

intercity and commuter train services between Orange and surrounding counties.

Recently, the Orange County Transportation Commission adopted a \$710 million budget, the largest budget ever adopted by the agency. This level of funding is directly attributable to *Measure M*. Approximately 73 percent of the budget was comprised of *Measure M* funds. In this era when the popular cry is "no new taxes," the voters of Orange County are to be commended for the foresight and vision of approving *Measure M*.

I would also like to note that 3 years of negotiations recently culminated in the agreement by six Southern California counties to purchase 340 miles of existing railroad lines to use for a comprehensive commuter rail project. This \$500 million acquisition has put Southern California on the fast track to develop mass transit rail service in a fraction of the time it would take to develop a project of this type from scratch. In fact, by 1993, we expect thousands of commuters to make the switch from driving alone to using the rail system. This will help relieve congestion on our freeways.

These are exciting times for transit projects in Orange County. We are tackling the challenges head on, with ample resources to solve many of the chronic problems that have plagued us for years. These are also exciting times at the local level. As a member of the Anaheim City Council, I have also had the opportunity to participate in the city's creative approaches to traffic problems. We need people like the transportation professionals gathered here today to help us solve these problems.

I believe the jewel of our efforts is the Anaheim Traffic Management Center. Don Dey was one of the key people that helped put the management system in place. This state-of-the-art system keeps millions of tourists, baseball and football fans, and local residents moving efficiently throughout the streets of Anaheim. From a single control center in central Anaheim, we are able to direct the flow of traffic at major intersections throughout the city with the use of

real-time video cameras and sophisticated signal switching equipment.

For example, we can now empty a capacity crowd at Anaheim Stadium, which holds approximately 70,000 people, in about 45 minutes. Before the system was developed it took twice that long. The Traffic Management Center also includes a link to Caltrans and the University of California-Irvine. These links provide for the monitoring of regional traffic conditions.

These features have provided a good start to addressing our traffic problems. We continue to explore new technology to enhance our capabilities at the Traffic Management Center. In combination with other innovative projects, the Traffic Management Center has made Anaheim a leader in solving regional traffic problems.

It is fair to say that traffic problems will be with us for many years to come. With the continued cooperation between agencies and the growing use of advanced technology systems, we will meet these challenges today, tomorrow, and well into the twenty-first century. Thank you and enjoy your symposium.

### **Federal Highway Administration Perspective**

*Dennis C. Judycki*  
*Federal Highway Administration*

It is a pleasure to be here on my first visit to the Beckman Center. I was pleased to be asked about a year ago to participate in this symposium. I think the topic of traffic management is very timely. Certainly, the Federal Highway Administration (FHWA) is interested in promoting and encouraging integrated traffic management systems (ITMS). I would like to share with you some views of where we have been and where we are going in the future with traffic management systems. I very much look forward to learning from the other panelists who will address the state, city, and user views of ITMS.

The first question often asked is, What is an integrated traffic management system? This will



be discussed more fully this morning, but I think it is appropriate to note that the working definition often used is that it is an integrated system representing the organized management of arterial and surface-street traffic management systems and freeway operations and management systems. Although this may be viewed as a more traditional definition, it certainly includes both institutional and functional integration.

My view of the concept of what an integrated traffic management system should be has changed over time, in keeping with the changes we have seen in the transportation system and advances in technology. I think the context within which we view ITMS is much broader now and includes interface with such elements as advanced traveler information systems (ATIS). Certainly, the institutional issues influencing ITMS have evolved to include expanded public/private roles and partnerships.

The benefits of ITMS have been proven at the technical level. However, I think formal documentation of these benefits has sometimes been missing. The TRB Freeway Operations

Committee has done a good job of documenting traffic management system projects and completing an inventory for North America. This is an important step in evaluating national experience and gaining insight into lessons that have been learned in different metropolitan areas.

Examples of the benefits of ITMS can be found in many areas around the country. The Long Island INFORM project reports delay savings in the order of 300,000 vehicle-hours a year and a 5 percent reduction in accidents on the Long Island Expressway, while a similar roadway had an increase of 13 percent. The Smart Corridor Project in Los Angeles has demonstrated the benefits when jurisdictional, institutional, and technical issues are addressed through ITMS. The expected return from this system is in the range of \$24–32 million in user benefits.

Coalitions are being formed at the local and regional levels to provide a bridge for management and coordination between various levels of government. One good example of this is the National Incident Management Coalition. This group was formed in response to an understanding at the national level that technically and institutionally we know how to deal with managing incidents, but it was not receiving adequate attention from decision makers. The National Incident Management Coalition was structured to reach out and accomplish deployment activities at the national, state, and local level. Many other cities, including Chicago, Minneapolis-St. Paul, Seattle, and Anaheim, have also developed extensive integrated systems.

Even with these examples, however, we still need to do more evaluations, documentation of project benefits, and more demonstrations of the effectiveness of these systems. The results of these need to be made available to technical groups and to decision-makers. It is important to put a priority on operational issues. There are obviously barriers to doing this. These include institutional and financial barriers, as well as technical barriers. Many of these will be discussed during the symposium, and, I hope, new approaches will be identified.

The institutional issues have been discussed on many different occasions and the relationships between local, state, and federal agencies continue to be important. The formation of regional coalitions has been used as one approach in many areas. The new Intermodal Surface Transportation Efficiency Act (ISTEA) provides a much broader and enhanced role for metropolitan planning organizations (MPOs) in this area. The importance of MPOs as a partner in operational activities in metropolitan areas is now greater. Thus, we are experiencing changes in the institutional framework within which traffic management systems are planned, developed, and implemented. System integration must also be addressed, giving full consideration to the increased involvement of the private sector. In April, FHWA sponsored a symposium dealing with the public/private sector institutional issues associated with deploying intelligent vehicle-highway systems (IVHS). You will note that this is the first mention I have made of IVHS. Although what we will be discussing at this symposium is part of implementing IVHS; ITMS is an important subject on its own merits.

A number of conclusions emerged from the April FHWA symposium on public/private sector roles in deployment. One was the need for widely based education programs to provide a better understanding of the programs and opportunities for ITMS deployment. Another was the need for a "corporate" cultural change involving many public agencies. It was felt that the transportation community should help promote innovative approaches, especially in areas such as procurement procedures.

It was further suggested that the public sector needs to better understand the motivation of the private sector in IVHS development and deployment, and that we need to do a better job of identifying the costs and benefits to assure that a priority is placed on deployment. Public agencies need to establish relationships with IVHS technology industries. A number of financial barriers have also been identified, along with technical issues which should not be overlooked. All of these will be discussed at your workshop sessions over the next couple of days.

I would like to note a few recent FHWA activities in these areas related to ITMS. In 1990, FHWA examined the operation and maintenance of traffic control systems around the country. A total of 24 systems in 7 states were examined. The results of this study indicated that many systems were not being operated or maintained at the level of sophistication that they should be. This was not unexpected, but raised a significant level of concern. An internal panel at FHWA developed a series of recommendations to address the concerns resulting from this study. In addition, a panel of experts, some of whom are in this room, was formed to make recommendations from outside of FHWA. Ed Rowe chaired that panel and did an exceptional job, for which we thank him.

The recommendations from this group, which are documented in a final report, included developing minimum standards and skills for operations and maintenance staff, establishing procedures to fund long term operations and maintenance of the systems, developing staffing guidelines for the operations and maintenance of the systems, developing operations and maintenance guidelines and model plans, developing operations and maintenance guidelines for traffic control systems planning and design, the development of a new National Highway Institute course for operators, establishing a FHWA clearinghouse to distribute technical information on ITMS, the development of a task force to update FHWA procurement regulations, and facilitating the formation of regional traffic management committees. All of the recommendations and follow-up actions are included in a program plan that will be available soon for external review.

From a national perspective, ISTEA recognizes the importance of integrated traffic management systems. A number of new elements are included in this legislation. These include the increased funding levels and the philosophy that integrated operations should be an integral part of managing the transportation system. For the National Highway System, the ability exists to pay for operational activities associated with traffic control centers, incident management

systems, and integrated systems for up to a 2-year period. Under the Surface Transportation Program (STP), operational activities are eligible, with no time limits or specific definitions for the operational programs. This is new eligibility and something you should be examining for possible application in your area.

Certainly, the IVHS program becomes important to eventual system deployment. IVHS funds are currently being utilized in three principle areas: research and development, operational tests, and, on a limited basis, deployment. The research and development program accounts for approximately \$24 million of \$234 million available from FHWA for IVHS this fiscal year. Most of the funds focus on operational tests. The criteria to be used in evaluating potential operational tests was issued in the *Federal Register* on May 8. The strategic plan developed by IVHS America includes further goals for the program and will serve as the point of departure for future areas of emphasis. We will annually solicit for operational test partnership initiatives. Early deployment funding at a level of approximately \$5 million a year is also being provided to metropolitan areas which demonstrate a capability and interest in advancing projects such as integrated traffic management systems. As with operational tests, we will annually solicit for these deployment programs.

In closing, I would like to suggest that our challenge is to deploy integrated traffic management systems that are operationally seamless to our customer—the transportation user. The development, operation, and maintenance of these systems must be a priority. To this end, the symposium should help advance this challenge. It will, hopefully, instill fresh ideas and enthusiasm within each of us. FHWA looks forward to working with you to demonstrate the resolve of our profession to take advantage of the opportunities to deploy integrated systems. Thank you and good luck.

## State Perspective

*Ann Hansen*

*California Department of Transportation*

I have been asked to provide a state perspective on ITMS. I would like to start by placing ITMS in the context of the mission described in the 1972 legislation creating the California Department of Transportation (Caltrans). This legislation stated that the mission of the department is to “provide transportation facilities and services which move people and goods at a reasonable cost and in an adequate, safe, and efficient manner.”

By way of background, it is important to note that California has spent billions of dollars in building one of the best transportation systems in the world. In the San Francisco Bay Area alone, Caltrans now has a \$20 billion investment in its freeway system. The investment in heavy rail systems like Caltrain and the Bay Area Rapid Transit System (BART) is \$7 billion. Light rail systems—San Francisco’s MUNI Metro and Santa Clara County Transit light rail transit—add another \$2.3 billion. Major bus

