

Estimating Demand For Managed Lanes in San Antonio

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2007 TexITE Summer Meeting
June 16th, 2007

Managed Lanes

- “A set of lanes where operational strategies are proactively implemented and managed in response to changing conditions”
- Separated lanes, with access management based on
 - Tolls
 - Vehicle Eligibility
 - Demand Management

Managed Lanes

- High Occupancy Vehicle (HOV)
 - 2 or more passengers
- High Occupancy Tolling (HOT)
 - Single occupant vehicles charged for HOV lanes
- Value Priced Lanes
 - Higher tolls charged during times with higher demand

HOT in Los Angeles

- State Route 91
- First fully automated toll road in US
- Toll varies by time of day
 - Minimum \$1.15
 - Maximum \$9.50
- Managed lanes carry 40-50% of vehicles even though only 33% of capacity
- Reduce travel time by 20 minutes



HOT in San Diego



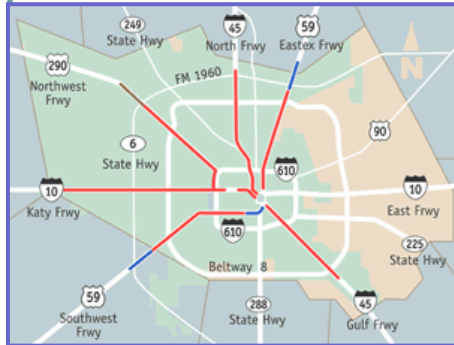
- 10 mile reversible lane in median with no intermediate access
- Variable toll determined every 6 minutes based on traffic conditions
 - Minimum \$1.00
 - Maximum \$8.00 (when heavily congested)
- Reduce travel time by 10-15 minutes

HOV in Dallas

- Currently 4 corridors
- Many more proposed
- I-30
 - Contraflow lane
 - HOV 2+
 - 37.4 million passenger trips in 2005
 - 30 mph at peak before HOV
 - 55 mph after HOV

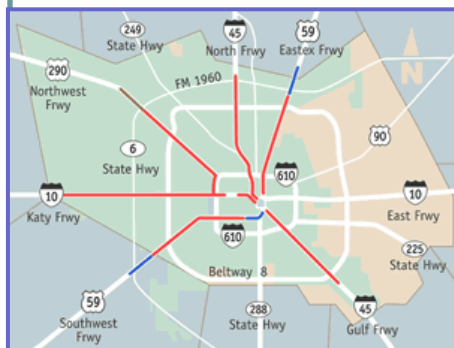


HOV in Houston



- 112 lane miles in 6 corridors
- Reversible
- HOV 2+
- Average Peak Speeds
 - 24 mph on main lanes
 - 55 mph on HOV
- Equivalent to 24 freeway mainlanes

HOT in Houston - QuickRide



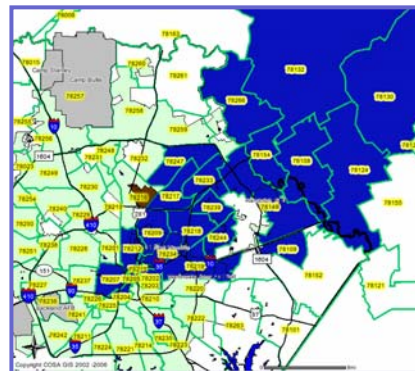
- During Peak Periods
- Northwest Freeway (US 290) and Katy Freeway (IH 10)
- HOV 3+ free
- HOV 2 pay \$2
- Intended to keep HOV lanes uncongested and reduce underutilization

Managed Lanes in San Antonio?

- Population of San Antonio
 - 1,395,880 in 1995
 - 2,023,235 in 2025
 - 45% increase
- 33 hours of delay/year for peak travelers
- Proposed: Interstate 35
 - 15 miles, 3 general purpose lanes in each direction
 - 175,000 vehicles each day now
 - 300,000 vehicles in 2025

Census Data

- Geography -- ZIP Codes
- Interested in variation due to income and ethnicity
- Data Obtained:
 - Population
 - Households
 - HH income
 - In labor force & working



Potential Managed Lane Users as a Portion of Population

- Number anticipated to be interested in ML
 - Houston, Dallas survey
- This number exceeds current 175,000 on I-35
- ML use ratio
 - 0.386
 - anticipated # interested divided by population

Income	House-holds	Potential ML Users
Total:	224,958	189,734
Less than \$15,000	39,382	26,249
\$15,000 to \$34,999	65,243	54,663
\$35,000 to \$49,999	39,510	36,691
\$50,000 to \$99,999	62,259	54,353
\$100,000 or more	18,564	17,778

Anticipated Demand

- 2025 Projected DDHV basis
- Total potential ML users
 - Multiply DDHV by ML use ratio
- Remaining DDHV = General Purpose Lane (GPL) Volume
- Required lanes in Peak Direction
 - Peak capacity for each lane type assumed
 - Anticipated volume divided by peak capacity

	Volume (vp/1ph)	Capacity (vp/1ph)	# Lanes
Peak DDHV:	14595		
Potential Peak ML DDHV:	5627	1650	4
Remaining GPL DDHV:	8968	2200	5

Alternate Scenarios

- Address uncertainty in analysis
- Sources:
 - ML use ratio
 - Projected DDHV
- Cases for each :
 - Projected
 - Projection – 10%
 - Projection + 10%
- Leads to 8 alternate scenarios

Primary Value of Interest Variance:		
Change	Proportion of Potential ML Users	DDHV
-10%	0.347	13136
Projected	0.386	14595
10%	0.382	14450

Overall Findings

- Results
 - 4 lane combinations
- Selected combination
 - 5 GPL, 4 ML
 - Most common result
 - Original projection
- Acceptable LOS in:
 - Design year – New capacity
 - Beyond – ML = congestion management

Projected Lane Requirements		
ML	GPL	Frequency
3	4	1
4	4	3
4	5	4
5	5	1

Conclusion

- Managed lanes likely to work in San Antonio
- 4 ML and 5 GPL in the peak direction is most likely to satisfy projected overall and ML demand
- Managed lanes will provide congestion mitigation even after overall corridor capacity is exceeded
 - Good solution for geographically constrained corridors
- Further analysis necessary to determine optimal toll rates for the San Antonio area