Congestion Reduction Demonstration Program

> Converts 25 miles of existing HOV lanes to Metro Express Lanes

> $274 Million Program Budget includes a $210 million federal grant

> Expands Transit Service on I-10 and I-110 Corridors

> Introduces Congestion Pricing to Manage Traffic Demand
2011 Year in Review

> January  – Notice to Proceed to DBOM Contractor (ExpressLanes)

> May     – Promotional Agreement with Automobile Club of So Cal

> June    – Launch of Phase I Enhanced Silver Line BRT Service on I-110 (Ridership has increased 39%)
2011 Year in Review (cont’d)

- July – Metro ExpressLanes Groundbreaking
- September – ExpressPark Notice to Proceed
- Sep – Dec – Market Research (9 Focus Groups)
- December – Carpool/Vanpool Loyalty Program
- December – Roadside Toll Collection System Factory Acceptance Tests
Program Milestones & Schedule

Toll Legislation
- Grant Award
- RTP Approved
- Market Research
- 68 public mtgs

2008
- 68 public mtgs

2009
- Public Outreach & Comm Plan
- Toll Policy & Toll Rates Adopted
- 6 Public Hearings
- 67 public mtgs

2010
- EIRs Approved
- 2 Public Hearings
- Fees Approved
- Toll Credit Approved
- Award DBOM Contract
- 45 public mtgs

2011
- Final Design
- Construction Begins
- Market Research
- Carpool Loyalty Program
- 59 public mtgs

2012
- CSC Opens
- Transponder Distribution Begins
- ExpressLanes Open

Public meetings
- 68
- 141
- 188
- 247
Lessons Learned

- A ‘Political Champion is a must
- Engage the public early in the process and often throughout project development
- A multi-modal approach increases public acceptance
- Address equity issues early in the planning process
- Ensure schedule deadlines take into consideration the complexity of the project elements
- Make certain appropriate staffing and resources are assigned from inception/approval of project
2012+ Future Steps in Congestion Pricing

- Regional (4-county) HOT Lane Network & Cordon Pricing Action Plan (Value Pricing Program)
  - Regional HOT Lane Network: Los Angeles, Riverside, San Bernardino and Orange Counties
  - Cordon Pricing Study: City of Los Angeles

- I-405 HOT Lane Feasibility Study
  - From Orange/Los Angeles County Line to LAX
For More Information

> www.metro.net/expresslanes --> Transponder Interest Form

> Follow us on twitter.com/expresslanes

> 511

> Like us on facebook.com/expresslanes

Metro

Customer Service Center
Call 511 (in LA County)
877-324-6511
(outside LA County)

Set before driving
Demonstrating a new approach to parking management

<table>
<thead>
<tr>
<th>Duration</th>
<th>Price Per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>9AM – 12AM</td>
<td>$2.50</td>
</tr>
<tr>
<td>12AM – 3PM</td>
<td>$3.50</td>
</tr>
<tr>
<td>3PM – 6PM</td>
<td>$2.00</td>
</tr>
</tbody>
</table>
Scope

Shift in goals: from revenue to policy

- Use parking management to achieve transportation goals
- Congestion/trip demand, transit, economic competitiveness, safety, greenhouse gas emissions

Pilot project scope

- Two years
- 8 pilot areas
- 7,000 metered spaces (25%)
- 12,250 garage spaces (75%)
Milestones for 2010

- Parking sensors installed
- Parking meters installed
Milestones for 2011

April
- City/SFMTA employee parking
- Garage upgrade
- Time limits extended
- Real-time data feed released
- Formal start of demonstration

July—December
- Develop data warehouse
- Three demand responsive rate changes (on- and off-street)
- Garage wayfinding signage
- Initial revenue evaluation
Managing employee parking

City & County of San Francisco

OFFICIAL BUSINESS PERMIT
Expires June 30, 2011

Expires
June 30, 2011

This permit is valid while performing official City and County business within San Francisco.

If properly displayed vehicle may park at parking meters without depositing payment.

Time limits on parking meters and all other parking regulations will be enforced.

#GB 000001
Project launch
Data management and analytics

Data inputs:
- Cars counted in/out at parking garages
- Parking sensors
- Roadway sensors
- Existing parking meters
- Smart parking meters

Data transfer:
- Vendor systems for garage management
- Vendor systems for sensor management
- SFMTA parking meter data management system
- Vendor systems for meter management

Data warehouse and processing:
- Data collection / transformation by SFMTA
- Parking enforcement handheld data feed
- Parking citation processor

Data warehouse and business intelligence tool

End users:
- Variable message signs
- SFMTA operational reports and alerts
- SFpark.org
- JSON/REST Open data feed
- Mobile applications (e.g., iPhone)
- Text message
- Analysis and evaluation
Demand responsive rate adjustments
## Demand responsive rate adjustments

### Rate changes by metered hours

<table>
<thead>
<tr>
<th></th>
<th>1st rate change</th>
<th>2nd rate change</th>
<th>3rd rate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up $0.25/hr</td>
<td>26%</td>
<td>25%</td>
<td>27%</td>
</tr>
<tr>
<td>No change</td>
<td>42%</td>
<td>37%</td>
<td>38%</td>
</tr>
<tr>
<td>Down $0.25/hr</td>
<td>28%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Down $0.50/hr</td>
<td>4%</td>
<td>7%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Garage wayfinding + advertising
Sharing lessons learned
Initial revenue evaluation (new meters/time limits)
What’s next

Winter through Spring 2012
• Roll out pay by phone (citywide)
• Continue to develop business intelligence tool
• Continue to improve and document business processes

Spring through Fall 2012
• Initiate variable message signs
• Evaluate pilot projects
• Accelerate sharing and dissemination of lessons learned
• Develop proposal for expanding SFpark citywide
• Release RFPs
High level lessons learned

- Focus on availability (not turnover)
- Shifting how people think about parking takes time
  - Extensive outreach
  - Branding is useful
- Having a transparent, rules-based, and data-driven approach helps
- SFpark is essentially a complex IT undertaking
- Parking equipment is not plug and play
Thank you

Jay Primus
jay.primus@sfmta.com
SFMTA
95 Express
Project Scope

- Intended for long-distance trips connecting regional facilities Miami to Ft. Lauderdale
- 1 HOV lane → 2 Express lanes
- Congestion-priced tolls
- Improved ITS monitoring and incident management capabilities
- Eliminate Bottlenecks
- Ramp Metering
- Bus Rapid Transit
- Carpool Registration
  - Effective in Reducing Trips
  - Unique to the Project
FY’11 Performance
Operational Analysis - Speed

- Average AM Peak Period Speeds (Southbound)
  - 2008 HOV – 20 MPH; GPL – 15 MPH
  - 2011 EL – 62 MPH; GPL – 50 MPH

- Average PM Peak Period Speeds (Northbound)
  - 2008 HOV – 18 MPH; GPL – 18 MPH
  - 2011 EL – 56 MPH; GPL – 41 MPH

- EL Travel Time Savings (vs. HOV)
  - 15.0 mins. (SB)
  - 16.5 mins. (NB)
FY’11 Performance
Operational Analysis - Overview

- Peak Period Benefits
  - SB – 13 MPH; NB – 15 MPH
  - Person Throughput ↑

- Volume / Trips
  - 21% Increase over FY’10
  - 1.6 Million per Month
  - 111% vs. Projected

- Revenue
  - $1.3 Million per Month
  - 115% vs. Projected

![FY 2011 Cumulative Monthly EL Traffic Volume Projected vs. Actual (Millions)](chart)
![FY 2011 Cumulative Monthly EL Revenue Projected vs. Actual ($Millions)](chart)
FY’11 Performance Operational Analysis - Overview

- Peak Period Speed (mph)
- Express Lanes Speeds > 45 MPH (%)
FY’11 Performance Tolls

❖ Range: $0.25 - $7.10*
❖ Daily Averages
  ▪ Weekday: $1.00 (SB); $1.05 (NB)
  ▪ Peak Period: $1.70 (SB); $2.25 (NB)
  ▪ Max. Toll: $4.25 (SB); $6.45 (NB) $7.10 Max (Oct. ’10)
  ▪ Weekend: $0.25

❖ 85%: ≤ $2.10 95%: ≤ $2.75
❖ Average Toll per Mile
  ▪ $0.10 (SB); $0.11 (NB) – Overall
  $0.21 (SB); $0.28 (NB) – Peak Period
January 2010, new 95 Express Bus Rapid Transit routes were introduced providing cross county “one seat” service.

95 Express transit ridership continues to grow even after the MULs have been established.

- Feb 2008 average daily boardings (pre-MUL): 1,746
- Feb 2010 average daily boardings (MUL Phase 1A/1B opening): 2,638
- June 2011 average daily boardings: 4,286  +145% Increase
FY’11 Performance
Customer Satisfaction

What are Customers Saying?
- Satisfaction Rating of 90% or Higher
  - Width of Lanes
  - Lane Separators
  - Entry and Exit Points
  - Signage and Display of Tolls
- 72% of Users Feel 95 Express Offers a More Reliable Trip
- 57% Expansion of 95 Express Lanes in Palm Beach County
- 49% Want Express Lanes Expanded on other highways in South Florida
95 Express Lessons Learned

- Sell reliability not speed alone.
  - Work with media and customers.
- When in doubt - more pavement
  - Incident management and enforcement
- Optimizing performance
  - Constant vigilance - good & bad
  - Automate control and QA/QC – but keep the “human” element!
- Think network first if possible
- Data Requests
Express Lanes Future

- 95 Express Optimization
- Other Initiatives - South Florida Managed Lanes Network
- Regional Concept for Transportation Operations - VPPP
- Exclusive Statewide Toll Lane Action Plan
Questions?

Thank you!

Rory Santana, P.E., PTOE
FDOT District Six ITS Manager
Rory.Santana@fdot.state.fl.us

For more information go to 95express.com
Atlanta’s CRD Update

FHWA Webinar
Presented by: Patrick Vu, PE
State Road and Tollway Authority
December 15, 2011
I-85 Express Lanes Overview

- **Goal:** Provide more reliable travel times and commuting choices

- **I-85 Express Lanes, $60 million**
  - ~16 miles long, from Chamblee Tucker near I-285 to Old Peachtree Road
  - Existing HOV2+ lane conversion to HOT3+
  - Opened September 30, 2011

- **Regional transit improvements, $122 million**
  - New Xpress Park and Ride Lots including 3 along I-85
  - New Xpress commuter coach

- **Total cost $182 million, with USDOT contributing $110 million**
I-85 Express Lane Corridor

- 1 lane in each direction, non barrier separated
- Dynamically priced to maximize vehicle throughput
- All vehicles must register and have a Peach Pass transponder
- Toll Exempt vehicles:
  - Vehicles with 3 or more occupants
  - Over-the-road buses
  - On-call emergency vehicles
  - Motorcycles
  - Vehicles with alternative-fuel vehicles (AFVs) license plates
- Single driver and 2 person carpools pay a toll
- Vehicles with more than 6 wheels are prohibited
- 24/7 operations
Rules of the Road

**Toll Rates:**
- Toll rates sign show min and max rate
- Customers locked into toll rates on sign seen when entering Express Lanes

**Violations:**
- Crossing the solid, double white line
- Using the Express Lanes without a Peach Pass/Cruise Card transponder
- Occupancy (vehicle does not meet the appropriate number of occupants for toll-free access)

**Penalties:**
- SRTA toll violation = $25 + toll amount
- May also be issued citation by law enforcement

www.PeachPass.com
I-85 Express Lanes Daily Trips

3,200 trips

11,500 trips
I-85 Express Lanes Average Fare

Last Week Highest Toll Rate for 15.5 miles (25 km)

AM PEAK = $1.55 to $3.55
PM PEAK = $1.55 to $2.15

$2.35

$1.46
I-85 Express Lanes Non-tolled vs Tolled Customers

<table>
<thead>
<tr>
<th>Date</th>
<th>Tolled Trips</th>
<th>Non-Tolled Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/1</td>
<td>10,690</td>
<td>11,237</td>
</tr>
<tr>
<td>11/2</td>
<td>10,525</td>
<td>9,908</td>
</tr>
<tr>
<td>11/3</td>
<td>10,060</td>
<td>11,155</td>
</tr>
<tr>
<td>11/4</td>
<td>10,457</td>
<td>11,458</td>
</tr>
<tr>
<td>11/5</td>
<td>10,495</td>
<td>8,101</td>
</tr>
<tr>
<td>11/6</td>
<td>10,160</td>
<td>8,126</td>
</tr>
<tr>
<td>11/7</td>
<td>9,831</td>
<td>7,876</td>
</tr>
<tr>
<td>11/8</td>
<td>11,237</td>
<td>5,816</td>
</tr>
<tr>
<td>11/9</td>
<td>9,908</td>
<td>1,186</td>
</tr>
<tr>
<td>11/10</td>
<td>1357</td>
<td>425</td>
</tr>
<tr>
<td>11/11</td>
<td>1,357</td>
<td>1,016</td>
</tr>
<tr>
<td>11/12</td>
<td>1,117</td>
<td>1,328</td>
</tr>
<tr>
<td>11/13</td>
<td>1,117</td>
<td>1,399</td>
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<tr>
<td>11/14</td>
<td>1,117</td>
<td>1,399</td>
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<tr>
<td>11/15</td>
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<td>1,399</td>
</tr>
<tr>
<td>12/1</td>
<td>1,117</td>
<td>1,399</td>
</tr>
</tbody>
</table>

November
Tolled Trips = 79%
Non-Tolled Trips = 21%
Express Lanes Lessons

- Anticipate/expect traffic pattern changes
- Pricing implementation insight
- Incident response
- Collection of key performance metrics
- Message coordination and addressing public response

www.PeachPass.com
CRD Transit Projects

- I-85 North HOV to HOT
  - Add 36 coaches on 5 routes
  - Add 2,200 parking spaces in 4 park and ride lots

- Remainder of Region
  - Added 45 coaches on 9 new routes
  - Added 5,000 parking spaces in 8 park and ride lots
  - New operating facilities
# I-85 Hot Lanes Weekly Transit Boardings

<table>
<thead>
<tr>
<th>Route</th>
<th>101</th>
<th>102</th>
<th>103</th>
<th>410</th>
<th>411</th>
<th>412</th>
<th>413</th>
<th>416</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsor</td>
<td>GCT</td>
<td>GCT</td>
<td>GCT</td>
<td>GRTA</td>
<td>GRTA / CRD</td>
<td>GRTA</td>
<td>GRTA / CRD</td>
<td>GRTA / CRD</td>
<td></td>
</tr>
<tr>
<td>Park and Ride</td>
<td>I-985/ GA 20</td>
<td>Indian Trail</td>
<td>Discover Mills</td>
<td>Discover Mills</td>
<td>Hamilton Mill</td>
<td>Discover Mills</td>
<td>Hamilton Mill</td>
<td>Dacula</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Destination</th>
<th>Downtown</th>
<th>Downtown</th>
<th>Lindbergh</th>
<th>Midtown</th>
<th>Mid town</th>
<th>Downtown</th>
<th>Downtown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 12-16</td>
<td>2912</td>
<td>1378</td>
<td>5797</td>
<td>702</td>
<td>1370</td>
<td>2667</td>
<td>455</td>
</tr>
<tr>
<td>Sept 19-23</td>
<td>2767</td>
<td>1433</td>
<td>5977</td>
<td>728</td>
<td>1381</td>
<td>2597</td>
<td>511</td>
</tr>
<tr>
<td>Sept 26-30</td>
<td>2803</td>
<td>1289</td>
<td>5744</td>
<td>744</td>
<td>1305</td>
<td>2656</td>
<td>474</td>
</tr>
<tr>
<td>Oct 3-7</td>
<td>2906</td>
<td>1406</td>
<td>5913</td>
<td>831</td>
<td>1474</td>
<td>2846</td>
<td>506</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Week of</th>
<th>Average</th>
<th>Change</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sept Average</td>
<td>15,724</td>
<td>+4.4%</td>
<td>11,007</td>
<td>3,992</td>
<td>725</td>
<td>10,033</td>
<td>3,365</td>
<td>2,326</td>
</tr>
<tr>
<td>Oct 3-7</td>
<td>16,411</td>
<td>+2.3%</td>
<td>11,260</td>
<td>4,320</td>
<td>831</td>
<td>10,225</td>
<td>3,677</td>
<td>2,509</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Destination</th>
<th>Route Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>GCT</td>
</tr>
<tr>
<td>Sept Average</td>
<td>10,033</td>
</tr>
<tr>
<td>Oct 3-7</td>
<td>10,225</td>
</tr>
<tr>
<td>Change</td>
<td>+1.0%</td>
</tr>
</tbody>
</table>
QUESTIONS?

More information:
http://www.georgiatolls.com/programs/i-85-express-lanes/
http://www.dot.state.ga.us/travelingeorgia/expresslanes/I85ExpressLanes/Pages/default.aspx

Patrick Vu
patrickvu@georgiatolls.com
Atlanta Congestion Reduction Demonstration

- USDOT Congestion Reduction Demonstration Program Grant awarded on November 21, 2008
- HOV2+ to HOT3+ conversion of I-85 (@16miles)
- 36 new commuter coaches, 2 park and rides
- Total cost $182 million, with USDOT contributing $110 million
  - Public outreach
  - Tolling system development and construction
  - Transit improvements
Minnesota’s Urban Partnership Agreement
2011 Update

Kenneth R. Buckeye, AICP
Minnesota Department of Transportation
Minnesota’s UPA Project Summary

• Combined $133 M in Federal funds, with $50.2 M in State Funds

• Funded 24 different projects and initiatives
  – Tolling
  – Transit
  – Technology
  – Telecommuting
I-35W HOV to HOT Managed Corridor

- Existing HOV Lane extended/converted to HOT Lane
  - Extend existing HOV through system interchange
  - Widen HOT lane to add buffer
  - Added tolling and lane management technology
  - Modified signing and striping
- Priced Dynamic Shoulder Lane (PDSL)
- HOT Lane now complete through the I-35W / Crosstown project
- Two mile MnPASS extension
Tolled Trips on I-35W MnPASS Lanes
Toll Revenue on I-35W MnPASS Lanes

- December '10
- January '11
- February '11
- March '11
- April '11
- May '11
- June '11
- July '11
- August '11
- September '11
- October '11
- November '11
I-35W MnPASS Customer Accounts
Travel Time Reliability: Northbound I-35W AM Peak

Travel Time in Minutes

Time of Day

Travel Time

Reliability:

Northbound I-35W AM Peak

Average Travel Time in General Purpose Lanes

Average Travel Time in MnPASS Express Lane

General Purpose Lane Travel Time Variability

MnPASS Express Lane Travel Time Variability
I-35W MnPASS Results

• 2500-3000 MnPASS users per day prior to Crosstown opening; 500-750 use PDSL

• 7500 new transponders holders in I-35W corridor
  • About 60 new-account holders sign up for 35W per week

• 20-25% of total customers are MnPASS
  – < 8% violation rate

• Average toll is $1.49: Tolls range from $0.25-8.00

• Almost 2000 new transponder holders in I-394 corridor as well
Transit

- **MARQ2 Express Routes**
  - 18 percent increase in ridership (4300 new riders)
  - Significantly enhanced customer experience
  - Time savings are substantial (5-10 minutes)
  - Operating speeds have increased substantially

- **Park and ride spaces occupied**
  - 1484 spaces added at four park and ride facilities
  - 45 percent of capacity filled on average
Technology

• Bus arrival electronic messaging
• Park and ride availability
• Lane guidance systems on buses for use on Highway 77 Bus Only Shoulders
• Intelligent lane control signals
  – Driver safety advisories
  – Speed limit advisories
• Arterial signal coordination
eWorkPlace

- 48 Employers: 4212 employees
- 55 minutes of time saved per teleworker per week
- $1,500 saved annually per teleworker
- 5000 peak period trips saved on I-35 and I-394 each week
- 155,000 VMT saved each week
- 8.2 million pounds of CO2 saved annually
- 92% of employees believe productivity improved or remained unchanged
- eWorkPlace brand and services will be continued through TMO partnerships
UPA Lessons Learned

• Strong commitment from all agencies at all levels
• Deployment and operation – fewer meetings more doing
• Clear decision-making authority and assignment of responsibilities helped ensure timely project delivery
• The amount of federal funds, and the threat of losing those funds, were clearly drivers
• Real and meaningful deadlines created motivation – no one wanted to let the team down
UPA Lessons Learned

• Multimodal solutions work
  – Simple solutions (bus bypass lane)
  – Major projects (MARQ 2, MnPASS)
  – Technology and telecommuting

• Good planning doesn’t just sit on the shelf – it prepares you for opportunities

• Learning on I-35W managed lanes is directly transferable to other corridors

• Must continue to market strategies and performance
UPA Lessons Learned

• Public supports optional toll lanes if shown the benefits:
  – A low cost and sustainable congestion free alternative
  – Added capacity and performance when capacity is most needed
  – Strong transit community support has emerged
  – Offers choice, time savings and guaranteed trip time reliability for commuters
What’s Next?

• Transfer managed lane experience
  – Implementing managed lanes and shoulders on I-94 in 2011
  – Study underway on I-35W north
  – Studying MnPASS lane using movable barrier on major river crossing (Highway 77)

• Transit

• Technology

• eWorkPlace continues with U of M and TMO’s

• All existing HOV lanes converted to HOT
  – More dynamic shoulders under consideration
  – MnPASS Phase II Study prioritizing system expansion areas
    • I-35E
    • Highway 36
Questions and More Information

Visit

www.mnpass.org

Or

www.dot.state.mn.us/upa

or Contact:

kenneth.buckeye@state.mn.us
Lake Washington Urban Partnership

Patty Rubstello, PE
Director, Toll Systems Development & Engineering

Dave Dye
Deputy Secretary

Paula Hammond
Secretary of Transportation

Steve Reinmuth
Chief of Staff

UPA/CRD Webinar
Dec. 15, 2011
Lake Washington Urban Partnership Agreement

- $154.5 million federal grant to apply these innovative approaches to reduce congestion in the SR 520 corridor
  - **Tolling** – time of day pricing of existing facility to encourage travel at off-peak hours and reduce trips
  - **Technology** – variable speed limits, lane control and real time driver info
  - **Transit** – added over 130 new daily bus trips increasing service by 20 percent
  - **TDM** – educational efforts with employers, van/carpools

- **Partners:**
  - Puget Sound Regional Council
  - King County
  - Federal Highway Administration
  - Federal Transit Administration
TDM: expanding travel options

- Employer programs take time and best if you have a carrot/stick
  - Incentives
  - Tolling
- Know the situation from all aspects
  - P&R Lot capacity
  - Amenities
- Telework programs are the hardest to get started
  - Employer
  - Employee
- How do you measurement effectiveness?
Transit: Enhanced Bus Service

- As the schedule for tolling slipped, it made it difficult to manage when the additional service could be implemented.
- With additional service added to SR 520, ridership has grown faster here than on other corridors.
Technology: Smarter Highways

- Lack of standards
  - Coordinate early with FHWA on sign messages

- Standard Operating Procedures
  - Spend time to think beyond the normal situations

- Test procedures
  - Plan ahead

- Education – Lots of it!
  - Media
  - Video
  - Variable speed limits
Tolling: SR 520 bridge

- Having something to sell
  - Vulnerable Floating Bridge
- Tolling an existing facility
  - History is helpful
  - What no Toll Booths?
- Forecasting Driver behavior
  - Diversion
  - Value of Time
Tolling: SR 520 bridge cont.

- Before you locate where you will toll, think long and hard about the physical environment
- Schedule was too aggressive
- TEST & TEST & TEST
- Education
  - No Toll Booths – Really!
  - Pay by Mail (Toll Bills)
  - Time of Day Pricing
  - Multiple types of Passes
What’s next in Washington state?

- December 29, 2011: Tolling begins on the SR 520 bridge
- Evaluation and monitoring
- Influence of SR 520 tolling on future tolling the region
For more information please contact:

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