Puget Sound Gateway Program
SR 167

Steering Committee
June 28, 2016

CRAIG J. STONE, PE    GATEWAY PROGRAM ADMINISTRATOR
TOM SLIMAK, PE     SR 167 ASST. PROJECT MANAGER
Agenda

• Welcome & Introductions
• Program Overview
• Scenario Review
• Review Essential Performance Metrics and Ratings
• Review Contextual Performance Metrics and Ratings
• Review Cost Estimates
• Refine Scenarios
• Conclusion and Next Steps
Puget Sound Gateway Program Update

- Gateway Program Management Office
- SR 167 General Engineering Consultant
- SR 509 Project Activities
- Coordination with WSDOT Secretary
SR 167 Steering Committee 2016 Work Plan

- Determine Needs
- Define Performance Metrics
- Develop Scenarios
- Stakeholder Endorsement of Scope
- Funding & Phasing
- Recommend Implementation Plan
Legislative Direction

In making budget allocations to the Puget Sound Gateway project, the department shall implement the project's construction as a single corridor investment. The department shall develop a coordinated corridor construction and implementation plan for SR 167 and SR 509 in collaboration with affected stakeholders.

Specific funding allocations must be based on where and when specific project segments are ready for construction to move forward and investments can be best optimized for timely project completion. Emphasis must be placed on avoiding gaps in fund expenditures for either project.
Puget Sound Gateway Program

Puget Sound Gateway projects (SR 167 and SR 509) are funded on the same 16-year timeline
  - Total funding is $1.87 billion; this amount assumes $310 million local match and tolling revenue
Puget Sound Gateway Program

Total funding is $1.87 billion; this amount assumes $310 million local match and tolling revenue.

- Total: $1.87 billion
- Local contribution: $130 million
- Toll revenue: $180 million
- Connecting Washington funding: up to $1.57 billion
Key Questions for Consideration

- SR 167 mainline prism
- Tolls
- Managed lanes
- Forward compatibility
- Effects to I-5
- Connectivity
- Port of Tacoma Access
Scenarios

- Range from “Closing the Gap” to “Full-Build Out +”
Scenario Vicinity Maps:
Essential Performance Targets

- Maintain or improve SR 167 operations between SR 161 and I-5
- Maintain or improve SR 509 Spur operations between I-5 and SR 509
- Maintain or improve I-5 operations between I-705 and SR 18
- Reduce travel time between Urban Centers and Manufacturing Industrial Centers in Pierce and South King County
- Improve travel time reliability between Urban Centers and Manufacturing Industrial Centers in Pierce and South King County
- Complete the freeway network and provide system redundancy
- Reduce hours of delay in the project subarea network
- Improve economic vitality
- Support local and regional comprehensive land use planning and development
- Reduce number of serious injury and fatal crashes (I-5, SR 167, and SR 509)
Performance Evaluation Results

Scenario Comparison Table - SR 167 Completion Project

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Baseline Performance Metrics</th>
<th>Economic Vitality</th>
<th>Safety</th>
<th>Contextual Performance Metrics</th>
<th>Cost</th>
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<td>Scenario 4 - Moderate Connectivity</td>
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<td>Scenario 5 - Full Build Out</td>
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</table>

Performance Trade-Offs Discussion and Recommended Preferred Scenario
Performance Metrics Evaluation Results

- Scenarios were evaluated using our previously reviewed performance metrics
- Performance metrics are based on our essential and contextual needs
- Each scenario is rated in each category via the following:
  
  - Very Good
  - Good
  - Moderate
  - Fair
  - Poor

Evaluation results are relative between the scenarios.
Performance Metrics Results

General Observations

• The proposed SR 509 Spur & SR 167 Scenarios all perform well in a tolled scenario;

• I-5 operations generally improve between the I-5/SR 167 interchange and Port of Tacoma Road;

• General travel time savings across the Scenarios, some impacts;

• Adding the missing SR 509 Spur & SR 167 connection shifts trips towards the SR 167 corridor;
Updated Project Subarea
Travel Pattern Changes

2045 Scenario 3 PM
Travel Pattern Changes

Change in Demand
- Increase in Demand
- Decrease in Demand

2045 Scenario 3 PM
Mobility- SR 509 Spur/SR 167 Performance

Throughput potential and congestion were evaluated for 2025 southbound PM Conditions

<table>
<thead>
<tr>
<th>SR 509 Spur &amp; 167 Performance 2025 PM Southbound</th>
<th>SR 509 Spur</th>
<th>SR 167</th>
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Scenario 1:          | Scenario 1:              | Scenario 1:     | Scenario 1:     |
Scenario 2:          | Scenario 2:              | Scenario 2:     | Scenario 2:     |
Scenario 3:          | Scenario 3:              | Scenario 3:     | Scenario 3:     |
Scenario 4:          | Scenario 4:              | Scenario 4:     | Scenario 4:     |
Scenario 5:          | Scenario 5:              | Scenario 5:     | Scenario 5:     |
Mobility: I-5 Performance

I-5 Performance Northbound AM, 2025

I-5 model projected speeds were evaluated at several screenline locations.
Mobility: I-5 Performance

I-5 Performance Southbound PM, 2025

I-5 model projected speeds were evaluated at several screenline locations

I-5 Auto/Freight
Scenario 1:  
Scenario 2:  
Scenario 3:  
Scenario 4:  
Scenario 5:  

I-5 HOV/Bus
Scenario 1:  
Scenario 2:  
Scenario 3:  
Scenario 4:  
Scenario 5:  

WSDOT
Mobility: Travel Time Between Centers

Each trip between the 8 centers were evaluated for each scenario, for AM & PM and for 2025 and 2045 to determine where changes occurred compared to no build. Two example charts of time savings in minutes are shown:

<table>
<thead>
<tr>
<th>2025 PM Scenario 1</th>
<th>Federal Way</th>
<th>Auburn</th>
<th>Sumner / Pacific - Proposed</th>
<th>Puyallup Downtown</th>
<th>Puyallup South Hill</th>
<th>Frederickson</th>
<th>Port of Tacoma</th>
<th>Tacoma Downtown</th>
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</thead>
<tbody>
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<td>1.5</td>
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<td>Port of Tacoma</td>
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<th>Tacoma Downtown</th>
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<td>2</td>
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<td>2</td>
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<tr>
<td>Sumner / Pacific - Proposed</td>
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</tr>
<tr>
<td>Puyallup Downtown</td>
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<td>0</td>
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<td>+0.5</td>
<td>0.5</td>
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<tr>
<td>Puyallup South Hill</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
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</table>
Mobility - Travel Time Between Centers

PM travel time changes between Auburn and the Port of Tacoma versus the No Build condition

### Auburn to Port of Tacoma Travel Time Savings (minutes)

<table>
<thead>
<tr>
<th></th>
<th>2025 PM</th>
<th>2045 PM</th>
</tr>
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<tbody>
<tr>
<td>S1</td>
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</tr>
<tr>
<td>S2</td>
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<td>0.5</td>
</tr>
<tr>
<td>S3</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>S4</td>
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<tr>
<td>S5</td>
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<td>1</td>
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<tr>
<td>S5 Free</td>
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</table>
Mobility: Travel Time Between Centers

PM Travel time changes between Federal Way and the Port of Tacoma versus the No Build condition

<table>
<thead>
<tr>
<th></th>
<th>2025 PM</th>
<th>2045 PM</th>
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</thead>
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<tr>
<td><strong>S1</strong></td>
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<td><strong>S2</strong></td>
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<td><strong>S3</strong></td>
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<td><strong>S4</strong></td>
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<tr>
<td><strong>S5 Free</strong></td>
<td>1.5</td>
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</table>
Mobility: Travel Time Between Centers

PM Travel time changes between the Port of Tacoma and Puyallup Downtown versus the No Build condition

<table>
<thead>
<tr>
<th>Port of Tacoma to Puyallup Downtown Travel Time Savings (minutes)</th>
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<td>S1</td>
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<tr>
<td>S2</td>
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<tr>
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<tr>
<td>S5 Free</td>
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</table>
Mobility: Travel Time Between Centers

AM Travel time changes between Puyallup Downtown and the Port of Tacoma versus the No Build condition

<table>
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<th>Puyallup Downtown to the Port of Tacoma</th>
<th>Travel Time Savings (minutes)</th>
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<td>S5</td>
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</tr>
<tr>
<td>S5 Free</td>
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</table>
**Mobility: Travel Time Between Centers**

Each trip between the 8 centers were evaluated for each scenario, for AM & PM and for 2025 and 2045 to determine where changes occurred compared to no build. Two example charts of time savings in minutes are shown:

### 2025 S1 PM

<table>
<thead>
<tr>
<th>Center</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
<th>Scenario 4</th>
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<tbody>
<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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### 2025 SS PM

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<th>Scenario 3</th>
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<td>Puyallup South Hill</td>
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<tr>
<td>Port of Tacoma</td>
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</tbody>
</table>
Mobility: Reliability Between Centers

- Travel time 50% longer than free flow and twice as long as free flow were evaluated

- Results of all trip pairs

  - **Scenario 1:** Moderate
  - **Scenario 2:** Moderate
  - **Scenario 3:** Moderate
  - **Scenario 4:** Moderate
  - **Scenario 5:** Moderate
Mobility: Subarea Delay

Total vehicle hours of delay (VHD) were evaluated for the South subarea.
Economic Vitality – Economic Benefit

We conducted a qualitative comparison of model benefits and consideration of costs. Scenarios were evaluated compared to each other. A quantitative benefit/cost analysis will be conducted later.

Scenario 1: Fair
Scenario 2: Fair
Scenario 3: Fair
Scenario 4: Moderate
Scenario 5: Fair
Economic Vitality: Comprehensive Land Use Planning and Development

How did we measure how scenarios support local and regional comprehensive land use planning and development?

Evaluated each alternative based on connections between the Urban and Manufacturing Industrial Centers and local land use.

**Scenario 1**: Fair

**Scenario 2**: Moderate

**Scenario 3**: Moderate

**Scenario 4**: Good

**Scenario 5**: Very Good

Scenario 1 received a “fair” because it didn’t provide as many connections and opportunities.

Scenarios 5 received rating of very good because it provided the maximum level connections, intersections and linkages.
Safety: Number of Serious and Fatal Crashes

Assessment of the changes in crashes on the highway sections.

**Scenario 1**: Fair

**Scenario 2**: Fair

**Scenario 3**: Fair

**Scenario 4**: Good

**Scenario 5**: Very Good

The ability to reduce backups onto I-5 due to queueing off ramps will improve safety. New onramp connections to I-5 have the potential to increase crashes due to merging.
## Essential Performance Metrics

### Scenario Comparison Table - SR 167 Completion Project

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Mobility</th>
<th>Economic Vitality</th>
<th>Safety</th>
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<tr>
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<td>Scenario 2 - Limited Connectivity</td>
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<tr>
<td>Scenario 4 - Moderate Connectivity</td>
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<tr>
<td>Scenario 5 - Full Build Out +</td>
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**Baseline Performance Metrics**

- **SR 167 Performance**
- **SR 509 spur Performance**
- **SR 509 Operations between SR 167 and SR 509**
- **Modal Operations between I-90 and SR 509**
- **Travel Time Reliability**
- **Congestion Reduction**

**Supporting Text**

- Reduce travel time by improving reliability between urban centers.
- Increase average speed on highways.
- Enhance connectivity between I-90 and SR 509.
- Reduce congestion and improve travel times.
- Improve overall network reliability and reduce travel time variability.
- Reduce travel time by improving reliability between urban centers.
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- Reduce congestion and improve travel times.
- Improve overall network reliability and reduce travel time variability.
Contextual Performance Metrics

• Reduce the number of serious injury and fatal crashes on local arterials
• Reduce pedestrian vehicle exposure
• Improve continuity and consistency of pedestrian and bicycle facilities
• Reduce area of impact to sensitive areas
• Maintains forward compatibility with future highway widening
• Reduce right of way impact
• Compatibility with Transit Long Range Plans
Safety – Serious and Fatal Crashes on Local Arterials

How did we measure “Number of serious injury and fatal crashes on local arterials”? 

The relative shift of trips off the local street system was viewed favorably as the decrease in volumes yield a decrease in crash frequency.

**Scenario 1:** Fair

**Scenario 2:** Moderate

**Scenario 3:** Good

**Scenario 4:** Very Good

**Scenario 5:** Very Good
Active Mobility – Reduce Pedestrian/Vehicle Exposure

How did we measure how scenarios “Reduce pedestrian vehicle exposure”?

We evaluated improvements made to pedestrian crossings at interchanges along the corridor with the relative shift in volumes from the local system onto the proposed Scenario.

**Scenario 1:** Fair

**Scenario 2:** Moderate

**Scenario 3:** Good

**Scenario 4:** Very Good

**Scenario 5:** Very Good
Mobility – Improve Pedestrian & Bicycle Facilities

How did we measure how scenarios “Improve continuity and consistency of pedestrian and bicycle facilities”?

We looked at the number of ramp crossings that pedestrians and bicyclists need to make to navigate across an interchange.

**Scenario 1:** Good

**Scenario 2:** Moderate

**Scenario 3:** Moderate

**Scenario 4:** Good

**Scenario 5:** Good
Environment – Reduce Impact to Sensitive Areas

How did we measure “Reduce area of impact to sensitive areas”?

We evaluated the proposed Scenario footprint against the Wetlands within the project area on whether their design minimized potential impacts.

Scenario 1: Good
Scenario 2: Moderate
Scenario 3: Fair
Scenario 4: Fair
Scenario 5: Poor
Other – Forward Compatibility

How did we measure “Forward Compatibility”?

For Forward Compatibility, we looked at right of way, structure width, and compatibility with future highway widening.

**Scenario 1**: Good

**Scenario 2**: Moderate

**Scenario 3**: Moderate

**Scenario 4**: Good

**Scenario 5**: Very Good
Other – Right of Way Impacts

How did we measure how scenarios “Reduce right of way impacts”?

Reducing right or way impacts reduces impacts on the community and reserves more property for economic development and housing in an important urban area. Generally narrower footprint scored better.

**Scenario 1:** Good 🟠

**Scenario 2:** Moderate 🟠

**Scenario 3:** Moderate 🟠

**Scenario 4:** Fair 🟠

**Scenario 5:** Poor 🟠
Other – Compatibility with Transit Long Range Plans

How did we measure “Compatibility with Transit Long Range Plans”?

We reviewed how the scenarios interact with the proposed Sound Transit ST3 package and Pierce Transits Designation 2040 Long Range Plan. Scenarios that provided greater connectivity to the local system generally scored higher.

Scenario 1: Fair
Scenario 2: Moderate
Scenario 3: Moderate
Scenario 4: Good
Scenario 5: Very Good
## Contextual Performance Metrics

<table>
<thead>
<tr>
<th>Safety</th>
<th>Active Mobility</th>
<th>Env't</th>
<th>Other</th>
</tr>
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<tbody>
<tr>
<td>Pad</td>
<td>Blue</td>
<td>Pad</td>
<td>Blue</td>
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</tbody>
</table>

- **Safety**
  - # of Serious injury and fatal crashes on local arterial

- **Active Mobility**
  - Reduce pedestrian vehicle exposure by reducing traffic volumes
  - Continuity and Consistency of Pedestrian facility
  - Improve Pedestrian & Bicycle connectivity along existing corridor
  - Sensitive Area impact
  - Reduce amount of impact to sensitive areas

- **Env’t**
  - Forward Compatibility
  - Right of Way impact
  - Relative Right of Way impact
  - Compatibility with Transit Long Range Plans

- **Other**

Date: 6/13/16
Preliminary Cost Review

- Costs are developed based on major items (bridges, earthwork, drainage, pavement, ITS) that can be estimated directly.
- Programmatic costs are consistent across all scenarios.
- Project development costs are based on a percentage of the scenario construction cost estimate.
- Assumptions included using a base year of 2016
  - PE estimates inflated to December 2019
  - Right of Way estimates inflated to July 2021
  - Construction estimates inflated to October 2025
- 7% risk applied to address events and project unknowns.
Scenario 1: Closing the Gap

Total Gateway Funding $1.87B

- SR 509: $1.1B (60%/40%)
- SR 167: $940M (50%/50%)
- $890M
Scenario 1: Closing the Gap

Other Items Total $141M
- Interurban Trail
- Early Mitigation Phase 1
- Early Mitigation Phase 2
- Toll System
Scenario 2: Limited Connectivity

- **Total Gateway Funding**: $1.87B
- **SR 509**: $1.1B (50%/50%)
- **SR 167**: $940M (60%/40%)

**Graph**

- Y-axis: $0.0 - $2B
- X-axis: 1 - 2
- Bar 1: $890M
- Bar 2: $950M

**Legend**

- SR 509
- SR 167
Scenario 2: Limited Connectivity

Other Items Total $145M
- Interurban Trail
- Early Mitigation Phase 1
- Early Mitigation Phase 2
- Toll System

Port of Tacoma Manufacturing Industrial Center

Tacoma Urban Center

Federal Way Urban Center

Auburn Urban Center

Fredrickson Manufacturing Industrial Center

Sumner / Pacific Manufacturing Industrial Center
Scenario 3: Gateway Connectivity

Total Gateway Funding $1.87B

- SR 509: $1.1B (60%/40%)
- $940M (50%/50%)
- SR 167: $890M

Yearly Breakdown:
- Year 1: $1.0B
- Year 2: $950M
- Year 3: $1.0B
Scenario 3: Gateway Connectivity

Other Items Total $145M
- Interurban Trail
- Early Mitigation Phase 1
- Early Mitigation Phase 2
- Toll System
Scenario 4: Moderate Connectivity

- Total Gateway Funding: $1.87B
- SR 509: $1.5B
- SR 167: $0.5B
- 60%/40%: $1.1B
- 50%/50%: $0.9B

1. $890M
2. $950M
3. $1.0B
4. $1.27B
Scenario 4: Moderate Connectivity

Other Items Total $145M
- Interurban Trail
- Early Mitigation Phase 1
- Early Mitigation Phase 2
- Toll System
Scenario 5: Full Build Out +

Total Gateway Funding $1.87B

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding</th>
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<tbody>
<tr>
<td>1</td>
<td>$890M</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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<td>4</td>
<td>$1.27B</td>
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<tr>
<td>5</td>
<td>$1.75B</td>
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SR 509: 60%/40% $1.1B
SR 167: 50%/50% $940M
Scenario 5: Full Build Out +

Other Items Total $145M
- Interurban Trail
- Early Mitigation Phase 1
- Early Mitigation Phase 2
- Toll System

Federal Way Urban Center
Auburn Urban Center

Port of Tacoma Manufacturing Industrial Center
Tacoma Urban Center

509
54th

$79M
2 Lanes

$23M
12 SPUI

$55M
4 Lanes

509

$1.75B

$57M
6 Lanes

I-5

$775M
Full I/C with HOV

$77M
Full I/C at Valley

161

$147M
- Full SPUI
- Widening PRB
- N. Levee to Valley Connection

167

$247M
6 Lanes

Sumner / Pacific Manufacturing Industrial Center

Fredrickson Manufacturing Industrial Center

Puylup Urban Center
Performance Evaluation Results – Key Takeaways

Key areas where scenarios differed in performance:

• Scenarios 1, 2 & 3 do not perform as well 4 & 5
• Traffic performance of Scenarios 2 and 3 are similar
• Traffic performance of Scenarios 4 and 5 are similar
• Scenario 4 is nearly 70% of Gateway Program budget while Scenario 5 accounts for over 90%
• Travel demand macro model will be supplemented with a more detailed model to evaluate the refined Scenarios.
## Project Schedule (SR 167)

<table>
<thead>
<tr>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan 2017</th>
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</thead>
<tbody>
<tr>
<td>1 Kick-off</td>
<td>2 Methodology review</td>
<td>3 Preliminary scenarios and evaluation results</td>
<td>4 Present refined scenarios</td>
<td>5 Recommend scope &amp; staging</td>
<td></td>
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<tr>
<td>1 Public Open House</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td></td>
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</tbody>
</table>

- **Steering Committee Meeting**
- **Executive Committee Meeting**
- **Open House**
Key Questions for Refinement

- SR 167 mainline prism
- Tolls
- Managed lanes
- Forward compatibility
- Effects to I-5
- Connectivity
- Port of Tacoma Access
More information:

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Puget Sound Gateway Program Administrator
(206) 464-1222
stonec@wsdot.wa.gov