

CHAPTER 12: INTELLIGENT TRANSPORTATION SYSTEMS

The foothill area of El Dorado County is being impacted by significant growth in jobs and housing, resulting in growth-related urban issues of commuter traffic, local roadway and intersection congestion, increased commercial goods movement, and increased need for sophisticated traffic control. In addition, the foothills are impacted by heavy tourism traffic flowing through to the tourist and recreational destinations in the Tahoe area and beyond. The mountainous area is more rural in character and has the inherent limitation of fewer alternate routes, as well as rapidly changing road and weather conditions. The region also contains a strong tie to tourism and an influx of year-round recreational travelers.

This substantial growth has already begun, and will continue, to stress the current transportation facilities and resources of the El Dorado County Region beyond their capacity. Limited transportation funds, along with rapidly escalating property values, environmental constraints and various other factors, have created the reality that capacity-increasing transportation projects alone will not fulfill the needs to improve safety and reduce congestion. Intelligent Transportation Systems (ITS) offer potential new solutions to accomplish these goals, by making the most efficient use of the existing transportation network. ITS will not solve all the transportation-related problems in the area; however, many applications have proven to help address similar challenges in regions across the country.

INTELLIGENT TRANSPORTATION SYSTEMS DEFINED

The “official” ITS definition (23 CFR Part 940), “Means electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.” An alternative definition for ITS is the application of advanced technology to assist in the solution of transportation problems and the management of transportation systems. The implementation of ITS technology is not new. ITS elements such as computerized signal systems have been used for well over a decade in the Sacramento Region to manage traffic flow on arterial roads. However, ITS technology is increasingly being used for other transportation management purposes such as traffic management, transit operations management, incident management, and travel information management.

ADVANCED TRAVELER INFORMATION SYSTEMS

These systems deliver data directly to travelers, empowering them to make better choices about alternate routes or modes of transportation. These systems include real time traffic data via the internet or Highway Advisory Radio changeable message signs, etc. An example of this type of technology utilized in El Dorado County is the 50corridor.com website, which contains construction updates and road closures for regionally significant roadways, real time traffic via video cams, commute assistance, and general information and news regarding the US 50 corridor.

ADVANCED TRAFFIC MANAGEMENT SYSTEMS

These systems employ a variety of relatively inexpensive detectors, cameras, and communication systems to monitor traffic, optimize signal timings on major arterials, and control the flow of traffic. El Dorado County currently has no Closed Circuit Television (CCTV) cameras in place. However, CCTV is planned for various locations along US 50 around Echo Summit.

INCIDENT MANAGEMENT SYSTEMS

These systems provide traffic operators with the tools to allow quick and efficient response to accidents, hazardous spills, and other emergencies. Multiple communications systems link data collection points, transportation operations centers, and travel information portals into an integrated network that can be operated efficiently and "intelligently."

TRANSIT OPERATIONS MANAGEMENT

Transit Operations Management utilizes technology of Automatic Vehicle Identification (AVI) and Automatic Vehicle Location (AVL) to provide communications between transit agency vehicles and dispatch centers. AVI and AVL is currently not being utilized in El Dorado County, but is one of the planned applications included in Table 12-1.

INTELLIGENT TRANSPORTATION SYSTEMS EXISTING CONDITIONS

The El Dorado County Transportation Commission (EDCTC), as the Regional Transportation Planning Agency (RTPA) for El Dorado County, is involved in varied levels of ITS studies and plans to integrate this technology into the region. EDCTC participates in the Statewide ITS Deployment Plan, the Sacramento Regional ITS Plan, and the Tahoe Gateway Strategic Deployment Plan, all of which must conform with a broader, National ITS Architecture. These programs and plans are described in detail below.

NATIONAL ITS ARCHITECTURE

The Federal Highway Administration (FHWA) has produced a National ITS Architecture that provides a template, or framework, to assist individual states and regions with the development of their ITS Programs. In addition to the template, the National Architecture provides a consistent vocabulary to facilitate the communication between transportation professionals, and structured guidelines to aid in regional ITS development. In short, The National ITS Architecture provides a common structure for the design of Intelligent Transportation Systems.

STATEWIDE ITS ARCHITECTURE & SYSTEM PLAN

As mentioned above, individual states can use the National ITS Architecture to develop ITS programs unique to their transportation needs. In California, the California Department of Transportation (Caltrans) is in the process of preparing a Statewide ITS Architecture and System Plan, which is a direct offshoot of the Intelligent Transportation Systems Deployment Initiatives Project completed in 2000. This project grouped applications identified in the National Architecture into six inter-dependent ITS systems: Transportation Management, Traveler Information, Electronic Payment, Goods Movement, Public Transportation, and Vehicle Safety and Control. The intent of the effort is to link existing and planned regional efforts within a statewide system that will result in a seamless, coordinated and integrated transportation "system of systems," thus providing the traveling public access to ITS services across geographic regions and municipal jurisdictions.

SACRAMENTO REGIONAL ITS PARTNERSHIP

The Sacramento Region ITS Partnership is an advisory committee made up of local and state transportation personnel. The Partnership meets on a regular basis and identifies issues and opportunities for deploying ITS in the region. The Sacramento Area Council of Governments (SACOG) has been active in building consensus among the various agencies to support successful ITS projects and anticipates continued collaboration between Partnership members on future projects. Future smart corridors, the 511 Comprehensive Traveler Information System, initiated September 2004, and The Sacramento Transportation Area Network (STARNET) Regional Services are examples of ITS cooperative efforts that will be facilitated by this collaboration and partnership.

CAPITOL VALLEY REGIONAL SERVICE AUTHORITY FOR FREEWAYS & EXPRESSWAYS

The Capitol Valley Regional Service Authority for Freeways and Expressways (CVRS) was established in October 1991. CVRS is a multi-county Service Authority for Freeways and Expressways (SAFE) containing six counties- El Dorado, Sacramento, San Joaquin, Yolo, Yuba, and Sutter. The CVRS is staffed by SACOG, and the CVRS Board of Directors includes the existing SACOG Board of Directors plus two representatives from San Joaquin County.

One of the projects administered by the SAFE is a multi-county call box system. The current call box system consists of approximately 1500 call boxes located throughout the six-county service area. CVRS call box calls are routed to three different California Highway Patrol (CHP) dispatch facilities. Call boxes in Yuba and Sutter counties are answered by the Chico CHP, calls from El Dorado, Sacramento and Yolo counties are answered at the Sacramento CHP, and calls from San Joaquin are answered by the Stockton CHP.

TAHOE GATEWAY INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC DEPLOYMENT PLAN

The Tahoe Gateway Counties project area includes the counties of Sierra, Placer, El Dorado and Nevada and encompasses approximately 5,500 square miles and nearly 450,000 people. The Strategic Deployment Plan was adopted by the EDCTC on June 6, 2002. The Tahoe Gateway Counties regional ITS architecture was created as a consensus view of what ITS systems the Stakeholders in the region have currently implemented and what systems they plan to implement in the future to improve mobility to and from the Tahoe region. The following ITS elements, which are defined in the glossary (Appendix L), are currently being used to some extent or are already programmed for implementation in the Tahoe Gateway Counties region:

RAMP METERS

Currently no ramp meters are operating in El Dorado County. On US 50 there are eleven ramp meters planned for installation between the Sacramento/El Dorado County line and Placerville. One mainline meter is planned for near Pollock Pines.

TRAFFIC MONITORING STATIONS

Six traffic-monitoring stations are planned for US 50 although none exist currently. On SR 89, there are two in the Truckee area and plans for one between Truckee and Tahoe City.

CLOSED CIRCUIT TELEVISION CAMERAS

Plans are being made to install two CCTV systems west of Meyers on US 50.

CHANGEABLE, OR DYNAMIC MESSAGE SIGNS (CMS/DMS)

CMS/DMS are in use along I-80, US 50, SR 49 and SR 89. On US 50, there are three existing signs and six more planned.

HIGHWAY ADVISORY RADIO

These devices are primarily found in the I-80 and US 50 corridors. On US 50, three are in operation and three more are planned.

WEIGH-IN-MOTION AND PRE-PASS

No weigh-in-motion facilities are planned along US 50.

ROAD WEATHER INFORMATION SYSTEMS (RWIS)

Two RWIS are planned for US 50 above Pollock Pines.

TRAFFIC MANAGEMENT

There is a new Traffic Management Center (TMC) serving the greater Sacramento area. This center has full capabilities for management of the ITS elements in the I-80 and US 50 corridors throughout the Tahoe Gateway Region. The facility serves as the central control point for all of Northern California. It operates 24 hours a day, seven days a week. Co-located in the facility is the CHP dispatch center. The location of these two agencies in a single building makes the facility a key element for transportation management in the study area.

TRAVELER INFORMATION

In the Tahoe Gateway Region, there is one traveler information kiosk located on northbound U.S. 395 at the Sierra-Washoe County line. A variety of traveler information for state highways is also available through the Caltrans web site at www.dot.ca.gov/hq/roadinfo and through Smart-Traveler at www.smart-traveler.com. Telephone based traveler information systems are available in the study area. These include Caltrans' Road Conditions 1-800-GAS-ROAD (1-800-427-7623), and TravInfo in the Bay Area (area codes 415, 650, 408, 510, 925, 707) at 817-1717. In addition, the 511 Traveler Information System in the Sacramento Region will assist motorists with travel plans into and through El Dorado County.

INTELLIGENT TRANSPORTATION SYSTEMS NEEDS ASSESSMENT

EXISTING AND PLANNED ITS APPLICATIONS

Figure 12-1 displays both existing and planned ITS projects in the Tahoe Gateway Region. Table 12-1 identifies the planned ITS applications for the Tahoe Gateway Region, and specifically for El Dorado County as part of the Tahoe Gateway Plan. The applications were assigned a relative priority (high, medium, low) based on input received directly from the Tahoe Gateway Counties ITS Committee, which included responsible transportation and transit management authorities throughout the region, as well as public agency staff from adjacent regions, Native American communities, business interests and trade groups, and other groups interested in transportation issues in and around the area. The priority relates to the proposed implementation timing as shown below. A more detailed description of El Dorado County projects is included in Appendix K.

Tahoe Gateway Counties ITS Strategic Plan Existing/Planned ITS Elements

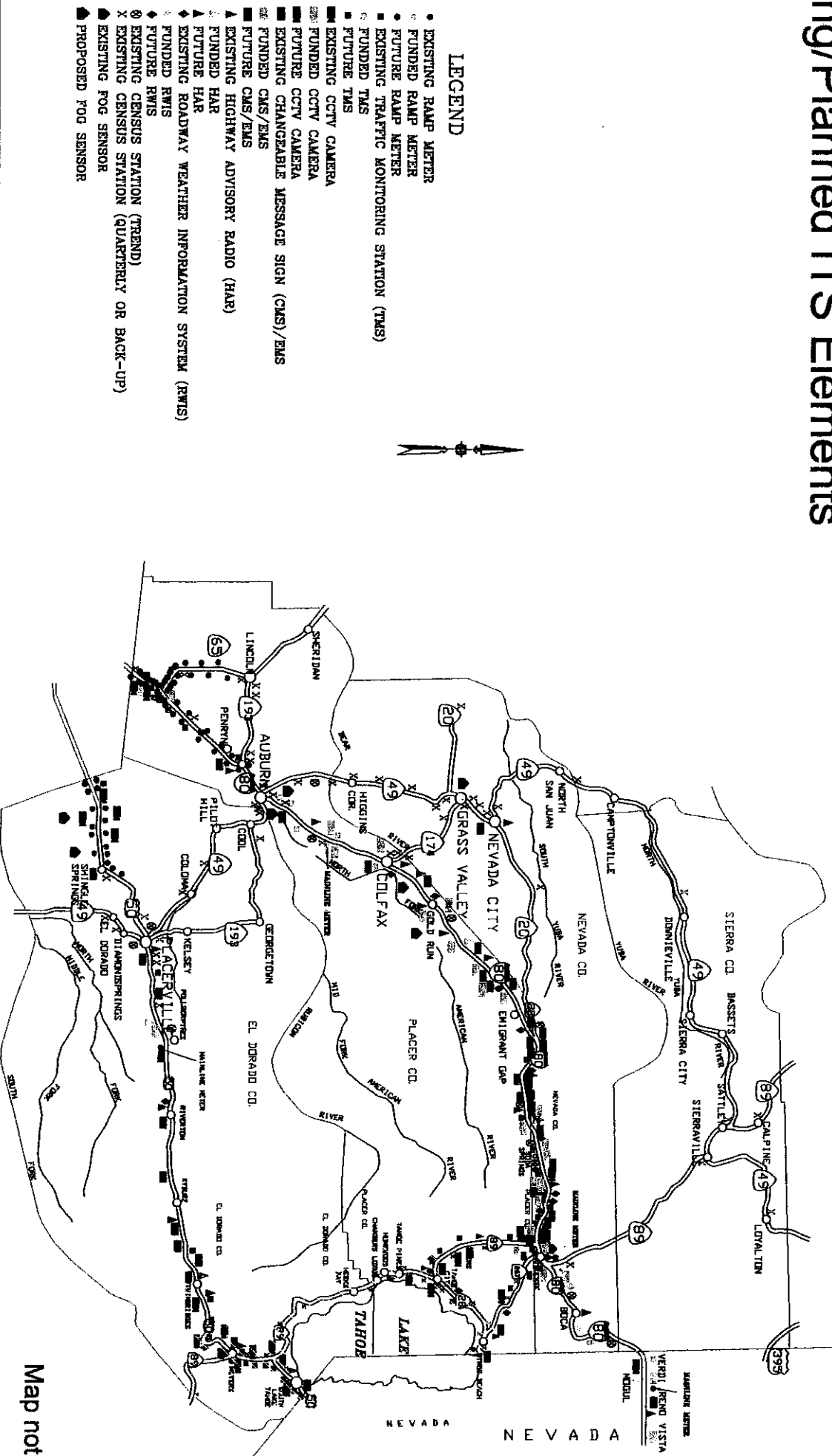


FIGURE 12-1 - TAHOE GATEWAY ITS EXISTING AND PLANNED PROJECTS

INTELLIGENT TRANSPORTATION SYSTEMS ACTION PLAN

The Action Element of the RTP consists of short term and long-term projects and activities that address regional transportation issues and needs. The federal conformity regulations (Title 40 CFR 93.106, Content of Transportation Plans) identify the short term horizon as a period up to ten years in the future and the long term horizon as projects or activities 20 years and beyond. Planned ITS projects with a priority of High fall into the short term horizon, and projects with a Medium or Low priority are included in the long term horizon (See implementation table below). The Action Element implements the Policy Element, must be consistent with the financial constraints identified in the Financial Element, and must conform with the air quality State Implementation Plan (SIP).

IMPLEMENTATION

Priority	Time Frame	Time Frame in Years
High	Short term	0-5
Medium	Medium Term	6-10
Low	Long Term	11-20

The projects listed in Table 12-1 implement Goals 1.A.4 and 2.D.4 of the Policy Element of this RTP, which pertain to Intelligent Transportation Systems and read as follows: *Incorporate Intelligent Transportation Systems (ITS) strategies where feasible.*

TABLE 12-1: INTELLIGENT TRANSPORTATION SYSTEMS SHORT AND LONG TERM ACTION PLAN (UP TO 10 YEARS AND 20 YEARS AND BEYOND)

Regional/Local	Project Description	Priority	Cost
SHORT TERM HORIZON			
Regional	Traveler Information Management	High	\$200,000
Regional	Traveler Information Dissemination Devices at Key Locations	High	300,000
Regional	Web Page Development	High	100,000
Regional	Communications Study	High	100,000
Regional	Upgrade Caltrans District 3 TMC to manage US 50, I-80 and other ITS deployments	High	1.5M
Local	Placerville Signal System Technology Advances	High	800,000
Local	Lower U.S. 50 Freeway Management	High	500,000
Local	U.S. 50 Winter Traffic Management	High	250,000
Local	U.S. 50 Traveler Information	High	1.5M
Local	U.S. 50 Surveillance	High	1.1M
Local	Implement/Expand AVI/AVL/CAD Technologies for Public Transit	High	600,000
LONG TERM HORIZON			
Regional	Regional Incident/Emergency Management Plan	Medium	\$200,000
Regional	Portable Traffic Management Devices	Medium	350,000
Regional	Medium Term Regional ITS Plan Update	Medium	200,000
Regional	Long Term Regional ITS Plan Update	Low	200,000
Local	Install Ice Detection and Warning Systems	Medium	200,000
Local	Install Downhill Speed Warning System on U.S. 50 Near Camino	Low	100,000
Local	Install Animal Vehicle Collision Avoidance Systems-Hwy 49 and U.S. 50	Low	150,000
Local	AVI/AVL For Emergency Vehicles	Low	400,000
Local	Install Rock/Mudslide and Avalanche Detection and Warning System	Low	200,000

SACOG is responsible for maintaining and updating the Tahoe Gateway Regional Architecture as required in coordination with the Tahoe Gateway Maintenance Team. SACOG is in the early phases of updating its 1996 ITS Early Deployment Plan and will address integration with the Tahoe Gateway Regional Architecture as part of that process.

Many of the projects listed relate and overlap with projects listed in Chapter 11, Transportation Systems Management, Table 11-1.

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