

# Implementation Elements for Conversion of General-Purpose Freeway Lane into High-Occupancy-Vehicle Lane

MATTHEW E. BEST

Conversion of a general-purpose freeway into a high-occupancy-vehicle (HOV) lane is an alternative to infrastructure addition for HOV system implementation. Research indicates that lane conversion is feasible technically if sufficient HOV usage and minimal main lane congestion occur from the first day of operation. The elements required for inclusion in an implementation plan for lane conversion to HOV after technical feasibility has been determined are presented. HOV-lane marketing is meant to heighten public awareness of the purpose and operation of HOV facilities while encouraging their use. The general public, local decision makers, and the local media are important elements to include in a marketing campaign for successful HOV implementation. These elements also apply to the successful implementation of lane conversion to HOV. Four HOV lane-conversion projects are investigated: (a) Santa Monica Freeway, Los Angeles, California; (b) Dulles Toll Road, Northern Virginia; (c) Interstate 90, Seattle, Washington; and (d) Interstate 80, northern New Jersey. The Santa Monica and Dulles projects are considered failures, whereas the Interstate 80 and 90 projects are considered successful. From these case studies and the literature review, implementation elements were identified: (a) technical feasibility, (b) early public outreach, (c) strong institutional arrangements, (d) inclusion of law enforcement agencies, (e) open relationships with the media, and (f) project opening timing.

In response to increasing traffic congestion, limited finances, and greater environmental concerns, urban areas across the United States have constructed high-occupancy-vehicle (HOV) facilities. With trip patterns of American commuters moving away from trips between suburbs and central business districts toward more dispersed patterns, the benefits derived from disconnected HOV facilities on radial freeways will be enjoyed by a smaller portion of commuters. By interconnecting HOV facilities into an HOV network, a wider range of trip patterns can be accommodated with travel-time savings by HOVs and transit.

Many links in an HOV network may not be completed because they would not be cost-effective to construct. Certain corridors may have cross-section and right-of-way restrictions that do not support an affordable addition of HOV capacity. In such locations where the expense of infrastructure construction or right-of-way acquisition is greater than the benefits of increased travel time savings for HOVs, other solutions must be found.

Lane conversion has been supported by environmental groups as the only environmentally sound way to provide HOV treatments (1). The argument is that worsened conditions for low-occupancy vehicles will lead to a greater incentive for motorists to shift to higher-capacity modes. This point of view has not been shared by the millions of commuters who think that HOV use, through carpooling or transit, is not an acceptable option. Lane conversion as a method

of HOV-lane implementation has been opposed strongly by the motoring public when increased congestion in the general-purpose lanes is the result (2,3).

Once the technical assessment of a project has been completed and a section of freeway lane has been identified for conversion to an HOV lane, little guidance exists on how to implement the conversion. From the case studies presented in this paper, important elements for inclusion in implementation guidelines will be identified. The objective of this research is to develop a set of elements that should be included in an HOV-lane-conversion implementation effort. This paper does not recommend specific courses of action.

## BACKGROUND

### HOV-Lane Conversions

The first step in any HOV-lane conversion project is to prove technical feasibility. Although the primary goal of an HOV freeway lane is to increase the person-moving capacity of a corridor (4), this cannot be the only measure of effectiveness used. Initial public acceptance often is more important than effects on traffic operation. If significant congestion is left on the main lanes and the converted lane appears empty after the change is made, the project is likely to fail from public and political pressure no matter what the traffic data indicate (5). Technical feasibility must be determined from a set of criteria that measures overall corridor performance as well as the effects of conversion on general-purpose and HOV-lane operations.

May (6) has developed guidelines to screen freeway sections in urban areas for promising HOV-lane conversion sites. The screening technique consists of eight major steps:

1. Input of available basic information,
2. Prediction of Day 1 traffic performance,
3. Prediction of mode shift,
4. Reevaluation of traffic performance after mode shift,
5. Prediction of future growth,
6. Reevaluation of traffic performance after future growth,
7. Prediction of further mode shift, and
8. Reevaluation of traffic performance after further mode shift.

May's technique (6) includes six quantifiable criteria as well as qualitative ones that are used to gauge the success of a conversion project:

1. Minimum flow in the HOV lane,
2. Maximum flow in the HOV lane,

3. Maximum flow in the mixed-flow lanes,
4. Differential in level of service between the mixed-flow lanes and the HOV lane,
5. Differential in the number of persons carried per lane between the mixed-flow lanes and the HOV lane,
6. Minimum travel-time savings in the HOV lane, and
7. Qualitative secondary criteria.

Minimum flow in the HOV lane and maximum flow in the mixed-flow lanes take into account the “empty-lane syndrome” (appearance that the HOV lane is empty) and congestion in the remaining general-purpose lanes. These items tend to test the political will of the implementing agencies and local politicians. If there is insufficient use of the HOV lane or increased congestion in the general-purpose lanes, the public outcry may be sufficient to shut down the project.

Maximum flow in the HOV lane, differential in level of service between the mixed-flow lanes and the HOV lane, differential in the number of persons carried per lane between the mixed-flow lanes and the HOV lane, and minimum travel-time savings in the HOV lane measure the success of the HOV lane in providing travel-time savings and stability to HOV users over the life of the project. If the improvement is not sufficient or cannot be sustained, lane conversion may not be the manner in which the goals of increased person-moving efficiency and mode shift should be pursued.

The secondary criteria include such considerations as the existence of upstream or downstream HOV facilities and the feasibility of conversion in the opposite direction or peak period.

HOV Pre-Design Studies Task 2.3 (7) suggests the conditions that best support HOV-lane conversion from general-purpose lanes:

- The lane should carry more person trips with faster times than an average general-purpose lane, but the general-purpose lane traffic should not be subjected to a level of service worse than E or diversion to parallel arterial streets on Day 1 of operation.
- The converted lane should show considerable cost savings over construction of a new lane.
- The converted lane should be implemented much sooner than an added lane would be programmed without the disruption of construction activities.
- Public surveys and affected agencies should show positive community and political support for HOV-lane conversion.

### HOV-Lane Marketing

The *High Occupancy Vehicle (HOV) Lane Marketing Manual* (5) is a comprehensive compilation of HOV-lane marketing issues. Through the use of case studies, elements of a sound marketing approach to HOV-lane implementation are presented. The manual does not cover the specific issues involved with HOV-lane creation by conversion of general-purpose freeway lanes.

HOV-lane marketing can accomplish the following (5):

- Heightened public awareness of ridesharing as an option,
- Increased public confidence in HOV strategies,
- Accurate expectations for HOV facilities,
- Advertisement of the opening of HOV lanes,
- Education of drivers in the use of HOV lanes,
- Promotion of immediate use of HOV lanes,
- Awareness of support facilities (e.g., park-and-ride lots, ride-matching services), and
- Updated accounts of HOV-lane time savings and usage.

The HOV-lane marketing process should begin early in the planning process. Market research at early planning stages often can aid the planner by helping to “define the social and political atmosphere in which the project will be set, identifying key stake holding groups, and assembling information on other HOV projects with similar goals and objectives” (5). This information is vital to a marketing campaign and important to successful planning and design efforts.

As the implementation date of an HOV-lane project approaches, marketing efforts should increase in scale and scope. This phase calls for the release of media materials and advertisements and the conduct of press conferences and promotional events such as ribbon cuttings. After implementation, marketing should continue to support implementation of facilities such as park-and-ride lots and any changes in operational procedures.

Gard et al. (2) surveyed 1,085 residents of California (575 in the San Francisco Bay Area, and 510 in Southern California) on conversion of general-purpose lanes. The results of the survey indicate that residents of California generally prefer that a new HOV lane be constructed (30 percent) or the left shoulder be converted (40 percent). Thirty percent of those surveyed indicated that they prefer an HOV lane to be created from conversion of an existing general-purpose lane on the freeway used most frequently. In-depth focus group interviews found consistent results with the broader telephone surveys; however, focus group participants who did not support lane conversion vowed to fight any conversion efforts.

A similar study was undertaken in the Seattle area (7). When given the option of HOV-lane construction or HOV-lane conversion from general-purpose lanes, 49 percent of the respondents favored new construction compared with 26 percent who favored lane conversion. Fifty-eight percent of respondents expressed negative opinions about HOV conversion, and 33 percent expressed positive opinions toward conversion.

### HOV-LANE CONVERSION CASE STUDIES

This section summarizes four HOV-lane projects that involved the conversion of a general-purpose freeway lane into an HOV lane:

- Santa Monica Freeway, Los Angeles, California;
- Dulles Toll Road, Northern Virginia;
- Interstate 90, Seattle, Washington; and
- Interstate 80, northern New Jersey.

Each case study includes a project description, discussion of implementation issues, and conclusions.

#### Santa Monica Freeway, Los Angeles, California

##### *Project Description*

In March 1976, the California Department of Transportation (Caltrans), in conjunction with the California Highway Patrol and local bus operators, reserved the median lane of the 19-km Santa Monica Freeway (Interstate 10), which connects the city of Santa Monica with downtown Los Angeles, for buses and carpools carrying three or more persons. The HOV lanes, called the “Diamond Lanes,” reduced the number of general-purpose directional lanes on what was the busiest freeway in North America from four to three (5).

Traffic congestion and accidents increased markedly (accidents were up 225 percent) in the main lanes of the freeway from Day 1 of operation. Speeds of general-purpose traffic decreased and were less stable after the implementation of the project. HOV-lane violation rates were high. The local newspaper, television, and radio coverage was extremely negative. After 21 weeks of operation, the HOV-lane project was terminated prematurely by court order.

The project succeeded in increasing the number of carpools (up 65 percent) and the number of transit riders (up 225 percent). Persons using an eligible mode were able to save a small amount of time over the length of the corridor during the peak period. The benefits of decreased fuel consumption and vehicle emissions failed to materialize during the project's shortened life (5).

#### *Target Audience*

The marketing campaign was conventional. It sought to increase ridesharing by targeting the general audience of corridor users. The marketing plan included a prediction of public outcry during the early stages of the project because of the operational problems involved with removing a lane of a busy freeway from general-purpose use (5).

Little preproject marketing research was undertaken before the Santa Monica Diamond Lanes project was begun. Other HOV-lane projects had been implemented in the Los Angeles area before the Santa Monica project, and it was thought that HOV-lane issues were understood by the motoring public. The marketing plan was not focused on any particular group.

#### *Institutional Arrangements*

Many issues made the creation of stable institutional relationships difficult during this project. Central authority for transportation planning in the Los Angeles area was fairly weak at that time, and transportation activities often were done in a noncooperative manner. A change in Caltrans administration further complicated efforts. The new Caltrans administrators were left with a project they did not initiate or fully understand. Finally, the project was set to occur during an election year. Many politicians saw more political benefit in using the project as a campaign issue than in working constructively for its success.

#### *Education and Public Relations*

The marketing campaign sought to induce public acceptance of improved mass transportation through lane conversion, to enhance the chances of project success through public information and education, and to increase bus patronage and carpooling (5). A press conference began the marketing campaign a few weeks before project opening. Efforts included radio, newspaper, and television ads; billboards; freeway message signs; and handouts to commuters. The handout information included reasons for the HOV lanes (the environment, congestion), how to use the lanes, rules for lane use, alternate route descriptions, and bus and carpool information.

#### *Continuing Efforts*

In response to the public and political outcry following implementation of the Diamond Lanes, Caltrans took a more aggressive mar-

keting approach by hiring a public relations consultant. The new campaign included appearances at public forums, contacts with downtown employers, formation of a "Friends of Diamond Lanes" group, and quick responses to press coverage deemed inaccurate or misleading.

These efforts did not succeed, and the project was prematurely terminated. The Friends of the Diamond Lanes group was not particularly useful in counterbalancing the great number of foes of the Diamond Lanes. Caltrans lost much credibility when those against the project collected contradictory traffic and vehicle-occupancy data on the HOV lanes.

#### *Conclusions*

It is difficult to conclude that any marketing campaign adjustments could have saved the Santa Monica Diamond Lanes project from early termination. One extensive survey reported that "eighty-six percent of the corridor drivers surveyed—including the majority of carpools—felt that the Diamond Lanes were either harmful or of no benefit whatsoever" (5).

Key marketing failures include the lack of preproject research, lack of a target audience on which to focus marketing efforts, timing of the project during an election year and during a Caltrans administration change, and the confrontational nature of relations with the media. Greater efforts to hold together a coalition of agencies and public officials; more effective carpool encouragement techniques such as ride matching and employer incentives to increase lane use during the early stages of the project; and greater communication with the public through public meetings, press releases, and telephone question lines have been suggested as ways in which the project could have been improved (5).

### **Dulles Toll Road, Northern Virginia**

#### *Project Description*

The Dulles Toll Road is a 19-km facility paralleling the Dulles Airport Access Road and running from Dulles International Airport to Tysons Corner in Northern Virginia. A state-owned toll road administered by the Virginia Department of Transportation (VDOT), it is a major artery connecting Fairfax and Loudoun counties with Washington, D.C. VDOT was given permission by the state legislature to expand the capacity of the toll road from two directional lanes to three lanes, with the provision that the added lane be reserved for carpools (8).

Portions of the new HOV lane were opened to general-purpose traffic while lane construction and toll-booth modification were completed. For 2 months, general-purpose traffic enjoyed free-flowing conditions on the three directional lanes of freeway. Traffic volumes on the facility increased through diversions from parallel roadways.

The day after Labor Day 1992 was chosen as the opening day for HOV-lane operations. Immediately, accidents and congestion on the Dulles Toll Road main lanes and parallel facilities increased while the HOV lane appeared empty. An anti-HOV campaign was led by U.S. Representative Frank Wolf, representing Northern Virginia and most of the users of the Dulles Toll Road. Congressman Wolf attached an amendment to the 1992 Federal Highway Appropriations Bill that made HOV-lane provisions illegal in the Dulles corridor. The governor of Virginia, Douglas Wilder, suspended the

project to avoid having Virginia state highway policy dictated to by the federal government. HOV-lane restrictions were in place on the Dulles Toll Road for 33 days.

VDOT did not plan for this HOV lane to be a conversion project. Specific marketing efforts were not aimed toward problems caused by converting a lane but were aimed at general HOV-lane issues. HOV lanes had been operating successfully in Northern Virginia for years, including on one of the nation's most successful facilities, Shirley Highway. With its past successes, VDOT did not believe an elaborate marketing plan was necessary for the Dulles Toll Road HOV lanes.

#### *Target Audience*

The target audience was corridor users. It was found through preliminary research that 7 percent of Dulles Toll Road users met the three-person carpool requirement before the project opened. The traffic stream also included 8 percent two-person carpools. Because of the long trips taken on the Dulles Toll Road, and supported by these occupancy numbers, VDOT was satisfied that ridership existed to make the lane work. However, VDOT's estimates of Day-1 HOV volume was 300 carpools an hour, light enough use to give the appearance to commuters in congested main lanes that the HOV lane was empty (5).

#### *Institutional Arrangements*

The project had strong support from a legislative mandate that the lanes be built as HOV lanes. The Fairfax County Board of Supervisors also supported the project. The Metropolitan Washington Airports Authority, which owns and operates the Dulles Airport Access Road located in the median of the Dulles Toll Road, took a neutral approach to the project. Little was done to contact local decision makers or community groups.

The failure to build support for the lane among local decision makers was especially harmful. Congressman Wolf was vocal against the HOV lanes, and it was through his legislative actions that the HOV-lane restrictions were removed by Governor Wilder (5).

#### *Education and Public Relations*

The messages of the marketing campaign included indications that HOV lanes were coming and attempted to build support for their use. The campaign was not particularly aggressive in disseminating these messages. Four methods were used to distribute this information (5):

1. "Burma Shave"-style signs containing slogans were displayed;
2. Local buses were outfitted with signs publicizing the HOV lanes;
3. Brochures were developed to be distributed by Loudoun and Fairfax counties ridesharing offices (Loudoun County officials forbade its ridesharing office to distribute the brochures); and
4. Opening day ceremonies were held, which included a barrel-bashing ceremony where attendees could smash orange construction barrels with a sledgehammer to mark the end of a long construction period.

Relations between the press and VDOT were poor. The media generally accepted the HOV-lane concept but did not support the Dulles Toll Road HOV lanes. VDOT did little to court this important constituency. Especially damaging to VDOT were traffic reporters who criticized the project during their on-air traffic reports (5).

#### *Continuing Efforts*

Few efforts were made to save the Dulles Toll Road HOV lanes in the short time in which they were in operation. Major changes in VDOT's procedures for marketing and implementing HOV lanes were and are being made.

#### *Conclusions*

The Dulles Toll Road experience is similar to that of the Santa Monica Diamond Lanes in that freeway lanes were taken away from general-purpose traffic and reserved for HOVs on busy freeways. Both projects occurred during a congressional election year, allowing them to be used as a political issue. However, the Dulles Toll Road HOV lanes originally were constructed as HOV lanes and were converted only temporarily to general-purpose flow. This temporary arrangement lasted long enough for general-purpose commuters to feel that "their lane" had been stolen from them.

The opening day chosen for the project was detrimental to its implementation. Planning opening day for the traditionally busiest travel day of the year, the day after Labor Day, could only make Day-1 congestion in the main travel lanes worse.

### **Interstate 90, Seattle, Washington**

#### *Project Description*

Interstate 90 is one of two east-west freeways in the Seattle metropolitan area. Interstate 90 connects the city of Seattle with the suburban city of Bellevue via a bridge over Lake Washington. Crossing Lake Washington and Mercer Island, Interstate 90 carries three directional general-purpose lanes and a two-lane, reversible median HOV roadway. The section immediately to the east of the HOV roadway was identified as a future HOV corridor in the HOV core freeway system plan. Construction of new HOV lanes in this section was years away (5).

Interstate 90 had a lane balance problem. Four lanes of westbound (inbound) freeway feed three general-purpose lanes and the two-lane reversible HOV roadway that cross Lake Washington and Mercer Island. The same situation existed in reverse in the eastbound direction. Excess capacity existed in the section to the east of the reversible HOV roadway, and good operations could be maintained with general-purpose traffic limited to three lanes. It was decided that the conversion of the far-left freeway lane could be a quick and inexpensive way to add an HOV lane to the facility (9).

The project involved conversion of 8 km of general-purpose lane and the addition of 5 km of HOV lane through restriping in the westbound direction. The eastbound lanes were converted for the entire 12 km. The estimated cost of adding 12 km of HOV lanes in both directions of this freeway was \$70 million. The conversion project cost the Washington State Department of Transportation a total of \$100,000 (9).

### *Target Audience*

No specific groups of facility users were targeted by the marketing plan for this project. The general commuting public on Interstate 90 and in the Seattle area was the broad audience. Later studies indicated that more could have been done to target a narrower audience. Studies indicate that slightly more commuters were against the conversion than were in favor, and that among those against the conversion, younger commuters, commuters from high-income groups, and single-occupant-vehicle drivers were the most opposed to lane conversions (7). A more effective campaign might have focused efforts on these groups.

### *Institutional Arrangements*

The support of local officials was sought as an important way to bolster support for the lane conversion project. Local decision makers and officials were involved in the preliminary stages of project development, before the decision to convert the lanes was made. Letters of support for the conversion project were provided by local governments.

Meetings were held with the city councils and engineering staffs of bordering areas. Local legislative representatives were kept informed of project developments and results from the public involvement process. The region's metropolitan planning organization, the Puget Sound Regional Council, and subregional planning committees also were informed of the technical, public, and political progress of the project.

In general, institutional arrangements made for this project were successful in bolstering support. Because all parties who may have had a stake in the project were kept informed and involved, none found a political motive to block it (9).

### *Education and Public Relations*

An environmental assessment (EA) was performed for this project. The EA started the public involvement process through federally required public meetings. Initial public meetings generated little public interest and were poorly attended. To garner greater public interest in the project, an advertisement campaign including newspaper advertisements was initiated. The newspapers also were solicited to publish articles about the project. Radio advertisements were aired and traffic reporters were briefed on the project and their opinions were solicited (9).

The advertising campaign was geared to an all-day open house and public hearing. Although there was some strong opposition to the conversion proposal, most citizens who attended the public meeting were either in support of or indifferent to the project (9).

### *Continuing Efforts*

The University of Washington was contracted with to perform an ongoing analysis of the project. Both the operational and the marketing aspects of the project were analyzed and specific recommendations for improving the process for future HOV-lane conversion projects were made (7). It was concluded that the HOV lane did not have adverse effects on the operation of Interstate 90 in the conversion section. Marketing suggestions for future projects focused on the better definition of a target audience. Marketing efforts have con-

tinued throughout the region. These efforts have been augmented by information available on the World Wide Web (10).

### *Conclusions*

The Interstate 90 project was one of the first successful HOV conversion projects. The primary reason for successful implementation was the correction of the lane balance problem on Interstate 90. The bottleneck section on Mercer Island metered flow to the east so that excess capacity was available for conversion to exclusive use by HOV-lane traffic. General-purpose-lane traffic was not subject to negative effects from the conversion.

Initiation of the EA process led to the early inclusion of the general public. Through this process the public understood the project's purposes and goals. The EA process also aided the determination of the public attitude toward the project.

The success of this project indicates that early and intense public involvement in a technically feasible project can aid successful implementation. Strong institutional arrangements that included local stakeholders in the decision-making process improved the chances of successful implementation.

## **Interstate 80, Northern New Jersey**

### *Project Description*

The Interstate 80 corridor serves diverse commuting patterns in suburban northern New Jersey. While in the midst of a 5-year, 10.5-km reconstruction and lane addition project, the New Jersey Department of Transportation (NJDOT) initiated a feasibility study for opening a 17-km HOV facility on Interstate 80, including all of the new lanes under construction and an additional 2.5-km segment east of the construction zone. In 1991, the western 6.4 km of the new lane was opened to general-purpose traffic. Another section of the new lane was completed before the opening of the HOV lane but was left closed until the project was finished in early 1994 (11).

In 1994, the full 17-km HOV lane was opened for HOV use only. This included 8.9 km of general-purpose lane that had been converted to HOV use. Supported by an extensive marketing campaign, the implementation of the HOV lane did not meet significant public resistance and is operating successfully in its person-moving capacity and HOV travel-time savings.

### *Target Audience*

The target audience of the public campaign was fairly broad. Freeway commuters were the primary target, but considerations of the impact on nonusers were also included. Attitudinal surveys were administered to 1,201 adults living in the freeway corridor. Additionally, 23 business leaders and community representatives were interviewed (11).

### *Institutional Arrangements*

A steering committee was formed to help guide the NJDOT through implementation. It was important that consensus be reached and that institutional stakeholders sign off on the project. The arrangements enabled positive statements regarding the HOV project to come

from sources outside NJDOT (11). The members of the steering committee included the following:

- FHWA,
- Traffic management associations,
- New Jersey Turnpike Authority,
- New Jersey TRANSIT,
- Morris and Bergen counties engineering and planning departments, and
- New Jersey State Police.

Executive interviews were an important tool for constituency building. The decision makers interviewed were given the opportunity to provide input to the project and were made available at press conferences to express their support for the project (11).

#### *Education and Public Relations*

The public relations campaign emphasized the viability of HOV lanes as an overall traffic improvement device. Discussion of air-quality issues was included in the campaign. The issue of lane conversion was not mentioned. NJDOT hoped that acceptance of the HOV-lane concept at the end of 5 years of disruptive construction activities would make the lane conversion a nonissue (11).

A major media blitz was used to disseminate the message of the HOV-lane conversion. Radio and television advertising, billboards, buttons, a newsletter, press releases, radio talk shows, and a speaker's forum that offered presentations to local community groups, professional organizations, and employers were used to carry the message of the HOV-lane improvement to the general public (11).

#### *Continuing Efforts*

The marketing efforts continued for some time after the lanes were opened. The main concerns from the public have been with HOV-lane operational issues. There have been some complaints from commuters who think it is unfair to have been subjected to 5 years of construction and associated congestion without receiving any benefits from the end product.

#### *Conclusions*

The Interstate 80 HOV lane has been successfully implemented and is operating with high ridership (6,300 persons in 2,500 vehicles during the morning peak) and considerable travel-time savings (10 to 15 min in the morning peak) (11). The lane generally was acceptable to the commuting public. Strict enforcement of the lanes by the state police has led to a low violation rate (5 to 10 percent), which has helped preserve public respect for HOV-lane treatment.

One reason for the success is the early consensus building between the many agencies and decision makers in the area. This eliminated dissension "at the top," which has helped kill HOV-lane projects in the past. Inclusion of the state police in this process, along with provisions for funding enforcement, has led to the low violation rate. Early information to the public through outreach surveys and the placement of Future HOV signs above the lane to be converted also were helpful.

Corridor-specific issues also led to successful implementation. The large number of two-person carpools that existed in the corridor before the opening of the HOV-lane treatments led to full use

of the HOV lane soon after implementation, thus avoiding the empty-lane syndrome that has killed other HOV-lane projects.

### **IMPLEMENTATION GUIDELINE ELEMENTS**

Elements that should be included in an implementation plan are the following:

- Technical feasibility,
- Early public outreach,
- Strong institutional arrangements,
- Inclusion of law enforcement agencies,
- Open relationships with the media, and
- Project opening timing.

#### **Technical Feasibility**

The research highlighted in the Background section of this paper provides a good tool for measuring the technical feasibility of a conversion project. Conversion projects that cause severe congestion in the general-purpose lanes or result in HOV lanes that appear empty are likely to fail. A sound screening process should be used to assess the traffic effects a conversion project is likely to have. No amount of marketing can save a project that is not technically feasible. This is especially true when commuters are subjected to high congestion by conversion of one of "their" lanes for use by others.

#### **Early Public Outreach**

Starting the outreach early and providing mechanisms for public comment on the plans are important when considering lane conversion. Federal regulation requires public participation in the transportation planning process, but a higher degree of participation may be needed for an emotionally charged issue such as the conversion of general-purpose lanes to HOV lanes. If public opinion is stacked against a conversion project and early marketing efforts are ineffectual in altering that public opinion, alternative implementation options may be necessary to achieve the goals of an HOV-lane project.

#### **Strong Institutional Arrangements**

Inclusion of all agencies and local officials will help a project to succeed. Local agencies and officials are much closer to the general public and have a better feel for the concerns of their constituents than a state or federal agency could have. Also, the agenda of local agencies and officials cannot be ignored. The benefits of using local agencies and officials as spokespersons and cause champions are immense. These people tend to be trusted and their support can turn public opinion in favor of project methods and goals.

#### **Inclusion of Law Enforcement Agencies**

Any HOV-lane project depends on strict enforcement for its operational success, but enforcement is also important from a public opinion standpoint. An HOV lane in which violators go unpunished

while law-abiding citizens wait in traffic is likely to be unpopular with the public. By making the law enforcement agencies stakeholders in a project, they are more likely to provide extra effort in a situation over which state transportation agencies have little control.

### Open Relationships with Media

It is never clear whether public opinion leads to similar press coverage or vice versa, but it is clear that a relationship exists. Honest relationships with the press should be established. If the media are provided with full information, reporters will be in a position to report events accurately and the need for investigations to unwrap the “mysteries” of a conversion project will be reduced. Providing full information to the media will not ensure that press coverage always will be positive but it will ensure accurate reporting and a higher level of discourse.

A group of reporters who must be kept informed of project details and developments are the on-air traffic reporters. They witness traffic conditions daily and are in a position to express support or criticism of a project and the implementing agency during their on-air reports. Their reports are trusted by commuters and if an attacking approach is taken, commuters stuck in traffic congestion are more likely to fight the project.

### Project Opening Timing

The timing of a conversion is important. Implementing projects during a period of lower traffic demand can lead to smoother operations during the critical early days of the project. Also, avoiding implementation during years in which politicians are looking for popular causes to support will help the chances of success. Local experience should dictate in what year project implementation should proceed.

### CONCLUSIONS

Thorough marketing is important to the success of any HOV-lane project. HOV facilities normally are built at public expense but serve a select group of commuters. Their successful implementation depends on convincing the public that the facilities are either a benefit to society or a minimal personal cost. This is especially true for lane conversion, during which a lane is taken away from general-purpose traffic and given to a select group.

This paper is not meant to support conversions of general-purpose lanes into HOV lanes as a preferred method of HOV implementation. The assertion that successful HOV-lane projects must force

people into carpools by subjecting general-purpose traffic to intense congestion, as suggested by environmental advocacy groups (1, 12), is not realistic. The political realities of transportation improvements overwhelm any attempts at forcing behavioral changes. The American public loves the automobile. Politicians are aware of this and will exploit it as a means to their own political agenda. Only technically strong conversion projects, supported by aggressive marketing campaigns including the elements listed in this paper, should be attempted.

### ACKNOWLEDGMENT

This research was completed under the Advanced Institute program at Texas A&M University.

### REFERENCES

1. Leman, C. K., P. L. Schiller, and K. Pauly. *Re-Thinking HOV Facilities and the Public Interest*. Chesapeake Bay Foundation, Annapolis, Md., 1993.
2. Gard, J., P. P. Jovanis, V. Narasayya, and R. Kitamura. Public Attitudes Toward Conversion of Mixed-Use Freeway Lanes to High-Occupancy-Vehicle Lanes. In *Transportation Research Record 1446*, TRB, National Research Council, Washington, D.C., 1994, pp. 25–32.
3. Kim, S. G., J. Koehne, and F. Mannering. *I-90 Lane Conversion Evaluation*. Washington State Transportation Center, Seattle, 1994.
4. Turnbull, K. F., and J. W. Hanks, Jr. *A Description of High-Occupancy Vehicle Facilities in North America*. Report UMTA/TC-90/925-1. Texas Transportation Institute, College Station, July 1990.
5. Billheimer, J. W., J. B. Moore, and H. Stamm. *High Occupancy Vehicle (HOV) Lane Marketing Manual*. Final Report DOT-T-95-04. FHWA, U.S. Department of Transportation, 1994.
6. May, A. D. Screening Freeway Sections for Promising HOV Lane Candidate Sites. Presented at 75th Annual Meeting of the Transportation Research Board, Washington, D.C., 1996.
7. JHK & Associates. *Task 2.3, General Purpose To HOV Lane Conversion*. Draft Task Report, HOV Pre-Design Studies, Puget Sound Region, Washington State Department of Transportation Office of Urban Mobility, April 1995.
8. Stowers, J. R. HOV Lessons Learned from Dulles Toll Road. *TR News 170*, Jan. 1994, pp. 5–9.
9. Berg, D. B., L. N. Jacobson, and E. L. Jacobson. Converting a General Purpose Freeway Lane to an HOV Lane. In *The 64th ITE Compendium of Technical Papers*. ITE, Dallas, Tex., 1994, pp. 74–84.
10. WSDO. <http://www.wsdot.wa.gov/regions/northwest/hovpage/hovmain.htm>, Aug. 1996.
11. Fisher, B. L. Lane Conversion Strategy for the I-80 High-Occupancy Vehicle Lanes in New Jersey. Presented at 7th National HOV Systems Conference, Los Angeles, Calif., June 1994.
12. The Sierra Club. *Comments to “Take a Lane” Provisions in the Seattle Area Regional Transportation Plan*. Seattle, Wash., 1993.

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*Publication of this paper sponsored by Committee on High-Occupancy Vehicle Systems.*