

Highway Capacity and Tolling

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Traffic Congestion



- ◆ In our 85 largest metro areas, motorists waste \$63.1 billion/year in fuel and time, stuck in traffic.
- ◆ This number has increased for the past 20 years.
- ◆ This despite major investment in HOV and transit:
 - Carpool to work: 11.2% in 2000 vs. 13.4% in 1990
 - Transit to work: 4.73% in 2000 vs 5.27% in 1990



Congestion is Directly Related to Roadway Capacity vs. Demand.

Metro area	Person Hours of Delay/Peak Traveler	Freeway Lane-Miles/1000 Daily VMT
Los Angeles	136	43
San Francisco	92	49
Washington, DC	84	55
Seattle	82	57
Houston	75	65
Salt Lake City	20	78
Pittsburgh	15	107
Oklahoma City	12	83
Rochester	8	91

Source: Texas Transportation Institute



New Highway Capacity Can Help



TTI data shows that cities that best kept highway capacity in step with traffic growth did best with congestion



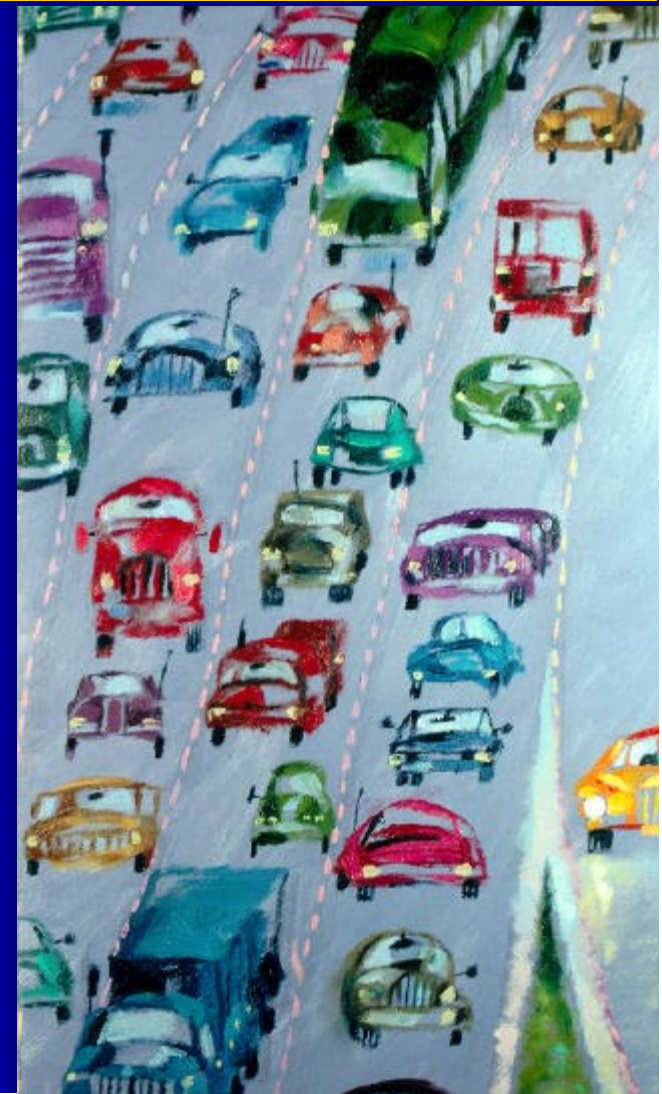
Some Say New Highways Built Only When. . .



Nationwide, We've Nearly Stopped Adding Capacity

From 1980 to 2000:

- ◆ Vehicle miles traveled (VMT) increased 82%
- ◆ Lane-miles of highway increased 4%



One Reason We Aren't Building Much: Major Funding Shortfall

- ◆ **2000 FHWA Conditions and Performance Report Found**
 - Annual capital spending: \$65 billion
 - Investment needed to maintain performance: \$107 billion
- ◆ **Urban expressway lane--\$5-10m/lane mile**
- ◆ **Elevate lanes--\$15-30m/lane mile**
- ◆ **Costs to build, operate, maintain--19-90 cents/mile, gas tax 2-3 cents/mile**



Telecoms vs. Highways: A Provocative Comparison

	Telecom System	Highway System
Structure	Interconnected network, multiple providers	Interconnected network multiple providers
Ownership	Private sector investors	Public sector
Revenues	User charges	User taxes
Investment criteria	Return on investment	Political process
Pricing	Demand-based	Virtually non-existent
Response to congestion	Raise price, add capacity	Discourage use
Incentive for maintenance	Risk of decline in asset value	When appropriations permit
Response to new technology	Entrepreneurial	Cautious



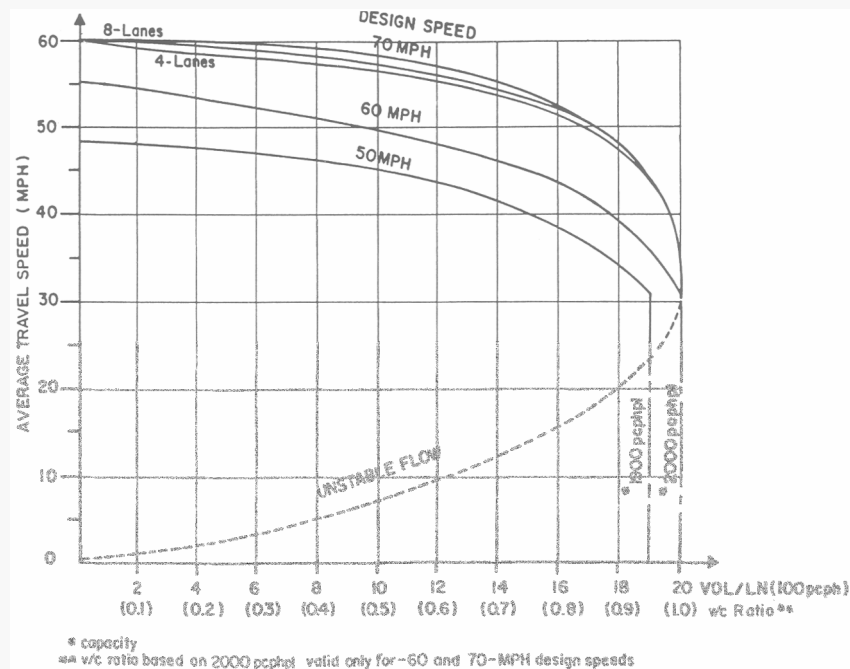
Comparing Tolling Modes

	Traditional Non-Toll	Nonprofit Toll	Long-Term Concession
Funding source	Highway trust fund	Toll revenue bonds	Equity and debt (bank, bonds)
Procurement process	Design-Bid-Build	Design-Finance-Build-Operate-Maintain	Design-Finance-Build-Own-Operate-Maintain
Cost overruns?	Taxpayers	Contractor	Contractor/Investors
Schedule slips?	Drivers	Contractor	Contractor/Investors
Traffic risk?	Taxpayers	Bondholders	Investors
Maintenance funding	Annual appropriations	Toll revenues	Toll revenues
Maintenance incentive	Public complaints	Bondholder pressure	Investors' asset value



Lessons Learned from Road Pricing

Speed and Flow Relationships Under Ideal Conditions
TRB, 1985)



Pricing does work

- ◆ Fewer choose to drive on priced facility, in proportion to price
- ◆ Can keep traffic moving on “managed lanes” at high speed and capacity
- ◆ Move 45% of traffic with 33% of lane capacity

Financing/Delivery Lessons Learned

1. Stronger incentives for due diligence and cost control with long-term concession.
 - Investors' own money at risk
 - Long-term stake in project success
2. Lower risk of financial failure with long-term concession
 - All-debt financing very risky for start-up toll roads
 - Equity is “patient capital”; gets you through the ramp-up years
3. Mega-project financing available from global capital markets
 - \$1.8 billion for Chicago Skyway
 - \$7.2 billion (potentially) for TTC-35 (Texas)



Technical Lessons Learned

1. Value pricing is a powerful tool for traffic management
 - Maintain free-flow at speed limit, even at busiest rush hours.
 - 91 Express lanes handle 49% of the traffic flow with 33% of the lane capacity.
2. Variable pricing is feasible, practical
 - Pre-published schedule, updated “automatically” (91 Express)
 - Quasi-real time adjustments via software algorithm (I-15 and I-394)
3. Revenue on express lanes much greater than many expected
 - Actual prices paid about double the level people say they would pay
 - People pay nearly as much for reliability (predictability) as for time savings.
 - Peak toll rates of 30-60 cents/mile are feasible on express lanes.



Political Lessons Learned

1. Non-compete clauses can be a problem

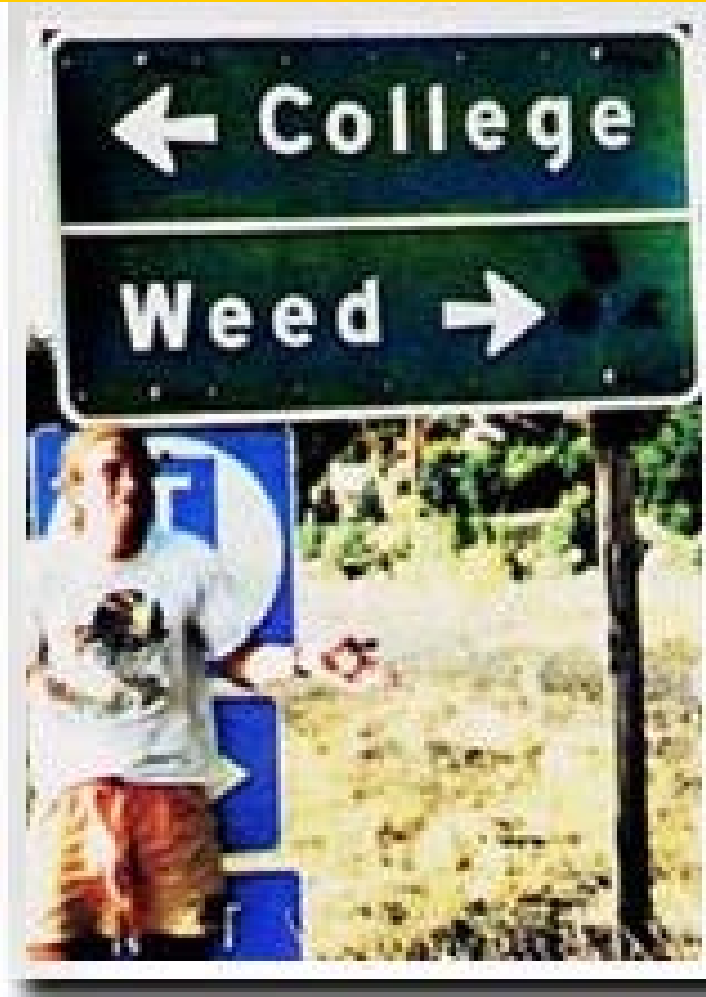
- Rigid non-compete led to OCTA buy-back of 91 Express Lanes
- 2nd-generation clauses not so rigid; balance protection of investors and public

2. Lexus Lane issue not a serious problem for HOT lanes

- People of all income levels find toll lanes valuable, worth paying for
- It's a voluntary choice, like Express Mail vs. regular mail.
- Uncongested HOT lane is good fit for improved bus service (BRT)



Life is Full of Tough Choices



The “Lexus Lane” Issue

Issue #1: Tolling is “regressive”

- ◆ Compared to what?
 - Fuel taxes are regressive
 - Transportation sales taxes are regressive
- ◆ With HOT lanes, only the user pay (and HOV and buses can go free)



Issue #2

Price/Quality choices are available everywhere else, why not on highways?



- ◆ Private sector: airlines, telephones, restaurants



- ◆ Public Sector: Amtrak, Postal Service



Issue #3

People of all income levels use HOT lanes for high-priority trips

- ◆ **San Diego and Orange County data (6 and 8 years worth)**
 - **It's not 10% of the people using the lanes all the time, its 90% of the people using them 10% of the time**
 - ◆ **Mother picking up kids from day care**
 - ◆ **Gardener reaching one more client**
 - ◆ **Family getting to airport on time**



Issue #4

Transit can be a major beneficiary of Managed Lanes

- ◆ Express bus service can be guaranteed access and time savings
- ◆ Speed and reliability are sustainable for the long term, unlike with HOV lanes



Issue #5

People overwhelmingly like this option, once they experience it

- ◆ **In San Diego, 80% of users and 60% of non users think toll lanes are fair, effective, and the best way to improve mobility in congested corridors**
- ◆ **Results hold for all income level, ethnic and age groups**



Steps toward the new paradigm

- ◆ 15 states now have public-private partnership laws for transportation
- ◆ 12 metro areas considering or planning new HOT lane projects
- ◆ Possible FAST lanes and variable pricing provisions in next federal surface transportation bill
- ◆ New TRB special committee to study replacement of fuel taxes for highway funding.



Questions?

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