

I-405 Corridor Program Overview

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Washington State
Department of Transportation

Today's Agenda

- I-405 Corridor Program Update
- Active Traffic Management
- I-405 Express Toll Lanes Option

I-405 Corridor Program Update



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
- 9 new transit centers added
- 50% transit service increase
- HOV direct access ramps and flyer stops
- 5000 new Park & Ride spaces
- 1700 new vanpools

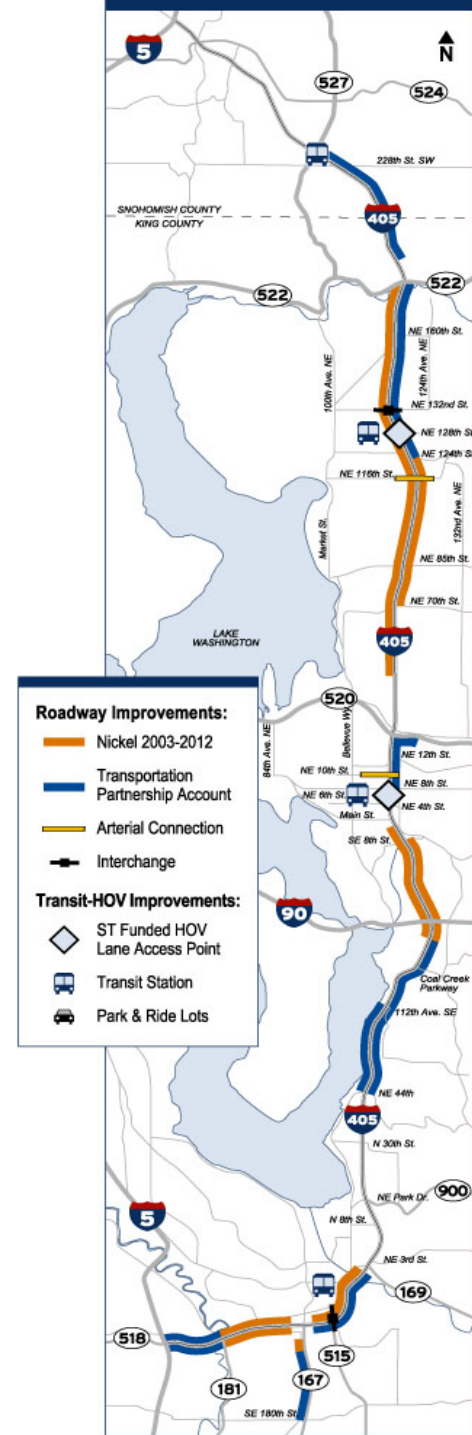
Environmental Enhancements



I-405 Funded Projects

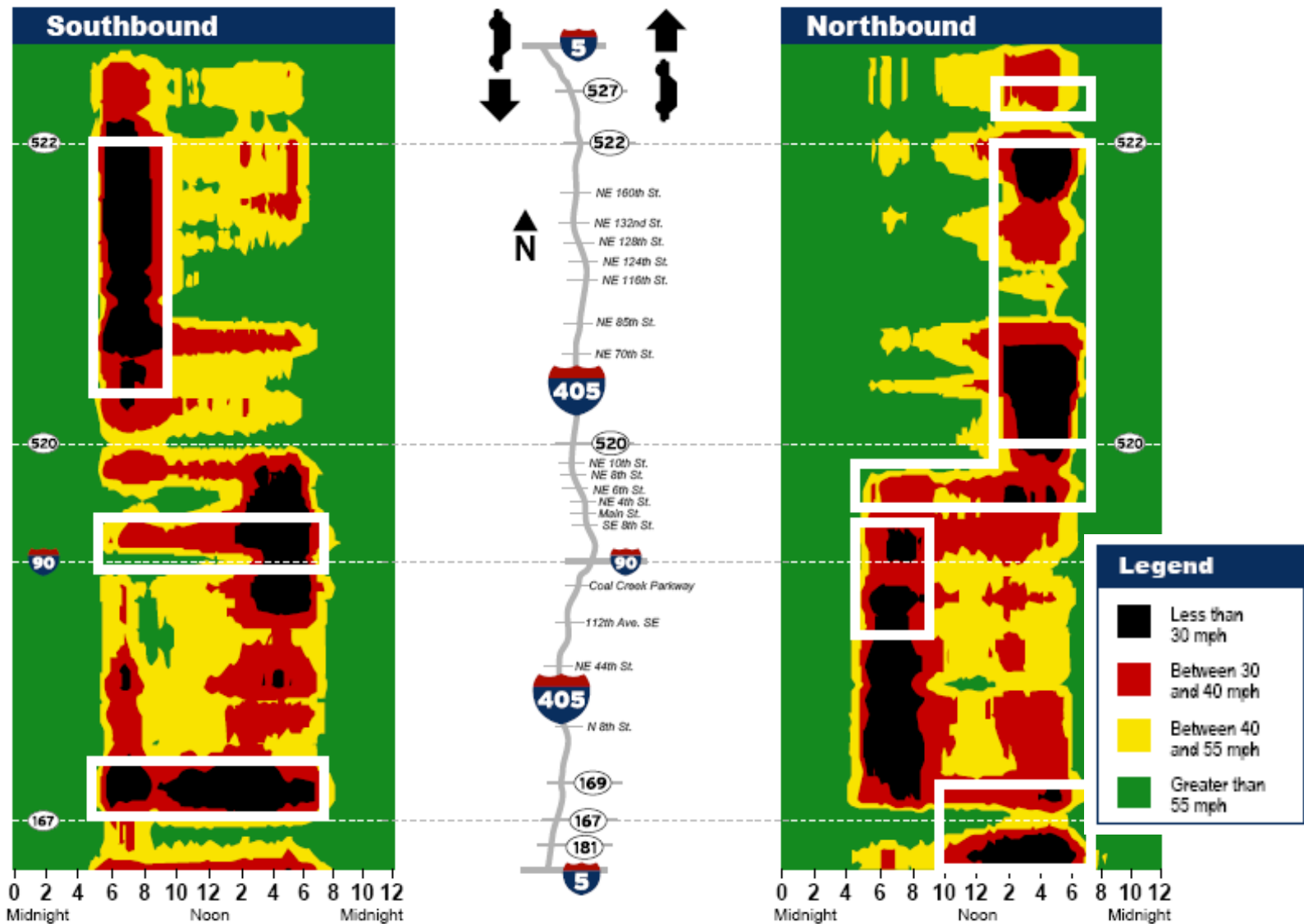
2003 Nickel 2005 TPA

| | |
|-------------------------------------------------------|----------------|
| SR 520 to I-5 | |
| NB 195th St. to SR 527 | 45 |
| Kirkland Nickel Stage 2 | 86 |
| NE 124th St. to SR 522 | 170 |
| NE 132nd St. Bridge | 30 |
| NE 132nd St. Interchange Ramps | |
| | 30 |
| Kirkland Nickel Stage 1 | |
| | 78 |
| NB NE 8th St. to SR 520 Braided Crossing | |
| | 250 |
| NE 10th St. Bridge Crossing | |
| | 67 |
| 112th Ave. SE to SE 8th St. | |
| Bellevue Nickel Project | 185 |
| 112th Ave. SE to I-90 | 20 |
| NE 44th St. to 112th Ave. SE..... | |
| | 150 |
| I-5 to SR 169 | |
| Renton Nickel Project | \$136 |
| I-5 to SR 181 | \$30 |
| NB SR 167 to SR 169 | 20 |
| SR 167 SB: I-405 to SE 180th St. | 50 |
| SR 515 Interchange | |
| | 110 |
| Totals: Nickel 2003-2012 | |
| | \$485 |
| 2005 Account..... | |
| | \$972 |
| I-405 Corridor Total State Investment | |
| | \$1,457 |



I-405 Congestion Chokepoints

Addressing the Worst First

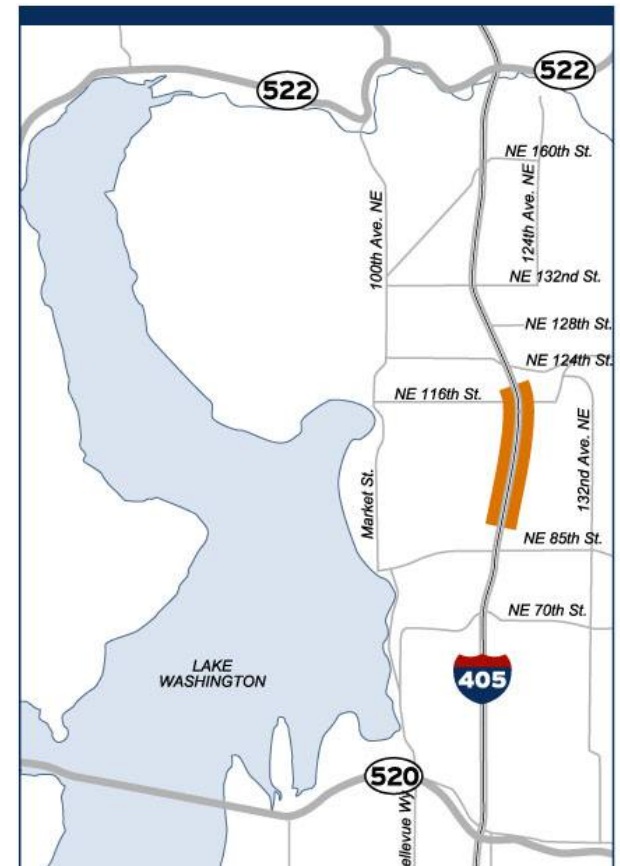


Kirkland Nickel – Stage 1

\$ millions

Kirkland Nickel Stage 1\$48

- Build one lane in each direction on I-405 between NE 85th Street and NE 124th Street in Kirkland
- Environmental Improvements
- Opened SB auxiliary lane between NE 116th Street & NE 85th Street in October
- Will open NB auxiliary lane between NE 116th Street & NE 85th Street in November



Kirkland Nickel Stage 1



Legend

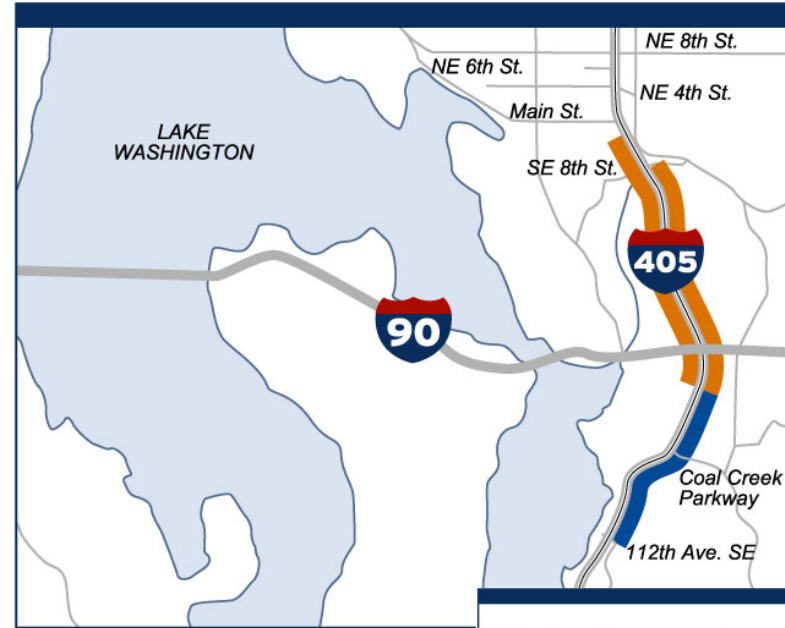
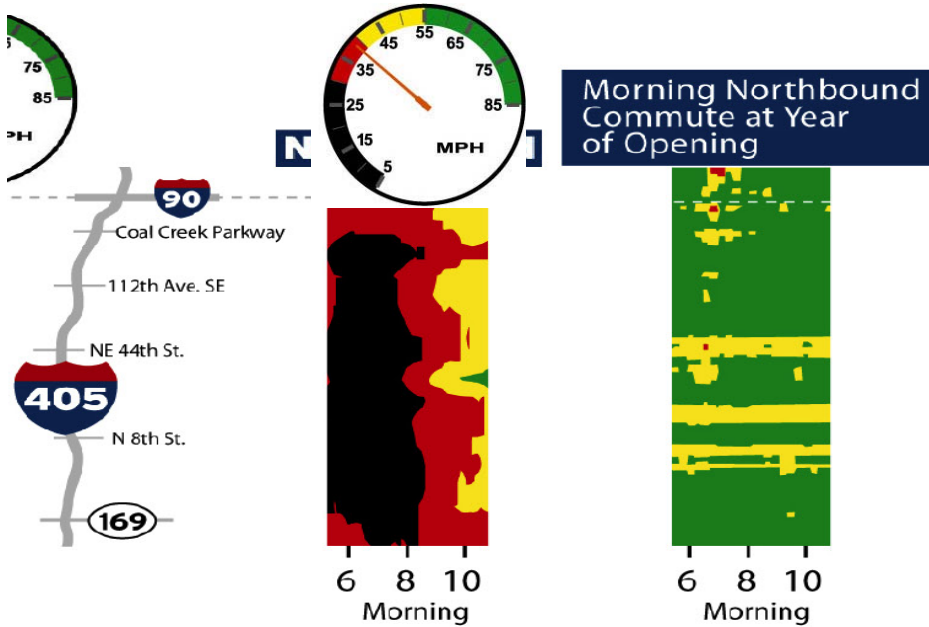
| | |
|--|------------------------------------------|
| | Preliminary Engineering and Right of Way |
| | Construction |

Kirkland Nickel Stage 1 Construction



South Bellevue Widening 112th Avenue SE to SE 8th St.

\$ millions
112th Ave. SE to SE 8th St.....\$124



- Roadway Improvements:**
- █ Nickel 2003-2012
 - █ Transportation Partnership Account
 - █ Arterial Connection
 - Interchange
- Transit-HOV Improvements:**
- ST Funded HOV Lane Access Point
 - Transit Station
 - Park & Ride Lots

112th Ave. SE to SE 8th St. 112th Ave. SE to I-90, Bellevue Nickel Project



- Legend**
- █ Preliminary Engineering and Right of Way
 - █ Construction



Bellevue Nickel Construction Kick-Off

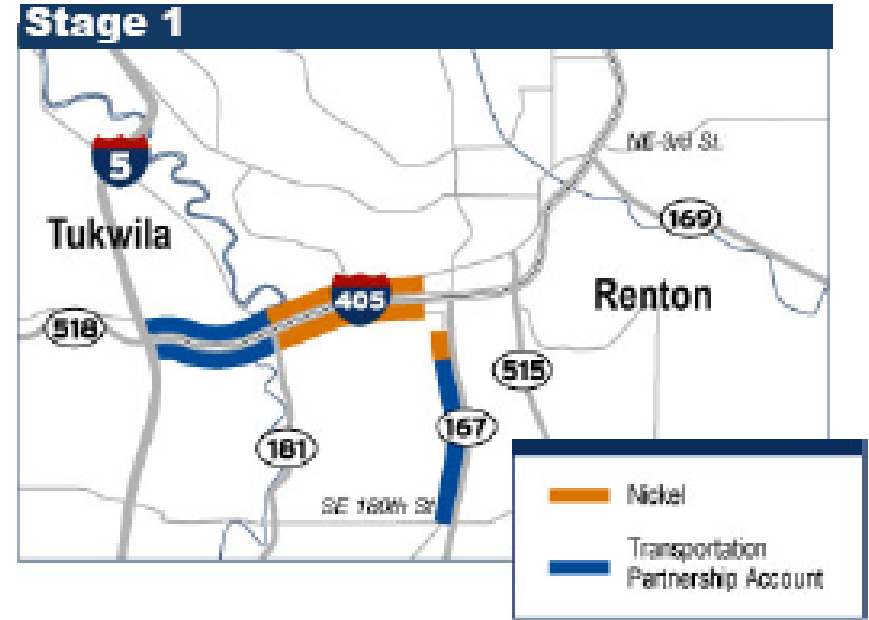
Renton Stage 1 – Widening

I-5 to SR 169

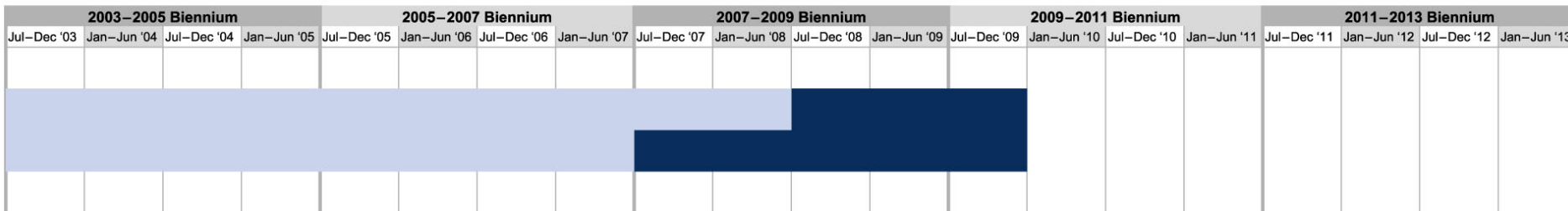
\$ millions

I-5 to SR 169 Stage 1\$91.5

- One new north and southbound general purpose lane from I-5 to SR 167
- One new southbound auxiliary lane on SR 167
- Lengthen southbound HOV lane on SR 167



I-5 to SR 169 *Renton Nickel Project, NB SR 167 to SR 169, SR 167 SB: I-405 to SE 180th St., I-5 to SR 181*



Legend

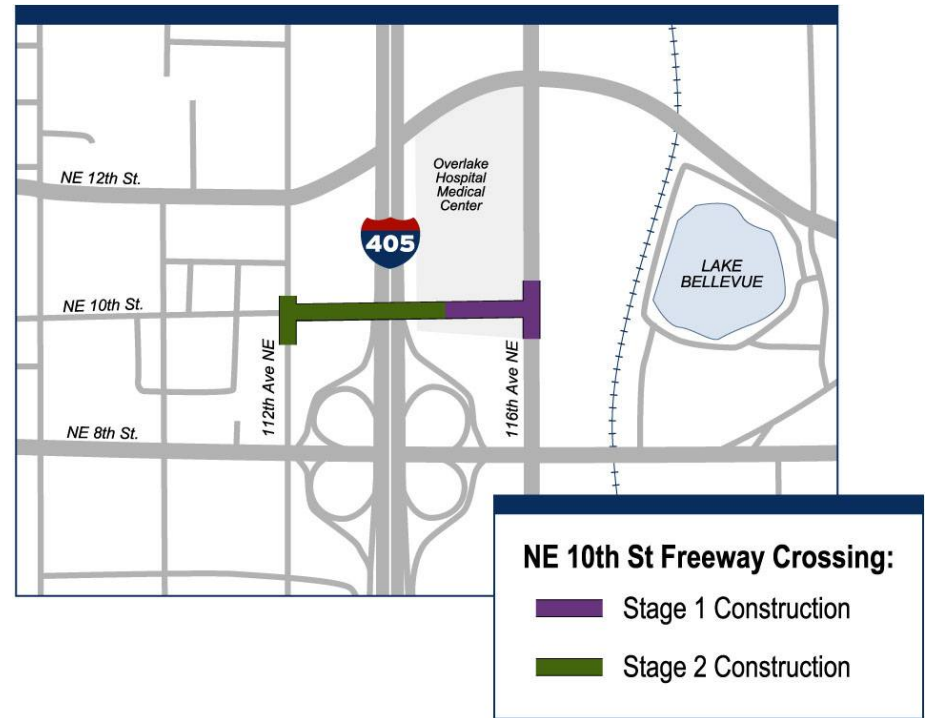
- Preliminary Engineering and Right of Way
- Construction

Bellevue NE 10th Street Stage 1

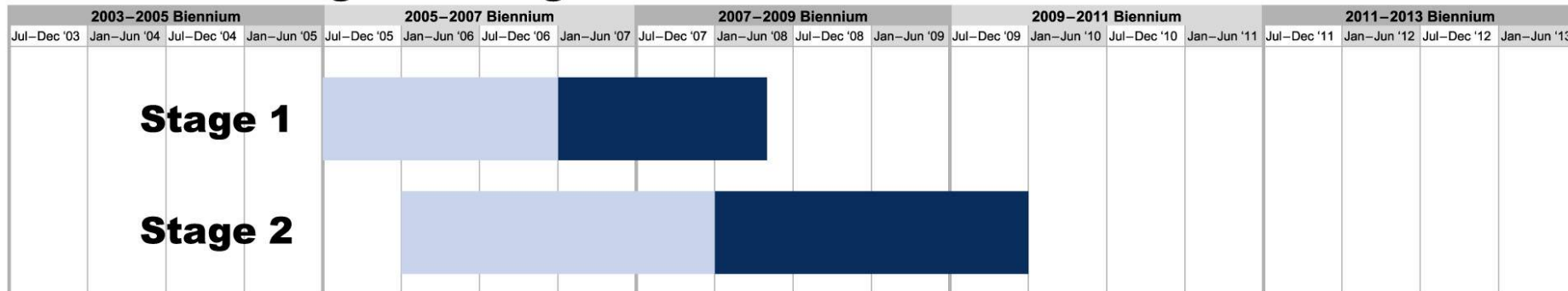
\$ millions

NE 10th Bridge Crossing (first contract).....\$ 7.2
(second contract)...\$15.4

- City of Bellevue will build Stage 1: NE 10th between 116th and I-405
- WSDOT will build Stage 2: a new bridge crossing at NE 10th Street in Bellevue



NE 10th St. Bridge Crossing



Legend

- Preliminary Engineering and Right of Way
- Construction

Springbrook Wetland & Habitat Mitigation Bank

\$ millions

Springbrook\$12.5

- The Bank will provide mitigation for highway construction and city development projects prior to the impacts on wetlands and other aquatic resources.
- Construction begins Spring 2007.
- Project completion expected May 2008.



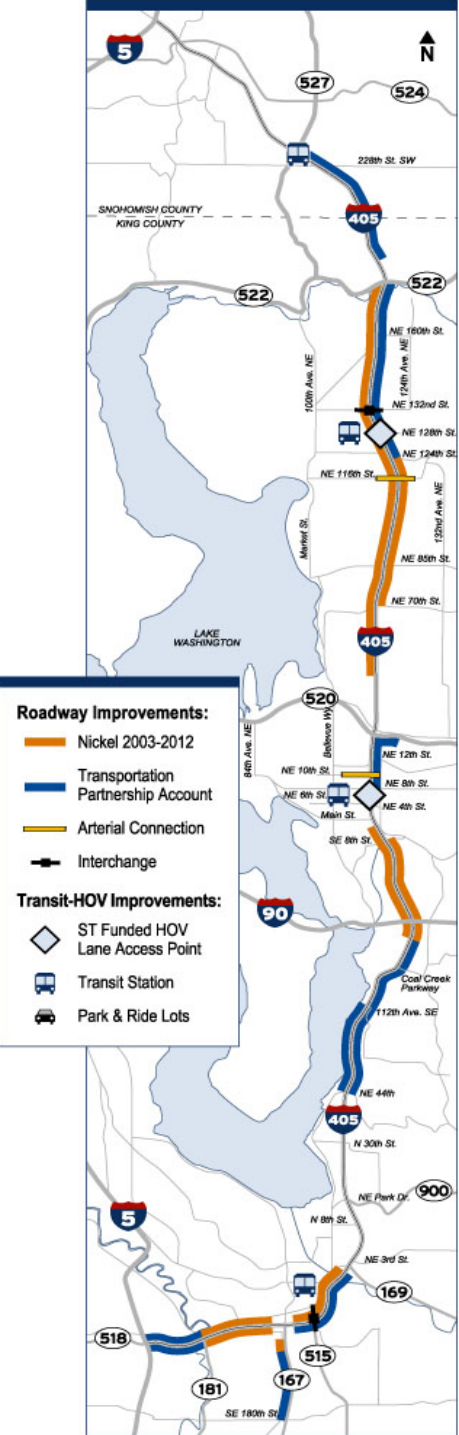


**Springbrook Wetland Mitigation Bank Construction
Kick-Off With Talbot Elementary School Students in
Renton**

I-405 Delivery Strategy

- \$1.5 Billion Program funded through 15 projects from Nickel and TPA
- Urban Corridor Office Strategic Foundation
 - Establish and maintain a Strong Owner role
 - Leverage Private Industry
 - Maintain a Corridor Delivery Focus
 - Use Flexible & Nimble Approaches
 - Embrace Innovation
 - Establish and Utilize Effective Project Controls and Quality Assurance

'07-'09 Construction Starts



Kirkland Nickel Stage 2
Summer 2009

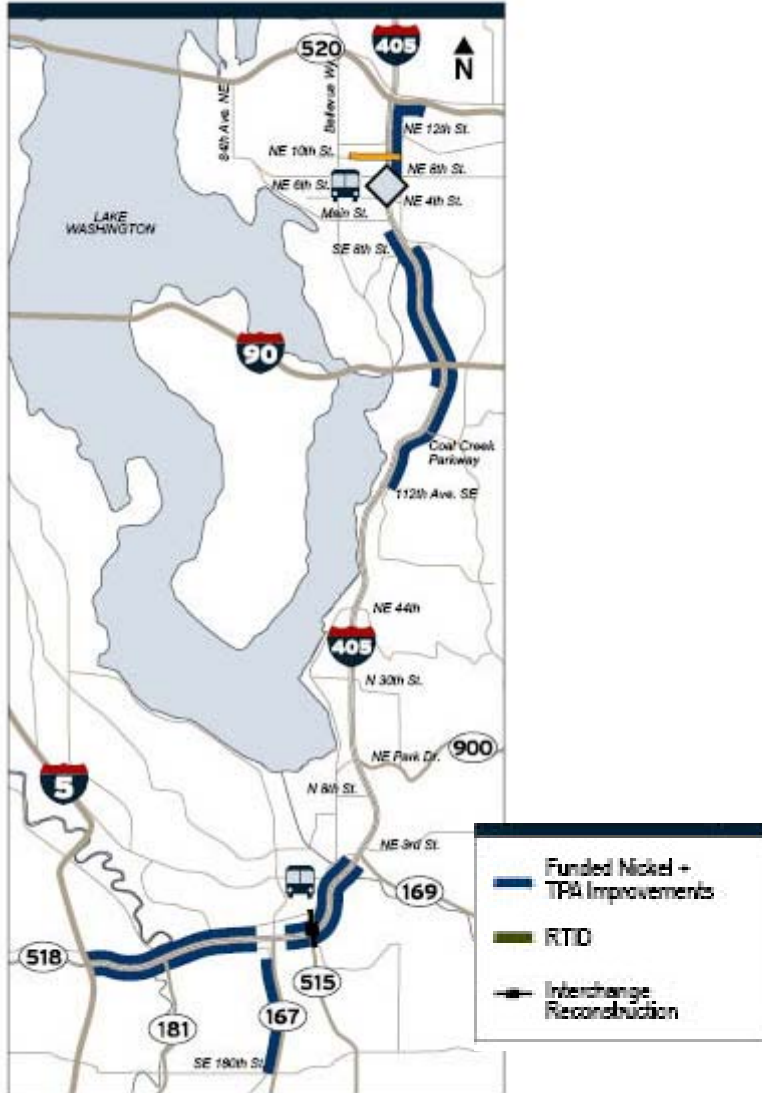
NB NE 8th St. to SR 520 Braided
Crossing Winter 2008

NE 10th St. Bridge Crossing Stage 2
Fall 2007

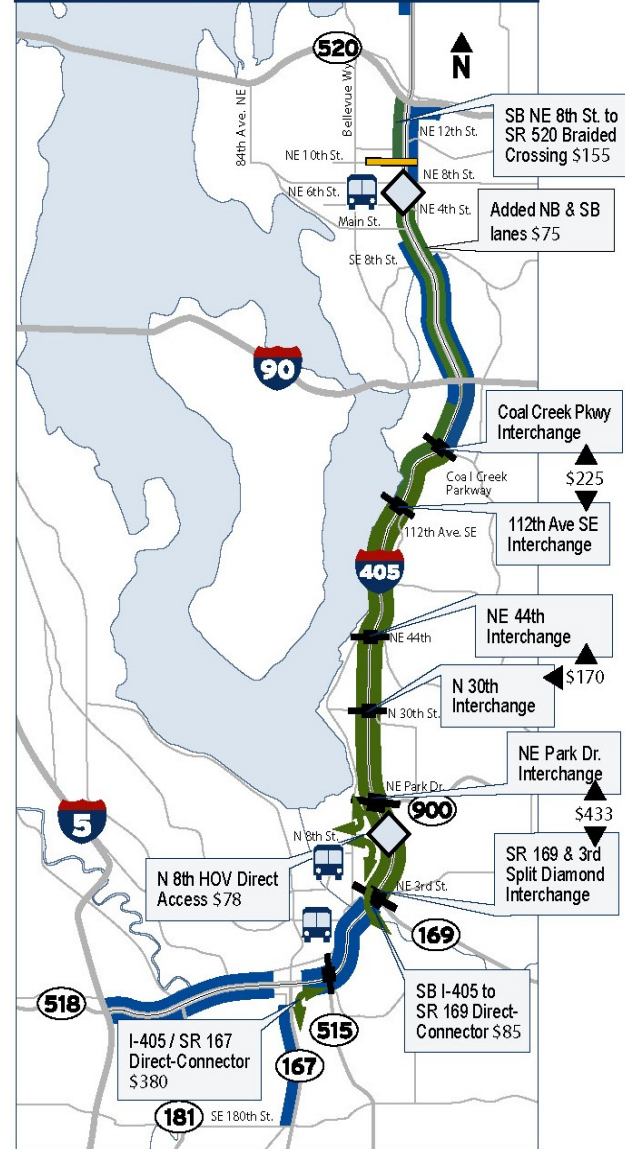
Renton Nickel Project Stage 2/SR
515 Interchange Spring 2008

Proposed I-405 RTID Investments

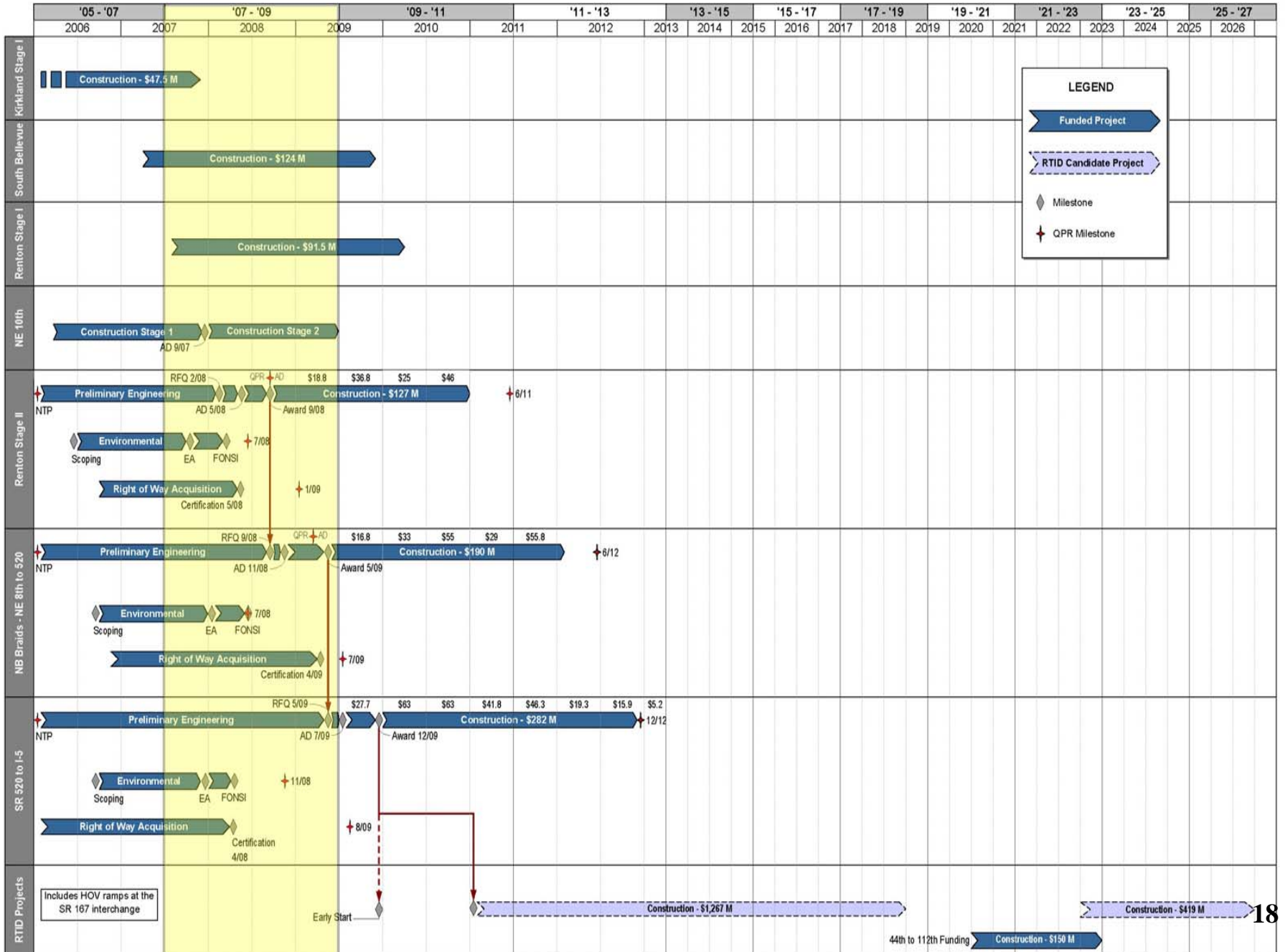
Funded Nickel plus TPA



Proposed I-405 RTID Projects



I-405 Project Schedules



LEGEND

- Funded Project
- RTID Candidate Project
- Milestone
- QPR Milestone

Active Traffic Management:

The Next Step in Congestion Management





Traffic Centre Hessen

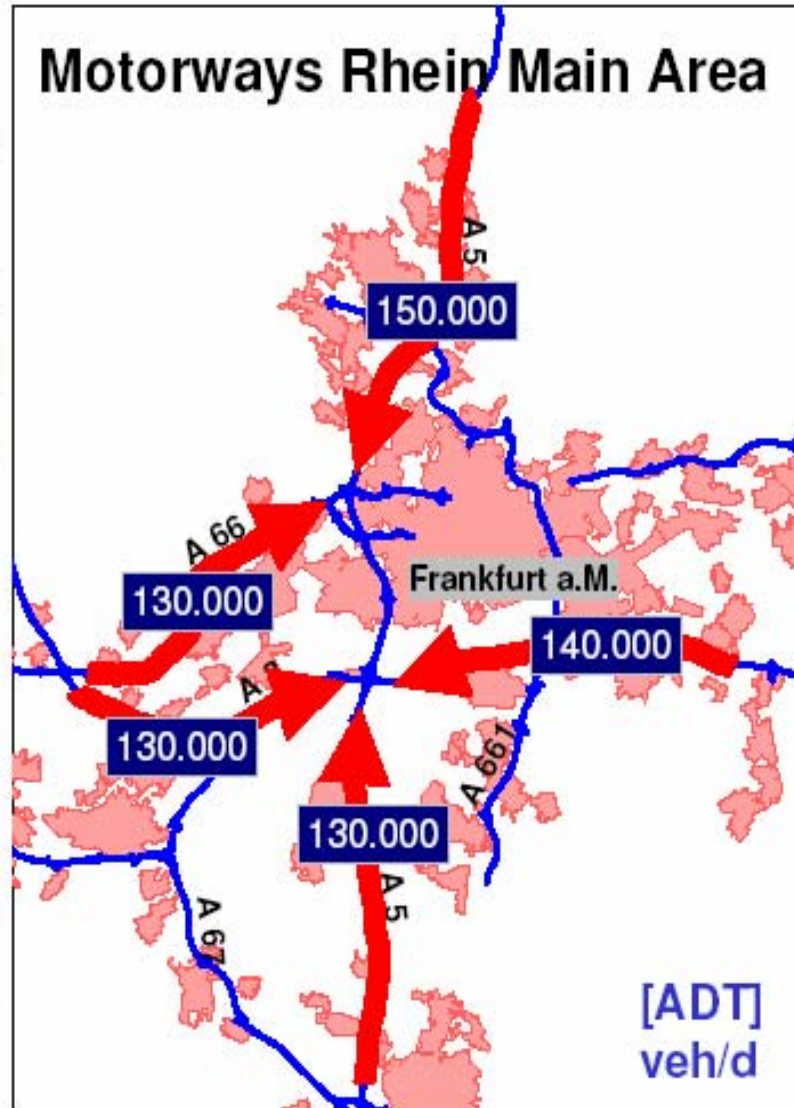




Accidents



Road Works



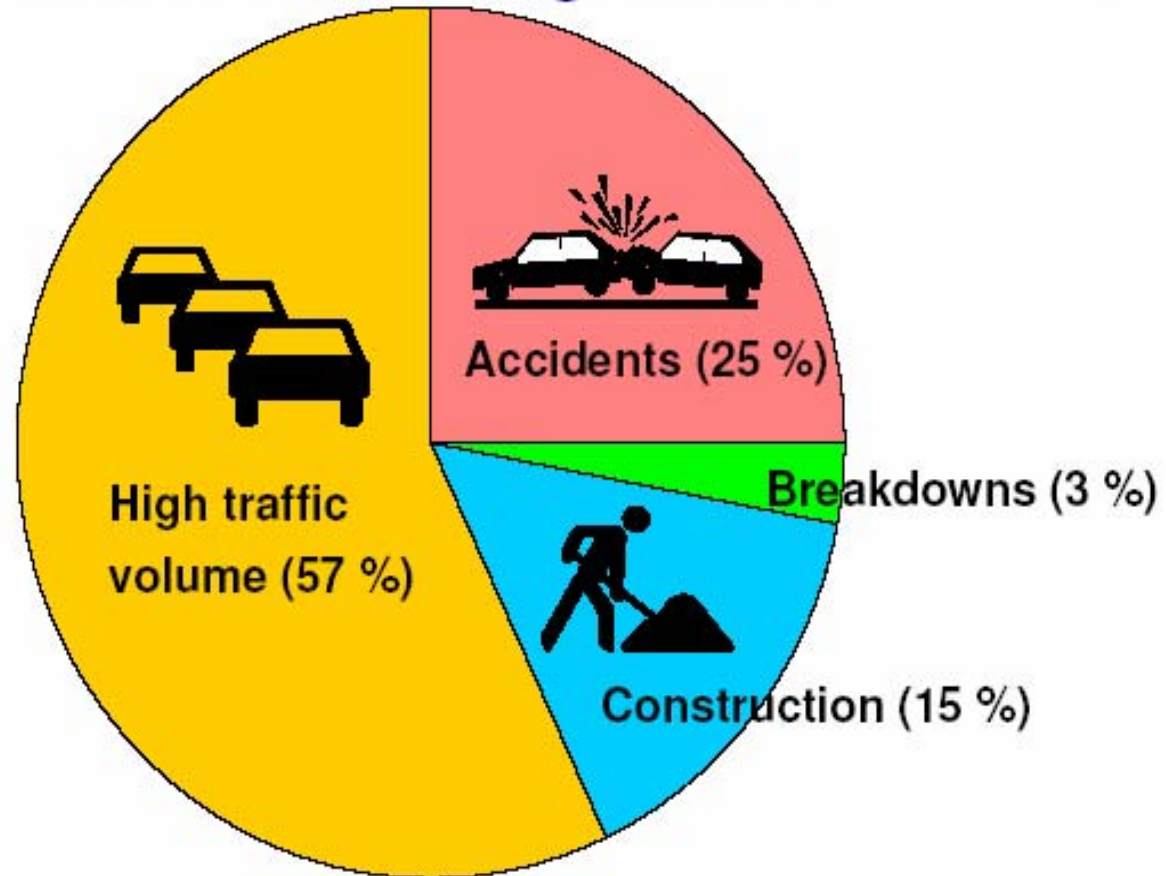
Events



Incidents

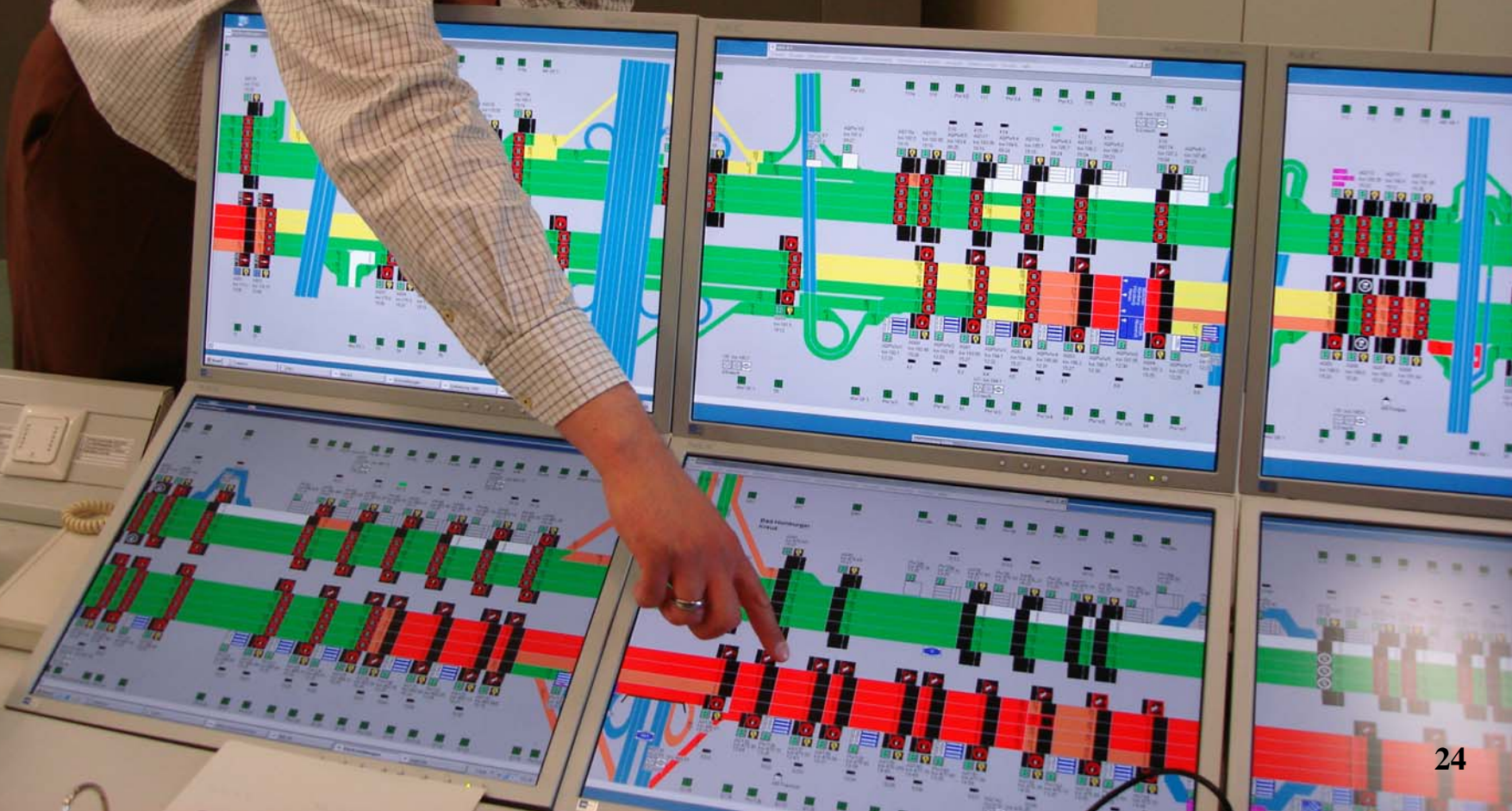


Sources of Congestion



Line Control System A5 Friedberg - Frankfurt





Temporary Use of Hard Shoulder



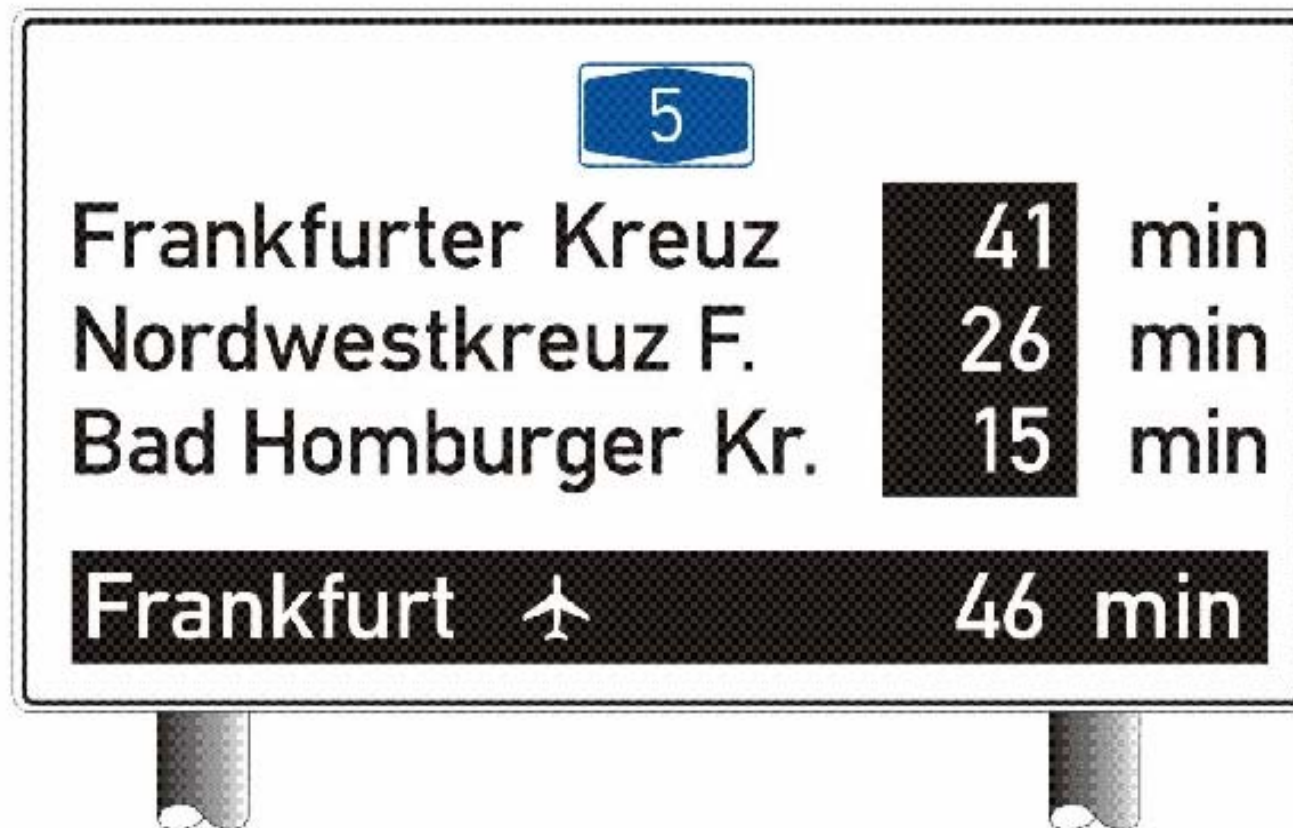


Variable Lane Signalization





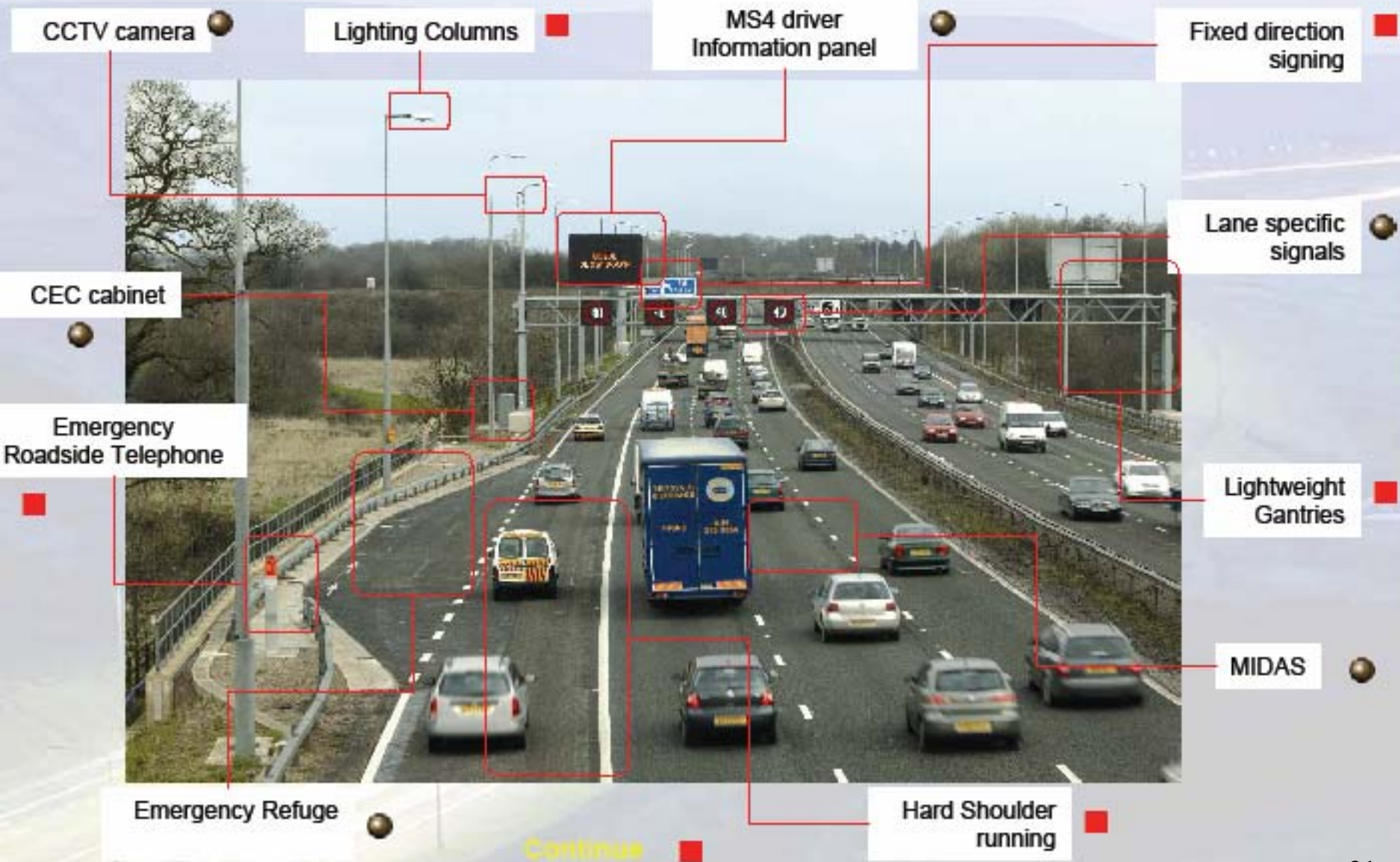
Estimated Travel Time Information





Benefits of Intelligent Traffic Management

- Reducing heavy damage accidents up to 30%
- Travel time reduction up to 20%
- Increasing line capacity up to 25 % at least temporarily
- High acceptance of variable traffic signs as long as the indicated speed limit seems to be reasonable
- Less disturbances through an optimal construction site management
- Less congestion in transferring traffic to alternate routes preventively



Continue



Early results of Hard Shoulder running

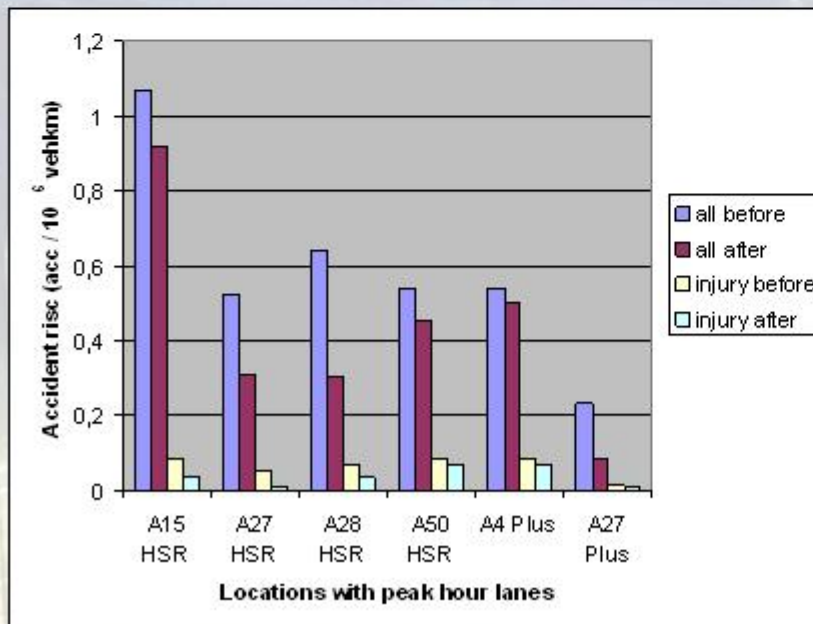
Very promising:

- Large reduction in delays / journey times
- Average journey time has improved by up to 30% in worst PM peak
- 13-15% of traffic is using the hard shoulder
- Fewer vehicles experience speeds of less than 45mph and 25mph
- Significantly reduced variability during weekdays



Other Indicators...

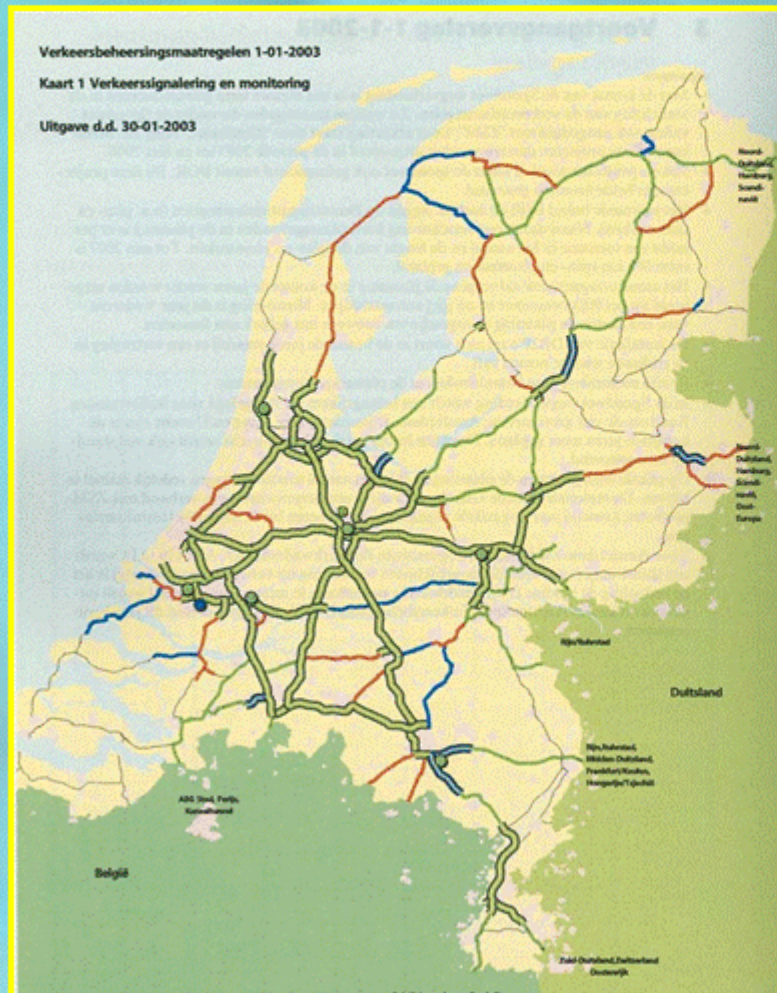
- Noise Reduction
- Speeds and Flows more even
- Too early to report on safety but the Dutch experience is positive



Last 3 years of safety data:

- 13% fewer accidents
- 19% less injuries
- 28% reduced accident risk
- 43% injury risk

Motorway Signalling Systems since 1981



| | |
|----------------|-----------------|
| Until 1993 | 242,1 km |
| 1994 | 6,2 km |
| 1995 | 63,1 km |
| 1996 | 116,0 km |
| 1997 | 190,8 km |
| 1998 | 174,4 km |
| 1999 | 167,8 km |
| 2000 | 22,9 km |
| 2001 | 0,0 km |
| 2002 | 2,0 km |
| 2003 | 12,0 km |
| 2004 | 0,0 km |
| Total | 997,3 km |
| Planned | 61,0 km |



70
km

70
km

PN 20

ALDI

38
4
M3 ↓

<18> NYBROVEJ 2 MIN
HELSINGØR MV 3 MIN

50

50



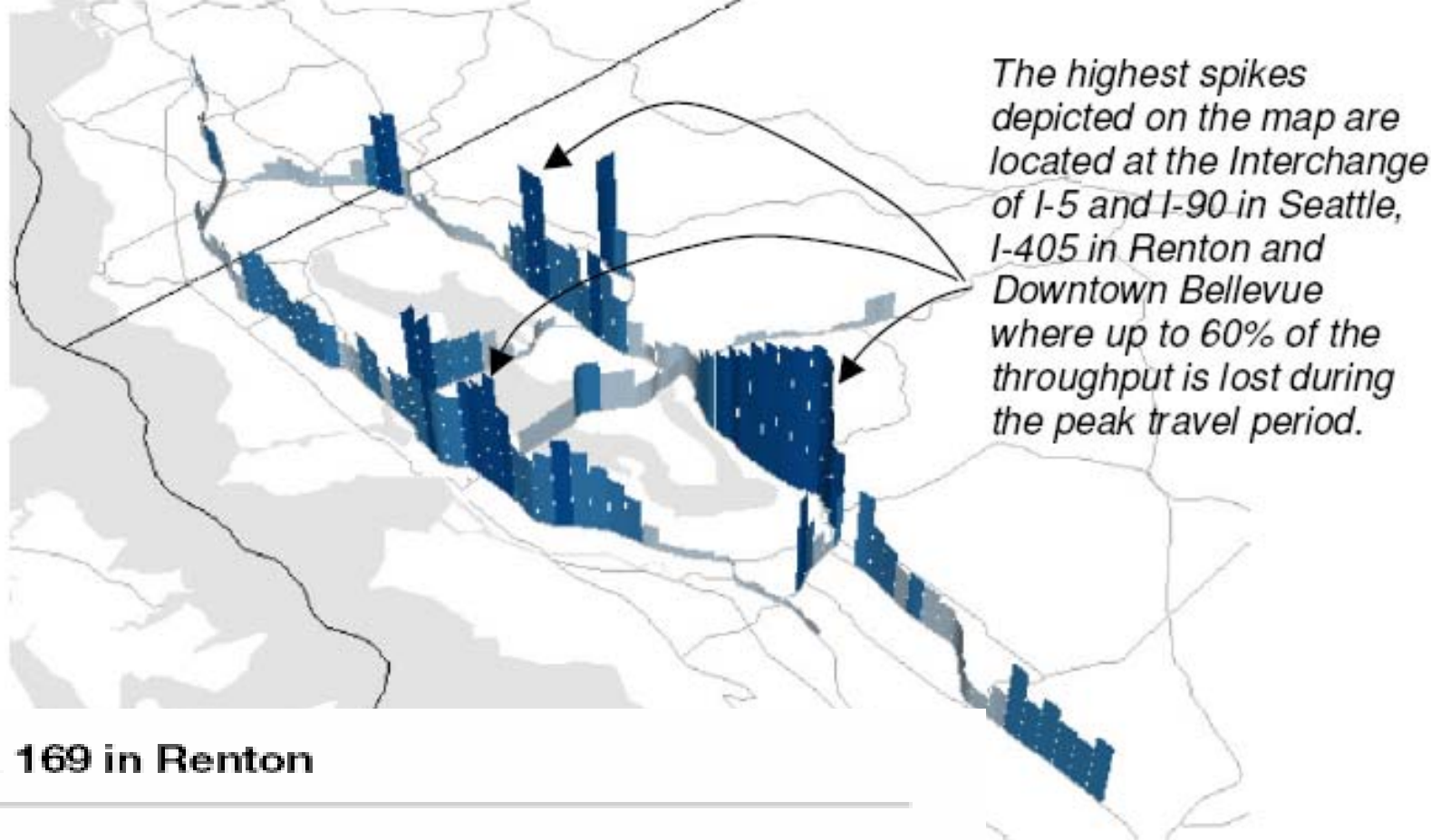
Overall Observations

The scan team originally went to look at managed lanes in Europe.....

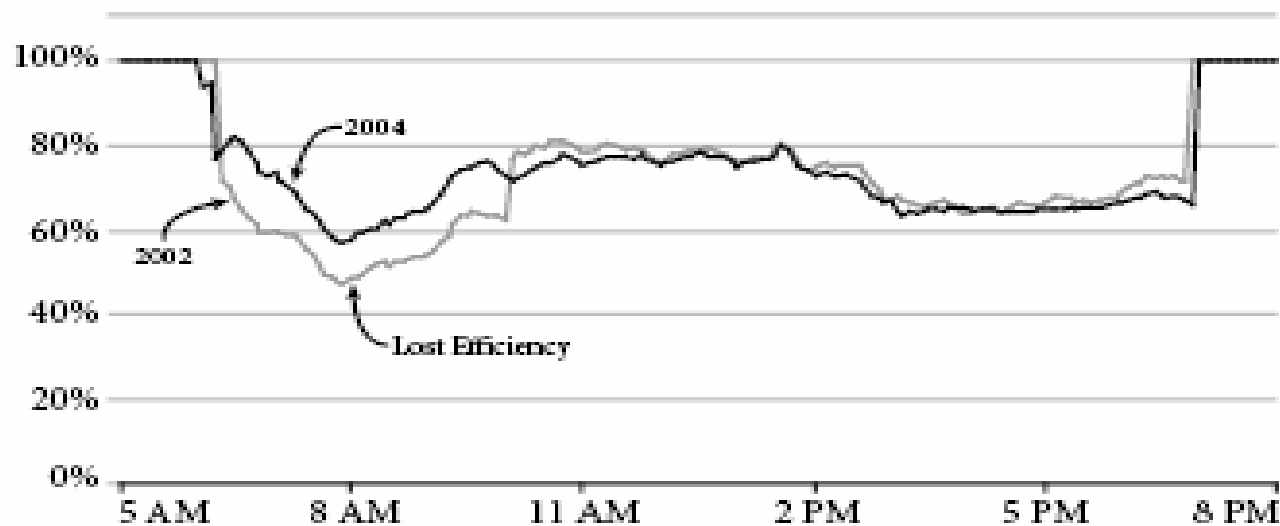
What we saw was a comprehensive, extensive, and customer-oriented approach to operating the system known as Active Traffic Management – something the US could learn from.

What do we know here in Washington State

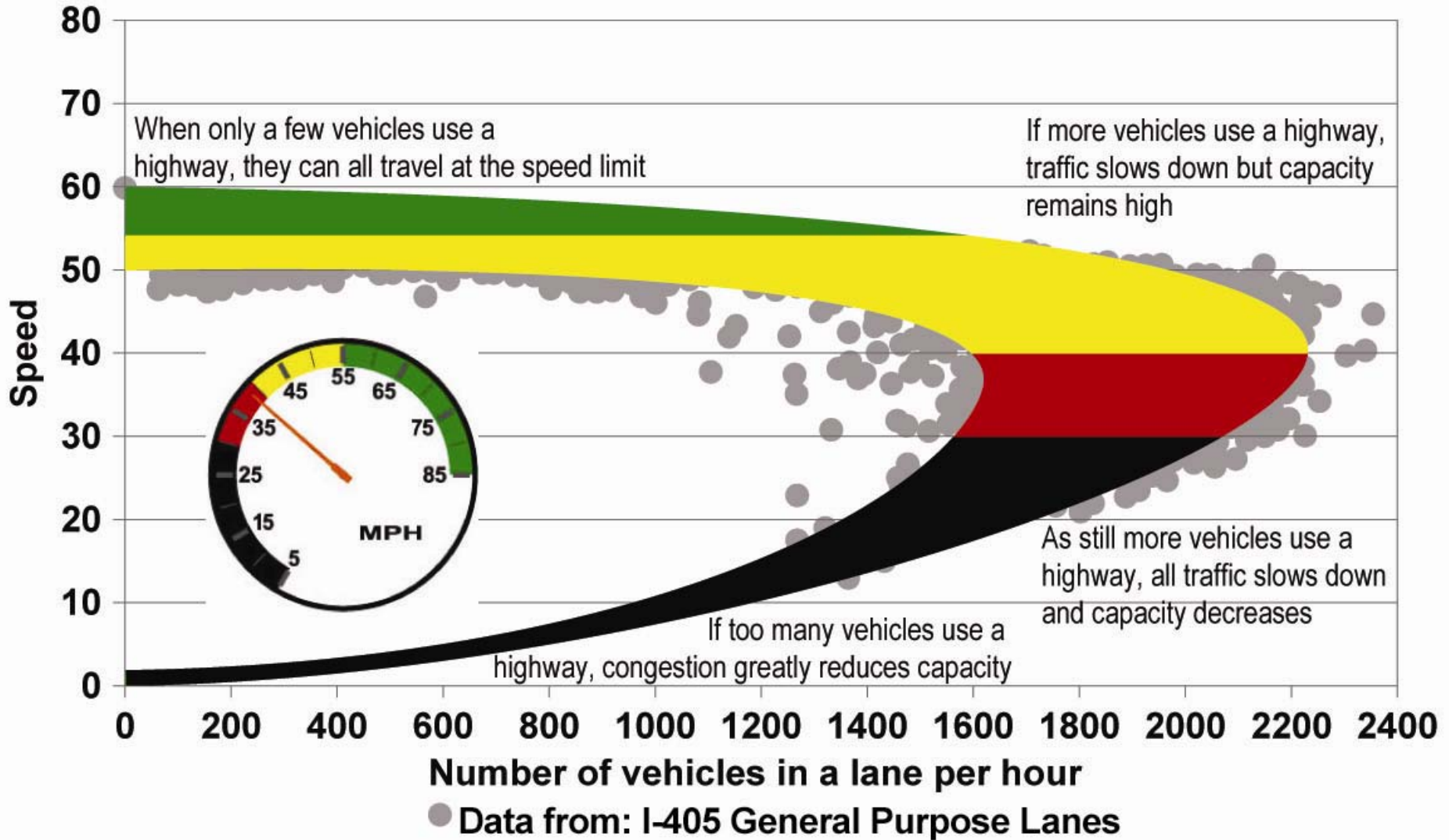
- We have the least performance from our roadway system when we need it the most
 - In some cases like on I-405, we lose half the capacity because of congestion
- Maximizing the efficiency of our corridors to move the most people and goods comes when freeway speeds are reliably maintained between 40 – 50 mph
- Our delay comes from recurrent and non-recurrent congestion similar to the European experience



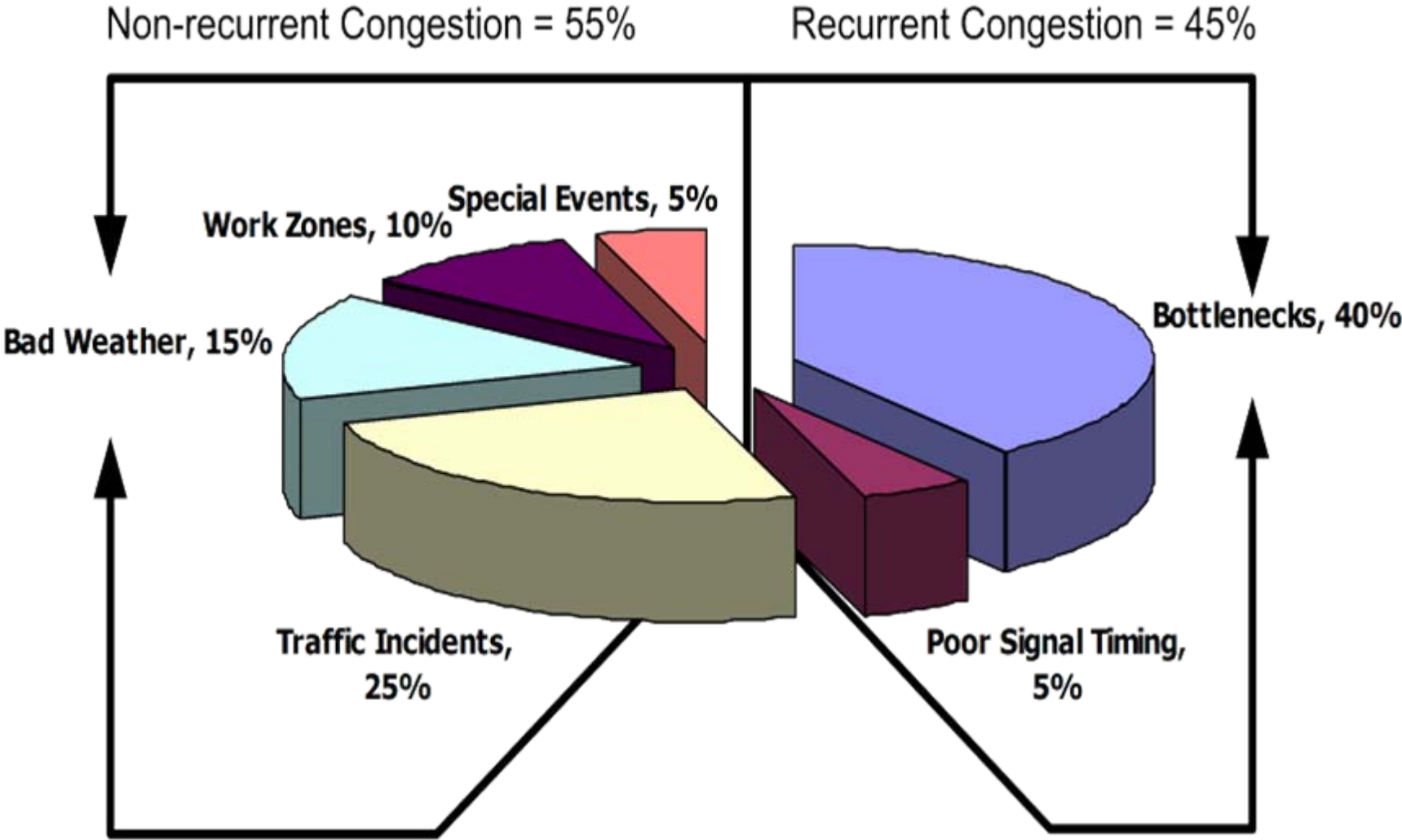
I-405 at SR 169 in Renton



Congestion Reduces Roadway Performance



Causes of Congestion



ATM Feasibility Study Purpose

Evaluation of major transportation corridors for best applications of active traffic management techniques observed in Europe to maximize capacity and increase safety of critical freeway corridors.

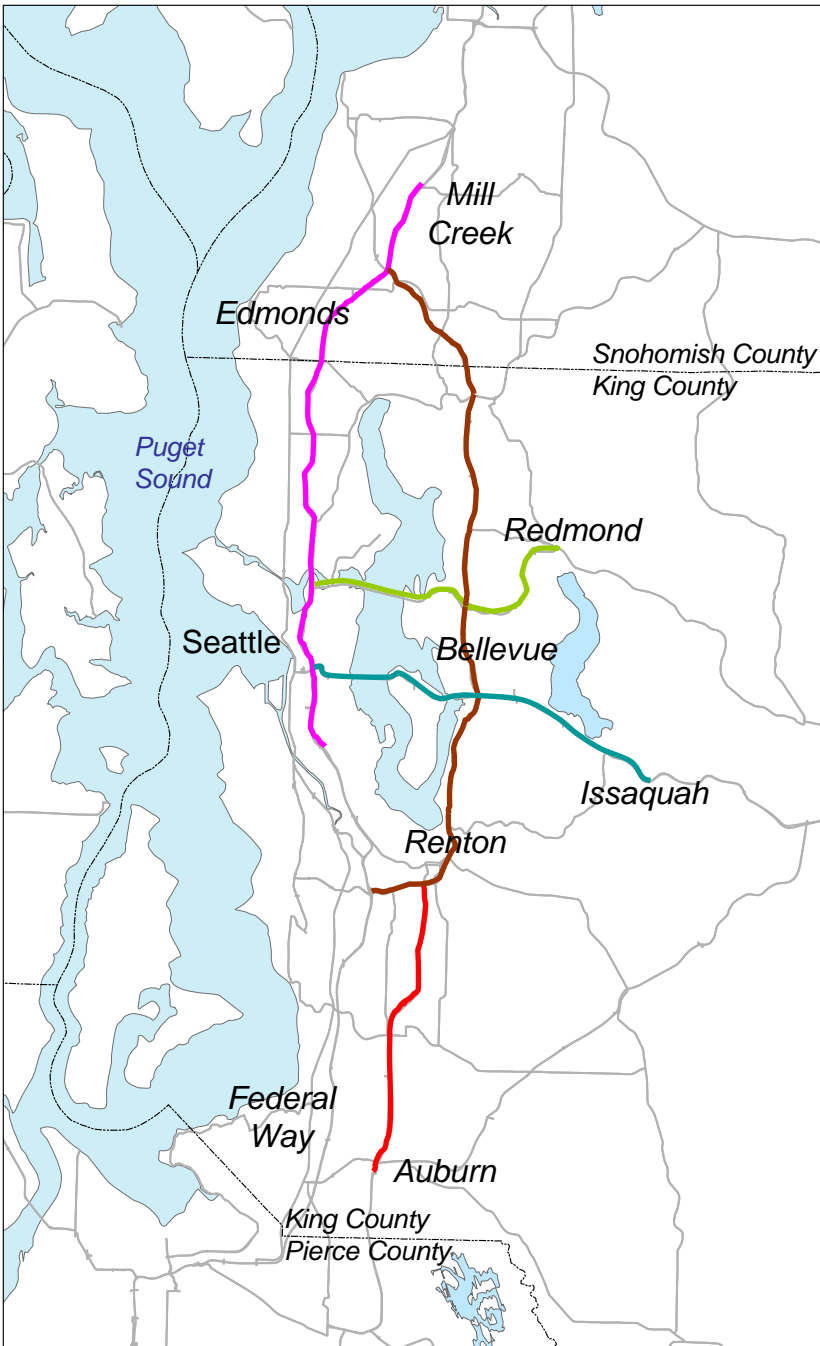
Interstate 405 / State Route 167 Corridor



Interstate 90 / State Route 520 Corridor



Interstate 5 / Alaskan Way Viaduct



ATM Feasibility Study Components

- Speed Harmonization
- Queue Warning
- Junction Control
- Hard Shoulder Running
- Construction Traffic Management
- Dynamic Re-routing
- Traveler Information
- Compatibility with HOT Lanes

ATM Key Study Findings

- Initial findings are positive, particularly regarding collision reduction.
- Coordinated system of location specific ATM techniques is key.
- Potential for implementation I-405, SR 520 (UPA), I-5/SR 99 Alaskan Way Viaduct.
- Provide information to political decision makers, policy makers and the public.

I-405 Express Toll Lanes Option



History of Managed Lanes on I-405

Corridor EIS, completed in 2002:

- Program committees recommended further consideration of managed lanes after more detailed study and policy considerations. They considered pricing a regional issue
- Include a 4-foot buffer to separate the managed lanes

Managed Lane Technical Analysis, 2003:

- Based on \$4.8B Implementation Plan
- Showed performance benefit to merit future consideration
- Briefings provided to I-405 Executive Committee

Senate Bill 6091, passed in 2005:

Section 606. The legislature intends that tolls be charged to offset or partially offset the costs for the Alaskan Way Viaduct, State Route 520 Bridge replacement and **widening of Interstate 405 including a managed lanes concept.**

HOT Lane Investment Analysis, 2006:

- Evaluated HOT Lanes application between SR 520 and I-5
- Study results showed merit
- Environmental review began in 2006, including the analysis of a HOT Lanes option

Senate Bill 1094, passed in 2007:

Section 605. The legislature intends that tolls be charged to offset or partially offset the costs for the following projects, and that **a managed lane concept be applied in their design and implementation:** State Route 520 Bridge replacement and HOV project, and widening of Interstate 405.

Managed Lane Technical Analysis

- What did we study...



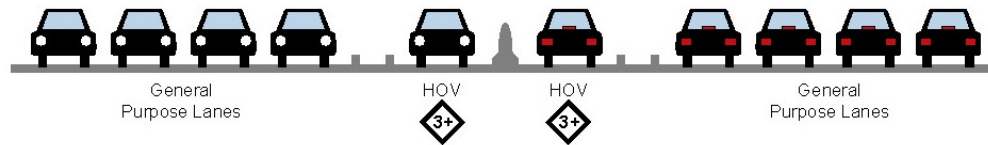
I-405 Operational Options

Existing (southend of corridor):

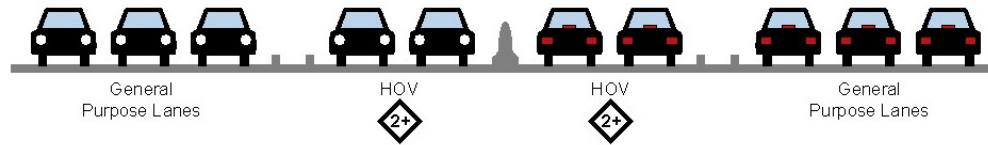


WSDOT evaluated four options for the two new lanes:

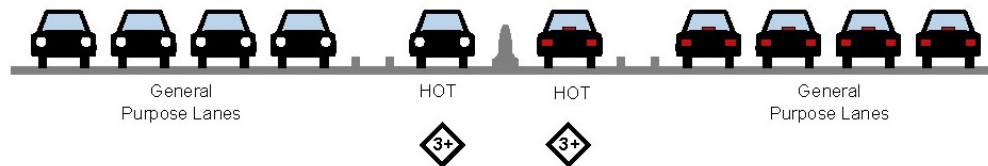
1 1 HOV
4 GP



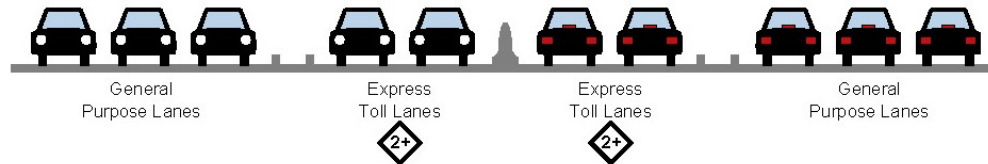
2 2 HOV
3 GP



3 1 HOT
4 GP



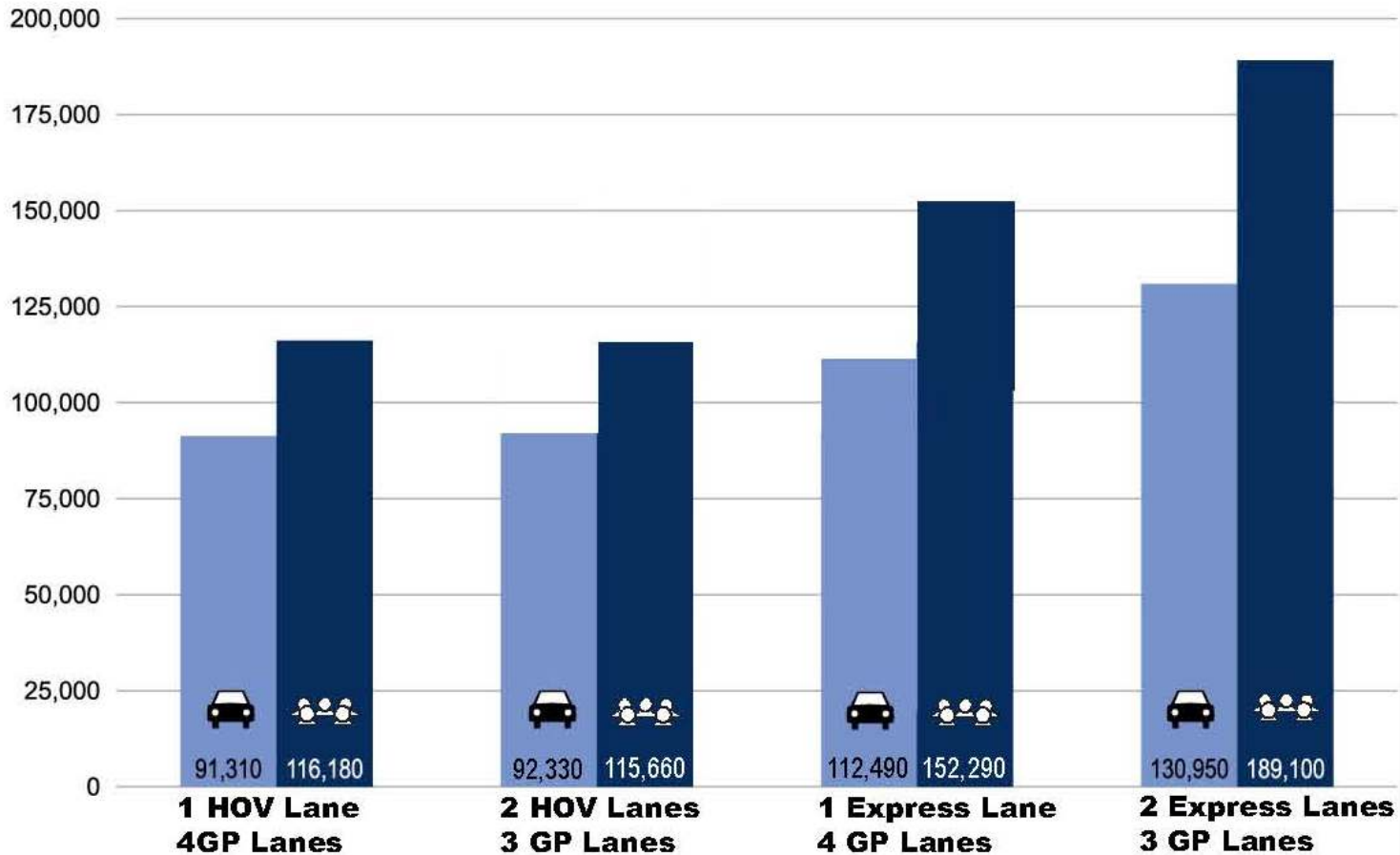
4 2 Express
Toll Lanes
3 GP



I-405 Performance

How would Express Toll Lanes work corridor-wide?

2014 Morning and Afternoon Service



HOV=High-Occupancy Vehicle Lanes

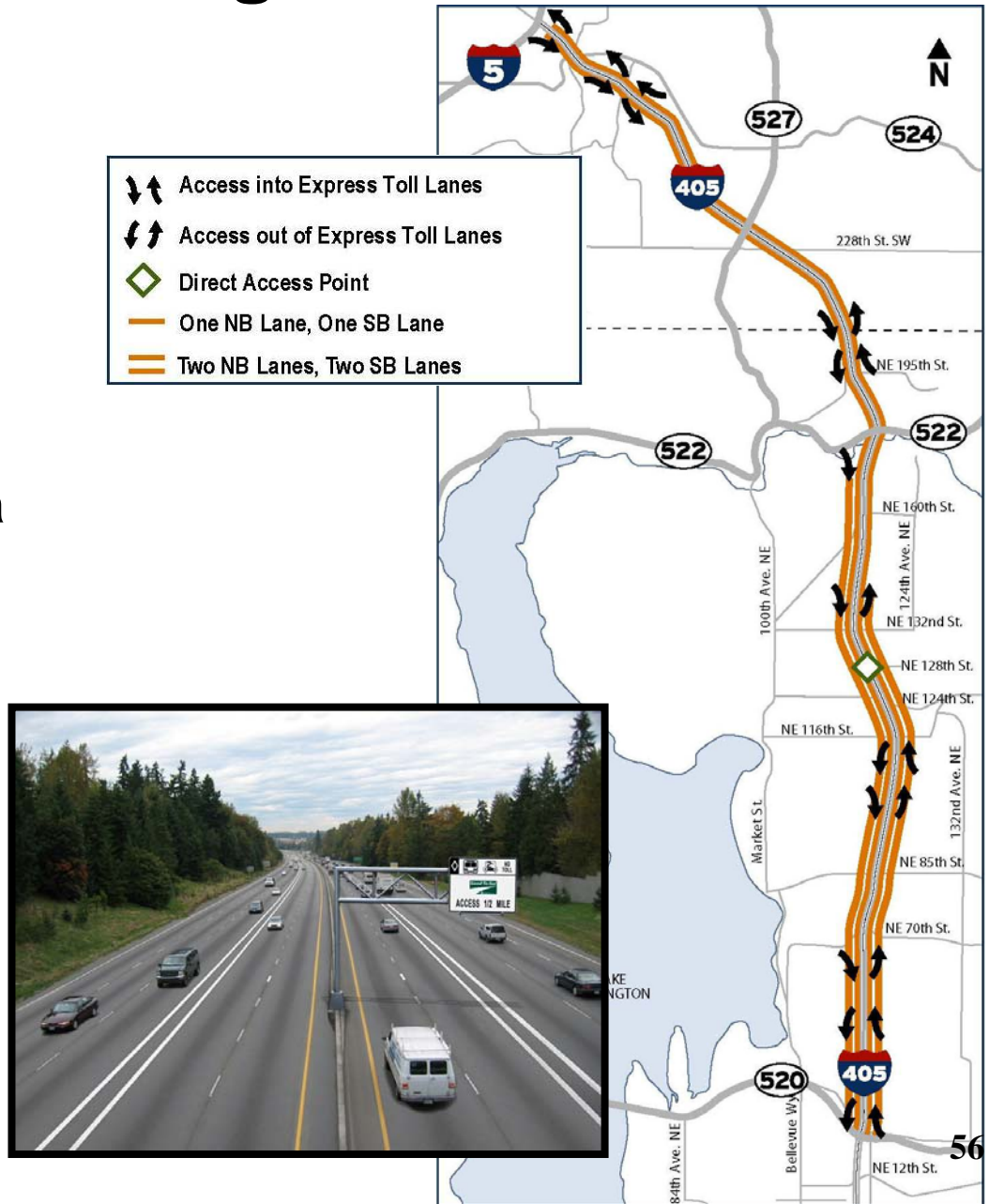
 Vehicles

 Persons

GP=General Purpose Lanes

Express Toll Lanes being Evaluated in Kirkland

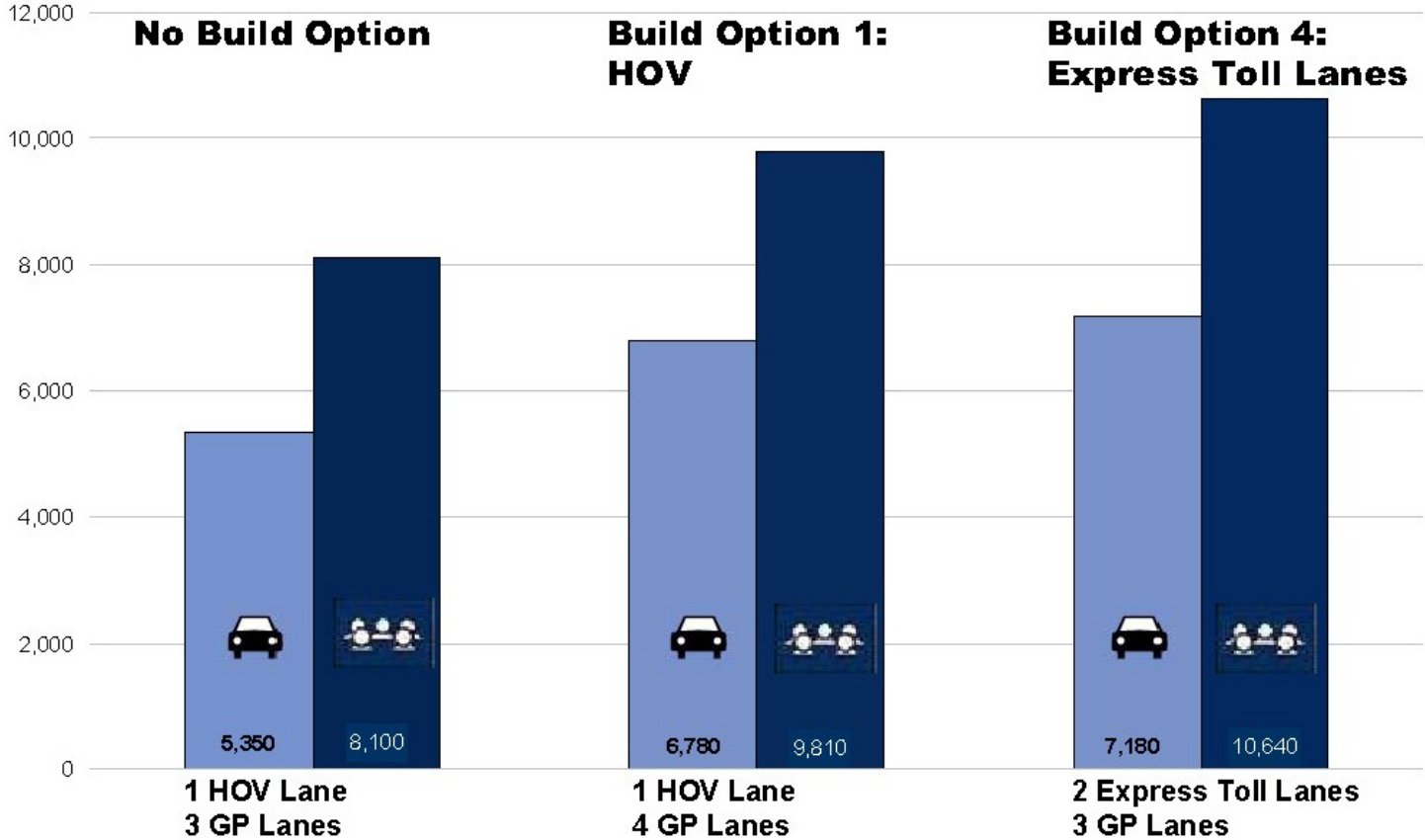
- Two options being evaluated to operate new capacity:
 - Add general purpose capacity and operate existing HOV lane with a 3+ occupancy requirement
 - Add new capacity in combination with converting HOV lane to operate express toll lanes system



Performance in Kirkland

How would Express Toll Lanes work in Kirkland?

2014 Afternoon Peak Hour Service



HOV=High Occupancy Vehicle Lanes



GP= General Purpose Lanes

Timing of Decisions for I-405

2008

- Window of opportunity
- Project stays on schedule
- Most efficient contracting

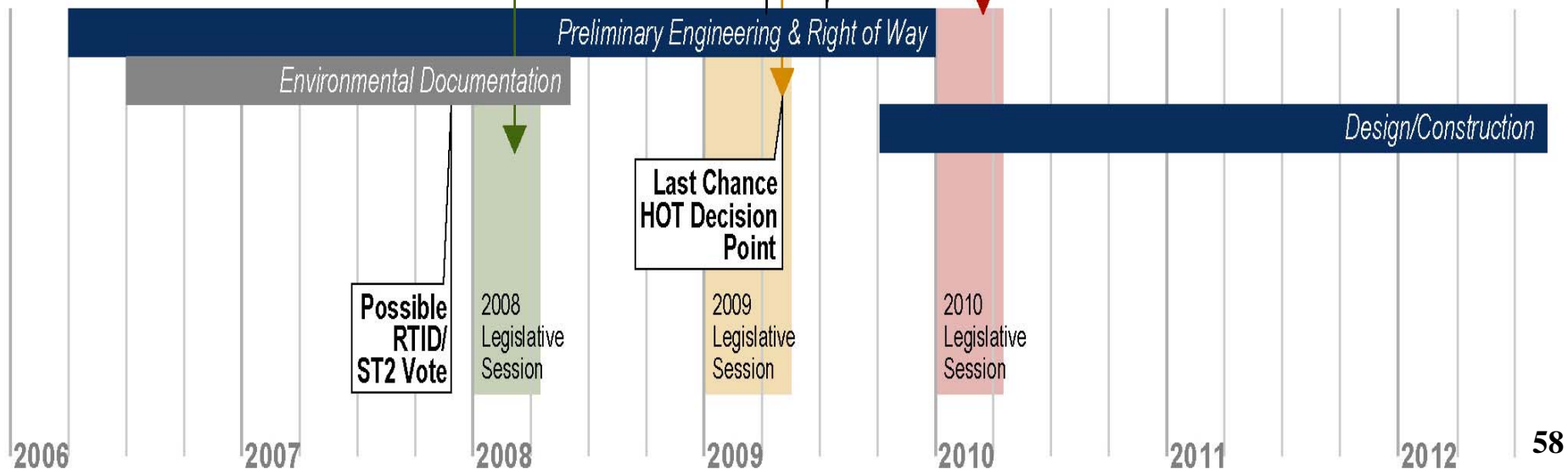
2009

- High risk for cost and schedule increases
- Contracting challenges
- Public information challenges

2010, or later

- Significant risk of cost increases and schedule delays
- High risk of losing HOT lanes opportunity

I-405/SR 520 to I-5 Widening



System-wide Corridor Improvements

- Building the infrastructure to support a multimodal, regional transportation system
- Working to get the best productivity from our transportation system
- Continuing to evaluate innovative traffic management concepts



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