

# MANAGED LANES

What was once known as rush hour may now last up to six hours each day in Texas' most congested cities. But the idea of "managed lanes" is giving transportation planners another way to address the growing problem of traffic congestion.

Limited land availability, scarce funds, and social and environmental concerns may prevent adding new freeway lanes. The combination of these factors is forcing transportation planners and engineers to explore new ways to more effectively operate the existing transportation network. "Managed lanes" is one such concept that is being used successfully across the country.

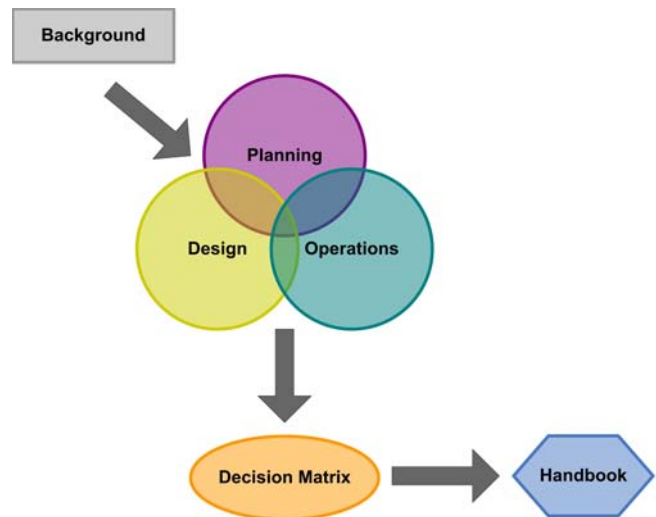
Like other transportation agencies nationwide, the Texas Department of Transportation (TxDOT) is looking to the managed lane operational approach to offer peak period free-flow travel to certain user groups, which might be high occupancy vehicles (HOV), trucks, toll-paying vehicles, transit, low-emitting vehicles, or some combination of these and other groups. However, little is known about the complexities of designing a practical, flexible, safe, and efficient facility that may have multiple operating strategies throughout the course of a day, week, year, or beyond.

**Project Objectives:** Working in support of the research sponsors, TxDOT and the Federal Highway Administration, the Texas Transportation Institute (TTI), assisted by Texas Southern University, investigated the complex and interrelated issues surrounding the safe and efficient operation of managed lanes and developed a managed lanes handbook to help TxDOT make informed planning, design, and operational decisions when considering these facilities for their jurisdiction.



**Project Tasks:** This multi-year project had a considerable number of tasks that focused on topics within the key thrust areas of planning, design, and operations of managed lanes facilities, all of which supported the development of a managed lanes decision matrix and handbook for TxDOT. These topics included:

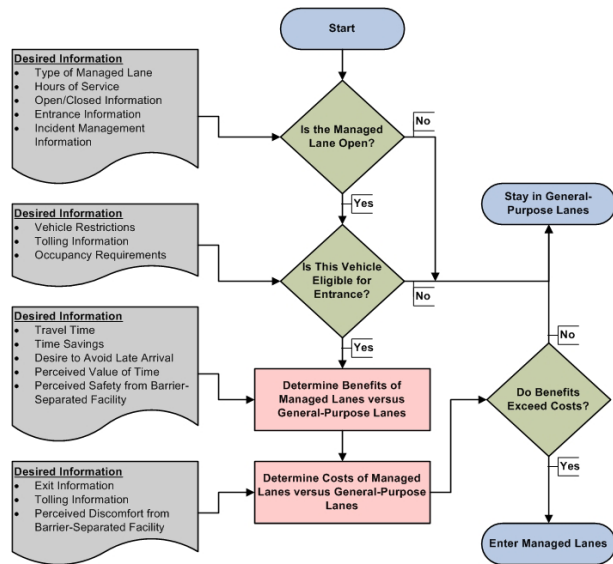
- Managed lanes state-of-the-practice;
- Legislative issues;
- Concept marketing;
- Funding and financing;
- Weaving issues;
- Geometric design and ramp issues;
- Traveler information;
- Traffic control devices;
- Inoperability;
- Enforcement
- Incident management;
- Evaluation and monitoring;
- Interim and special use; and
- Staffing and training needs.



**Implementation and Useful Tools:** The research effort has been extremely timely and beneficial for TxDOT. For example, research completed in 2003 regarding legislative issues was critical in securing changes in Texas statutes during the 2003 Regular Session of the 78<sup>th</sup> Texas Legislature. The research was used to draft statutes that provide TxDOT and other operational agencies with the complete arsenal of options available to design and operate managed lanes under a variety of control scenarios. Specifically, three bills, Texas House Bill 3588, Texas Senate Bill 514, and Texas House Bill 1208, addressed managed lanes in a variety of ways to support and enhance their use in Texas, including defining exclusive lanes, allowing exclusive lanes on the Trans Texas Corridor, allowing the Texas Transportation Commission to designate exclusive lanes and lane restrictions, giving Texas counties the authority to create lane restrictions and designate exclusive lanes, and correcting problems with a previous statute allowing municipalities to designate lane restrictions.

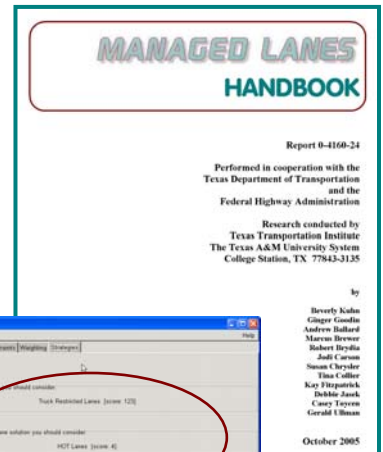


Research on concept marketing yielded two position papers on managed lanes intended to provide TxDOT's statewide perspective on managed lanes. One paper is tailored to editorial staff, transportation reporters, and others in the media. The second provides policy makers with information about managed lanes, how they may be operated, the benefits of managed lanes, where successful projects have been implemented, and what TxDOT is planning for Texas. These user-friendly brochures have been distributed widely across the state and have been extremely popular and useful to both audiences.

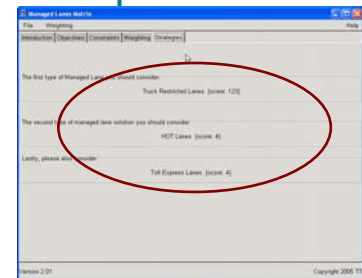


To aid practitioners in the development of managed lanes facilities, researchers developed a conceptualized decision model. This model incorporates what information a driver needs to correctly answer each of the questions required in the process of deciding whether a managed lane facility is a better choice than the general-purpose lanes. It also takes into account not only the specifics of the managed lane facility and traffic conditions, but also the qualitative specifics of the individual driver. It is related to the issue of driver familiarity. A general classification of drivers includes the unfamiliar driver, the semi-familiar driver, and the very familiar driver. The interaction between driver familiarity and information requirements implies that information requirements should be considered early in the managed lane design process, as choices are being made regarding access and egress points, types of tolling facility, and type and amount of vehicle occupancy adjustments to accommodate. One noteworthy point is that more complex managed lane facilities require even familiar drivers to acquire a substantial amount of en route information.

Finally, the research team developed a preliminary screening tool and a handbook for use in developing managed lanes projects. The screening tool is based on a decision support framework that depicts the sequential elements considered in implementing a managed lanes project. Features of the framework include the incorporation of financial goals, particularly those involving revenue generation, into the general policy framework; objective-based decision making in determining potential user groups and the use of pricing for demand management and/or revenue generation; the combination of vehicle user groups and operating strategy as the basis for determining design parameters for the project; the involvement of other agencies in the process, as well as multiple opportunities for public input; a strong link between design and operations in the development of schematic design; and a re-evaluation process if expected performance does not meet desired outcomes. The screening tool helps users determine appropriate managed lanes operational strategies for a corridor at the sketch planning level.



The handbook, which is based on the decision support framework, provides a comprehensive guide to developing policies for, planning, designing, implementing, marketing, operating, enforcing, evaluating, and monitoring managed lane facilities. The *Managed Lanes Handbook* is a practical and easy-to-use reference for transportation professionals at all levels and with a variety of backgrounds. Policy makers can also use the handbook to review the key elements associated with various aspects of managed lane projects.



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