

INTELLIGENT TRANSPORTATION SYSTEMS (ITS) UPDATED VISION FOR THE SACRAMENTO REGION

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Why Consider Intelligent Transportation Systems in Regional Planning?

Sacramento's population is projected to grow by one million people over the next 20 years. While this growth will generate more inter- and intra-regional travel, transportation agencies are limited in the number and scope of infrastructure projects they can undertake to accommodate the additional travel by households and businesses. Seeking a solution to this dilemma, regional transportation agencies have embraced Intelligent Transportation Systems (ITS) to help them improve the operating efficiency of our existing infrastructure. ITS helps emergency service agencies reduce response time and clear accidents sooner. Roadway technologies are available that reduce stop-and-go traffic conditions, thereby improving mobility on our roadways and reducing vehicle emissions. ITS technologies that improve timeliness and facilitate transfers are the cornerstone of efforts to expand transit operations. Traveler information, made available via the internet, telephone, or smart transit kiosks, will help people make better decisions about when, where, and how to travel. Collectively, these and other ITS technologies will improve mobility and accessibility throughout the region without relying solely on major infrastructure investments.

ITS and the Goals of the 2025 Metropolitan Transportation Plan

The ten goals of the MTP are listed below and followed by brief descriptions of how ITS can help achieve those goals.

1. OVERARCHING GOAL: QUALITY OF LIFE

Develop a fully integrated, multi-modal transportation system to serve as a catalyst to enhance the quality of life enjoyed by the current and future residents of the Sacramento region.

ITS is the technology needed to develop a fully integrated, multi-modal transportation system. With the ability of ITS to enhance and integrate transit services, smooth traffic flow, and provide traveler information, the region can achieve this goal with a likely benefit of reduced vehicle emissions.

Objectives:

- **Market ITS to encourage the use of multi-modal transportation system**
- **Reduce time residents spend in congestion**
- **Provide current traveler information via 511**
- **Improve traffic management**

- **Provide real-time transit vehicle arrival information system**
- **Provide guidance to available parking**
- **Provide electronic payment and/or regional fare collection system for transit (possibly multi-modal)**
- **Improve safety for all modes (i.e., surveillance on transit vehicles, traffic calming)**
- **Have a better ITS education system in the region**

2. ACCESS AND MOBILITY

Improve access to goods, jobs, services, housing, and other destinations; provide mobility for people and goods throughout the region, in a safe, affordable, efficient and convenient manner.

ITS will be a critical component in achieving this goal. Its provides the technology needed to integrate various transit services, improve transit timeliness, create new Bus Rapid Transit (BRT) transit trunk lines, and eventually make possible neighborhood-scale paratransit services that provide virtual door-to-door access either as a stand-alone service or as a feeder service to transit trunk lines. Traffic Operations Centers (TOC) will be able to leverage this ITS infrastructure investment to increase traveler mobility using applications that will allow engineers to remotely monitor the roadway system and optimize operations according to changing conditions throughout the day. These technologies can also be used to reduce conflicts between non-motorized modes and vehicles. Traveler information made available via STARNET, will help residents make travel decisions that best meet their needs given conditions on the region's roadways and the availability of transit.

Objectives:

- **Improve traffic signal timing, coordination, and management across jurisdictional boundaries**
- **Provide more predictable travel times**
- **Improve reliability of alternate modes**
- **Implement transit signal priority**
- **Improve coordination among traffic, public safety and transit agencies**
- **Provide for enhanced multi-modal transit transfers**

3. AIR QUALITY

Develop a transportation system and related strategies that contribute to achieving healthy air in the region.

There are two important ways ITS may help reduce vehicle emissions. First, the transit improvements mentioned above will make bus and light rail service a more convenient and viable option for travelers in the region. With even a modest number of trips shifting from auto to transit, cold starts and VMT may be reduced thereby reducing emissions.

For auto trips, ITS can be employed to smooth traffic flow thereby possibly reducing stop-and-go conditions, which tend to have higher rates of emissions on a per mile basis.

Objectives:

- **Improve travel time along corridors**
- **Promote increased use of alternate modes (walking, bicycle, transit, carpool, vanpool)**
- **Streamline goods movement processes**
- **Improve overall congestion**
- **Improve traffic management**
- **Increase ridership on transit vehicles by improving reliability**
- **Consider addition of HOV/HOT lanes across region**

4. TRAVEL CHOICES

Provide affordable, convenient, safe, and integrated travel choices.

As mentioned above, ITS is the technology needed to integrate the various modes of transit in the region. Not only can ITS integrate modes of transit (paratransit, bus, and rail), it can integrate service between transit districts creating a potentially seamless system that will enable travelers to access most parts of the region. With the deployment of ITS-enhanced paratransit service, transit can become a virtual door-to-door service making it a convenient alternative to the automobile. On-board cameras and cameras at transit stops will improve the security of the transit system by making surveillance easier and uninterrupted. Advances in signal operations have the potential to help reduce vehicle conflicts with bicyclists and pedestrians. Additionally, traveler information made available via STARNET will help people make better decisions about mode, route, and time of travel.

Objectives:

- **Improve bicycle and pedestrian safety**
- **Provide priority for transit vehicles using transit priority, queue jumper lanes, and signal coordination**
- **Provide advantageous transit service over the use of automobiles**

5. ECONOMIC VITALITY

Enhance the economic vitality of our region by efficiently and effectively connecting people to jobs, goods, and services, and by moving goods within our region and beyond with an integrated multi-modal freight system.

In addition to increasing the efficiency of transit and the roadway system, ITS is the technology that businesses can use to improve the efficiency of moving goods and services throughout the region. Improvements in freight movement are already being seen from weigh-in-motion sensors in the roadway. Other improvements will be possible using real-time roadway condition information, made available via STARNET, enabling businesses to re-route or re-schedule commercial vehicles according to changing

conditions on the system. Not only will businesses benefit from improved freight movement, but also their employees will have better access to jobs by focusing initial ITS improvements on corridors that feed job centers in the region. Access improvement will come in the form of improved transit service, as well as in the ability of TOCs to integrate operations across jurisdictional boundaries. These interconnected TOCs will be able to maintain roadway capacity during peak periods by facilitating faster accident clearing, adjusting signals to smooth traffic flow, and providing alternate routes when needed.

Objectives:

- **Improve access into and out of economic centers**
- **Expedite commercial vehicle deliveries**
- **Improve accessibility to parking**
- **Develop an ITS education program in the region**
- **Integrate Sacramento region initiatives with adjacent regions**

6. EQUITY

Pursue a transportation system that addresses the needs of all people in all parts of the region and assure that impacts of transportation projects don't adversely affect particular communities disproportionately.

Focusing ITS improvements on transit in corridors feeding job centers not only addresses unmet transit needs in those corridors, but also helps balance investments made in roadway improvements. While initial ITS deployments will be in select priority corridors; they will nonetheless help expand and improve the transit system making it a more attractive option for travelers. For those who are unable or unwilling to drive, these ITS transit applications will noticeably improve the level of service in existing and new transit corridors, providing greater frequency, timeliness, and easier transfers. These ITS improvements will also help traffic engineers relieve congestion in many of the same corridors by adding functionality that will reduce stop-and-go traffic conditions. Consideration for bike and pedestrian movement can also be included making this a comprehensive corridor improvement effort.

Objectives:

- **Develop programs that have a regional focus**
- **Develop compatible/consistent ITS deployment initiatives across region for similar deployments (i.e., transit priority deployed in one corridor has same technology as transit priority in another)**
- **Improve access to and reliability of alternate modes**
- **Provide traveler information in accessible formats (i.e., large print, Braille, 711, audio, multi-lingual) and varying media (i.e., web, TV, in-vehicle, 511, kiosks)**

7. TRANSPORTATION AND LAND USE

Influence land use policies to improve access to jobs, services and housing to everyone in the region by using market forces and the regulatory process.

ITS will be used to create BRT corridors like those planned for Stockton Blvd. and Watt Ave. These new trunk line transit facilities can be targeted for transit oriented development (TOD) improvements such as those that have come out of the Transit for Livable Communities (TLC) effort at Regional Transit. Just as the TLC planning effort focused on station area land use plans that would support light rail, a similar planning effort can be undertaken for BRT corridors. Such an effort will explore how to densify areas along BRT corridors via redevelopment and infill, thereby supporting transit and helping to reduce sprawl.

Objectives:

- **Consider alternate mode mobility in every development**
- **Link transit operations to jobs, services and housing**
- **Mainstream ITS initiatives into the transportation and land use planning process**

8. FUNDING AND REVENUE

In order to adequately fund the Plan, develop appropriate, innovative, equitable, and stable funding sources (both short- and long-term) and identify cost-reduction measures.

While ITS will have to compete with other projects for funding, TEA21 (and likely subsequent transportation bills) includes discretionary money for ITS integration, which is distributed via an earmarking process. The earmarks provide up to 50 percent of project cost with a required 20 percent local match. That means that a \$1,000,000 ITS project can potentially cost the region only \$200,000 (not including the opportunity cost of the 30 percent paid for with other federal funds). The ITS earmarks provide a means to leverage local and federal funds for projects with an ITS integration component.

Objectives:

- **For CIP projects, create a funding incentive for including ITS on the project**
- **Position the region to qualify for federal ITS funding**
- **Seek multi-jurisdictional opportunities for funding**
- **Promote benefits of ITS in the region to build support for funding**
- **Track the number or types of projects that successfully integrate ITS into a project**
- **Seek funding from traditional funding sources (i.e., Bicycle Transportation Account, Safe Routes to School, Federal Transit Authority)**
- **Obtain Homeland Security funding**

9. HEALTH AND SAFETY

Improve the health of our residents by developing systems that would encourage walking and biking, and improve the safety and security of people on all modes in all areas.

An outcome of increasing transit service would likely be an increase in walking and biking to access the transit network. Even if a neighborhood paratransit service were implemented, patrons would still have to walk short distances between their origin or destination and transit stops. Transit-oriented development along BRT corridors would also create urban designs conducive to walking and biking. Such designs coupled with signal timing that accommodates pedestrian and bike movement could create a much safer environment for non-motorized modes.

As mentioned above, ITS could help reduce emissions and resultant respiratory distress. Also discussed above are the improvements in safety resulting from monitoring technologies at transit stops and on vehicles. Cameras on roadways and signal preemption technology would also accelerate the detection of emergencies and reduce the response time of fire, police, and ambulance personnel. Additionally, an ITS enhanced transportation system can help reduce vehicle emissions by encouraging more transit use and by smoothing traffic flow thereby minimizing stop-and-go conditions, which tend to have a higher level of emissions on a per-mile basis.

Objectives:

- **Encourage use of alternate modes (i.e., bicycle, pedestrian) for mobility**
- **Provide safer transit service**
- **Improve emergency response time and coordination by integrating emergency response and traffic management activities**
- **Reduce vehicle crashes**

10. ENVIRONMENTAL SUSTAINABILITY

Develop the transportation system to promote and enhance environmental quality for present and future generations.

| As mentioned above, ITS-enhanced BRT could lead to TOD land use designs along these transit trunk line corridors. Such development reduces pressure to convert agriculture and other open space for future development. As well, TODs supports walk, bike and transit use, which translates to a reduction in vehicle use and resultant emissions. Additionally, ITS will help reduce stop-and-go traffic conditions, which tend to have higher levels of vehicle emissions.

Objectives:

- **Use technology to help maintain a balance of environmentally friendly growth and the use of advanced technology**
- **Provide real-time traveler information for ride-sharing and trip planning**