

Managed Lanes:

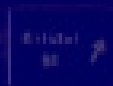
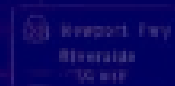
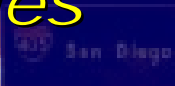
Expanding Highways for Increased Performance

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Congestion: Still Getting Worse

- Annual cost = \$63 billion in top 85 urban areas, an all-time high.
- Has grown every year since TTI began doing studies.
- This is despite major investment in HOV lanes and transit.
- Only 11.2% carpooled to work in 2000, vs. 13.4% in 1990.
- Only 4.73% rode transit to work in 2000, vs. 5.27% in 1990.



New Highway Capacity Can Help

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

- **Anchorage, Charleston, New Orleans, Pittsburgh, and Tampa expanded capacity, had smallest growth in congestion.**
- **25 other urban areas had worse congestion increase, as traffic significantly outpaced capacity.**
- **45 added very little capacity; had drastic congestion increase.**



New Lanes Are Very Costly

- **Urban expressway lanes often cost \$5M to \$10M/lane-mile.**
- **Elevated urban lanes cost 3 times that much.**
- **Cost to build, operate, and maintain works out to 19 to 90 cents/mile.**
- **But gas tax yields only 2 to 3 cents/mile.**



New Approach: Manage New Lanes for Higher Productivity

- HOV lanes were early form of managed lanes—but most have excess capacity.
- Exclusive busways are another form—but also have much excess capacity.
- HOT lanes sell excess capacity, charging market price.
- HOT Networks combine HOT lanes and Bus Rapid Transit.
- Truck Tollways are another form of Managed Lanes.



HOT Lanes

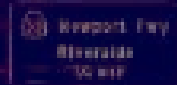
- Initial idea: sell the excess capacity to paying motorists.
- Five in operation: Houston (2), Minneapolis, San Diego, and Orange County, CA.
- Variable pricing works: use all capacity, free-flow at rush hour.
- On 91 Express Lanes, they handle up to 49% of freeway's traffic with 33% of capacity, at rush hour.
- Plans under way in a dozen metro areas.



Managed Lanes Overview, 2005

Projects Being Implemented

- **Dallas: I-635 expansion adds HOT lanes**
- **Denver: I-25N HOV to HOT conversion**
- **Houston: I-10 expansion adds HOT lanes**
- **San Diego: I-15 Managed Lanes expansion**
- **San Francisco East Bay: I-680 HOT lanes**
- **Tampa: SR-618 elevated Express Lanes**



Managed Lanes Overview, cont.

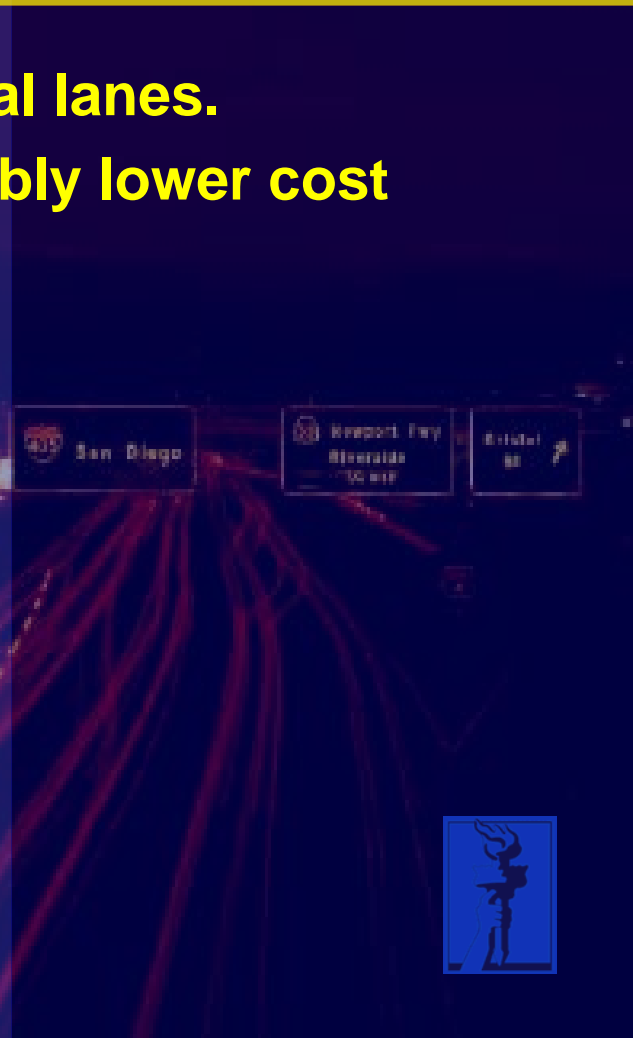
Proposals Being Considered

- Atlanta: new HOT lanes on I-75, I-285, I-575
- Denver: new HOT lanes on I-70 and C-470
- Dallas: express toll lanes on Airport Freeway
- Texas: toll truck lanes for TTC-35
- Texas: new HOT lanes on San Antonio Beltway
- Virginia: toll truck lanes on I-81
- Virginia: new HOT lanes on I-95 and I-395
- Washington, DC: new HOT lanes on Beltway (I-495)



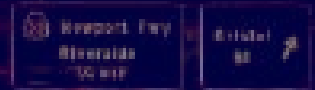
Bus Rapid Transit

- Frequent express bus service in special lanes.
- Comparable to light rail, but considerably lower cost (GAO)
- Strong support from FTA



Definition of Managed Lanes Network

- **Interconnected set of limited-access lanes on urban freeway system.**
- **Buses and vanpools use at no charge; all others pay.**
- **Variable pricing, a la I-15, all ETC.**
- **Composed of existing HOV plus new links and interchange connectors.**
- **Many one lane each way with central Jersey barrier; but some (a) two-lane reversible and others (b) two lanes each way.**



Advantages of ML Network

- **Congestion-insurance for all drivers, when they really need it.**
- **Greater person throughput than nearly all HOV lanes, thanks to**
 - express bus service (offsets loss of free HOV-2s)
 - paying vehicles making use of currently unused capacity
 - seamless network offers more time-saving than HOV fragments
- **Partly self-funding—a major advantage.**
- **Ease of enforcement—all-electronic. Either has a valid transponder and account or not.**



Miami ML Network



Keopart, Fay
Hester, Inc.
WSP

Briggs
LLC



Feasibility of ML Networks

- Networks modeled for 20 most-congested cities.
- Cost ranged from \$2.0B (Baltimore) to \$13.5B (Los Angeles).
- Revenues based on average peak tolls ranging from 22.5 cents/mi. to 30 cents/mi.
- Revenue bond amount = 15X year-10 toll revenue
- Conclusion: between 41% (New York) and 111% (Houston) of cost can be covered from toll revenue bonds.



A Win-Win Proposition

- Transit riders get region-wide express bus service.
- All motorists get “congestion insurance” on entire freeway system.
- Users of regular lanes encounter somewhat less congestion.
- Paying drivers on Network gain time savings and reliability.
- Taxpayers get improved transportation system without higher taxes.



Managed Lanes for Trucks

- **Truck-serving Interstates need more lanes—but states have insufficient funding.**
- **Tolls could be a major new funding source, but truckers oppose tolls.**
- **The challenge: how can we make tolled truck lanes a good deal for truckers?**



What does trucking industry want, that it's not getting?

- **Greater productivity—i.e., more payload per driver**
- **In cities, reliable trip times for just-in-time delivery**

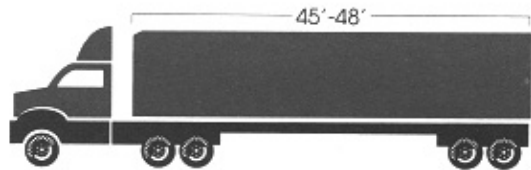


Trucking Could Be Far More Productive

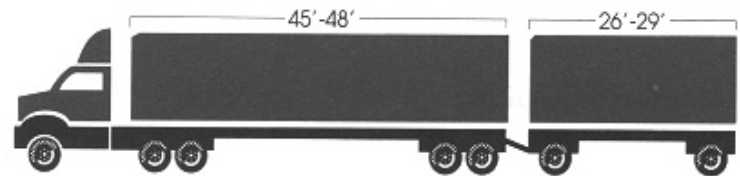
- Rail labor productivity has increased four-fold since 1980.
- But in trucking, one driver still hauls (mostly) one trailer.
- Longer combination vehicles (LCVs) can more than twice as much freight as conventional 18-wheelers
- Truck shipping is \$610 billion/year business; 10% saving is \$61 billion



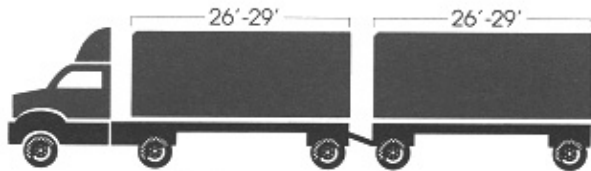
What Are LCVs?



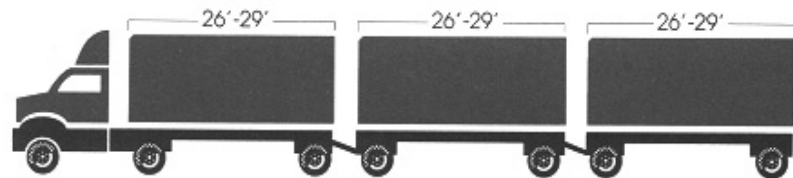
Standard Tractor - Semitrailer



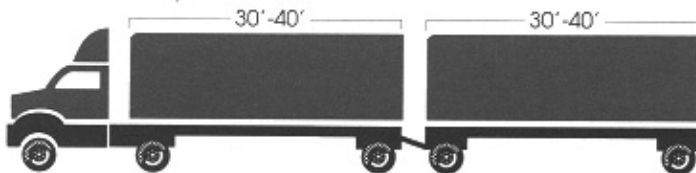
Rocky Mountain Double



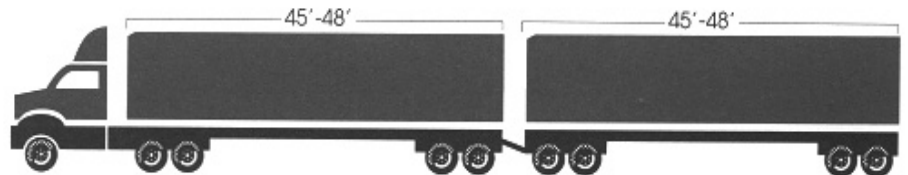
STAA Double



Triple



Intermediate Double



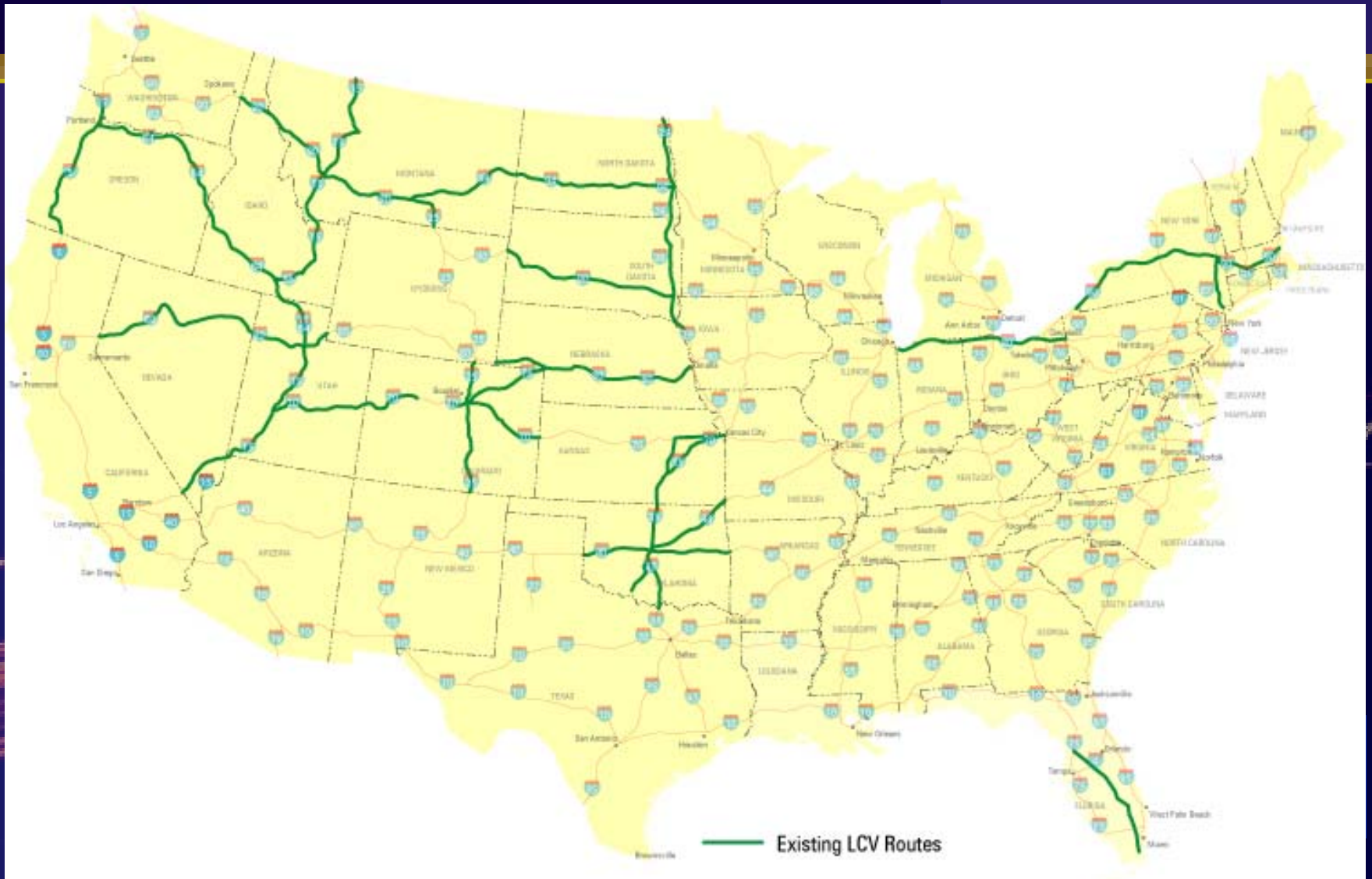
Turnpike Double

Safety Issues Holding Up Change

- **5,000 deaths/year from car-truck crashes.**
- **Highway safety groups against expanding territory of LCVs.**
- **Federal (1991) “LCV freeze” restricts use to western states and a few eastern turnpikes.**



Existing LCV Routes



Toll Truckways: a win-win proposition

- Heavy-duty lanes designed for LCVs
- Built in existing right of way on Interstate routes
- Open (voluntarily) to all trucks; mandatory for LCVs in non-LCV states
- Self-funding from tolls, charged electronically



Reason Study Findings

- In many long-haul corridors, it would make sense for truckers to pay high tolls to be able to use LVCs.
- In some scenarios, toll revenues would be enough to pay the cost of separate new lanes in existing ROW.



Proposed Toll Truckway Pilot Corridors



What About Urban Toll Truckways?

New Reason study estimated:

- **Time savings**
- **Payload increase**
- **Cost of elevated urban lane additions**



Key Urban Truckway Features

- Two (14') lanes each way
- Concrete jersey barrier separation
- Separate access/egress ramps
- Nodes (make-up/breakdown yards)
- Variable tolling, all-electronic
- Voluntary for conventional rigs, mandatory for LCVs
- Located in existing freeway corridors



Proposed L.A. and Oakland Toll Truckways

L.A. Ports to San Bernardino:

292 lane-miles

\$8.4 billion cost

Fundable 100% by toll revenue bonds

Oakland to Central Valley:

325 lane-miles

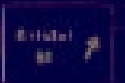
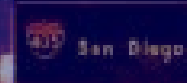
\$9.1 billion cost

Breakeven funding via toll revenue bonds



Needed Policy Changes

- **Provision of right of way in Interstate and freeway corridors (federal and state)**
- **Liberalized size & weight limits on Toll Truckway lanes (federal and state)**
- **Removal of ban on Interstate tolling for Toll Truckway lanes (federal and state)**
- **State enabling legislation for tolling, regional joint powers authorities**



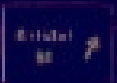
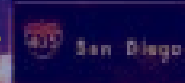
Conclusion

- For costly urban lane additions, we need to get maximum value for the investment.
- Managed Lanes can be paid for largely or entirely with tolls.
- Managed lanes permit higher throughput of people, vehicles, or goods:
- HOT lanes have much greater throughput, at 65 mph, at rush hour.
- HOT lanes become “virtual busways” for Bus Rapid Transit.
- Toll Truckways can increase safety and double trucking productivity.



The "Lexus Lane" Issue

- **Issue #1: Tolling is “regressive”**
- **Key question is: compared to what?**
- **Fuel taxes are regressive**
- **Transportation sales taxes are regressive**
- **With HOT lanes, only the users pay (and only auto users, since HOV and buses go free)**



Lexus Lanes, cont.

#2 Price/Quality choices are available everywhere else; why not on highways?

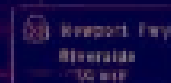
- **Private sector: airlines, telephones, restaurants**
- **Public sector: Amtrak, Postal Service**



Lexus Lanes, cont.

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

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



Lexus Lanes, cont.

#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 long-term, unlike with HOV lanes.**
- **Transit providers must be brought on board early, as in Houston.**



Lexus Lanes, concluded

- #5 People overwhelmingly like this option, once they experience it.
- In San Diego, 80% of users and 60% of non-users think Managed Lanes are fair, effective, and the best way to improve mobility on I-15.
- Results hold for all income levels, ethnic groups, and age groups.
- Key phrasing: do you favor or oppose having a time-saving option in this corridor?

