

SR 167 Extension Comprehensive Tolling Study Round 1 Preliminary Results

WSDOT SR 167 Tolling Study Team

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What We Did at the Last Meeting

- Reviewed the 2010 Toll Feasibility Study
- Reviewed 19 different phasing options
- Selected three options for further analysis
- Endorsed the evaluation criteria
- Reviewed the Public Opinion Survey

What We Are Doing Today

- Review first round analysis results
- Discuss and decide what to analyze next
- Discuss the public outreach plan

Full Build (formerly Option 1)



Option A (formerly Option 2)



Option B (Formerly Option 9A)



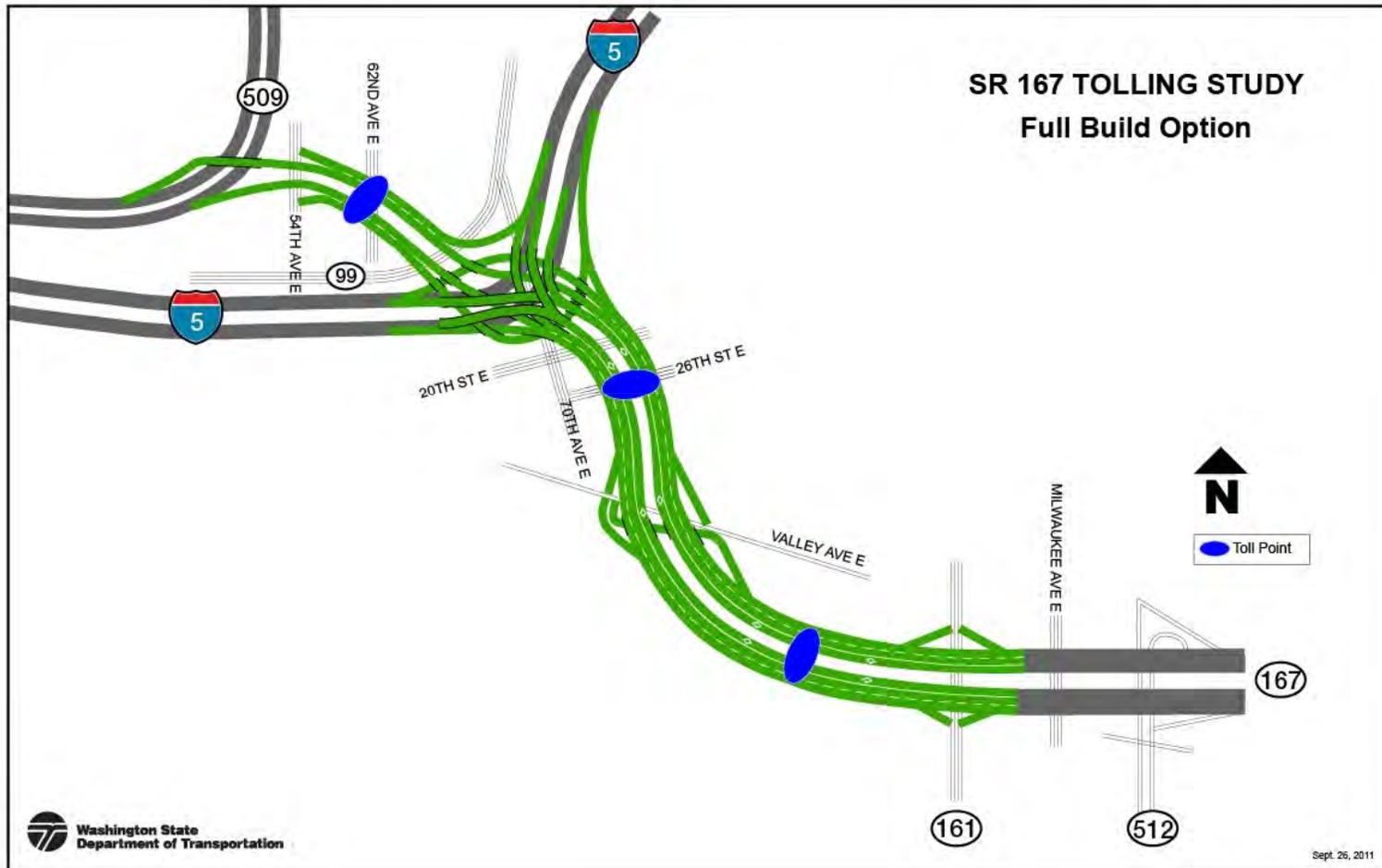
Basic Toll Concepts

- Single point tolling (TNB)
- Segmental tolling
- Fixed rate tolling (TNB)
- Variable tolling (SR 167 HOT lane, SR 520)

For this study:

- Segmental tolling
- Variable tolling

Full Build (formerly Option 1)



Option A (formerly Option 2)



Option B (Formerly Option 9A)



Option C (Option B plus toll existing SR 167)



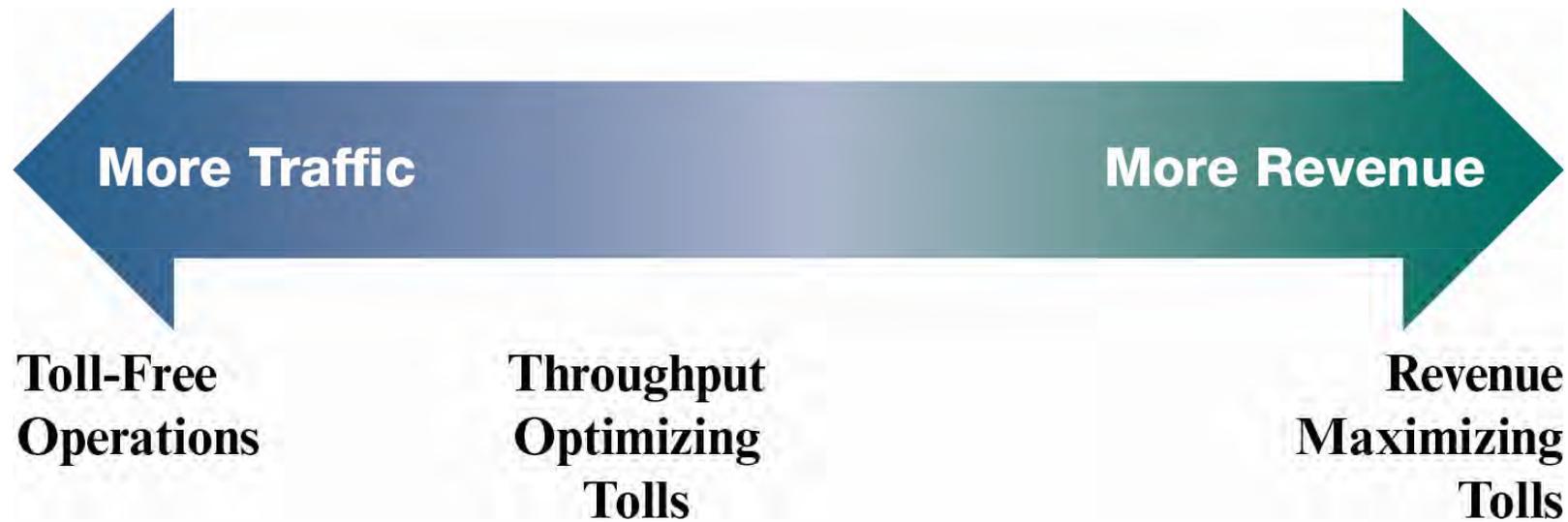
Analysis Assumptions

- All vehicles except transit pay tolls
- Toll rates vary by time of day based on level of congestion
- Trucks pay higher tolls
- Toll rates are set toward revenue generation
- Traffic model was adjusted for downward trend in regional job and population forecasts by 3% and 1% respectively to reflect recent economic downturn.

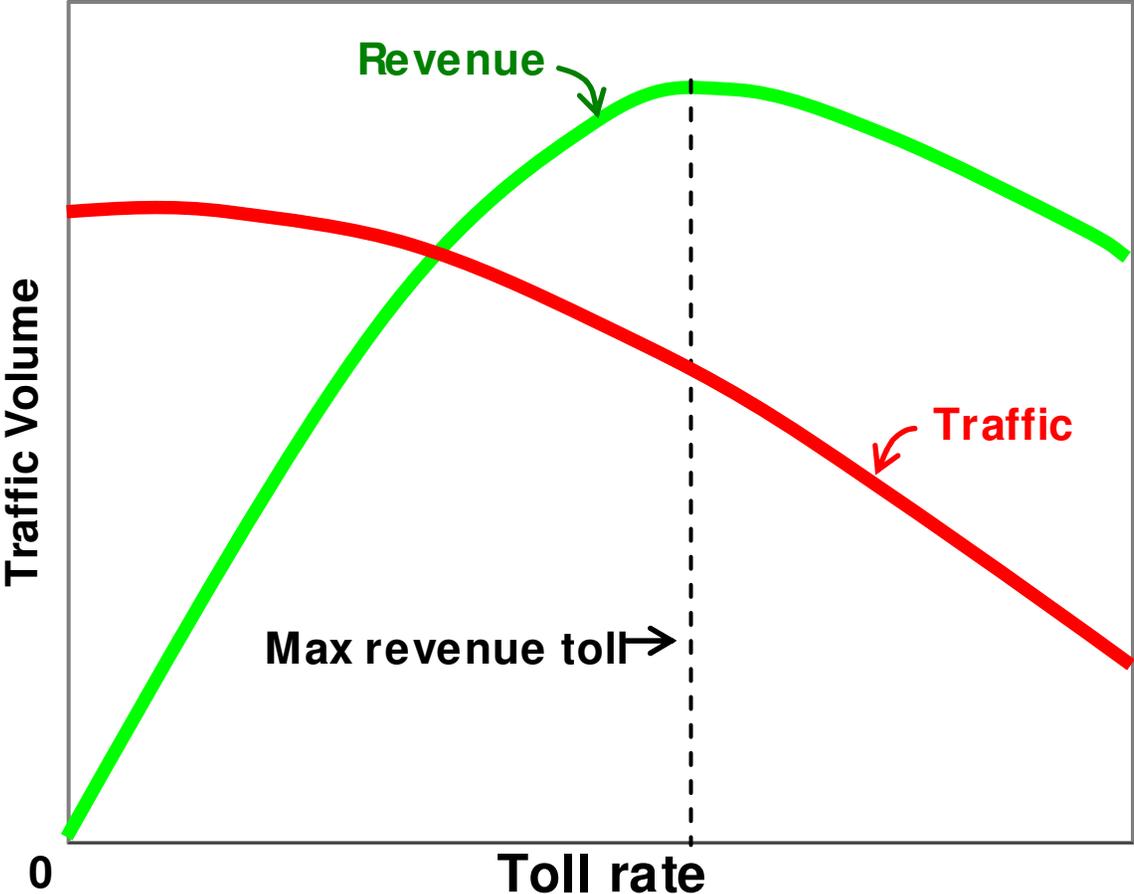
Value of Time (VOT)

- **People's willingness to pay a toll depends on:**
 - Perception of what their time is worth
 - Available options to avoid/reduce toll
 - Trip type/destination
- **Updated VOT drawn from SR 520 Investment Grade study:**
 - Average work trip: reduced from \$26.25/hour to \$14.70/hour, nearly 50% reduction.
 - Non-work trip: reduced from 19.00/hour to \$13.25/hour, a 30% reduction.

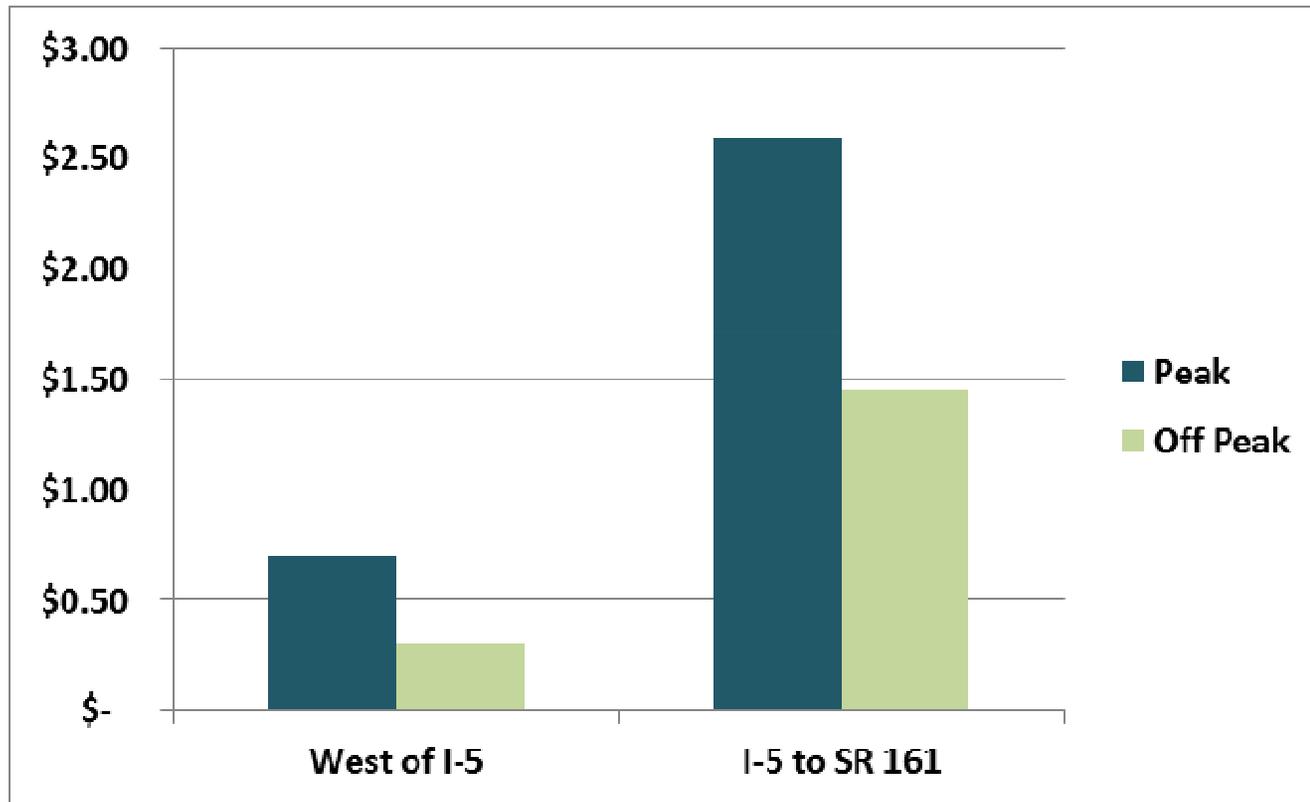
Nexus between Tolling and Traffic



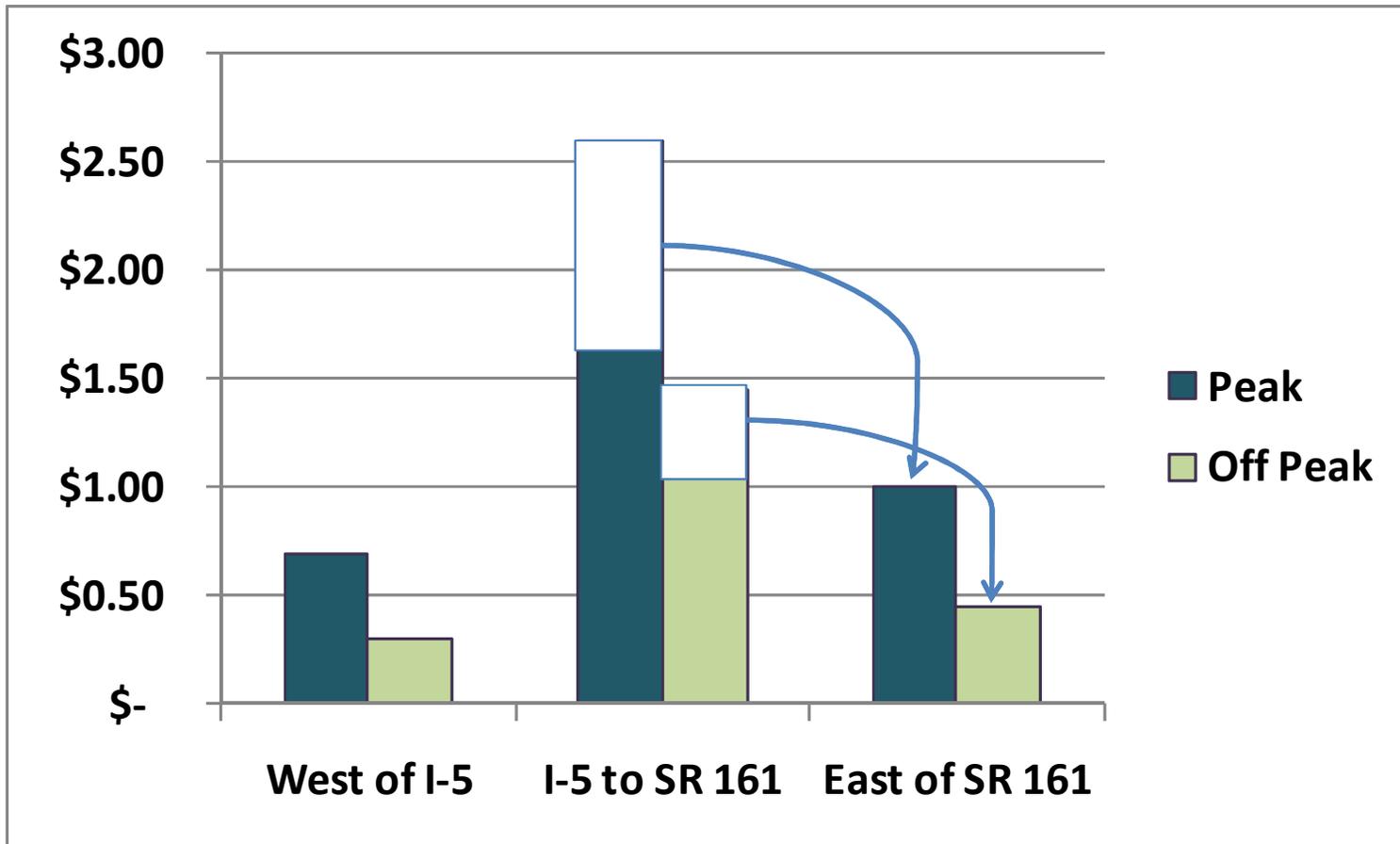
Relationship between Toll Rate, Traffic and Revenue



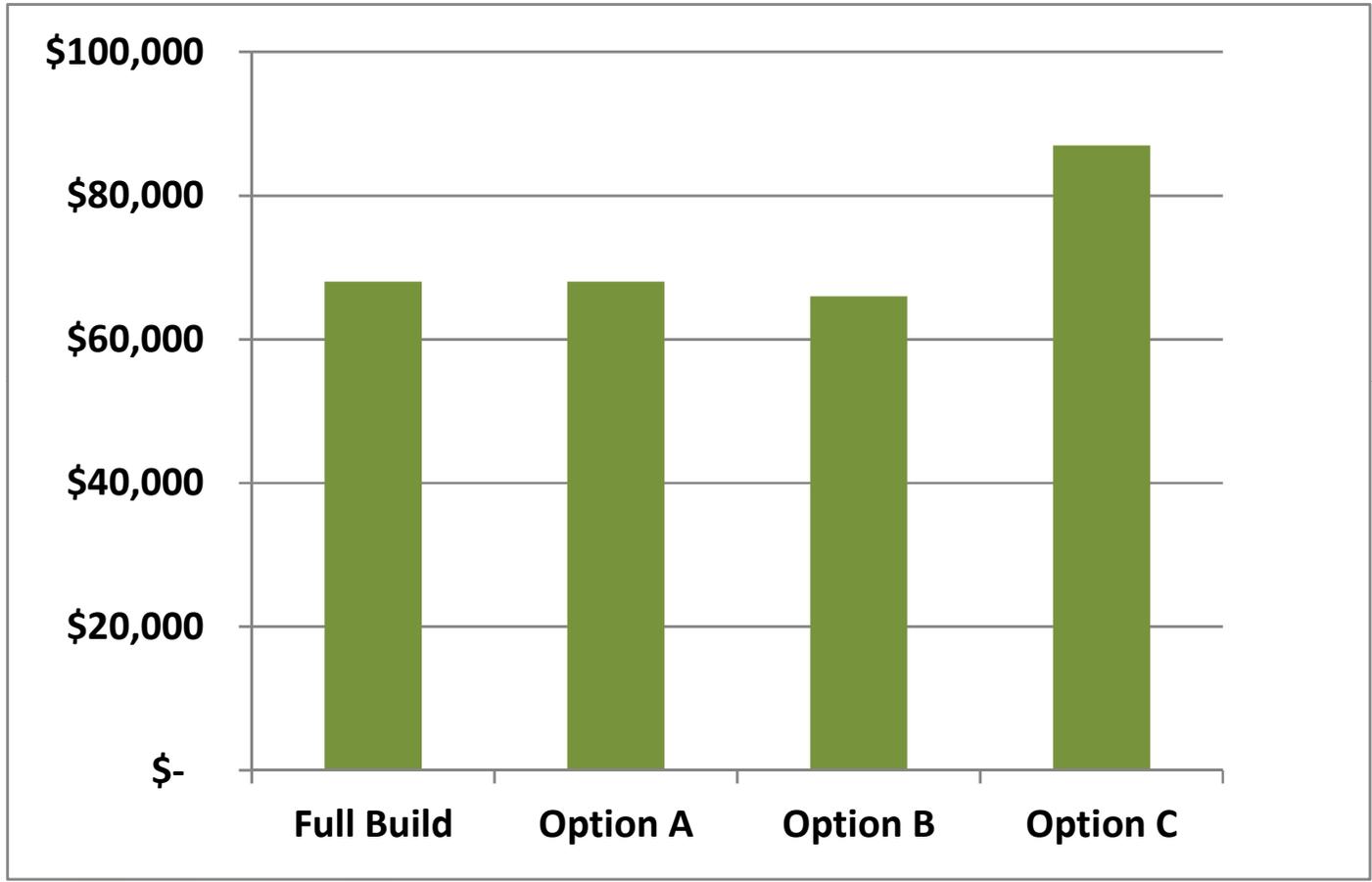
Full Build, Option A & B Toll Rates by Segment



Option C Toll Rates Tested



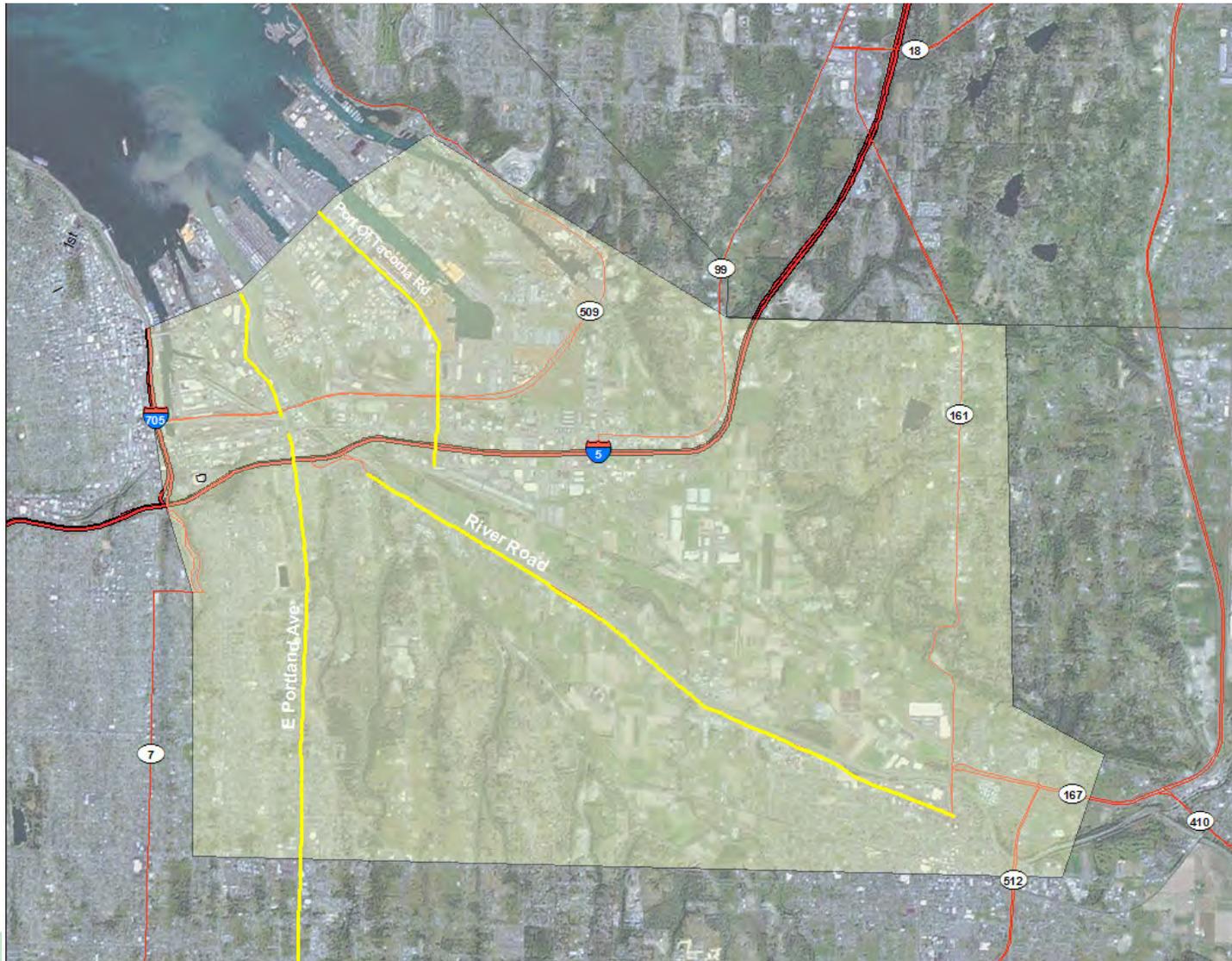
Estimated 2030 Weekday *Gross* Toll Revenue



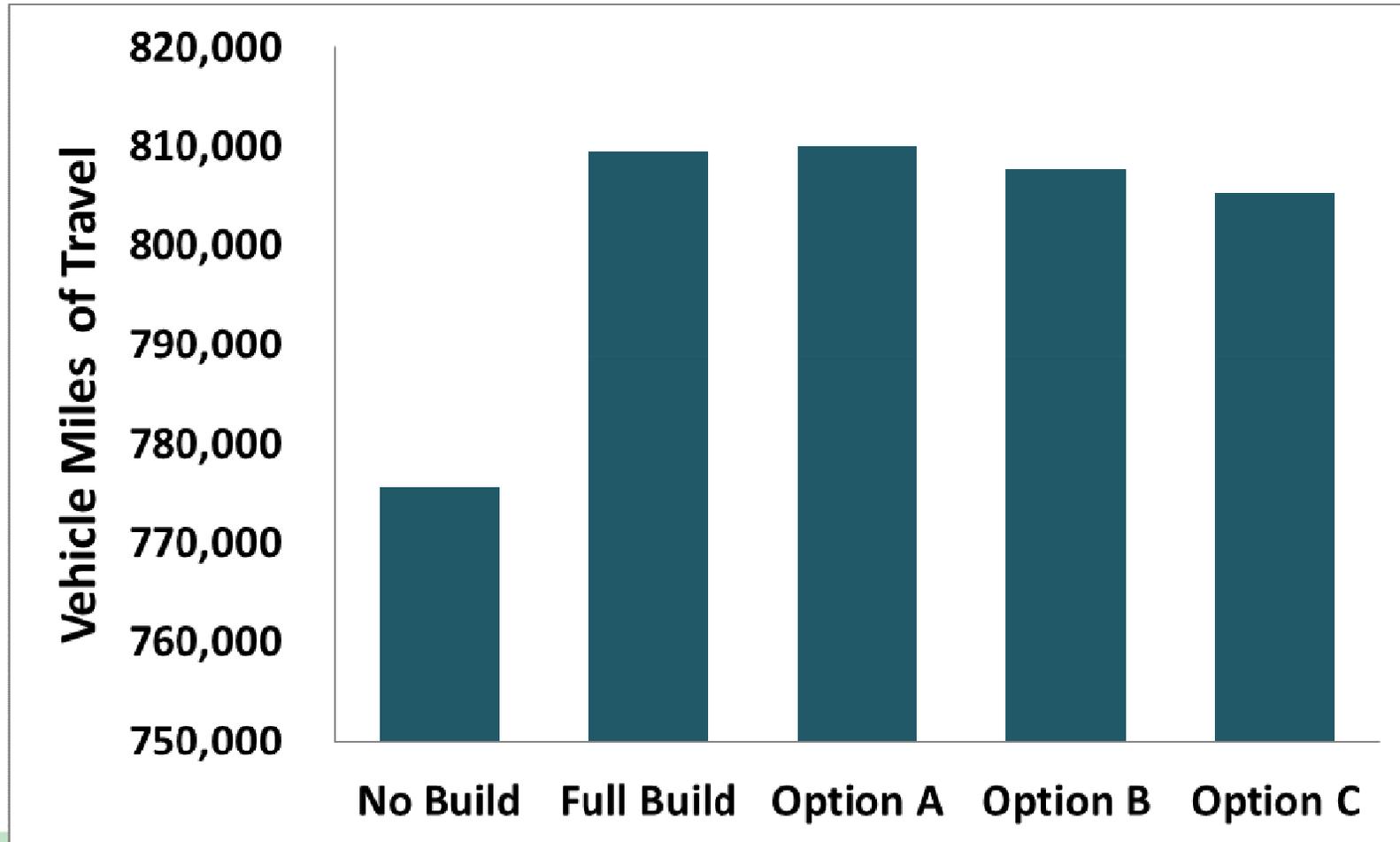
Performance of Alternatives

- Vehicle Miles of Travel (VMT)
 - Number of Vehicles on a road way link multiplied by the length of that link
 - Sum this for all roadway links in the study area
- Delay
 - Congested Travel time on a roadway link is one of the output from Travel Demand Model.
 - Vehicle of hours of Travel (VHT) in the study area is calculated as:
 - Congested travel time multiplied by number of vehicles on that road way section gives us the vehicles hours of travel for that roadway
 - Sum this for all roadway links in the study area
 - Delay Reduction in the study area is calculated as follows:
 - No Build alternative VHT minus a given Alternative VHT

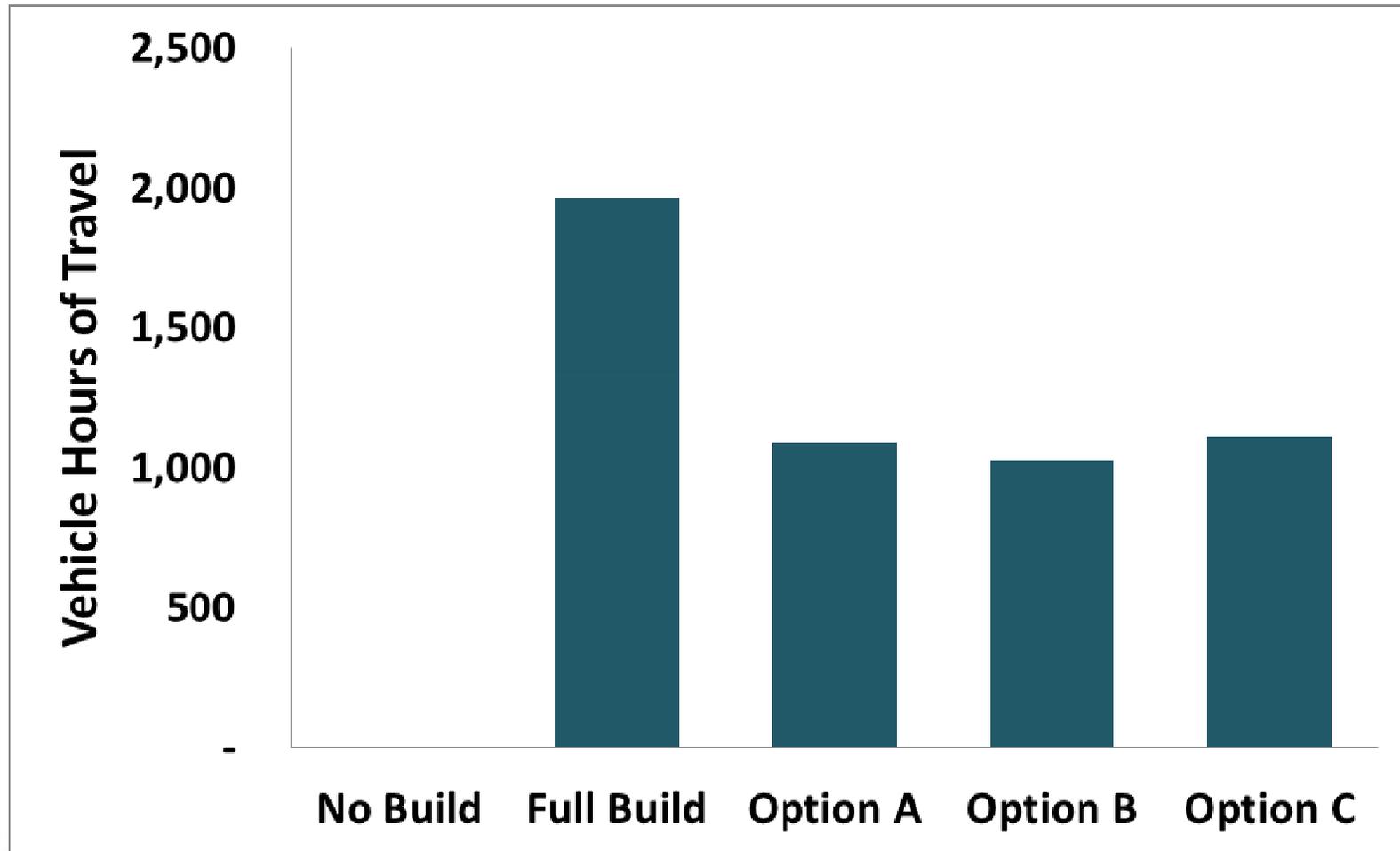
Study Area Defined for the Analysis



2030 PM Peak Period Vehicle Miles of Travel in the Study Area



2030 PM Peak Delay Reduction in the Study Area *compared* to No Build Option



Assessing Extension Usage: Volume to Capacity Ratio

- Typically a freeway lane is able to carry 2000 vehicles/hour
- Utilization = $\text{Volume} / \text{Capacity} \times 100\%$
- Traffic engineers use peak hour volume to capacity ratio (V/C) to assess how fully a corridor is used and how congested it might be.
- A V/C of 0.9 or higher indicates potential congestion.

Full Build Extension Utilization

2030 PM Peak Percentage of Volume to Capacity Ratio



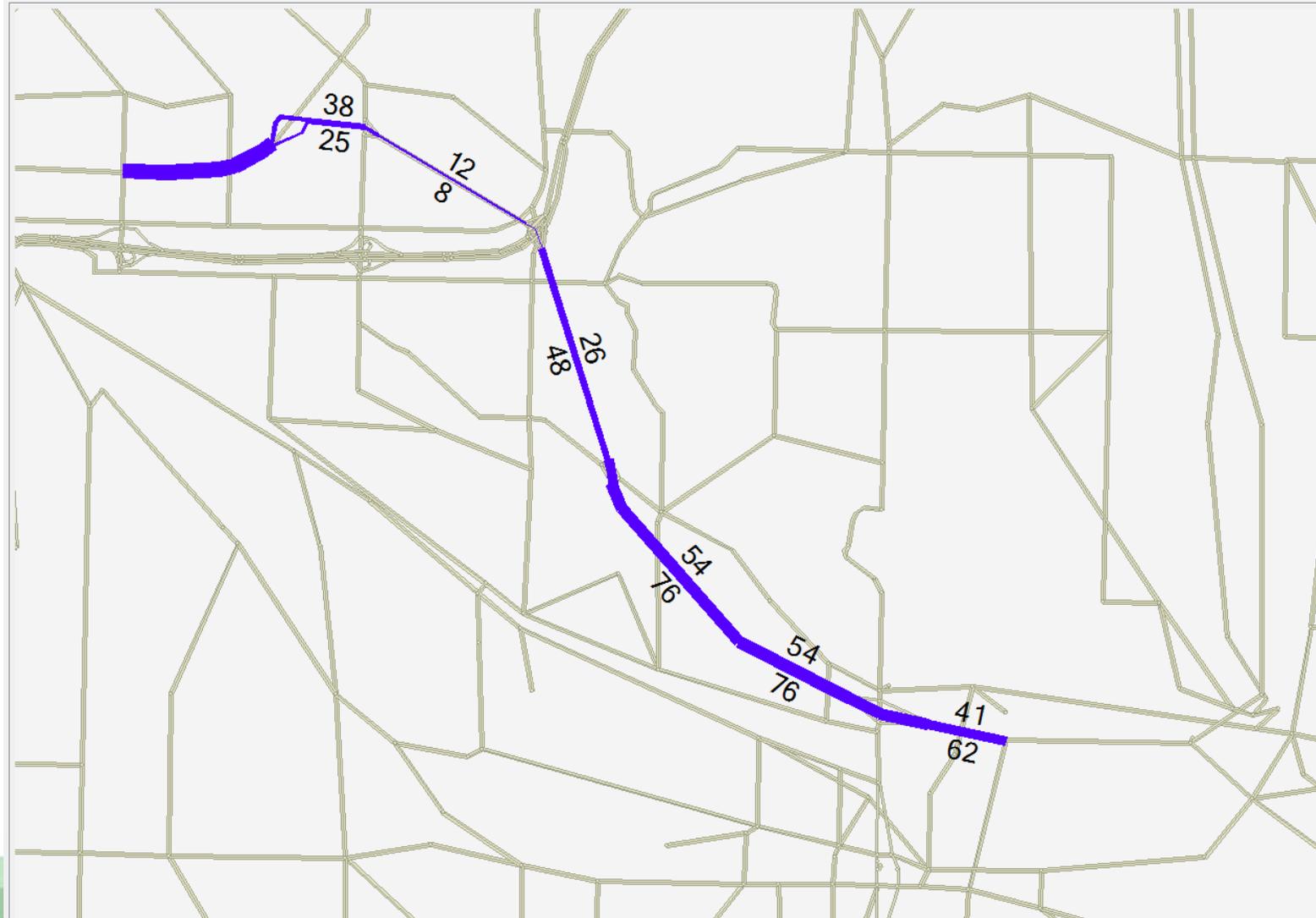
Option A Extension Utilization

2030 PM Peak Percentage of Volume to Capacity Ratio



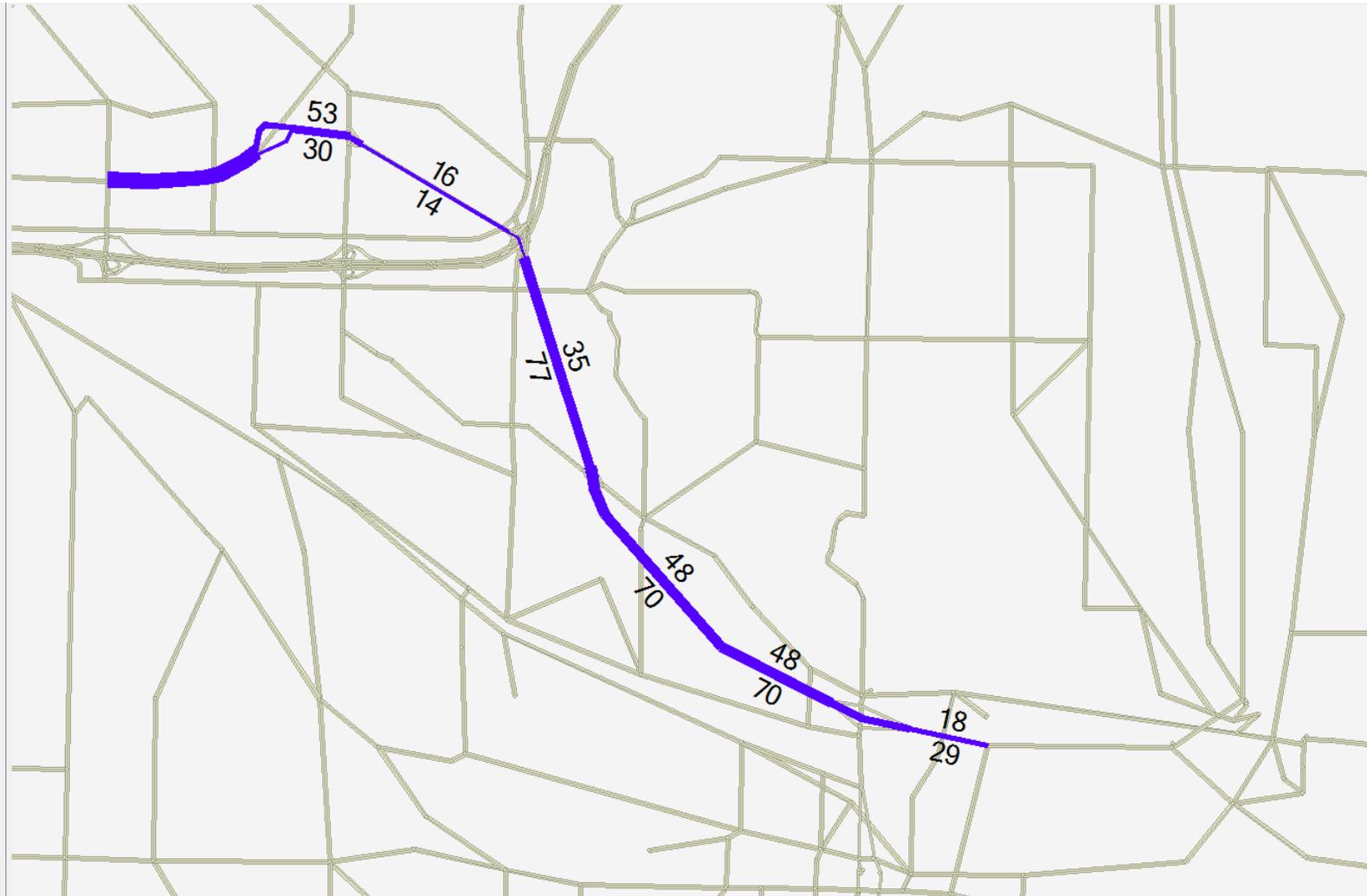
Option B Extension Utilization

2030 PM Peak Percentage of Volume to Capacity Ratio



Option C Extension Utilization

2030 PM Peak Percentage of Volume to Capacity Ratio



What Did We Find from V/C Analysis?

- By 2030, the Full Build option would approach congestion if it is not tolled.
- Tolling is expected to reduce the extension usage
 - The segment west of I-5 is more sensitive to tolling than the east segment
 - For the Full Build and Option A, with the toll rate as tested, less than half of the capacity is expected to be used by 2030 east of I-5, while less than one fifth of capacity utilization is expected west of I-5
 - For Option B and C, about three quarter of the capacity is expected to be used east of I-5, while the usage is expected to approach one fifth west of I-5
 - Spreading a portion of the toll to the existing SR 167 just east of SR 161 would help balance the flow and increase revenue generation. But it introduces potential equity issue

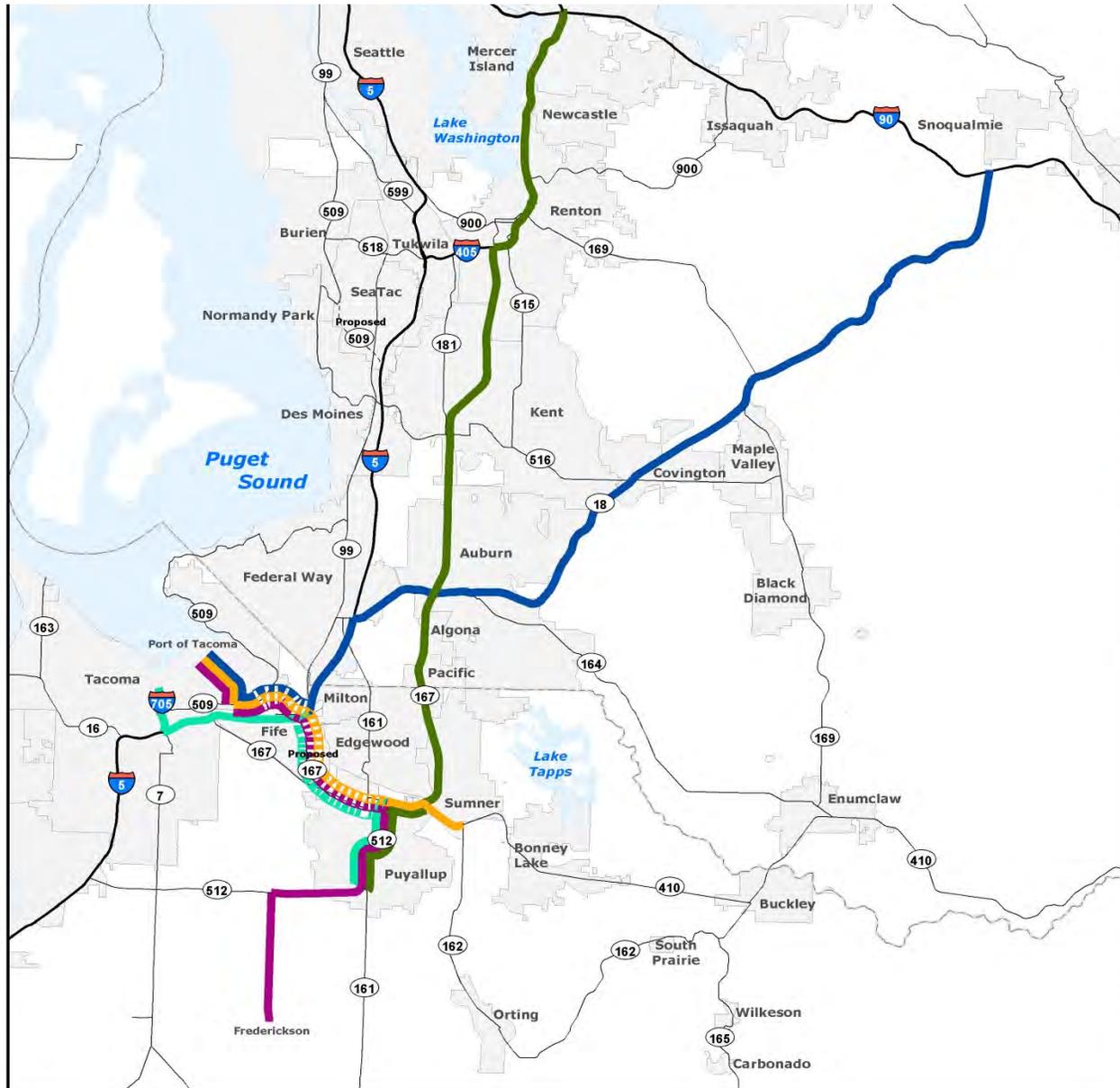
2030 Full Build – Truck Volume per Hour (pickup trucks included)



2030 Option A – Truck Volume per Hour



Corridor Performance Analysis



**SR 167 Extension
Comprehensive
Tolling Study
Analysis Corridors**
September 2011

Legend

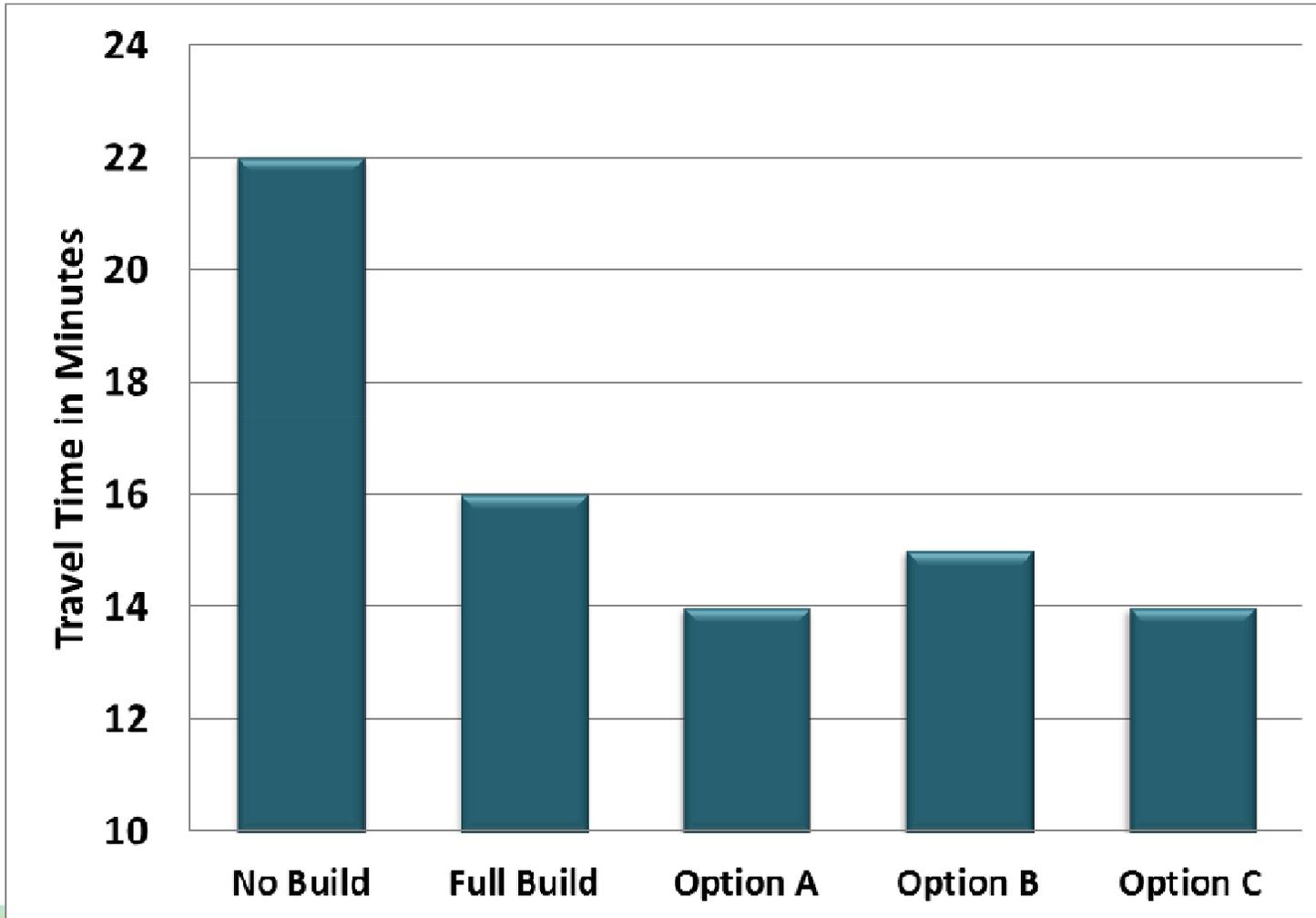
- █ 1. Sumner to Port of Tacoma
- █ 2. Puyallup to Bellevue
- █ 3. Port of Tacoma to I-90
- █ 4. Frederickson to Downtown Tacoma
- █ 5. Puyallup to Downtown Tacoma



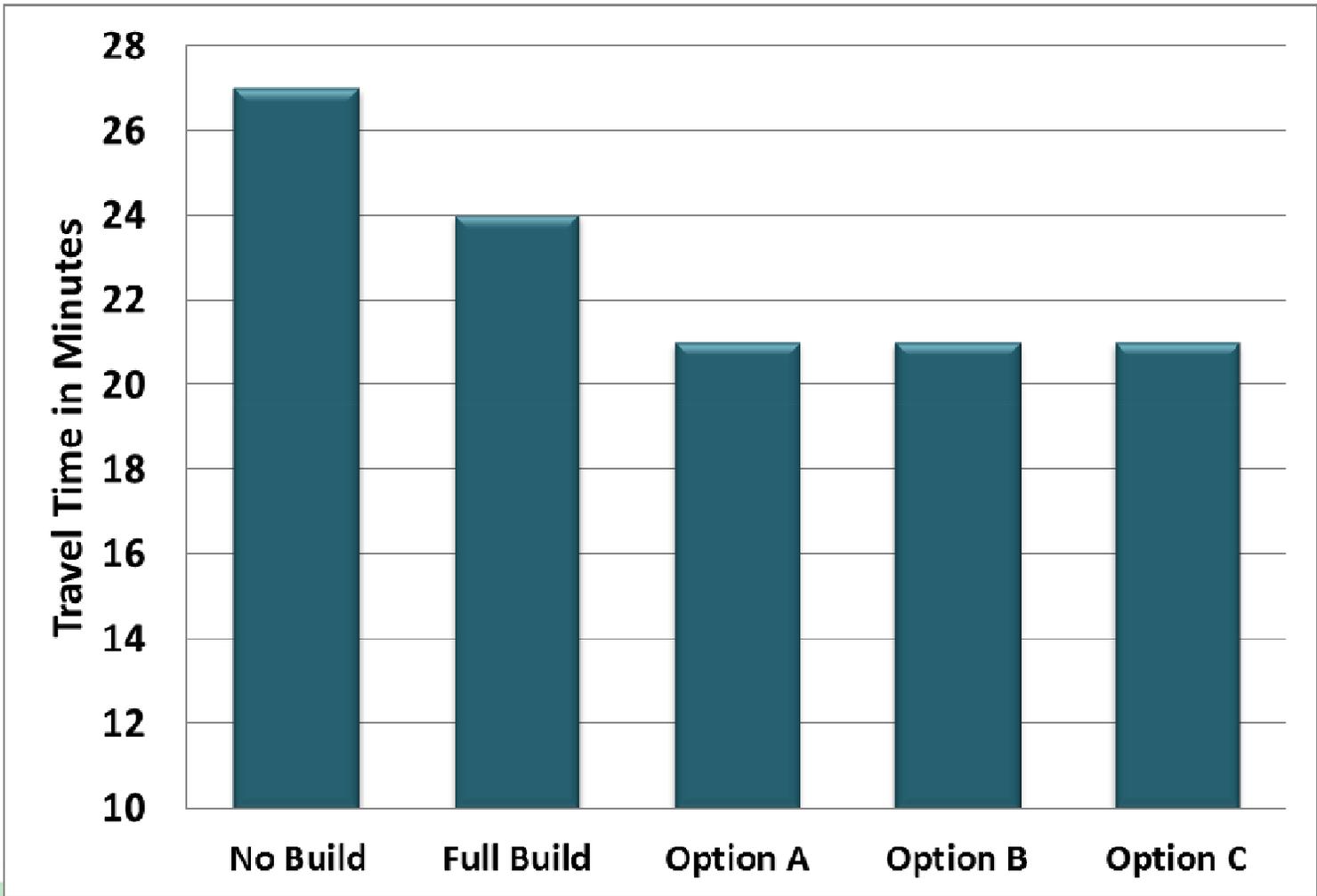
Produced by: Urban Planning Office (Paul McCorkhill)



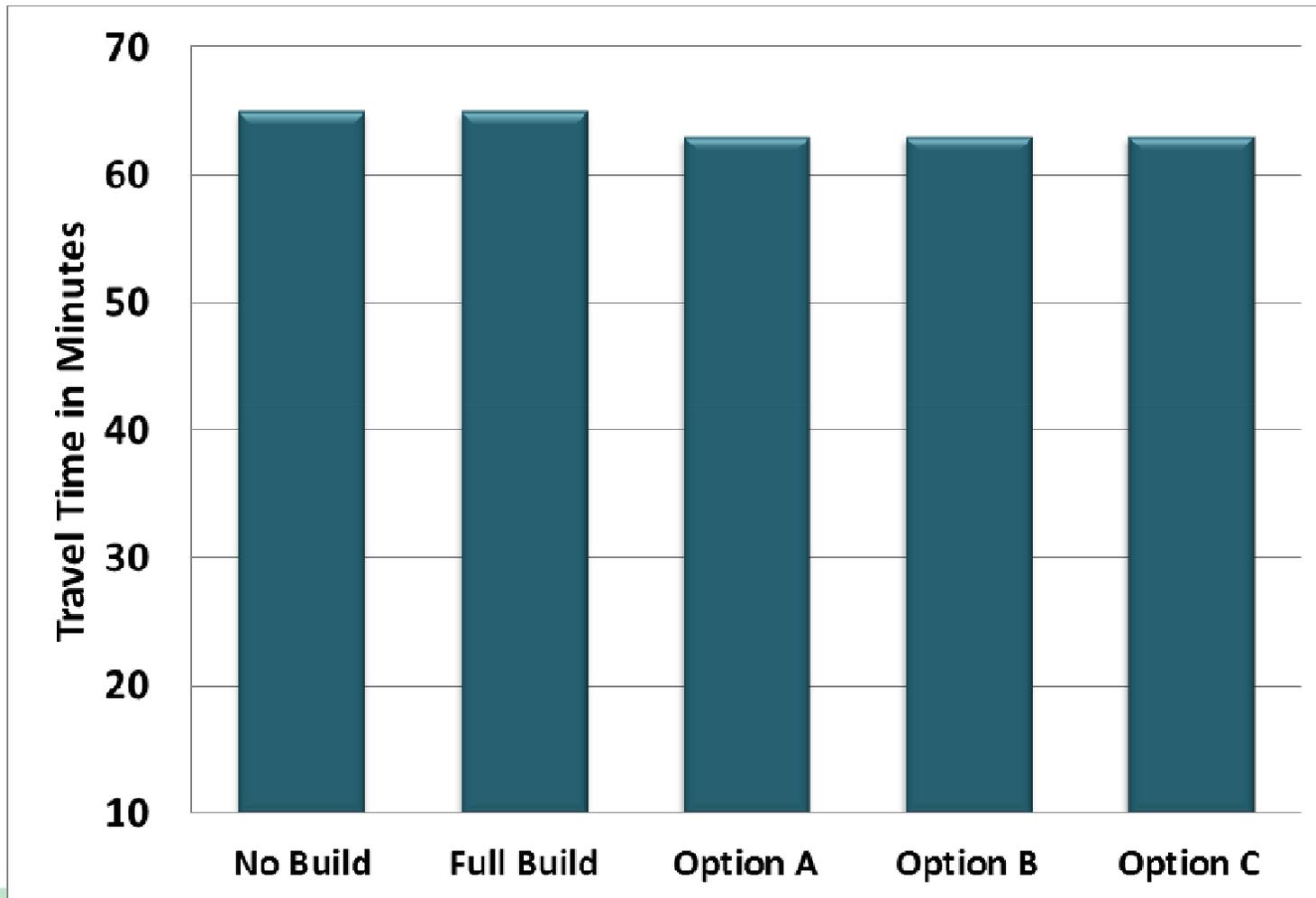
Port of Tacoma to Sumner Corridor Travel Time Comparison – 2030 PM Peak Period



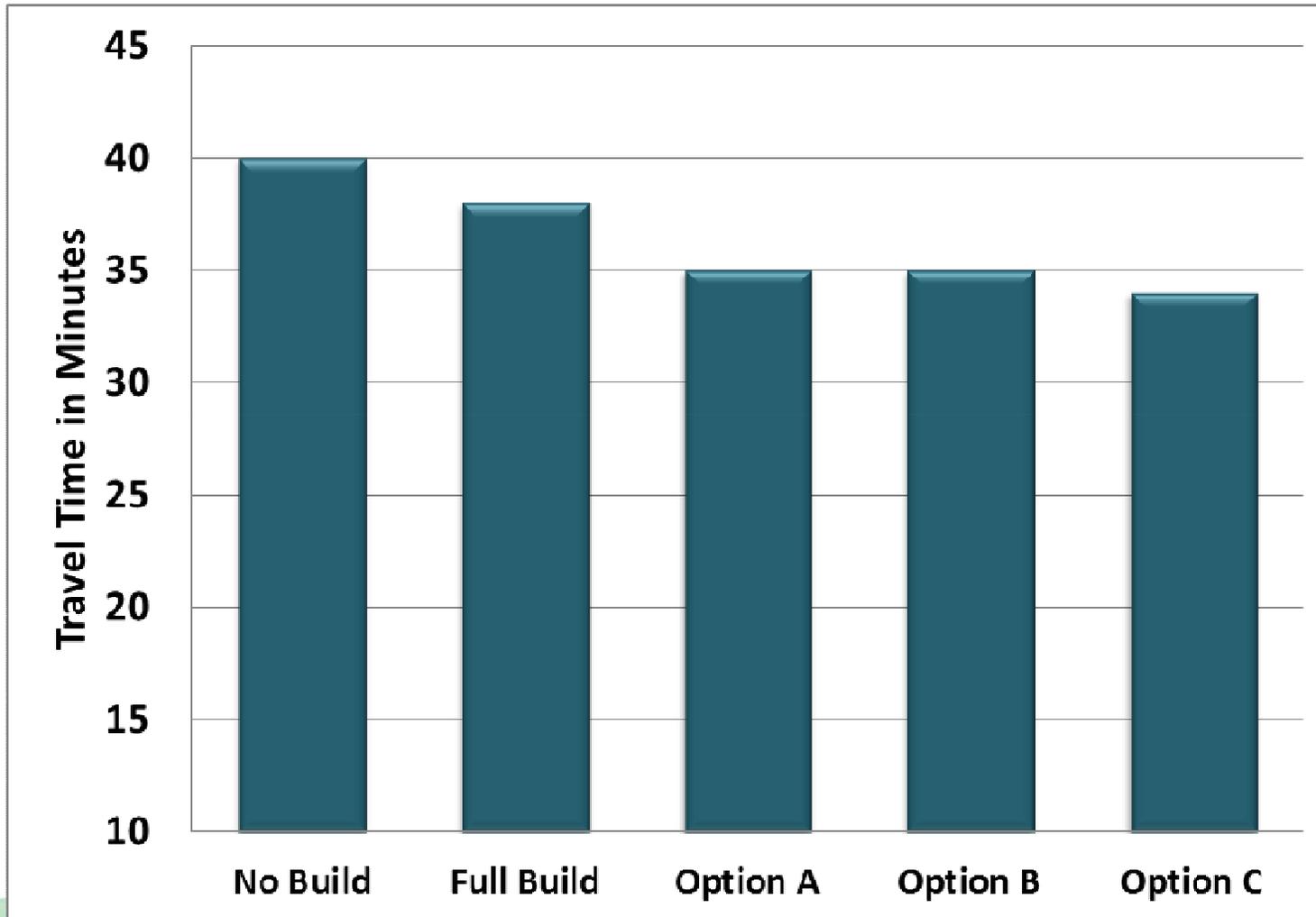
Downtown Tacoma to Puyallup Corridor Travel Time Comparison – 2030 PM Peak Period



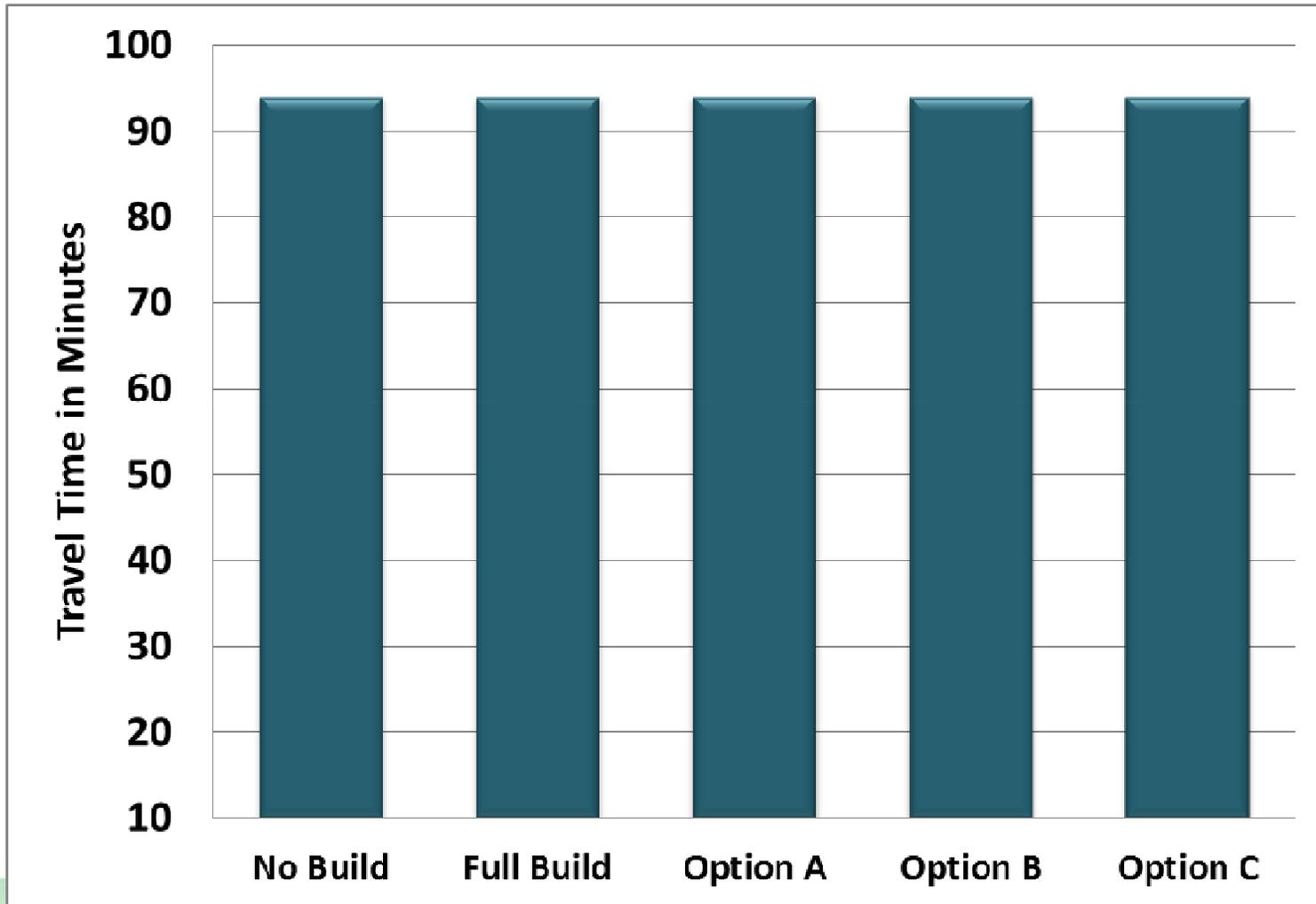
I-90 Corridor to Port of Tacoma via SR 18 - Travel Time Comparison – 2030 PM Peak Period



Port of Tacoma to Frederickson Corridor Travel Time Comparison – 2030 PM Peak Period



Bellevue to Puyallup via SR 167 - Corridor Travel Time Comparison – 2030 PM Peak Period



Summary Findings

- Tolling is expected to reduce demand by about half
- For the sections with more than 1 lane each direction, model analysis indicates surplus capacity
- Adding a toll point on the existing SR 167 just east of SR 161 would
 - Increase toll revenue
 - Increase the extension usage
 - Balance traffic flow
- With the updated assumptions, daily gross revenue is expected to be less compared to the 2010 Toll Feasibility Study

Developing/Endorsing Options for Second-Round analysis



Questions to Keep in Mind in Developing 2nd Round Options

- How do we leverage on the findings from the first round analysis?
- How can we get the analysis done most efficiently?
- How to fit phased approach with the ultimate vision of the corridor and the system as a whole?



Specific Things to Focus On

- Number of lanes:

Which option/s analyzed in Round 1 provide reasonable capacity? Are there any other configurations do you want staff to test?

- Toll locations:

Which tolling option shows the most promise? Are there different ways of tolling that you would like to test?

- Toll Rates:

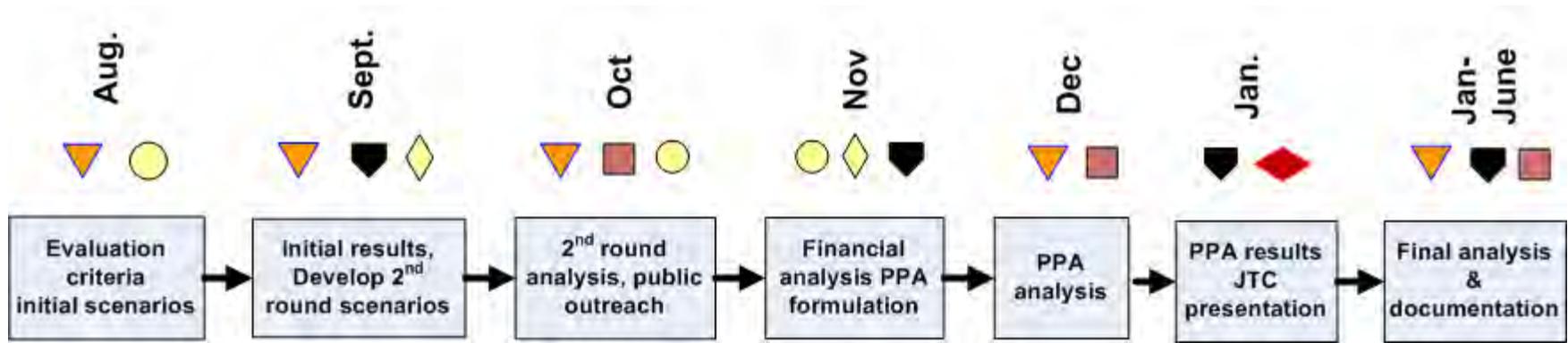
Toll for maximum revenue or system performance?

- Anything else?

Overall Schedule & Next Meeting



Study Schedule & Milestones



-  Stakeholder Committee Meetings
-  Focus Group
-  Public Opinion Survey/Open Houses
-  WSDOT Toll Executive Team Briefing
-  Commission Presentations
-  JTC Presentation