

# I-405 Peak-Use Shoulder Lane Project Overview

**Barrett Hanson, P.E.**

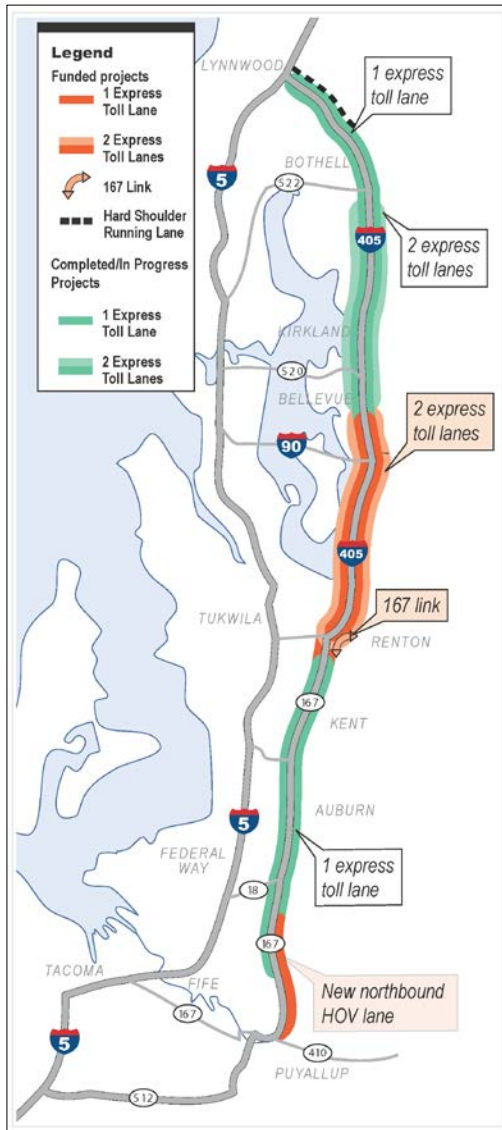
Design Manager  
WSDOT I-405/SR 167 Program

**Karl Westby, PhD**

Traffic Manager  
WSDOT I-405/SR 167 Program

NOCoe Webinar  
Sept. 28, 2017

# Project Setting



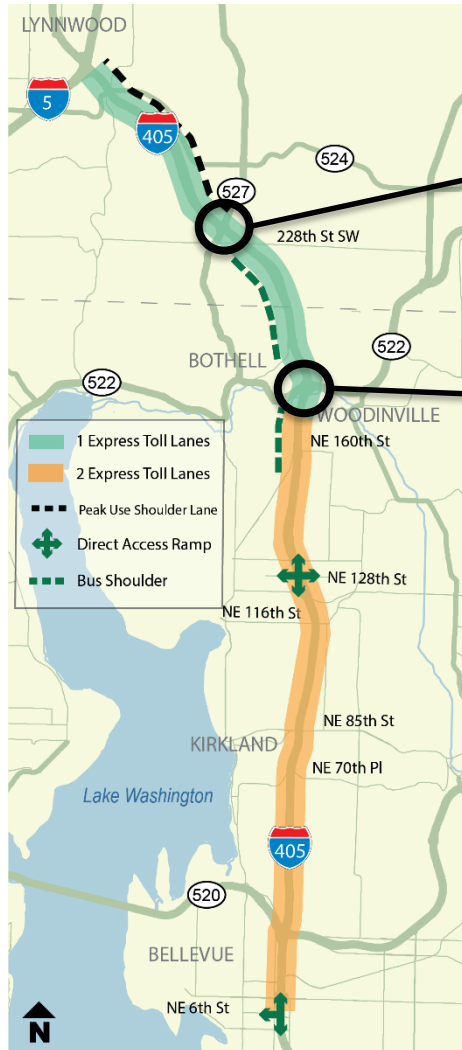
## I-405/SR 167 Corridor

- 40-mile freight and commuter corridor
- North-south alternative to I-5
- One of the most congested routes in Washington State
- Home to fastest-growing population and job centers in greater Seattle area

## I-405 express toll lanes

- Opened between Bellevue and Lynnwood in Sept. 2015
  - Two-lane system between Bellevue and Bothell
  - Single-lane system between Bothell and Lynnwood
- Extension of system funded between Bellevue and Renton to connect with SR 167 high occupancy toll lanes

# Challenge: High Demand, Limited Capacity



## High volumes entering I-405 at SR 527 during afternoon peak periods

- ~1,000 vehicles/hour were forced to merge into full general purpose lanes
- *The result:* general purpose lane back-ups, less reliable express toll lane trips (and higher toll rates)

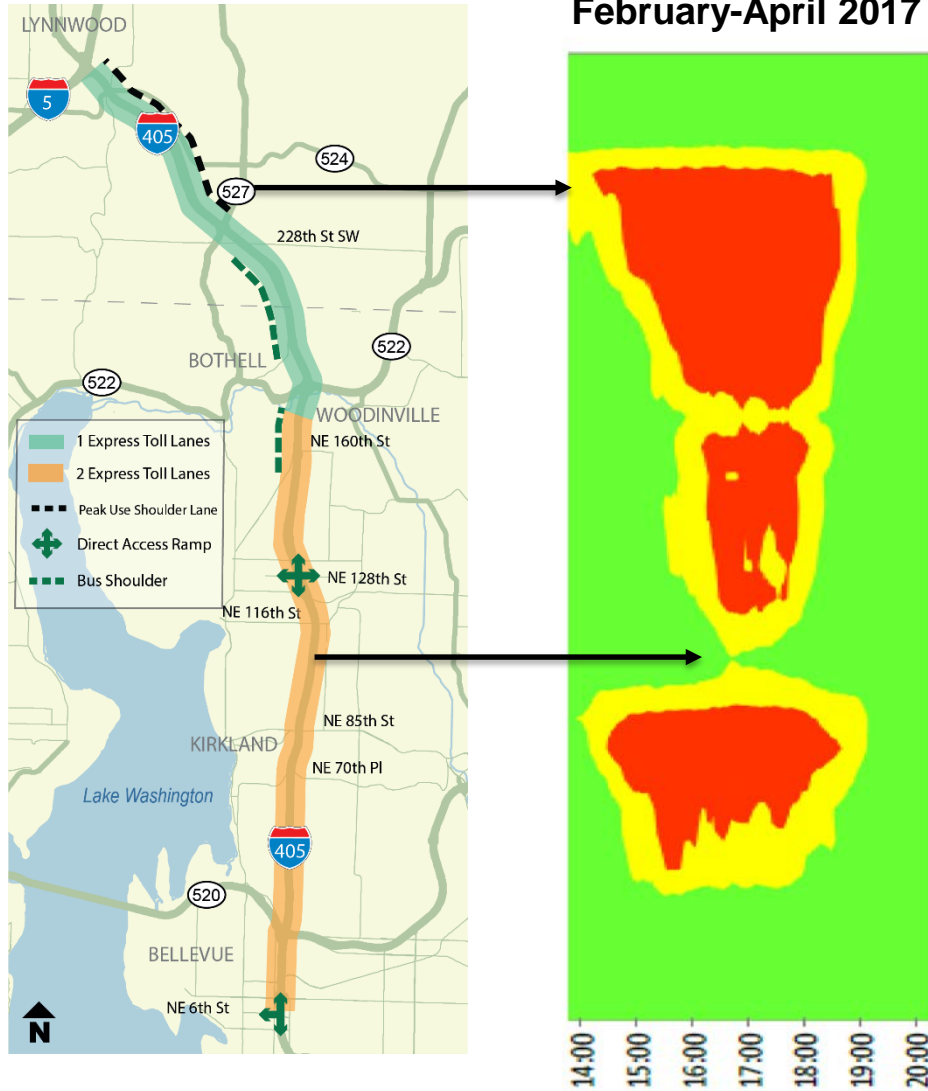


## Bottleneck moved north after new capacity opened

- Higher volumes moving faster in five-lane section (Bellevue/Kirkland area)
- Resulted in increased congestion in three-lane section (Bothell area)

# Traffic Conditions Before Shoulder Conversion

February-April 2017



- Heavy traffic during the afternoon commute throughout the corridor
- Congestion builds south of SR 527 during peak periods
- Desire for quick congestion relief

# Project Scope and Outreach

**Converted existing right shoulder** to 1.8 mile long, dynamically controlled general purpose peak-use shoulder lane

**First dynamically controlled peak-use shoulder lane in Washington State**

## **Extensive stakeholder coordination & outreach**

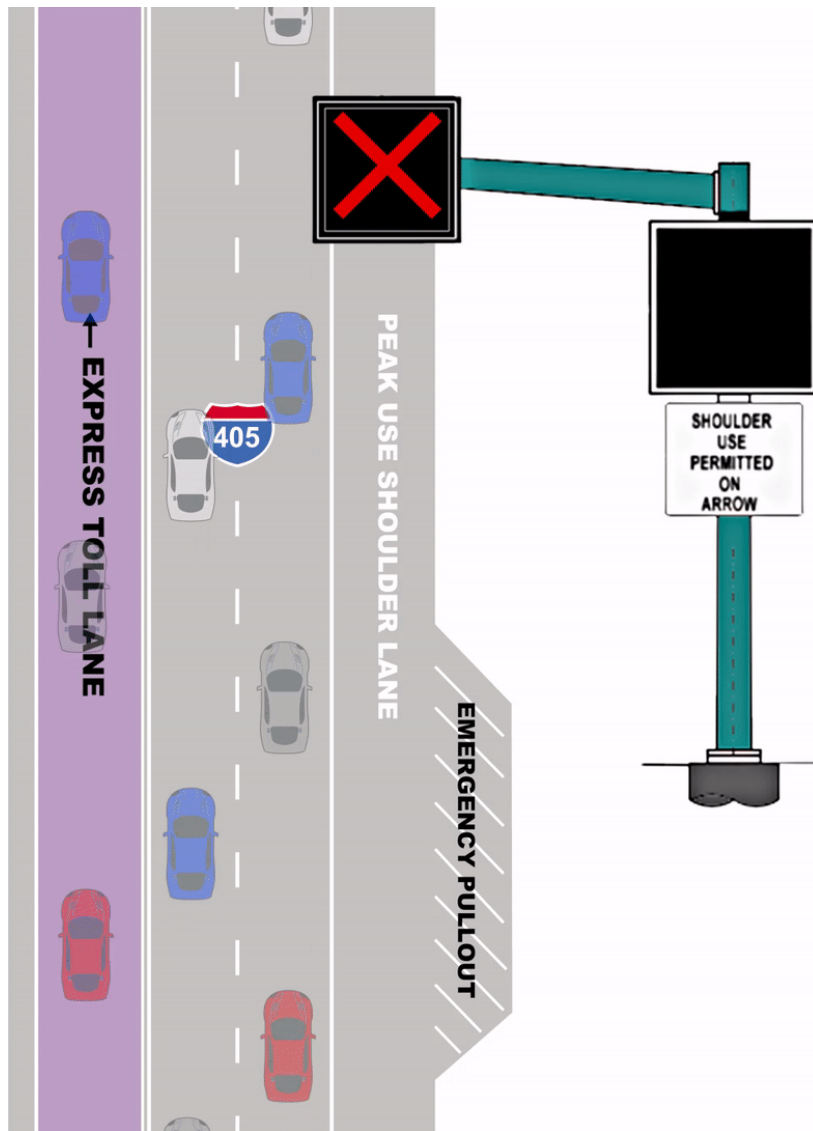
- Washington State Patrol
- WSDOT traffic/tolling divisions
- FHWA
- Local cities
- Freight industry
- Traveling public
- Elected officials

**Total project cost: \$11.5 million funded by toll revenue**

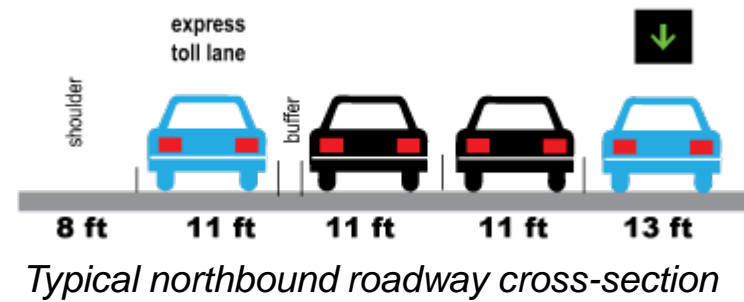
- \$7.29 million construction contract



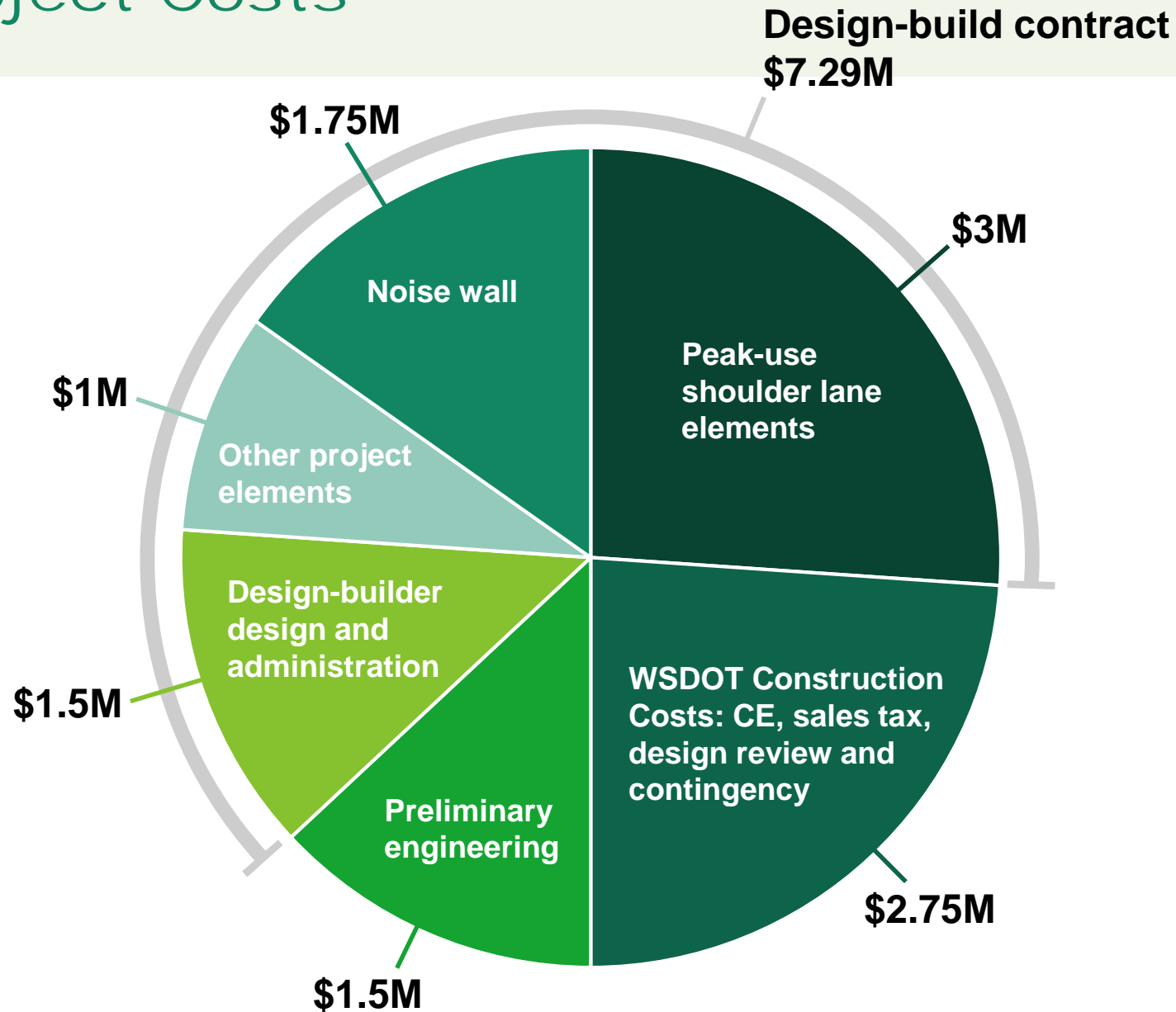
# Project Construction Elements



- Four overhead electronic lane control signs with side-mounted message signs
  - 0.5 mile spacing
  - 5-foot by 5-foot lane control sign
  - Supplemental messages and queue warnings
- Four paved emergency pull-out areas
- New quarter-mile long noise wall
- Striping and delineators
- Paving
- Guardrail



# Project Costs





# Rapid Project Timeline

2016

**March**  
Project  
identified

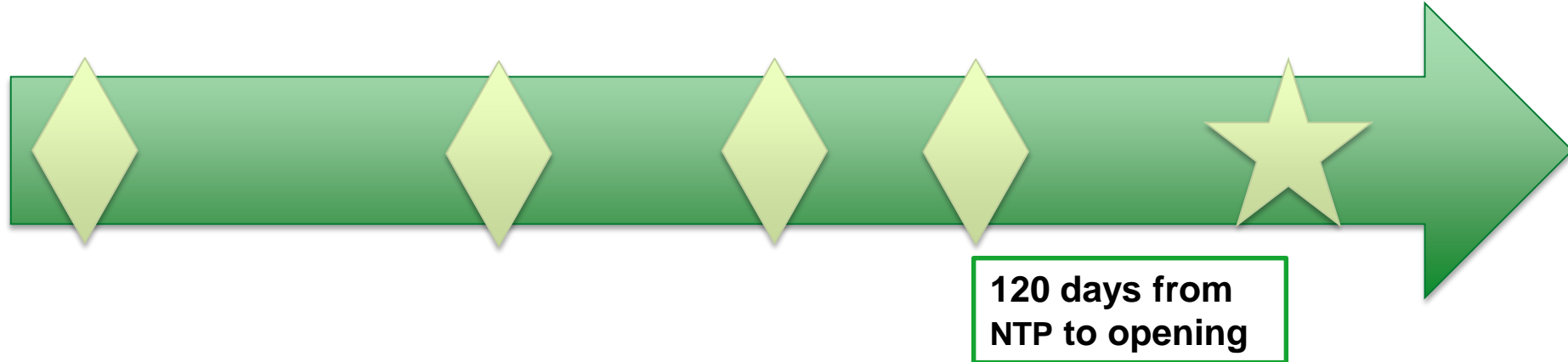
**September**  
Design-build RFP  
issued

**December**  
Contract  
awarded

2017

**January**  
Construction  
start

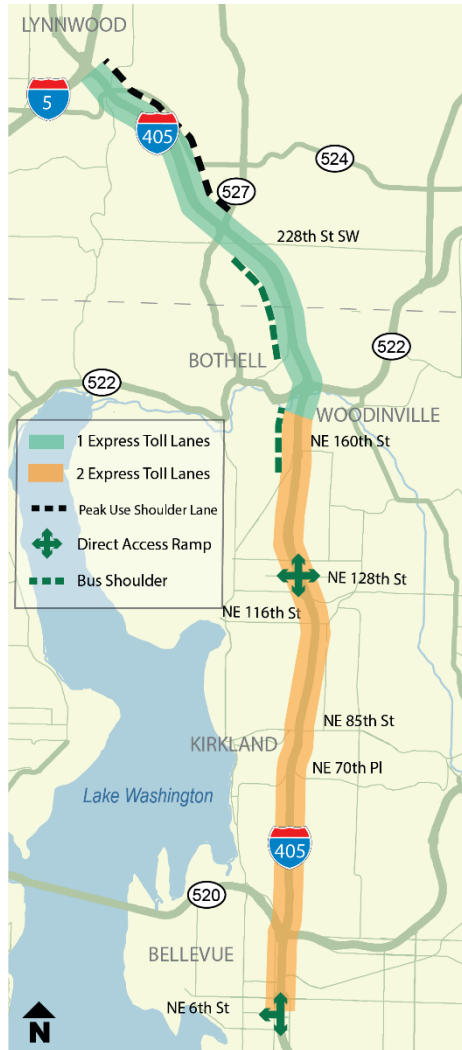
**April 24**  
**Opened to  
traffic**



**14 months from project identification to open to traffic**



# Early performance: Congestion contours for general purpose lanes



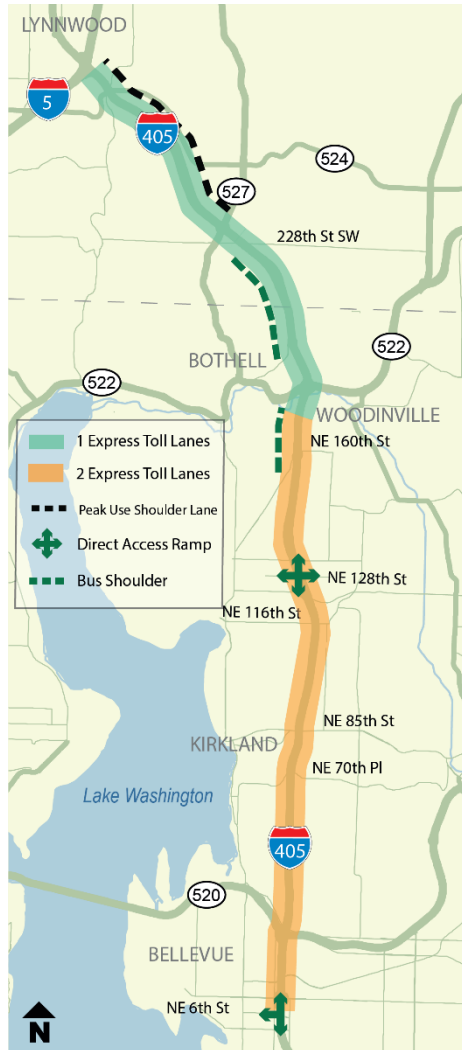
**BEFORE**  
**February-April 2017**



**AFTER**  
**First 3 months**



# Early performance: Congestion contours for express toll lanes



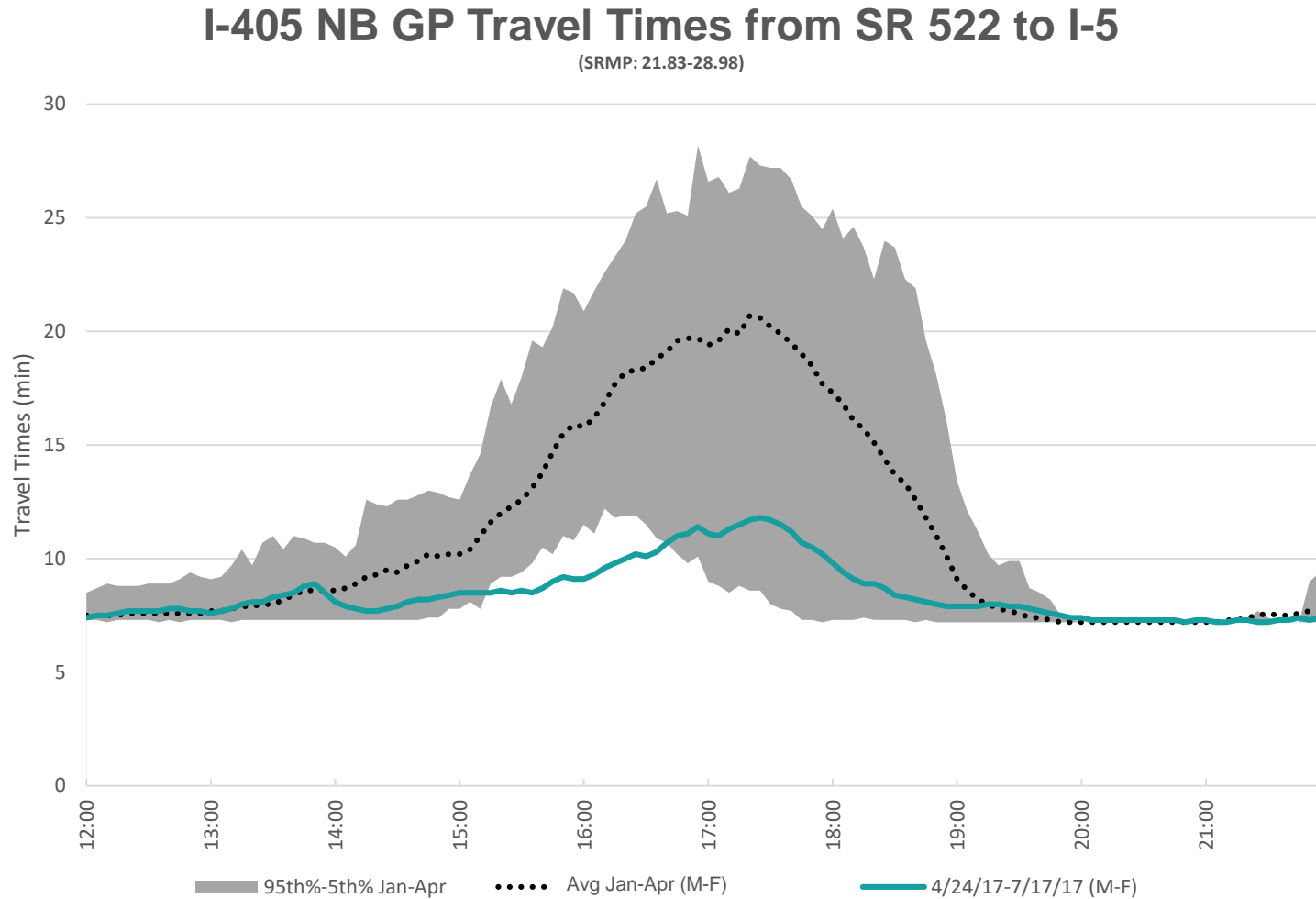
**BEFORE**  
**February-April 2017**



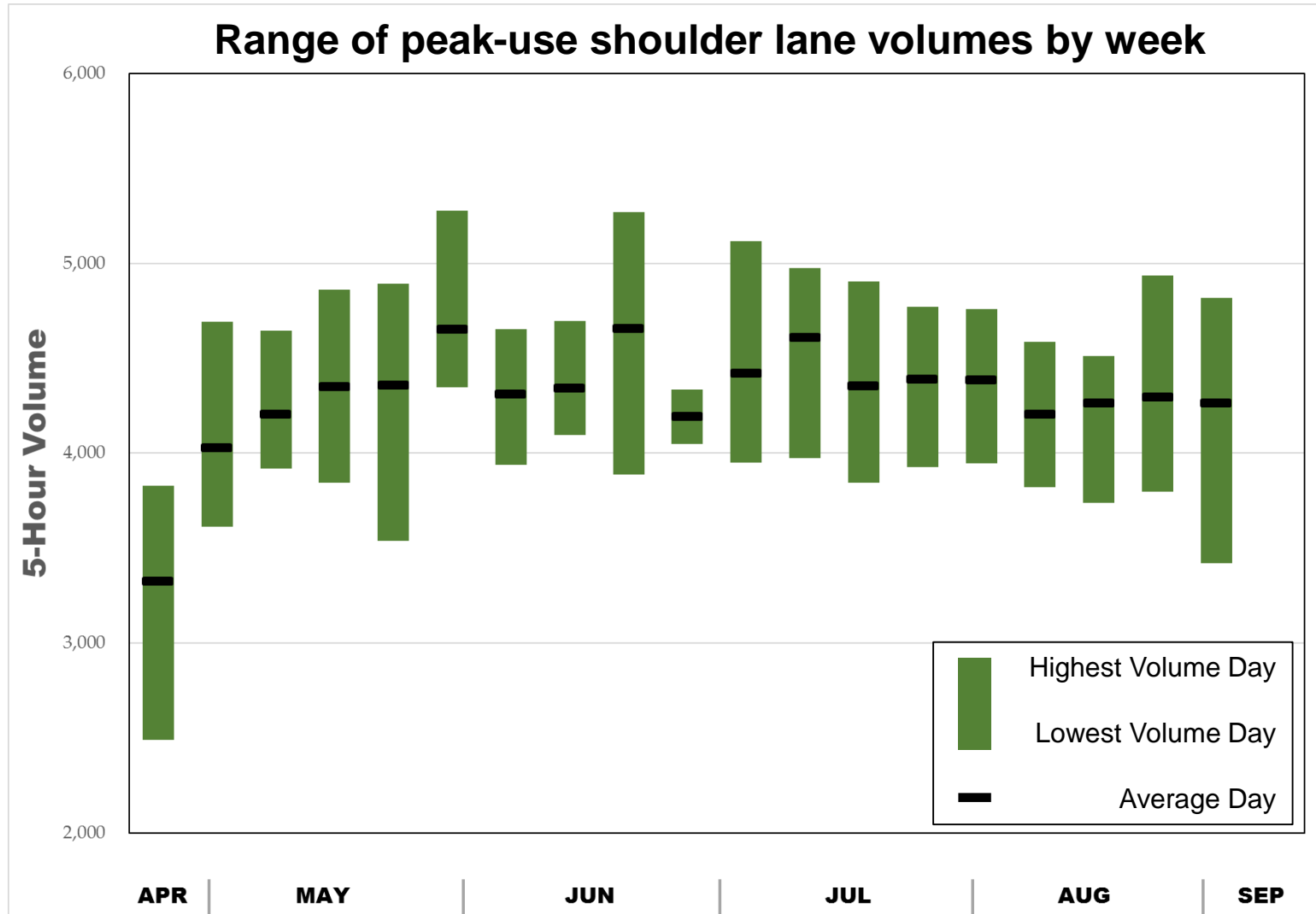
**AFTER**  
**First 3 months**



# Early performance: Travel times



# Early performance data: Volumes



# Incidents

## 11 incidents in first five months of operation

- Four collisions
- Six disabled vehicles
- One unclassified incident
- *Too early for trend identification*



*Disabled motor home blocked peak-use shoulder lane, resulting in temporary closure*



*Box truck in emergency pullout partially blocked shoulder lane, triggering warning signs*

# Positive feedback from the public



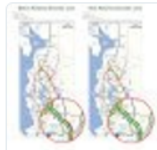
**Mudit Purwar** @muditpurwar7 · Apr 25

Replying to @wsdot\_traffic

Thank you @wsdot\_traffic for the shoulder lane. You reduced my drive time by at least 10 mins to reach Lynnwood during peak office hours.



**WSDOT Good To Go!** @GoodToGoWSDOT · Jun 22  
I-405 peak-use shoulder lane is off to a positive start!



I-405 peak-use shoulder lane is off to a positive start  
The WSDOT Blog  
[wsdotblog.blogspot.com](http://wsdotblog.blogspot.com)

3 replies 3 retweets 1 like



**John Turnbull**  
@seattlebull

Follow

Replying to @GoodToGoWSDOT @wsdot

I noticed my evening commute is significantly more pleasant and the time from Redmond to Edmonds is cut in half. Thank you @wsdot.

9:45 PM - 22 Jun 2017

1 Retweet 2 Likes



1 retweet 2 likes



**Matt D.**  
@mdonald66

Follow

@wsdot\_traffic @wsdot Loving the extra lane on the north end of 405! 🙌🙌🙌

2 likes



2:52 PM - 25 Apr 2017

2 likes



**James Woollard** ★  
@BritVoxUS

Follow

My commute got better thanks to this. New I-405 shoulder lane opens to afternoon commuters. Thanks @wsdot\_traffic  
[wsdot.wa.gov/news/2017/04/2...](http://wsdot.wa.gov/news/2017/04/2...)

3 likes



8:46 PM - 1 May 2017

1 like 3 likes

# Future peak-use shoulder lane projects planned in Seattle region

WSDOT is implementing peak-use shoulder lanes at strategic locations to add more space for travelers in a quick, cost-effective manner. WSDOT is also partnering with local transit agencies to open bus-only shoulders.

- **I-5, Everett to Marysville (northbound only)**  
Construction start: 2019
- **I-405, Renton area (northbound only)**  
Construction start: 2019





# Lessons learned

## Design

- Added delineation
- Early stakeholder coordination



Wednesday, April 12, 2017

This is not a test: I-405 peak-use shoulder lane opens April 24

By Craig Smiley

Good news for travelers on northbound Interstate 405 in the south Snohomish County area: In less than two weeks, you'll have a new option for your afternoon commute.

At 2 p.m. Monday, April 24, the [I-405 northbound peak-use shoulder lane](#) will officially open to general-purpose traffic on the 1.8 mile stretch between State Route 527 and I-5. Between now and then, we're wrapping up our testing of the new electronic signs that will control the lanes, so you might still see some test messages, symbols and colors as you drive through the area.



A green arrow like this will indicate if the new I-405 peak-use shoulder lane is open to traffic.

Originally, the Washington State Legislature funded this project with an expected opening date in 2018. However, with approval to use revenues from the I-405 express toll lanes earlier, we were able to complete the project more than a year sooner than expected.

### How do I use the lane?

As the name suggests, general-purpose traffic and buses will now be able use the northbound right shoulder as an additional lane during times with the heaviest congestion—in this case, the weekday afternoon commute. That means there will effectively be three regular lanes and one express toll lane in this area.

The peak-use shoulder lane will generally be open during the afternoon peak period but will be dynamically controlled, so be sure to check the overhead electronic signs before entering the lane. A green arrow will indicate that the lane is open, and a red "X" will indicate that the lane is closed, similar to the signs you see today on I-5 near downtown Seattle. To learn more about what you might see on the signs, check out [our previous blog on the subject](#).



Sign up for email updates

Your email

Search this blog

Blog Archive

▼ 2017 (107)

- September (4)
- August (24)
- July (8)
- June (8)
- May (19)
- ▼ April (19)
  - Traffic signal changes at I-5 exits in DuPont and ...
  - How do you rehabilitate nearly 22 miles of I-5?
  - Good To Go! website improvements coming soon
  - Happy 1st birthday to the world's longest floating...
  - A summer toolkit to help navigate around construct...
  - It only takes a moment to cause a life-altering wo...
  - Relieving the aches and pains of an aging I-5
  - Remembering our fallen colleagues at our Worker Me...
  - Lengthy closure of Tacoma I-5 exit may begin Friday...
  - This is not a test: I-405 peak-use shoulder lane o...
  - Pothole repair turns scary for Morton crew
  - Closure of State Route 530 near Oro extended
  - SR 530 near Oro to remain closed until at least Mo...
  - The slowdown on rolling slowdowns
  - Bertha's breakthrough and the highway to come
  - Adjustment coming to I-405 express toll lane acces...

## Implementation and Outreach

- Robust public outreach for educating the traveling public
- Supplemental incident response teams and enforcement
- Managing public expectations of implementing additional peak-use shoulder lanes



# CONTACT

Barrett Hanson

Design manager, I-405/SR 167 program

425-456-8534

[hansonb@consultant.wsdot.wa.gov](mailto:hansonb@consultant.wsdot.wa.gov)

Karl Westby

Traffic manager, I-405/SR 167 program

425-450-2537

[westbyk@consultant.wsdot.wa.gov](mailto:westbyk@consultant.wsdot.wa.gov)