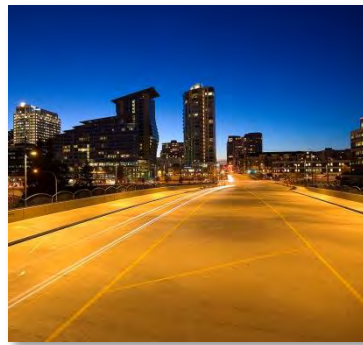
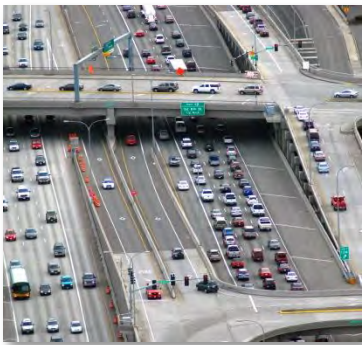


# I-405 Express Toll Lanes Operational Options



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)

# Ramp Access - Note

**Direct Access ramps at NE 6<sup>th</sup> St. in Bellevue and NE 128<sup>th</sup> 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 128<sup>th</sup> 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

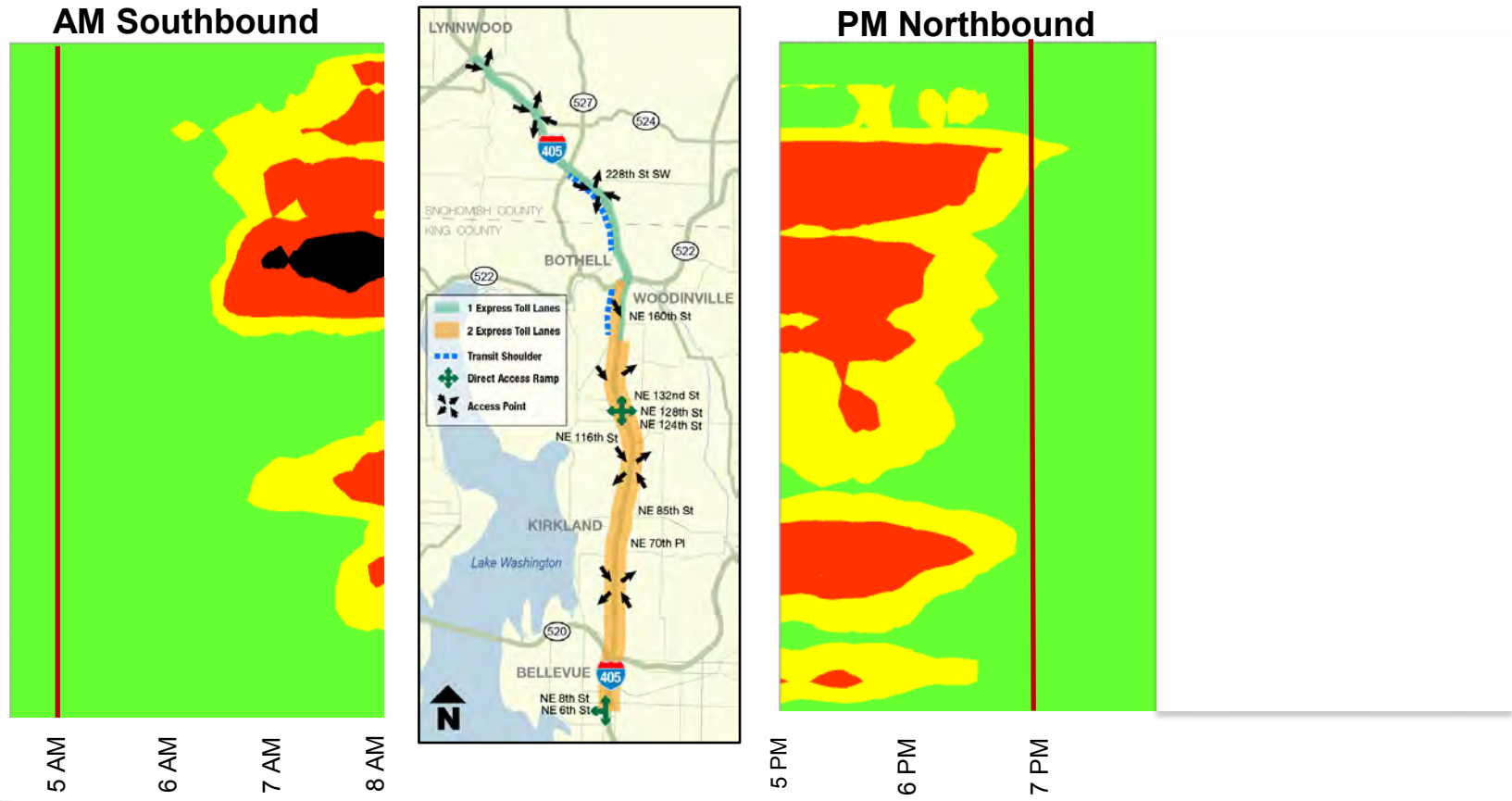


# Weekday Express Toll Lane Hours of Operation

# Nighttime Hours Data - Congestion

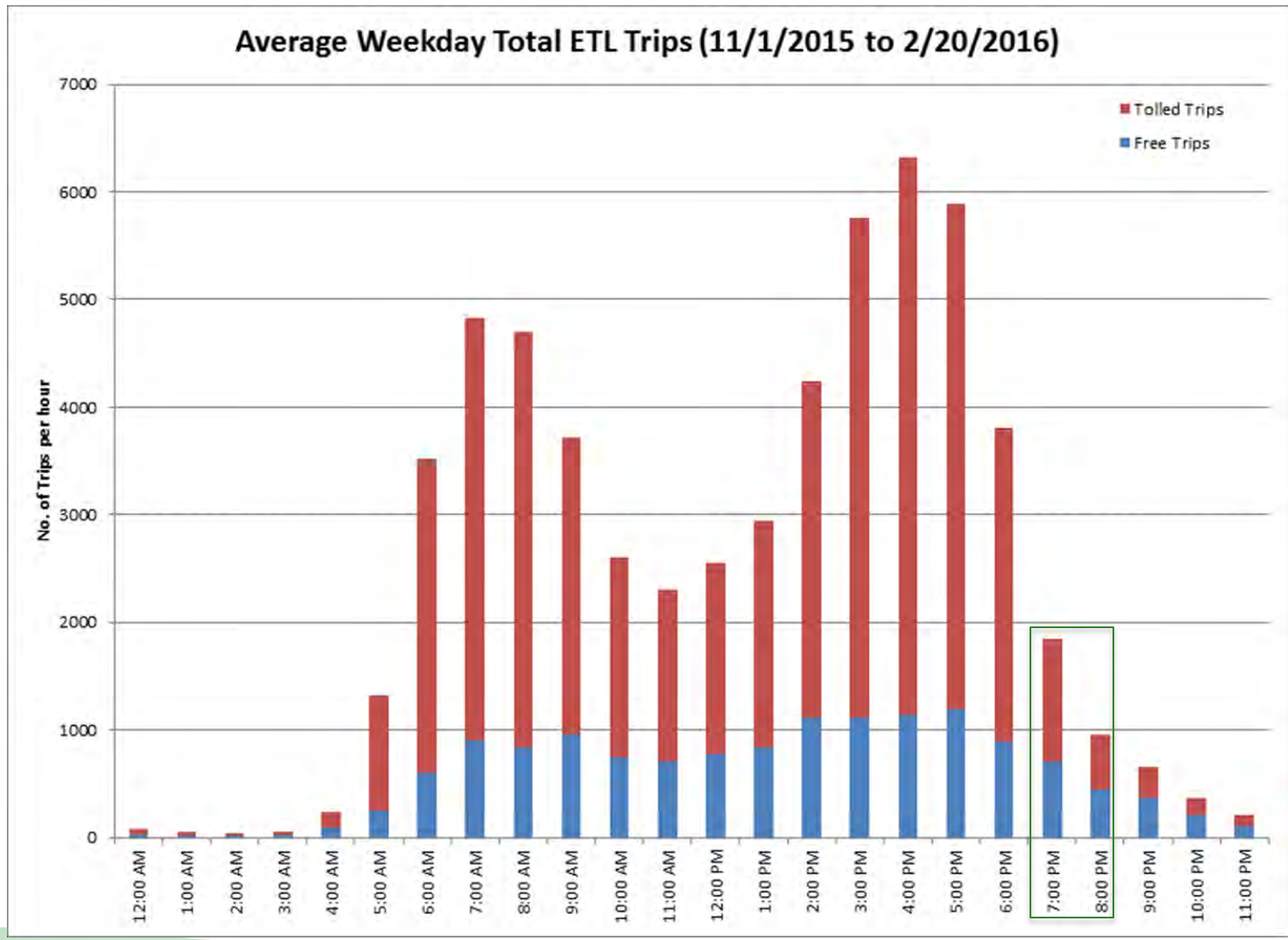
General purpose lane performance – Nov. 2015 – Feb. 2016

- 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

Total System Volumes Nov. 2015 – Feb. 2016



# 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.

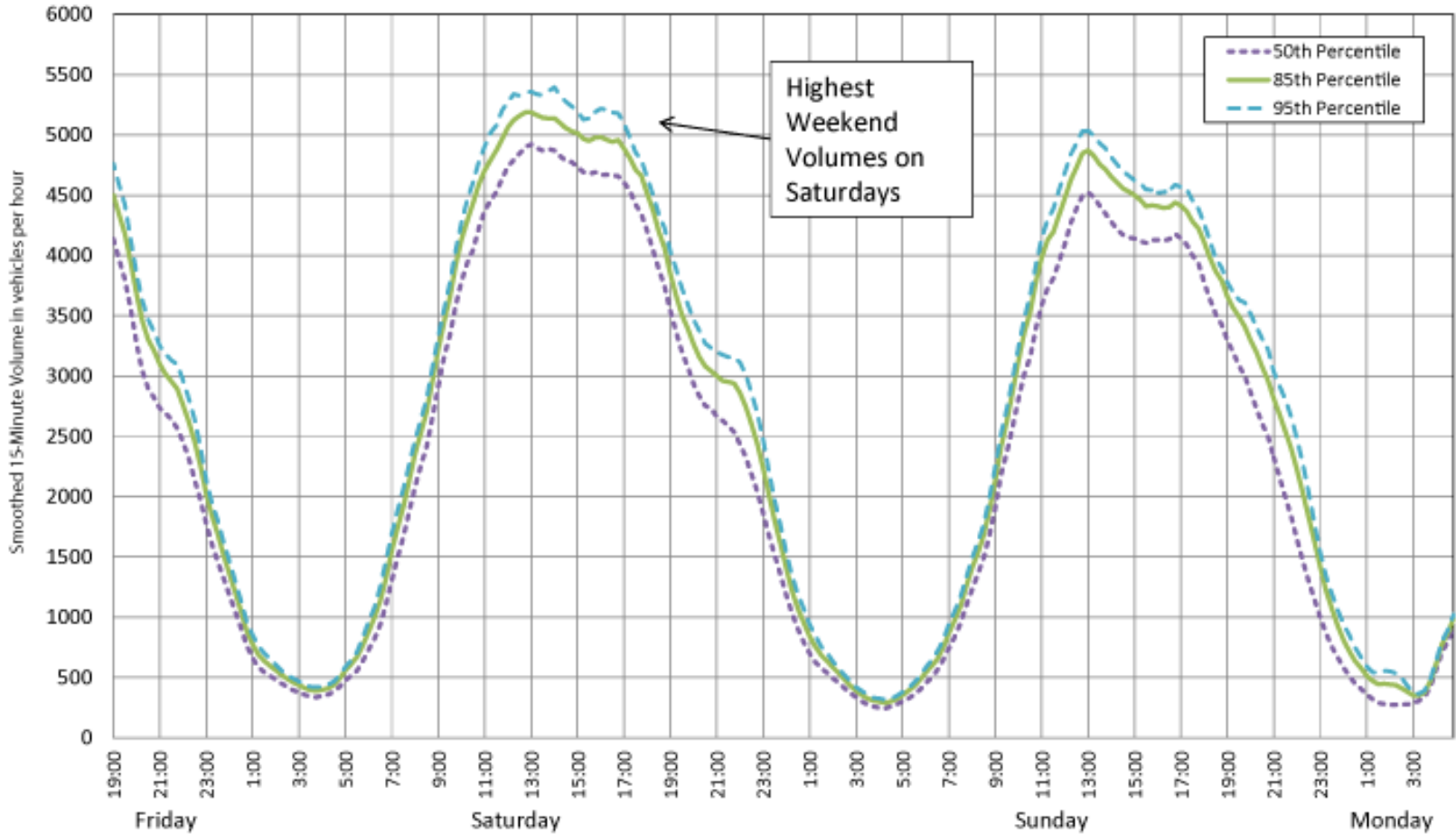
- Traffic Impacts:
  - Potential for reduced general purpose congestion in the 7:00 pm hour
  - Potential for increased northbound congestion in single lane ETL after 7:00 pm
- Implications to Existing Systems:
  - Consistent with I-405 HOV lanes and existing SR 167 HOT Lane hours
- Customer Expectations:
  - 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

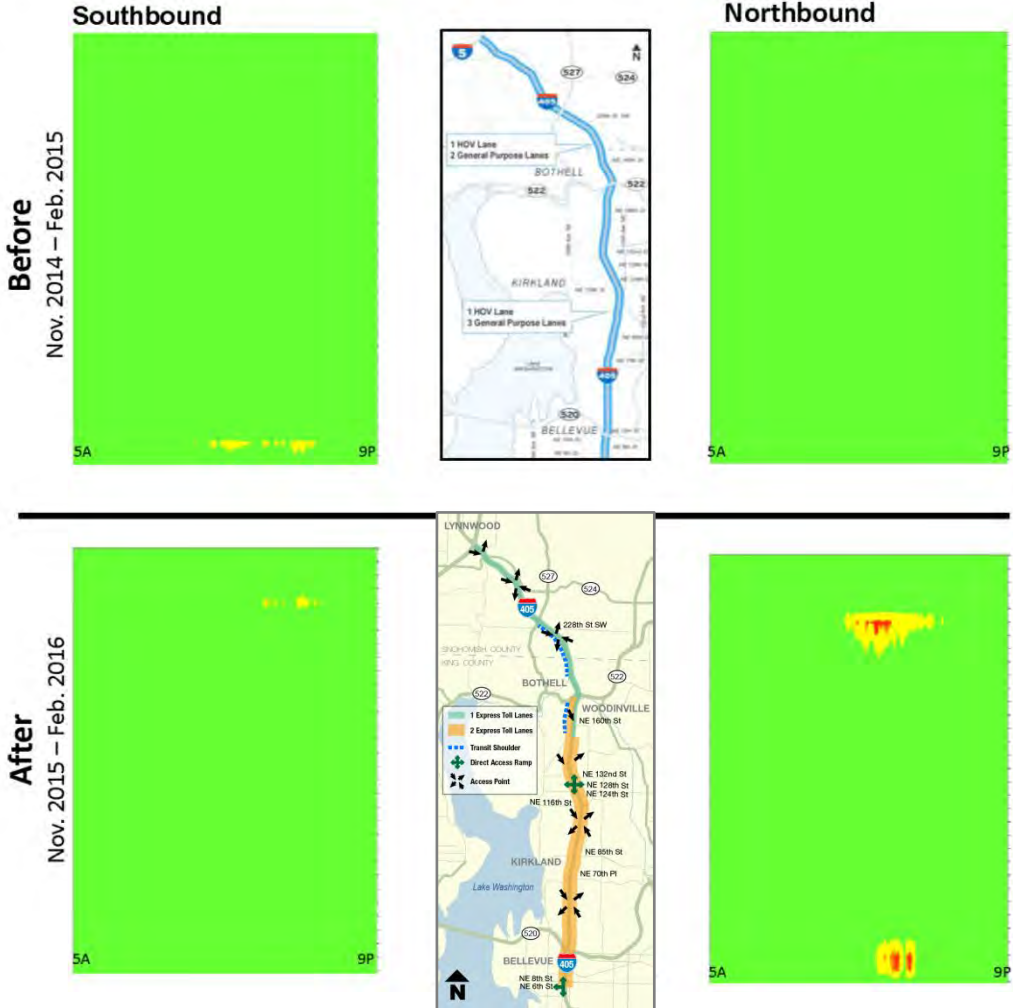
Total Volume Profiles: I-405 Northbound At NE 195<sup>th</sup>



# Congestion on Saturdays

*Before and after express toll lane implementation*

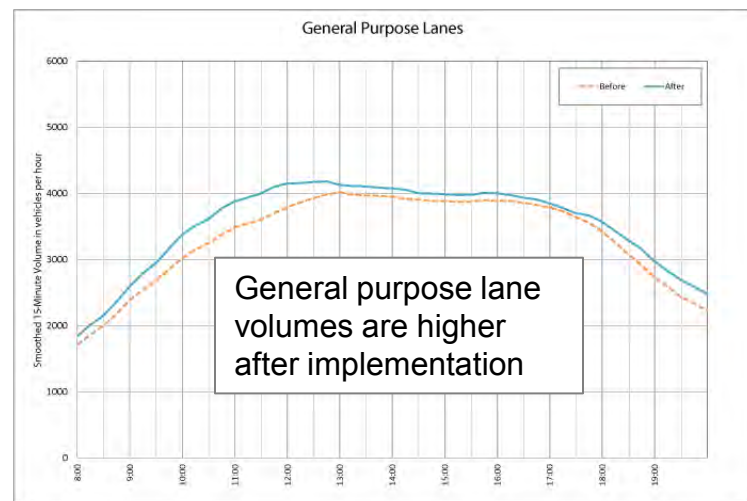
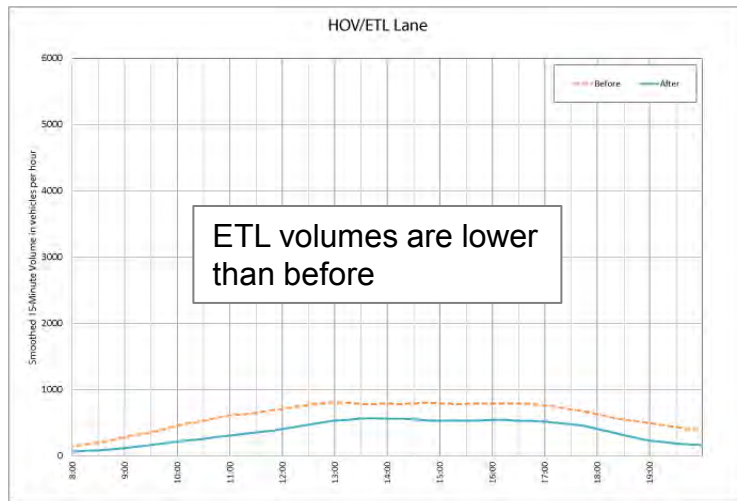
- Congestion occurs on Saturday in the general purpose lanes
- Some increase in traffic congestion, especially on northbound I-405



# 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.





# 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

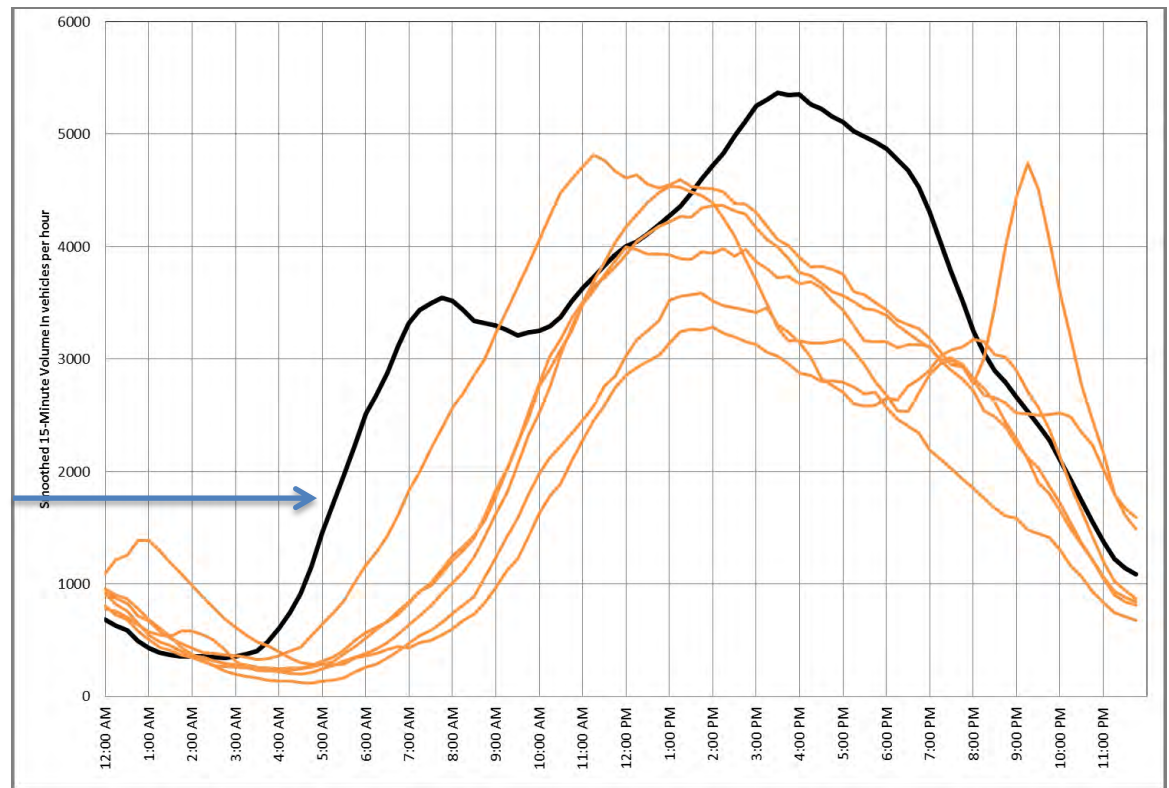
# Traffic Volumes on Six Major Federal Holidays

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

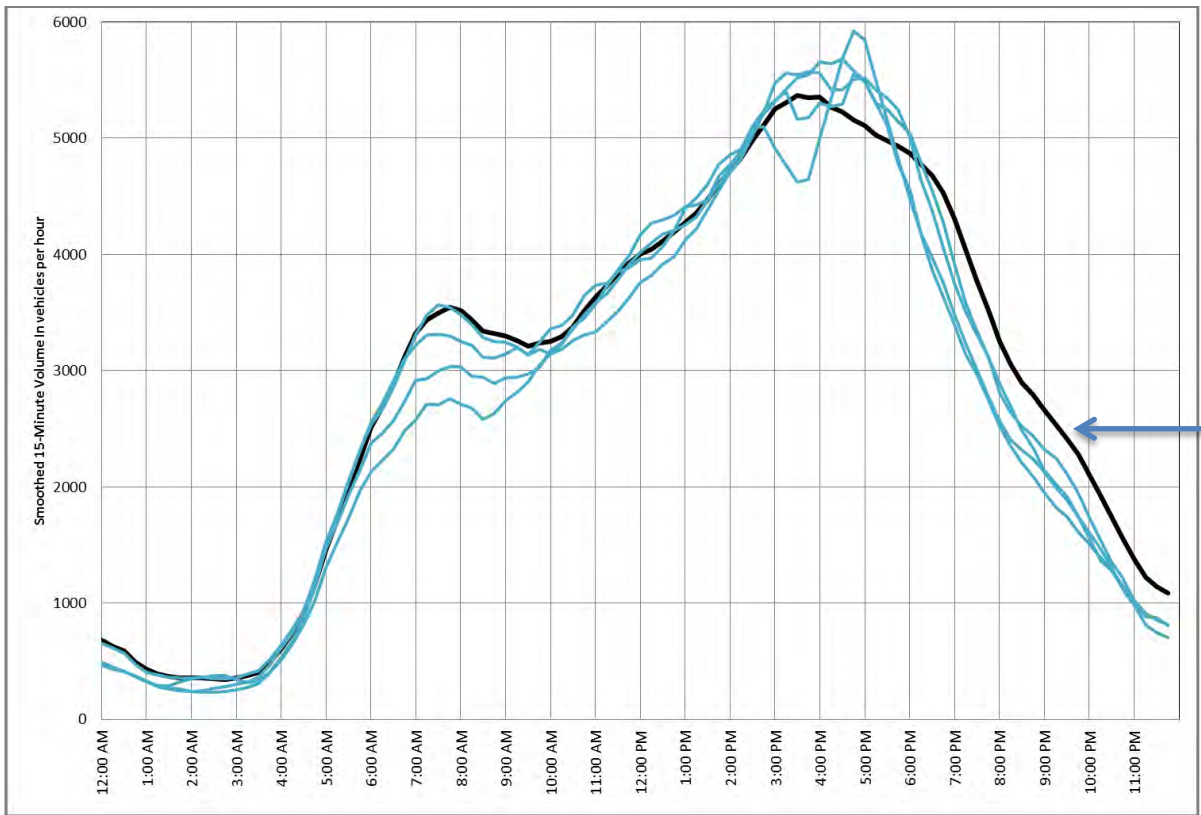
Typical weekday volumes





# Traffic Volumes on Four Additional Federal Holidays

Traffic volumes on these days often exceeds 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

# 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

**WSDOT Recommendation:**  
Six Federal holidays

# WSDOT Recommendation Summary

## **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](mailto:RubsteP@wsdot.wa.gov)