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2002 California HOV Summit

TRB COMMITTEE ON HIGH OCCUPANCY VEHICLE SYSTEMS (A3A06)

Participating Organizations

American Planning Association, Orange County Section
Automobile Club of Southern California
California Department of Transportation
City of Irvine
Los Angeles County Metropolitan Transportation Authority
Metropolitan Transit Development Board, San Diego
Metropolitan Transportation Commission, San Francisco Bay Area
Orange County Transportation Authority
San Bernardino Associated Governments
San Diego Association Governments
South Coast Air Quality Management District
Southern California Association of Governments
University of California at Irvine, Department of Urban and Regional Planning

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Introduction

On May 3, 2002, the Transportation Research Board (TRB) Committee on High-Occupancy Vehicle (HOV) Systems (A3A06) hosted a 2002 California HOV Summit in Irvine, California. Building off the success of the first technical summit on HOV lanes held 2 years ago, this year's 2002 California HOV Summit brought together top transportation leaders and elected and appointed officials from around the state to discuss the latest events and research findings surrounding HOV lanes. *HOVs Work* was the principal theme at this year's event. The Summit objectives were to:

- Improve the understanding of HOV planning and operations;
- Provide comprehensive and objective research findings;
- Discuss the top HOV issues brought forth by the public and elected-officials;
- Communicate statewide and regional performance measures;
- Discuss future legislative changes that are performance-based; and
- Discuss approaches to maximize HOV lane productivity.

More than 125 professionals representing academia, planning, engineering, operations, transit, and private industry, as well as elected and appointed officials from local, regional, and state government, participated at this 1-day Summit. The agenda included panel presentations from top transportation executives from both northern and southern California, a lively roundtable discussion that invited perspectives on HOVs from political leaders, private industry, and the media, and afternoon breakout groups.

Throughout the Summit, the participants not only benefited from hearing some of the latest research findings on HOV performance, but participants also suggested actions aimed at improving the operations and future planning of HOV facilities in the state. Some key themes that were expressed by Summit attendees include the following:

MAJOR THEMES

1. HOVs work!
2. Partnering is vital to HOV success.
3. Complete the HOV system.
4. Improve mobility and quality of life.
5. Provide flexibility and choice.
6. Marketing and education are needed.
7. HOVs are part of an overall mobility strategy.

8. Incident management and enforcement.
9. Travel time and trip reliability are what matters.
10. Operational changes should be performance based.

UNRESOLVED ISSUES

1. The overall average vehicle occupancy trend is declining.
2. Goals are multiple and ill-defined.
3. Funding is needed to complete the system.
4. HOV lanes are over-utilized.
5. Occupancy restrictions are increasing.
6. Integration with transit and other strategies should be pursued.
7. Views on pricing strategies are mixed.
8. HOV reliability should be measured.

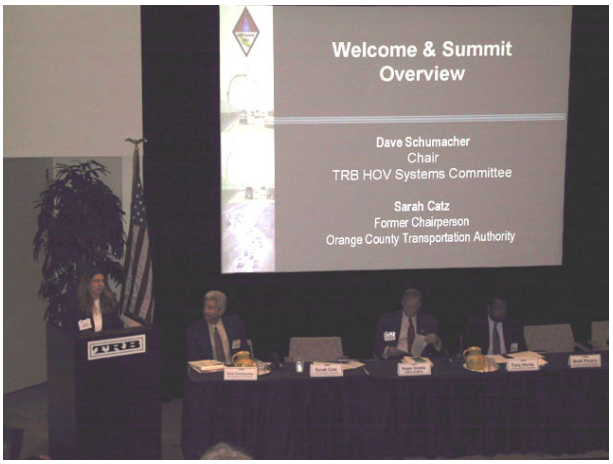
Welcoming and Summit Overview

DAVE SCHUMACHER
Chair, TRB Committee on HOV Systems

SARAH CATZ
Former Chair, Orange County Transportation Authority Board

Dave Schumacher, Chair of the TRB Committee on HOV Systems, opened the 2002 HOV Summit by welcoming attendees to the Beckman Center. To learn more about the Committee, Schumacher invited the attendees to visit the Committee's new website at www.hovworld.com. "Today's HOV Summit builds off the success of a Technical Summit that was held in the same venue about 2 years ago," Schumacher said. Schumacher then provided an outline of the program agenda. Schumacher thanked the sponsors, a number of agencies from throughout the state that lent their support to making this HOV Summit possible. The podium was then turned over to Sarah Catz, the former chair of the Orange County Transportation Authority (OCTA) Board, to provide some additional opening remarks.

Sarah Catz welcomed the attendees to Orange County. Catz, who retired from serving on the OCTA Board in January, said that during her 10 years of serving on the board that she was a strong proponent of HOV lanes. "I've felt this way because HOV lanes work and they increase our mobility," said Catz. She said that it's absolutely perfect that the Summit is being held in Orange County because Orange County has been a real leader in the building of HOV lanes. She said that Orange County currently has 231 HOV lane-miles and another 28 mi planned for the Garden Grove Freeway (State Route 22). "During peak hours our lanes carry over 1,600 cars per hour," Catz said. "And right now on the 405 you can go from South Orange County all the way to LAX and not have to leave the carpool lanes." Unfortunately, Catz couldn't say the same about the Santa Ana Freeway (Interstate 5). She indicated that carpoolers currently traveling through Orange County, particularly northbound on the I-5 HOV lanes during rush hours have to merge over



to the mixed-flow lanes because the there are presently no HOV lanes in the adjacent county. Catz used the example of the fax machine, whereby "if one person has a fax machine it's not very useful, if two people have a fax machine it's helpful…but if everybody had a fax machine just think how effective you can be." She said this same principle applies to HOV lanes.

"We're trying to get commuters to carpool, we're trying to get users to use these lanes, and we're finding that many of our commuters go between counties and not just within Orange County," she reported. "If every County in our region has a good HOV system, I think we can encourage more and more people to use HOV lanes and to carpool."

Catz closed by emphasizing one of the key issues that needs to be discussed today, which is who gets to use the carpool lanes: "Is it just two or more people or three or more people or should it be anyone who advances reducing congestion and improving our air quality?" Then there are questions about vehicle and lane types: "Should it be hybrid vehicles, and should we be discussing HOT lanes?" Catz encouraged the gathering, "Working together on these issues, we can build the absolute best HOV system in the nation."

Opening Remarks

ROGER SNOBLE
Los Angeles County Metropolitan Transportation Authority

Roger Snoble, Chief Executive Officer of the Los Angeles County Metropolitan Transportation Authority was introduced to give the Opening Remarks. Snoble used today as an example of an excellent day to carpool because of this morning's accident on the I-5. He talked about the daily frustrations of sitting in traffic and the significant amount of delay caused by congestion.

"The Los Angeles area operates almost 400 miles of HOV lanes in conjunction with an extremely good partner, Caltrans," Snoble said. He praised the role of today's Caltrans and for their new focus on mobility improvements and for Caltrans's interest in being partners with others who are interested in improving mobility. Snoble also recognized the strong leadership of both Maria-Contreras Sweet, the Secretary of Business, Transportation and Housing, and Jeff Morales, the Director of Caltrans, and for their interest in working with the regions in true partnership in recent years.

Snoble said that there are some really fantastic things going on with the HOV systems in Los Angeles and Orange Counties. "This is a tremendous transportation laboratory, because there are so many different kinds of things going on and so many different kinds challenges being met by innovative kinds of things in the Southern California area that most people are not aware of. All this innovation can only happen through partnerships with different agencies, the business community, and with the general public. We just can't do things the way we used to do things. And today it takes an immense effort to get anything done, particularly if you're going to affect neighborhoods and environments. Most of the transportation improvements that we're looking at in some way, shape, or form do affect people, but vastly benefit more people if we can get them built, so it takes tremendous partnerships and tremendous focus and persistence to build the kinds of improvements that we know that we can build and make them work."

Snoble talked about how the partnership between the MTA and Caltrans and the California Transportation Commission, the cities involved and the County are all essential if we're ever to get anything done. He said, "Part of the problem that Southern California has experienced in the past is that there hasn't always been that sense of teamwork, either at the state level or the federal level, and so one of the things that we need to work on is a consistent transportation program in front of our legislative bodies so that they know what they are supposed to be working on." HOV lanes are one of those programs that we need to work on with our legislators to get the point across that HOV lanes are important and that the funds that go to HOV lanes are extremely well spent," Snoble said. He cited the example of the recent opening of the southbound I-405 HOV lanes, which has provided tremendous relief to one of the busiest freeways in the country. "When that HOV lane opened up not only did we provide a very, very quick way for carpoolers and vanpoolers to get through there, it actually speeded up the speeds on the mainlines and reduced some of the congestion on the parallel surface streets, and so it's been very successful since it's opening," Snoble said. "And now we're working very hard on the northbound lanes." Even though Los Angeles County operates nearly 400 miles of HOV lanes, there are still gaps to be closed, according to Snoble. "Those gaps cause additional delays to the carpoolers as well as the main lanes."

Snoble then offered some suggestions for making HOV lanes work better after they're built. "We spend a lot of time and energy constructing them and getting them built, but there are some things that are really important to making sure that they operate effectively," Snoble said. He emphasized the importance of HOV enforcement, incident detection and clearance in both the HOV lanes as well as the main lanes, and better ways to manage our freeways. Snoble also talked about efforts underway in conjunction with the Southern California Association of Governments (SCAG) to better utilize the HOV lanes through better marketing, primarily to employer-sponsored vanpools. Better utilization of the HOV lanes by transit buses is another area that requires greater attention so that the HOV lanes are used to their greatest extent. Snoble closed by saying, "We've demonstrated that they can work. We just need to follow through, continue to build the ones that make sense, and figure out how we can operate them better and better all the time."

Keynote Address

TONY HARRIS
California Department of Transportation

Due to the state budget deliberations, the State Secretary of Business, Transportation & Housing, Maria-Contreras Sweet was unable to give the Keynote Address. In her absence, Tony Harris, Chief Deputy Director of Caltrans, had agreed to step in to give her speech. Harris opened by saying that this Summit is a great opportunity to begin to help educate and to have everybody begin to understand the importance of HOV lanes. He focused on the issue of quality of life as the main reason why people want to move to California. "And one of those things that makes the quality of life important is mobility," Harris said. "HOV has to begin to be viewed as part of an overall system management." Harris further elaborated on the importance of partnerships with the various transportation agencies. He said, "But one of the challenges that we have is you don't flip a switch and you have the whole system built at once." "And because of that, we are building pieces of it and moving forward." According to Harris, the key to the usage of the HOV system is looking at ways to encourage people to use it and to talk about some of the major benefits.

Harris then indicated that there is a significant amount of transportation work that's occurring in California. "By the end of the calendar year there's going to be around $7 billion worth of improvements underway," Harris said. "And that's creating approximately 182,000 jobs across the state. This program is important and it stimulates the economy, but we cannot build our way out of this effort. First and foremost is to look at how we can complete the system. We have to look at ways to do things differently." Harris credited Orange County for developing an HOV system that's nearly a total system, which means that carpoolers can make their trips pretty much without getting out of the HOV system until they reach their destinations. Harris also emphasized the importance of time savings. He used the example of the recent opening of the southbound HOV lanes on I-405, where carpoolers have said that it's saving them as much as 15 minutes, which is a big deal because the time savings adds up. He talked how important it is to share these kinds of stories about the benefits of HOV lanes.

Harris also talked about the importance of improving the usage of the total transportation and not just the HOV system. He warned that the average vehicle occupancy (AVO) trend is going in the wrong direction. “We have to look at how to improve the occupancy rate not only in the HOV lanes, but all lanes and transit systems overall,” said Harris. “That’s why we at Caltrans are beginning to talk about setting a goal to improve statewide transit ridership. It’s important to set a goal like this because it begins to drive the mindset, to encourage us to engage, to work with the different operators, to listen to the users of the systems, and to find out what is needed to encourage people to consider carpooling, to consider taking a bus, and to consider taking a train. The idea is not to get people to change their mode of travel on every trip, it’s to get people to think about other options and try them.” Harris closed by reiterating the importance of partnerships, not just with Caltrans and the regional transportation agencies, but also with businesses and our communities.

Executive Panel Presentations

MARK PISANO
Moderator
Southern California Association of Governments

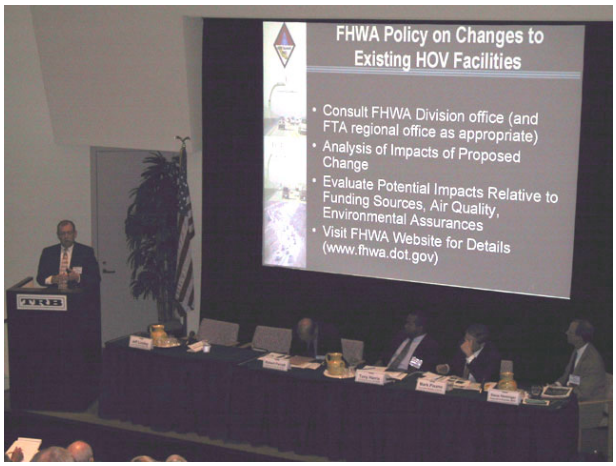
The session on Executive Panel Presentations featured top transportation executives from around the state of California to provide a sense of how different regions approach the development and operation of HOV lanes. This session was moderated by Mark Pisano, Executive Director, Southern California Association of Governments. Pisano began by first giving audience members a brief overview of the HOV system in the Southern California region. He talked about the El Monte Busway as being one of the early successes in this region, and the failed attempt at HOV lanes on the Santa Monica Freeway. Pisano noted that the region currently has 580 miles of HOV lanes. He said the adopted Regional Transportation Plan (RTP), which is the basis for the region's air quality plan, calls for HOVs, carpools, and vanpools as a major component that will expand the HOV system to 1,200 miles between now and the year 2025. Pisano also talked about the RTP's emphasis on increasing vanpool usage over the next 25 years.

Pisano also underscored some of the points made earlier by Tony Harris by saying, "The HOV system itself is demonstrating that it works in accordance with our designs and plans, but the overall mode split for ridesharing within our region, and which is true across most of the country, is not achieving the targets that we have set forth nationally and here in our region." Pisano emphasized the need to focus on marketing concepts that can sell the time savings and the productivity gains that are attributable to HOV lanes. Pisano also emphasized the need for partnerships in order to increase the ridesharing mode split. Pisano then provided a brief introduction for each of the panelists.

FEDERAL PERSPECTIVE

Jeff Lindley
Director, Office of Travel Management, FHWA

Jeff Lindley, Director, Office of Travel Management, FHWA presented a series of slides on the federal perspective on HOV lanes. His presentation focused on the basis for FHWA's support for HOV facilities. Lindley said, "We believe that HOV facilities are a cost-effective, environmentally friendly investment to make in the transportation system to improve mobility, particularly in large, congested metropolitan areas." He echoed the point made earlier that HOV lanes are part of a bigger mobility picture, and that they are not just stand-alone facilities. In order to address traffic congestion, Lindley said that we have to employ a three-pronged strategy that includes increasing capacity, managing capacity, and managing demand. According to Lindley, HOV facilities do all three. "We support HOV lanes because they work and they move much more people than single-occupancy vehicle (SOV) lanes," Lindley said. "They provide travel time savings and maybe more importantly reliability for people that use them."



The bigger picture is regional mobility. Lindley emphasized that HOV facilities can't be implemented in a vacuum; they're part of a bigger mobility picture. According to Lindley, "HOV facilities should be part of a network, there has to be coordination with transit services, and you have to have good support facilities and services [e.g., enforcement, park and ride facilities ridesharing and transportation demand management (TDM) strategies]. He said that places around the country that focus on these items are places that have successful HOV facilities, and some of the less successful HOV facilities are in places that haven't looked at the bigger picture. However, Lindley said, "HOV lanes are not appropriate for every situation, and they don't always work the way they're planned."

Lindley then briefly talked about FHWA's position and policies with regard to making significant changes to the operation of HOV facilities. Lindley said that when areas do make changes to HOV facilities they first and foremost use all the techniques to make the HOV facilities a success. And if that fails, Lindley pointed out that there's a federal process that is required in order to make any significant changes to the hours of operation, occupancy requirements, or the potential to convert an HOV facility back to a regular mixed-flow lane. This policy, which grew out of what happened in New Jersey in 1998, is available for download at www.ops.fhwa.dot.gov/Travel/traffic/hov.

Essentially, the federal policy requires that any significant change to HOV operations be coordinated with the FHWA and FTA division office as appropriate, and that an analysis be conducted of the impacts of the proposed change. A full analysis of the safety and operational impacts is generally required. "Probably more complicated are the potential impacts relative to funding sources, air quality, and environmental assurances and commitments that were made during the project implementation process." Lindley said. "Many of the lanes across the country were built

with special categories of federal-aid funds that can't be used to build single-occupant vehicle capacity." And if you go back later and try to convert an HOV lane back to a single-occupant vehicle lane, you quickly find yourself sideways with those funding restrictions.

Lindley also noted that, contrary to popular belief, there's no easy way to pay back the funds. There is no provision in federal law that would allow a state or a municipality to revert an HOV facility back to SOV use and to pay the money back, and if attempted could lead to federal sanctions. Lindley also stated that air quality may be another issue, because HOV lanes are used in many areas in order to meet the conformity determination with regard to the Clean Air Act. And because there may be prior commitments that could be violated, consultation and full analysis of the impacts are critical before a decision can be made about making any significant changes to HOV operations.

SAN DIEGO PERSPECTIVE

Robert Parrott

Deputy Executive Director, San Diego Association of Governments

Robert Parrott, Deputy Executive Director, San Diego Association of Governments (SANDAG), presented the San Diego region's planned HOV system and its managed lanes strategy. Parrott said that the San Diego region today does not have an HOV system but has three isolated HOV facilities on I-15, the northbound lane on I-5, and a peak-period–only lane in the South Bay on State Route 54. He indicated that only 5% of the freeway segments in San Diego have HOV facilities. "San Diego's draft future plan calls for a true HOV system, including segments with multiple lanes in each direction, and managed lanes," Parrott said. "Our HOV system goes from that 5% to over 50% of the freeway miles with HOV facilities." He said, "The future of the HOV system will provide choices for improved mobility—choices such as travel time savings that will increase our carpools and our vanpools and move more people not just more vehicles." Parrott said that the planned HOV system allows implementation of the regional transit vision and a bus rapid transit system on the HOV lanes. He also indicated that it provides additional opportunities for value pricing to better utilize the HOV facilities as usage grows.

Parrott then briefly described San Diego's regional transit vision, which was approved by SANDAG's board of directors last November and will be included in its 2030 regional transportation plan. This was a cooperative effort developed by SANDAG, the two transit districts—the Metropolitan Transit Development Board (MTDB) and North County Transit District (NTDB)—and Caltrans. According to Parrott, "Implementation of the regional transit vision and the bus rapid transit system will rely heavily on the HOV system being planned." He explained that the regional transit vision provides a network of convenient, reliable, fast, and safe transit service that interconnects the region. It's intended to make transit as fast and as

convenient as the automobile. Parrott also noted the importance of integrating land use planning with transit, and for communities to be designed for walkability. He said, "Transportation problems cannot be solved solely with transportation solutions."

Parrott explained that there are four levels of transit service that are envisioned: 1) Green Car—community based service with low speeds and frequent stops; 2) Blue Car—local service; 3) Red Car—corridor service with higher speeds, less frequent stops; and 4) Yellow Car—regional service with high speeds and limited stops with frequencies of 10 min or less. He said that, to increase speeds, Yellow and Red Car service will make extensive use of the HOV lanes and the preferential treatments on local surface streets. Park-and-ride lots, specially designed transit stations, and direct access ramps are also being planned in conjunction with the system to make transit a more attractive alternative. Parrott provided some estimates on the increases in transit mode share, the greatest gain (increase to 20% to 30% mode split) forecasted in select employment corridors.

Parrott then talked about San Diego's I-15 FastTrak program, which allows solo drivers to pay a per trip fee to use the existing HOV lanes along an eight mile stretch of the I-15. He indicated that carpoolers continue to use the lanes for free. Physically, he said, the carpool lanes are separated by barrier from the main lanes, and access is currently at the two ends. Parrott said, "FastTrak is a model for using existing infrastructure more efficiently." This was made possible because of partnerships with Caltrans, MTDB, California Highway Patrol (CHP), the state legislature, the Governor's office, and SANDAG. The program provides faster commutes for solo drivers and also funds express bus service in the corridor. He said the project had three goals: 1) increase the overall usage of the express lanes when they were first ordinary carpool lanes; 2) better utilize a facility that was underutilized; and 3) test whether value pricing could help relieve traffic congestion on the main lanes of I-15 and generate toll revenues to fund transit improvements. Parrott noted that the experience to date has been very positive. Before the project began in 1995, 9,200 vehicles used the lanes each day. Now almost twice that amount uses the facility per day, according to Parrott. There's also been a substantial increase in carpools, said Parrott. Before the project, there were 7,700 carpools, and now there are over 14,400 per day. Transit ridership on the express bus service has also increased. HOV lane violation rates have dropped from 15% to 2%.

HOV Managed Lanes are also planned for 20 mi of the I-15 corridor, which will be built in three segments. According to Parrott, the first segment will be built just north of the current two-lane reversible facility. This segment is a completely funded project in the State Transportation Improvement Plan (STIP), partners with Caltrans in the use of Grant Anticipation Revenue Vehicle (GARVEE) Bonds, and is scheduled to be open in 2006–2008. "Managed lanes provides flexibility in the number of lanes by direction and in different uses," Parrott said. "It also allows us to serve multiple purposes, and given that it's primarily within the median of the existing right-of-way, it's cost-effective and can be implemented quicker. The managed lanes will be a four-lane facility with movable barriers to serve the large directional split on the I-15, and, unlike two current reversible lanes, there will be intermediate access points along the way. Value pricing will also be incorporated into its operation.

Lastly, Parrott briefly talked about the importance for good HOV signage. "We have 20 plus signs on the northbound I-5 HOV lanes that define what a carpool lane is, what the violation is, but we don't have one sign telling people how to join a carpool," Parrott said. "We need to do a better job in terms of when we develop our HOV facilities to develop a signage plan." He talked about San Diego's recent innovation of partnering with Caltrans to advertise rideshare

information at HOV by-pass ramps locations. Limited rideshare information is also being shown on the Caltrans changeable message signs, but Parrott noted that the messages have to be more consumer oriented.

SAN FRANCISCO BAY AREA PERSPECTIVE

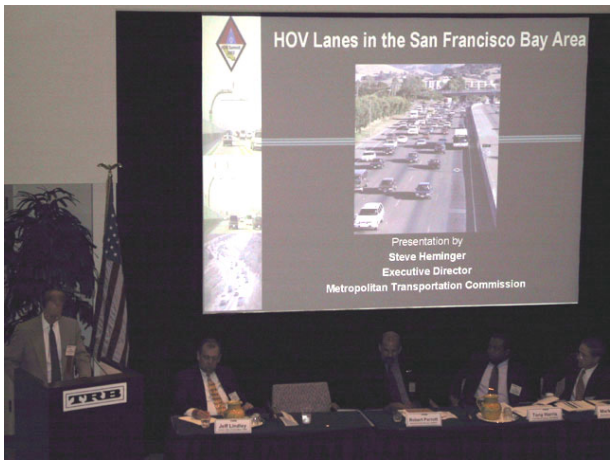
Steve Heminger
Executive Director, Metropolitan Transportation Commission

The next speaker was Steve Heminger, Executive Director of the Metropolitan Transportation Commission (MTC), who gave the northern California perspective and experience on HOV lanes. Heminger noted that the Bay Bridge project was the Bay Area's first HOV facility, which started as a bus-only facility in 1970. Today, there are over 300 mi of HOV lanes in operation in the Bay Area. The long range plan builds that out to 600 mi by 2025. He said that most of the system is in the Silicon Valley. Significant expansions are planned in the North Bay on the U.S. 101 in Marin and Sonoma Counties, on I-80 in Solano County, as well as a couple of toll bridges with carpool lanes.

Heminger explained that their HOV lanes are operated differently than southern California. HOV lanes in the Bay Area are only operated during the peak hours, they are not barrier separated, and users don't have to cross double yellow lines. Thus, these lanes are only oriented towards the peak. The occupancy requirements are also different. Heminger said that in the Bay Area it's three plus on some of the toll bridge approaches and on the I-80, and everything else is two plus.

Part of the Bay Area's success in HOV lanes, according to Heminger, is the extensive amount of planning, starting with the MTC's long-range plan and continuing through to an HOV Master Plan, which is currently being updated. He talked about their peer review process by the county level agencies, by the public, by the legislators, and an established committee comprised of MTC, Caltrans, and the CHP that rigorously monitors the HOV lanes. Heminger said, "One of the tests to that partnership is that we're willing to admit failure as was done on the I-580 in Contra Costa County which eventually was re-designated to mixed-flow lanes.

Heminger then talked about the issue of "freelancing"—legislated changes to HOV facilities. He used the example of the I-580 in Alameda County, in which HOV lanes were introduced as a result of litigation when it really wasn't ready. The HOV lanes were de-designated after 5 years, and then state and federal legislators put a ban in federal and state law prohibiting HOV lanes in unincorporated Alameda County. This law later had to be repealed, at both the state and federal level, so that HOV lanes could be built on the I-680, which is now the second most utilized HOV lane in the Bay Area. Another example cited by Heminger was the I-80, which is an HOV3+ facility that was threatened with litigation unless it was opened as a 24-h HOV facility. The compromise led to an 18-month demonstration of 12-h lanes, basically all day long. The state legislature



then felt that the lanes weren't being used during the day, and later permitted the demonstration to be terminated and the facility to be operated during peak hours only.

Like Los Angeles and San Diego, the Bay Area is also attempting to make use of some of excess HOV lane capacity with express bus services. Approximately $40 million was included in the Governor's plan to help the Bay Area purchase additional express buses and to add service to the HOV lanes that exist and those planned to be built.

Heminger further elaborated on MTC's HOV Master Plan Update. He said that the process is used to evaluate how they are doing and how they might do better. "This planning process will, perhaps, be the most extensive of any we've done," Heminger said. "It comes on the heels of an air quality plan, and so there's a lot of interest in what you might call 'non-traditional approaches.'" He talked about the possibility of using freeway shoulders where right-of-way is limited, using reversible HOV lanes, converting HOV lanes to 3+ where warranted (e.g., I-80), and the possibility for additional HOV freeway connectors.

Heminger closed by talking about the role of "casual carpooling" in the Bay Area, whereby people get into carpools on the spot, primarily in the East Bay to get onto the HOV lanes in order to bypass the queue and toll at the Bay Bridge and getting into San Francisco. He said that this arrangement not only provides a time savings but a money savings. One of the reasons for its success is that there's good transit service back to the East Bay. From surveys, the MTC has estimated that casual carpoolers comprise about 10,000 people, most do it most of the time, most make the return trip on transit, and most are former transit riders.

CALTRANS PERSPECTIVE

Tony Harris

Chief Deputy Director, California Department of Transportation

Tony Harris spoke a second time, this time representing Caltrans's perspective on HOV lanes. Specifically, Harris offered a couple of points that he felt warranted further discussion during the afternoon breakout sessions. The first point made was that not every HOV lane is the same, which is a point that was made evident in the way that HOV lanes are operated in Los Angeles, in San Diego, and in the San Francisco Bay Area. Harris said that we have to look at HOV lanes from a corridor perspective. He also emphasized the need to be flexible in the way that HOV systems are managed. To determine the level of flexibility that's needed, "we need to look at some clear way of assessing performance and then be prepared to adjust," Harris said.

The second point made by Harris was the need to complete the HOV system. Harris said, "We need to look beyond the state highway system. Trips don't just start on the on-ramp and end on the off-ramp. We need to think of the beginning and the ending of the trips." Harris said we need to have more discussion about building HOV lanes on local city streets that tie into the total network. An example is "drop ramps,"

which provide direct access to freeway HOV lanes from local streets. Safety is also important because it affects the reliability of the trips. Harris said that in order to effectively motivate people to use the HOV lanes, we need to maintain system reliability for users. Lastly, Harris talked about the importance for providing information on choices. He said, "A lot of effort has been put into giving information on the different types of transit systems, but not a lot of information has been put out there on the HOV system and what it means to you if you choose to use it." Harris also commended the LACMTA on its push for performance measures and the management of the system. He said that more of this has to be looked at, and that we need to use the results for systems management. We also need to do a better job about telling the story of the benefits of HOV lanes. He said that positive stories need to be told to our legislators and to our users.

WHAT DOES THE PUBLIC THINK ABOUT HOVs?

Heidi Stamm
Principal, HS Public Affairs, Seattle, Washington

After the morning break, Heidi Stamm provided a summary of the market research results from the Los Angeles County Metropolitan Transit Authority (LACMTA) HOV Performance Program. Stamm, who is a member of the consultant team, acknowledged the work of Mark McCourt and his firm, Strategic Consulting and Research, which conducted the general public telephone survey and other market research activities associated with the project. According to Stamm, "We now have some wonderful baseline information on attitudes and opinions about the customers in Los Angeles County that we can overlay with the actual operations activities that are taking place in the county as well."

She began by first introducing the background and methodology used for the LACMTA research. The research involved 3,273 telephone surveys of people 18 years and older who live in Los Angeles County. Gender, age, and ethnicity were balanced to match that of the demographics of Los Angeles County. The methodology involved random digit dialing, a minimum of five call attempts, a 1-800 call-back number, and surveys in both English and Spanish. The surveys were conducted over a 4-month period, and the final surveys were completed just about 1 year ago to date. The research was also stratified by geographic sub-regions throughout the county so that the data could be cross-tabulated to a very small geographic area within Los Angeles County. Stamm presented a chart, which showed that the attitudes and opinions towards HOV facilities varied very little from sub-region to sub-region. According to Stamm, "From a marketer's perspective that's great, because the education and promotional messages that we put out there are going to ring true to people throughout the county, and we don't need to segment those messages by sub-region."

Stamm then presented a series of charts summarizing some of the important survey responses. Summit attendees had also

filled out a survey questionnaire at check-in to indicate how they felt Los Angeles County residents had responded to the highlighted questions. The results of the audience responses were then compared to the actual response rate from Los Angeles County residents. When asked, "Overall do you support or oppose having carpool lanes on Los Angeles County freeways," the response was an overwhelming 88% support. The audience felt that only 83% of Los Angeles County residents would indicate positive support. This seemed to suggest that the general public is actually more supportive of HOV lanes than what transportation professionals had expected from the public. On the question about why do people support having HOV facilities, the top two responses were that it shortens their trip time and that it reduces congestion. The audience had expected that reducing congestion would be less of a determinant for why people support having HOV facilities. Another significant difference between the public and the audience perceptions was that the public was more likely to think HOV facilities important for encouraging people to carpool than the audience thought they would be. Regarding the statement that carpool lanes are more efficient than regular freeway lanes, 53% of L.A. County residents indicated that they "Agree" and another 19% that they "Strongly Agree." This was about the same as what the audience believed the public perception would be. Again, 48% agreed that carpool lanes reduce congestion in all lanes, and only 4% strongly disagreed with that statement. On the question of utilization, 37% of the population feels that HOV lanes are used sufficiently, and about the same percent feels that they are underutilized. The audience actually thought the underutilization response from the public would have been higher. Should the carpool lane system be completed so that there is a carpool lane on every freeway? Eighty-nine percent said "yes" to completing the system. "It's results like this, combined with a couple of other statistics that we really need to tell to the media, to our elected officials, to our neighborhood groups, and to our environmental groups," Stamm said. "Not only do people like HOV lanes, they think that the HOV system should be completed, and they are also willing to pay for it." She said that when we run into problems in other parts of the country, it's typically because the level of support is questionable, the public perceives underutilization of the lanes, or the public is unwilling to pay for them. Stamm said that this is clearly not the issue for Los Angeles County.

Roundtable Discussion

PETER VALK
Moderator
President, Transportation Management Services, Pasadena, California

Peter Valk invited the "Roundtable" participants on stage. His firm, Transportation Management Services, was also part of the LACMTA consultant team that conducted a series of focus group meetings and executive interviews. He began this session by introducing the following dignitaries who were formally invited to participate in the day's roundtable discussion: Senator Betty Karnette (27th District), Immediate Past Chair of the Senate Transportation Committee; Tim Keenan, Vice-Chair of the Orange County Transportation Authority (OCTA) Board and Councilman for the City of Cypress; Allen Lawrence, Commissioner and Immediate Past-Chair of the California Transportation Commission (CTC) and Chairman and Chief Executive Officer of Allen Lawrence and Associates; Gene Hauck, President of SuperShuttle Los Angeles; and Chris Hughes, Traffic Reporter/Producer at Airwatch America.

The discussion started with some brief opening remarks from each of the panelists. Panelists were asked for their thoughts on a series of questions, which were shown on the screen, and audience members were encouraged to fill out questionnaire cards that were later used to generate further discussion and interaction with the panelists. Senator Karnette began by noting her longtime interest in the topic of transportation, and in particular her support for carpool lanes. She said that it was her constituents, transportation professionals, people she met at dinner parties, her friends, neighbors and the like that influenced her opinion towards HOV lanes. As an elected official, she said that one of the indicators of success is whether the public supports HOV lanes. From the survey results, she said that it seems pretty clear that people like them. She said that she didn't see any reason to change her position towards HOV lanes, since the system seems to be working. Nonetheless, Senator Karnette noted the importance of having an open mind and to be forward thinking in order to effect positive change.

Commissioner Lawrence also noted his positive support for HOV lanes. As a member of the California Transportation Commission, he said that HOV lanes are an integral part of the state's transportation system. Lawrence reiterated Tony Harris' comments about Caltrans' number one mission, which is to improve mobility. He went further by saying, "Our number one mission is to improve mobility and to further enhance the quality of life." "HOV lanes are a valuable tool to maximize the people-moving capacity out of our freeway system," Lawrence said. At times when there is not significant congestion on our freeways, there's little benefit in restricting use of the HOV lane. The real value of HOV lanes is

that during periods of extreme congestion they enable us to maintain at least one lane at an acceptable level of service. That capacity, with the high level of service, should be used by transit buses and carpool vehicles in order to move the most people." Lawrence said, "The optimum strategy for HOV lane operations would be a demand-responsive system, similar to the system used to set the tolls charged on the SR-91. The HOV system operations should be based on technical traffic-management principles rather than theoretical or political controls." Lawrence also talked about the need to understand the regional patterns of congestion, the length of peak periods and off-peak periods, and the number of peak periods in a day. He talked about the need to incorporate better technology that can control access to the HOV lanes and can inform motorists of their travel options. Lawrence said, "We also need to build an extensive, connected HOV network so that the public-mobility and air-quality benefits justify the costs of the capital and operations." Lawrence said he believed that more and more people will use the HOV system as we continue to connect the lanes. He said that closing the gaps in the HOV system should be the priority, particularly in Southern California.

Gene Hauck then gave his thoughts on HOV lanes, particularly from industry perspective. He first noted that SuperShuttle operates in 23 airports throughout the United States and transports about 5 million passengers annually in various types of vehicles, primarily shared ride vans. He said that his industry is doing on a for-profit basis what people are doing anyway. He added that in 1995, SuperShuttle began voluntarily converting its fleet to natural gas vehicles. He said that in the beginning there was a lot of driver resistance to using the natural gas vans and that there were problems getting the vans turned around fast enough because of the limited fueling stations. Hauck said all that went away when the law was changed to allow low-emission vehicles with single occupants use of the HOV lanes. He said that this change really increased his company's operational efficiency, because vans could deadhead out and pick-up new passengers more frequently.

Chris Hughes said that he was surprised at some of the marketing statistics. Hughes then shared three main concerns that he has with HOV lanes: 1) lack of consensus on how to measure the success of HOV lanes, 2) diversion of existing carpoolers versus actual carpool formation, and 3) HOV lanes that become congested. He talked about his concern that different transportation agencies seem to have different ideas about the purpose of HOV lanes. He cited different published materials that seem to conflict on whether HOV lanes reduce traffic congestion. He said that this type of mixed message needs to be resolved so that there is a common understanding of the purpose of HOV lanes, and a set of standards is needed which define what makes an HOV lane successful. According to Hughes, "They have to induce people to carpool. They have to encourage people to carpool and not serve carpools that would have been there anyway." Hughes also emphasized the importance of calculating the door-to-door travel time. He said that

carpoolers may actually lose some of the corridor time savings because of the time needed to pick-up and drop-off passengers. Hughes then talked about situations when the carpool lanes are more congested than the mixed-flow lanes. He said that if the response is to increase the occupancy restrictions then you risk losing most of the 2+ carpoolers.

Tim Keenan as well as a board member of the Orange County Transportation Authority (OCTA). He began by saying that the solutions to transportation problems are not just transportation related. He said that the problems are a result of other issues such as the jobs–housing imbalance, land use density, and sprawl. Keenan also agreed with earlier presentations, asserting the differences between northern and southern California. He said that the traffic patterns are clearly different. He said that the peak periods are not so fixed. Keenan also noted his surprise at the strong public support for HOV lanes. He said the trick is to get the 10% to 12% who oppose the HOV lanes to go out and buy an inherently low-emission vehicle so that they can use the HOV lanes as well as encourage more fueling stations. Keenan also indicated that, as part of OCTA's Ten Strategic Initiatives, his agency will be looking at the possibility of subsidizing toll-road users who carpool. He also agreed that an increased marketing and promotions effort is needed.

Peter Valk, the moderator, then engaged the roundtable discussants with some additional questions. He raised the point brought up by Chris Hughes, that if HOV lanes aren't supposed to reduce congestion, then should we continue to build them? Senator Karnette responded by saying yes because there are many people that carpool on a daily basis and need that extra incentive to continue carpooling. She said that the flexibility is important. She also believed that HOV lanes do relieve some congestion, although there are always new cars and drivers getting on the roads. Commissioner Lawrence also agreed that HOV lanes relieve congestion. From personal experience, he said that he often makes it a point to find a carpool partner before driving on the freeway. He said that two people sharing a ride to the same destination often get there earlier and faster, and experience less congestion and less hassle. Lawrence also believed that by using the HOV lanes that you're relieving some congestion in the mixed-flow lanes.

Tim Keenan said that the other reason to continue building HOV lanes is the goal to change patterns and habits, to encourage the next generation to think a little differently about the automobile and not just use it as a single rider. Keenan said the other reason is just to complete the HOV system. He cited the benefits of having continuous HOV lanes where carpoolers aren't forced to weave in and weave out of HOV lanes. Tim Hughes again noted the importance of knowing whether new carpools have been formed. Otherwise, he believed that HOV lanes aren't serving their purpose.

Valk then raised the question of whether an HOV lane which is not saving people time when the mixed-flow lanes aren't congested should be decommissioned? The discussants generally agreed that they should remain as HOV lanes because the facilities are planned for future growth. Keenan emphasized that we know the growth is coming, and that this is just planning ahead for that growth. "It may not be the majority, but a lot of people do want to do it (i.e., carpool)," Karnette said. "And as far as mixed-flow use by single occupant drivers, I think that it would be confusing." The discussants also debated about whether travel behavior has changed as a result of HOV lanes or whether it would happen after the system is completely built.

On the question of whether we've done a good job of explaining and marketing HOV lanes to the public, the discussants agreed "no." When asked what needs to be done and what messages need to be communicated, some of the discussants felt that because the system is not complete, the total benefits of using HOV lanes are not self apparent. Commissioner Lawrence

said that we need to have some public service advertising and better tie-in of the marketing of HOV lanes with park-and-ride lots and with vanpool and ridesharing—basically the total concept. Hauck talked about the need to market the flexibility and convenience afforded by HOV lanes, and not the facility itself or that it has to be used every day of the week for there to be a benefit. The discussants also debated somewhat whether the improved accessibility that HOV lanes provide actually hinders smart-growth policies. The group cited other external factors such as jobs–housing imbalance and affordable housing in the outlying areas as the more fundamental problems.

Valk then asked the question of whether it's appropriate to legislate operational policy for HOV lanes. Senator Karnette said that as much as possible should be done first at the local level before the state legislature should get involved. But she also felt that it should be okay for the legislature to test changes and to learn from the experience as had happened with the El Monte Busway. Keenan agreed that to the extent possible such decisions should be made at the local level, the folks closest to the problem. However, Hughes said that these are regional problems and often require the coordination between multiple counties. "This is democracy and that's the point, if you can't do it then come to the state and we'll try and do it," Senator Karnette said.

Are there other options or solutions to increase mobility, manage congestion, and provide travel time reliability that are better than HOV lanes? The discussants felt that tolling was a promising concept. Hughes talked about the benefit of tolling single-occupant vehicle use of the HOV lanes, which could then generate revenues to make improvements in that particular corridor. However, Senator Karnette cautioned that toll revenues should not be just kept in the corridor, because people don't just travel on a single corridor, they travel on multiple corridors, and therefore, there should be some flexibility with the revenues. Keenan said that we need to look at everything in our toolbox of strategies, particularly increasing the use by transit buses, both private and public. The group agreed that HOV lanes alone will not be able to accommodate the growth that is expected. "It has to be the expansion of our freeways, increases in transit, alternative transportation, as well as completion of the HOV system," Keenan said.

Lastly, on the question of where do we go from here? The group agreed that we have to be prepared with what to do as the HOV lanes reach capacity. Completing the HOV systems around the state was another priority. We also need to come to a consensus on what the criteria should be when evaluating HOV lane performance. Continued evaluation was another call to action. We also need to better market the cost-saving benefits of ridesharing. Looking broadly, the group agreed that better land use planning to help facilitate the use of transit systems should be another top priority.

Summary of Morning Session

DONALD G. CAPELLE
TRB Emeritus Member

Dr. Capelle provided a brief summary of the major themes, which were discussed during the morning sessions. He said that there was general consensus among the speakers that HOVs work, but as to how successfully they work remains to be discussed. Capelle reiterated the points made by Sarah Catz that it is important for HOV facilities to be developed as a system. Partnership was a major theme that was brought up by a number of the speakers. "In order to make HOV systems effective, you've got to have the partnership and input from all the participating agencies involved," Capelle said. He reiterated Tony Harris's comment about the importance for completing the gaps in the system. This is now becoming a priority for Los Angeles County so that users can benefit from a truly continuous HOV system. Capelle also noted that a couple of the speakers had emphasized the objective of improving mobility and enhance the quality of life. HOV lanes also can't operate in a vacuum. They have to be coordinated with transit services and other support facilities and services.

It was also apparent that flexibility is needed. Northern California and Southern California clearly have different needs; there are regional differences in traffic conditions and land use patterns. Capelle reiterated from the survey results that travel time savings and reliability appear to be the most important benefits to users. There also seemed to be general agreement that operational changes should be based on experience and technical findings rather than legislated. Lastly, some other key points made during the morning sessions were better utilization of HOV lanes by transit, the need to maintain safety HOV lane operations, and greater focus on the marketing of HOV lanes, particularly the time savings and cost benefits.

Major Findings from Los Angeles County Metropolitan Transit Authority HOV Performance Program

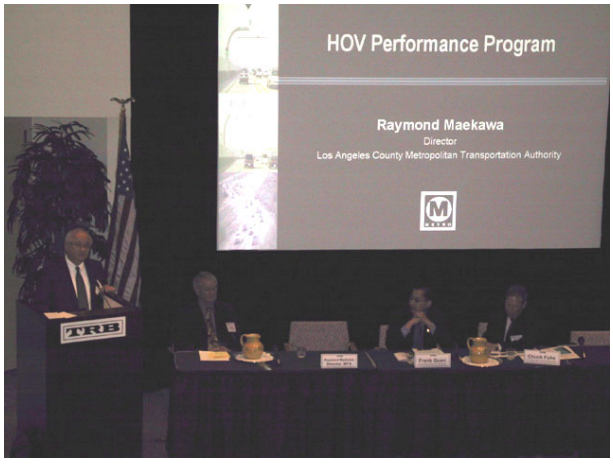
RAYMOND MAEKAWA
Director, MTA Highway Programs

FRANK QUON
Deputy Director, Caltrans District 7

CHUCK FUHS
Senior Project Manager, Parsons Brinckerhoff, Quade & Douglas

Ray Maekawa, Director of MTA's Highway Programs Development and Implementation, presented on what prompted the MTA to conduct the HOV Performance Program. He began by giving some background on HOV lane development in Los Angeles County. He said that significant HOV lane expansion began in the early 1990s after SCAG forecasts indicated that the region would face a 33% increase in population and a 40% increase in travel demand by 2015. Freeway speeds were also forecasted to operate below 17 mph. In response, the MTA had at that time adopted a 30-Year Long-Range Transportation Plan to meet the projected travel demands. Maekawa indicated that the plan was comprehensive, including not just freeway expansions, but also rail transit, paratransit, bus transit, transportation systems management, and more importantly demand management strategies that focused on reducing trips rather than simply accommodating vehicle trips. "The primary emphasis of the MTA 30-Year Plan was to improve the management of the system," Maekawa said. "And to focus on person trips and goods movement." He said that one of the key elements of the plan was the HOV lane program. Initially, the HOV lane development was concentrated in the outlying areas. This was because those in outlying areas were the cheapest and easiest ones to build first. Maekawa presented a slide depicting the current Los Angeles HOV lane development program.

Maekawa talked about how the series of legislative bills enacted in response to perceived underutilization of HOV lanes affected MTA's HOV program. These legislative changes were in part what prompted the MTA to initiate the HOV Performance Program. Some of the study objectives included: 1) enhancing the existing database of data on HOV lane performance, 2) HOV policy development, and 3) improved marketing of HOV lanes. Maekawa also acknowledged the strong partnership between the MTA and Caltrans District 7 in this study effort. He noted Caltrans' support in providing new travel time runs for all of the study locations and new traffic and occupancy counts. He concluded by saying that it was only through this cooperative effort that the study was able to analyze a very robust database.



Frank Quon, Deputy District Director of Caltrans District 7, followed. Quon noted the value and importance of HOV lanes in the state of California. He said that the HOV programs have been successfully

undertaken because of the partnerships that Caltrans has with the local regions. Governor Davis' Transportation Congestion Relief Program is another example of the importance of HOV lanes to the state, whereby additional funds were provided accelerate the completion of HOV facilities that otherwise would not have been possible due to funding limitations. Quon then recognized the importance for assessing how the HOV system is performing and what we've gotten in return for our investments. He talked about how the MTA HOV Performance Program had taken the right steps towards providing hard numbers on the performance benefits of HOV lanes. Quon commended the MTA for having that vision to undertake the study. He said that Caltrans also recognized the importance of such a study and how it also provided the resources and commitment in making this a meaningful HOV Performance Program. Quon believed that this study will not be of benefit only to us [Los Angeles] locally, but throughout the state and nationally. He closed by encouraging the study be continued and be conducted on an ongoing basis so that the total HOV system benefits can be understood, particularly as the system becomes connected.

Chuck Fuhs, Senior Project Manager with Parsons Brinckerhoff Quade & Douglas had the pleasure of presenting the technical findings of the LACMTA HOV Performance Program. Fuhs began by noting that this effort was born somewhat out of adversity, and at right around the same time that a California State Legislative Analyst's Report had recommended, among other things, that HOV lane performance evaluations be used in helping decide whether goals and objectives are being met. Though HOV performance monitoring been conducted on a regular basis in Southern California, the LACMTA-funded effort allowed greater investigation of the performance benefits of HOV lanes. Fuhs also acknowledged the Project Advisory Team, comprised of SCAG, Caltrans, CHP, adjacent county transportation agencies, and the Auto Club of Southern California, as well as input from the Orange County Drivers for Highway Safety group. He said that these diverse interests were extremely valuable in the shaping of the report.

Fuhs said that it was the team's goal to be as objective as possible in the analysis. He said that most of the measures employed in the study erred on the side of being conservative. For instance, the team did not account for all the potential benefits when calculating air quality, nor in cost-effectiveness of HOV lanes. The study effort involved a rigorous look at what data could be used and what couldn't. Fuhs indicated that in some cases there were gaps in the data set. But the emphasis was to only use data that was defensible and representative of what was really happening on the freeways. "This [HOV Performance Program] represents the largest HOV performance monitoring program ever to be undertaken anywhere in the entire nation," Fuhs said. "Then again, it's based upon one of the largest HOV systems anywhere in the world and certainly anywhere in the country." Fuhs prefaced that the data that he is about to present is only representative of

Los Angeles County. It is not representative of the adjoining counties of Orange and Riverside or San Bernardino.

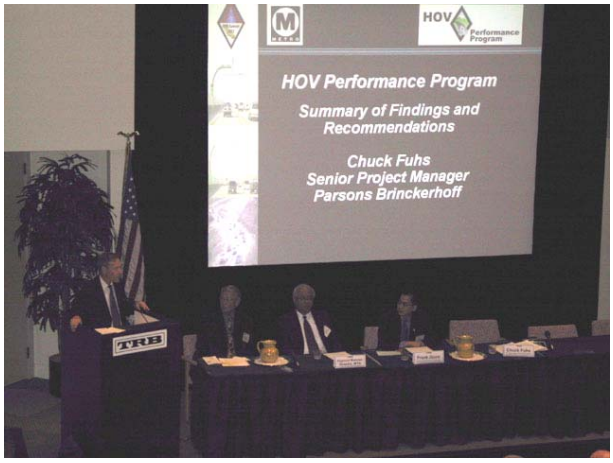
Fuhs then presented the summary of findings. Among the research findings, the first was HOV utilization—there is high HOV lane utilization in Los Angeles County. Fuhs said, "The carpool system here, by and large, is certainly not suffering from lack of use. In L.A. County, it may be suffering in the very near future a more immediate problem of being too successful." Fuhs presented a chart showing that the majority of the HOV lanes in Los Angeles County are operating at or above 1,200 vehicles per hour. "We start loosing travel time benefits between 1,400 and 1,650 vehicles per hour," Fuhs said.

The second finding from the study concerned travel time savings. In comparing the travel time in HOV lanes versus the adjacent mixed-flow lanes, the study found significant time savings in almost every HOV corridor. In Los Angeles County, there appears to be time savings of at least a half a minute per mile, with many corridors achieving between fifteen and thirty minutes along the entire duration of the route. Fuhs also noted that the travel time savings were also reflected in the survey results. In fact, for every minute of actual time savings, the public seems to think that it's saving almost twice that. Fuhs said that we are not always successful in travel time savings. According to Fuhs, we are loosing travel time savings potential for three reasons: (1) lack of congestion in the mixed-flow lanes eliminates the opportunity for HOV lanes to provide a benefit, (2) excessive demand in the HOV lanes erodes travel time savings, and (3) time savings are lost partly because the HOV lane ends, resulting in an incomplete system.

The third finding involved person movement. Fuhs said that the carpool lanes are unequivocally moving more people than the mixed-flow lanes. He said that there is significant person movement in the majority of the HOV routes. An estimated 700,000 people use the carpool lane system each day in Los Angeles County, and this easily translates to over 1 million people being moved in carpool lanes in the three-county Southern California area. Fuhs said that this is almost fivefold the amount of daily usage of any other HOV system in the country.

The fourth study finding dealt with carpool lane formation. Fuhs noted that this was a question raised in the Roundtable Discussion earlier in the day. He said that through the survey efforts, with a fairly high degree of statistical reliability, the finding was that far more than half of the HOV lane users out there responded that they were previously single occupant drivers.

This represents a very significant change in driver behavior and mode shift. In fact, this data is corroborated by the occupancy count data. Fuhs said that the study took the additional step of evaluating some freeway control routes without HOV lanes, and had discovered a decline in average auto occupancies. On freeways with HOV lanes, average auto occupancies have either been sustained or, in many cases, have seen growth in auto occupancies, ranging from 10% to 15% over what was previously reported.



A fifth finding involved cost-effectiveness. Taken into consideration in the cost-effectiveness evaluation of HOV lanes was the life-cycle costs and benefits of HOV lanes. With most of the HOV lanes in Los Angeles County built in the early to mid 1990s, and a 20- to 25-year life cycle of HOV lanes, it was found that most of the HOV lanes have paid for themselves already, that is, they have generated HOV benefits that have more than paid for their costs. Fuhs noted that this finding was solely based on travel time savings. The study did not account or accrue any benefits such as emission reductions or accident changes or safety differentials.

A sixth was in transit usage of HOV lanes. It was concluded that the level of transit usage of HOV facilities was much lower in Los Angeles County compared to other cities such as Seattle and Dallas. Aside from the I-10 El Monte Busway and the I-110 Transitway, the rest of the county's HOV lanes are lacking in transit service.

A seventh dealt with safety. Are carpool lanes safe? Fuhs said that the study's accident analysis was inconclusive. The problem, in large part, is the way that accident data is recorded. Records of accidents are not always tabulated as to whether they occurred in the HOV lanes or in the mixed-flow lanes. In fact, the study will be recommending better training of CHP officers of the proper coding and possibly a redesign of the recording forms. The study found in some cases accidents increased where HOV lanes were implemented and in other places accidents had decreased. Therefore, the team found no strong correlation to indicate that carpool lanes are unsafe. Although the state has one of the highest violation rates in the country and a more established HOV system, the study found very low violation rates among HOV users, about 3% of all users.

An eighth concerned air quality benefits. The study found that though the emissions are much lower in the HOV lanes, the reductions appear miniscule compared to the overall number of trips being made in the corridor. Fuhs noted the need for better modeling to assess air quality over the long term. Fuhs said, "We can be very specific about the individual improvements of a lane or lane treatment, but we could not out of this effort validate the overall air quality [benefits] for the region."

Last was public support. It was clear from the survey results that the public strongly supports HOV lane investments in Los Angeles County. Fuhs said that it would be erroneous to think that greater marketing is needed to increase utilization, with so may of the routes already oversubscribed. According to Fuhs, marketing should focus more on the education side about using modes such as transit and vanpools.

Breakout Groups

Concurrent Sessions

Following the presentation by Chuck Fuhs, the attendees went into their selected breakout groups to discuss specific topic areas concerning HOV lanes. Summaries from each of the four breakout groups are presented below:

Breakout Group 1

"Saves Time Saves Time Saves Time!": HOV Market Research

Cheryl Collier, *Facilitator, Southern California Association of Governments*

This group focused its attention on two areas: 1) How do we communicate time savings to the commuter market? and 2) How do we preserve the time savings that users of HOV lanes are currently enjoying? As was suggested earlier, HOV marketing has become a dilemma. With a number of the HOV lanes at or near capacity, the question for transportation agencies is how much marketing do we do at this point versus how much education? Many in the group felt that marketing is still needed but more at a corridor specific approach. Collier said the marketing is still needed in HOV corridors, which are underutilized. In HOV corridors that are at or near capacity, marketing can be used to increase AVO through vanpooling programs as well as transit options. "Rideshare Thursday" was a campaign that was initiated by Caltrans in the early 1990s. Though the program is no longer publicly funded, the media has carried this campaign forward. Many in the group felt that this is still an important message to get out to commuters because it's simple, it's a call to action, and it's just 1 day a week.

Collier said many in the group felt that education is needed to help users and potential users understand the location of HOV lane access points, occupancy requirements, park-and-ride facilities, and differences in regional HOV systems. In terms of how marketing should be communicated, suggestions included use of radio broadcasts, billboards with corridor specific messages about HOV lane travel time benefits or cost savings, ITS technologies that can cast messages directly to the driver, and alliances with other agencies as well as interest groups such as the Auto Club of Southern California. On the issue of preserving time savings, suggestions included marketing vanpools and transit in already congested HOV corridors, completing gap closures to provide continuity in the system, and better enforcement and incident response.

Breakout Group 2
"Where's the Bus?": HOV Transit Utilization and Lane Productivity
Dave Elbaum, *Facilitator, Orange County Transportation Authority*

Dave Elbaum said this breakout group had wide representation from across California as well as from New York, Seattle, and Dallas. This group focused its discussion in five areas: infrastructure, planning, funding, incentives for the private sector, and providing consumer information. In the area of infrastructure, many in this group felt that additional access ramps were needed to support transit routing, quality on- and off-line transit stations that are easily accessible, good park-and-ride facilities, finishing the HOV connectors, greater emphasis on the quality of vehicles for express bus riders, and the elimination of HOV choke points. In the area of planning, Elbaum noted the suggestion for integrating transit planning with the planning of HOV lanes. "Too many communities have built HOV lanes on the promise that there will be express buses, and they never show up," Elbaum noted. The group also talked about creating incentives for the private sector. For example, many in the group suggested allowing private-sector operators to dead-head in the HOV lanes regardless of the number of occupants. Subsidizing vanpool services was another suggestion made to increase HOV lane productivity. In terms of funding, the shortfall in funding to actually operate express bus services was noted. Allowing flexibility in the FTA rules on converting bus fleets to express buses was another suggestion. In the area of consumer information, Elbaum said the use of real-time information systems was emphasized, such as highway advisory radios and NextBus notices, as well as cooperation with the media to promote transit and vanpooling as part of its traffic reporting.

Breakout Group 3
"One Size Does Not Fit All": HOV Lane Operations
Antonette Clark, *Facilitator, Caltrans*

Antonette Clark facilitated the breakout group on HOV Lane Operations. The group focused its discussion on Los Angeles County because of the diversity of regions throughout the state. The group first talked about part-time versus full-time HOV lane operations in Los Angeles County. Many felt that full-time operations on all of the HOV lanes in Los Angeles County is appropriate. It's less confusing for the public with it being 24 h/day, 7 days a week. However, the need for flexibility was recognized. Clark also noted the suggestion for improved partnering, which was hit on a number of times earlier. The most appropriate agencies should be identified for each phase of HOV lane development, including planning, design, construction, and

operations. Weaknesses in the HOV system in Los Angeles County were identified as short periods of underutilization, limited or far-apart HOV access points, and lack of a program-specific public awareness campaign. Clark also talked about testing HOV productivity strategies which have proven to work in other parts of the country. Many in the group also emphasized the need for more demonstration projects, possibly reversible lanes or managed lane projects. Lastly, many felt there needs to be further ongoing studies on the performance of HOV lanes.

Breakout Group 4

"Will the Real Measures of Success Please Drive Forward?": HOV Performance Evaluation and Data Collection

Marlon Boarnet, *Facilitator, University of California, Irvine*

This breakout group began with the question of how would you know if an HOV lane is successful? Boarnet said there was consensus among the group that knowing what the goals and expectations of HOV lanes would be the paramount issue before determining success. However, there was no consensus on what the goals of a HOV lane should be. Boarnet said perhaps that, because HOV lanes are in the public arena, there are multiple possible goals, and that different people will prioritize them differently. "And one of the realities of HOV lane performance evaluation will be that there's going to be various goals," Boarnet said. Some of the goals which were identified by members of the group were encouraging carpooling, reducing congestion, and to a lesser extent improving air quality. Other goals talked about were increasing person movement capacity, improving travel time savings for HOV lane users and non-users, increasing travel time reliability, providing an alternative mode choice, and also increasing safety. From the discussion, it was quite clear that HOV lanes have multiple goals.

Boarnet noted that there was, however, agreement on how HOV lanes should be evaluated. Evaluations should range from looking at just the lanes themselves to the freeway to the entire corridor and even to a network. This variation in scale should be employed based on the type of goal that is

being measured. There was also some support for more comparative evaluations of HOV lanes versus mixed-flow lanes. Lastly, many in the group recommended improved data collection procedures such as reliable volume and speed data at the loop detector level and to archive that data, additional travel time data, and ongoing travel surveys.

BREAKOUT GROUP SUMMARY

Deborah Redman then summarized the following additional points made in the breakout group discussions:

- Improve partnerships;
- Know what customers want;
- Expect a multiplicity of goals in transportation;
- Do not preclude innovation;
- Refine goals with ongoing research; and
- Educate elected officials and the public so that funding can be secured.

Closing Remarks

EDWARD SULLIVAN
California Polytechnic State University, San Luis Obispo

Dr. Sullivan provided the closing remarks for the 2002 California HOV Summit. He reiterated the following major themes and issues brought forth at this year's Summit:

- Complete the HOV system;
- Allow flexibility for integrating HOV lanes;
- Cultivate flexibility in marketing;
- Treat HOV lanes as part of an overall system;
- Build on remarkable public acceptance;
- Measure reliability;
- Remember that consumer choice is important;
- Monitor the overall AVO trend, which is going down but is up in HOV corridors;
- Disseminate information on HOV lanes more widely;
- Achieve rapid clearance of incidents and maintain proper enforcement;
- Address the problem of overutilized HOV lanes; and
- Give consideration to pricing strategies.

Breakout Group Summaries

The following is a listing of points made by breakout group participants.

Breakout Group 1
"Saves Time Saves Time Saves Time!": HOV Market Research

Should we market the HOV system?

- Yes
  - Region/Corridor-sensitive marketing
  - Cumulative time-savings
  - "Trial Run": Rideshare Thursday

How should we market HOV lanes?

- Media ads
- Drive-time radio spots
- Billboards
- Electronic counter
- Internet banner
- ITS technology
- Auto-club/others agencies
- Rideshare program
- "Take-Your-HOV-to-Work" Day

What should we educate about HOV?

- Access points
- Occupancy requirements
- Time savings
- Park and Ride
- Different HOV systems
- Reliability

How do we preserve time savings?

- Selective application of marketing for different regions/corridors
- Peak-spreading
- Market transit/vanpool on some already highly congested corridors
  - Enforcement
  - Incident response/occupancy requirements
- Gap closure—complete the system

- Assess the impacts of special interest groups on HOV lane performance before implementing changes

Breakout Group 2

"Where's the Bus?": HOV Transit Utilization and Lane Productivity

- HOV lanes not accommodating to buses/transit
  - Design
  - Ingress/egress
  - Drop ramps
  - Direct access
- Need common vision for transit on HOV
- Need integration of highways and transit (network)
- Weaving of buses degrades level of service of freeway as well
- Direct connections to other modes of transportation
- Need money for service
- Need commitment/ownership of all regional facilities (highways/rail)
- Common "fare" card between all modes
- Buses on HOV are different market than regular service
- Subsidies for vanpools
- Subsidies/sanctions for employers
- Allow deadheading of certain vehicles—private shuttles/paratransit vehicles.
- Most people will only do one transfer during their commute, with no more than15 minutes wait-time or less
- Provide safety in stations
- Need to identify heavy demand corridors to prioritize projects
- Look at whole system when determining benefit/cost of one element
- Need two HOV lanes?
- Joint effort of public/private for Park-and-Ride lots (shopping malls)
- Need information at stations and at home—schedules and real-time performance
- Use highway advisory radio for corridor to guide motorists to other modes.
- All agencies need to know alternative route (modes for all corridors—rail, highway)
- Highway and transit agencies need a common vision and money to fund them. Need to plan transit with land use, housing, jobs, development, etc.
- Constraints of FTA need to be revised or modified
- Partner with media for education during nonemergency and emergency periods
- Infrastructure—transit-oriented

Breakout Group 3
"One Size Does Not Fit All!": HOV Lane Operations

Why should we customize? Most participants felt it was necessary to customize in order to improve efficiency of the entire freeway system and quality of life. Examples of improvements voiced during the session included supporting transit facilities, rideshare programs, etc. Participants brainstormed the Strengths, Weaknesses, Opportunities, and Threats with respect to the current full-time HOV lane hours of operation, vehicle occupancy, and lane configuration in the Los Angeles region.

Strengths:

- Less confusion (majority of HOV lanes in the LA region are consistently full-time)
- Flexibility (i.e., I-10 dual occupancies)
- Growing future users (children in carpools become familiar with HOV lanes and the incentives of using them)
- Closing gaps between existing HOV lanes

Weaknesses:

- Under-used, midday
- Restricted entrances and exits
- Entrances and exits far apart
- Confusing signage (confusing to decide where to leave the HOV lane in advance of the desired general purpose freeway exit on the right)
- Little public awareness information disseminated to the public on HOV lanes

Opportunities:

- Increased access
- Education
- Exchange of ideas with other states
- More connectivity
- Demonstration projects and studies

Threats:

- Inflexible
- Unfinished system
- Too many choices (confusion)

Actions:

- Partnering (public/private) with some agencies taking a lead
- Public information campaign

  - Time savings/reliability
  - Exchange information on configuration alternatives
- Improved access/connectivity
- Demonstration projects
- Studies/trends on safety, etc.

Breakout Group 4

"Will the Real Measures of Success Please Drive Forward?": HOV Performance Evaluation

What are our goals?

- Increase carpooling?
- Reduce congestion?
- Increase vehicle throughput?
- Increase person throughput?

What level of evaluation is appropriate?

- Lane
- Freeway
- Corridor

Differences of opinions on overriding goals

- Public arena—inherently multiple objectives
- Measure at various levels
- Comparative evaluation

Concerned with Pros and Cons

Measure of Success Depend on Goals

Possible Measures of Success

- Ability to grow carpools and transit
- Other measures
  - Air quality
  - Time savings
  - Improvement in reliability of trip time
  - Safety
- Person movement capacity
- More people in fewer vehicles

Two Stages for Comparison

- Planning: comparison with and without
- Actual operational

Summit Photos

Registration desk.

Heidi Stamm conversing with attendee.

Attendees in front of LACMTA exhibit.

Breakout group facilitators' pre-meeting.

Attendees in front of SCAG exhibit.

Darren Henderson, Parsons Brinckerhoff, watches over presentation logistics.

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