I-405 ETL Peer Review Workshop Purpose and Organization

Catherine Larson, Principal Consultant, Jacobs
November 16, 2016
I-405 Express Toll Lanes

Quick Facts

• 17 miles of express toll lanes
• Toll rates
  – Minimum toll rate $0.75
  – Maximum toll rate $10
• Carpool policy
  – To travel toll-free carpools must:
    – Meet new carpool occupancy requirements
      – 3+ carpools exempt at peak hours
      – 2+ carpools exempt at off-peak hours
    – Have a pre-paid Good To Go! account
    – Have a Good To Go! Flex Pass set to HOV mode
Bellevue to Lynnwood Express Toll Lanes - Critical Path to Go Live

I-405 EXPRESS TOLL LANES
PROJECT IMPLEMENTATION
## Express Toll Lanes
### Successes and Challenges

### Successes
- Express toll lanes are heavily used.
- Commuters have a faster and more reliable trip in the express toll lanes.
- Pay By Mail use is higher than anticipated.

### Challenges
- Limited capacity in the single express toll lane between SR 522 and I-5, combined with heavy demand from drivers, causes:
  - Toll rates reach the $10 maximum often to manage demand.
  - Speeds drop below 45 mph frequently when at maximum toll rate.
### General Purpose Lanes

**Successes**

+ Southbound general purpose peak period travel times and speeds have improved with express toll lane operations.

+ Weekday peak period general purpose travel times are faster in both directions through the section of the corridor with dual express toll lanes.

### Challenges

- Limited capacity in the general purpose lanes on northbound I-405 between SR 522 and I-5, due to transition from five to three lanes, has resulted in travel times being three minutes slower for that section.
Peer to Peer Workshop

Nick Farber
Colorado Department of Transportation
High Performance Transportation Enterprise

Kathy McCune
Los Angeles County Metropolitan Transportation Authority

Lev Pinelis
Transurban

David Ungemah
Transportation Research Board Congestion Pricing Committee

Support:
Greg Jones
Federal Highway Administration

James McCarthy
Federal Highway Administration
Workshop Goals

• Review the findings and observations from initial implementation of I-405 express toll lanes

• Promote a dialogue of the I-405 express toll lane implementation and its outcomes

• Increase knowledge, understanding and confidence among stakeholders around steps taken to improve the operation and direction forward
Background on I-405 Express Toll Lanes

Rob Fellows, Policy and Planning Manager,
Washington State Department of Transportation
November 16, 2016
I-405 Context

- Some of the worst traffic in the state
- HOV lanes were not meeting state requirements to operate at 45 mph 90 percent of the time during peak hours.
- Congested lanes significantly delay transit trips and reduce reliability.
The Puget Sound region is growing

Since 2000, as planning for the I-405 corridor was underway:

Population Growth:
- 22 percent in King County
- 27 percent in Snohomish County

Job Growth:
- 12 percent in King County
- 33 percent in Snohomish County

In the last year, the Puget Sound region grew by 86,000 people and 64,000 jobs.

Sources:
U.S. Census Bureau, WA State Office of Financial Management.
Puget Sound Regional Council.
Job and population data covers 2000-2015.
I-405 Master Plan

Regional Consensus
- EIS Record of Decision, 2002

Roadways
- 2 new lanes in each direction
- Local arterial improvements

Transit & Transportation Choices
- Bus Rapid Transit system
- New transit centers
- 50% transit service increase
- HOV direct access ramps and flyer stops
- Potential managed lanes system
- 5000 new Park & Ride spaces
- 1700 new vanpools

Environmental Enhancements
Ultimately a 40-mile Eastside Corridor express toll system will connect express toll lanes on I-405 with the HOT lanes on SR 167 in South King County.

**Phase 1: Bellevue to Lynnwood**
Open September 2015

**Phase 2: Next steps**
- **Renton to Bellevue Widening and Express Toll Lanes** – $890 m, Open 2024
- **I-405/SR 167 Direct Connector** – $285 m
  Contract award in 2016; Open 2019
- **SR 167 Stage 5**
  $35 m PE/ROW/CN obtained recent grant funding for HOV lane; express toll conversion remains unfunded
Goals of Express Toll Lanes

- Improve speed and reliability in the HOV lanes
- Offer more choices to drivers
- Fund future corridor improvements
How Express Toll Lanes Work

• Double and single express toll lanes
  – Single express toll lane between I-5 and SR 522
  – Two express toll lanes in each direction between SR 522 and NE 6th Street

• Dedicated entry and exit points
  – Northbound: seven entries, seven exits
  – Southbound: eight entries, seven exits

• Toll rates adjust based on demand
  – Keeps lanes moving at 45mph+
  – Signs display toll rates based on destination
  – Drivers pay rate posted upon entry
Toll Policies

Carpool Policy
- 3+ HOV exemption during 4-hour peaks
- 2+ at other times
- Must use switchable Flex Pass

Minimum and Maximum Tolls
- $0.75 Minimum
- $10.00 Maximum

Payment Methods
- Pre-paid Good To Go! account
  - Good To Go! pass (transponder)
  - Pay By Plate (with 25-cent fee)
- Pay By Mail (for $2 higher toll)
Reaching the Public

Grassroots outreach
• Reached 11,500 people through 185 presentations

Online and social media
• Website: GoodToGo405.org
• WSDOT Blog
• Animated Videos
• Social media: YouTube, Facebook

Paid media
• 230 million advertising impressions
• $1.2 million in total paid media

Earned media
• Desk side briefings for reporters
• On-air and social media chats
• Nearly 500 earned media stories
Media Coverage: Reflecting Public Sentiment

Before Launch
50,000 vehicles are ready for the September launch of I-405 express toll lanes  Aug 8, 2015 at 6:00AM

From HOV to express toll lane, early signs of transformation coming to I-405 in Kirkland  Sep 2, 2015 at 5:47PM

After Launch
With toll lanes targeted by critics, WSDOT releases new data on faster travel times  KIRO TV, 12/18/15

WSDOT: I-405 toll lanes moving general purpose traffic faster

Express toll lanes on I-405 set to open in late September  Originally published August 20, 2015 at 11:59 am Updated August 20, 2015 at 7:05 pm

More than 19,000 residents sign petition against I-405 tolls  by AARON KUNKLER, Bothell Reporter Reporter  Dec 11, 2015 at 8:00AM

Inrix study shows traffic has worsened due to I-405 express toll lanes  Feb 11, 2016, 10:55am PST
So What Actually Happened: Nine month trends

Since opening the express toll lanes:

- Express toll lanes use continues to increase.
- In most sections, during peak period commutes I-405 is moving more vehicles at faster speeds across all lanes.
- Express toll lanes are moving more vehicles than previous HOV lanes.
- Currently express toll lanes are meeting the performance requirement of maintaining speeds of 45 mph 90 percent of the time during peak periods. However, more drivers are using the lanes, causing toll rates to reach the $10 maximum more often and for longer durations.
- No impacts to traffic volumes on alternative routes have been found.
- Northbound through Bothell, general purpose lanes continue to be more congested than prior to express toll lanes.
What we’re seeing: Express toll lanes moving more vehicles per hour than previous HOV lanes

Performance of HOV (2015) vs. ETL (2016)

Dual Lane Section: Northbound I-405 (north of NE 85th St) Speeds and Volumes

Northbound dual express toll lane is moving 300-700 more vehicles per hour per lane than the previous HOV lane

Data Source: WSDOT CDR Loop Data
15-minute data from 2:00 PM to 8:00 PM
2015 Data: 9/29/14 - 9/25/15 weekdays
2016 Data: 9/28/15 - 9/23/16 weekdays
What we’re seeing: Ramp-up occurred faster than on other U.S. express toll lane facilities

Total Quarterly Tolled Express Toll Lane Trips (Oct. 2015-Sept. 2016)

One year performance update
I-405 is moving more vehicles at faster speeds in most sections

Southbound I-405 from NE 195th to NE 85th (AM Peak Period)

<table>
<thead>
<tr>
<th>Timeframe Comparison</th>
<th>GP Lane Travel Times in Minutes</th>
<th>Change in Travel Times</th>
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<tbody>
<tr>
<td></td>
<td>Average (95th Percentile)</td>
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<tr>
<td>Oct</td>
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<tr>
<td>2014</td>
<td>19 (23)</td>
<td>6 minutes faster</td>
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<tr>
<td>2015</td>
<td>13 (17)</td>
<td>6 minutes faster</td>
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<tr>
<td>Jan</td>
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<tr>
<td>2015</td>
<td>16 (20)</td>
<td>5 minutes faster</td>
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<tr>
<td>2016</td>
<td>11 (15)</td>
<td>5 minutes faster</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>16 (20)</td>
<td>5 minutes faster</td>
</tr>
<tr>
<td>2016</td>
<td>11 (13)</td>
<td>7 minutes faster</td>
</tr>
<tr>
<td>Aug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>15 (19)</td>
<td>4 minutes faster</td>
</tr>
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I-405 is moving more vehicles at faster speeds in most sections

Northbound I-405 from NE 85th to NE 195th (PM Peak Period)

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<td>Reliable</td>
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<td><strong>Oct</strong></td>
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<tr>
<td>2014</td>
<td>15 (18)</td>
<td>3 minutes faster</td>
</tr>
<tr>
<td>2015</td>
<td>12 (17)</td>
<td>1 minute faster</td>
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<td><strong>Jan</strong></td>
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<tr>
<td>2016</td>
<td>12 (17)</td>
<td>2 minutes faster</td>
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<tr>
<td><strong>May</strong></td>
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<td></td>
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<tr>
<td>2015</td>
<td>15 (19)</td>
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<td>2016</td>
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Limited capacity causes bottleneck northbound at NE 160th St

Northbound I-405 from NE 160th St to I-5 (PM Peak Period)

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<tr>
<td>2014</td>
<td>13 (19)</td>
<td>3 minutes slower</td>
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<tr>
<td>2015</td>
<td>16 (26)</td>
<td>7 minutes slower</td>
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<td>2015</td>
<td>12 (20)</td>
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<td>17 (25)</td>
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Peak Period Congestion in the General Purpose Lanes
April-June 2015 vs. April-June 2016

SOUTHBOUND
Before ETL    After ETL

NORTHBOUND
Before ETL    After ETL

Where are you traveling on I-405?

LYNNWOOD
NE 195th St

BOTHELL
NE 128th St
NE 116th St

KIRKLAND
NE 85th St
NE 70th St

BELLEVUE
NE 6th St

Free Flow
Moderate
Heavy
Stop and Go

Nine month performance update
What we’re seeing: Speeds and predictability have improved with express toll lanes

I-405 Performance – Full Corridor
Percentage of Peak Periods When Speeds are Greater Than 45 Miles Per Hour

<table>
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<tr>
<th>Month Period</th>
<th>Southbound</th>
<th>Northbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>April – September 2015 Before Express Toll Lanes</td>
<td>70%</td>
<td>40%</td>
</tr>
<tr>
<td>January – June 2016 After Express Toll Lanes</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>April – September 2016 After Express Toll Lanes</td>
<td>80%</td>
<td>90%</td>
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One year performance update

What we’re seeing:
What drivers are choosing to pay

Percent of Peak Period 405 Toll Trips by Rate Category

Sept. 27, 2015 - Sep 30, 2016
Monday - Friday
5 - 9 a.m.
3 - 7 p.m.

Average Peak Period Toll Rates
- July-Sept 2016 average - $2.99
- May-June 2016 average - $2.33
- Jan-Apr 2016 average - $2.40
- Oct-Dec 2015 average - $1.75
How we’ve responded

- **Toll policy change**
  - Operational hours
    - Mon-Fri 5 a.m. to 7 p.m.

- **Operational Adjustments**
  - Toll rate algorithm adjustments
  - Striping and access adjustments at 9 locations
  - Additional pavement markings and signage at 3 locations

- **Future Improvements**
  - Northbound auxiliary lane between SR 520 and NE 70th Place
  - General purpose hard shoulder running on northbound I-405 from SR 527 to I-5
  - Address limited capacity in single express toll lane section (SR 522 to I-5)
What is Hard Shoulder Running (HSR)?

- Traffic Management Strategy that uses a shoulder as a general purpose lane to provide additional capacity when needed (peak periods)
- Shoulder is preserved when traffic volumes are lower
- Dynamically controlled using electronic signs

Timeline

- Initial funding in 2016 Supplemental Transportation Budget
- Construction targeted for 2017
- Estimated project cost: $11.5 million
Some Takeaways

• **Capacity Management**: Brought more traffic into a bottleneck; isolated congestion due to weaving and merging at access points

• **Opened New Lanes as Auxiliary Lanes** that were closed when dual-lane Express Toll Lanes opened

• **Understanding Individual Effects**: Need to understand and respond to individual trip effects (customer view)

• **Virtually No Ramp up**: Pay by mail eliminated the ramp-up, but ramp-up (or cheating?) continues for HOVs

• **Infrequent Users Less Likely to Get Flex-Pass**: Infrequent weekend HOV customers may be unlikely to purchase a Flex Pass

• **Limits on Lane Management?** Challenging to manage single lane segment with high demand