I-5 Express Lanes
Toll Feasibility Study

Paula J. Hammond, P.E.
Secretary

David L. Dye, P.E.
Deputy Secretary

Steve Reinmuth
Chief of Staff

Rob Fellows
Toll Planning and Policy Manager

Craig Stone
Toll Division Director

Joint Transportation Committee
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Presentation Summary

• Introduction
  – Legislative Provisos
  – Project Context
  – Study Approach

• Analysis Assumptions
  – Operating Concept
  – Tolling Approach
  – Traffic, Costs and Revenues
  – Financial Analysis

• Findings
• Next Steps
Proviso Background

- Included in FY 2011 transportation budget
- Study feasibility of tolling the I-5 reversible express lane roadway between downtown Seattle and Northgate.

- Specific questions include:
  - The potential to generate funding for needed transportation facilities
  - Maximizing the efficient operation of the corridor
  - Economic considerations for future system investments
  - An analysis of the impacts to the regional transportation system

- Funded by FHWA value pricing grant for a broader study of express toll lane concept in the I-5 corridor, described in the Appendix.
Project Context

- Reversible express lanes between Northgate and downtown Seattle
  - Southbound in AM, Northbound in PM
  - 4 lanes in central portion, 1 at each end
  - 4 downtown exits, 2 are HOV only
  - Closed during overnight hours

- About 270,000 average weekday trips on this segment of I-5 in 2010
  - Mainline: 217,370 (80% of total)
  - Express lanes: 53,720 (20% of total)

- Express Lanes operation issues
  - Bottlenecks in lane returning to mainline
  - Off peak, mainline backups in opposing direction from express lane flow

- Highest freeway transit volumes in region
Regional and Statewide Context

Consistent with WSDOT’s Moving Washington Strategies

- More efficient operation by reducing demand at bottlenecks re-entering mainline lanes
- Improves transit reliability through pricing
- Consistent with HOT/express toll lane strategy

Consistent with PSRC Transportation 2040

- Envisions funding future transportation improvements by transitioning to user fees
- Starts with developing high occupancy toll (HOT) lanes, or express toll lanes
Study Approach

• Analysis only; public outreach would occur at later project stage.

• Interagency coordination through project coordinating committee – includes transit, ports, PSRC, Seattle, Washington State Patrol and Transportation Commission staff.

• Beyond toll system expenses, *no assumption regarding use of toll revenues, or costs associated with mitigating traffic diversion.* Toll-funded improvements could help reduce diversion impacts.

• Analysis process:
  – PSRC prepared optimal toll rates
  – Consultant team and WSDOT provided capital costs
  – WSDOT produced toll and facility O&M costs
  – Consultant prepared revenue and financial capacity analysis

• Value pricing grant project tasks and budget adjusted to incorporate this analysis and report.
Analysis Assumptions

Operating Concept and Tolling Assumptions
• Single toll point mid-corridor captures all trips
• Both electronic and photo tolling, as on SR 520
• Variable (or dynamic) pricing by time of day
• Modeling assumed no toll for 3+ HOVs
• HOV restrictions on downtown Seattle ramps would be removed

Revenue and Financial Assumptions
• Average tolls analyzed (in today’s dollars): $4.30 AM Peak, $5.50 PM Peak, $1.55 Midday
• Free or closed from 8 PM to 5 AM
• Assume 30 year debt, 7.25-8.5% interest rates
• 2.24x average debt service coverage ratio
Cost and Revenue Analysis Process

Cost estimating
• Toll system costs based on recent procurements
• Facility O&M costs based on current expenses
• Toll system O&M based on projections for other current projects
• All costs are preliminary and conceptual

Revenue estimating and funding analysis
• Used PSRC travel model to assess traffic volumes and impacts
• Determined optimal toll rates through multiple travel model iterations
• Gross revenues less O&M costs yields net revenues for funding
• Financial modeling determined potential toll funding contribution
• Very high level analysis to determine if further study is warranted
Deductions from Gross Revenues

Uses of Gross Toll Revenues:

- Credit card fees
- Toll collection O&M
  - Customer service center
  - Toll collection system
  - State operations
- Routine Facility O&M
  - Roadway O&M
  - Incident Response Team (IRT)
- O&M reserve account
- Uncollectible accounts

Uses of Net Toll Revenues:

- Debt service on borrowed construction funding
- Other pay-as-you-go uses
Findings – Traffic Effects

Express Lane performance improves
• 16-17 mph speed increase for through-trips, or 6 minutes savings
• 7-17 mph speed increase for trips to/from downtown Seattle
• Improved reliability assumed but not modeled

Some diversion to mainline I-5 and other routes
• Express lane volumes would decrease ~14,000 per day (21%)
• Mainline traffic would increase ~12,000 daily (4% of total I-5 volume)
• Less than 1% of I-5 traffic would choose a different route

Effects of shifts between ramps requires further study
• Removing HOV restrictions increased traffic using HOV ramps
• Alternative policies and potential mitigations need more analysis

Lower tolls would result in less delay and diversion, but would generate less revenues
• Peak toll rates about ¾ as high would result in least system delay
Findings – Costs

Capital Costs = $16M (year of expenditure dollars)
- $5M for environmental, outreach and engineering, $11M capital
- Includes toll system and rate signs at each entrance

Operating and Maintenance (O&M) Costs, and other deductions from gross revenues = ~$9.6M/yr. in 2015 dollars
- Includes toll collection costs and uncollectible accounts
- Toll equipment O&M and periodic replacement
- Facility O&M including maintenance, incident response, etc.

Future environmental assessment would also include costs (and benefits) of improvements or mitigations to be funded from toll revenues.
Findings - Toll Revenues and Debt Service

Projected revenues assume modeled toll rates that vary by time of day and emphasize revenue generation. Express lane toll rates through FY 2031 are assumed to increase annually reflecting both inflation and a forecasted increase in traffic levels. Beyond FY 2031, toll rates are assumed to keep pace with general inflation.

Net Revenues in Excess of Debt Service

Projected Net Toll Revenues

dollars in millions (YOE)
Financial Analysis Results

- **Toll funding contribution of up to $185 million**
  - Total net bond proceeds available for capital investments in FY 2015
  - Toll implementation cost could be covered by toll bond proceeds

- **Excess toll revenues available for pay-as-you-go uses**
  - Excess revenues come from debt service coverage
  - Assumed to be available in the year after they are generated
  - Cannot be used to support additional borrowing
  - Up to $6 million in FY 2017
  - Up to $40 million in FY 2045
    - Amount generated from last year of debt service
    - Assumes toll escalation occurs as modeled
Response to Proviso Questions

Revenue Generation Potential of Value Pricing
• Up to $22M annually net revenue in 2017, growing over time.
• Could finance up to $185M in capital improvements in FY 2015.
• Excess net revenues not used to pay debt service would be available for other pay-as-you-go uses.
• Tolls also assumed to pay for facility operation and maintenance (but not major preservation), freeing up existing funds for other uses.

Maximizing Efficient Operation of the Corridor
• Congestion pricing will improve express lane speeds and reliability.
• Eliminating HOV ramp restrictions will balance distribution of traffic between ramps and between lanes.
• Reduced queuing at bottlenecks at lanes to/from mainline I-5.
• Some traffic shifted to mainline lanes or other facilities, reducing speeds.
Response to Proviso Questions

Economic Considerations for Future Corridor Investments

• Provides revenues available for transportation use
• Benefits depend on how revenue is used
  – Could provide seed money for I-5 capacity in Seattle or corridor build-out of express toll lanes (described in report appendix)
  – Could address preservation, maintenance and safety backlog in corridor

Regional Transportation System Impacts

• Model shows no significant impact on other major regional facilities
• Moderate increases in volumes on nearby corridors due to 1% shift of traffic from I-5 to other routes
  – University Bridge and SR 99 Aurora Avenue Bridge
Next Steps

Define/develop proposal and assess public support
• Define the proposal – what will tolls pay for?
• Develop and refine the proposal
• Prepare tolling concept of operations
• Prepare environmental studies
• Prepare more detailed traffic operation and financial analysis
• Conduct public outreach

If the Legislature grants tolling authority, implement tolls:
• Request Federal tolling authority
• Prepare and issue toll system procurement
Questions?

For more information, please contact

Rob Fellows
Toll Planning and Policy Manager, at
206-464-1257 or Rob.Fellows@wsdot.wa.gov