Arterial Managed Lanes

Chris Swenson, P.E.
Wilbur Smith Associates
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Based on research conducted by
Chris R. Swenson, P.E. and
Robert W. Poole, Jr.

Why Manage Arterials?

“In many major metropolitan areas, the freeway system is functioning at or beyond the capacity for which it was designed. Many drivers are choosing to use arterial streets instead. The resulting stress on the arterial systems creates gridlock on the thoroughfares that define our cities and suburbs.”

Office of Operations - FHWA

http://ops.fhwa.dot.gov/aboutus/one_pagers/arterial_mgmt.htm
New Capacity Needs to Maintain its Impact

- Value pricing keeps the new lanes uncongested, offers premium service.
- During rush hours, priced lanes offer much greater throughput.
- Self-generated revenues mean they can get built now, not “someday.”
- For Arterials, this means queue jumps.

What is a Queue Jump?

- Recognizes that arterial capacity is defined by intersection capacity
- Grade separation allows drives to bypass queues at a traffic signal.
- Drivers have a choice – remain at grade and proceed through the signalized intersection or use the queue jump to bypass congestion for a toll.
- The queue jump itself is a natural toll collection point.
Queue Jumps Can Be Overpasses or Underpasses
Queue Jumps Can Be Overpasses or Underpasses

Synergy of Queue Jumps and Bus Rapid Transit

- Value-priced lane is *virtual equivalent* of an exclusive busway (VEB).
- Pricing limits vehicle flow to what’s compatible with LOS C (or better) conditions.
- Reliable uncongested speed is sustainable long-term, thanks to pricing.
Queue Jump Costs

- “Basic” queue jump priced at $35 million
- 5.6 mile example corridor requires 6 queue jumps and has a total construction cost of $277 million or $46.2 million per queue jump.
- Example corridor not likely to require significant ROW.

Revenue Assumptions

<table>
<thead>
<tr>
<th>Table 6: Queue Jump Toll Rate Assumptions, 2008</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Initial peak toll</td>
<td>$0.45</td>
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<tr>
<td>Initial shoulder toll</td>
<td>$0.35</td>
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<tr>
<td>Initial off peak toll</td>
<td>$0.20</td>
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<tr>
<td>Initial weekend toll</td>
<td>$0.25</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Table 7: Queue Jump Usage Assumptions (% of total traffic)</th>
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<tbody>
<tr>
<td>Percent use in peak hours</td>
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<tr>
<td>Percent use in shoulder hours</td>
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<tr>
<td>Percent use in off-peak hours</td>
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<tr>
<td>Percent use in weekend hours</td>
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</tbody>
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Revenues

- Operating Costs assumed at 20% to 30% or revenue
- CPI assumed at 4%, discount rate at 6%
- Total Revenue over 30 years of $790 million
- Net Present value of $285 million over 30 year revenue stream

Closing Thought:

“Congestion is not a scientific mystery, nor is it an uncontrollable force. Congestion results from poor policy choices and a failure to separate solutions that are effective from those that are not.”

Norman Mineta, Secretary of Transportation, 2001-2006
For More Information

Chris Swenson
Wilbur Smith Associates
cswenson@wilbursmith.com
239.936.9400
AND
www.Reason.org – Policy Study 374

Florida Department of Transportation

Express Bus/BRT in Managed Lanes
February 10, 2010
Programmed Projects
- 95 Express Bus/BRT
- 595 Express Bus Park and Ride

Planning Studies
- I-95 Broward to Palm Beach Managed Lanes Extension
- I-75 Master Plan – Broward and Miami-Dade Counties
- Regional Managed Lanes Network

95 Express Project Scope
- 21 miles from Miami to Ft. Lauderdale
- HOT Conversion of 2 HOV Lanes plus 2 New Express Lanes
- Registered 3+ Carpools
- Dynamically Priced Tolls
- Express Bus/Bus Rapid Transit
- Increased Effective Capacity with Minimal Construction Disruption
Regional Express Bus Program 2010 – 2015

95 Express Alternative mode use:

- **3,300+** Transit Boardings per Weekday
- **3,486** Hybrid Sign-ups
- **2,188** Carpoolers in 667 Carpools
- **231** Vanpoolers in 34 Vanpools
Evaluation Studies

- SFCS Surveys
- Before and After Studies
- Signal Priority Performance Assessment Tests
- FHWA National Assessment

95 Express
Phase II

- 95 Express Implemented Service
  - Pembroke Pines and Hollywood to Miami
  - Ft Lauderdale to Miami
  - Hollywood to Miami
  - Miramar to Miami

- 595 Express 2012 Service
  - Weston and Sunrise to Davie/Universities and Ft. Lauderdale
  - Weston and Sunrise to Davie/Universities and Miami

- Phase II 2013 Service
  - 2 BCT Route Extensions to Miami-Dade
  - Expand Ft Laud and Hollywood to 13 hrs
Concept of Operations include Park and Ride Lots

- Park and Ride Lot
- Shared Use P&R
- Transit Hubs
- Expansion
- Corridor Study

Regional Map

- Stuart to WPB HOV Express
- I-95 Express + Hollywood-Pines
- I-595 Express
- I-95 Managed Lanes Feasibility Study Ft Lauderdale to WPB
I-75 Corridor Map

I-75 Transit Study
I-75 Park and Ride Concepts

Managed Lanes Network

- Managed Lanes Con-Ops Study
Managed Use Lanes Network
Concept of Operations

- Managed through FDOT District 6
  - Interconnectivity of individual managed Lane Corridors into a seamless region wide network
  - Multiple Agencies and stakeholders – Federal, State, Enforcement, MPOs, Transits and others
  - Coordinate stakeholders and how to achieve for regional operations
  - Increased throughput and safety utilizing state–of-the-art technologies

Questions & Discussion

Florida Department of Transportation

jeff.weidner@dot.state.fl.us
954-214-0024
Bus Toll Lane
Combining Price Management and a New Transit and Tolls Partnership to Create Financially Sustainable Public Transportation

VALUES
Equity
Livability
Sustainability
VALUES

Equity
- Transportation Choices (Public & Private)
- Affordable
- Accessible

Livability
- Quality of Life (Economic & Environmental)
- Individual & Community Benefits

Sustainability
- Multi-Modal Transportation System
- Funding Additions of New BRT/Bus/Toll Lanes
- Funding of Public Transit Operations
- Significant Long-Term Congestion Reduction

Bus Toll Lane

To achieve equity, livability and sustainability ... combine the operational and economic strengths of transit and tolls.

- BRT and Express Bus
- All-Electronic Toll Collection
- Managed-Lane Operations
- Variable/Congestion Pricing
Bus Toll Lane

To achieve equity, livability and sustainability … combine the operational and economic strengths of transit and tolls.

We need to change our thinking about the way we finance and price transportation … by employing new funding and operating partnerships between local/regional public transit agencies and local/regional toll agencies.

Bus Toll Lane

- New capacity - special use lanes
- Dedicated 1st to public transit = guaranteed capacity and level-of-service to provide schedule reliability for BRT & express bus (make transit competitive)
- Sell ALL remaining capacity (no free rides)
- Congestion insurance - free flow (through price management)
Bus Toll Lane

- New partnership between transit and toll agencies to fund the construction and operation of Bus Toll Lanes

**Construction**
- Public Partnership (P2) = remove silos to allow us to combine capital funds
- Transit as an equity owner of highway infrastructure

**Operations**
- Transit agency operates & maintains all rolling stock
- Toll agency operates toll collection system & maintains highway lanes

What do we achieve with this partnership?
Bus Toll Lane

- New partnership between transit and toll agencies to fund the construction and operation of Bus Toll Lanes
- Equity-based revenue sharing model provides public transit agencies with a sustainable source of operating funds
  
  Fare Box + Net Toll Revenue = Inflation sensitive, sustainable revenue stream for public transit

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Equity, Livability and Sustainability

Benefits to Individuals & the Community

- Attractive, competitive and affordable transportation choices
- Long-term reductions in traffic congestion and associated improvements in air quality
- Positive impacts on the local economy
  (improves movement of goods & services)
- Plow excess toll revenues back into local public transportation
  (transit operations and system improvements)
CONTACT

Martin Stone, Ph.D., AICP
Director of Planning
Tampa Hillsborough Expressway Authority

1104 East Twiggs Street
Tampa, Florida 33602
(813) 272-6740
Marty@Tampa-xway.com

Miami-Dade Busway Conversion

Converting an existing busway into a multimodal managed lane facility

February 10, 2011
FHWA and MPO Managed Lanes Workshop

www.mdxway.com
Let’s move forward together.
Miami-Dade Expressway Authority

- Agency created to enhance mobility, connectivity and transit with innovative technology
- US-1 Express identified in 2035 MPO LRTP
- Leading regional interagency coordination effort for first of a kind conversion
- Comprehensive analysis includes public outreach, financial analysis, transit analysis, engineering and environmental
US-1 EXPRESS LANES
Project Development Study

- Two year study will commence March 2011
- Phased implementation
- Traffic and Revenue projections will inform implementation decision
- The future is sharing transportation corridors for betterment of all modes
- Transit improvements can be catalyst for managed lanes

US-1/SOUTH DADE BUSWAY
US-1 EXPRESS LANES
GOALS

• Improve transit service
• Improve mobility along US-1 and at cross streets
• Improve air quality (bus and vehicle travel)
• Improved safety at intersecting cross streets
• Innovative use of underutilized right-of-way corridor
• Managed lane linkage to existing and planned toll facilities (Turnpike, SR 826)

US-1 EXPRESS LANES
BENEFITS FOR BUS RAPID TRANSIT

• Elimination of at-grade intersections could improve bus travel times by 30%
• Increased ridership & fare revenue
• Reduced operating costs (time and fuel)
• Supportive of transit station enhancements/ transit oriented development (TOD)
US-1 EXPRESS LANES
BENEFITS FOR BUS RAPID TRANSIT

- Opportunities for new park/ride lots
- Opportunity for more limited-stop/express service
- Potential revenue source for minor transit enhancements
- Opportunity to preserve envelope for future heavy rail extension
Discussion

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