

# Columbia River **CROSSING**

## **Welcome and Announcements**

CRC Task Force

November 29, 2006



# Columbia River **CROSSING**

## Public Comment

CRC Task Force

November 29, 2006



# Columbia River **CROSSING**

## Major Trends and Traffic Performance

CRC Task Force

November 29, 2006

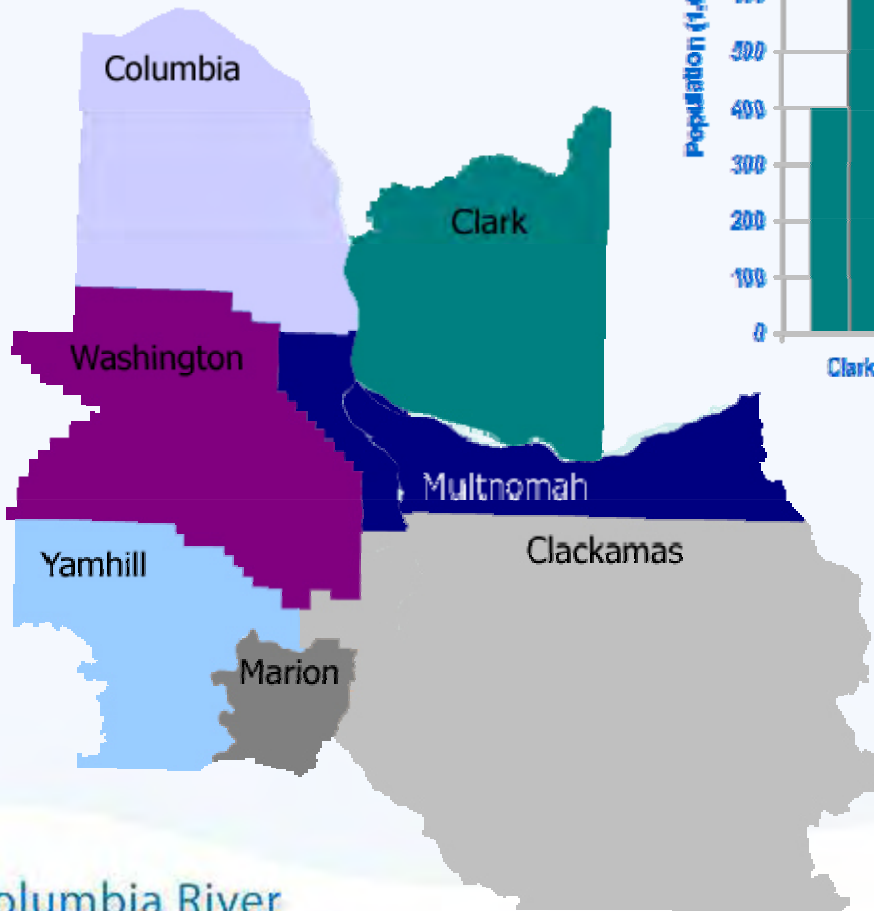
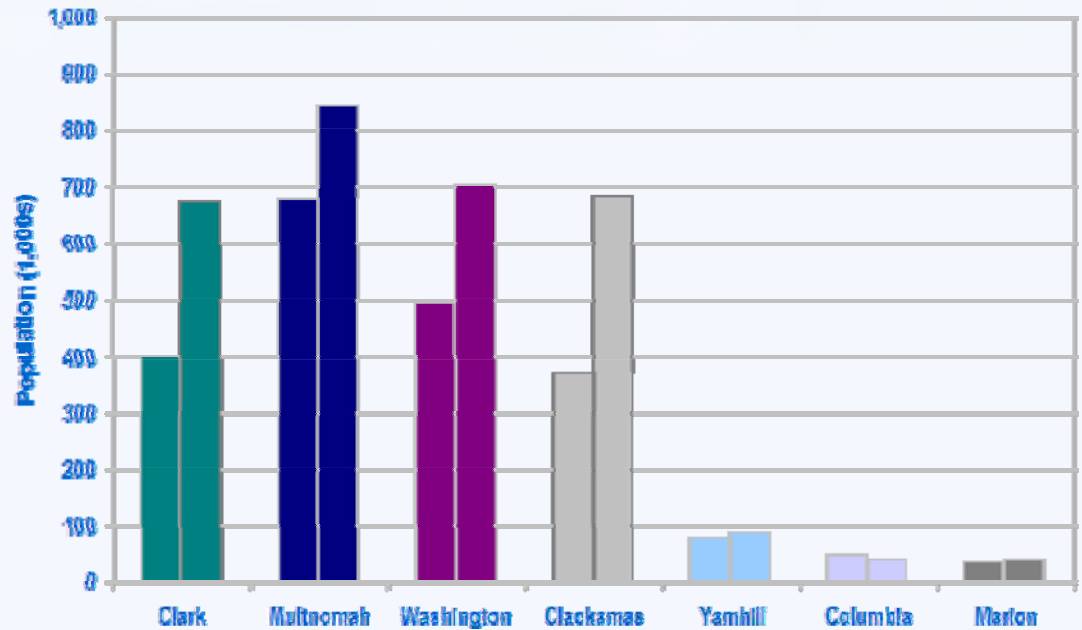


# Major Trends

- Population
- Employment
- Historic traffic growth
- Trip origins and destinations using Interstate Bridge

# Population Growth

2005 & 2030

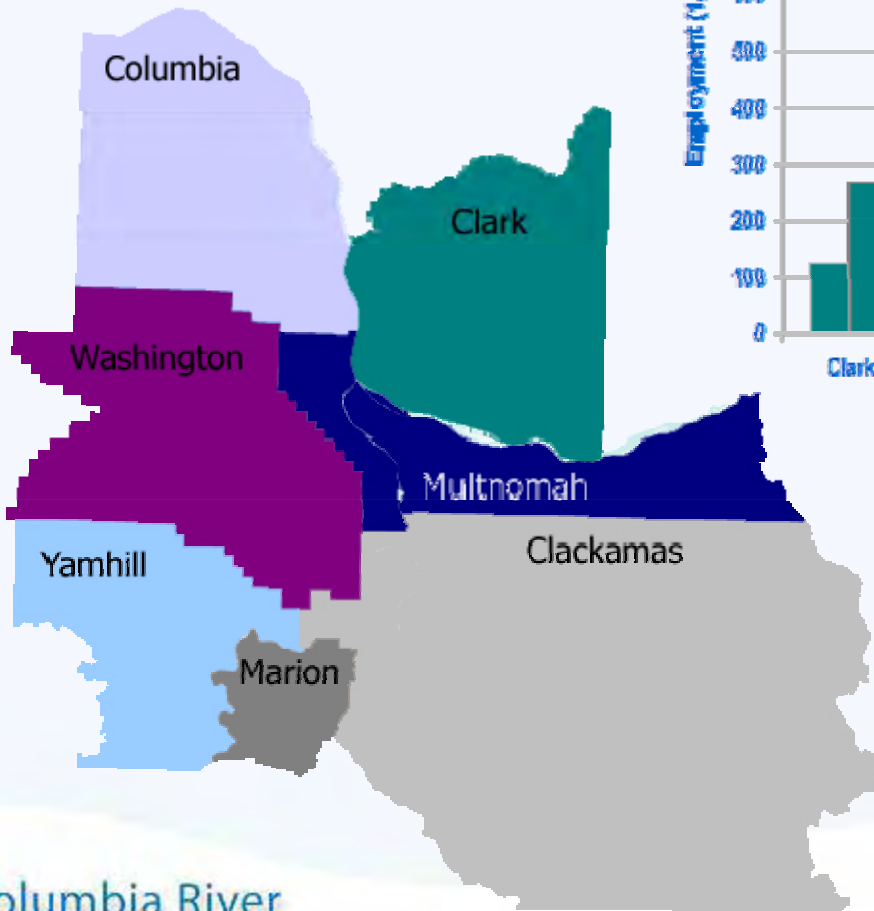
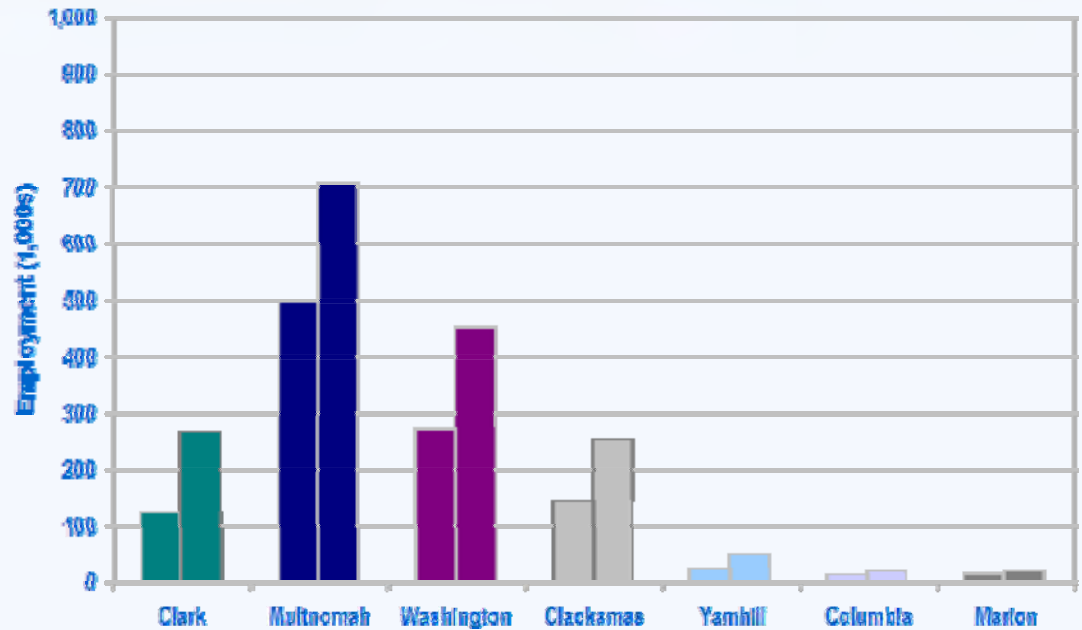


## 7-County Population

- 2005 = 2,100,000
- 2030 = 3,070,000

# Employment Growth

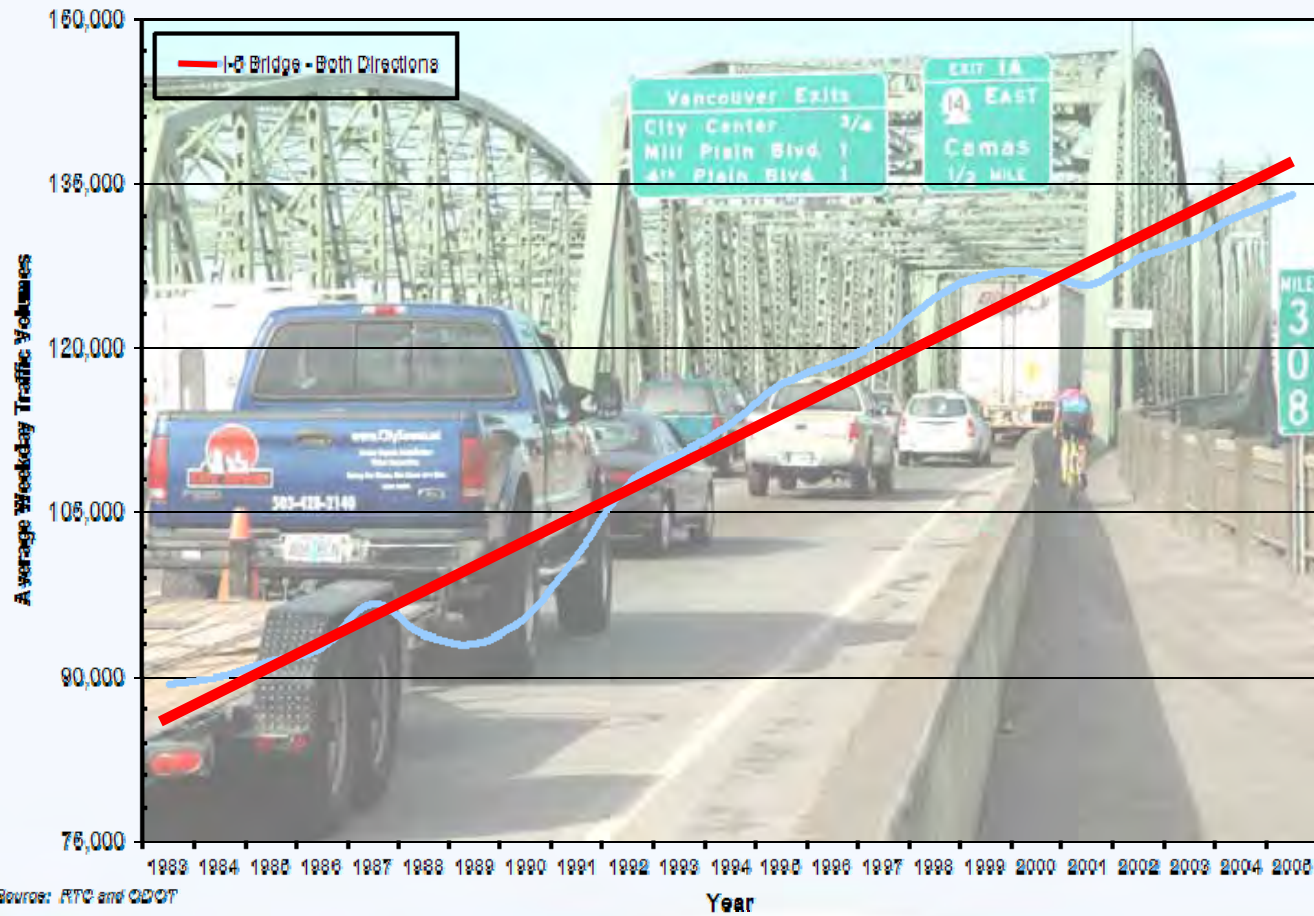
2005 & 2030

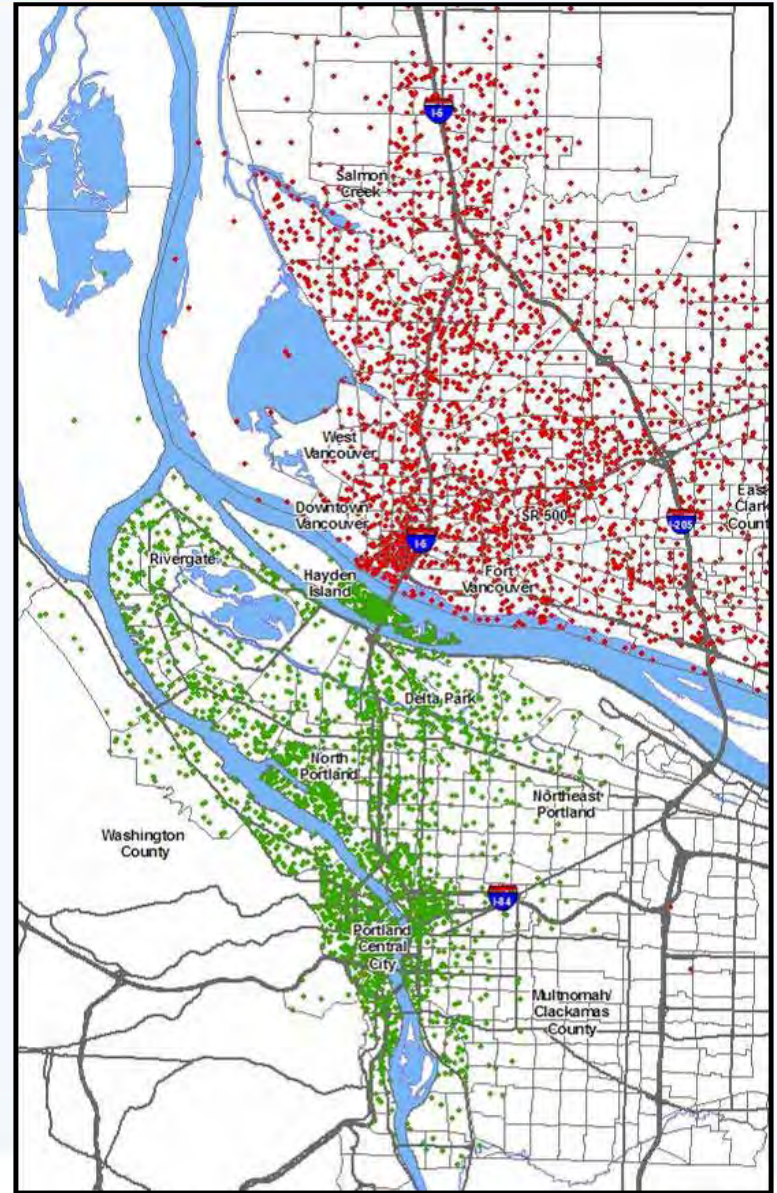
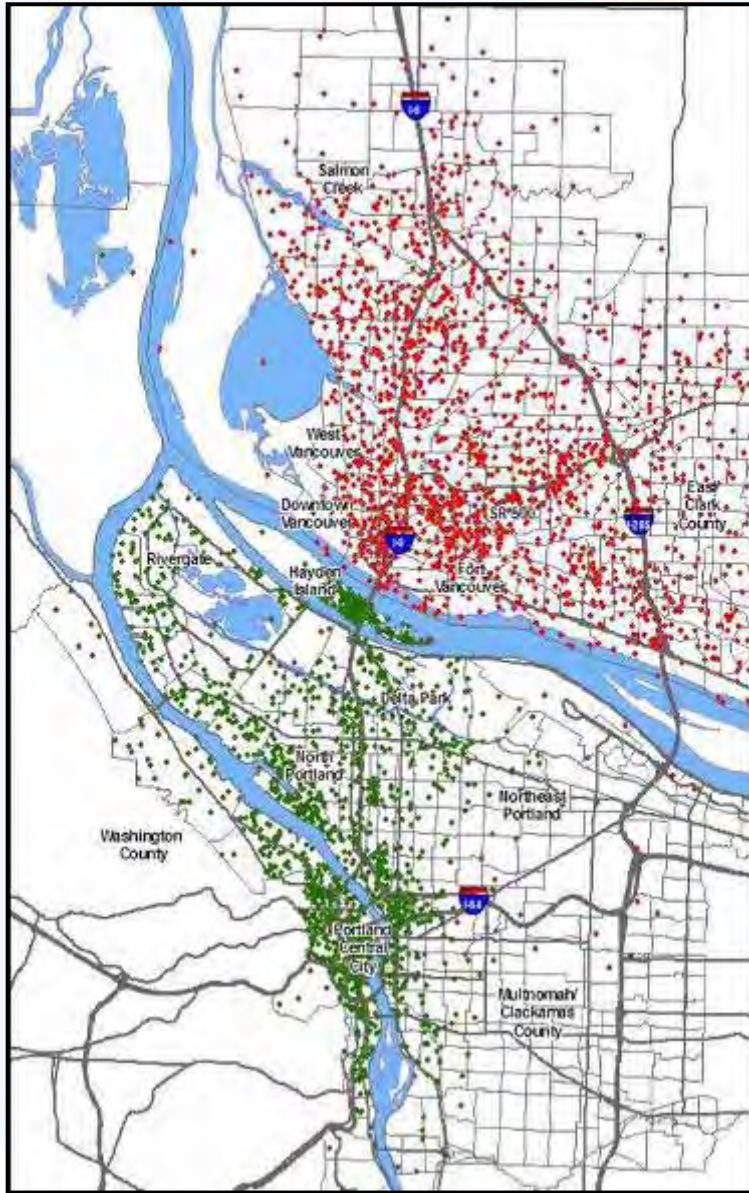


## 7-County Employment

- 2005 = 1,080,000
- 2030 = 1,760,000

# I-5 Traffic Growth at Interstate Bridge







# Alternative Packages

- No-Build (1)
- TDM/TSM (2)
- New Arterial bridge (3)
- Supplemental Interstate bridge (4-7)
- Replacement Interstate bridge (8-12)

\* All alternative packages, except No-Build, include aggressive TDM/TSM strategies

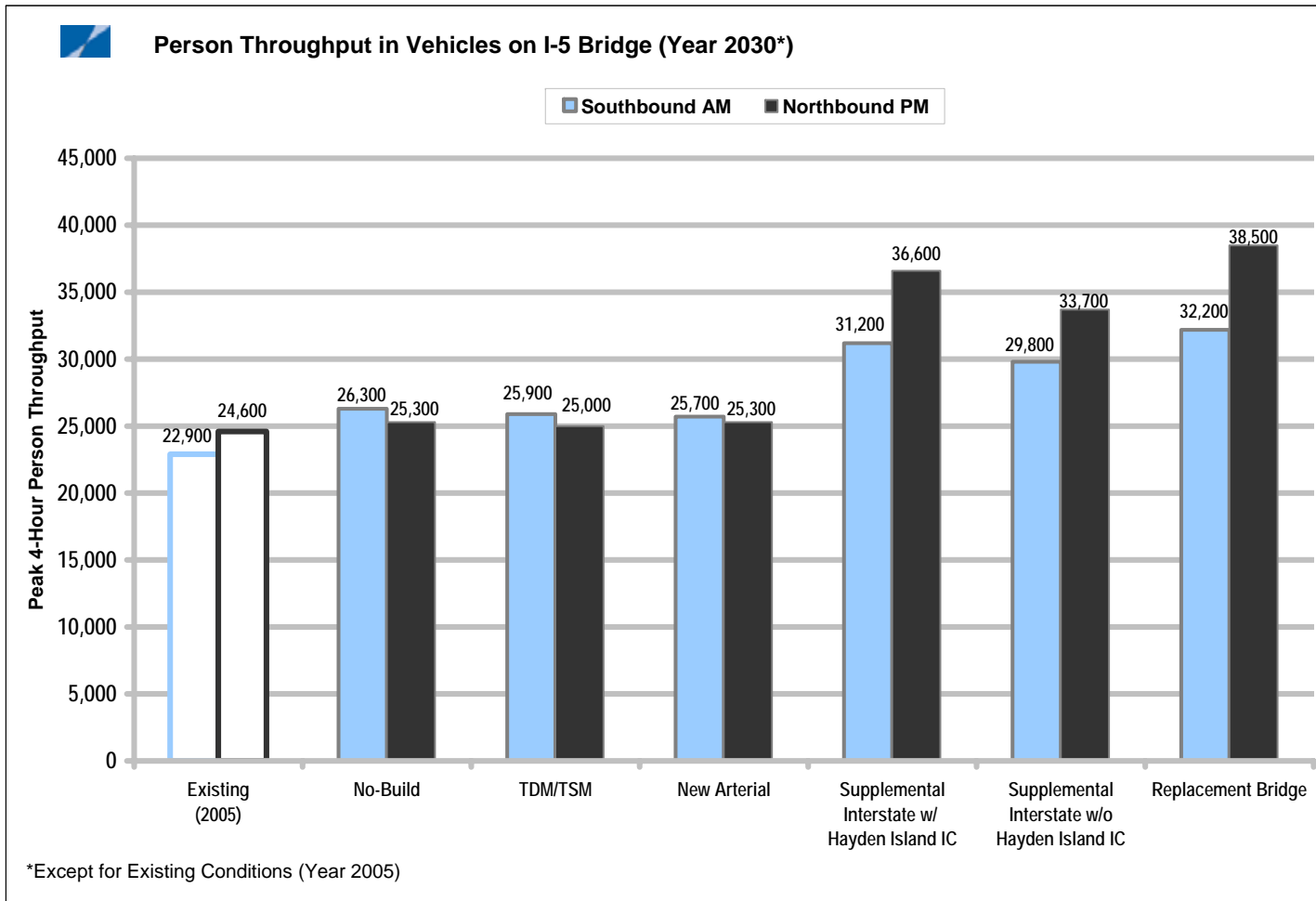
# Criteria Related to Traffic Performance

- Person throughput
- Vehicle throughput
- Truck throughput
- Traffic congestion
- Safety and collisions

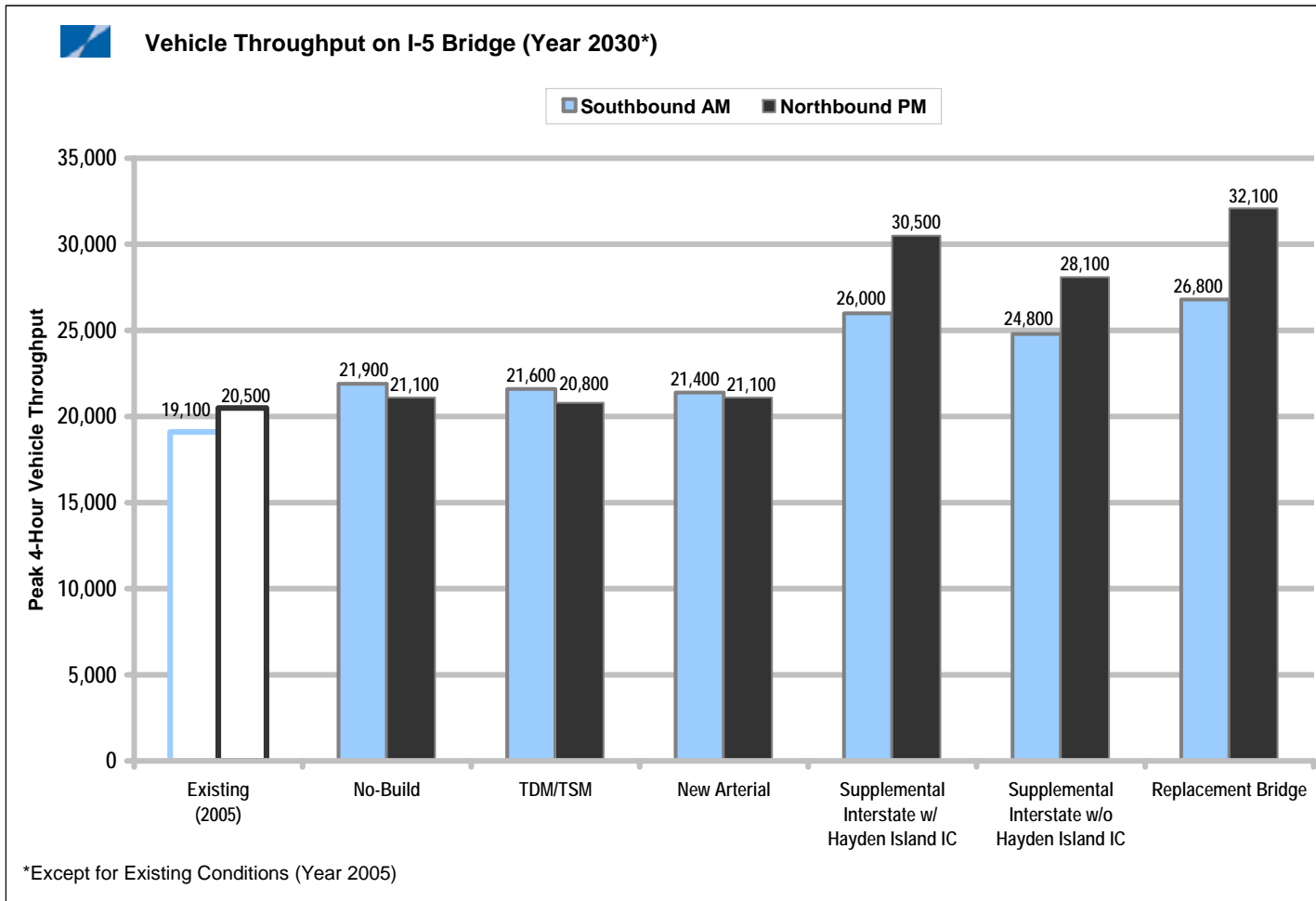
# Traffic Performance

- Results for Supplemental and Replacement bridge alternatives (4-12) based upon 10 lanes for Interstate traffic
- Additional auxiliary lanes to be tested for operational and safety considerations
- 68% to 75% of all I-5 river crossing traffic enters and/or exits a ramp within the 5-mile Bridge Influence Area

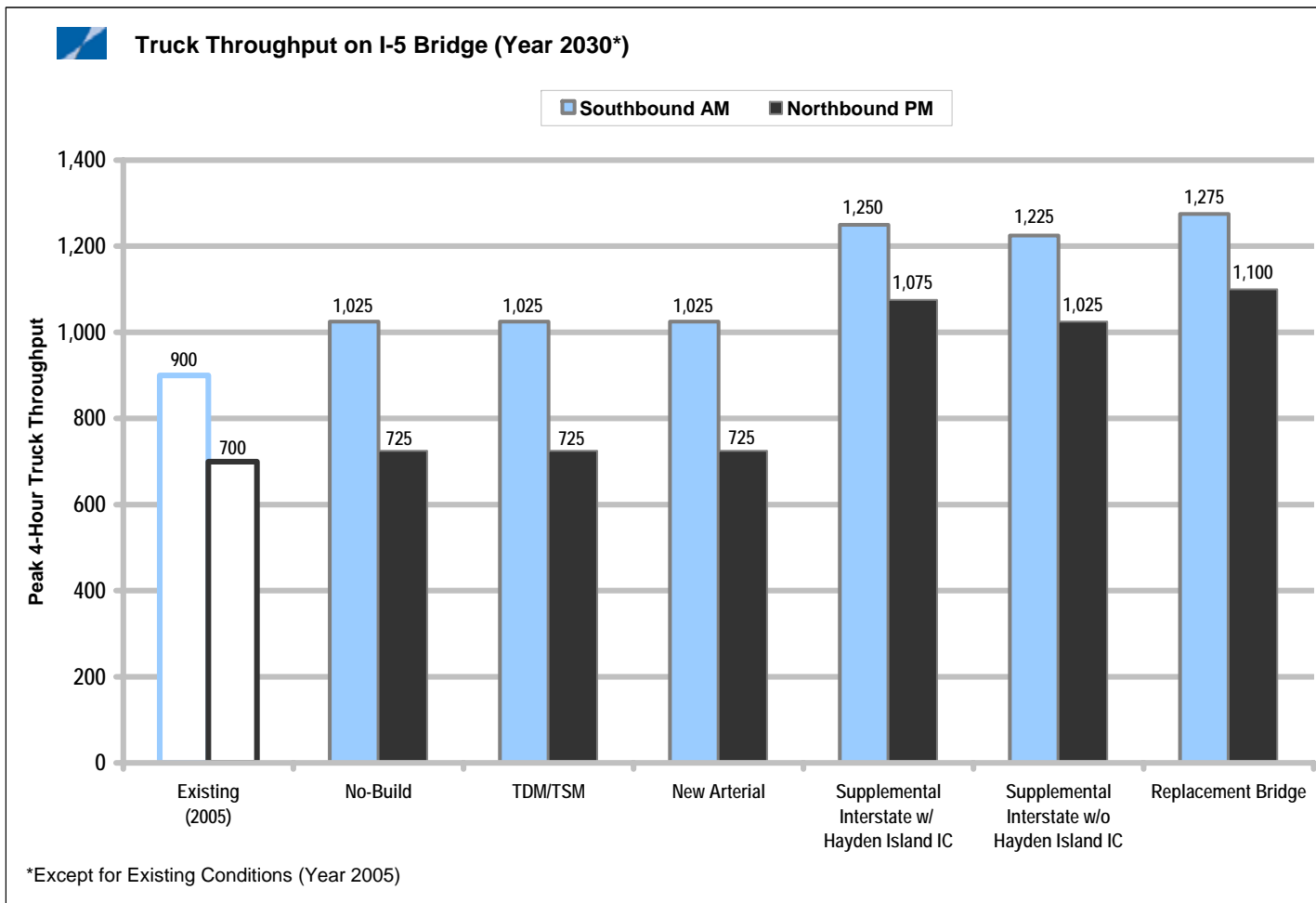
# Person Throughput



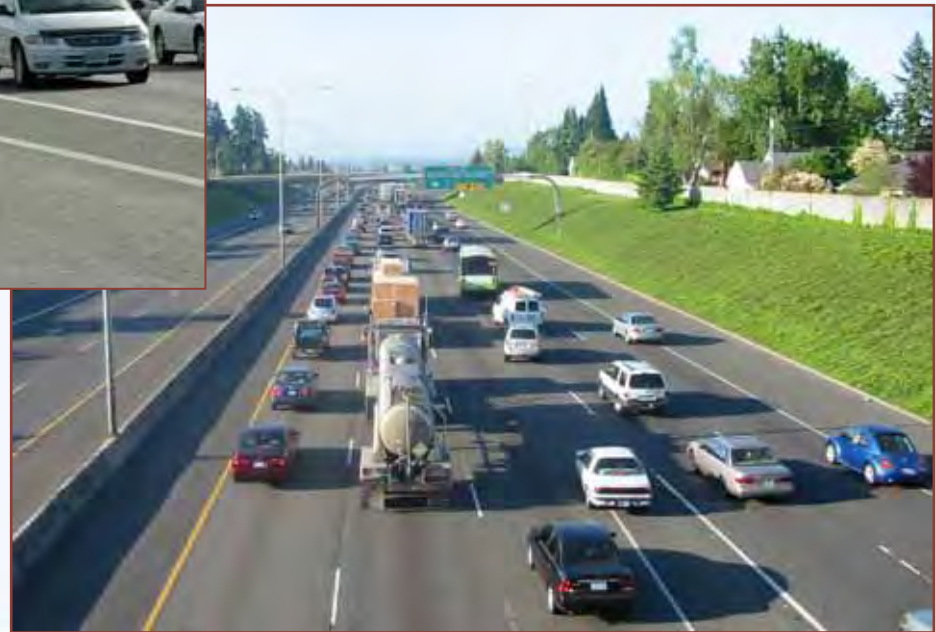
# Vehicle Throughput



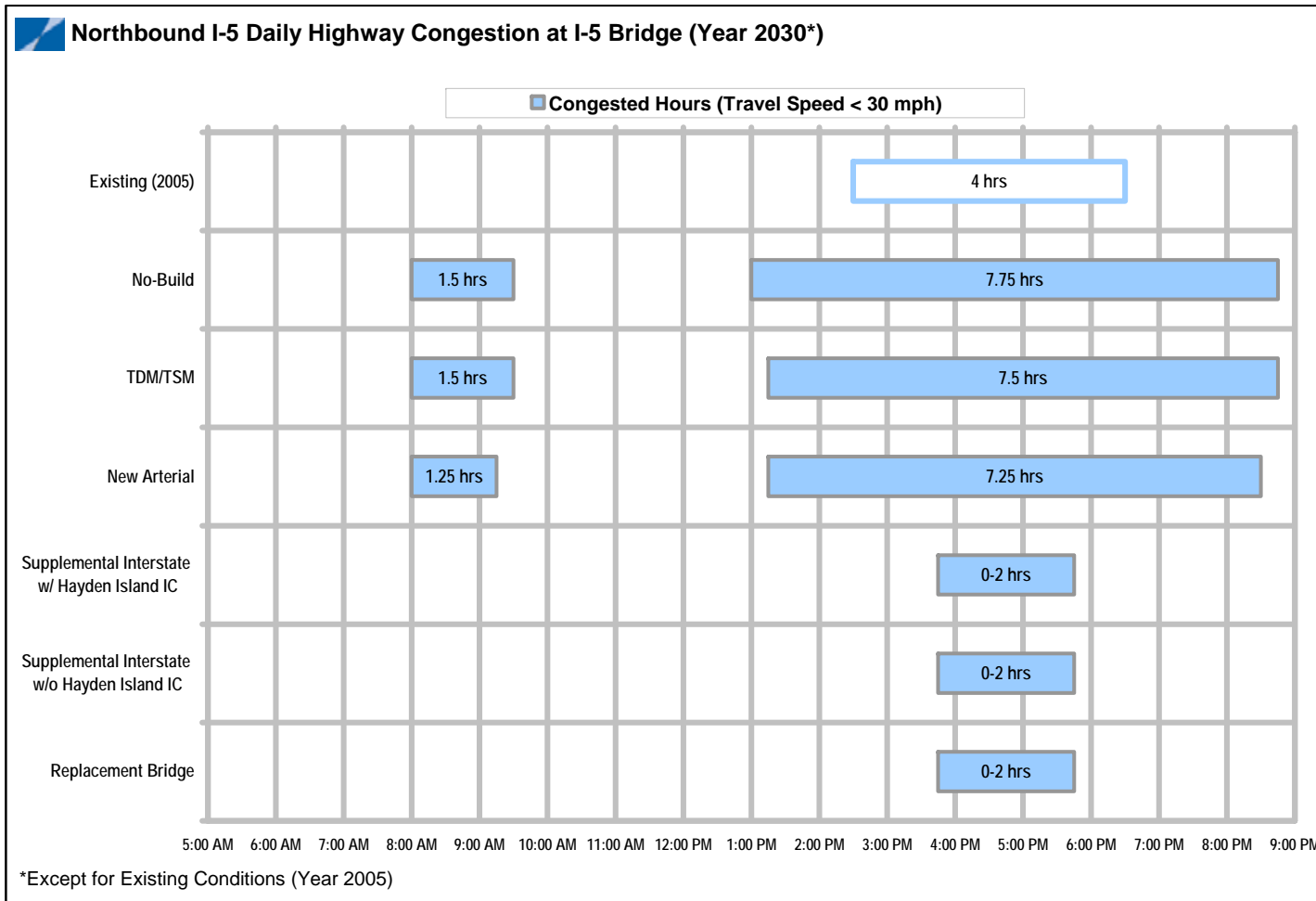
# Truck Throughput



# Duration of Congestion

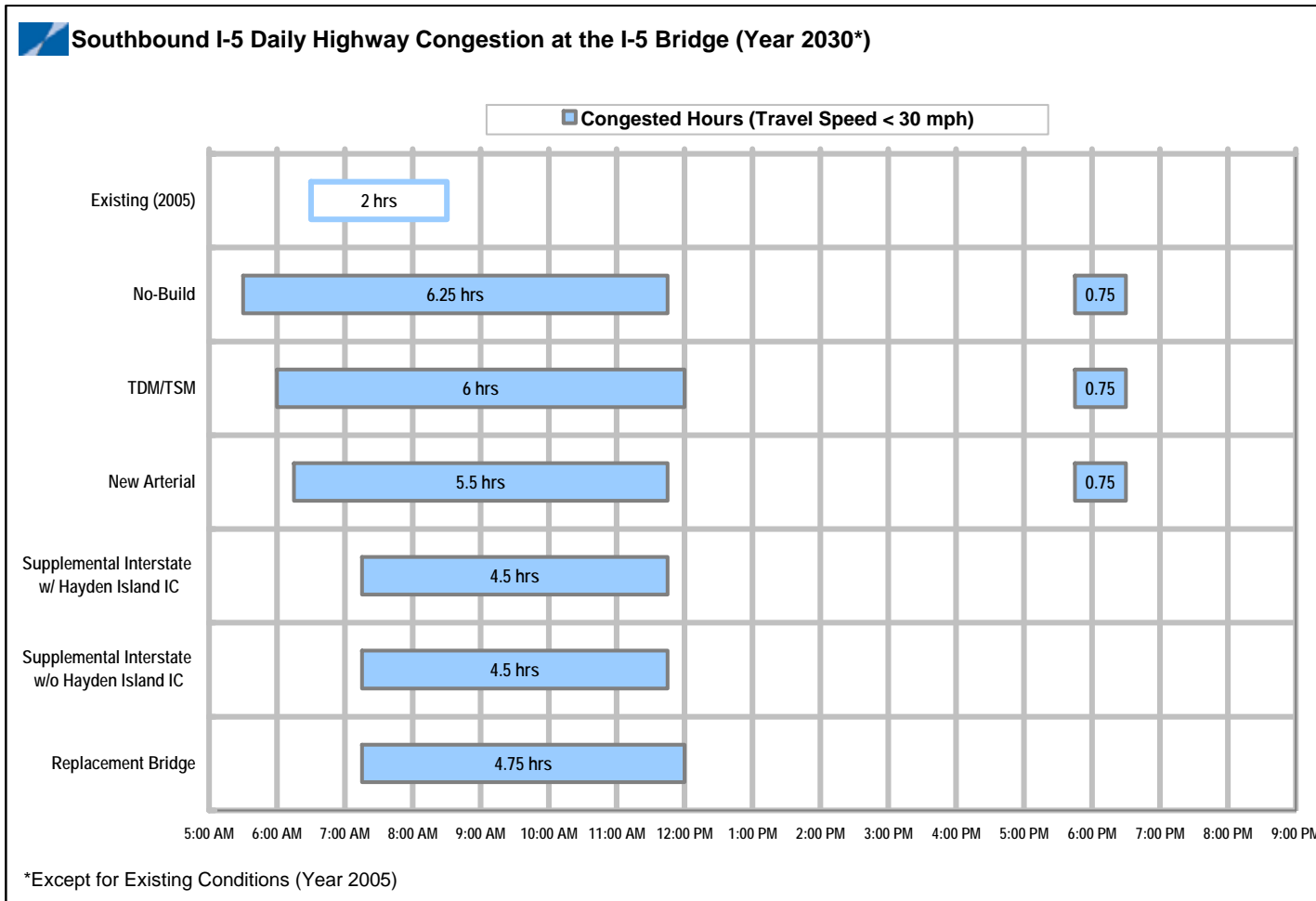


# Duration of Congestion – Northbound

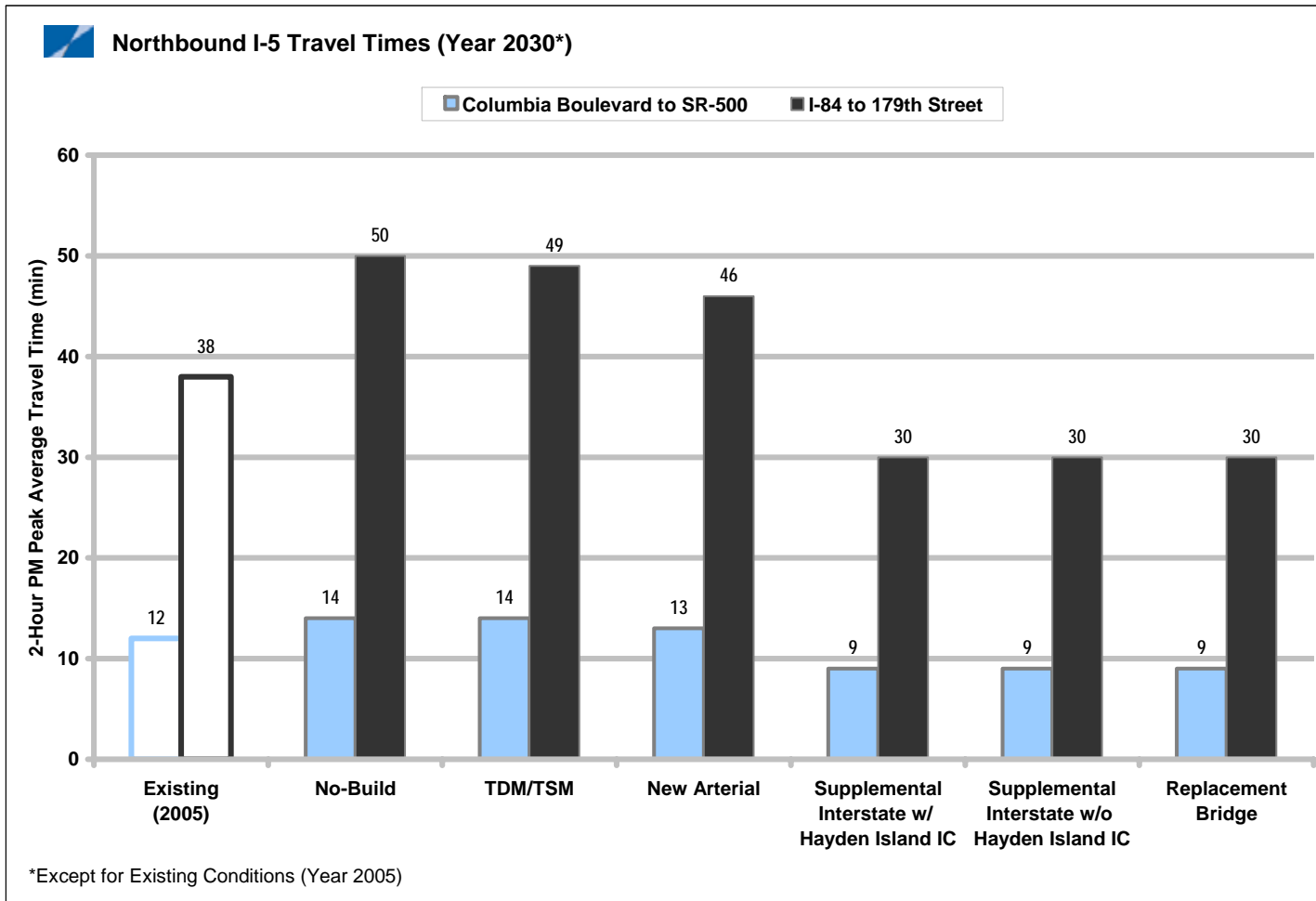




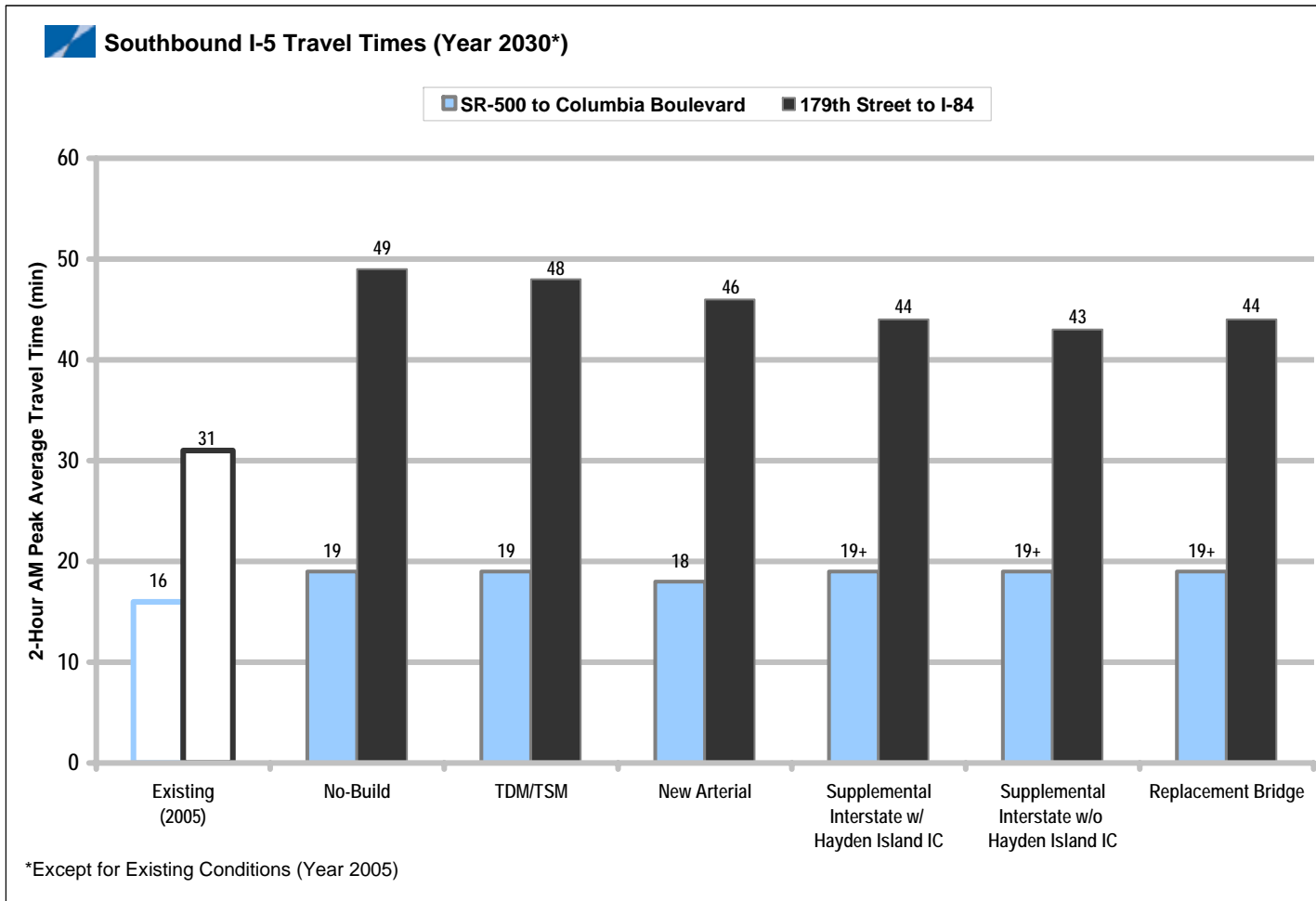
# Duration of Congestion – Southbound



# Vehicle Travel Times – Northbound



# Vehicle Travel Times – Southbound



## Vehicle and Freight Safety

- Over 2,200 reported crashes on I-5 mainline and ramps within Bridge Influence Area in last 5 years
- Average of 1.21 reported crashes per day
- Crash rate is over twice as high as average for similar urban city interstate freeways



## Vehicle and Freight Safety

- There is a strong correlation between existing non-standard features and frequency and type of collisions
- Crashes generally proportional to traffic volumes except during periods of congestion when number of crashes appear to increase two-fold by comparison
- From 3 to 5 time more collisions occur on I-5 approaching the bridge during bridge lifts/traffic stops compared to when lifts/stops do not occur

## Vehicle and Freight Safety

- Under No-Build, TDM/TSM and the New Arterial alternatives, crashes would be expected to increase up to 70% over existing conditions due to continued presence of non-standard features and increased traffic congestion
- Under these options, bridge lifts would continue, further affecting vehicle and freight safety

# Columbia River **CROSSING**

## Major Trends and Traffic Performance

CRC Task Force

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November 29, 2006



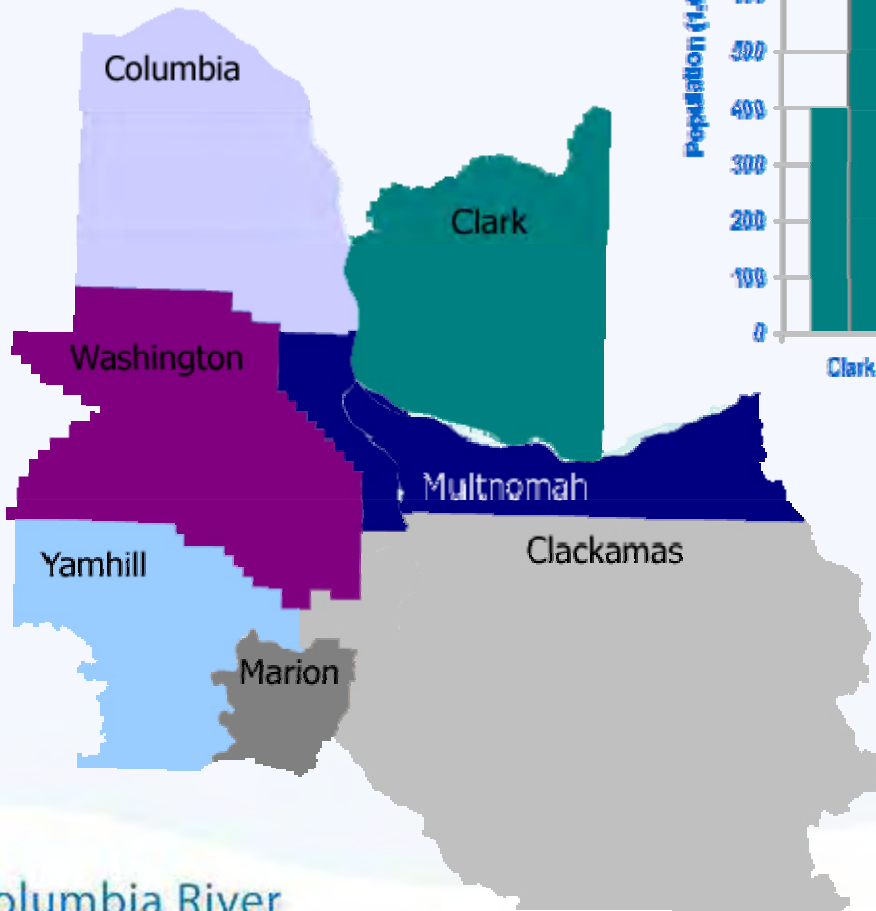
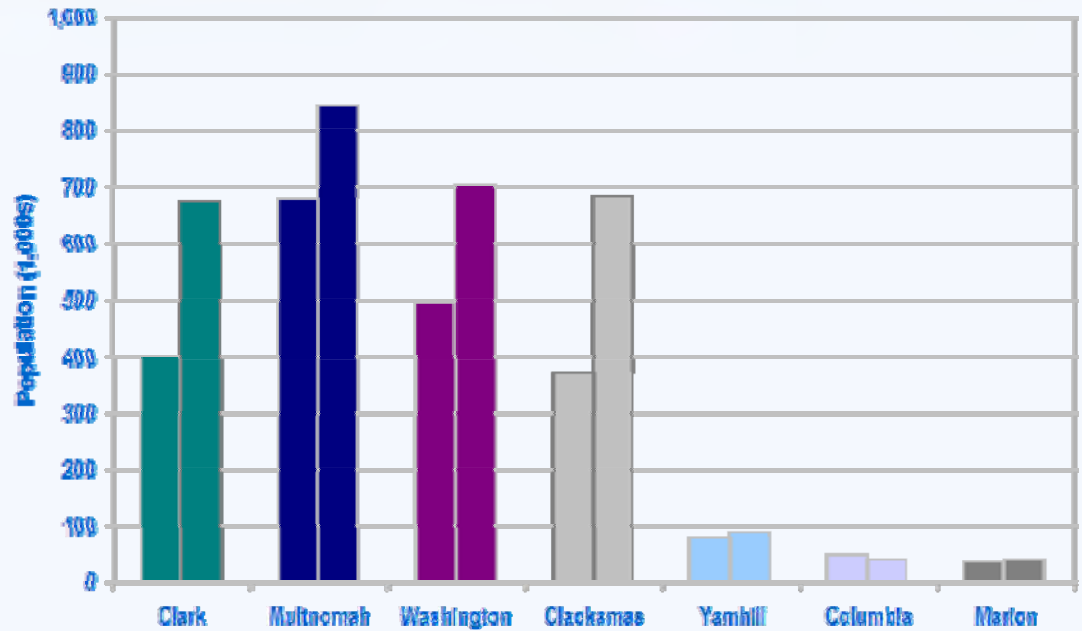
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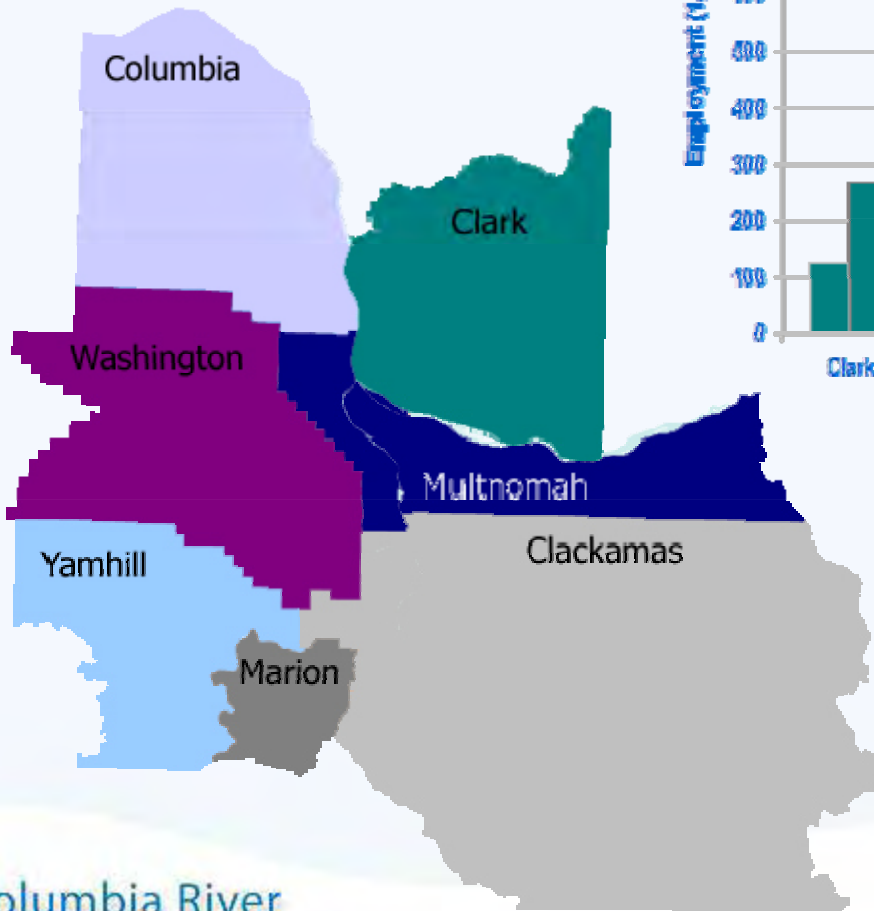
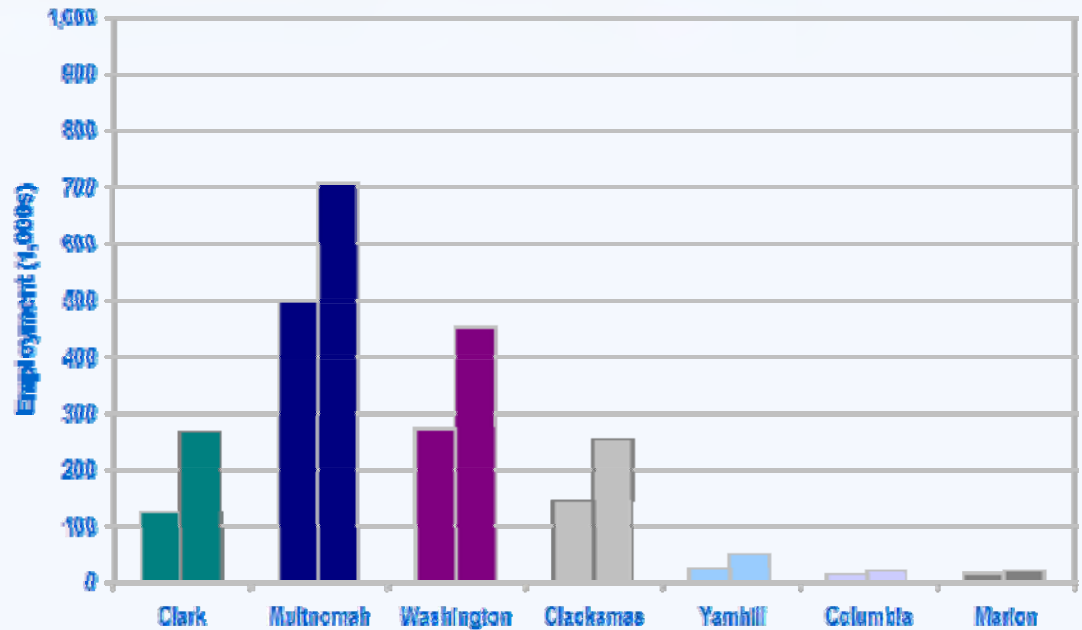


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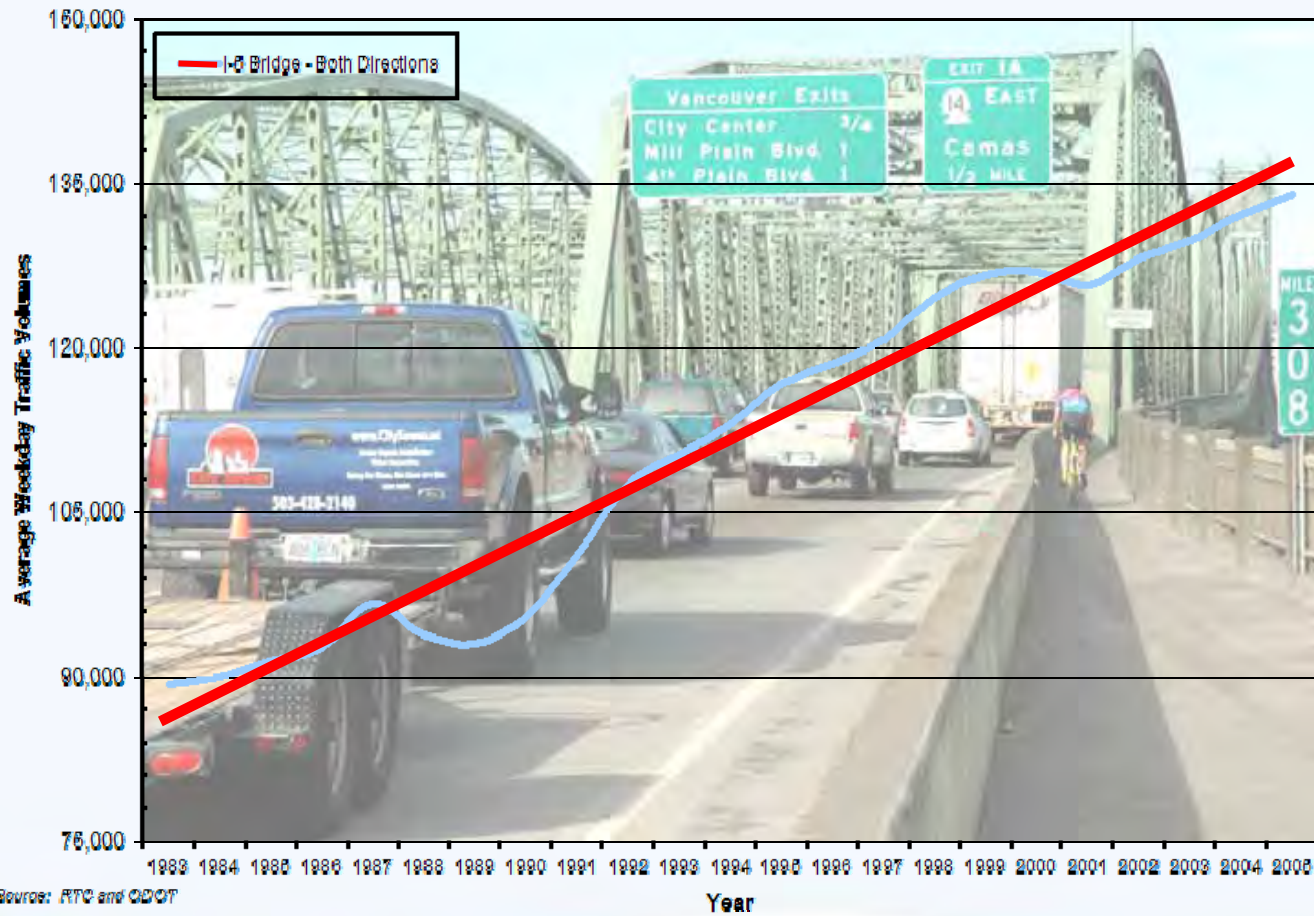
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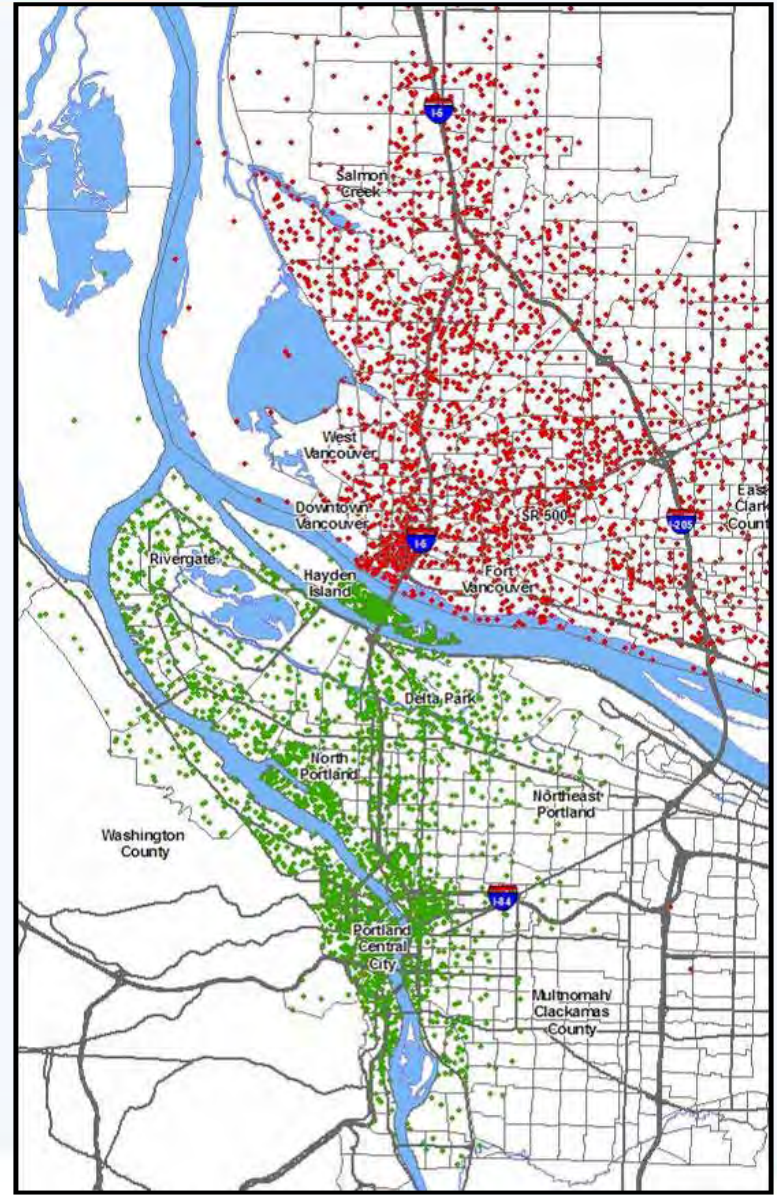
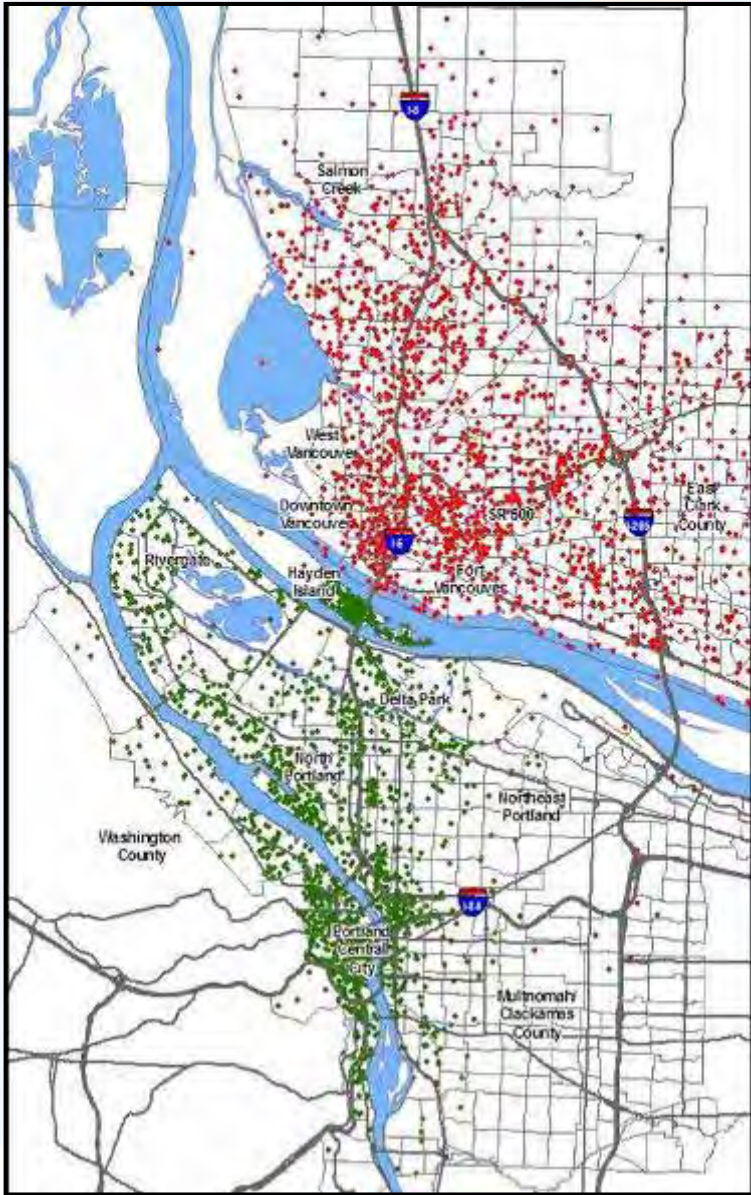


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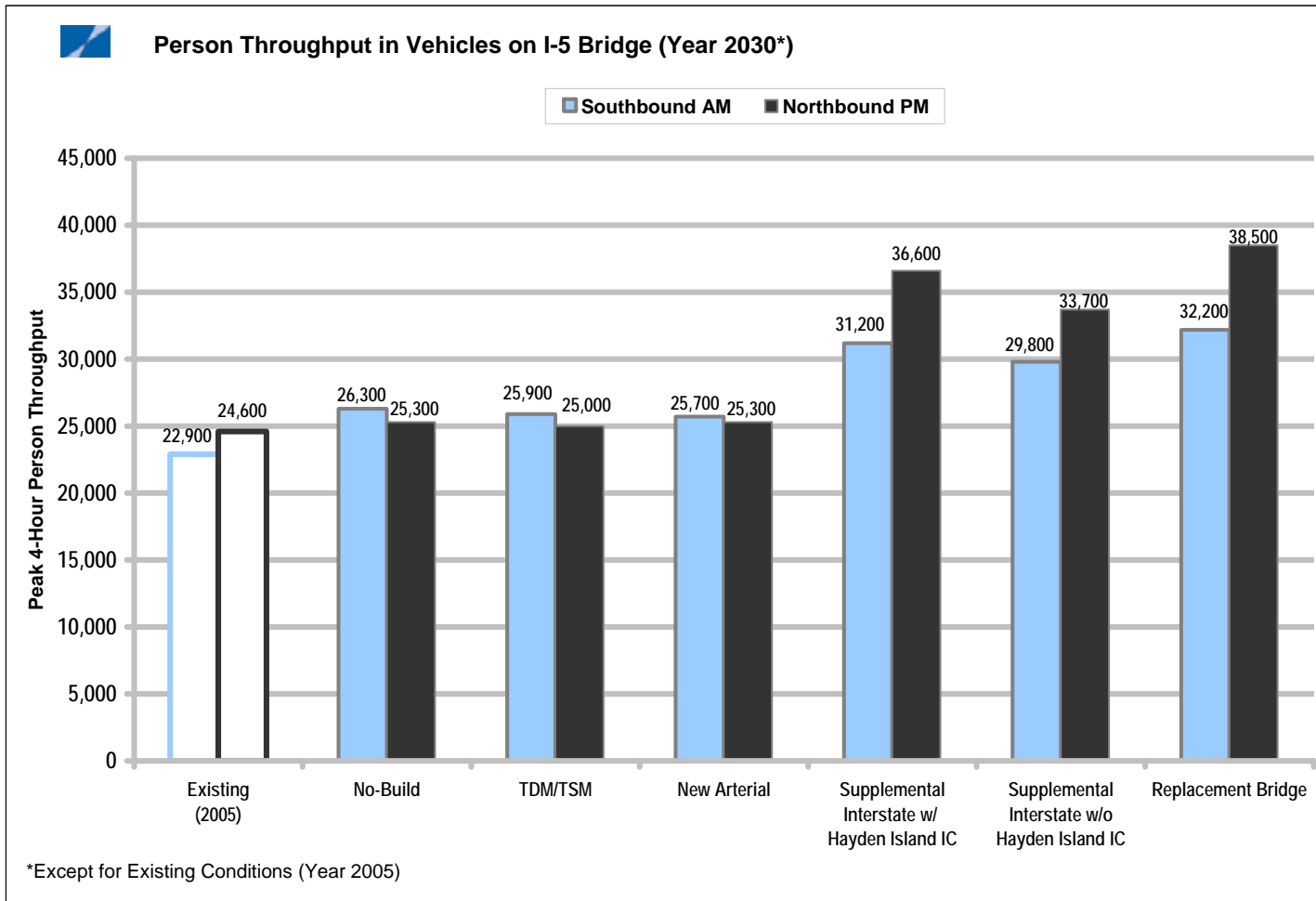
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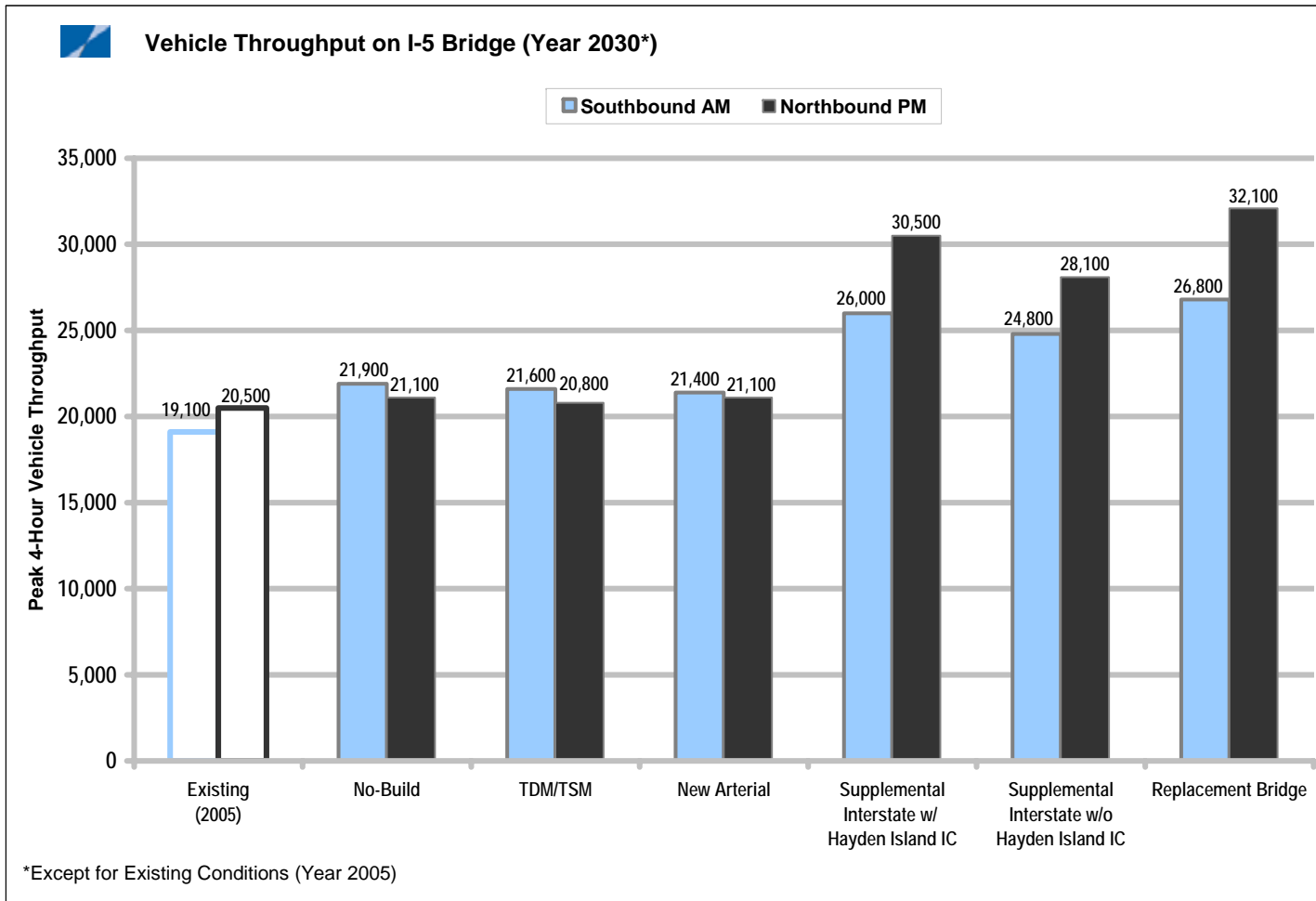
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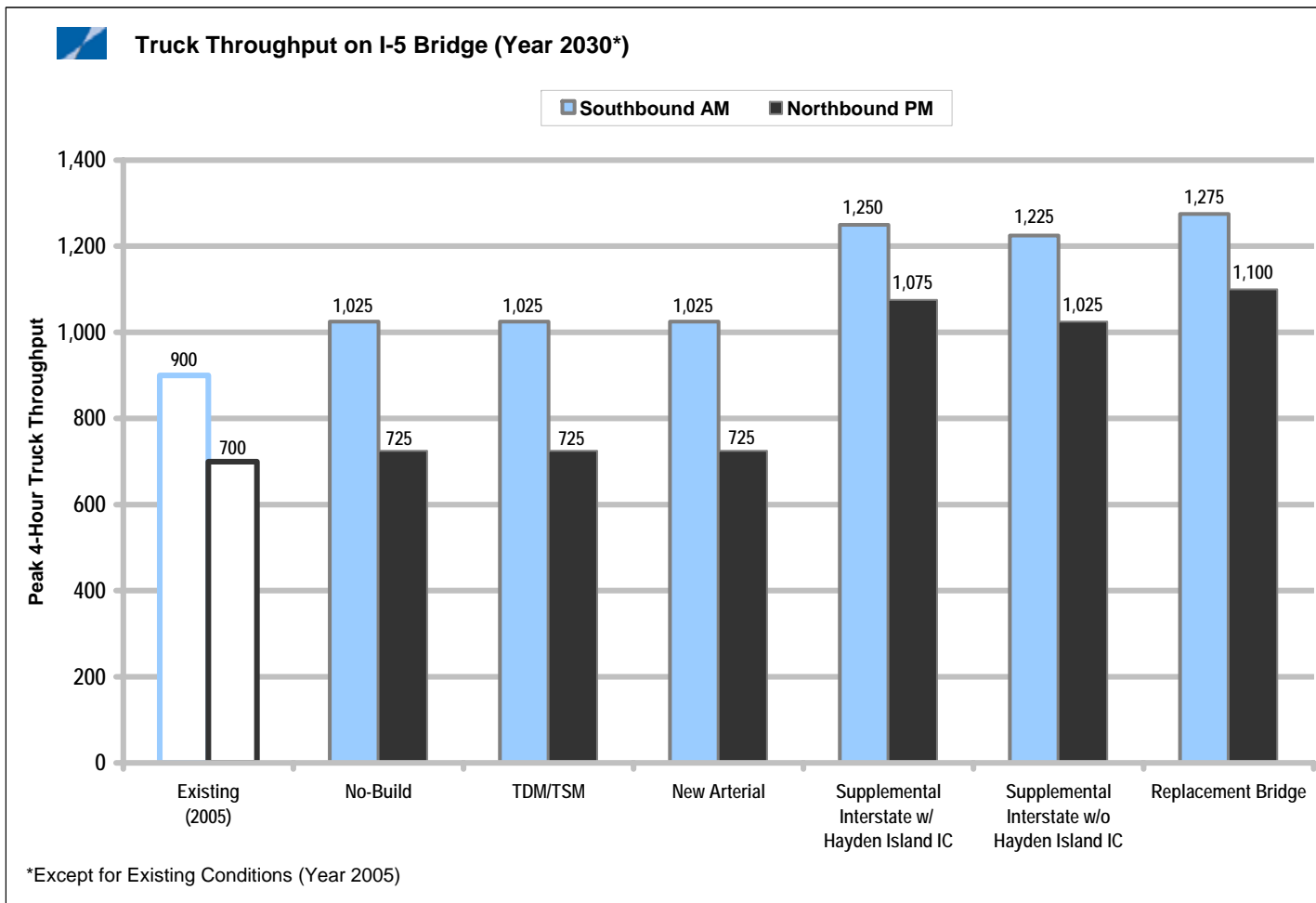




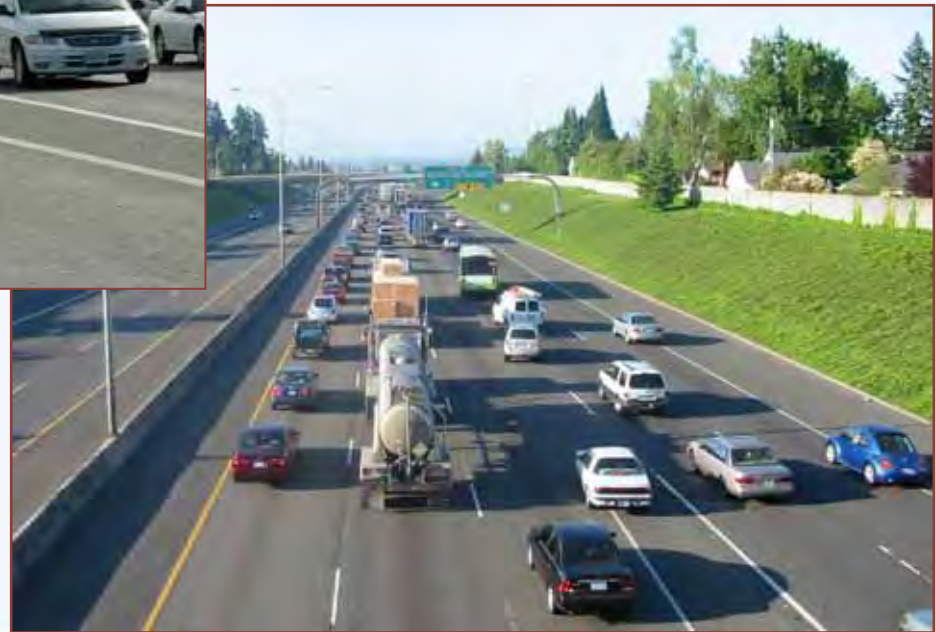
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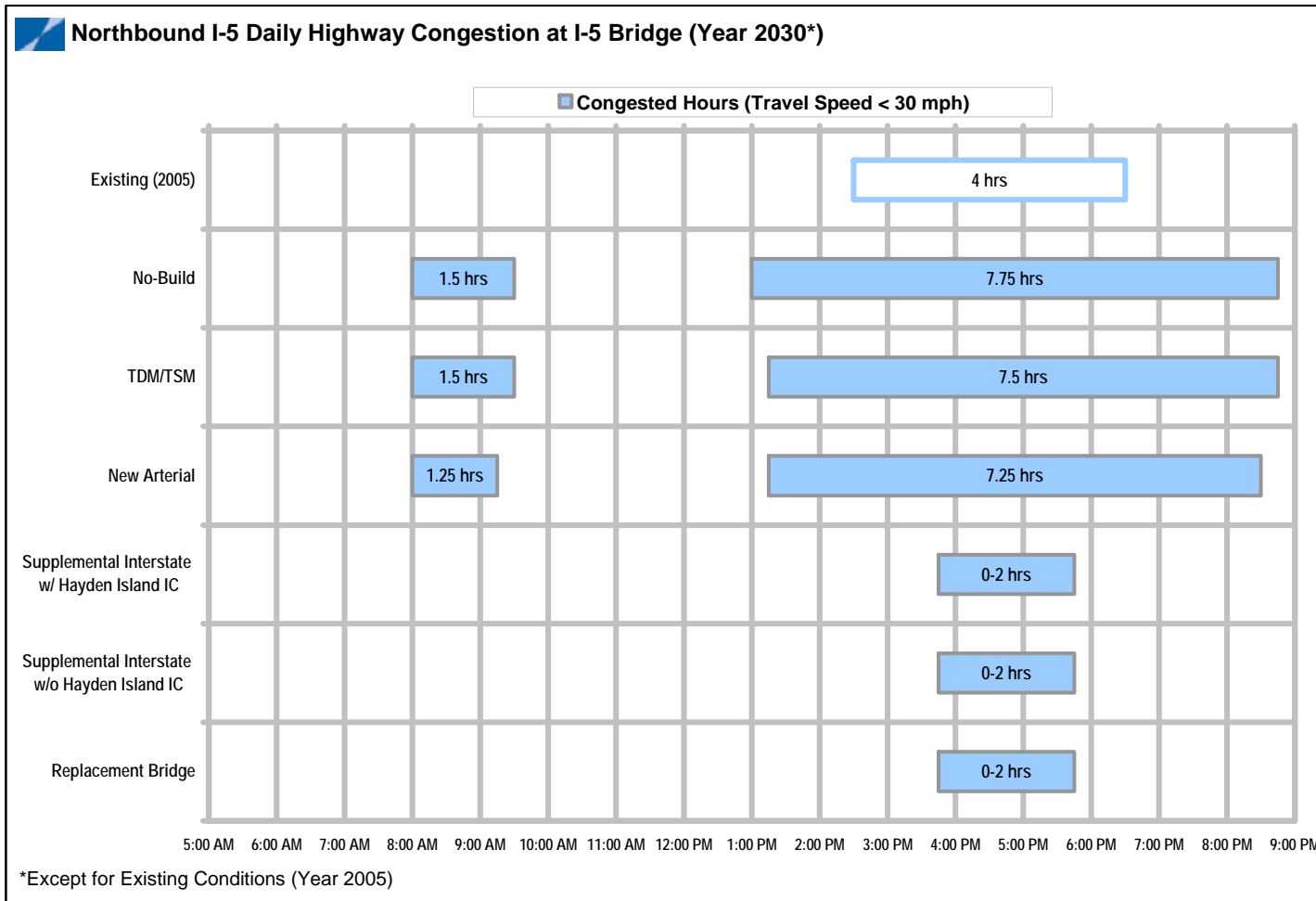
# Truck Throughput



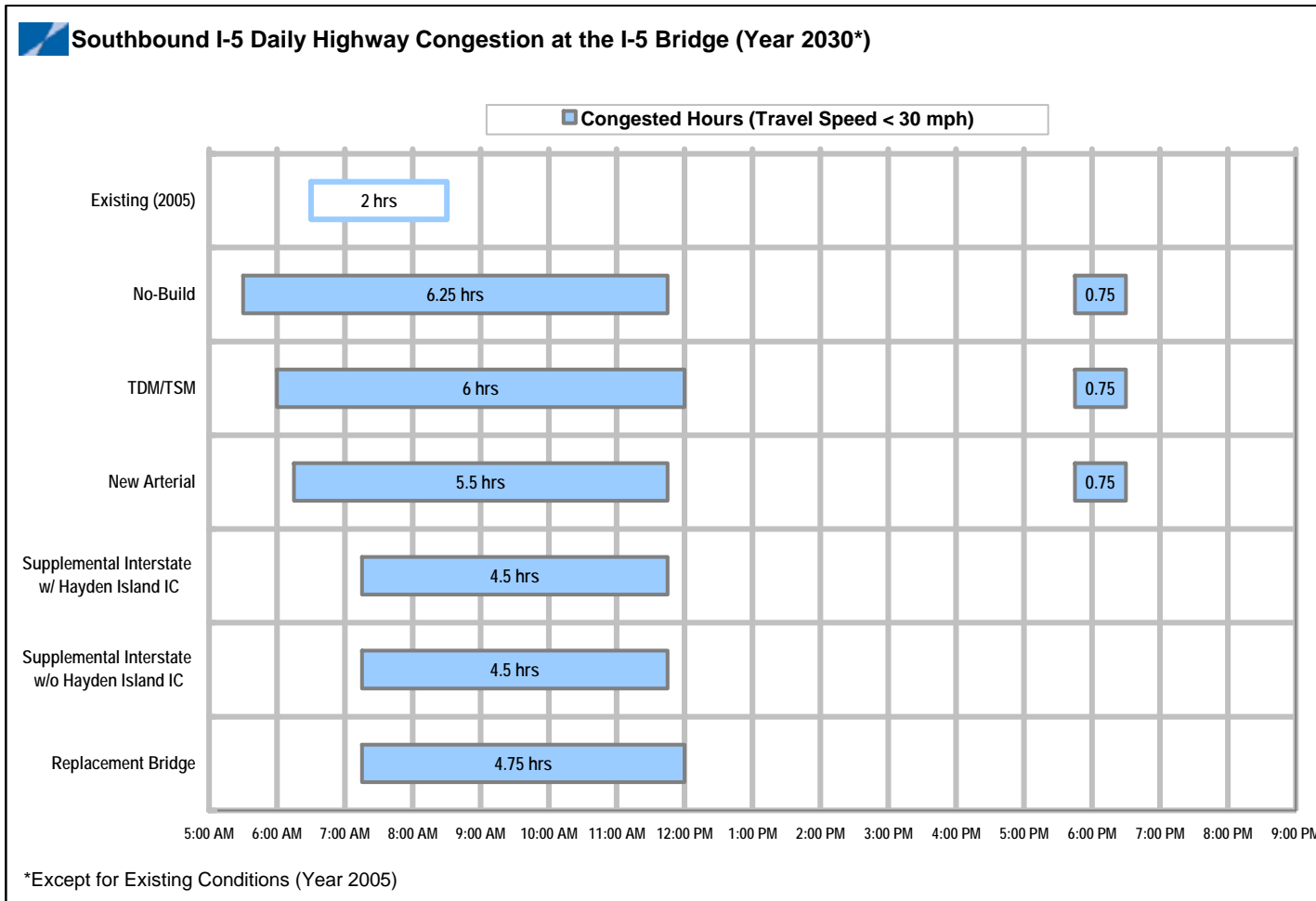
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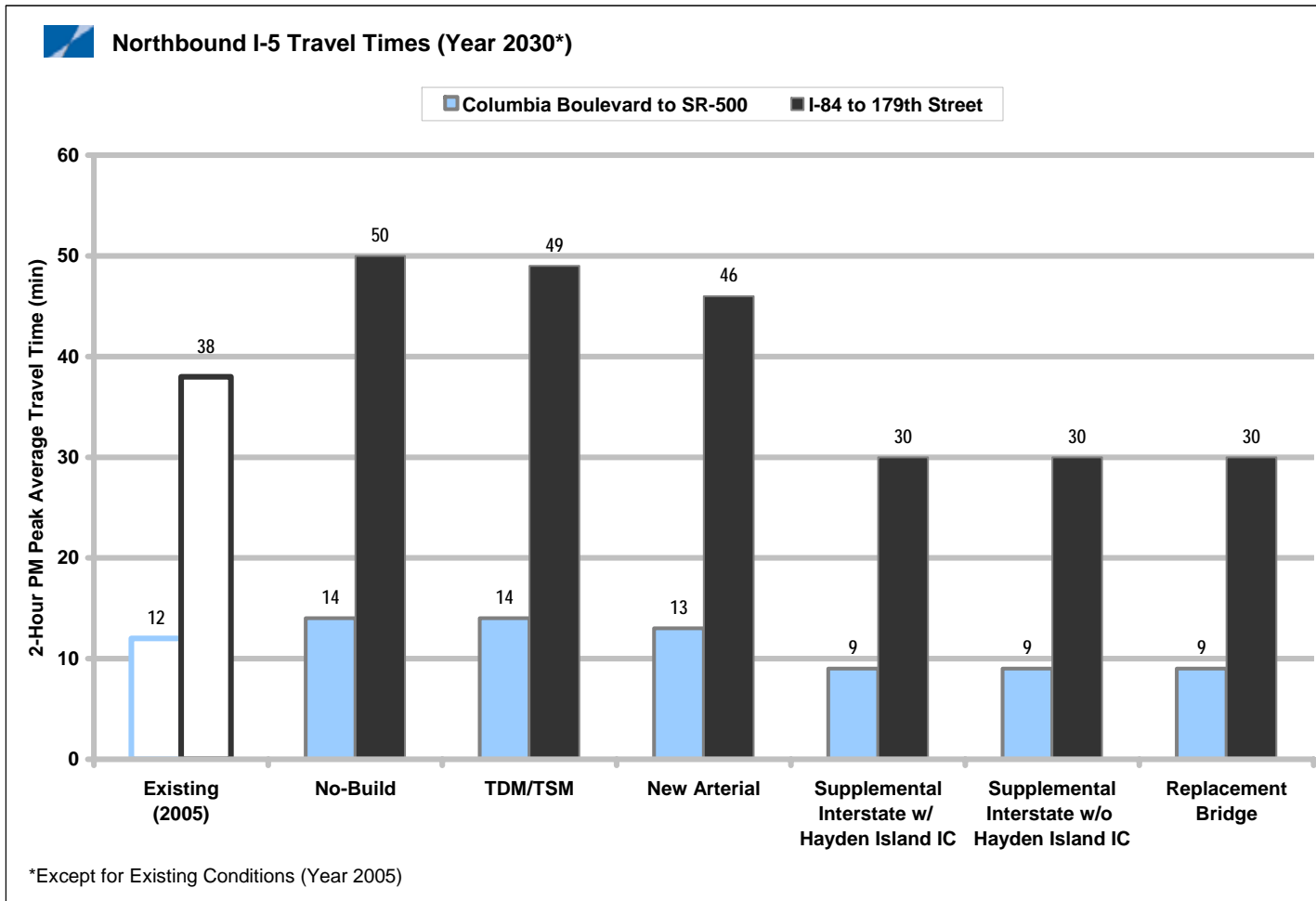
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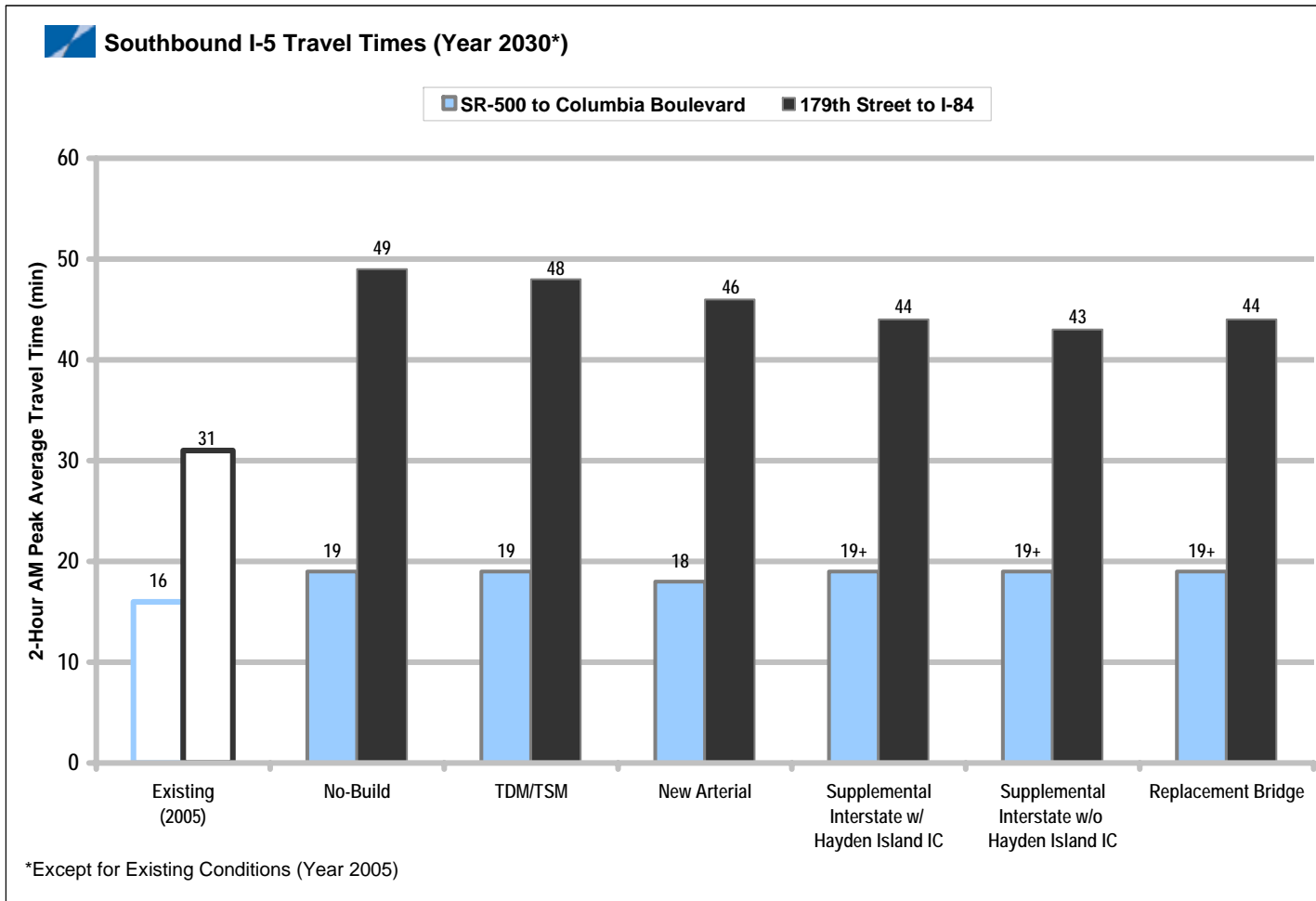
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# Columbia River **CROSSING**

## Transit Recommendations

CRC Task Force

November 29, 2006





# Today's Presentation

- Recommended Alternatives for the DEIS
- Evaluation and Lessons Learned Regarding:
  - Markets
  - Reliability
  - Operations
  - Connectivity
- Next Steps



# Evaluation Criteria

- Analysis structured around CRC Evaluation Framework
  - Derived from Task Force Vision and Values Statement
- Performance measures included:
  - Transit markets – Criterion 2.5
  - Travel speeds – Criterion 3.1
  - Capital and operating costs – Criteria 8.1 and 8.3
  - Others



## Summary of Findings

- HCT alternatives increased transit use significantly over the 2030 No-Build
- HCT and Express Buses are needed to serve forecasted transit markets
- Strong 2030 transit market for reliable, fast, frequent and more accessible transit service
- Delays associated with lift spans degrade transit reliability
- HCT modes in exclusive guideways increase reliability and decrease delay
- Substantial cost differences between the modes
- Remaining transit modes can be optimized for better performance



# Transit Modes Evaluated

- TR-1: Express buses in I-5 general purpose lanes
- TR-2: Express buses in I-5 managed lanes
- TR-3: Bus Rapid Transit LITE (BRT-LITE)
- TR-4: Bus Rapid Transit (BRT)
- TR-5: Light Rail Transit (LRT)





# Recommendations

HCT Mode

+

Express Bus

- DEIS Alternative # 1
  - **Bus Rapid Transit** with complementary express bus service.
  
- DEIS Alternative # 2
  - **Light Rail Transit** with complementary express bus service.







# Recommendation

## DEIS Alternative # 1 Bus Rapid Transit

### PROS:

- Significantly increases transit use.
- Any bus can use the exclusive guideway.
- Lower capital cost HCT alternative.
- Supports local and regional transportation plans in OR and WA.



### CONS:

- Highest HCT operating cost.
- Bus access to downtown is constrained.
- Decreased reliability due to operations in I-5 lanes south of the bridge.



# Recommendation

## DEIS Alternative # 2 Light Rail Transit

### PROS:

- Significantly increases transit use.
- Highest passenger capacity.
- Highest travel time reliability.
- Takes advantage of existing LRT infrastructure.
- One-seat ride from Vancouver to Portland.
- Lowest HCT operating cost.
- Best supports local and regional plans.



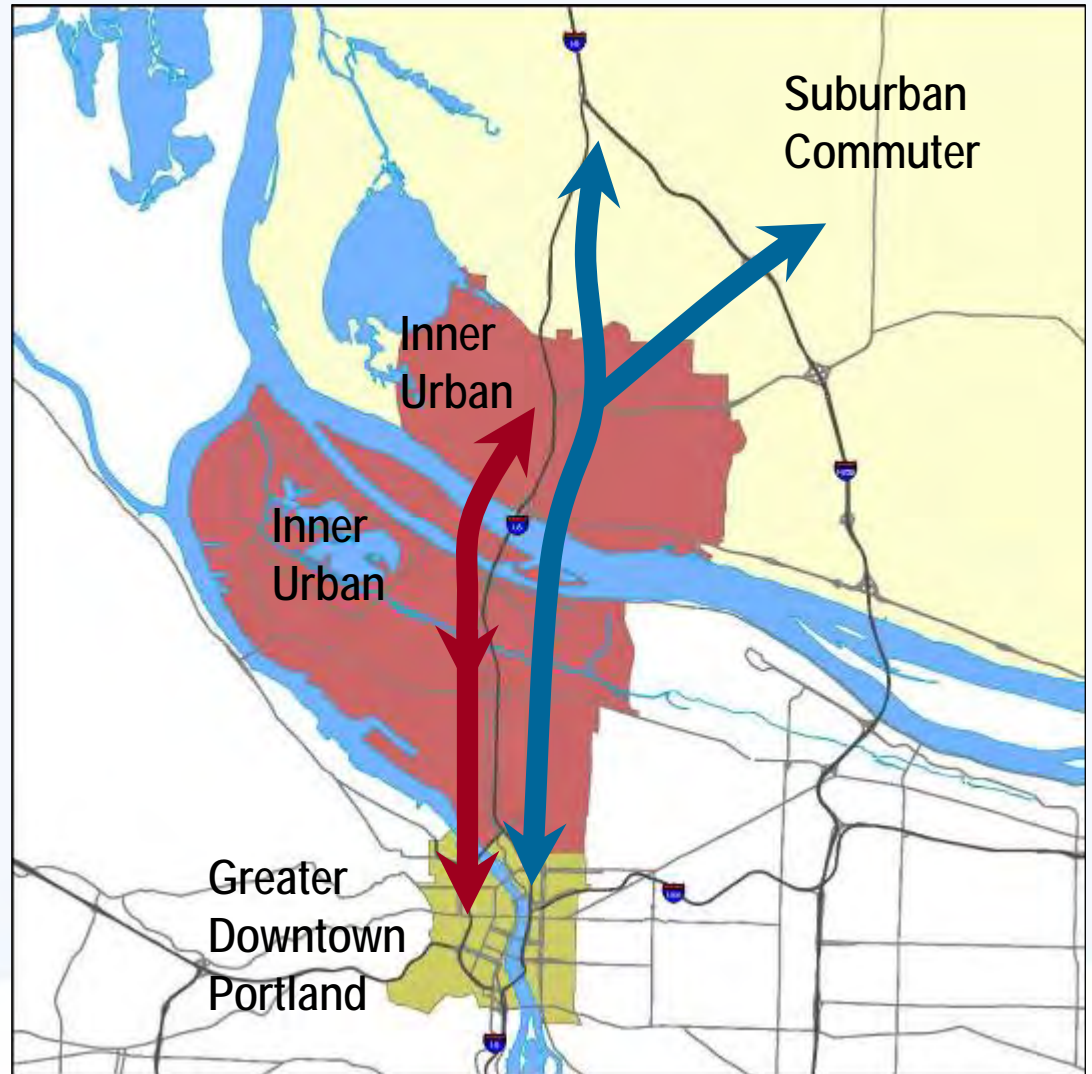
### CONS:

- Highest capital cost of HCT alternates.
- Less flexibility than bus modes.



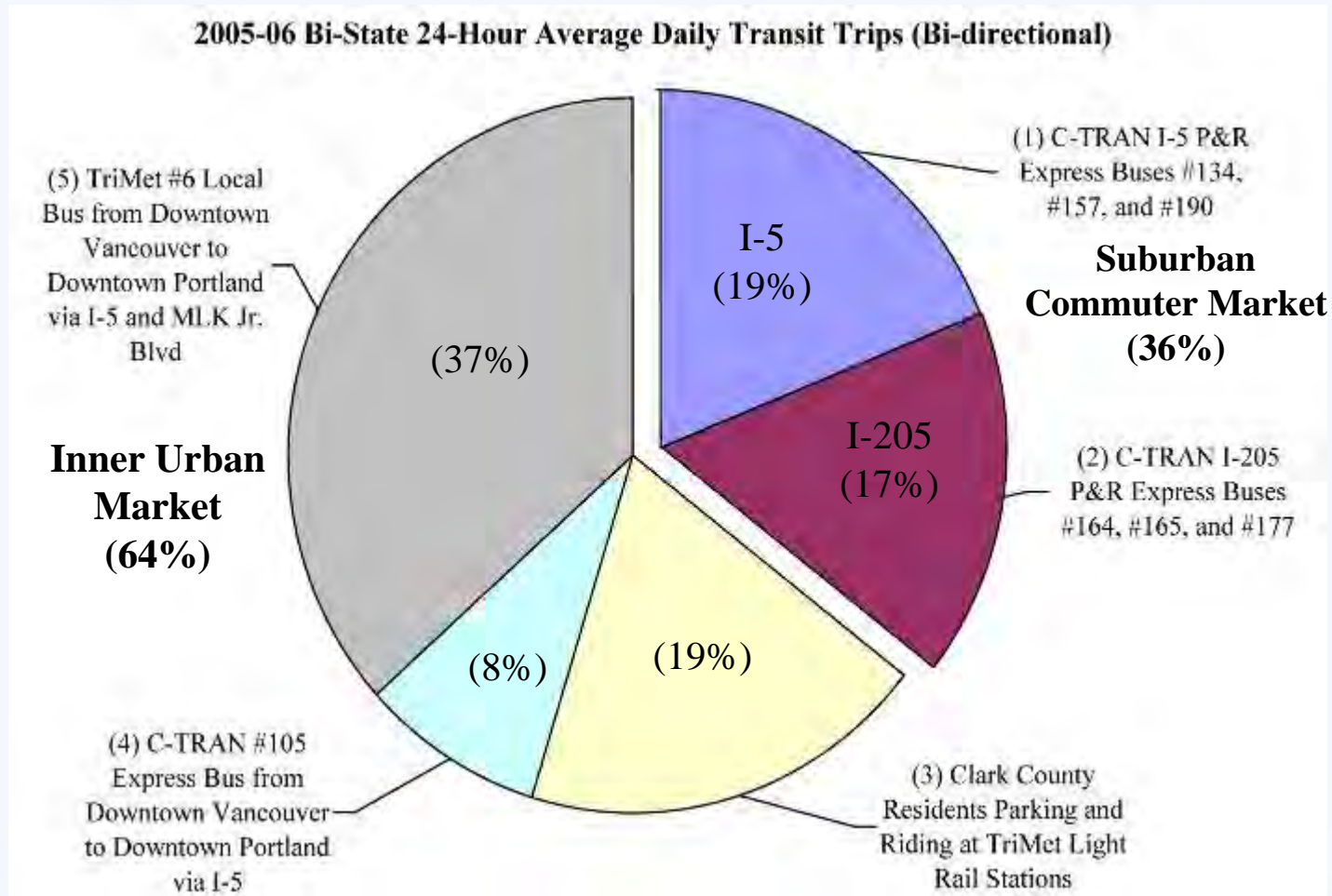
# Lessons Learned Transit Markets

- Inner Urban Market (Red)
- Suburban Commuter Market (Yellow)
- Maximum coverage and transit market share when HCT modes are paired with Express Buses





# Lessons Learned Transit Markets



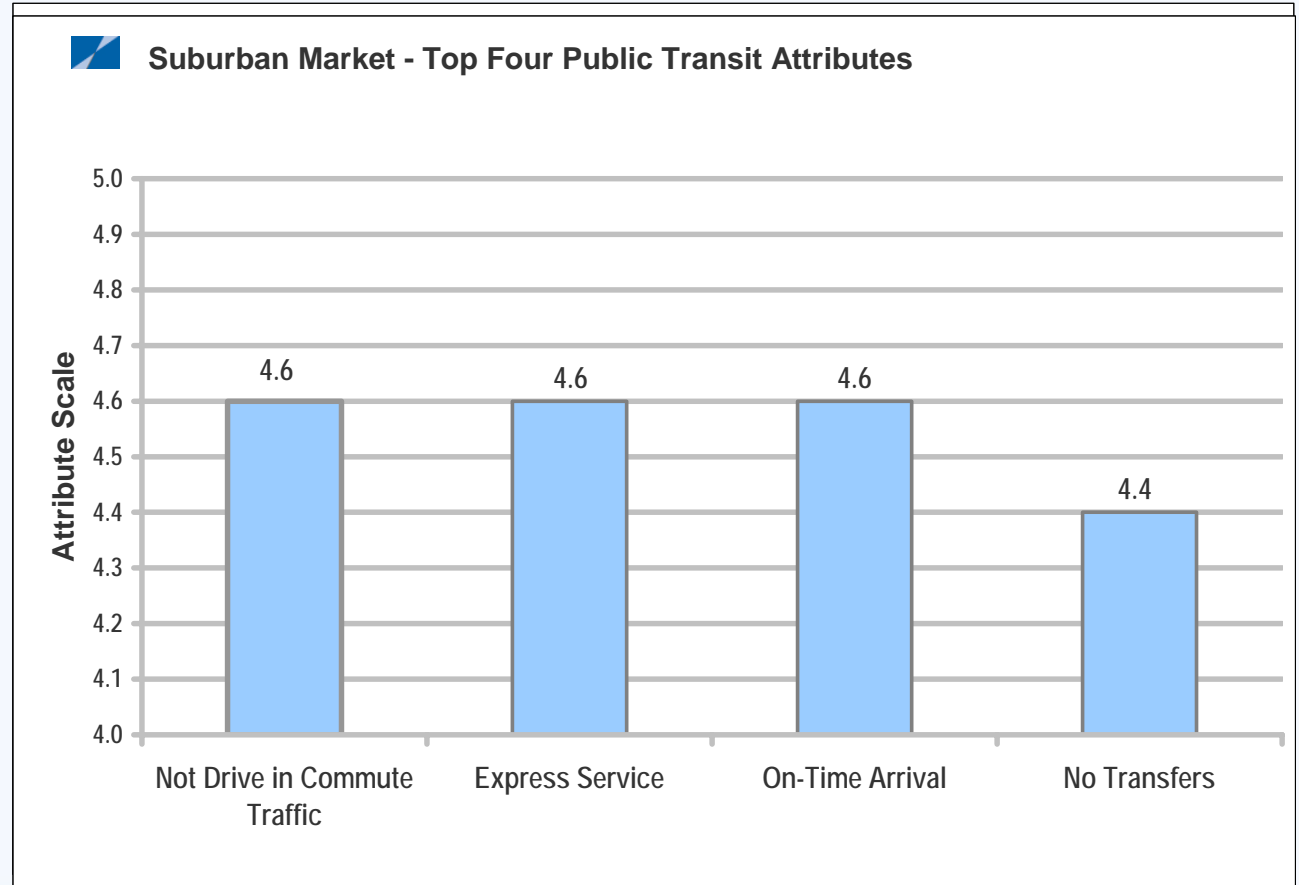
Source: CRC Park-and-Ride Study 2006, C-TRAN Origin and Destination Study May 2006, TriMet #6 APC Average Daily Rider Census October 2005



# Lessons Learned

## Transit Reliability

- Schedule reliability is one of the most important transit attributes.



Source: CTRC On Board Survey, October 2006 (N=860-535)



# Public Input from Transit Survey

*"I would like this bus to be reliable. Almost never on-time—have to wait up to 20-45 minutes most days."*

-Passenger comment from CRC on-board survey

*"I need a faster way than the #6 (TriMet) to get to downtown Portland and Vancouver."*

-Passenger comment from CRC on-board survey

*"I love the express bus. One time it was late and I drove – it ended up passing me on I-5 and I learned my lesson."*

-Passenger comment from CRC on-board survey

*"Mass transit is a hard sell. If it's not reliable – it's worthless."*

-Passenger comment from CRC on-board survey



## Lessons Learned

### Transit Reliability

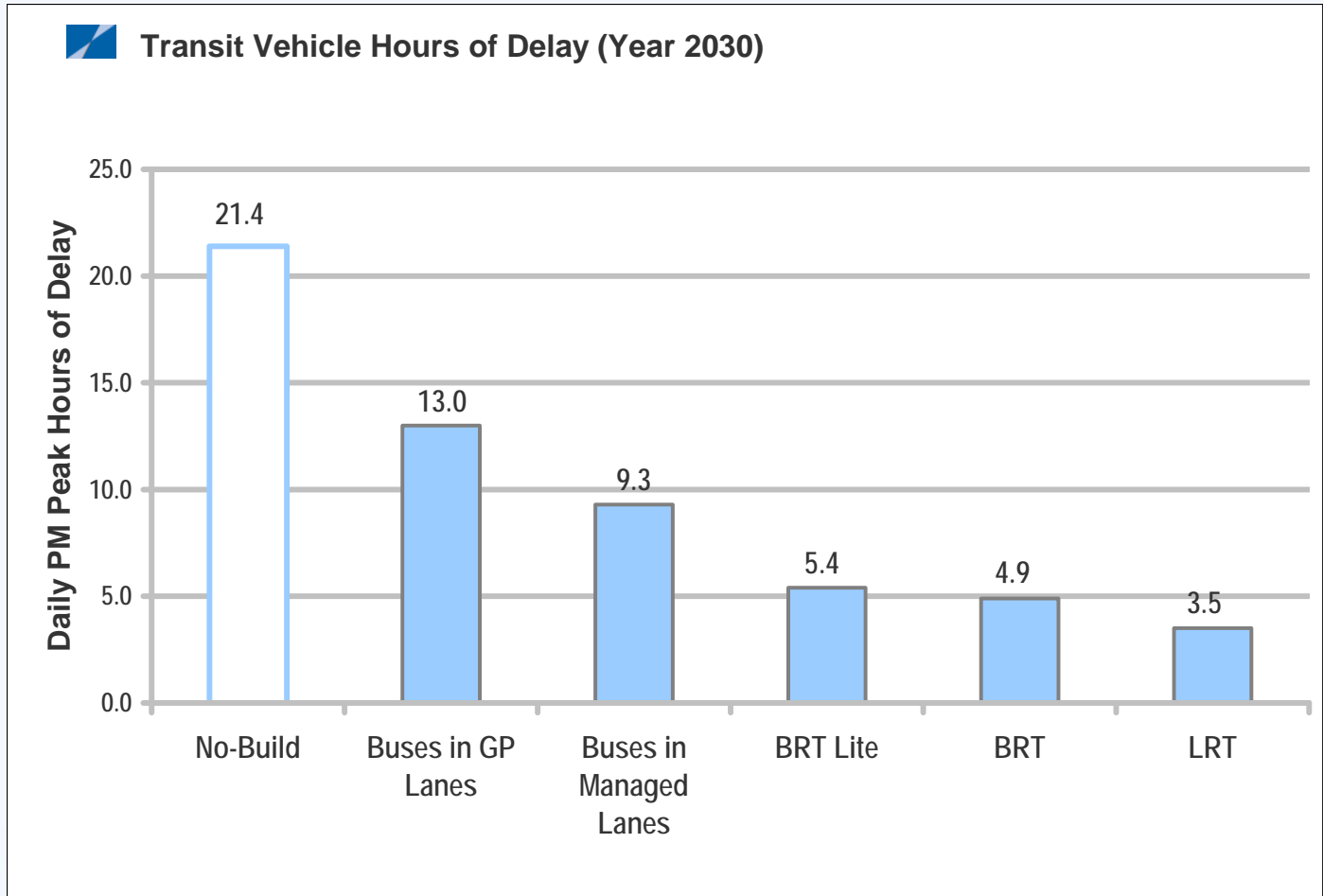
- Congestion, bridge lifts, and incident delay on a portion of a transit route can deteriorate reliability on the entire route.
- A bridge without a lift span would be beneficial.





# Lessons Learned

## Transit Reliability

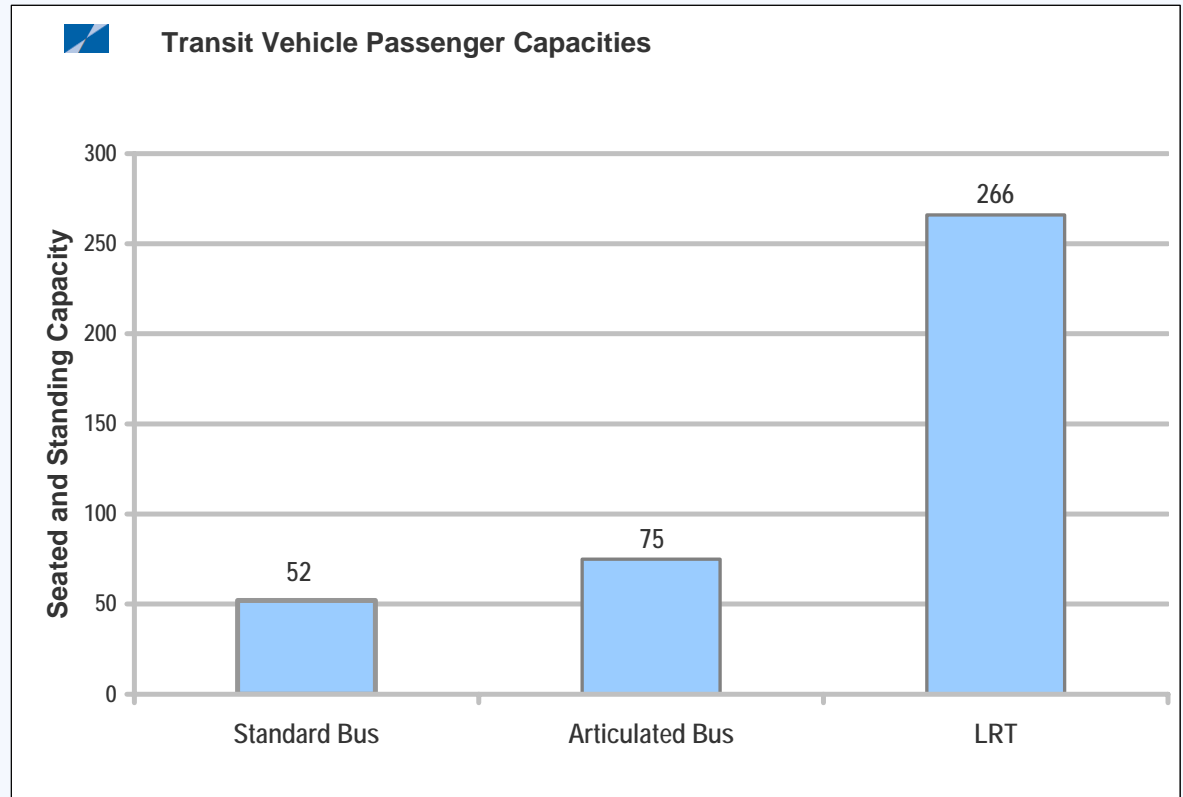






# Lessons Learned Transit Operations

- Vehicle passenger capacities are different
- Frequencies would be lower for LRT and higher for BRT and BRT-Lite.
  - BRT at 4 minutes or less.
  - LRT between 5 to 10 minutes.





# Lessons Learned

## Transit Operations

Criterion 8.1 and 8.3



LRT



BRT

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Operating Costs



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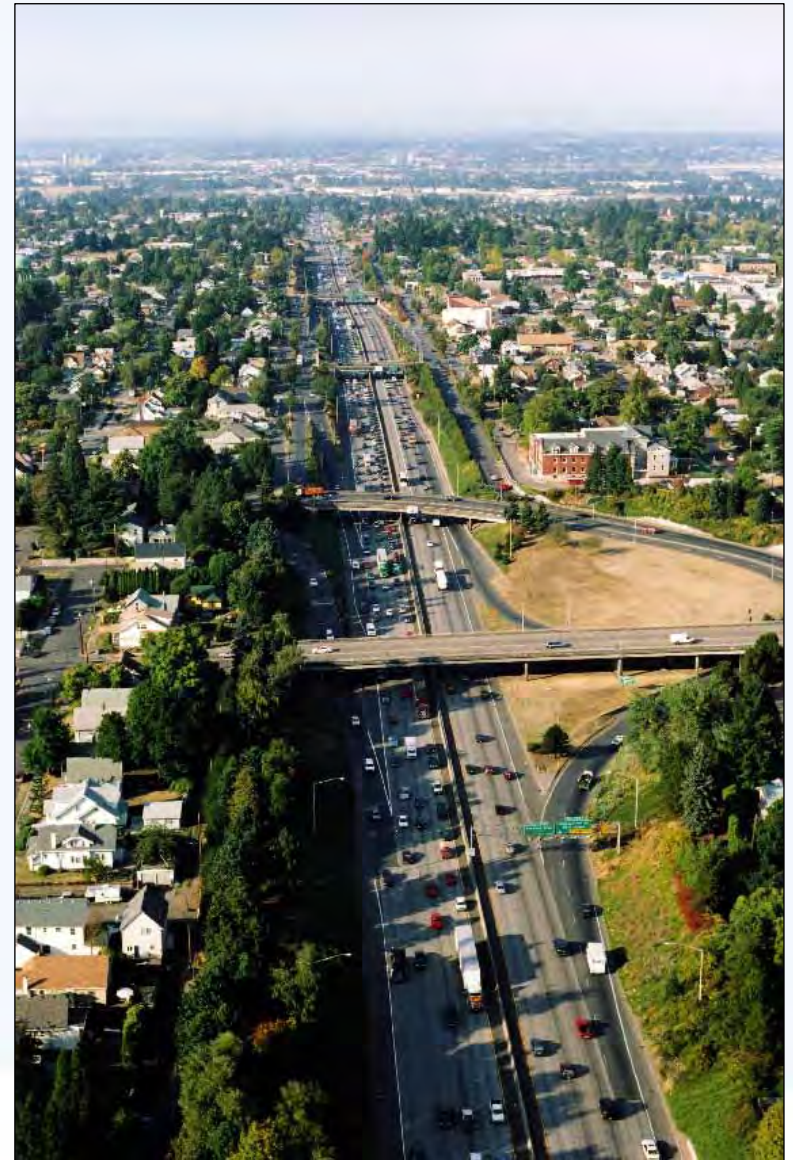
Capital Costs





## Lessons Learned Transit Connectivity

- HCT modes are more supported in local and regional transportation plans.
- HCT modes combined with express bus provides the most access to future employment and activity centers.





# Recommendation Recap

HCT Mode + Express Bus

- DEIS Alternative # 1
  - **Bus Rapid Transit** with complementary express bus service.
- DEIS Alternative # 2
  - **Light Rail Transit** with complementary express bus service.





# DEIS Activities to Optimize BRT

- Tie the BRT service to the Interstate MAX Line
- Avoid travel on I-5 and reduce operating costs
- Locate bus/rail transfer facility
- Determine exclusive guideway segments
- Determine appropriate number of buses to be accommodated in downtown PDX and VAN





# DEIS Activities to Optimize LRT

- Better match LRT frequencies to passenger demand
- Confirm station locations
- Optimize local bus and LRT transfer locations
- Evaluate alignment alternatives
- Select terminal location





## DEIS Activities for Both Alternatives

- Work with local project sponsors to optimize alternatives.
- Obtain public input on alignments and station locations at:
  - Open houses
  - Community Events
  - Neighborhood and Business Association Meetings
  - Project Sponsor Meetings
- Refine cost estimates.
- Optimize the supporting local and express bus networks.
- Evaluate alignment options and determine park and ride lot configuration.

# Columbia River **CROSSING**

## River Crossing Recommendations

CRC Task Force

November 29, 2006





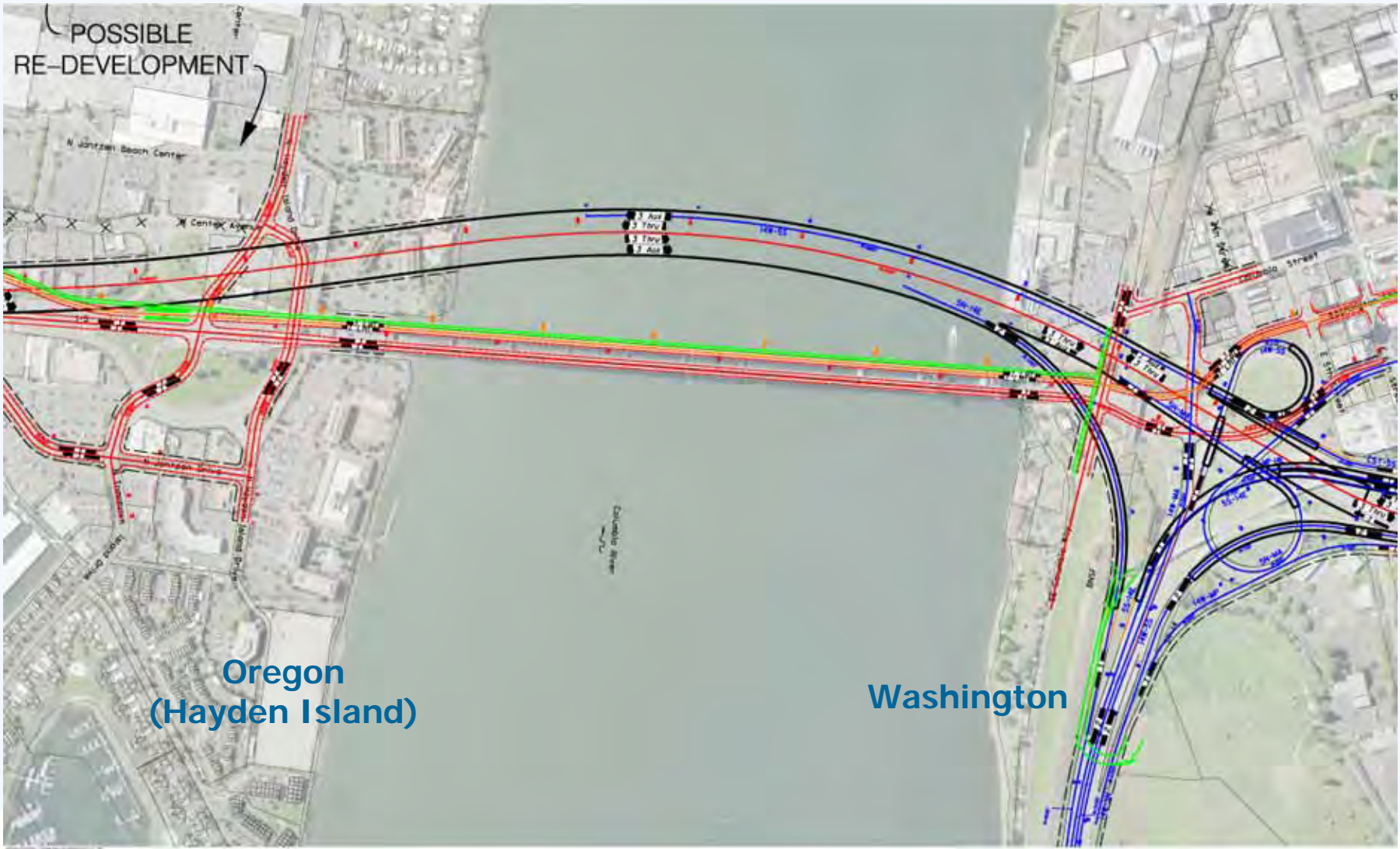


## River Crossing Concepts for Consideration

- Replacement Bridge      Downstream      Midlevel
- Replacement Bridge      Upstream      Midlevel
- Supplemental Bridge      Downstream      Midlevel
- Arterial Crossing with I-5 Improvements



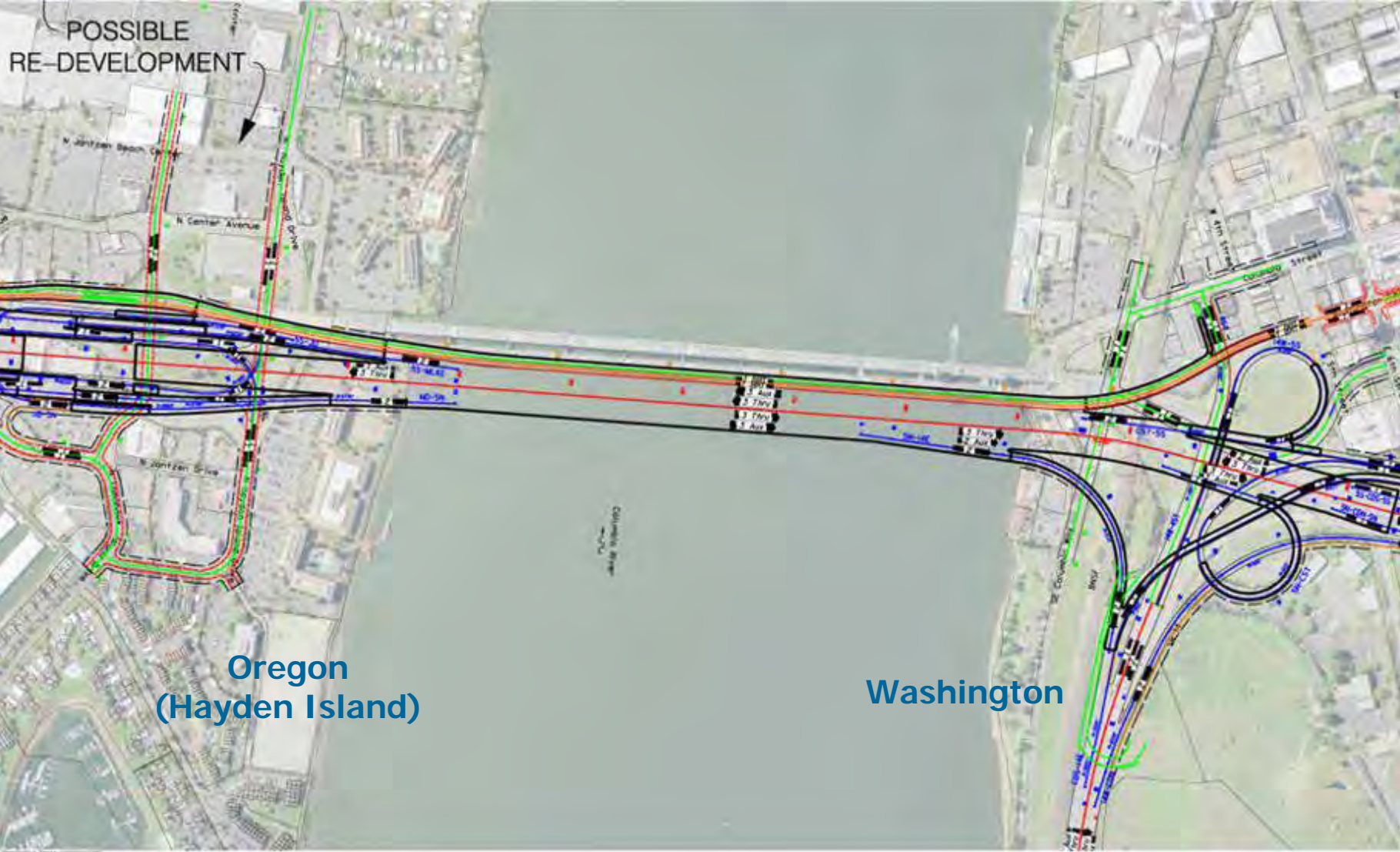
# Supplemental Downstream (Alt's 4, 5, 6, 7)



# Replacement Downstream (Alt's 8, 9, 11)



# Replacement Upstream (Alt's 10 & 12)



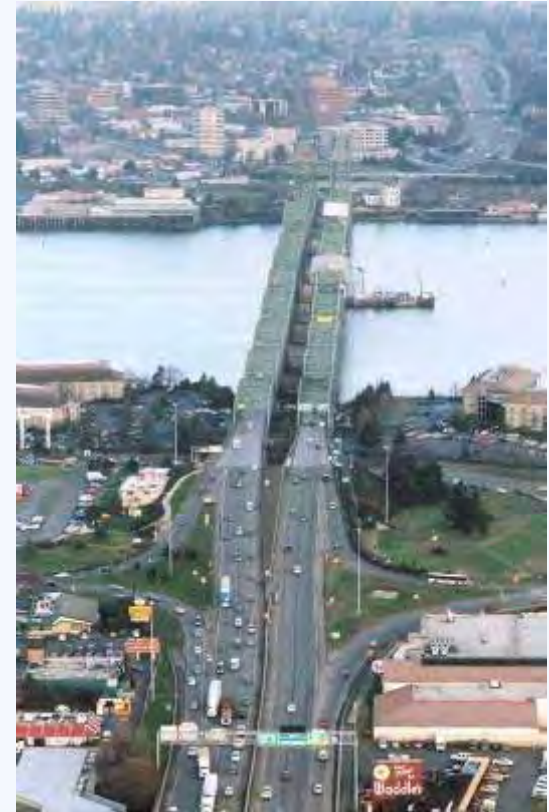
Oregon  
(Hayden Island)

Washington



# What we learned from the Performance Criteria

- I-5 Needs to be on a new structure.
- A parallel arterial bridge that leaves I-5 traffic on the existing I-5 Bridges doesn't meet Purpose and Need.
- Replacement bridges work better than supplemental bridges in all cases.
- There is a compelling case to remove the existing bridges.



# The case for a new I-5 Bridge



## Existing bridges are obsolete for Interstate traffic

- They don't meet current design standards
- They can't handle current and projected traffic volumes
- They aren't safe
- Transit and freight are stuck in traffic with everyone else
- Bridge lifts further impact congestion
- They don't meet current seismic standards

## I-5 Northbound Bridge Opened in 1917



Designed when 50% of US vehicles were Model T's.

Built for horses, trolleys and cars.

Originally posted for speed of 15 mph – now 50 mph.

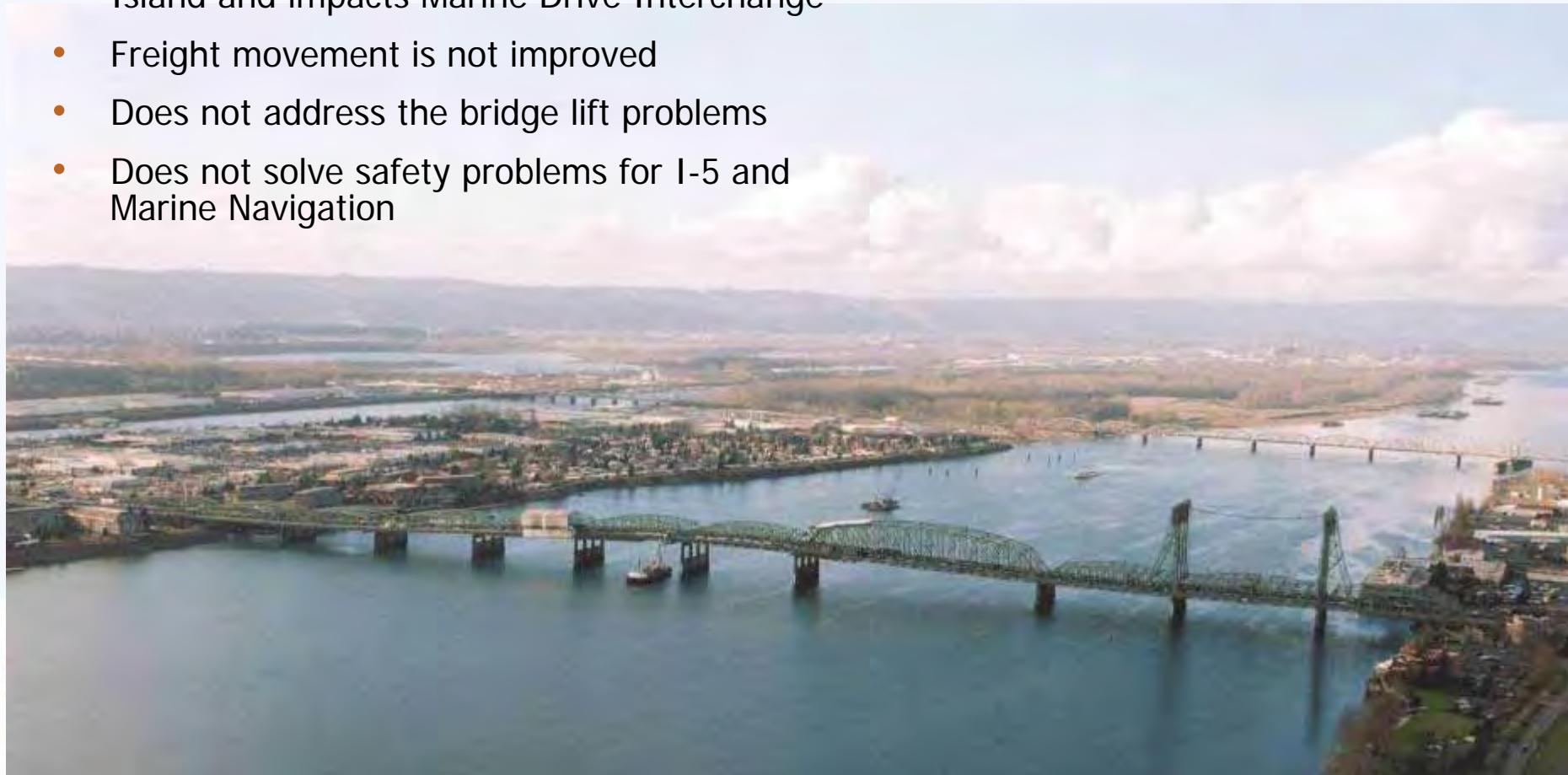
Re-stripped for three lanes in each direction.





# Why a new arterial/transit bridge won't work





- Keeps I-5 traffic on the existing bridges
- Traffic demand across the river far exceeds the capacity of arterial bridges
- Clogs streets in downtown Vancouver, Hayden Island and impacts Marine Drive Interchange
- Freight movement is not improved
- Does not address the bridge lift problems
- Does not solve safety problems for I-5 and Marine Navigation



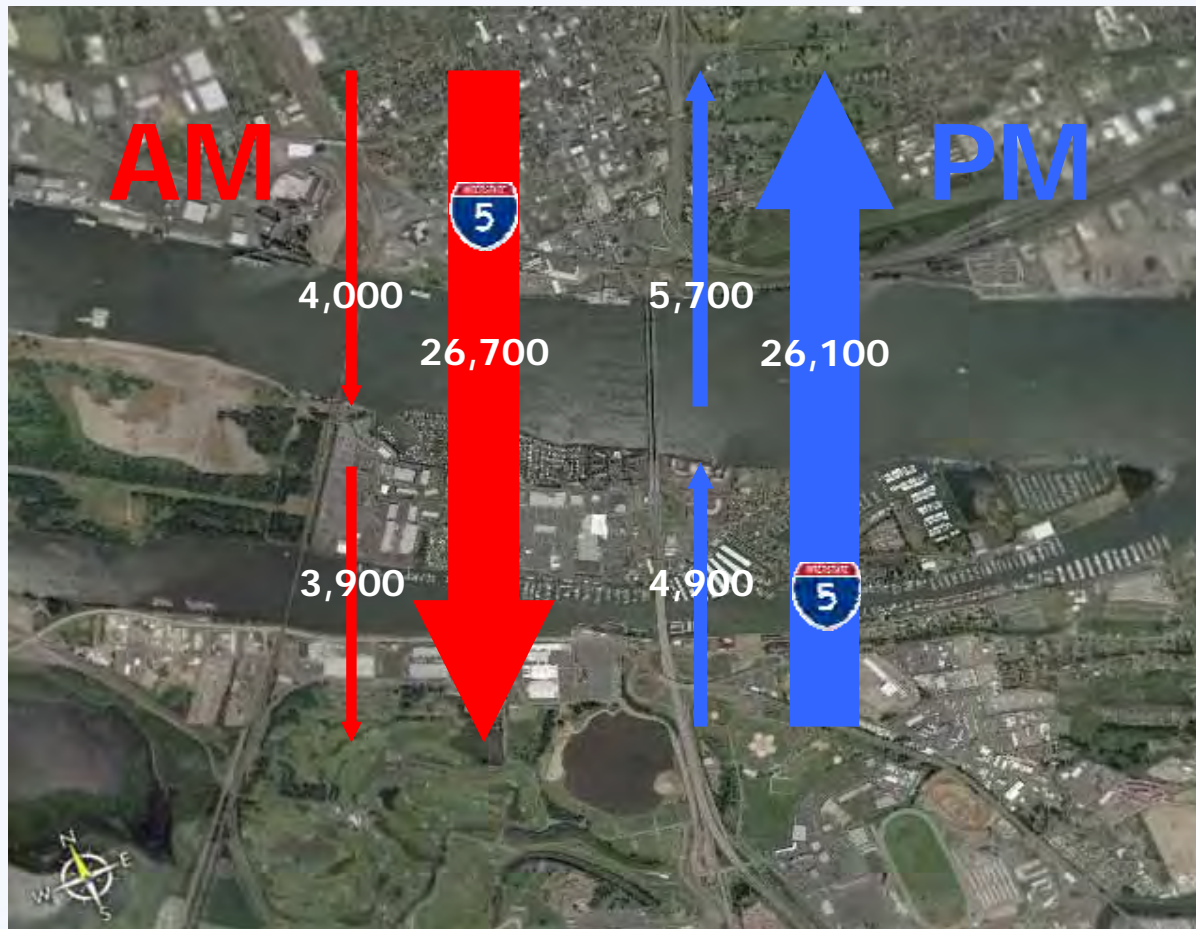


DISCLAIMER These maps are for discussion purposes only and are subject to change.

### LEGEND

-  I-5 Travel Lanes
-  Arterial Connections
-  High Capacity transit alignments
-  I-5 Interchange

# Alternative 3: 2030 4-Hour Volumes



## Alternative 3: Impacts to Local Street Networks

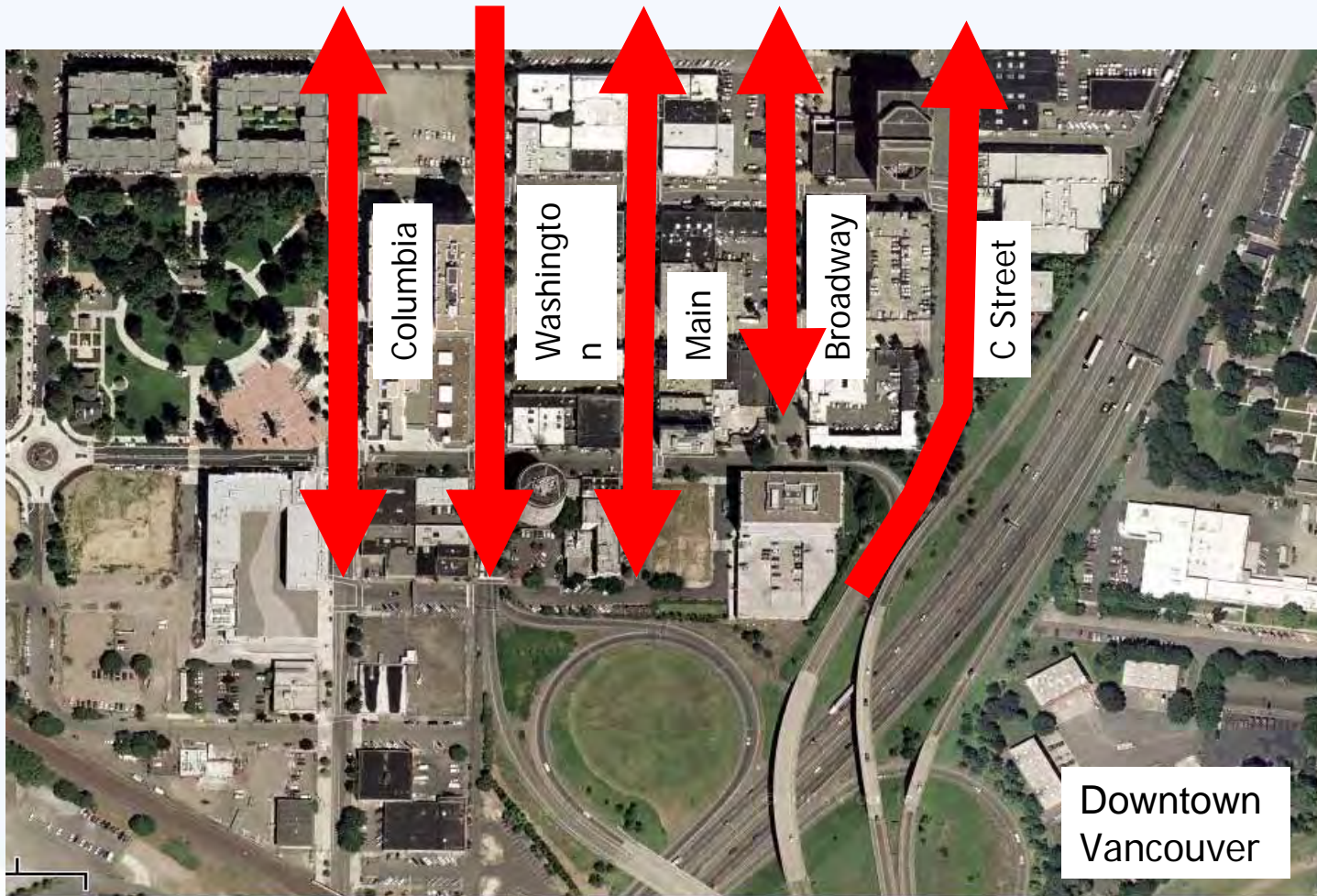


Downtown Vancouver

Hayden Island

Marine Drive

# Alternative 3: Downtown Vancouver Effects



# Why not keep the existing bridges?

- Three potential uses
  - Arterial
  - Transit
  - Bicycle and Pedestrian



# Arterial use of existing bridges

- Arterial crossing lanes are less efficient than new I-5 lanes
- Traffic congestion would increase in downtown Vancouver, on Hayden Island, and in the vicinity of Marine Drive
- Arterial traffic would be impacted by bridge lifts





# Transit use on the existing bridges

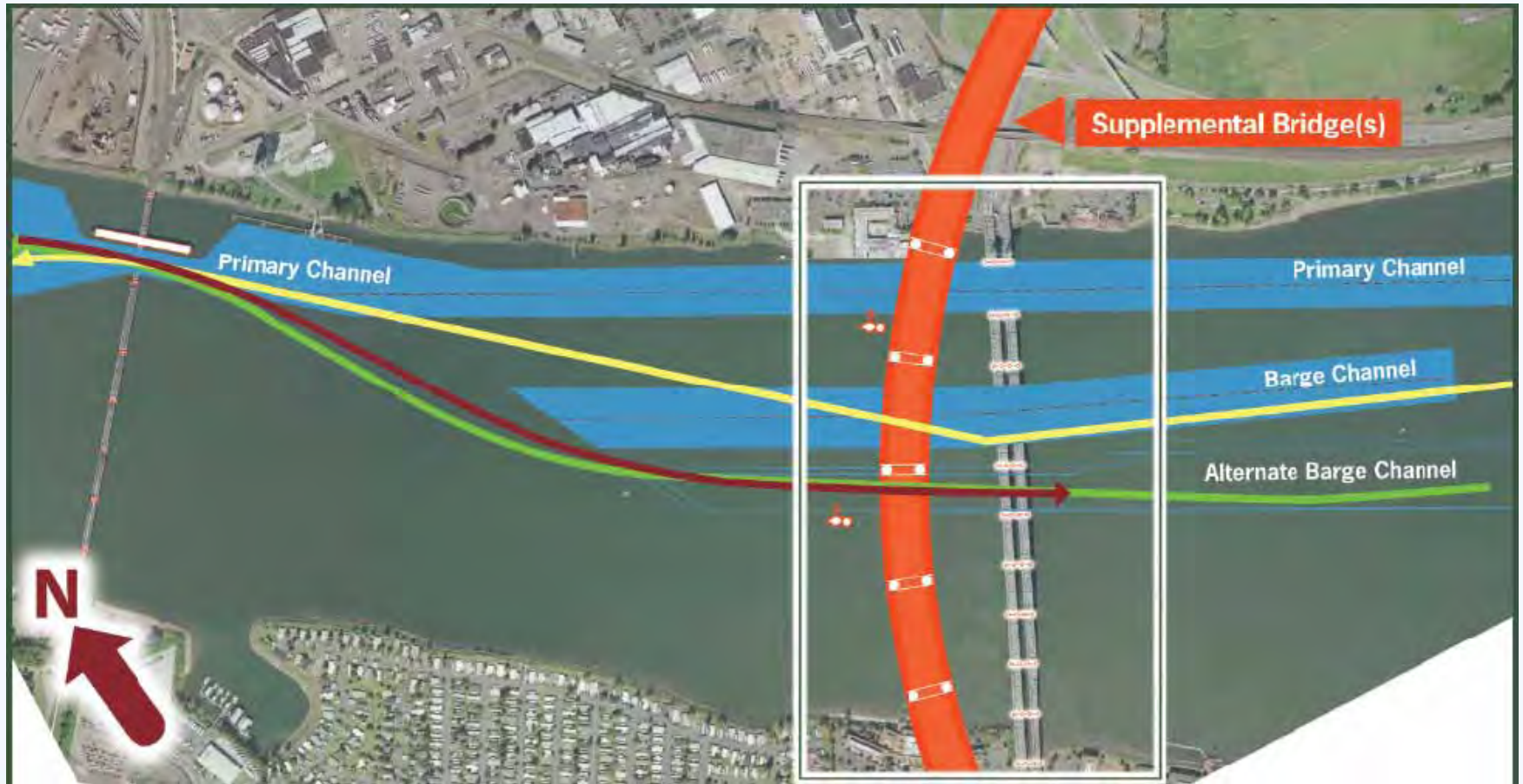
- Potential need for costly seismic upgrades
- Potential for unrestricted bridge lifts that would disrupt service
- HCT service would be inferior and more costly compared to a new I-5 Bridge

# Bicycle and pedestrian use

- A very expensive option that could be served as well on a new I-5 Bridge



# River Navigation for Supplemental Bridge Pier Locations, Bridge and Barge Channels



# Other impacts to keeping existing bridges

- Ownership is a significant consideration
- M&O costs estimated at nearly \$3 million a year (excluding seismic upgrade costs)
- Adverse land use and ROW impacts
- Natural resource impacts

# A Replacement Bridge

- Accommodates all types of travel over the Columbia River
- Provides a safe and efficient bridge for vehicles, freight, public transit, bicycles and pedestrians
- Can be built high enough to avoid the need for a lift span
- Can be designed to avoid impacts to Pearson Air Park
- Improves river navigation
- Has fewer natural resource impacts
- Has less land use/ROW impacts

# Columbia River **CROSSING**

## **Staff Recommended Range of Alternatives**

Task Force  

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November 29, 2006



## Staff Recommended Range of Alternatives to Carry Forward into the DEIS

- Alternative 1: No Action
- Alternative 2: Replacement Bridge and Bus Rapid Transit (BRT) with complementary express bus
- Alternative 3: Replacement Bridge and Light Rail Transit (LRT) with complementary express bus

# Other Elements of the Build Alternatives

- HCT alignment and station area refinement
- Interchange designs linking to river crossing
- Freight features
- TDM/TSM measures
- Managed lanes
- Tolling
- Number of lanes
- Bridge type, alignment and appearance



# Columbia River **CROSSING**

## Public Outreach and Involvement

Task Force

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November 29, 2006



# Public Participation



- Bi-State Task Force
- Community and Environmental Justice Group
- Discussions with neighborhood, business and community groups
- Outreach to schools, low income and minority communities
- Web site, monthly e-news updates, education
- Since March, we've talked *in person* with over 3,726 people.

# Public Discussion

## Open Houses

**January 17, 2007**

5:30pm – 7:30pm

Battleground

**January 20, 2007**

9:30 a.m. - 1 p.m.

Lincoln Elementary School, Vancouver

**January 25, 2007**

4:30 p.m. - 7:30 p.m.

OAME in Portland



## Community Events

January 18 - African American Community Unity Breakfast

Listening sessions in Clark County and Portland

Presentations to neighborhood groups

Agency briefings

# Columbia River **CROSSING**

## Overview of Budget and Schedule

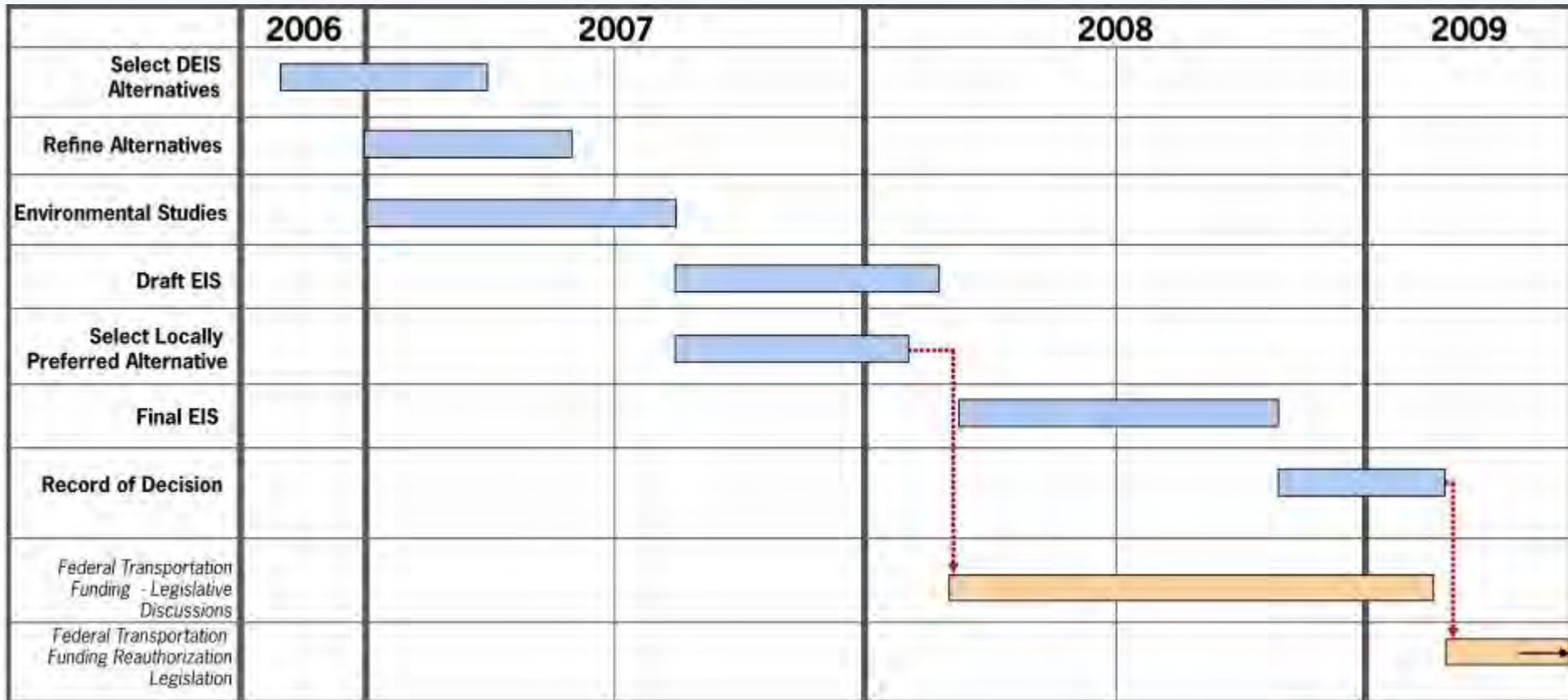
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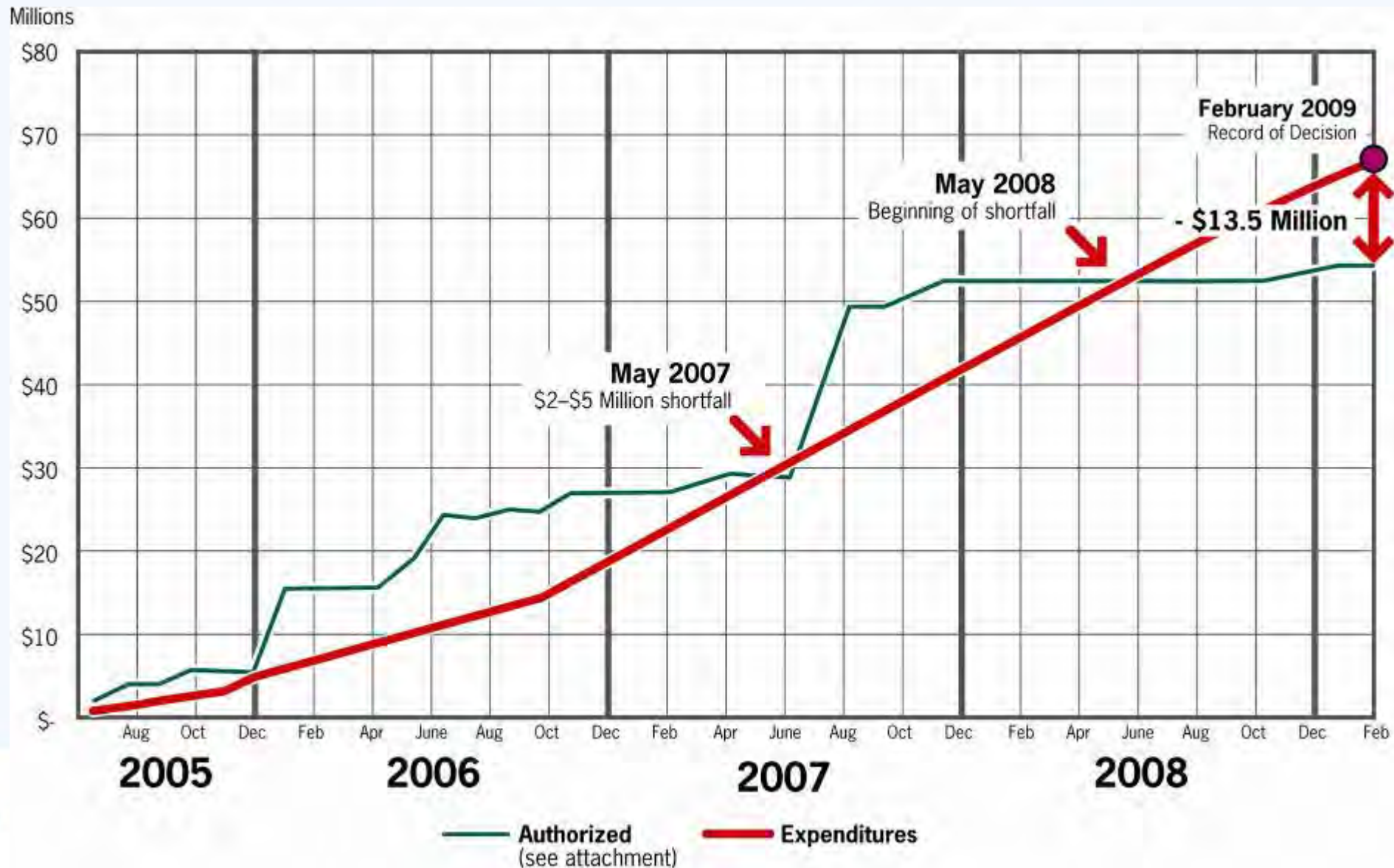


# Project Development Schedule and Potential Federal Funding



Revision date: November 21, 2006

# CRC Planned Expenditures vs. Anticipated Funds (Funds Needed)



# Columbia River Crossing Funding



<b>ODOT 2003 Federal Earmark</b>	<b>\$1,500,000</b>	
<b>ODOT State Funds</b> - Oregon Transportation Investment Act III	<b>\$5,000,000</b>	
<b>ODOT SAFETEA-LU</b> 2005-2009 \$6.22M Federal Funds with estimated 15% takedown	<b>\$5,287,000</b>	
<b>ODOT 2006 \$0.8M Federal Earmark</b> with 1% takedown	<b>\$792,000</b>	
<b>WSDOT 2004 &amp; 2005 Federal Earmark Funds</b>		<b>\$4,967,856</b>
<b>WSDOT SAFETEA-LU</b> 2005-2009 \$8M Federal Funds with estimated 15% takedown		<b>\$6,800,000</b>
<b>WSDOT State Funds</b> - 2005-2007 Transportation Partnership Funds - Feb 2006		<b>\$10,000,000</b>
<b>WSDOT State Funds</b> - 2007-2009 Transportation Partnership Funds - July 2007 & 2008		<b>\$20,000,000</b>
<b>WSDOT State Funds</b> - 2009-2011 Transportation Partnership Funds - July 2009		<b>\$20,000,000</b>
<b>WSDOT State Funds</b> - Other		<b>\$75,000</b>

**FUNDING TOTALS**

**\$12,579,000**

**\$61,842,856 = \$74,421,856**