I-405 Express Toll Lanes
Operational Options

Washington State Transportation Commission
March 15, 2016
Recap: Early operations

Early successes
✓ Initial express toll lane usage is higher than expected
✓ Transit, vanpools and carpools have a more reliable trip in both directions
✓ I-405 is moving more vehicles during peak commutes
✓ Southbound traffic is better in general purpose and express toll lanes
✓ Northbound express toll lane traffic has improved overall compared to HOV
✓ Long and medium trips are receiving faster travel times

Challenges
✓ Northbound general purpose traffic is more congested in some locations
✓ Weekend congestion has developed in spots along corridor
✓ Some shorter trips are not seeing the same travel time benefits as longer trips

Continuing to Monitor
✓ Initial weekday carpool use was lower than projected, but has been steadily increasing
✓ Toll rates have been reaching the maximum toll rate
Operations Options Considered

Weekday hours of express toll lane operation
• 5:00 am to 7:00 pm
• 5:00 am to 8:00 pm

Nighttime operation options
• Static “Open to All”
• Dynamic “$0 Toll”

Weekends operation options
• Static “Open to All”
• “HOV 2+, No Pass Required”
• Dynamic “$0 Toll”

Holidays to be treated same as weekends
• Six major Federal holidays (same as current WAC)
• Ten holidays (Federal)
Direct Access ramps at NE 6th St. in Bellevue and NE 128th St. in Kirkland require special rules.

- Both direct access ramps were approved by FHWA as managed facilities through either occupancy designation or pricing.
- The NE 128th ramps were funded by Sound Transit (ST) using Federal Transit Administration (FTA) funds
  - Agreement with ST and FTA restricts use of NE 128th ramp by general purpose traffic, although tolled vehicles are allowed.
  - Agreement requires ramps to be restricted to HOV-only when non-tolled general purpose traffic is using the express toll lanes.
Weekday Express Toll Lane
Hours of Operation
Nighttime Hours Data - Congestion


- Southbound general purpose congestion starts after 5 am
- Northbound general purpose congestion rarely continues after 7 pm
- Opening general purpose capacity at 7 pm dissipates traffic congestion
Nighttime Hours Data – ETL Volumes by Hour


Average Weekday Total ETL Trips (11/1/2015 to 2/20/2016)

- Tolled Trips
- Free Trips

Washington State Department of Transportation
Evaluation of Hours of Operation Options

Options Considered
5:00 am to 7:00 pm – has potential to reduce extent of afternoon peak period
5:00 am to 8:00 pm – could maximize transit reliability on severely congested days

- Traffic Impacts:
  - 7:00 opening has slight potential for minor congestion reduction in GP, helping dissipate congestion in the single-lane segment north of Bothell
  - 8:00 opening is unlikely to affect traffic or enhance reliability

- System Consistency:
  - 5am to 7pm is consistent with I-405 HOV lanes and SR 167 HOT Lane hours

- Transit Considerations:
  - Current transit service is limited to peak periods, and service beyond 7pm is scarce

- Revenue Impacts:
  - Little difference between options

- Implementation Cost/Timeframe:
  - Little to no difference between options

WSDOT Recommendation:
Operating hours of 5:00 am to 7:00 pm
Night-time Operations
Nighttime Operations: Open to All

Description
ETLs would be open to all outside of tolling hours of operation, with no pass required.

• **Traffic Impacts:**
  – Potential for reduced general purpose congestion in the 7:00 pm hour
  – Potential for increased northbound congestion in single lane ETL after 7:00 pm

• **Implications to Existing Systems:**
  – Consistent with I-405 HOV lanes and existing SR 167 HOT Lane hours

• **Customer Expectations:**
  – Customers are accustomed to the change in operations during the nighttime hours

• **Revenue Impacts:**
  – Estimated gross revenue reduction of 3 percent or $600,000 annually

• **Implementation Cost/Timeframe:**
  – Minor system changes required to implement, low cost
Nighttime Operations: $0 Minimum Toll

Description
Operate ETLs overnight with a $0 toll rate that could increase to manage operations if conditions warrant. A $0.00 rate would be displayed, along with a message saying that a toll pass is not required at a $0 rate.

• Traffic Impacts:
  – Night congestion is usually incident-related. Switching from $0.00 to $0.75 at these times could significantly worsen GP congestion

• Implications to Existing Systems:
  – Inconsistent with the existing SR 167 HOT Lane operations

• Customer Expectations:
  – “$0 Toll” would be a new message that has not been used in the region
  – Challenging to communicate if some segments are tolled and others are not
  – Could prompt requests to lower minimum toll at other times

• Revenue Impacts:
  – Estimated gross revenue reduction of 3 percent or $600,000, annually

• Implementation Cost/Timeframe:
  – Up to 6 weeks to develop/test/implement system changes at a cost of $30,000
  – Requires increased communication explain to drivers
Nighttime Operations: Open to All

Description
ETLs would be open to all outside of tolling hours of operation, with no pass required.

- **Traffic Impacts:**
  - Potential for reduced general purpose congestion in the 7:00 pm hour
  - Potential for increased northbound congestion in single lane ETL after 7:00 pm

- **Implications to Existing Systems:**
  - Consistent with I-405 HOV lanes and existing SR 167 HOT Lane hours

- **Customer Expectations:**
  - Customers are accustomed to the change in operations during the nighttime hours

- **Revenue Impacts:**
  - Estimated gross revenue reduction of 3 percent or $600,000 annually

- **Implementation Cost/Timeframe:**
  - Minor system changes required to implement, low cost

**WSDOT Recommendation:**
Open to All 7:00 pm to 5 am
Weekend Operations
Weekend Traffic Volumes

Total Volume Profiles: I-405 Northbound At NE 195th

[Graph showing smoothed 15-minute volume in vehicles per hour from 13:00 to 3:00 for Friday, Saturday, Sunday, and Monday.]

Highest Weekend Volumes on Saturdays
Congestion on Saturdays

Before and after express toll lane implementation

- Congestion occurs on Saturday in the general purpose lanes
- Some increase in traffic congestion, especially on northbound I-405
Weekend Traffic Volumes – Saturday
Northbound at NE 195th Street

- Overall volumes are similar before and after express toll lane implementation
- However, volumes shifted from the express toll lanes to the general purpose lanes. This created the weekend congestion.

Total volumes are similar before and after express toll lanes
ETL volumes are lower than before
General purpose lane volumes are higher after implementation
Survey of I-405 weekend drivers

Methodology:
• Survey was fielded January 2016 to 1,402 King, Pierce, and Snohomish county residents using the ResearchNow Online Panel.
• 682 complete responses from residents who had driven both:
  – On I-405 between Bellevue and Lynnwood
  – On the weekend and within the past month

About the respondents:
• 52 percent of respondents have never used the express toll lanes on the weekend
• Only a portion used express toll lanes once (20 percent) or twice (13 percent)
• Top reasons drivers use I-405 on weekends are for discretionary trips:
  – Errands/shopping
  – Visit family or friends
  – Recreational activities
Survey of I-405 weekend drivers

Barriers to using the express toll lanes

- Perceived cost is the most common barrier. Top responses included:
  - Don’t want to pay to use the express toll lanes
  - Don’t think it’s worth the cost.
  - Would use the express toll lanes if the tolls were less expensive.
  - Didn’t know tolls are usually 75 cents on the weekends.

- While 57 percent have a Flex Pass for at least one vehicle, only 40 percent knew that two person carpools ride free on weekends with a Flex Pass.

- Drivers who did not have a Flex Pass cited concerns about the cost and steps involved in getting a Flex Pass. Top responses included:
  - Don’t want to pay $15 for a Flex Pass.
  - Don’t want to pay $30 in prepaid tolls to open Good To Go! account.
  - Vehicle is rarely driven on I-405.
  - Didn’t know carpoolers travel free with a free Flex Pass.
  - Didn’t know they can buy a Flex Pass at a retailer or at a customer service center.
Weekend Operations: Open to All

Description
The ETLs would be open to all to on weekends, no pass required.

• **Traffic Impacts:**
  – More even distribution of traffic across all lanes likely to reduce congestion
  – Single lane ETL segments may operate below free flow speeds at times

• **Implications to Existing Systems:**
  – Inconsistent with I-405 HOV lanes and existing SR 167 HOT Lane operations

• **Customer Expectations:**
  – Assuming nighttime would operate the same, this could provide a more clear message for drivers, the system operates Monday through Friday from 5am to 7pm and is “Open to All” all other hours, even without a pass

• **Revenue Impacts:**
  – Estimated gross revenue reduction of 10 percent or $2 million annually

• **Implementation Cost/Timeframe:**
  – Minor system changes to implement, low cost
Weekend Operations: HOV 2+, No Pass Required

Description
ETLs would be HOV 2+ only (no pass required) on weekends between 5am and 7pm

• Traffic Impacts:
  – During first few months GP congestion would increase as tolled customers move to general purpose lanes, but HOV customers slowly return
  – Limited access points further constrain HOV2 entrance into the system

• Implications to Existing Systems:
  – Consistent with I-405 HOV lanes south between Renton and Bellevue
  – Inconsistent with SR 167 HOT Lane operations and weekday ETL operations

• Customer Expectations:
  – Current toll users lose access to lanes as well as travel time benefit
  – Changing HOV rules could be confusing to users. HOV eligibility to use the lanes would be different on different days and times of day.
  – Customers who obtained the Flex Pass strictly for the weekend HOV free trip may feel their purchase has lost value

• Revenue Impacts:
  – Estimated gross revenue reduction of 10 percent or $2 million.

• Implementation Cost/Timeframe:
  – Requires additional funding for education and outreach costs requirements.
Weekend Operations: $0 Minimum Toll

Description
Operate ETL from 5am to 7pm on weekends with a $0 minimum toll rate to manage operations if conditions warrant. A $0.00 rate would be displayed, along with a message saying that a toll pass is not required at a $0 rate.

- Traffic Impacts:
  - Weekend congestion may be incident-related. Switching from $0.00 to $0.75 at these times could worsen GP congestion.

- Implications to Existing Systems:
  - Inconsistent with the existing SR 167 HOT Lane and weekday ETL operations

- Customer Expectations:
  - “$0 Toll” would be a new message that has not been used in the region
  - Challenging to communicate if some segments are tolled and others are not
  - Could prompt requests to lower minimum toll at other times

- Toll Revenue Impacts:
  - Estimated gross revenue reduction of 10 percent or $2 million

- Implementation Costs/Timeframe:
  - Up to 6 weeks to develop/test/implement system changes at a cost of $30,000
  - Additional funding required for education and outreach costs
Weekend Operations: Open to All

Description
The ETLs would be open to all to on weekends, no pass required.

- **Traffic Impacts:**
  - More even distribution of traffic across all lanes likely to reduce congestion
  - Single lane ETL segments may operate below free flow speeds at times

- **Implications to Existing Systems:**
  - Inconsistent with I-405 HOV lanes and existing SR 167 HOT Lane operations

- **Customer Expectations:**
  - Assuming nighttime would operate the same, this could provide a more clear message for drivers, the system operates Monday through Friday from 5am to 7pm and is “Open to All” all other hours, even without a pass

- **Revenue Impacts:**
  - Estimated gross revenue reduction of 10 percent or $2 million annually

- **Implementation Cost/Timeframe:**
  - Minor system changes to implement, low cost

**WSDOT Recommendation:**
Open to All on weekends
Holidays
Traffic Volumes on Six Major Federal Holidays

Major Federal holidays include:
- New Year’s Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day

Traffic volumes are generally lighter than on these days

Typical weekday volumes
Traffic Volumes on Four Additional Federal Holidays

Traffic volumes on these days often exceed average weekdays.

Typical weekday volumes
Holiday Operations: Six Federal Holidays

Description
Current I-405 rate-setting WAC treats observed holidays the same as weekends (providing exemptions for 2+ carpools all day)

• **Traffic Impacts:**
  – Based on historic traffic volumes NWR Traffic does not feel there would be any negative traffic impacts and no impact to transit operations

• **Implications to Existing Systems:**
  – Inconsistent with existing SR 167 HOT Lane operations

• **Customer Expectations:**
  – Drivers will likely expect operations consistent with weekend operations
  – Consistent with holidays for SR 520, and for I-405 2+ exemptions

• **Toll Revenue Impacts:**
  – Estimated gross revenue reduction of 0.4 percent or $80,000 annually

• **Implementation Cost/Timeframe:**
  – No system changes needed
Holiday Operations: Ten Federal Holidays

Description
Operate identically to weekends on all Federal holidays as proposed by some legislators

- **Traffic Impacts:**
  - Likely to cause congestion on non-Federal holidays, when traffic can exceed normal weekday volumes
  - Transit agencies run full operation for some of these State holidays

- **Implications to Existing Systems:**
  - Inconsistent with existing SR 167 HOT Lane operations

- **Customer Expectations:**
  - Less certainty for customers about what days will be treated as holidays

- **Toll Revenue Impacts:**
  - Estimated gross revenue reduction of $240,000, $160,000 higher than federal holidays only

- **Implementation Cost/Timeframe:**
  - No system changes needed
Description
Current I-405 rate-setting WAC treats observed holidays the same as weekends (providing exemptions for 2+ carpools all day)

• Traffic Impacts:
  – Based on historic traffic volumes NWR Traffic does not feel there would be any negative traffic impacts and no impact to transit operations

• Implications to Existing Systems:
  – Inconsistent with existing SR 167 HOT Lane operations

• Customer Expectations:
  – Drivers will likely expect operations consistent with weekend operations
  – Consistent with holidays for SR 520, and for I-405 2+ exemptions

• Toll Revenue Impacts:
  – Estimated gross revenue reduction of 0.4 percent or $80,000 annually

• Implementation Cost/Timeframe:
  – No system changes needed

WSDOT Recommendation:
Six Federal holidays
Weekday hours
- 5:00 am to 7:00 pm

Nighttime operations
- Static “Open to All”

Weekends operations
- Static “Open to All”

Holidays
- Six major Federal holidays (same as current WAC)
For more information

Patty Rubstello, P.E.
Assistant Secretary, Toll Division
206-464-1299 or RubsteP@wsdot.wa.gov