

## **A REGIONAL HOV SYSTEM PLANNING APPROACH INVOLVING MULTIPLE AGENCIES**

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### **ABSTRACT**

The Austin, Texas metropolitan area has experienced significant growth over the past ten years. The region is facing a mobility and air quality crisis. To address these concerns the Austin District of the Texas Department of Transportation (TxDOT) has embarked upon a planning process for developing a system of HOV facilities that incorporates multiple regional agencies. This paper presents TxDOT's HOV planning framework for the Austin region, highlighting both the technical and the policy-related elements of the process. Included in the paper are descriptions of a number of features of the process: a multi-agency interlocal agreement for HOV system planning; a regional HOV Task Force comprised of technical staff from participating agencies to support and compliment Major Investment Studies (MIS) on specific corridors; inter-agency review teams for each MIS; and the use of research results from other communities as a basis for technical decisions and for the development of public education/awareness tools.

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### **BACKGROUND**

The Austin region has experienced an extremely high growth rate during the last decade. Population in the metropolitan area is nearing one million. Increased traffic from population growth, fueled by a booming high-tech economy and an enviable quality of life is threatening the region with a mobility crisis. The metropolitan area is also on the verge of being designated as non-attainment for air quality standards. Mobility has become the most pressing issue facing the region. Texas Transportation Institute's (TTI) annual mobility report identified Austin as experiencing the highest annual delay per driver for cities its size (1). In addition, TxDOT forecasts that it has only 30% of the funds needed to make the improvements required to meet future travel demand.

In 1997 a study was conducted to determine which freeway facilities would be conducive to the development of HOV lanes (2). The study findings were incorporated into the Capital Area Metropolitan Planning Organization's 2025 Transportation Plan, which serves as the basis for further development of corridor improvements. Presently there are two major freeway improvement studies being conducted by the Texas Department of Transportation (TxDOT) on the IH-35 and the Loop 1/U.S. 183 corridors. Both corridors were identified as prime candidates for HOV lanes in the 1997 Austin HOV Study.

In order to facilitate the timely and effective development of HOV facilities in the Austin region, The Austin District of TxDOT initiated a multi-faceted, regional HOV planning process that incorporates technical as well as community and policy-level elements. While detailed design and operational efforts proceed on the two freeway corridor improvement projects involving HOV lanes, the regional system-oriented approach described in this paper has been developed to complement that effort and address global issues.

## **TECHNICAL ELEMENT**

### **Research Implementation**

The documented experience of HOV facilities elsewhere serves as a credible technical foundation for HOV planning in the Austin region. Texas in particular has experienced success with the implementation of HOV facilities in the Houston and Dallas regions. Through ongoing monitoring and evaluation of these facilities, an extensive database of both baseline and operational data has been developed (3). The results of the evaluations have been used to identify improvements in HOV lane design and operation, which is benefiting the Austin planning process. Furthermore, institutional frameworks for HOV design, construction, and operation in Houston and Dallas serve as models for other Texas cities, and the examples of institutional relationships have been advantageous in developing working partnerships in Austin. The Texas experience has been well documented in the available literature (4, 5, 6). The availability and usefulness of this information emphasizes the critical importance of ongoing monitoring and evaluation of

implemented facilities as a resource to technical staff developing new projects in communities without HOV lanes.

### **Austin HOV Task Force**

Under each of the MIS projects there are technical teams, called “Director’s Teams,” that focus on specific technical issues related to individual project development. In addition to these teams there is a regional HOV Task Force, which serves as the primary mechanism for coordination of technical issues and communication of technical information to agency staff on system-wide HOV lane development.

The HOV Task Force meets monthly with twenty to twenty-five agency staff in attendance. The Task Force includes representation from TxDOT, the Federal Highway Administration, the metropolitan and rural transit authorities, the metropolitan planning organization (MPO), the toll road authority, the City of Austin and other surrounding cities, university researchers, and consulting engineers involved in the MIS process. An interlocal agreement signed by all involved governmental agencies guides the technical staff involvement. Under that agreement the agencies agree to devote staff resources to participate in the following tasks (as appropriate for the individual jurisdiction):

- Support and promote regional HOV facility planning, development, and implementation activities
- Attend regularly scheduled working (Director’s Team) meetings of the HOV-related Major Investment Studies (MIS) and meetings of the Austin HOV Task Force;

- Provide HOV technical support, including research, data collection, analysis, presentations as appropriate, and provide timely review and comment on reports;
- Participate in a multi-agency public education/involvement effort;
- Promote ridesharing and support the development of HOV facilities through the incorporation of HOV strategies and policies into short and long-range transportation plans;
- Participate in the discussion of subsequent agreements relating to right-of-way reservation, project management and financial participation in HOV development phases, including but not limited to planning, design, construction, operation, maintenance, monitoring, and enforcement of HOV facilities;
- Identify and plan local land use and development policies that support HOV facilities and enhance their effectiveness;
- Identify and plan supporting facilities, programs, and services that complement HOV facilities and enhance their utilization, including but not limited to
  - Coordination with major employers to promote ridesharing
  - Park-and-ride lots
  - Express bus service
  - Parking ordinances that encourage ridesharing
  - Arterial street HOV treatments that connect freeway HOV lanes to major trip generators, or that address localized congestion; and
  - Support schedules, established milestones and critical paths compiled by the HOV Task Force for all activities listed above, monitor progress of those activities,

assist in the resolution of schedule delays, and participate in the development of a Quarterly Progress Report.

In addition to a coordination function, the HOV Task Force also serves a critical role in educating agency staff on technical issues related to HOV lanes; many local agency staff members have minimal experience in HOV concepts. Communication among task force members is facilitated by an electronic mail list that includes fifty representatives from participating agencies. In addition to general information about meeting logistics the email list serves as a mechanism to communicate technical information, share articles, alert members to the availability of documents and resources, engage in topic-specific discussion, and provide details of upcoming conferences or training sessions. A restricted access web site is available to task force members. There they can find meeting schedules, meeting handouts, presentations on specific topic areas, technical information and HOV resources.

In order to ensure timely decision-making regarding HOV lane development, a decision framework has been devised that follows the steps in TxDOT's project development process. As a project moves forward through the preliminary and final design processes there are critical decisions related to HOV lane implementation that should be addressed. Figure 1 illustrates the decision framework in general terms. The task force periodically reviews the framework in relation to individual project schedules to ensure that timely issues are being addressed. For instance, most of the task force's recent efforts have been focused on public education related to the concept of HOV lanes

since most of the current projects are in the planning/programming and early preliminary design stages. As projects move toward construction and operation, it is expected that the task force will evolve both in terms of the focus areas and the participants.

**FIGURE 1 HOV Planning Decisions**

Project Phase	HOV Planning Decisions
Planning and Programming	Facility Type, Public Education Strategy
Preliminary Design and Environmental	Design, Park-and-Ride Lots, Enforcement, Operations, Arterial Facilities
PS&E, Right of Way and Utilities	Maintenance, Supporting Programs and Services, Marketing Strategy
Construction Letting	Evaluation and Monitoring Plan
Operation	Operational Modifications as needed

The following is a list of items that have been covered during Austin HOV Task Force meetings:

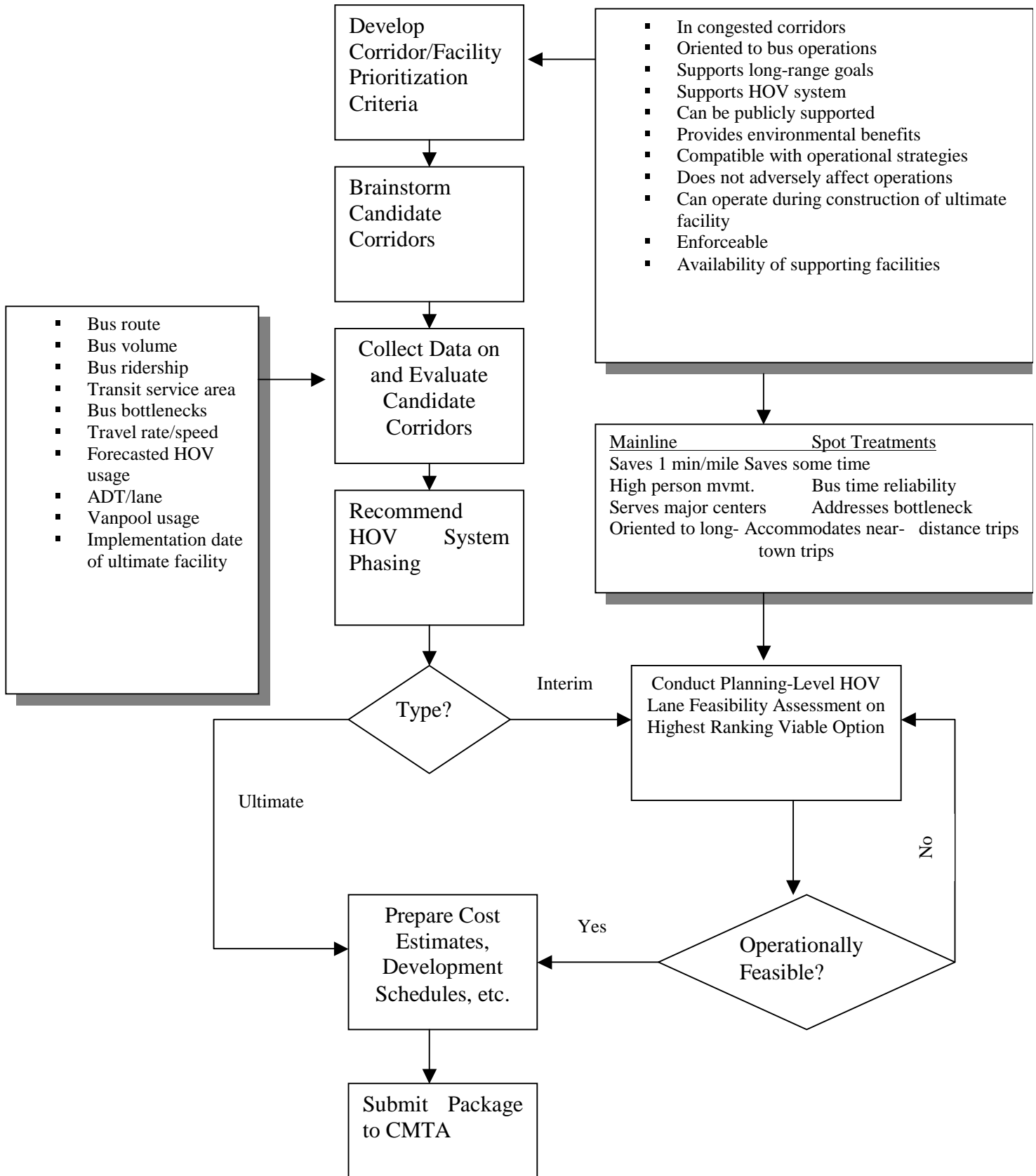
- HOV to HOV connections;
- Access design;
- Park-and-ride coordination and location selection criteria;
- Estimated capital and operating costs;
- Project timelines;
- HOV modeling assumptions for development of the long-range transportation plan;
- Institutional issues related to funding, enforcement, operations, maintenance, and construction;



- Public education, public awareness, and constituency-building;
- HOV treatment in toll facilities;
- Value pricing and managed lanes;
- History of park-and-ride facility development in Houston;
- Presentation from Dallas Area Rapid Transit on lessons learned in HOV lane development.
- HOV lanes and air quality impacts; and
- Opportunities for near-term implementation of HOV treatments, both mainline and spot arterial improvements.

Topics and focus areas change over time and the task force maintains flexibility in order to address pertinent issues according to their priorities. For example, the task force is currently focused on the implementation of interim HOV facilities. The major freeway corridors TxDOT has under study are slated for permanent HOV lanes in the seven to ten-year timeframe when the freeways are reconstructed. Recent emphasis has been placed on evaluating opportunities for interim treatments throughout the system, including freeway and non-freeway facilities. Figure 2 illustrates the process by which corridors are being screened and evaluated for interim improvements.

**Figure 2. HOV Corridor Phasing Process and Interim HOV Lane Sketch Planning**



## **POLICY AND COMMUNITY ELEMENT**

### **Interlocal Agreement – A Regional Perspective**

TxDOT's interlocal agreement with other agencies in the region has certainly been valuable in garnering the commitment of agencies to devote staff resources to HOV lane planning. In addition, the interlocal agreement has become a useful policy-level tool to engage participants in supporting HOV system development. The technical tasks referenced in the previous section of this paper and listed in the interlocal agreement are prefaced by the following policy-related language:

“...WHEREAS, the Parties are of the opinion that regional mobility can be improved through the implementation of high-occupancy vehicle (HOV) facilities, which increase the movement of people through congested corridors and intersections by offering travel time savings, thus encouraging bus transit ridership, carpooling, and vanpooling; and

WHEREAS, a high-occupancy vehicle (HOV) facility is defined as a physical or operational feature of the transportation infrastructure that provides priority treatment for high-occupancy vehicles. HOV facilities may take the form of separate lanes on freeways, arterial streets or exclusive rights-of-way, preferential signalization at intersections or freeway ramps, and supporting facilities such as park-and-ride lots on public right-of-way; and

WHEREAS, the Parties believe that the mobility objectives of HOV lanes can be achieved through a regional, cooperative approach accomplished through coordinated implementation of HOV facilities; and

WHEREAS, this regional approach is to be facilitated by a multi-agency HOV Task Force, which will identify and address issues related to planning, design, construction, operations, enforcement, and maintenance of HOV facilities, and to which the parties commit to provide staff resources with the authority to implement the respective policies of their elected bodies in cooperation with other participating agencies; ...” (7).

By approving the interlocal agreement at the policy level, the agencies not only agree to participate by committing staff resources but also symbolically support HOV lanes as a regional mobility strategy.

### **Public Education and Awareness**

Garnering support of policy-making bodies in the region has been facilitated by the development of several public education tools. These communication tools are based on research results from monitoring and evaluating Texas HOV lanes. More than fifteen years of research into Texas HOV lane operation is summarized in a report titled, *The ABCs of HOVs: The Texas Experience* (8). From this report three communication tools

have been developed that are oriented toward non-technical audiences in the Austin metropolitan area:

- 30-page booklet titled *The ABCs of HOVs: The Texas Experience* (<http://tti.tamu.edu/product/catalog/reports/1353-I.pdf>)
- Brochure highlighting Texas results but oriented to Austin HOV system development
- PowerPoint presentation for small groups highlighting Texas and some of the national experience and oriented to the lessons learned as they apply to the Austin region
- TxDOT – Austin District website (<http://www.dot.state.tx.us/insdotdot/geodist/aus/hov/hov-hm.htm>)

All of the public education tools are part of a concept marketing strategy that is intended to increase general awareness of HOV lanes and managed lanes (i.e., other user groups allowed in addition to HOVs) and to supplement individual project-related public outreach efforts. Refinement of the concept marketing strategy is underway. This involves development of a specific action plan for HOV concept marketing. The concept marketing plan is being supported by market research consisting of a 30-question telephone market survey of 600 residents to determine their level of understanding and support of HOV lanes. Preliminary results are as follows:

- 80% of those responding had an understanding of the general concept of HOV lanes
- 70% had experience with HOV lanes in other cities, either by using them or observing them. Those who expressed opposition to HOV lanes were those that claimed the most experience with them.

- Support of HOV lanes is correlated with anticipated use, but those who stated they would not likely use HOV lanes claimed support if other community-related goals could be satisfied, particularly improved air quality.

The results of this survey are important in crafting the specific outreach plan, the message, and in identifying targeted groups and audiences.

## **ISSUES ON THE HORIZON**

One of the more critical issues facing the Task Force is the need to establish goals and objectives for HOV facilities under development in Austin. The Texas experience with HOV facilities has predominately been one of HOV lanes in their purest form – allowing only vehicles with two or more passengers. The testing of the high-occupancy toll (HOT) concept on the Katy HOV lane in Houston has elevated the awareness across the state of managed lanes as a mobility strategy. A recently completed TxDOT research study on HOT lane feasibility was initiated by the Austin District (9). The Loop 1/U.S. 183 MIS now underway in Austin is investigating managed lanes as one of the improvement concepts, as are several MIS projects throughout the state.

There is a general agreement among technical staff in the Austin community, and as implied in the regional interlocal agreement, that the HOV/managed lanes under development would first give priority to vehicles with two or more occupants, with other user groups as secondary consideration. There is increasing interest, however, in

exploring access by other user groups such as low-emitting vehicles. The development of overall goals and specific objectives beyond those outlined in the interlocal agreement will be valuable in resolving issues arising from the evolution of the HOV lane concept to one of managed lane facilities.

## REFERENCES

1. Schrank, David L. and Timothy J. Lomax. *The 1999 Annual Mobility Report: Information for Urban America*. Texas Transportation Institute, 1999.
2. Lomax, Timothy J., David L. Schrank, and William L. Eisele. *Austin High-Occupancy Vehicle Study*. Technical Memorandum. Texas Department of Transportation, February 1997.
3. Stockton, Wm. R., Ginger F. Daniels, Doug A. Skowronek, and David M. Fenno. *An Evaluation of High-Occupancy Vehicle Lane in Texas, 1997*. Report No. FHWA/TX-99/1353-6. Texas Transportation Institute, November 1999.
4. Turnbull, Katherine F., Patricia A. Turner, and Nell Frazer Lindquist. *Investigation of Land Use Development, and Parking Policies to Support the Use of High-Occupancy Vehicles in Texas*. Report No. FHWA/TX-96/1361-1F. Texas Transportation Institute, November 1995.
5. Walters, Carol H., Timothy J. Lomax, Christopher M. Poe, Russell H. Henk, Douglas A. Skowronek, and Mark D. Middleton. *The Dallas Freeway/HOV System Planning Study: Year 2015*. Report No. TX-95/1994-7. Texas Transportation Institute, June 1995.



6. Turner, Shawn M., Gary A. Carlin, and Russell H. Henk. *Quantifying the Benefits of High-Occupancy Vehicle Facilities Using Automatic Vehicle Identification Technology*. Report No. SWUTC/95/465020-1. Texas Transportation Institute, November 1995.
7. *Interlocal Agreement for the Development of a Regional High-Occupancy Vehicle Facility System*. Texas Department of Transportation, July 2000.
8. Stockton, Wm. R., Ginger Daniels, Douglas A. Skowronek, and David M. Fenno. *The ABCs of HOVs: The Texas Experience*. Report No. 1353-I. Texas Transportation Institute, February 2000.
9. Stockton, Wm. R., Robert Benz, Lawrence Rilett, Doug Skowronek, Sharada Vadali, and Ginger Daniels. *Investigating the General Feasibility of High Occupancy/Toll Lanes in Texas*. Report No. TX-00/4915-1. Texas Transportation Institute, July 2000.

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