S. highlights the fact that institutional issues create significant barriers for the deployment of ITS services. From communications to operational responsibilities, these issues influence all aspects of a project. In general, institutional issues fall into five broad categories:

- Funding
- Operational Policy
- Legal
- Agency Authority
- Private Entities

Although individual members of the Task Force may not have encountered problems with all of these issues, considering them prospectively will assist the Task Force as new projects develop. Addressing the issues ahead of time may decrease the time spent during implementation, or may prevent a project from coming to a standstill. Each category is described in detail in the following sections.

4.21 Funding

Beyond simply a constraint, funding can become a key factor in many ways. ITS projects, for example, may or may not compete for funds against traditional transportation projects. Perhaps just as importantly, regional projects may require complicated agreements--often in non-traditional ways such as between public and private partners-to ensure adequate funding for success. The issues below outline types of needs associated with funding and types of issues that different funding mechanisms create.

> Staffing-includes the need to increase existing staffs responsibilities or add additional or specialized technical staff members to handle the new work load.

Capital Investment/Facilities-includes the need to either upgrade existing facilities or invest in new infrastructure. These investments are often made through planning decisions. Because ITS is so young, many of these projects have been funded with Federal funds and consequently circumvent the planning process, affecting project communication and coordination.

Operational-includes needs to upgrade existing facilitates to accommodate an **improved** technology. These requests for funding are more likely to be funded at the local level and will consistently contribute to the "building blocks" of ITS.

All categories of funding have different approval processes. Operational funding requests are more likely to be funded at the local level, whereas capital funding requests may have more success at the state or Federal level.

4.2.2 Operational Policy

Operational policy covers the largest share of institutional issues, ranging from an agency's responsibilities for a given project to difficulty in coordinating information or decision making with other agencies. Most regions involved in ITS early deployment planning indicated that these issues arose more frequently than any other institutional issue.

Coordination-the need for agencies to work together, coordinate decision making, build consensus, participate on oversight committees, and share information.

Standardization-standardization of information exchanged, technology deployed, hardware and software procured.

Privacy/Joint Use-aspects of how public agencies jointly use or share resources and protect privacy rights.

Responsibility/Maintenance-clearly defining an agency's role and responsibility for management, maintenance, planning, and financing.

4.2.3 Legal

Legal issues include liability, insurance, and other risks. Even though issues related to agency authority have legal implications, their resolution is often quite different than that of legal issues. Consequently, agency authority issues are considered separately from legal ones.

Liability--the agency's liability for a project, and whether the liability is shared among the project partners.

Insurance-which agency should hold the insurance and whether insurance can be granted for that project. In cases involving multiple agencies, the issue is how the insurance agreement should be structured.

Exclusivity Offers-addressing whether a public entity can grant a single private provider the right to a public asset.

Outdated Regulations-limitations that may require a regulatory or legislative change, including those related to procurement.

4.2.4 Agency Authority

As each agency changes the way it does business, it may need to make fundamental changes in its mission, directives, or authority. These issues, which are closely tied to legal issues, may involve legislative changes or the need to grant additional authority to manage or conduct work with other public and private entities.

Multiple Missions/Independence-for example, whether the agency's mission conflicts with the agency's role or responsibility for a specific ITS project.

Joint Ventures-whether the agency has the authority to form a joint venture with either public or private entities.

Collection of Revenue-whether the agency has the authority to collect revenue.

Support Private Entities (Credit Enhancements, Underwriting Insurance) -- whether the agency has the authority to support-financially or otherwise--private entities.

4.2.5 Private Entities (Users/Providers)

Many of the categories already discussed involve consideration of how public agencies may work with private entities. This section highlights a few specific issues related to working with private entities:

Coordination/Cooperation -for example, how a public agency would coordinate or improve the cooperation of private users, such as the trucking industry.

Create Incentive for Investment-the need to create an incentive for private users and providers to participate in that program.

Selection Criteria-addressing the development of selection criteria to choose a private provider.

4.3 Survey Responses

A preliminary survey on institutional issues was sent to the project's Steering Committee. Although the results should be interpreted cautiously, they point to some of the institutional issues in the Washington metropolitan area. The issues identified in this survey helped to direct the agency interview process as well as the workshop.

Table _I. Highlights of the Most Frequent Responses_

Category	Type of issue	Number of Responses
Funding	Staffing	10
	Facility/Capital Investment	12
Operation Policy	Coordination of Information	17
	Standardization	9
Private Entities	Coordination/Cooperation	10
	Selection Criteria	8

The category with the most responses, "Coordination of Information," indicates a need for information sharing and education. As expected, "Funding" also received a large share of the total (22 responses between the two issues of staffing and investment), reflecting the current fiscal climate and the unusual circumstances associated with ITS projects. Dealing with private entities can be difficult, as seen from the number of responses.

Problems may take a number of forms related to coordinating information with, or influencing the behavior of, private entities. Problems arise with private entities because choices on the part of the private sector may conflict with public agency goals. Selection criteria pose the problem in reverse: private entities want to work with public agencies, yet the public agency must develop a process **to** ensure that the agency's needs are met and that it has selected the best partner.

4.4 issues and Opportunities Identified During Interviews

The interviews provided an opportunity for the team to continue exploring the issues identified in the survey and to provide a regional context to those issues. The issues are organized into five broad categories:

- Understanding ITS
- Tracking Regional ITS Activities
- Coordinating ITS Initiatives
- Planning and Funding
- General Thoughts on the Task Force

The section below characterizes the general comments and assisted the team in developing a framework for the January 3 1 st workshop. In addition to the comments received on these categories, there were a number of comments on leadership.

4.4.1 Understanding ITS

Throughout the interviews, the need for understanding ITS and the ability to explain it to stakeholders, such as government boards, elected officials and to other agency officials, was expressed and reiterated. Each agency interviewed also believed that the Task Force is an excellent vehicle to accelerate their knowledge of ITS and to ensure coordinated policy and

investment. Task Force members also expressed a desire to educate themselves and their agencies on ITS. The following examples illustrate this need.

Many respondents mentioned that within their own agency, ITS knowledge varied according to the individual's responsibilities-such as operations, planning, public affairs, or financing. The interviews referred to the need to educate planners, since more capital ITS projects are likely to be advanced.

Clearly demonstrated in the interview comments was the fact that not only do the individuals within agencies have different levels of understanding of ITS, but also the agencies themselves. Agencies active in ITS naturallyunderstand more. Two agencies, for example, Montgomery County and Virginia Railway Express (VRE), illustrate this point. Montgomery County has been on the leading edge in traffic management systems and the connection of traffic and transit management systems. In those areas, Montgomery is extremely knowledgeable, yet in other areas, such as commercial vehicle operations, Montgomery county has a limited understanding and may never need to know much about that topic.

Likewise, VRE, a transit agency, is well informed on the transit aspects of ITS and less so on the traffic management side of ITS. Importantly, however, VRE has offered ideas on how VDOT could maximize their traffic management by using the message signs to recommend VRE as an alternative when there is a congestion or an incident on the highways. These ideas could optimize both systems.

In other interviews, agencies mentioned the need to understand and communicate the benefits of ITS to their board of directors, to elected officials, and to the public. The agencies said that there was limited information on the benefits of ITS nor could they communicate it. Agencies mentioned that they needed to communicate the value of ITS projects to multiple audiences.

The education needs identified in these examples highlight some of the themes. In summary, the interviews expressed a need to educate within agencies, among agencies, and to stakeholders with vested interests in ITS.

4.4.2 Tracking Regional ITS Activity

The region has many ITS projects proposed, planned or implemented. During the interviews, countless agencies indicated that they needed information on specific projects. Agencies also thought that the Task Force could assist in the keeping track of ITS projects in some capacity. Some recommendations to do so included: an annual report, monthly updates at meetings, or a survey of ITS projects (annual or bi-annual).

Among the reasons cited for the difficulty in tracking ITS projects included the lack (until now) of a regional ITS group and the fact that projects were supported with a variety of funding sources. For example, individual agencies may fund incremental enhancements to existing facilities through operating budgets. Such projects may go unrecognized because they are not called out in a capital plan.

4.4.3 Coordinating ITS Initiatives

Similar to the problem of tracking ITS initiatives, many agencies expressed a need for a mechanism or forum to coordinate ITS projects. From the interviews, it is clear that it is an issue between agencies and within agencies. Agencies are struggling to determine how ITS fits into planning, operations, public relations, finance, and other areas. For example, Virginia DOT has created an ITS coordinator position to assist in the management of ITS projects across departments. WMATA is also determining how ITS fits into its organization. The reason for uncertainty among those interviewed seemed to be that, unlike other transportation investments, ITS involves a wide variety of agency departments.

Also expressed in the interviews was the belief that coordination among agencies needs improvement. Agencies indicated that they generally only thought about their own resources and had to continually remind themselves to consider resources outside of their own agency.

4.4.4 Funding and Planning

As characterized in earlier sections of this chapter, planning and funding ITS projects, especially projects with a regional dimension, is difficult. Many agencies indicated that it would be difficult to use their own funding, as the ITS projects would compete with other projects. Some agencies believed that Federal funding for ITS projects would continue and, consequently, they would not need to use their own funding. Other agencies expressed an understanding that Federal funding might not continue and that if ITS projects were to be funded in the future, they would need to draw on their own funds.

In the interviews, agencies indicated that planning departments and planning agencies need to be involved in ITS. Presently, transportation plans do not go far enough to integrate ITS alternatives, a problem attributed to a lack of knowledge and understanding.

4.4.5 Task Force

The ideas expressed about the Task Force were consistently positive regarding the importance and value of the Task Force. Coordination was emphasized by virtually all as the core purpose and value of the Task Force.

With respect to membership, some interviewees suggested that the Task Force may wish to include multiple members from a single agency. For example, Arlington County had many individuals interested in ITS, including planners, traffic engineers, and commuter coordinators. Because each individual has a specialized interest, they would not want to attend every Task Force meeting. Yet, the same individual would want to attend a Task Force when their area of interest is covered. Arlington County's solution was to include many members of their staff on the mailing list, and to rely on a point person who would attend all meetings to inform remaining staff of upcoming meetings that might be-of interest-Arlington County's approach would maximize the benefits of the Task Force without requiring that every individual interested in ITS attend all meetings.

4.5 Workshop Results

The ITS Task Force Workshop was held on January 3 1, 1997 to explore coordination and institutional options for ITS in the Washington Region. The workshop was organized by the Umbrella Study Team in cooperation with the Washington Region ITS Task Force of the Metropolitan Washington Council of Governments. Workshop participants represented various Federal, state and local agencies involved in ITS in the metropolitan Washington, D.C. area.

Workshop Objectives

The objective of the Workshop was to seek participant input on the future role of the ITS Task Force, specifically by defining future goals and activities for the Task Force.

Participants were given a briefing book providing an overview of the ITS Task Force, the workshop goals, and information to support the workshop discussion on the future role of the Task Force. The briefing book contained worksheets that listed potential activities for which the Task Force could take responsibility. The areas of responsibility included ITS Education, ITS Planning, Tracking Regional ITS Projects and ITS Project Oversight. The workshop goal was to develop these plans more fully, including the relative importance, appropriate timing, and level of effort required for implementation.

Workshop Results

This section describes the team's initial assessment of the potential areas of responsibility and associated activities identified during the Workshop.

Workshop participants were divided into four groups, and each group was asked to identify goals and derive a "laundry" list of related activities for the Task Force, The groups were encouraged to use the activity worksheets to guide their discussion. Members of the team served as facilitators for each of the four break-out group discussions.

The briefing book created for the workshop included four areas of potential responsibility-Based on the feedback from the workshop, the team narrowed that list to three:

- ITS Education
- ITS Planning, and
- Designated Regional Project Coordination.

Each area is discussed below. Each section presents an analysis of the workshop findings, formulation of a brief goal statement for that activity area, and a discussion of specific activities around which some consensus formed during the Workshop. These activities should not be viewed as definitive recommendations. Instead, they encompass a broad list of options. The Task Force will, of course, be the final decision maker on the appropriateness of each.

4.5.1 ITS Education

The ITS Task Force Workshop reiterated the belief that ITS education is key to increasing the level of understanding of can how technology can be used to solve transportation problems. Participants concurred that the Task Force could play an important role in facilitating exchange of information and ideas and helping stakeholders increase their awareness and level of understanding of ITS. Therefore, an appropriate goal could be to:
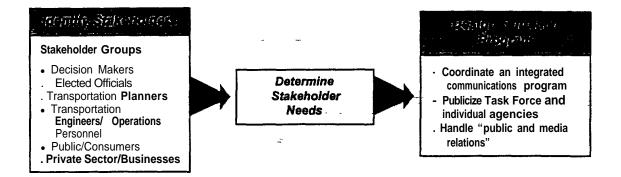
> "Facilitate exchange of information among stakeholders to increase understanding of how technology can be used to solve transportation problems."

All groups agreed that the Task Force could promote ITS education through the following broad categories and related activities:

- Performing outreach efforts
- Promoting self-education among stakeholders
- Training state and local transportation professionals
- Tracking ITS projects to keep abreast of ITS-related activities in the Region

Building ITS Awareness through Outreach

Participants agreed that the Task Force could play an important role in educating stakeholders on how ITS can be used to solve transportation problems. The first step in this process is to identify stalceholders who could potentially form a core "support group" for ITS in the Region. The second step is to identify the needs of the stakeholders, and the third is to design strategies that can help meet those needs. The graphic below pictorially depicts the potential process and activities through which the Task Force can implement/promote ITS outreach.

Stakeholder Groups

- Decision Makers
. Elected Officials
. Transportation **Planners**
- Transportation
  Engineers/ Operations
  Personnel
- Public/Consumers
. **Private Sector/Businesses**

Determine Stakeholder Needs

· **Coordinate an integrated communications program**
- **Publicize Task Force and individual agencies**
. **Handle "public and media relations"**

Stakeholders can potentially represent many interest groups, ranging from elected officials, decision-makers in the public sector, private businesses, and the public at large. A key stakeholder group that needs ITS education is comprised of elected and appointed officials who make decisions on implementing or funding ITS projects in the Region. Elected officials who have been educated about ITS are more likely to understand its uses and support deployment. Providing decision-makers with a clear understanding of the economics (that is, the costs and benefits) of ITS, can help them make informed decisions about ITS applications in the Region. It is equally important to "manage" any unrealistic expectations that officials may have by educating them on the limits of ITS.

There is also a need for the public and private sector to work together. The private sector is a major player in the ITS arena. The private sector builds most of the technology that make up intelligent transportation systems and has a vested interest in seeing that ITS succeeds. The public sector can leverage that interest by inviting the private sector to share the costs of developing ITS, Public-private partnerships are a key motivation for seeking private participation in funding ITS projects.

The Task Force needs to plan a communications strategy and coordinate with individual transportation agencies to implement an integrated program to spread the word on ITS and disseminate its benefits. Keeping in mind that most transportation agencies lack resources to spend on communications campaigns, the Task Force needs to take on the responsibility for identifying the appropriate medium, the message, and the resources required for a communications program.

Public support is key to ITS success. To "buy" into ITS, the public needs to understand how ITS can improve their quality of life, increase transportation efficiency, and ultimately benefit the economy. It is also important to give these groups opportunities to provide input on occasions such as city or town council meetings. Likewise, public sector officials should target local chambers of commerce or business association meetings to build ITS awareness. More than news stories or communications campaigns, public support depends on people being able to relate to a problem on a personal basis and support a solution that works for them.

ITS needs to be mainstreamed into everyday life. The media can assist in bringing ITS into the popular culture. The media can play a key role in spreading the word on ITS and helping gain recognition for the Task Force, individual agencies and ITS projects. Individual agencies should document ITS success stories for dissemination to local media. Inviting media personnel to tour ITS facilities to experience how ITS works can open new channels for communicating the

benefits of ITS to the public. Briefing the media on ITS developments in the Region and inviting media personnel to "ribbon-cuttings" can give ITS the visibility it needs.

ITS Task Force members should be encouraged to send articles on local ITS initiatives to selected publications such as ITS World and ITS Quarterly. Individual Task Force members can contribute stories on new ITS developments in their respective jurisdictions to newsletters such as ITS America News and Inside ITS to increase awareness of ITS events in the Region.

Self-Education

Workshop participants acknowledged that in a rapidly changing and evolving field like ITS, it is
. imperative that those involved in ITS, including both transportation and non-transportation

professionals, keep up with the state-of-the-art and the
state of current ITS practices. Knowledgeable staff and
adequate training are key to successful ITS deployment.
As a step in this direction, participants agreed that the ITS
Task Force needs to first develop an ITS knowledge base.
To meet this goal, the Task Force could organize tours of
local ITS facilities to give officials a hands-on
understanding of how "intelligent" technology and

Self-Education
Participate in local tours
● **Attend ITS chapter meetings**
● **Send articles on local ITS initiatives to selected publications**
· **Identify deployment opportunities**

communications work hand in hand with existing transportation systems. Potential sites where
tours can be arranged include the Montgomery County Transportation Management Center, one
of the pioneering systems in the nation that integrates traffic management with transit
management. Visitors to the Northern Virginia Department of Transportation Advanced Signal
Systems and Traffic Operations Center, can experience how a central control room communicates
with all traffic lights in Northern Virginia to coordinate signal timing. The Traffic Operations
Center component coordinates responses of local police, state police, fire fighting and emergency
management units to local and road emergencies.

Publications from organizations such as the Institute of Transportation Engineers (ITE),
American Association of State and Highway Transportation Officials (AASHTO), American
Public Transit Association (APTA), have been useful sources of information for transportation
professionals. These sources need to be supplemented by publications such as ITS World, ITS
Quarterly, Traffic Technology International, Intelligent Highways, Inside ITS, ITS America
News, etc., which can help ITS professionals keep abreast of new ITS products and services, and
the current "state of ITS affairs." The Task Force could devise a strategy for collecting and
distributing relevant articles to member agencies and their representatives, perhaps during its
monthly meetings.

Most participants agreed that monthly ITS Task Force meetings were an ideal forum for
information exchange and sharing of ideas, providing members with an opportunity to keep up
with new ITS-related developments in the Region. Individual agencies could also learn a great
deal by participating in state chapter meetings organized by ITS America. The ITS Maryland and
ITS Virginia state chapter meetings provide opportunities for state and local transportation
officials to exchange information with their peers and share lessons learned from their respective
ITS initiatives.

Training

Training efforts will allow the Task Force to
follow ITS project development and progress
in the Region. It will enable individual
agencies to share lessons learned and thereby
reduce risk for other agencies that undertake
similar projects.

Training
· **Organize seminars & workshops**
· **Invite guest speakers**
· **Training program for state and local ITS professionals**

Workshop participants expressed the need for training state and local transportation officials who are involved in ITS planing and operations. If local transportation officials are to consider ITS as a viable solution for their transportation problems, they should be knowledgeable about ITS and have adequate training to develop a clear understanding of the functions and application of ITS technologies. It is critical that staffworking on ITS projects receive adequate ITS training. The ITS Task Force can develop a plan focusing on "informal" training of transportation professionals working on ITS in the Region. Such informal efforts can take the shape of seminars and workshops organized for member agencies on both general and specific topics, including issues of interest to highway and transit officials. Guest speakers from both the public and private sector can be invited to make voluntary presentations on topics such as: non-traditional procurement processes, innovative financing mechanisms for ITS projects, guidance on seeking public-private partnerships, Federal procurement laws, Federal transportation budget and finance, trends in the ITS markets and their implications for procurement strategies for ITS projects, project evaluation and performance assessment, measuring user acceptance of ITS and identifying the relative benefits and costs of ITS in the Region.

Tracking ITS Projects

Workshop participants favored ITS project tracking mechanisms such as an annual inventory or survey of the Region. Project tracking will be part of an educational effort to build an information base of ITS projects in the Region. Such an effort will allow the Task Force to follow ITS project development and progress in the Region. It will enable individual agencies to share lessons learned and thereby reduce risk for other agencies that undertake similar projects.

> **Tracking ITS Projects**
> - **Maintain an inventory of ITS projects**
> - **Update this inventory by tracking project developments**
> - **Conduct annual survey of ITS projects**
> - **Prepare an annual report**

Workshop participants viewed regularly scheduled Task Force meetings as the main mechanism for project tracking. Some of the options considered included an annual survey, using the Castle Rock Consultants' inventory as a "baseline." In addition, individual agencies could provide a brief (oral/written) update on their respective ITS initiatives, during Task Force meetings. Project tracking will also help the Task Force retain an institutional memory of ITS in the Region

4.5.2 Planning

Planning, as we are normally familiar with the term, is an activity carried out by an agency or department, where goals are formulated, alternative courses of actions are identified and evaluated, and choices are made on an informed basis. Normally, the agency or department can implement the choices made in the process. For example, a private corporation can act to implement the results of a corporate planning process through its budget, by promulgating policy, and through executive orders. The corporation can then monitor the results and make adjustments as implementation proceeds.

Regional agencies involved in the preparation of comprehensive development plans that specify the scale and locations of schools, housing, industrial areas, transportation corridors, parks, etc. work hard in getting consensus on these important documents, which guide decision making in

zoning, permitting, land development, and utility budgeting. However, the planning agency often has little power to enforce compliance with its plans, and the decisions that underlie the actual emerging urban structure are the product of millions of decisions of individuals, companies, and governmental agencies. Planning in such a decentralized environment is often frustrating, but can, if skillfully and realistically performed, significantly improve the overall results.

Planning as carried out by the Task Force will in some ways be analogous to comprehensive regional planning. Significant effort will be required to encourage participation, gain consensus on major goals, establish guidelines for interoperability, and provide a longer range vision of ITS that can inform and improve the individual decisions of participating agencies. Its plans will be advisory, not directive. If successful, the planning effort will accelerate the emergence of an integrated ITS program that will capture the full benefits of ITS technology for the region.

The ITS Task Force Workshops confirmed that virtually all participants believe planning should be an important activity of the Task Force. The four breakout groups developed goals for planning that were not identical. However, a synthesis of views expressed suggests that the planning goals should be:

> "To identify where technology has the best chance of furthering regional transportation goals, and integrate ITS into transportation planning."

Early ITS deployment suffers from the fact that it is new, it is still changing, and its relevance in addressing specific transportation problems is not apparent to many planners and decision makers. Decision-makers are familiar with the process of identifying existing and future problems, and formulating and evaluating alternative solutions. But to get serious consideration, proposed solutions must be familiar to planners, who also must be confident that the solutions are reliable, affordable,

Planning
- Develop Regional ITS Plan
- **Adopt Guidelines**
- Create Subcommittee
- Coordinate with Transportation Planning Board
- Ensure Inter-jursidictional & Project Coordination
- Marketplace of Ideas
- Identify Non-TIP Funding
- Integrate ITS into Transportation Planning

implementable, and that claimed benefits can be realized. ITS applications frequently don't meet these tests because the are not understood.

The ITS Task Force can assist in overcoming this inherent bias against ITS by examining regional transportation deficiencies and goals. Coupling such analyses with the Task Force knowledge of ITS should permit the development of an array of potential projects that decision makers can evaluate along with other solutions.

By organizing the ITS alternatives into discrete, high-priority projects, and by costing and evaluating such projects, ITS becomes less murky and decision makers are more likely to view ITS alternatives as reliable, affordable, implementable, and real. By insuring that the individual projects are part of an overall vision, the Task Force can ensure that over time the region will be moving toward development of an integrated system of ITS.

Ideally, the Task Force would be permitted to employ a staff or consultants to inventory the region, interview participants, draft alternative vision statements, prepare alternative courses of action and work with the Task Force in the evaluations leading to a consensus plan for regional ITS development. At some point, it might be possible.

The initial realities are that some of this work has already been done. Regional inventories of ITS projects, ongoing and planned, have been conducted. Regional transportation goal statements have been examined, and future transportation deficiencies have been identified. Efforts have even been made to deveiop preliminary ITS plans on a subregional basis.

The challenge is how to move forward, making the most of work already completed and capitalizing on the technical knowledge available to Task Force participants, but recognizing the shortage of financial resources, at least in the short term. The Task Force itself will have to decide how to proceed, but the following comments may be of value in elaborating on some promising options, as identified in the workshops.

Establishing Subcommittees

The Task Force is already using subcommittees to make decisions and form consensus. A subcommittee allows the Task Force to devote enough time to address specific issues that need more attention. Attendance to the subcommittees should be voluntary because individual agencies have limited resources and time. Yet, the agencies should participate in issues that they are vested in. A subcommittee allows the Task Force members to self select the issues they are most interested in. If an issue arises that needs more attention than the Task Force can address during their regular meetings, the subcommittee is a useful mechanism to address that issue. To date the subcommittees have been extremely useful in making decisions, developing ideas, and coming to consensus when needed.

A Marketplace of Ideas

Developing a marketplace of ideas is easy to recommend but hard to accomplish. One method to promote idea development is the continued education of the Task Force members. When a Task Force member learns how one agency handled a particular issue, whether it is for freeway or parking management, that same Task Force member can apply that to his or her own agency to continue to develop the idea. Because the main focus of the Task Force is to communicate and coordinate on local projects, the Task Force must allow for continued education and discussion of the ideas that agencies already have. There are many good ideas out there. The Task Force must take the time to discuss these ideas, either through subject specific discussions such as freeway management, transit management, and others, or at a general discussion in the Task Force meetings. When individual member have an idea, they should be encouraged to at least discuss the idea and to continue to explore it. That responsibility rests on the individual Task Force members.

Create Regional ITS Vision

The Task Force now has in its hands two important documents that can help them develop a regional ITS plan. The Umbrella Study documents what is already planned, in progress, or

operational, and even goes one step further by discussing the opportunities for coordination between existing projects.

- Create a regional ITS vision
- Identify gaps in existing plans
- 'Umbrella' study
- Adopt vision statement

The second document, the Vision Statements, identify otherdesirable projects for the area. The statements are not complete, but they do present some ideas of the types of projects the region might be interested in. So with these two documents and with the knowledge of the Task Force, a regional ITS vision could be created. The regional ITS Vision would also help to identify the next steps the Task Force could take. In creating a regional vision, The Task Force should be sure to identify gaps in existing plans and to develop the ITS Vision into a plan. The plan will outline the priorities of the combined agencies and steps to accomplish those priorities.

Adopt Guidelines

The Task Force should not be a regulating or enforcing entity. Yet, in dealing with technology, computability issues will arise. The Task Force might be able to preempt some such problems by recommending guidelines for the region. These guidelines would not be mandatory but would be recommendations that agencies could consider when implementing projects that have technologies that could be useful to other agencies.

Encourage Interjurisdictional and Project Coordination

This idea is similar to a market place of ideas: easy to recommend, yet hard to implement. The Task Force needs to take responsibility for encouraging a general exchange of ideas. A number of suggestions might help to encourage this effort. Add a time at each meeting to review new initiatives that other agencies are considering. By adding this item to the agenda, Task Force members will become familiar with the idea of sharing information at meetings and continuing to discuss ideas after meetings in a one-on-one capacity.

Identify Non-TIP Funding Sources

The Task Force should take advantage of any available funding source, Federal, private, local, or even TIP funds. This is an activity that will take time and planning to determine appropriate sources. Chapter 5 discusses some finding opportunities, both TIP and non-TIP.

Integrate ITS into Transportation Planning

Many of the first steps to integrate ITS into transportation planning begin with extensive education efforts. Typically, the individual operations staff and planners need to be educated first on how ITS can be used to solve transportation problems. Once they consider ITS as an option then they in turn will begin educating decision-makers in order to sell their ideas. The ITS Task Force is taking the early steps to integrate ITS into transportation planning. To continue this effort they should continue their self-education and other education or notification efforts for the Transportation Planning Board, senior officials in their agencies, and the general public. Through these efforts, ITS will naturally be incorporated into the transportation planning process.

> • **All projects should consider an ITS component**
> • **Integrate ITS into major investment studies (MIS) and UPWP**

4.5.3 Designated Regional Project Coordination

One of the unique aspects of the ITS Task Force is its role with the Traveler Information Service project. As this project, provided the founding for the Task Force, it is also unlikely that such are large-scale project involves extensive network of regional agencies working together. The Task Force out of necessity has developed way to manage this large-scale project, which would be useful, if the Task Force plans to manage future projects. As the Traveler Information Services is a large project there have been smaller initiatives that the Task Force has also managed, including the Vision Statement and this study the "Umbrella" Study. Because the future has yet to be revealed, and whether or not the Task Force will manage other large scale, an goal appropriate goals for this area could be:

> "Provide technical and planning advice on designated regional projects."

At this point, the Task Force has chosen to be open to future management of designated regional projects. The Task Force can play a key role by providing a forum to discussing issues on designated regional projects and providing advice and direction. There are several activities and management techniques that the Task Force can follow through on to take steps toward achieving this goal.

> **Designated Regional Project Coordination**
> • **Provide advice**
> • **Endorse project managers on Designated Projects**
> • **Document and review meetings, new developments**

Provide Advice

The Task Force can provide advice on ITS issues in all stages of Designated Regional Projects. **By** adding the project to the agenda, that issue could be discussed at a meeting. When issues are too complex or in-depth to be covered during the regular Task Force meeting, we recommend that the Project Manager investigate the issue and suggest either that the Task Force make a decision or form a sub-committee to address the issue.

This is the flip side of proactive advice. The Task Force can be used as a "sounding board" for its members, We recommend that the Task Force take the opportunity it has been given to actively respond to discussions about ITS issues and projects.

The Task Force can help members working on ITS projects where they have a particular expertise. The Task Force is in a unique position because it is able to have input on projects that will affect the region as a whole. This opportunity probably has not been available before and should be utilized.

Endorse project managers on specific projects

When it became clear that the Traveler Information Services project need a project manager, the Task Force member considered and endorse a project manager. This person will be a liaison between the private contractors and the Task Force, helping not only to manage the project, but to manage the direction and input that the Task Force provides. Because this has worked well, we recommend that the Task Force considered endorsing project manager for future designated regional projects.

The Task Force can supply project managers with information and guidance on ITS projects. The responsibility of acting as a resource could fall into the category of Special Effort because the input that an agency could provide to a project manager may exceed the scope of a Task Force meeting. Agencies may also have limited resources to provide to the Project Manager, and taking that extra step to help may be difficult. As previously mentioned, this situation may best be addressed by creating a subcommittee.

Document and review meetings, new developments

The obvious advantage to documenting meetings is the ability to clearly reference the information discussed at a later date. This will come in handy when agenda items need to be referenced for the continuation of a project or when new projects that are related are instigated. Referencing information that is readily available is usually less costly than obtaining the information from an outside source. When working on new projects, if some of the information has already been researched, it could possibly reduce the amount of time to complete a project. Documenting projects and the agencies that have worked on them will help in the development of an information network within the Task Force comprised of the regional agencies.

Ensure that a correct, consistent message is communicated

The Task Force needs to ensure that the ideas that it is trying to convey to the public and to agencies are the ideas that they explicitly intend to communicate. By managing the expectations of the public and agencies who are funding the ITS projects, this will prevent expectations from going beyond the scope of the project. This will prevent the public from expecting the moon and stars when all they are really being supplied with is a new road sign, for example. If the purpose of the project is clearly defined and is completed within that same definition, those funding the projects will see realistic conclusions and will be more inclined to fund additional projects, especially those that may be more costly or non-conventional. The level of trust between the Task Force and the agencies and the public is key in maintaining a healthy, beneficial relationship.

5. Recommendations for the Task Force

While Chapter 4 describes the goals and activities of the Task Force, Chapter 5 outlines how these goals can actually be implemented. This involves understanding the following points: when to prioritize activities, how activities should be implemented, what positions are key to managing the Task Force, what agendas should be considered, what material will help to develop a common vision for ITS, and what resources can be-tapped to accomplish these activities:

- Implementation of Workshop Goals and Activities
- Task Force Membership and Key Positions
- Proposed Meeting Agendas
- Resources

5. 1 Implementation of Workshop Goals and Acfivifies

The initial step in implementing an activity is deciding to do the activity. There are some activities that the Task Force is already implementing. In cases where the Task Force has initiated the activity, this section will provide a mechanism to organize the activity.

In implementing activities, the Task Force should designate a time frame within which to complete the task and should assign a date to assess what was accomplished. Given that the Task Force is mandated for three years, it will ideally use a time period of one year as a threshold to review accomplished goals and activities.

Based on the interviews and workshop comments, the team developed a Task Force timeline. The timeline (on the following page) covers goal areas over three years. When sub-activities were relevant, they were added to the timeline. The Task Force has many ongoing initiatives; for example, the TlS. We recommend that the Task Force prioritize the activities, so that they do not expend their resources too early or undermine commitments from individual agencies.

The timeline proposes when the Task Force should pursue a goal or activity. Given the issues at the forefront, we recommend that the Task Force consider prioritizing its vision as the first item to accomplish in the beginning of 1997. Formulating a vision will assist the Task Force in the activities that will follow. Since the vision statements are complete and the "'Umbrella" study is coming to a close, developing a vision seems timely. In addition to addressing the vision, the Task Force will continue making progress on the ITS.

On completion of the vision, the Task Force could begin activities on education, including self-education and outreach activities. A completed vision might also include developing a message on ITS in the region, which the Task Force could communicate to the other stakeholders. These will be ongoing efforts for the duration of the Task Force.

The second major activity for the Task Force to consider is the development of guidelines for the region. Part of that effort will be covered under the TIS project. The initial step would involve reviewing the vision and then defining the scope of what the guidelines should cover. These guidelines will be useful to agencies as they consider ITS projects.

The final area to take note of **is** the integration of ITS and Transportation planning. Two of the first steps to accomplish this activity involve raising awareness and educating those involved.

Time Line of Task Force Goals

	1997	1998	1999	2000
ITS Education				
Self Education		▇ Focused		
Outreach		▇		
Project Tracking		▇		
Planning				
Regional ITS Vision	▇	Focused		
Guidelines		*TIS* Focused		
Coordination (project/jurisdiction)		▇		
ITS/Traditional Transportation Planning		▇		
Designated Regional Project Coordination*	▇			

. Each project will have its own time line.

▓ **Focused Activity**

■ **On-going Activity**

Since the Task Force is evolving at such a rapid pace, it is recommended that the Task Force make a self-assessment annual. Ideally, the Task Force anniversary will be the time to reflect on the goals and activities that were accomplished during the year. At a minimum, the Task Force should address the following questions to ensure that the Task Force accomplishes what it set out to do. A group like the Task Force, with multiple agencies involved, could easily lose its focus. If this happens, the members of the Task Force should ask themselves if they are still headed in the right direction. The following questions should help the Task Force to focus on their goals:

What goals and activities has the Task Force accomplished during the year7
Are these goals and activities still a priority for the Task Force?
Are there new goals and activities that the Task Force should consider?
What does the Task Force hope to accomplish in the next year and the year after that ?

Implementation Strategies

The results of the workshop were used by the team to formulate options for the Task Force to consider implementing. Each activity, fully described in Chapter 4, has implementation strategies-agenda, individual and special effort. The first, Agenda Item, is simple. In order to implement the activity, the Task Force must add that item to their monthly agenda. The second, Individual is slightly more complex. For this implementation, we recommend that an individual

Task Force member take responsibility for organizing and managing the activity. The third, Special Effort, will require more than a set time period and in some case might require additional funding.

> **Agenda-These are** activities which can be implemented by adding them to the Task Force Agenda. The Task Force may select which activities they would like to add. Basically, the concept works like this: an agenda item such as a "new ITS projects" would be added to the meeting's agenda. When the meeting covers that agenda item, the meeting would then open a discussion of new ITS projects. Ideally, the agenda topic will cover a discrete amount of time to keep the meeting focused. Adding an activity to the agenda is one of the simplest ways for the Task Force to reach their goals.

> **Individual-Activities** marked as an individual responsibility are usually tasks that require more organization. This individual could be any one of the Task Force members or support staff. These tasks can be accomplished more efficiently if an individual takes the responsibility. One example is the organization of tours. If one individual manages the process, then the tours are more likely to take place. That person may request assistance from other Task Force members, but it will still be that individual's responsibility to make sure that the tours are scheduled and the schedule is then communicated back to the Task Force. The idea here is not to overburden any one individual, but to evenly distribute the responsibilities. Without a distribution of the tasks, the Chairs and Vice Chairs are likely to take on an inordinate amount of work.

> **Special Effort**-Clearly these items would require more time than a single individual or support staff could manage. These activities are likely to need additional funding or help from a subcommittee. If funding was an issue, the Task Force would then need to determine how to raise the needed funds. The Task Force could pool funds from the individual agencies, apply for special funding from the Federal government, or attempt to bring in private funds (if they believe the activity could attract private funding).

The following table highlights the implementation strategy that each activity requires.

Activities for Task Force

Activities	Implementation Strategy	
	Agenda Item	Individual Special or Staff Effort*
1. ITS Education		
A. Self-Education		
Participate in local tours		✓
Attend and participate in seminars, conferences and workshops		✓
Announce deployment and research opportunities		✓
Send articles on local ITS initiatives to selected publications		✓
B. Outreach		
Identify stakeholders such as consumers, policy makers, transportation planners, media, private sector partners, youth, etc.		√
Gain recognition for the Task Force and individual agencies involved in ITS projects	√	
Handle "public and media relations"	√	
C. Project Tracking		
Exchange information on individual agency projects	√	
Maintain an inventory of ITS projects in the Region		√
Update this inventory by tracking project developments in the Region		√
Conduct annual survey of ITS projects		√
Prepare an annual report		✓
2. Planning		
A. Develop Regional ITS Plan		
Create a regional ITS vision		√
Identify gaps in existing plans		√
'Umbrella" Study		√
Adopt Vision Statement		√
B. Adopt Guidelines	√	
Not standards, this simply includes keeping up with new developments and share information	√	
C. Create a Task Force "Sub-Committee" or "Working Group"	√	
This group will specify data collection activities, and	√	
D. Coordinate with Transportation Planning Board (TPB) and/or Sub-Committees		√
E. Ensure Inter-Jurisdictional and Project Coordination	√	
F. Serve as a "Marketplace of Ideas"	√	
G. Identify Non-TIP Funding (i.e. Public/Private Partnerships)	√	
H. Integrate ITS into Transportation Planning		
All projects should consider an ITS component	√	
Integrate ITS into Major Investment Studies (MIS) and UPWP		√

Activities	Implementation Strategy		
	Agenda Item	*Individual* or *Staff*	Special Effort*
3. Designated Regional Project Coordination			
A. Provide Advice			
Proactively	√		
Reactively	√		
Respond to queries from project staff and/or consultants on policy and technical issues	√		
B. Endorse Project Managers on those Designated Projects		√	
C. Act as a Resource for Project Manager(s)	√		
D. Document Reviews			√
E. Ensure that a Correct, Consistent Message Is Communicated about "Designated" Projects	√		

*Special Efforts would either require a sub-committee or use of a consultant to complete

5.2 Task Force Membership and Key Posifions

In order to ensure success of the ITS Task Force, its membership must include many individuals from the regional agencies. This would guarantee that all individuals with interests related to ITS would be included, therefore achieving the Task Force objective to communicate and coordinate with all local entities. The challenge in including so many individuals is managing such a large group. When a group is of that size, individuals are likely not to attend every meeting. If the individuals will pick specific meetings to attend, it is important that they receive the most up-to-date information on the previous Task Force meetings. Presently, there are two mechanisms for making that happen: first, the agenda should be sent out to a wide audience, and second, the Task Force must rely on an individual from each agency who regularly attends the meetings to communicate with their respective agencies.

The mission and vision statements for the Task Force established two to three leadership positions-Chair and Vice Chair. At the first official Task Force meeting, the Task Force nominated and confirmed on a single Chair and two Vice Chairs. These positions will be decided on annually. The regularly attending agency representatives, along with the Chair and Vice Chair(s), constitute the core members of the Task Force. Two other key positions are recommended to assist the Task Force in realizing its goals. First are the Goal Leaders, who could be the Vice Chair(s). The Goal Leaders ensure that progress is being made on the Task Force goals. Second are the project managers for the Designated Regional Projects. Below is a recommendation on the distribution of responsibilities for the Chair, Vice Chairs, Goal Leaders and Project Managers.

>**Chair-The** Task Force Chair will lead the monthly meetings and develop the meeting agendas. The Chair ensures that the Task Force completes its an annual self- assessment, which would include a presentation on each goal area. At the same meeting, new Chairs and Vice Chairs will be nominated and confirmed.

Vice Chair(s)-The Vice Chair(s) will assist the Chair in the development of the meeting agendas and any other activities. The Task Force could assign the responsibility of the Goal Leaders to the Vice Chair(s), depending on the other responsibilities the Vice Chair(s) assume.

Goals Leaders-The Task Force has three specific goals related to its activities. To ensure that progress is made on the individual activities, we recommend nominating individuals to monitor and coordinate progress on the goals. These individuals would make sure that activities prioritized by the Task Force are accomplished. To do so, these individuals are expected to draw on the help of other Task Force members. For example, the education Goal Leader might assign an individual to organize tours. That individual would work with the Goal Leader to schedule the tours, and this would continue in the same fashion for other activities. The Goal Leader would also assist in annual Task Force assessment, presenting the activities accomplished in the past year, highlighting changes in priorities and recommending new activities for the coming year. It is the GoaI Leader's responsibility to work with the Chair and Vice Chair(s) to ensure that these activities are added to the agenda at the appropriate time.

Since designated regional projects typically have a project manager who reports back to the Task Force, we do not recommend creating a Goal Leader for that goal. ITS Education and Planning will both need Goal Leaders.

Project Managers-Determining project managers will depend on the number Designated Regional Projects the Task Force chooses to administer. Presently, the Task Force is administering the Traveler Information Services (TIS) and the "Umbrella" Study projects. A project manager has been named for the TIS project. For future projects, the Task Force should consider naming a project manager to channel the communication and track management concerns.

The positions outlined here are the keys to the success of the Task Force. These positions help to distribute the responsibilities and to ensure that the Task Force will continue to be in touch with its priorities. These varied positions also distribute leadership within the group, so that the group is not dominated by a single individual or agency.

5.3 Proposed Meeting Agendas

The Task Force Chair and Vice Chair(s) are responsible for developing the Task Force meeting agendas. Because many of the prioritized activities will be accomplished through the agenda, agenda setting is critical.

Many of the agencies interviewed expressed a desire to discuss specific aspects of ITS. During such conversations, many new ideas surfaced. Some of the ideas involved new ITS initiatives, while others were just connecting to an existing initiative. So as not to lose some of the useful suggestions from the interviews and the workshop, this section lists some proposed agenda items that the Task Force could consider.

Proposed Agenda Topics

1. Internet as a means of communication: video and data.

2. Web pages--who has them? How to connect to them to create a joint web page for the region? What video connections should be considered?

3. What is meaningful information and data to share? What data are currently being collected?

4. What traffic and transit monitoring is useful?

   - buses (the time of arrival of the next bus)

   - transit (headway times)

   - interstates, highways, secondary roads, and other intersections (congestion information)

   - airports (ground side conditions)

   - intermodal locations (connection between traffic and transit)

5. For each one of the ITS components: Electronic Payment System, Freeway Management, Incident Management, Advance Signal Control System (along major corridors, and on jurisdiction lines)

   - Project Briefings by jurisdiction,

   - Do the projects relate?

   - What projects should connect in the future?

6. Other jurisdictions that might be interested in initiating a similar project.

7. What are the appropriate planning steps to realize that vision?

Of course, many other topics could be added to the list. As ideas occur, we encourage you to record them and to propose them as topics for discussion. It will be during these discussions that the connections between ITS projects will occur.

5.4 Resources

Potential funding sources for ITS projects include the highway trust fund, innovative financing approaches, and local funding. Each of these resources is described briefly below.

Highway Trust Fund

The Intermodal Surface Transportation Efficiency Act (ISTEA), the most recent authorization bill for surface transportation programs, established funding levels for Federal fiscal years 1992 through 1997. The proposed National Economic Crossroads Transportation Efficiency Act

(NEXTEA) will establish funding levels for Federal fiscal years 1998 through 2003. These highway authorizations from the Highway Trust Fund create budget authority in the form of contract authority, enabling the Secretary of Transportation to enter into contracts committing Federal funds to projects.

Joint Program Office Funding

In 1994, the U.S. DOT established the ITS Joint Program Office (JPO) to coordinate efforts by FHWA, FTA, and the National Highway Traffic Safety Administration. All funds authorized specifically for ITS go through JPO.

Title VI, Part B of ISTEA launched a program of research, testing, and technology transfer of ITS aimed at solving congestion and safety problems, improving operating efficiencies in transit and commercial vehicles, and reducing the environmental impacts of growing travel demand. The proposed NEXTEA continues this program and also launches the integrated, inter-modal deployment of proven technologies that are technically feasible and highly cost-effective. These program funds are detailed below:

> **ITS Research, Testing, and Technology Transfer.** $96 million for 1998-2000 and $130 million for 2001-2003, continuing 80 percent Federal share (funding match requirement can be waived for innovative research activities) with focus **on** demonstration and evaluation of fully integrated intelligent vehicle systems.

> **Intelligent Transportation Infrastructure Deployment Incentives Program. $100** million per year for 1998-2003 (limits Federal share to 80 percent) to support integration of metropolitan area travel management intelligent infrastructure, intelligent infrastructure elements in rural areas, and Commercial Vehicle Information Systems and Networks (CVISN) deployment within states and at border crossings. This program establishes annual funding limitations ($15 million per metropolitan area, $2 million per rural project, $5 million per CVISN project, $35 million within any state), establishes funding priorities (at least 20 percent for implementation of CVISN and international border crossing improvements and at least 10 percent for other deployment outside metropolitan areas), and replaces the IVHS Corridors Program.’

Other Authorized Funds

Traditionally, states are given apportionments for transportation broken down by program! In addition to JPO funds, other programs proposed to receive funding in NEXTEA could be used for **ITS** projects. In the proposed **NEXTEA,** the most significant of these programs are noted below, with the ITS activities eligible for funding described briefly.

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2 Currently designated Priority Corridors remain eligible for funding.

3 Most, but not all, funds are distributed to the states through apportionments, but some funding categories do not contain a legislatively mandated apportionment formula. Distributions of funds when there are no formulas in law are called "allocations". In most cases, allocated funds are divided among states using administratively determined formulas and/or criteria provided in law.

Interstate Maintenance Program. Includes infrastructure-based ITS capital improvements to the extent that they improve the performance of the Interstate;

Surface Transportation Program. Includes ITS capital operations and maintenance and defines operational improvements to expressly include installation, operation, or maintenance of public infrastructure to support ITS, as well as improvements designated by the Secretary that enhance roadway safety and mobility during adverse weather, and

National Highway System. Includes ITS capital operations and maintenance, and defines operational improvements in the same manner as the Surface Transportation Program.

In addition to the ITS activities specifically mentioned in each of these three programs, there are numerous additional programs which may be sources of funding for ITS projects. For example, the National Motor Carrier Safety Program notes that it will fund implementation of CVISN, a form of ITS. Since ITS covers such a broad range of activities, it is likely that the eligible activities covered by the various programs will overlap with ITS activities in multiple situations.

Many categories and programs also provide for substantial flexibility to transfer funds among the remaining categories giving states greater flexibility in their ITS spending decisions. For example, states can transfer 50 percent of Highway Bridge Replacement and Rehabilitation Program funds to the National Highway System or State Transportation Program.[4]

Innovative Finance

The growing demand for ITS has created a need for innovative finance options specifically targeted for these systems. Innovative finance options typically include techniques designed to capitalize on the unusual characteristics of ITS to support the potential for income generation; many states have done so through public-private partnerships or public-public partnerships.

As a direct result, several states and regions are considering ways to encourage private entrepreneurial involvement in ITS deployment. Options include:

- Joint ventures in which the public and private sector partners pool investments or share resources;
- Contracted-out or privatized provision of services;
- Parallel public and private provisions of services or service inputs; and
- Mutually exclusive public and private responsibilities.

Joint ventures can involve funding, resource, and risk sharing by public and private partners. One type of joint venture is shared resource arrangements in where those projects that share public highway rights-of-way, previously viewed as entirely within the public domain, for installation of telecommunications hardware (principally ITS).

Compensation to the public sector may or may not be involved, though in the strictest sense "shared resource" implies some form of consideration granted (over and above administrative

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[4] Transfers of funds must meet the restrictions of the Highway Bridge Replacement and Rehabilitation Program.

costs) to the public agency partner by the private sector participant that is permitted access to the right-of-way or other public resource. Compensation options include in-kind arrangements and cash.

In an in-kind arrangement private parties install the system, receiving access to the right-of-way for their own capacity in return for providing telecommunications (ITS) capacity to the public agency. In cash arrangements, private parties install the telecommunications (ITS) system, receiving access to the right-of-way in return for monetary compensation to the public agency. Hybrids of in-kind and cash alternatives also can be created in which in-kind compensation (communications capacity) and monetary compensation are combined as consideration for private access to right-of-way for private sector objectives. Shared resource projects offer the public sector a way to implement ITS with a lower financial burden.

Local Funding

State Transportation Improvement Plans (STIP) are planning documents which outline transportation projects that the state anticipates conducting in the years covered by the plan. ISTEA requires that the STIPs, submitted annually, be "fiscally constrained". That is, funding sources must be identified for the first two years of the three-year program of planned projects. The financial constraint on STIPs serves as a strong incentive for states to engage in financial planning for transportation investments, both for individual projects and statewide.

While STIPs are not a funding source for ITS, they do outline the anticipated funding sources for planned ITS projects. The STIP, therefore, is a good resource for identifying the allocation of local funding to ITS projects. Potential sources of local funding include development assessments, toll revenues, local impact fees, and private contributions, among others.

APPENDIX A
Stakeholders

UMBRELLA ITS STUDY

List of Stakeholders

The list of significant stakeholders includes ***federal, national, regional, state and local*** agencies in the National Capital Region including:

- **District of Columbia**

- **Maryland**
    + Montgomery County
    + Prince George's County

- **Northern Virginia**
    + Arlington County
    + City of Falls Church
    + City of Alexandria
    + City of Alexandria
    + City of Fairfax
    + City of Fredericksburg
    + City of Manassas
    + City of Manassas Park
    + Fairfax County
    + Loudoun County
    + Town of Herndon
    + Town of Leesburg
    + Town of Vienna

The significant **stakeholder groups** are:

1. Transportation Planning Agencies
2. Transportation Partnerships, Associations and Advocacy Groups
3. Public Transit Operators
4. Private Transportation Providers
5. ITS Consultants, Technology Providers & System Developers
6. ITS Researchers & Evaluators
7. Elected Representatives
8. Emergency & Enforcement Services
9. Large Employers/Employment Centers
10. Special Event Centers

1. Transportation Planning Agencies

FEDERAL
Federal Aviation Administration (FAA)
Federal Transit Administration (FTA)
Federal Highway Administration (FHWA) Headquarters
 Surface Transportation Policy Office
 Office of Motor Carriers / Commercial Vehicle Operations Division
 Office of Traffic Management and ITS Application
 ITS -Joint Program Office
FHWA - Region 3
 Maryland Division
 Virginia Division
 Washington DC Division

REGIONAL
Metropolitan Washington Council of Governments (MWCOG)
Metropolitan Washington Airports Authority (MWAA)
North Capital Region Transportation Planning Board
Washington Metropolitan Transit Authority (WMATA) - Office of Mass Transit
Washington Suburban Transit Commission

DISTRICT OF COLUMBIA
DC Department of Public Works
DC Office of Mass Transit
Department of Recreation and Parks
Taxicab Commission
Transportation Systems Administration (TSA) - Office of Planning and Policy
Washington Public & Government Relations Office

MARYLAND

State
Maryland Department of Transportation
 State Highway Administration
 Mass Transit Authority
 State Aviation Administration (SAA)
 Transportation Authority (MdTA)
 Office of Systems Planning & Evaluation
Maryland Association of Counties
Maryland Institute for Governmental Services
Maryland National Capital Parks and Planning Commission
Maryland Office of OutReach Programs
Maryland State Planning Office

local

Montgomery County
    Transportation Department
    Office of Traffic
    Board of Supervisors
City of Rockville
    Planning Department   --
    City Council
Prince George's County
    Department of Public Works and Transportation
    County Council of Governments
    Planning and Building

VIRGINIA

State

Commonwealth Transportation Board (CTB)
Virginia Department of Transportation (VDOT)
Virginia Department of Rail and Public Transportation (VDRPT)
Virginia Association of Planning Districts
Virginia Association of Counties

Regional

Northern Virginia Planning District Commission (NVPDC)
Northern Virginia Regional Park Authority
Northern Virginia Transportation Commission (NVTC))
Northern Virginia Transportation Coordinating Council (TCC)
Potomac and Rappahannock Transportation Commission (PRTC)
Route 28 Transportation District
Tidewater Transportation District (TDD)

Local

City of Alexandria
    Department of Transportation
    Planning and Zoning
County of Arlington
    Board of Supervisors
    Department of Public Works, Planning Division
    Department of Public Works, Engineering Division
City of Falls Church
    Department of Public Works
    Planning Department
City of Fairfax
    Department of Public Works
    Transportation Division
City of Manassas
    Department of Public Works
City of Manassas Park
County of Prince William
    Board of Supervisors

Public Works
Fairfax County
　　　　Board of Supervisors
　　　　Office of Transportation
Loudoun County
　　　　Transportation Department
　　　　Board of Supervisors
Town of Herndon
　　　　Department of Public Works
Town of Leesburg
　　　　Airport
　　　　Police & Emergency
Town of Vienna
　　　　Planning & Zoning
　　　　Public Works

2. Transportation Partnerships, Associations and Advocacy Groups

NATIONAL
American Association of State Highway and Transportation Officials (AASHTO)
American Automobile Association (AAA)
American Public Transit Association
American Society of Civil Engineers
Association of American Railroads
Commercial Vehicle Safety Alliance
Environmental Protection Agency (EPA)
Highway Users Federation for-Safety and Mobility
Institute for Governmental Service
Institute of Navigation
Institute of Transportation Engineers (ITE)
International Bridge, Tunnel and Turnpike Association (IBTTA)
Interstate Truckload Carriers Conference
ITS America
National Academy of Sciences
National Highway Traffic Safety Administration (NHTSA)
National Science Foundation (NSF)
National Private Truck Council
NHTSA - Office of Crash Avoidance Research
Transportation Research Board (TRB)

REGIONAL
I-95 Corridor Coalition

DISTRICT OF COLUMBIA
Committee to Promote Washington DC

MARYLAND
ITS Maryland
North Bethesda Transportation Action Partnership

VIRGINIA
Alexandria Transportation and Environmental Management and Planning Organization (TEMPO)
Ballston/Rosslyn Area Transportation Association (BATA)
Crystal City Commuter Service Center
Dulles Area Transportation Association (DATA)
ITS Virginia
Loudoun County Transportation Association (LCTA)
Northern Virginia Transportation Association
Reston Transportation Management Association (LINK)
The Ride Finder's Network
Toll Road Investors Partnership (TRIP)
Tyson's Transportation Association (Tytran)

3. Public Transit Operators

REGIONAL
Amtrak
Metrorail
Metrobus
Greyhound/Trailways
MetroAccess

DISTRICT OF COLUMBIA
Washington National Airport

MARYLAND
Kiss & Ride
Baltimore Washington International Airport
MARC
Ride On

VIRGINIA
Arlington Access
Arlington Trolley
City Wheels
CUE
DASH
Dulles International Airport
Fairfax Connector
Fare Wheels
FasTrans
Loudoun Rideshare
PRTC/OmniRide
RIBS
Tyson Shuttle Fleet
VanStart
Virginia Railway Express (VRE)

4. Private Transportation Providers

REGIONAL
Aries
Bonanza Bus
Brooks Transit Services
DHL
Diamond Cab Company
Federal Express
Greyhound/Trailways
Groome Transportation
Lee Coaches
National Coach Works
Private Transportation Providers
Quick-Livic Bus Company
Quicks Comuter Service
Red Cab Company
Transportation Total inc.
United Parcel Service
Van Pool Service, Inc.
Washington Cab Company
Washington Flyer
Yellow Cab Company

5. ITS Consultants, Technology Providers & System Developers

Apogee Research, Inc.
ARINC
Automatic Signal/Eagle Signal
Batelle Memorial Institute
Bell Atlantic
BMI
Booz, Allen & Hamilton, inc.
Booz, Allen, Hamilton & Associates
Cambridge Systematics
Castle Rock Consultants, inc.
Charles River Associates
COMSIS, Inc.
Cubic Toll Systems
DBH Consulting
De Leuw, Cather & Company
DKS Associates
Dynamic Science
E-Systems
EG&G, Dynatrend Inc.
Engineering Research Associates
Farradyne Systems, Inc.
Frederic R. Harris, Inc.
GMSI, Inc.
Greiner Engineering
HNTB Corporation
Hughes Corporation
Information Dynamics
JHK & Associates
Loral Federal Systems
Michael Baker Jr., Inc.
MiTech, Incorporated
MITRE Corporation
Orbital Sciences Corporation
PB Farradyne
Penn & Schoen Associates
Public Technology, Inc.
RGS, Inc.
Rockwell International
RS Information Systems
Science Applications International Corporation (SAIC)
SG Associates
SRA International
SRI International
Stanford Telecommunications, Inc.
Strategic Marketing & Management Group
System Resources Corporation

The Vlexis Group, LLC
Transportation Management Solutions
Trapeze Software, Inc.
TRESP & Associates
Viggen Corporation
Violette Engineering Corporation
Wilbur Smith Associates
3-G International

6. ITS Researchers & Evaluators

Electronic Industries Association (EIA)
Environmental Defense Fund
Highway innovative Technology Evaluation Center
Jet Propulsion Laboratory
Lawrence Livermore National Laboratory
National Institutes of Standards and Technology (NIST)
University of Michigan
Volpe National Transportation Center

DISTRICT OF COLUMBIA
Urban Institute

MARYLAND
Johns Hopkins University's Applied Physics Laboratory
Maryland Information Technology Center

VIRGINIA
George Mason University
Turner-Fairbank Highway Research Center
Virginia Polytechnic Institute and State University
Virginia Tech Center for Transportation Research
Virginia Transportation Research Council
University of Virginia

7. Elected Representatives

DISTRICT OF COLUMBIA
DC Congressional Delegation

MARYLAND
MD Congressional Delegation
Senate Committee on Appropriations: Subcommittee on Transportation and Related Agencies, Barbara Mikulski - Dem. (MD)

VIRGINIA
VA Congressional Delegation
House Committee on Appropriations: Subcommittee on Transportation and Related Agencies, Chairman Frank Wolf - Rep. (VA-1 0)
House Transportation and Infrastructure Committee: Subcommittee on Surface Transportation, Herbert Bateman - Rep. (VA-1)
House Transportation and Infrastructure Committee, Tom Davis - Rep.
House Committee on Commerce: Subcommittee on Telecommunications and Finance, Rick Boucher - Dem. (VA-9)
Senate Committee on Transportation and the Infrastructure, John Warner - Rep.

8. Emergency & Enforcement Services

DISTRICT OF COLUMBIA
DC Police
DC Fire
DC Emergency Services

MARYLAND
Prince George's County Fire Department
Prince George's County Police Department
Maryland State Police
Maryland State Highway Patrol

VIRGINIA
Arlington Emergency Communication Center
County of Arlington Fire Department
County of Arlington Police Department
City of Alexandria Police
City of Falls Church Fire and Emergency Ambulance
City of Alexandria Fire
County of Fairfax County Police Department
Fairfax County Police, Fire and Emergency
Loudoun County Fire & Rescue Services
Town of Herndon Police
Virginia State Police
VA State Highway Patrol

9. Large Employers/Employment Centers

DISTRICT OF COLUMBIA
ICMA Retirement Corporation
AARP
EAD

MARYLAND
Marriott International
IBM
COMSAT
Martin Marietta
Bell Atlantic
Sovran's Bank

VIRGINIA
Oracle
TRW
National Rifle Association
Tyson's Corner
B DM/Ford Aerospace
Mitre Corporation
Spacenet
Honeywell

1 0. Special Event Centers

DISTRICT OF COLUMBIA
Arena Stage
Carter Barron Amphitheater
Ford Theater
Kennedy Center
Kreeger
National Theater
RFK Stadium
Smithsonian
The National Gallery
MCI Arena (under construction)

MARYLAND
USAir Arena
Merriweather Post Pavilion

VIRGINIA
Nissan Pavilion
Patriot Center, George Mason University
Wolf Trap

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1. Intelligent Transportation Systems Index 1996
2. ITS JPO Communications & Outreach
3. ITS Market Resource Guide - A Reference Guide 1996
4. ITS Maryland
5 . ITSVA
6. Maryland Association of Counties Directory 1996
7. Maryland DOT
8. Northern Virginia ITS EDP; Prepared by De Leuw Cather & Company of Virginia
9. Northern Virginia White Pages
10. Northern Virginia Yellow Pages
11. USDOT's Intelligent Transportation Systems Projects, January 1996
12. Virginia Association of Counties Directory 1996
13. Virginia DOT
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16. MWCOG Directory 1996

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Agencies, Chairman Frank Wolf - Rep. (VA-10)
House Transportation and Infrastructure Committee: Subcommittee on Surface
Transportation, Herbert Bateman - Rep. (VA-1)
House Transportation and Infrastructure Committee, Tom Davis - Rep.
House Committee on Commerce: Subcommittee on Telecommunications and Finance, Rick
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Maryland State Highway Patrol

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County of Arlington Fire Department
County of Arlington Police Department
City of Alexandria Police
City of Falls Church Fire and Emergency Ambulance
City of Alexandria Fire
County of Fairfax County Police Department
Fairfax County Police, Fire and Emergency
Loudoun County Fire & Rescue Services
Town of Herndon Police
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14. Washington DC White Pages
15. Washington DC Yellow Pages
16. MWCOG Directory 1996

ITS Task Force Workshop - Break-out Session Results
January 31, 1997

This Appendix presents the results of the ITS Task Force Workshop break-out sessions held on January 3 1, 1997. The results identify future goals and potential activities that the ITS Task Force could undertake. The consulting team guided the break-out session discussions using the activity worksheets which highlighted ITS Education, ITS Planning, Tracking ITS Regional Projects and Project Oversight. Workshop participants identified areas where the Task Force could take responsibility and recommended a wide range of activities that the Task Force could implement.

Contents of this Appendix include:

- Analysis of Each Break-out Session
- Activities Recommended by Each Group

Analysis of Break-out Session Group I
Facilitator: Mike Harris, Castle Rock Consultants

An open dialog existed throughout the discussion, with questions and options being raised by the facilitator and the group members individually. Each member of the group had distinct opinions and thoughts about the subjects discussed. Following is a review of the pertinent issues the group examined.

ITS Education
The group determined that this was the key aspect for the Task Force to focus on. As the group discussed this issue, they came to consensus that the term education needed to be further separated into outreach as well. The group strongly felt that outreach differed from education in its focus and relationship to different audiences.

ITS Planning
This topic led to discussions focused on the operational implications, including system requirements, and the planning implications, including new planning processes. The group was not unified in their recommendations to the Task Force on this subject. In fact the issue of creating an ITS Vision received mixed responses. The group, however, did support a project integration plan.

Tracking ITS Regional Projects
On the subject of tracking, the group concurred that this activity needs to be implemented; however the group was concerned on the availability of resources. The group voiced or admitted that their agencies did not have any resources for this activity but mentioned that in the interim, regular meetings would suffice for this activity.

Project Oversight
The group decided that project oversight was not an area that the Task Force should get involved in and closed the subject.

Activities Recommended by Group I

Areas of Responsibility & Associated Activities	Relative importance
1. ITS Education	
a) Organize training sessions and tours as appropriate	* *
b) Invite guest speakers	* *
c) Agenda items needed for specific awareness outreach	* * *
d) New newsletter is not useful	*
e) 90% of ITS information crossing their desks is not useful	*
f) Specific structure for achieving education goals is not desired	*
2. ITS Planning	
a) Need to discuss planning implications of planning data which may flow back from systems	* *
b) Need to define functional requirements and performance criteria for integrating appropriate ITS systems	* *
c) Need for working groups	* * *
d) Encourage standards monitoring	* *
e) Create an integrated highway and transit ITS regional plan	* *
f) Encourage vision process	*
3. Tracking Regional ITS Projects	
a) Web site is a good idea	* *
b) Chair and subchairs should provide help desk support	*
c) Hold regular meetings	* * *
4. Outreach	
a) Written Information dissemination and reports to publications and conferences	* *
b) Media representation through public affairs officials, need for an ITS "song sheet"	* *
c) Resource sharing at agency level as needed	*
d) Consultant hired for technical expertise was a possibility through agencies	* *
e) Keep MWCOG' s role simple and administrative	* * *

Key:
* * * Very Important
* * Important
* Somewhat Important

Analysis of Break-out Session Group II
Facilitator: Matt Hardison, Apogee Research

This group did not use the worksheets provided by the workshop organizers. Rather the group formulated a brief "goal" statement for each area of responsibility and identified specific tasks that the Task Force could implement.

ITS Education
Participants concurred that the Task Force could play an important role in facilitating exchange of information and ideas and helping stakeholders increase their awareness and level of understanding of ITS. The group agreed that the Task Force should pursue a range of efforts, including first identifying stakeholders and then organizing education programs to match stakeholder needs. The group placed great emphasis on what it called "self-education," where stakeholders should make it a point to attend seminars, tour ITS facilities and get involved in training workshops to increase their ITS awareness.

ITS Planning
While participants expressed interest in coordinating/integrating ITS with the traditional transportation planning process, the emphasis of the group was on simply ensuring that technological solutions were adopted where appropriate to address transportation needs.

Tracking Regional ITS Projects
The group recommended using the Internet, among other platforms, to develop an information database on ITS projects in the Region. The database could be stored on an existing web site or a Web page developed for the Task Force. The group thought that the most convenient option, requiring the least resource allocation, would be to have Task Force member's agency update the web page on their own.

ITS Project Oversight
Rather than "oversee" ITS projects in the Region, the group recommended that the Task Force serve as a forum for coordination and cooperation between inter-jurisdictional and/or interstate ITS projects. However, the group also emphasized that the Task Force adopt a specific project role on select, regional projects. The group cited the Traveler Information System (TIS) project as a example of a logical project for the Task Force to coordinate, given the regional scope and clear need for inter-jurisdictional cooperation. The group concurred that other projects that were narrower in scope or that may not need multi-agency initiatives, such as signal system installation, did not require Task Force involvement.

Activities Recommended by Group II

Areas of Responsibility & Associated Activities	Relative Importance
1. ITS Education	
a) Conduct stakeholder analysis – identify stakeholder groups	**
b) Organize education programs to match stakeholders	**
c) Focus on "self-education" through	***
– monthly seminars	
– speakers	
-tours	
– cross-training	
2. ITS Planning	
a) Work through MWCOG "Unified Planning Work Program" (UPWP)	*
b) Develop a common short and long term "vision"	**
c) Develop an inventory of research	*
d) Establish guidelines	**
3. Tracking Regional ITS Projects	
a) Develop an information database	*
4. ITS Project Coordination	
a) Develop a process for coordinating regional ITS projects	**
b) Ensure that a correct, consistent, message is communicated	***

Key:
* * * Very Important
** Important
* Somewhat Important

The facilitator began the session by describing the worksheets and their four areas of concentration: Education, Planning, Tracking and Project Oversight. The group decided that the worksheets provided a good framework for working through the issues. Using a single page of a flip chart for each area, the group proceeded with the discussion, beginning with Education. After some discussion of the various activities under each area, the group decided by a show of hands the relative support for each activity. After counting the hands, the facilitator would note the degree of support on the flip chart. Three stars indicated a virtual consensus, two stars a preponderance and one star a substantial minority. No stars meant that less than a quarter of the group concurred. While time pressures restricted full discussion, all areas except Project Oversight were discussed in detail. The absence of stars for activities under Project Oversight does not mean that the group viewed **it** as unimportant, only that the group ran out of time.

ITS Education
The group felt that education was one of the most important areas for the Task Force and suggested that an appropriate goal would be: "increase the level of understanding of how technology can be used to solve transportation problems." The attached sheet shows how the group voted on various educational activities. They were enthused about all the activities except for tours and developing a reference li brary.

ITS Planning
Planning was thought to be an important area for the Task Force and the suggested goal was: "To integrate technology into the transportation planning process." The group voted for all the activities except for making TIP/CLRP recommendations.

Tracking Regional ITS Projects
The group felt that tracking of regional ITS projects was an appropriate area for the Task Force. The identified goal was: "Report the status of ITS deployment in the region to support timely, cost-effective ITS decision-making." In some ways this area was hard to differentiate from education. The word "timely" in the goal was stressed upon, since the group felt that by tracking the progress of project impacts, it would result in better decision making, especially, in a field which is evolving so rapidly. The group was in favor of all the suggested activities under this area.

Project Oversight
The group ran out of time before they had the opportunity to seriously engage in discussing this topic. A goal was suggested: "Serve as a forum for cooperation, coordination and commitment towards regional ITS projects." However, time constraints did not permit an extensive discussion of the real purpose of these activities.

The group could not come to grips with the issues of cost. It was recognized that the task Force had few resources, and there was no enthusiasm for extending efforts towards providing a large budget. Some activities would not require special resource allocation (for example, distributing existing newsletters, inviting local speakers, etc.). Some participants voiced the view that activities, if considered genuinely meritorious, would be allocated resources. The group did not specify which activities.

The group did not have anyexplicit discussion about timing of activities. Clearly, those activities with a myriad of benefits and which requited few resources, would have highest priority. It was felt that the Task Fore itself could make these decisions during its meetings.

Activities Recommended by Group III

Areas of Responsibility & Associated Activities	Relative Importance
1. ITS Education	
a) Develop a web site	* * *
b) Use existing newsletters	* * *
c) invite guest speakers	* *
d) Compile a glossary of ITS terms	* *
e) Create newsletter	**
f) Program reviews	**
g) Training seminars	* *
h) Public service announcements	**
i) Workshops	* *
j) Tours	*
k) Reference library	*
2. ITS Planning	
a) Create a vision	***
b) Create and maintain an ITS plan, as a component of the transportation plan	***
c) Coordinate with other TPB sub-committees	***
d) Encourage ITS applications in non-ITS projects	* * *
e) Encourage public-private partnerships	* * *
f) Make TIP/CLRP funding recommendations	*
g) Identify non-TIP funding	* *
h) Ensure inter-jurisdictional and inter-project coordination	* * *
i) Idea generation – serve as a "marketplace" of ideas	* * *
3. Tracking Regional ITS Projects	
a) Conduct periodic surveys and report on ITS projects	* * *
b) Develop a ITS project database for the region	* *
c) Create a web site	* *
4. ITS Project Oversight	
a) Provide a forum for coordination and cooperation between ITS projects	
b) Advice on procurement	
c) Provide technical and policy advice	
d) No contractual authority	

Key:
* * * Very important
* * Important
* Somewhat important

Analysis of Break-out Session Group IV
Facilitator: Doug Ham, DBH Consulting

This group worked backwards from ITS Project Oversight to Education, believing that they could complete more detailed work on activity areas that- the other groups might not have time to cover. The group did use the activity sheet, and found it moderately useful, Rather than coming up with a one-sentence, over-arching goal, the group worked in a more stream-of-consciousness manner to make several general statements about goals for each activity area.

ITS Education
As the group was pressed for time on this subject, it did not have a lengthy discussion. All members agreed that education was important, and a crucial target of educational efforts should be young people, who were viewed as being receptive to new technologies and an important block of support for the future.

The group did not want to create a new newsletter but felt the dissemination of other existing materials would be appropriate. The group was supportive of training seminars and workshops, outside guest speakers, and tours. With regard-to the category "peer information exchange," the group viewed that to be part of every other activity of the Task Force and did not find it meaningful within the context of education. The group did discuss creation of a web page, possibly as part of another organization's web page, e.g., MWCOG.

Dissemination of existing materials was perceived to be a low resource, ongoing effort, as were training seminars, workshops, and guest speakers. The group wanted to see a tour sometime within the year, and viewed that as a low resource activity if an organization such as ITS America could assist. The group also wanted to see a web page within the year.

ITS Planning
The group felt that the Task Force could help re-think how transportation planning is performed relative to ITS, while at the same time helping to incorporate ITS into the mainstream transportation planning process (as amended to appropriately reflect ITS). There was general agreement that current planning is inadequate in addressing ITS, e.g., planning and operations need to be better aligned.

In discussing the creation and/or maintenance of an ITS regional plan, the group felt that its role was to identify gaps in existing plans rather than to create a new ITS-specific plan. Moreover, rather than create a new ITS vision per se, the group felt that the exercise of developing a response to Congressman Wolf would result in a vision of sorts. The group thought that the adoption of the Wolf plan would fulfill the creation of the regional ITS vision.

While the group did want to see integration with the existing process, as well as to ensure that technological solutions were adopted as appropriate, it also wanted to make efforts to change the current planning process.

The group was not clear what its role was with regard to TIP/CLRP funding recommendations, although under project oversight it saw a clear role **in** making policy recommendations to the TPB. They "tabled" discussion of this topic. On the other hand, the group saw a clear role in identifying and encouraging public/private partnerships, as well as in identifying other non-TIP funding sources.

The group saw the identification of gaps in the regional plan as an ongoing, low resource activity. Working to produce results for Congressman Wolf, although nearing completion, was viewed as a medium resource activity. The group did not estimate resources or time frames.

Tracking Regional ITS Projects
The group viewed tracking as being crucial to building a knowledge base which would in turn have the following salutary effects:

- Retain an institutional memory despite staff turnover
- Allow for technology sharing between agencies and jurisdictions
- Allow for sharing lessons learned, thereby reducing the risk for other agencies that undertake similar projects
- Allow for the efficient use of funding as projects benefit from the above three points.

The group viewed the main mechanism for tracking as regularly scheduled Task Force meetings. However, it also discussed, at a minimum, an annual survey, using the Castle Rock Consultants' inventory from this study as a foundation. In addition, the group felt that the Task Force should use its regular meetings to hear short presentations (3 minutes) about various projects. Presenters would be expected to bring hard copy documents/materials relating to those projects so that Task Force members could learn more about those projects or share the materials with others in their respective agencies.

Ironically, this group, which had discussed some type of database of projects under Project Oversight category, rejected a "centralized database" for tracking (although the same concept described with different terminology might have been acceptable). They also viewed the Help Desk as of possible use, but not likely to occur in the near term.

The group viewed the regular meetings as requiring low levels of resources, with the periodic surveys and reports possibly requiring low to medium resources. Each was viewed as a priority in the near term and ongoing into the future.

ITS Project Oversight

The group envisioned the ITS Task Force as a venue for representatives of different agencies to come together with a shared commitment to cooperate and coordinate. The group clearly saw the respective agencies operating on their own, but developing cross-cutting policy recommendations, sharing information and otherwise cooperating to maximize the benefits of ITS across the region. This philosophy was applied to projectoversight activities, where this group placed its emphasis on project oversight from primarily a policy perspective rather than administrative or technical perspectives.

The group viewed the following as relevant activities from the policy perspective:

. Coordinating policy development and advancing it across agency lines
. Presenting ITS Task Force policy recommendations to:
- Their own agencies
- The Transportation Planning Board

To assist in providing policy coordination, the group felt that a matrix or database of all projects would be beneficial (Note: This activity would fall under Tracking Regional ITS Activities, too).

With regard to administrative and technical activities relating to project oversight, the group perceived the Task Force member roles as coordinating between agencies to include a substantial amount of reviewing documents related to projects, e.g., contracts, RFPs, etc. Pam Marston, former chair of the Task Force, emphasized this latter requirement relating to document review, and stressed the need to handle reviews in an expedited fashion.

The group viewed all of the above activities as requiring a low level of resources and continuing for the life of the Task Force. They viewed these activities as very much a part of the basic mission of the Task Force.

Activities Recommended by Group IV

Areas of Responsibility & Associated Activities	Relative Importance
1. ITS Education	
a) Disseminate existing newsletter/information	**
b) Training seminars/workshops with Task Force members as appropriate to individual interests and specialties	**
c) Outside guest speakers	**
d) Tours	*
e) Web site with possible links to other web pages	*
f) Work with other programs such as Driver Education to reach young people	*
2. ITS Planning	
a) Identify gaps in regional plan	***
b) Link to the WOLF project	***
c) Identify and encourage public-private partnerships	**
d) Identify non-TIP funding	**
3. Tracking Regional ITS Projects	
a) Sharing in regular meetings	***
b) Conduct annual survey	**
cl Provide verbal summary, reports	**
4. ITS Project Oversight	
a) Make recommendations to TPB on regional issues	***
b) Task Force takes recommendations to agencies	***
c) Coordinate policy development and advancement across agency lines	***
d) Document reviews, meetings, ideas, etc.	**

Key:
* * * Very important
** important
* Somewhat Important