# US 2 Trestle Capacity Improvements & Westbound Trestle Replacement PEL Study

## TECHNICAL WORKING GROUP (TWG) MEETING #3

January 27, 2025

# Safety Moment

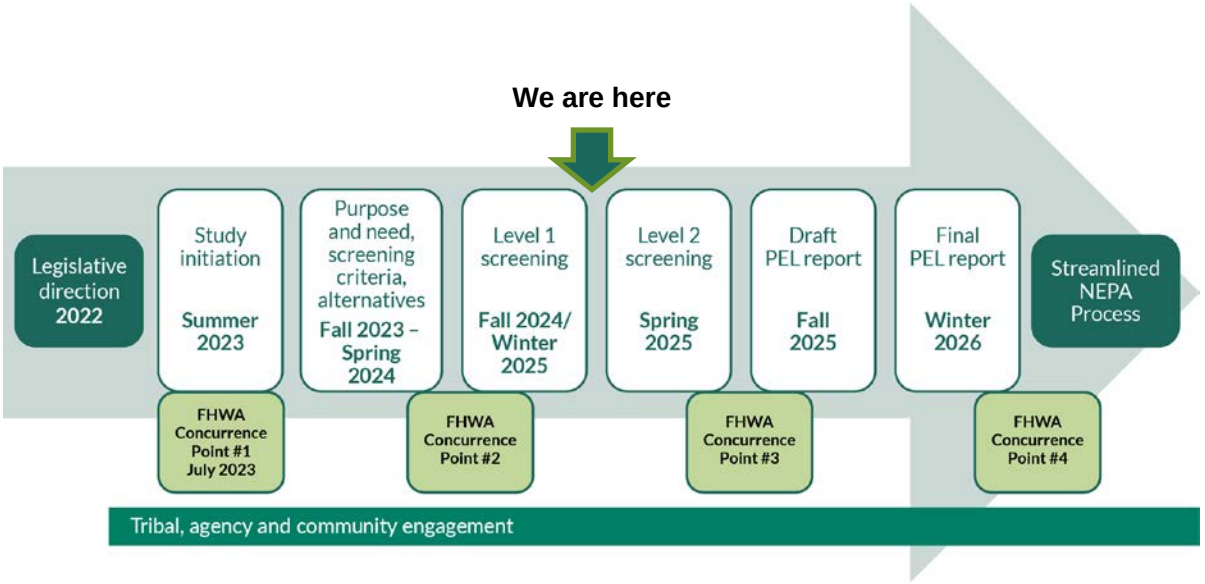
# Introductions

Please introduce yourself in the chat: Name, Organization, Role

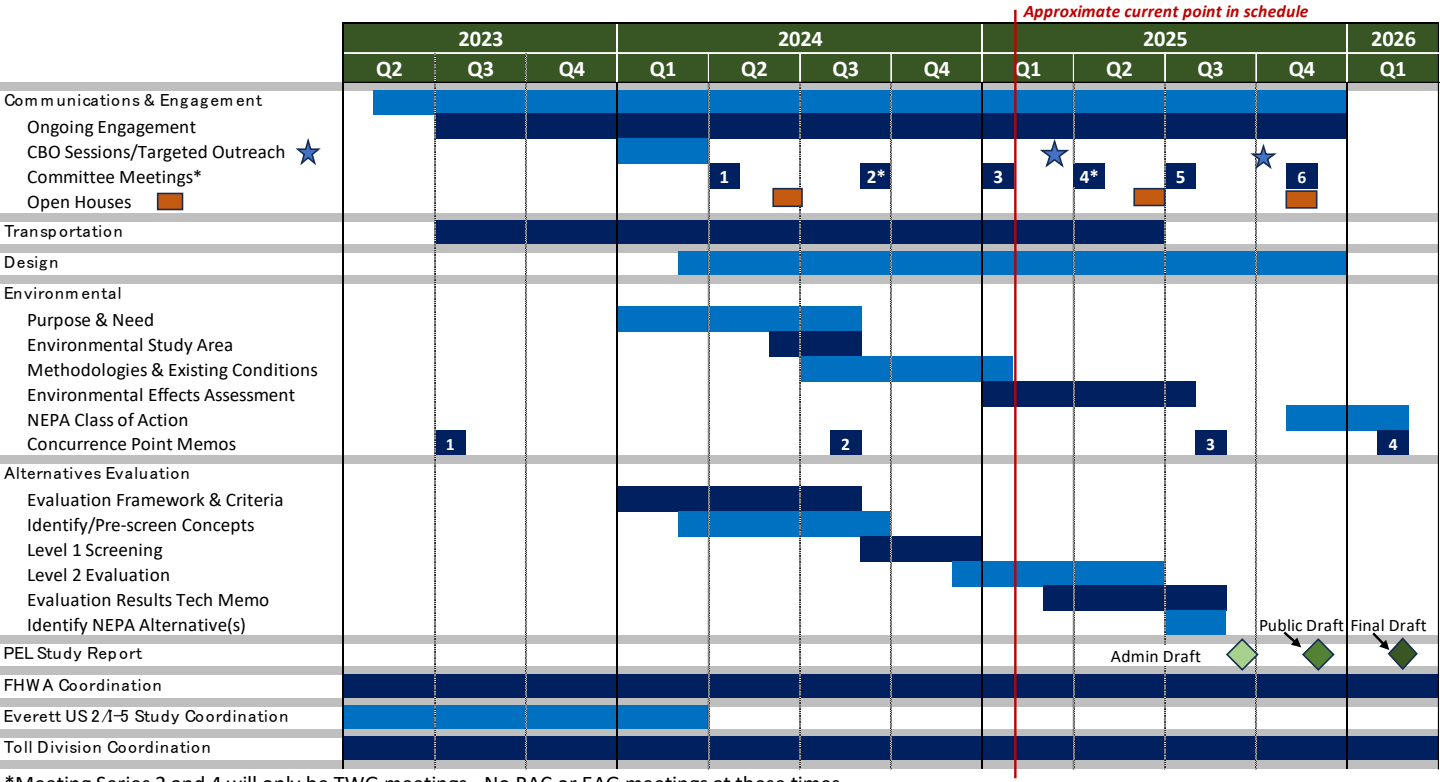
**Organizations invited today:**

- Boeing
- City of Everett
- City of Lake Stevens
- City of Marysville
- City of Snohomish
- Community Transit
- Economic Alliance of Snohomish County
- Everett Transit
- FHWA
- Muckleshoot Tribe
- Port of Everett
- PSRC
- Sauk-Suiattle Tribe
- Snohomish County
- Snoqualmie Indian Tribe
- Stillaguamish Tribe
- Suquamish Tribe
- Swinomish Tribe
- Tulalip Tribes
- Washington State Department of Health
- Washington State Patrol
- Washington State Transportation Commission
- WSDOT
- Washington Trucking Association
- Yakama Tribe

# US 2 Trestle PEL Study Status

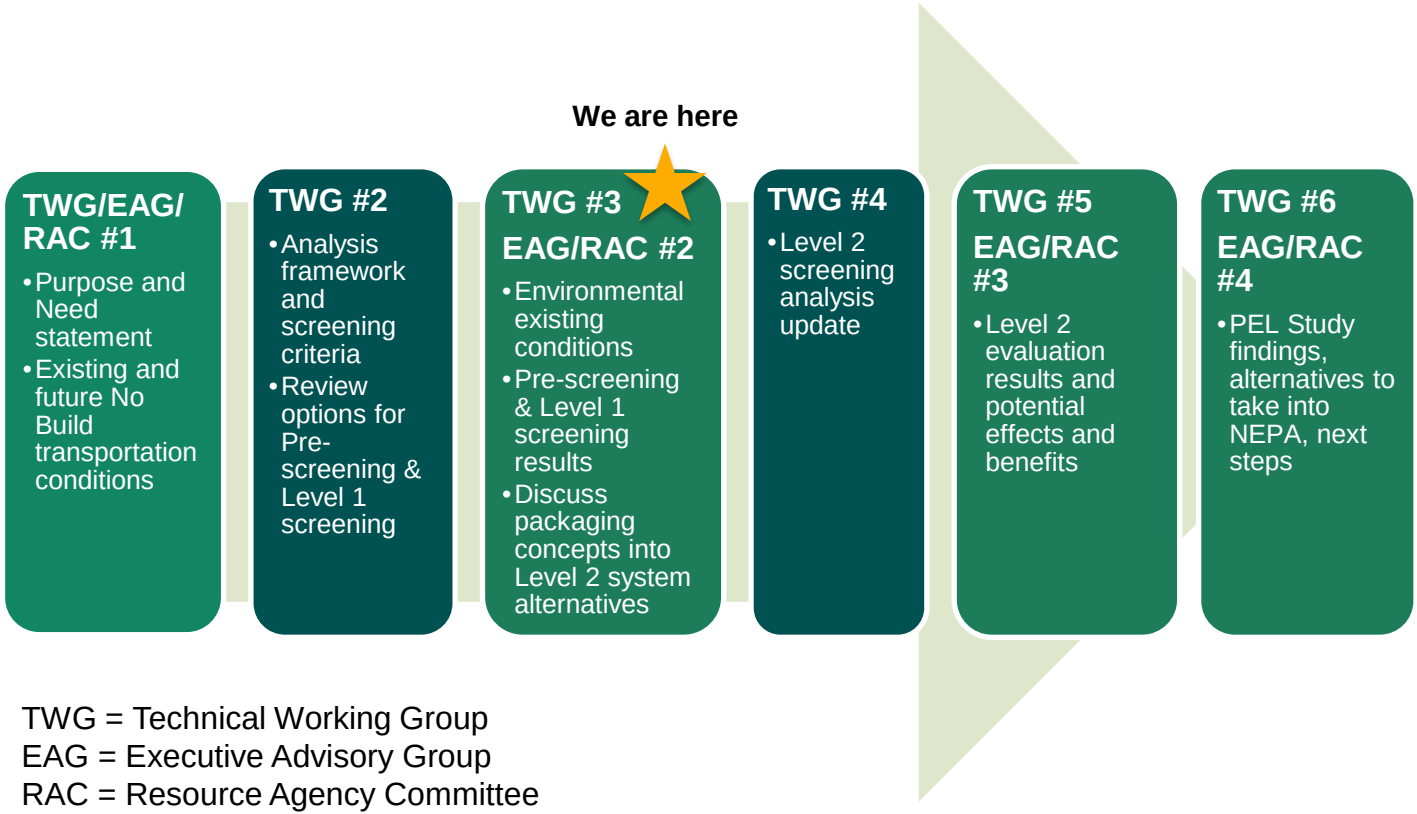


# Summary Milestone Schedule




*Meeting Series 2 and 4 will only be TWG meetings - No RAC or EAG meetings at these times

# TWG Meeting Progression




TWG = Technical Working Group
EAG = Executive Advisory Group
RAC = Resource Agency Committee

# TWG Meeting #3 Purpose

Seek input on:

- Active transportation concepts and integration
- Pre-screening and Level 1 screening results
- Process to develop preliminary system-level alternatives

# Agenda

- Study progress
- Review results of Pre-screening and Level 1 screening of concepts
- Discuss Level 2 screening and forming system alternatives
- Environmental existing conditions
- Next steps and adjourn

# Study Progress: Prescreening and Level 1 results

# TWG Meeting #2 Recap

- Reviewed final Purpose & Need statements
- Introduced analysis framework and screening criteria
- Introduced existing and future No Build conditions
- Previewed concepts and took suggestions for edits

# Concept Evaluation Update

***Process to develop a reasonable range of alternatives that meet the Purpose and Need***

| **Concept and Criteria Development** | **Pre-Screening:** Multimodal Improvement Concepts | **Level 1 Screening:** Multimodal Improvement Concepts | **Level 2 Screening:** System Alternatives | **Alternatives for NEPA Analysis** |
|---|---|---|---|---|
| • Develop multimodal improvement concepts for trestle and east/west connections.<br>• Develop evaluation criteria for pre-screening, Level 1, and Level 2. | • **Qualitative Screening**<br>• Score concepts as **Pass, Neutral, or Fail** against each criterion.<br>• Concepts will be screened out if at least one criteria receives a "fail" rating.<br>• Failing concepts may be refined and pre-screened again. | • **Qualitative Screening**<br>• Remaining concepts after prescreening scored as **High, Medium or Low** for meeting the criterion.<br>• Level 2 screening thresholds will be determined after reviewing initial results.<br>• Remaining concepts after Level 1 will be packaged into Level 2 system alternatives. | • **Quantitative screening where possible**<br>• Quantitative results will use **5-point rating system.**<br>• Potential criteria weighting will be determined after Level 1 screening.<br>• Qualitative results scored as High, Medium, and Low. | • Review results of Environmental Impacts and Benefits analysis of Level 2 alternatives.<br>• Conduct tradeoff analysis to identify preferred alternative(s). |
| **FHWA and TWG #2 Meeting Input** | **FHWA Input** | **FHWA and TWG #3, EAG #2, RAC #2 Meeting Input** | **FHWA and TWG #4 Meeting Input** | **FHWA and TWG #5, EAG #3, RAC #3 Meeting Input; Community Engagement** |

# Prescreening Results

**Study concepts eliminated through prescreening:**

- **TW1:** *Retrofit existing structure*
  *Two 11' GP lanes with 2' inside shoulder and 8.25' outside shoulder.*
  - Fails multiple mobility and resiliency criteria
- **TW8:** *SR 526 Extension*
  *New east-west corridor extending SR 526 from I-5 to SR 9 south of the US 2 trestle.*
  - Fails multiple resiliency criteria in the US 2 corridor

# Qualitative Level 1 Criteria: Vehicular

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Vehicle delay | H: Substantial improvement compared to No Build<br>M: Somewhat lower delay as No Build<br>L: Similar or Worse delay than No Build |
| Travel time reliability | H: Substantial improvement compared to No Build<br>M: Somewhat better reliability compared to No Build<br>L: Similar or Worse reliability compared to No Build |
| Effect on vulnerable populations and overburdened communities (VPOC) | H: Improves transportation access for VPOCs<br>M: Similar transportation access for VPOCs<br>L: Worsens transportation access for VPOCs |

Multimodal Mobility

# Qualitative Level 1 Criteria: Freight

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Delay for freight vehicles | H: Substantial improvement compared to No Build<br>M: Somewhat lower delay as No Build<br>L: Similar or worse delay than No Build |
| Freight travel time reliability | H: Substantial improvement compared to No Build<br>M: Somewhat better reliability compared to No Build<br>L: Similar or Worse reliability compared to No Build |

Multimodal Mobility

# Qualitative Level 1 Criteria: HOV and Transit

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Transit/HOV delay | H: Substantial improvement compared to No Build<br>M: Somewhat lower delay as No Build<br>L - Similar or worse delay than No Build |
| Transit system accessibility and connectivity | H: Substantial improvement compared to No Build<br>M: Somewhat better compared to No Build<br>L: Similar or worse than No Build |
| Transit travel time reliability | H: Substantial improvement compared to No Build<br>M: Somewhat better reliability compared to No Build<br>L: Similar or worse reliability compared to No Build |
| Corridor person throughput | H: Substantial improvement compared to No Build<br>M: Somewhat better compared to No Build<br>L: Similar or worse person throughput compared to No Build |

Multimodal Mobility

# Qualitative Level 1 Criteria: Active Transportation

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Direct route to key destinations | H: Most direct route, little to no out of direction travel to destination(s)<br>M: Average of about 20% of route is out of direction travel to destination(s)<br>L: Average of more than 50% of route is out of direction travel to destination(s) |
| Elevation changes | H: Minimal change in elevation<br>M: Some change in elevation at a low grade<br>L: Alignment has a significant change in elevation (multiple overpasses, hills) |
| Connections to existing or planned AT facilities | H: Multiple connections to planned or existing AT facilities without new on-street connections<br>M: One connection to planned or existing AT facilities without new on-street connections<br>L: Connects to planned or existing AT facilities with new on-street connections |

Multimodal Mobility

# Qualitative Level 1 Criteria: Safety

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Motorized vehicle safety | H: Substantial improvement compared to No Build<br>M: Moderate improvement to motorized vehicle safety<br>L: No improvement in motorized vehicle safety |
| AT conflicts with motorized vehicles at intersections | H: No conflict points with motor vehicles<br>M: Alignment passes through intersections, but no ramp terminals<br>L: Alignment passes through multiple intersections including ramp terminals |
| Visibility for AT modes (CPTED) | H: Substantial improvement in visibility for AT compared to No Build<br>M: Moderate improvement in visibility for active transportation modes<br>L: Similar or worse visibility for active transportation modes |
| Safety of access to transit facilities | H: Substantial improvement compared to No Build<br>M: Moderate improvement in safety of access to transit facilities<br>L: No improvement in safety of access to transit facilities |

*Notes: CPTED = Crime Prevention through Environmental Design*

Safety

# Qualitative Level 1 Criteria: Seismic Resilience

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Seismic resiliency | H: Substantial improvement in seismic resiliency compared to No Build<br><br>M: Moderate improvement in seismic resiliency compared to No Build<br><br>L: No improvement in in seismic resiliency compared to No Build |

Resilience

# Qualitative Level 1 Criteria: Asset Management

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Asset management | H: Improves 2 or more of the focus infrastructure areas (roadway, stormwater, structural) compared to No Build and reduces logjam occurrences under bridge(s) across Ebey Slough (east end concepts only)<br><br>M: Improves at least one of the 3 infrastructure focus areas or reduces logjam occurrences under bridge(s) across Ebey Slough (east end concepts only)<br><br>L: Similar or Worse than No Build in terms of corridor infrastructure state of repair and frequency of logjam occurrences under bridge(s) across Ebey Slough (east end concepts only) |

Resilience

# Qualitative Level 1 Criteria: Climate and Natural Hazard Resilience

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Climate/ natural hazard resilience | H: Substantially improves drainage design to prevent standing water compared to No Build<br><br>M: Moderately improves drainage design to prevent standing water<br><br>L: Similar or worse than No Build in terms of drainage design and preventing standing water |

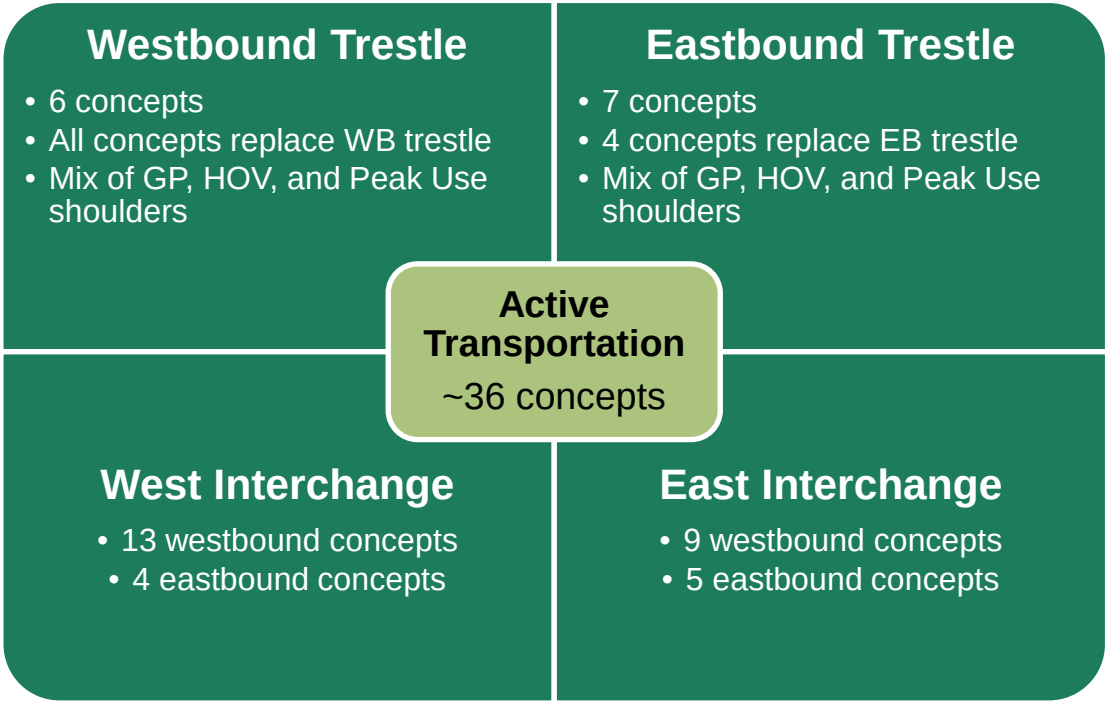
Resilience

# Qualitative Level 1 Criteria: Operational Resilience

| *Level 1 Criteria* | *Level 1 Scoring* |
|---|---|
| Operational resilience | H: Substantial amount of shoulder provided compared to No Build and additional ramp connections to downtown Everett for west end concepts<br><br>M: Some additional shoulder space provided compared to No Build or additional ramp connections to downtown Everett (for west end concepts)<br><br>L: Similar or less shoulder space compared to No Build and no additional ramp connections to downtown Everett (for west end concepts) |

Resilience

# Multimodal Concepts Screened in Level 1

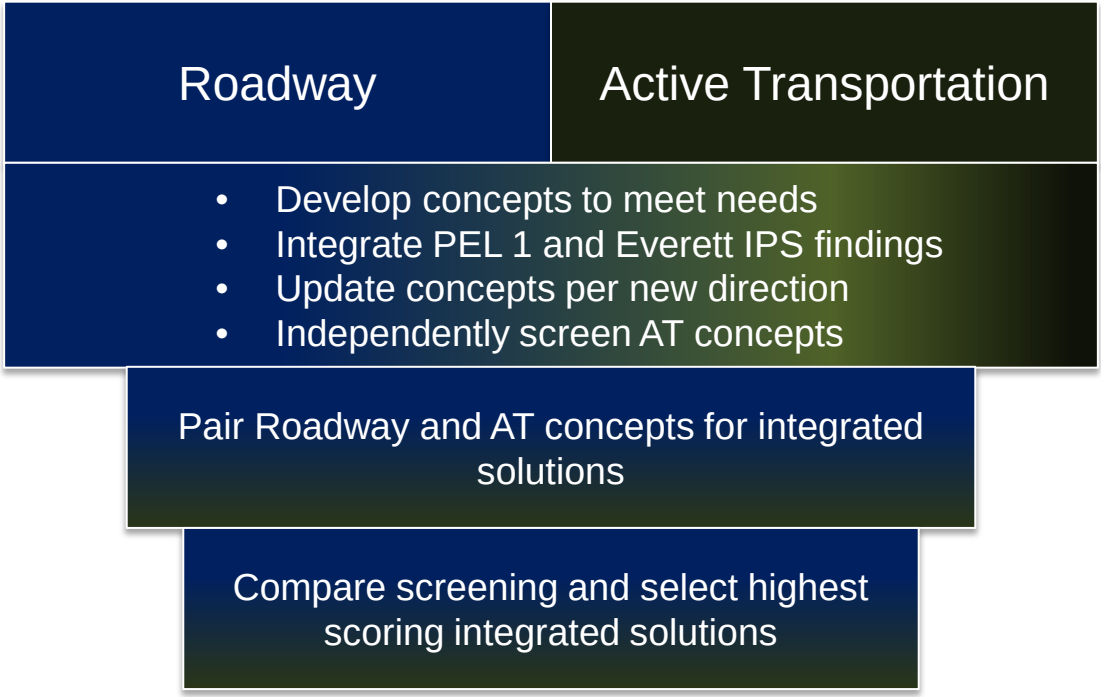


# What's changed?

Modifications since we last met:

- Westbound ramps to California open in all concepts
- Ramp meters included on ramps to I-5
- No HOV ramp meter bypasses except transit routes
- Additional Active Transportation concepts

# Active Transportation Integration



# Level 1 Screening: Rating Process

Multimodal criteria derived from purpose and need statement

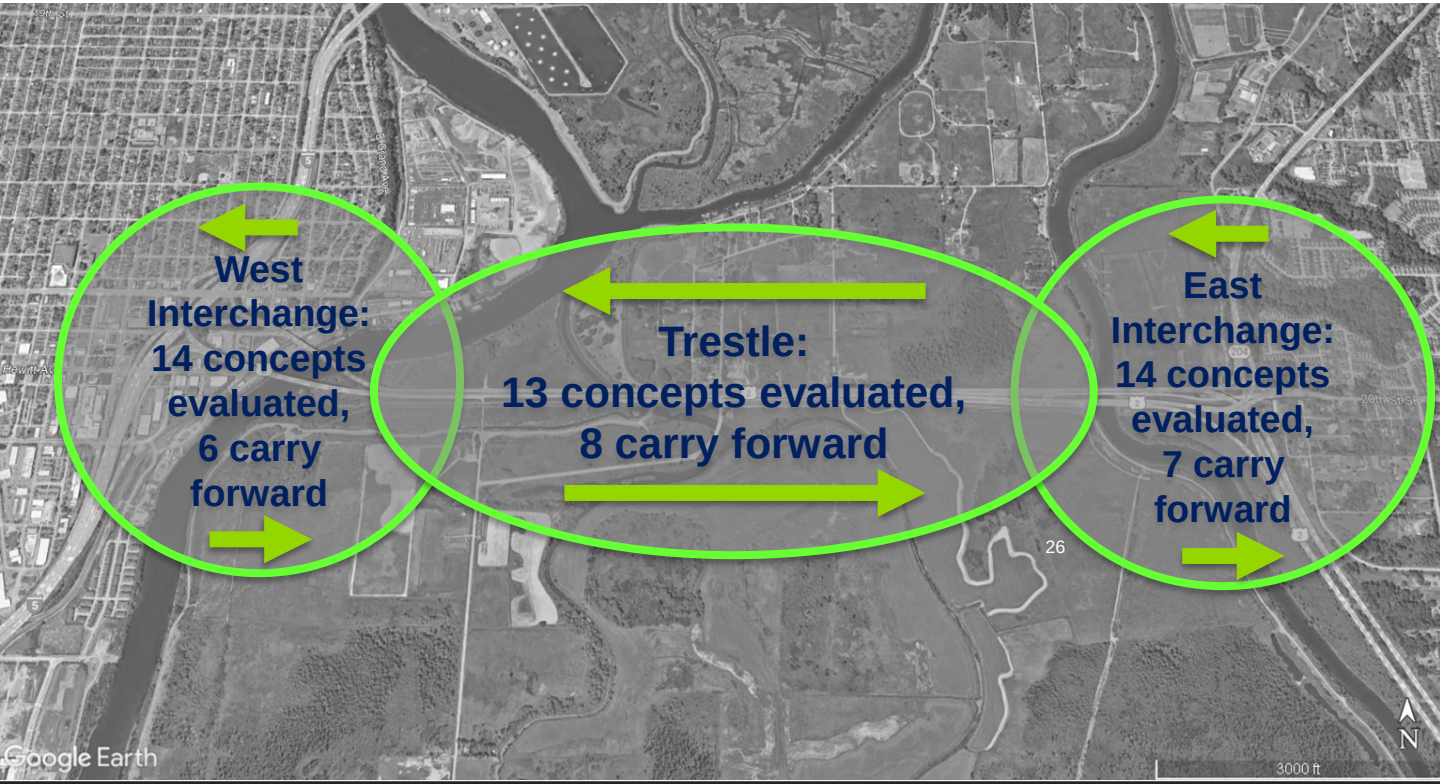
Multimodal concepts are rated as High (H), Medium (M) or Low (L) across all

Highest rated multimodal concepts are those that score higher than the average score

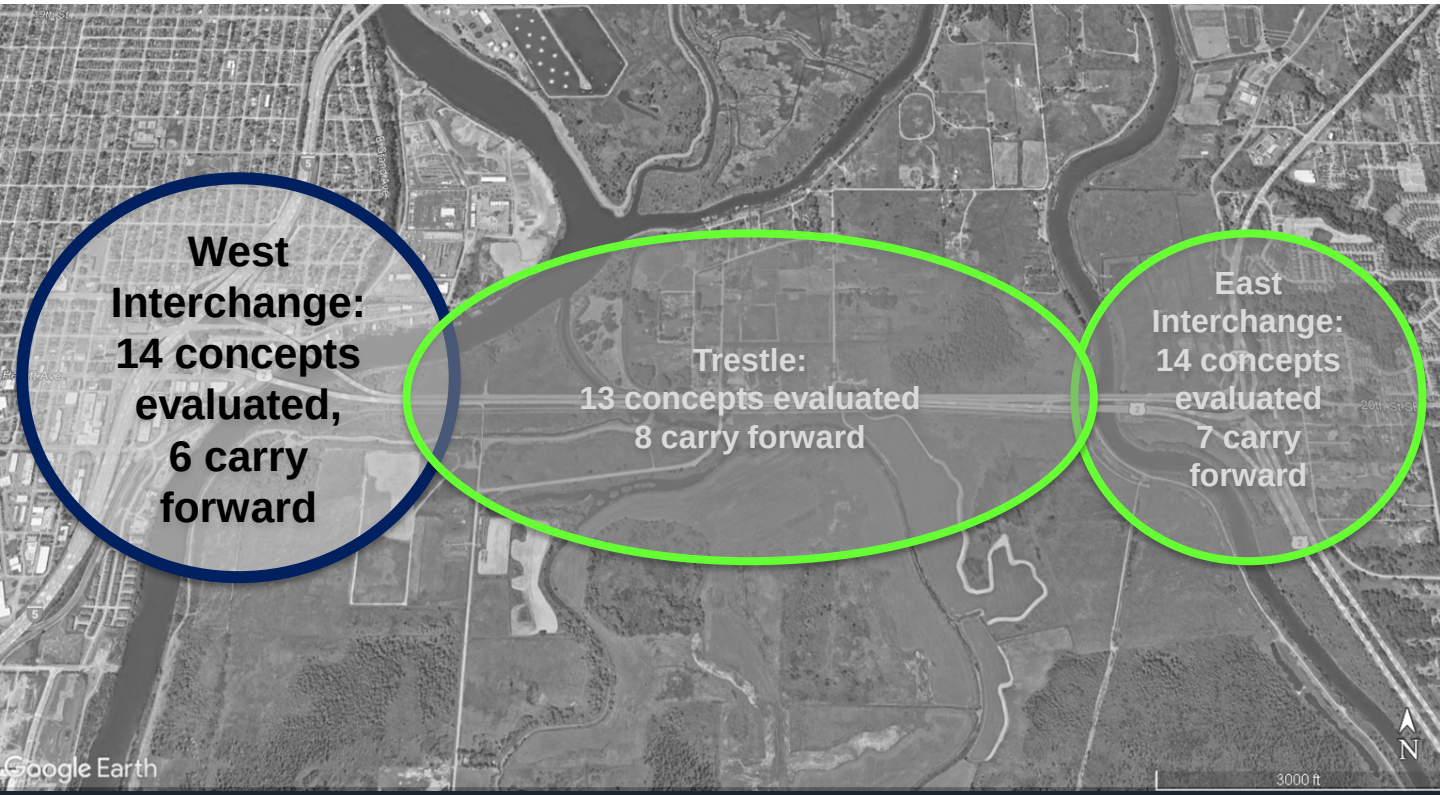
| | | Multimodal Concepts | | | | | |
|---|---|---|---|---|---|---|---|
| | Roadway Concept | A | B | C | D | E | F |
| | AT Concept Pairing | 1 | 2 | 3 | 2 | 5 | 4 |
| Purpose & Need | Criteria 1 | M | M | H | H | M | L |
| | Criteria 2 | H | M | H | L | L | M |
| | Criteria 3 | L | H | H | M | L | M |
| | Criteria 4 | H | L | M | H | M | L |
| | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | Criteria 19 | L | M | L | M | H | H |
| | Total Score (H=3, M=2, L=1) | scoreA | scoreB | scoreC | scoreD | scoreE | scoreF |
| | Above Avg Score? | Yes | No | Yes | Yes | No | No |

**Highest rated concepts are *A, C* and *D***

# Level 1 Screening: Summary of Preliminary Screening Results

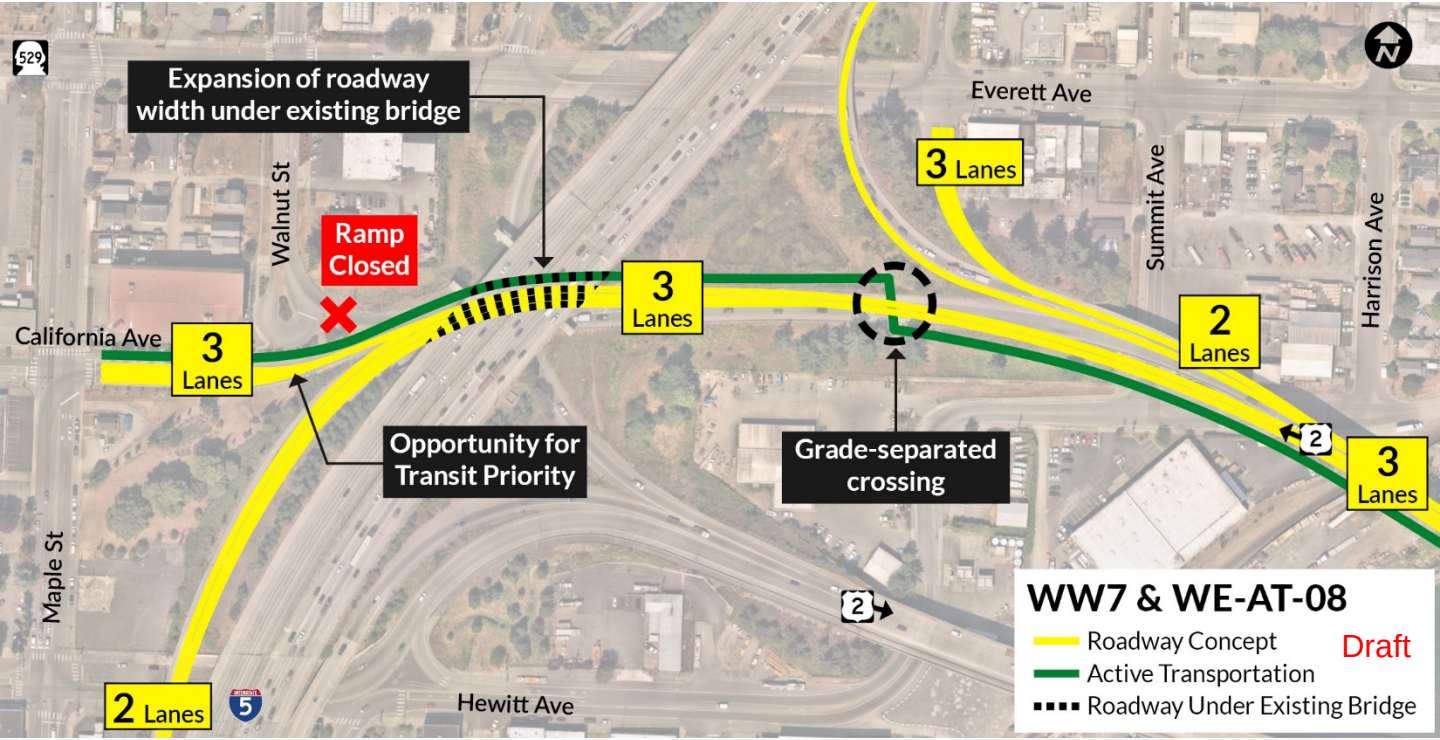


# Level 1 Screening: Summary Results for West Interchange

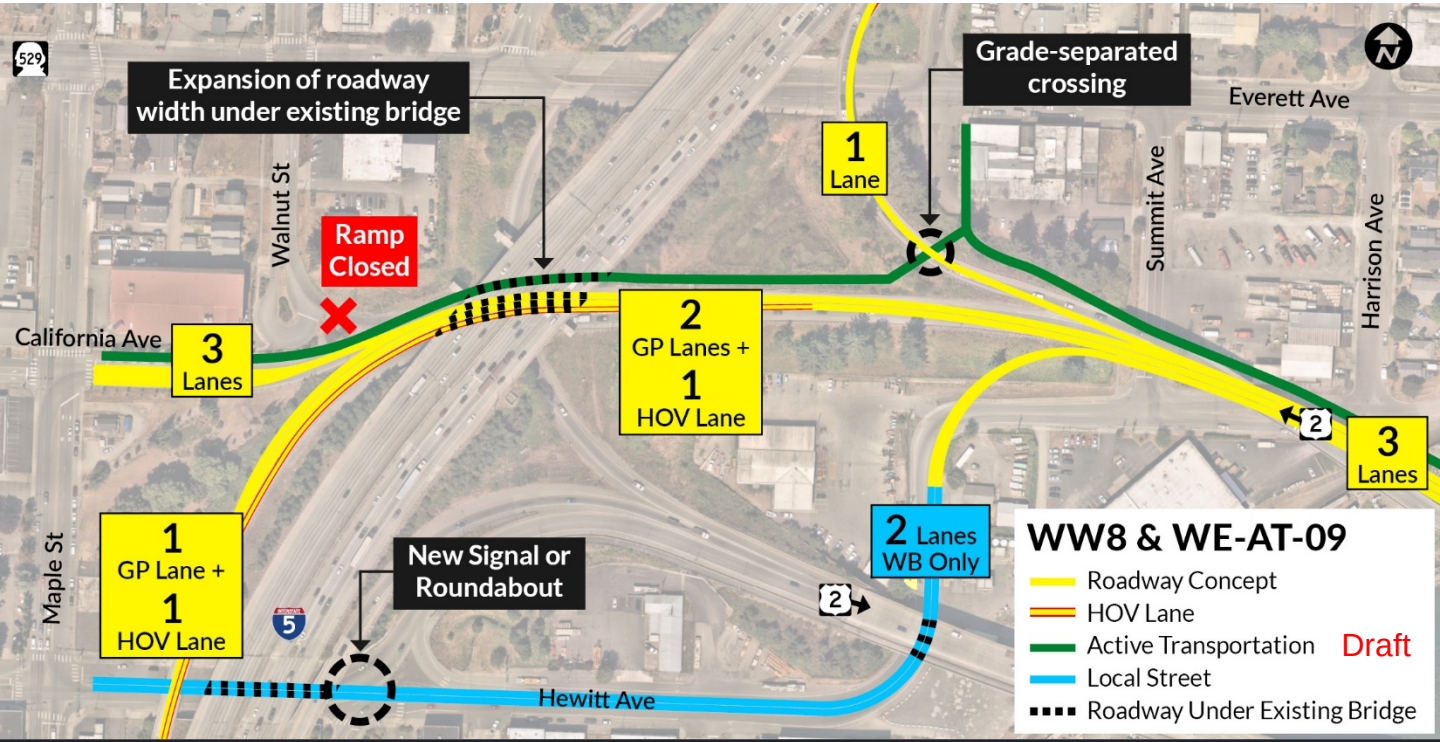


# Level 1 Draft Screening Results: West Interchange - WB

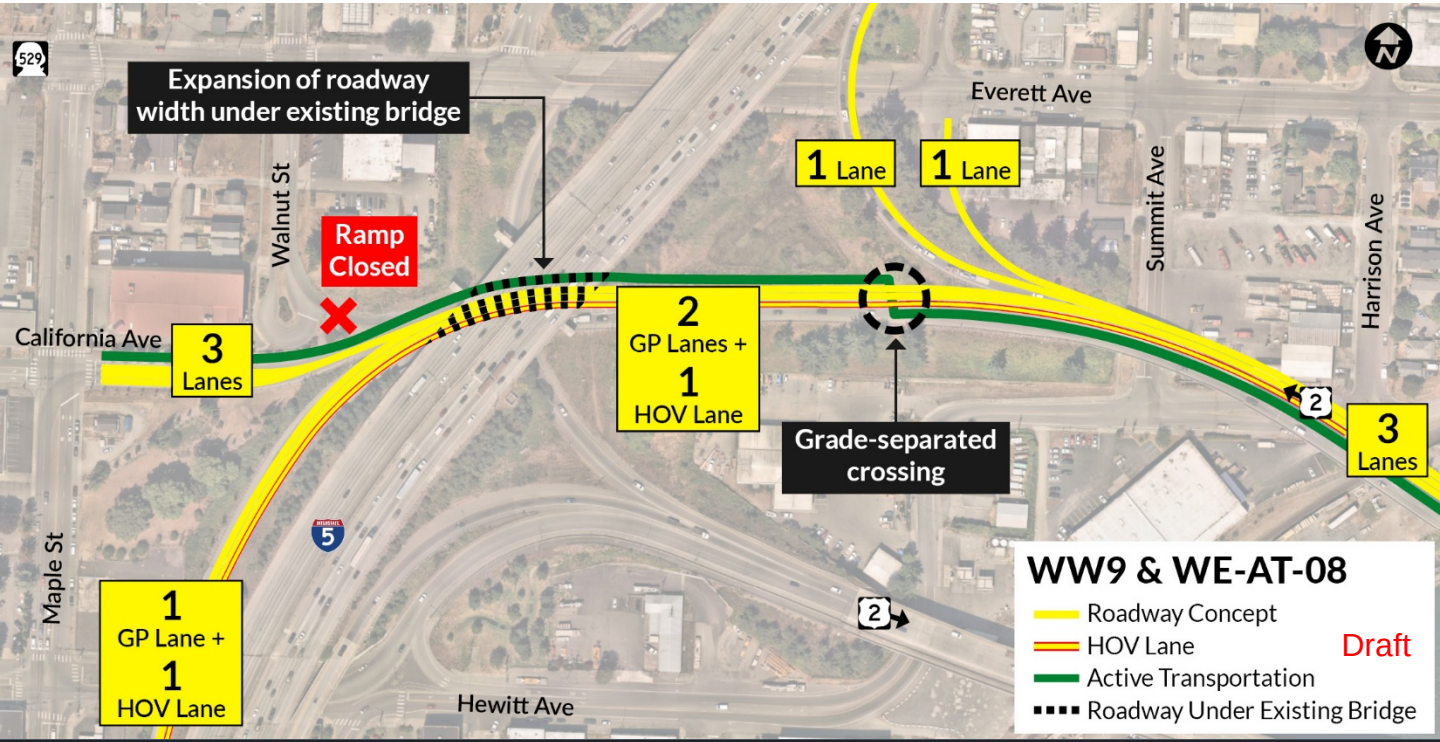
# Level 1 Draft Screening Results: West Interchange - WB



# Level 1 Draft Screening Results: West Interchange - WB

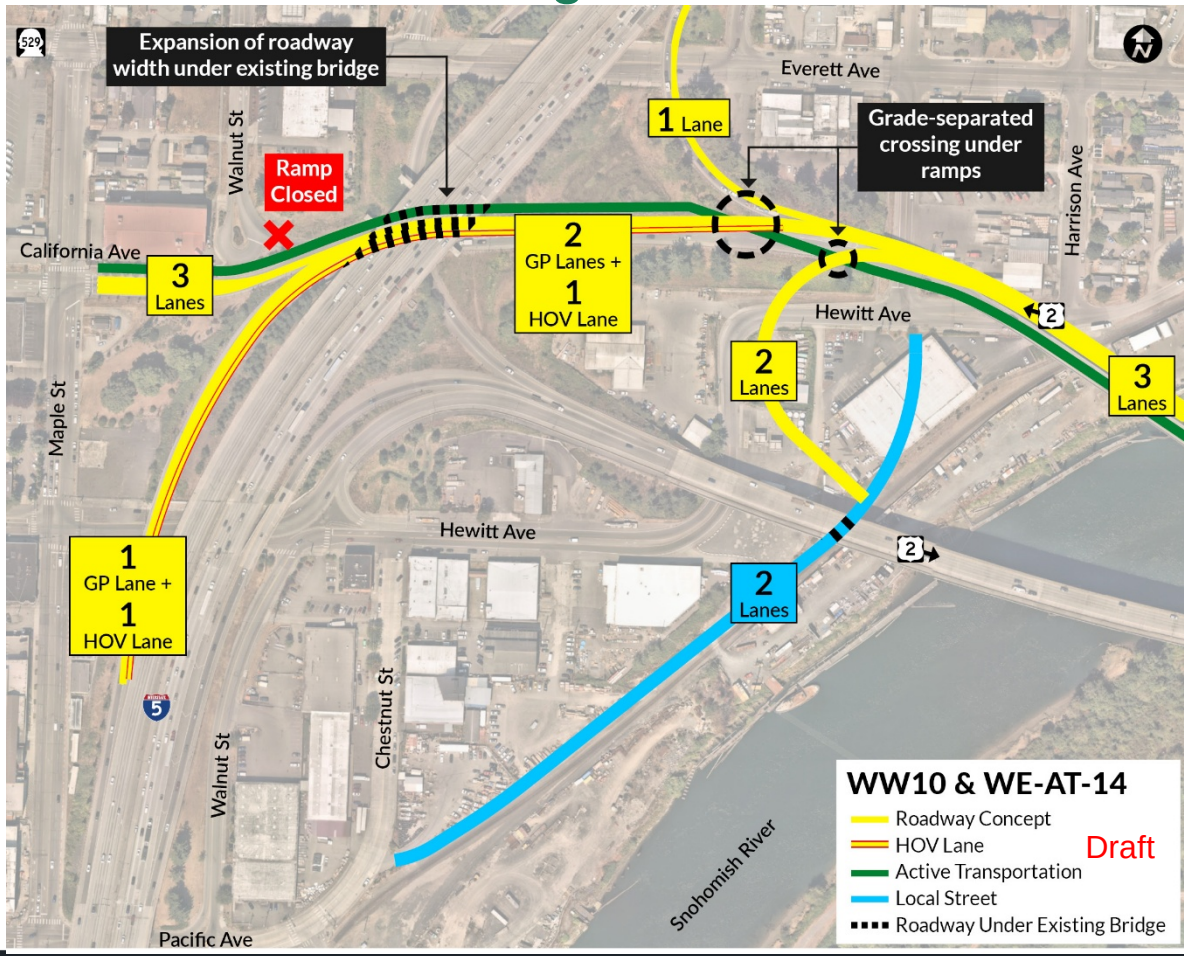


# Level 1 Draft Screening Results: West Interchange - WB



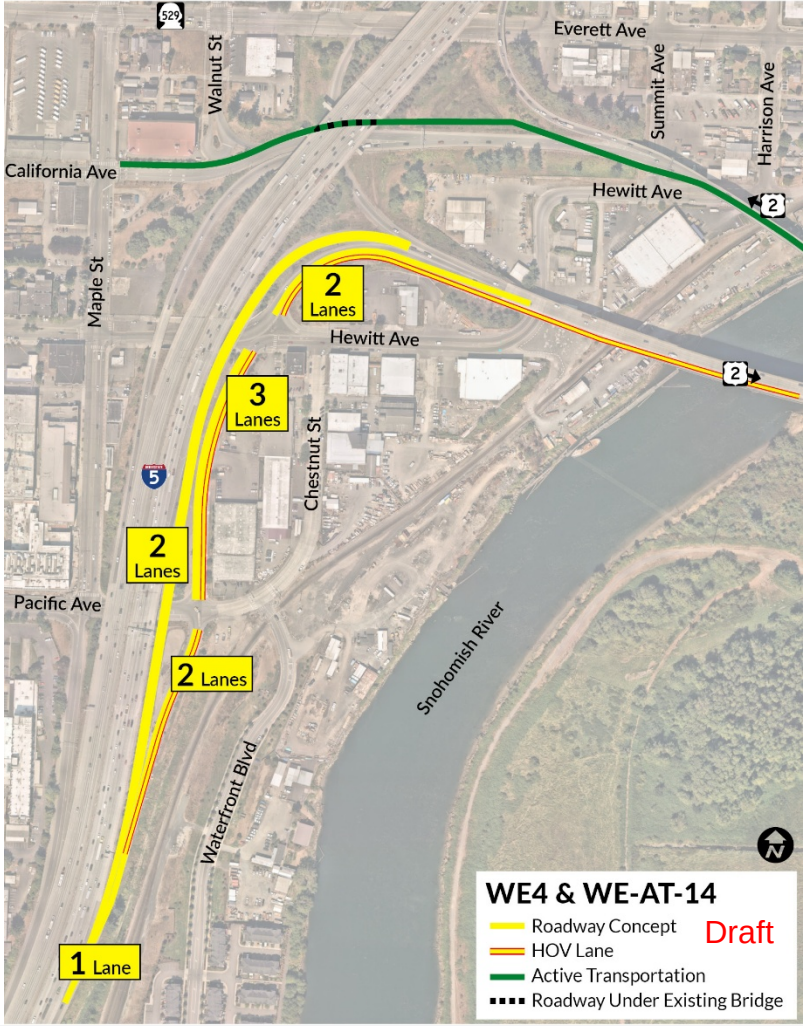
# Level 1 Draft Screening Results:

## West Inter-change WB

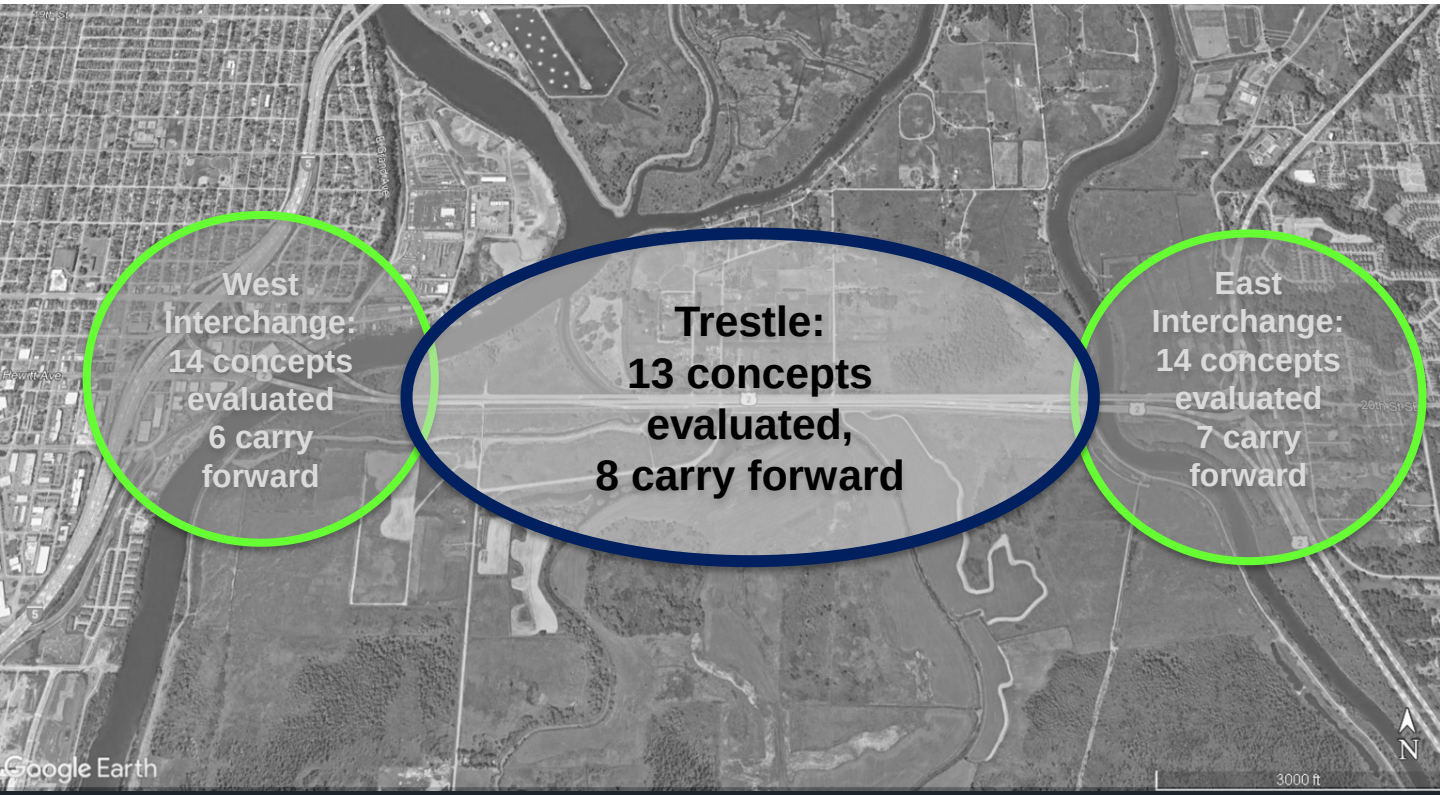


# Level 1 Draft Screening Results:

## West Interchange - EB



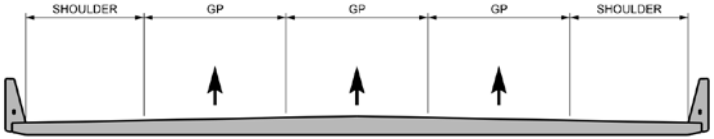
# Level 1 Screening: Summary Results for the Trestle



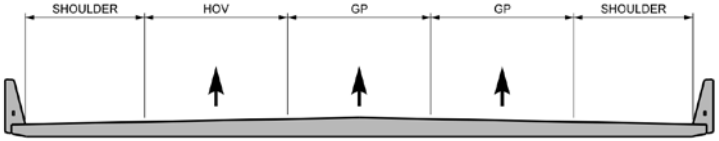
# Level 1 Screening Preliminary Results: Westbound Trestle

## Highest Rated Roadway Concepts (4)

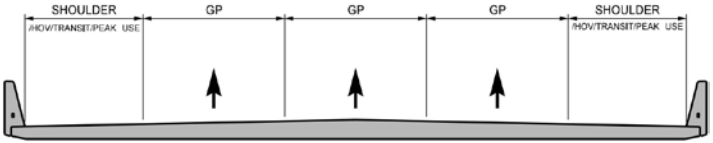
**TW3** – **New structure**
3 GP lanes, full shoulders



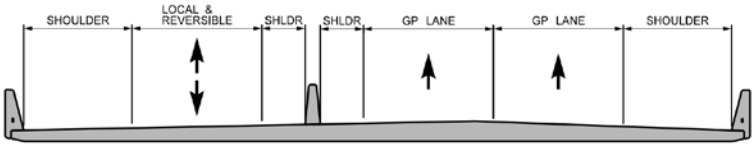

**TW4** – **New structure**
2 GP lanes, 1 HOV lane, full shoulders




**TW5** – **New structure**
3 GP lanes, 1 Peak Use HOV/transit shoulder, full shoulders on both sides during off-peak




**TW6** – **New structure**
2 GP lanes, 1 reversible HOV/transit lane, design-standard shoulders



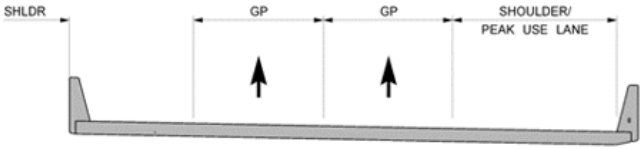

*All concepts would be paired with TR-AT-04 for active transportation*

Draft

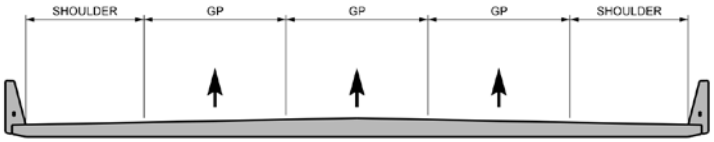
# Level 1 Screening Preliminary Results: Eastbound Trestle

## Highest Rated Roadway Concepts (4)

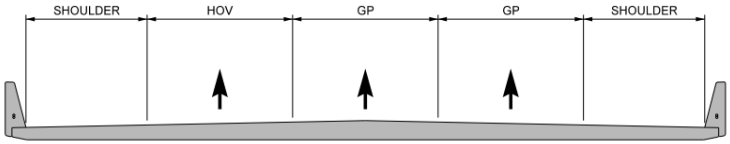
**TE4** – **New structure**
2 GP lanes, Peak Use transit shoulder



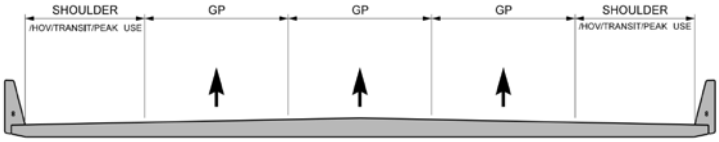

**TE5** – **New structure**
3 GP lanes, full shoulders




**TE6** – **New structure**
2 GP lanes, 1 HOV lane, full shoulders



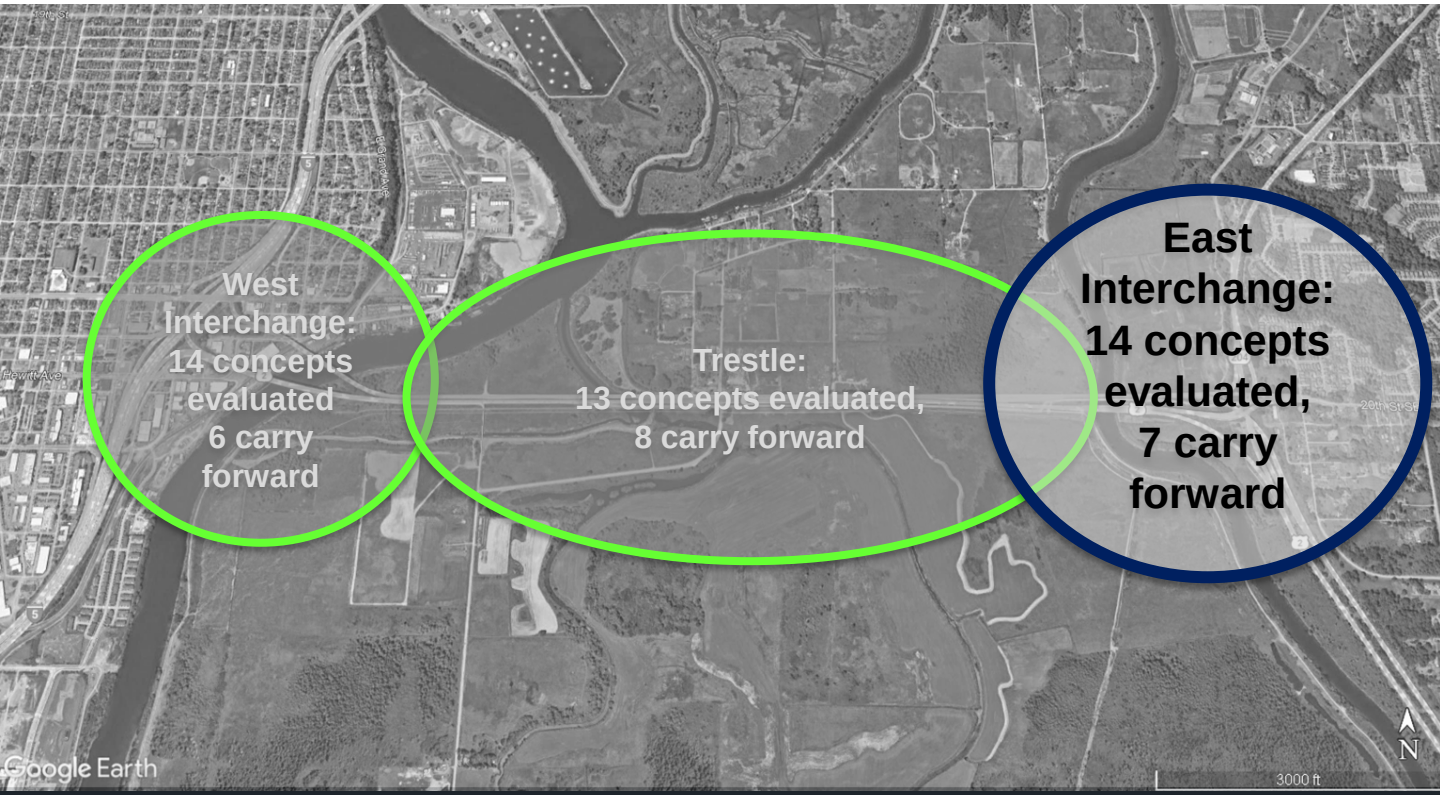

**TE7** – **New structure**
3 GP lanes, Peak use HOV/transit shoulder



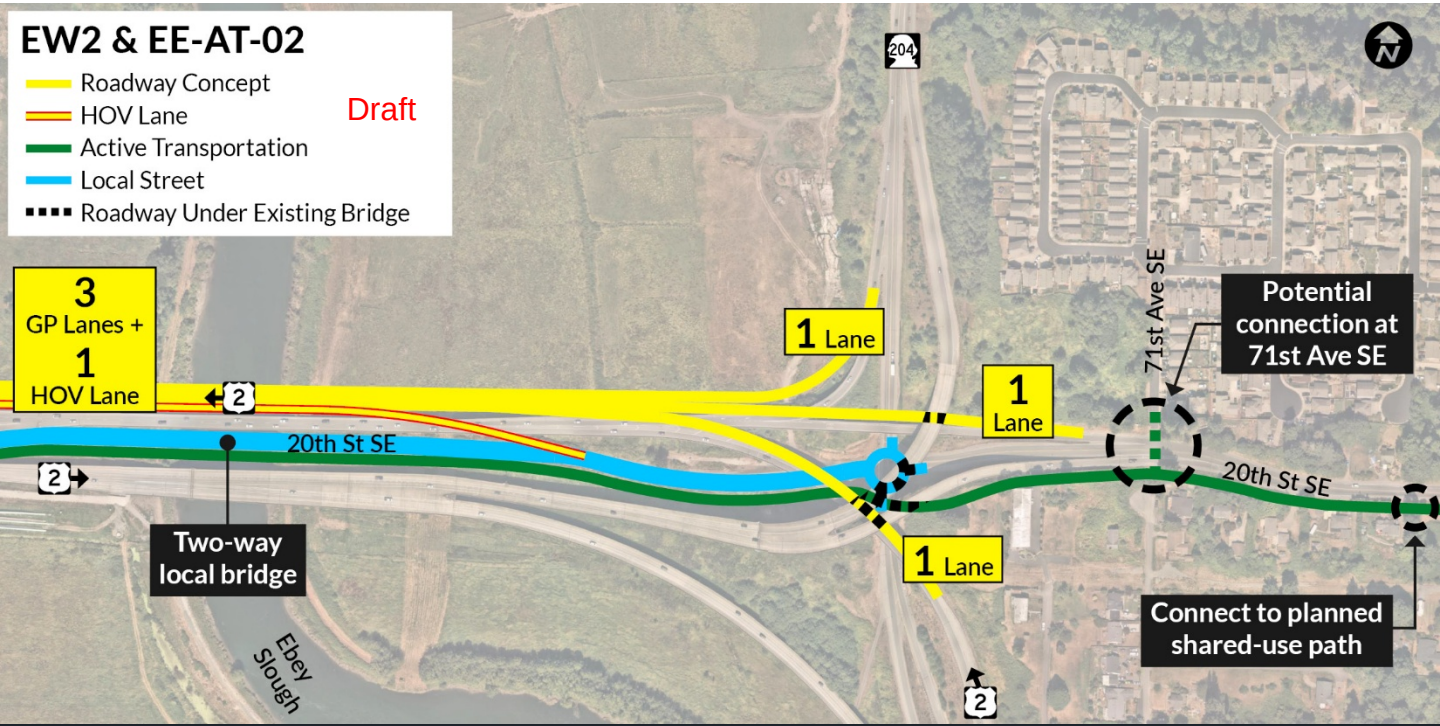

*All concepts would be paired with TR-AT-06 for active transportation*

Draft

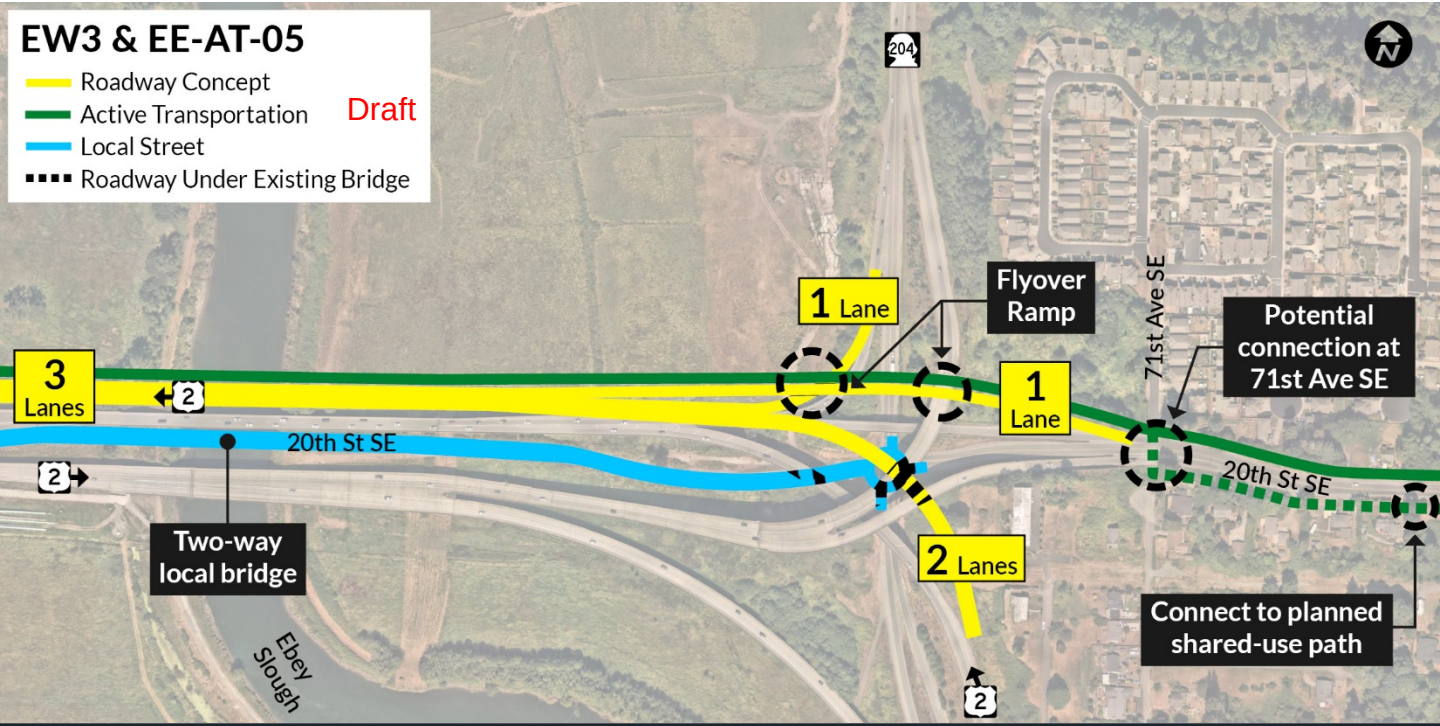
# Level 1 Screening: Summary Results for East Interchange



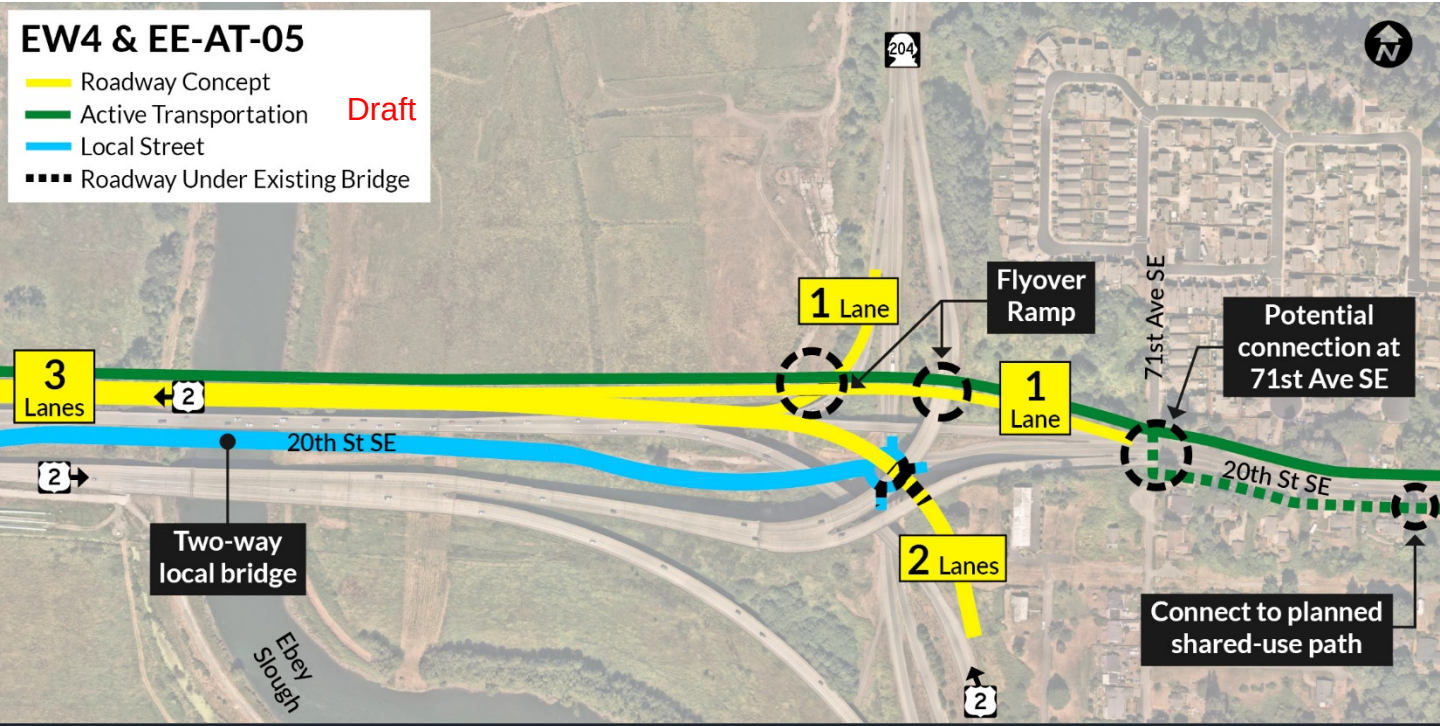
# Level 1 Draft Screening Results: East Interchange - WB



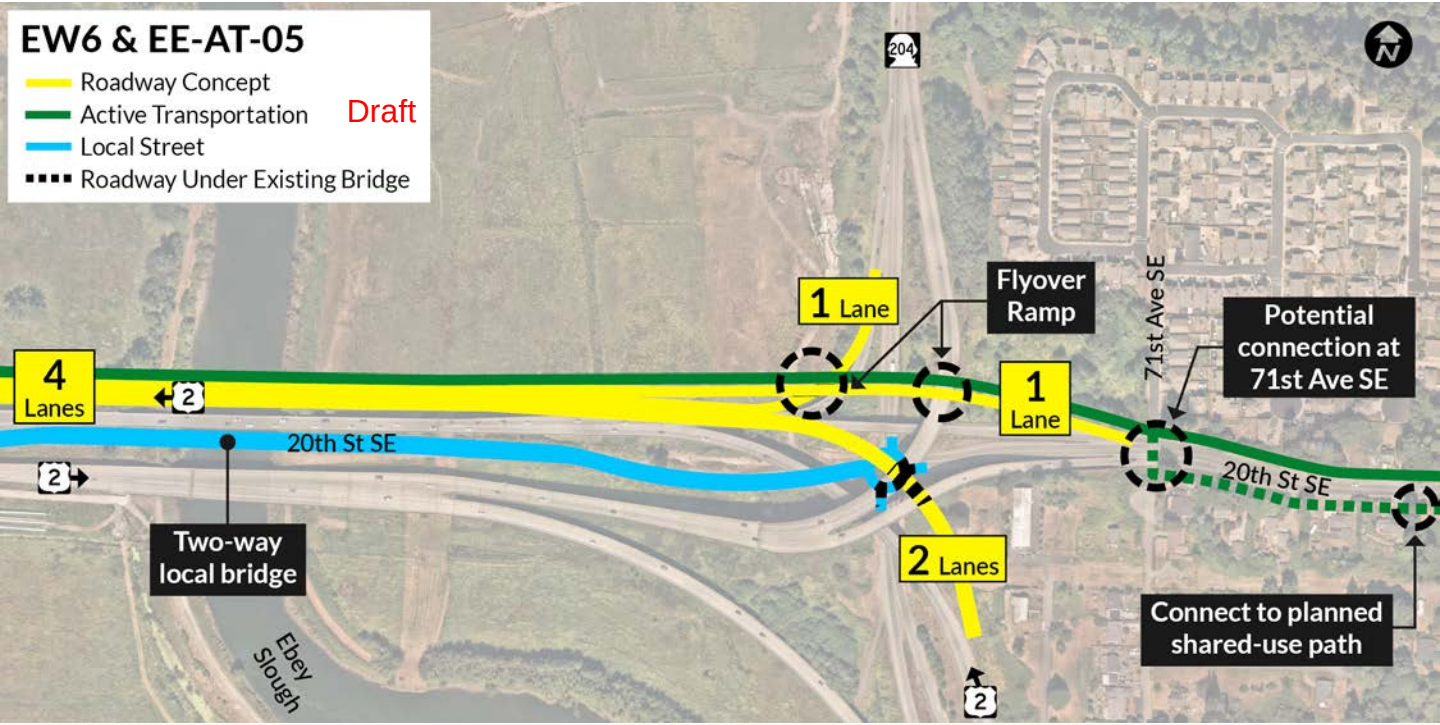
# Level 1 Draft Screening Results: East Interchange - WB



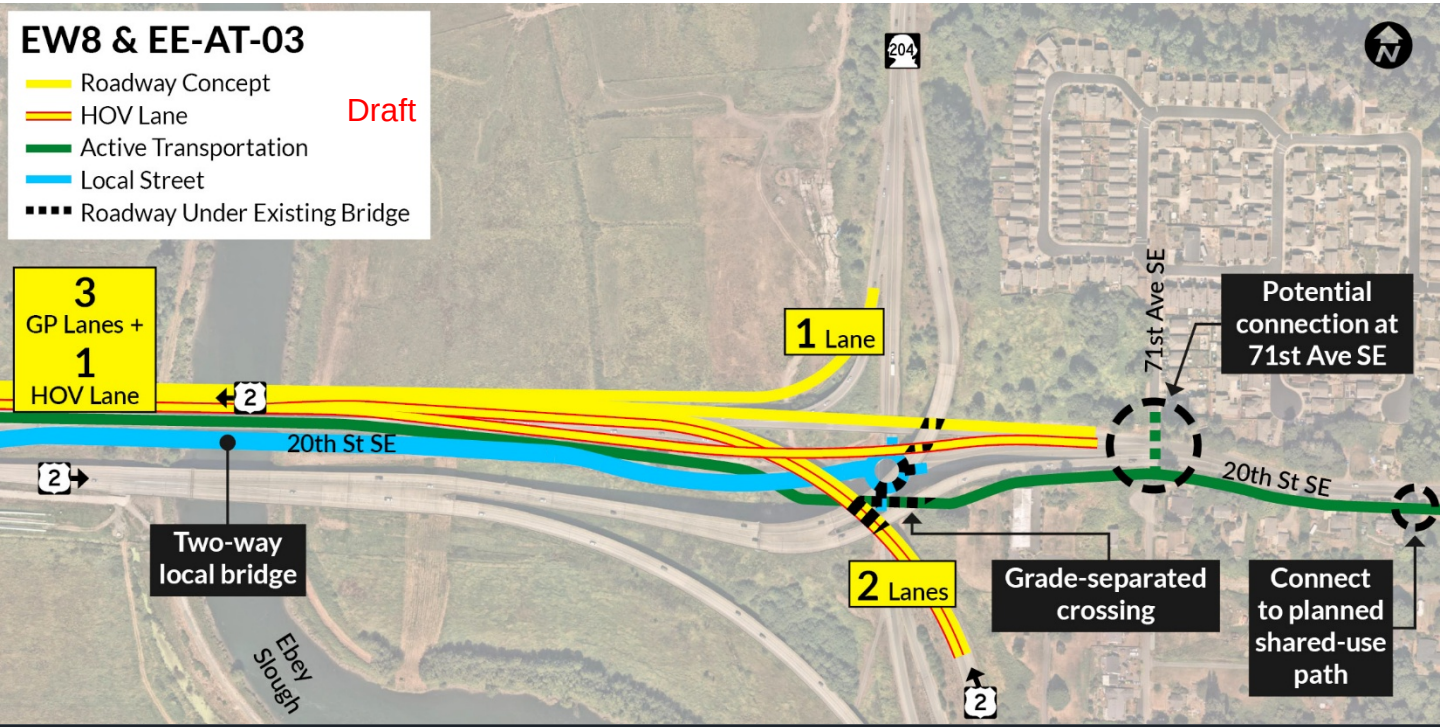
# Level 1 Draft Screening Results: East Interchange - WB



# Level 1 Draft Screening Results: East Interchange - WB



# Level 1 Draft Screening Results: East Interchange - WB

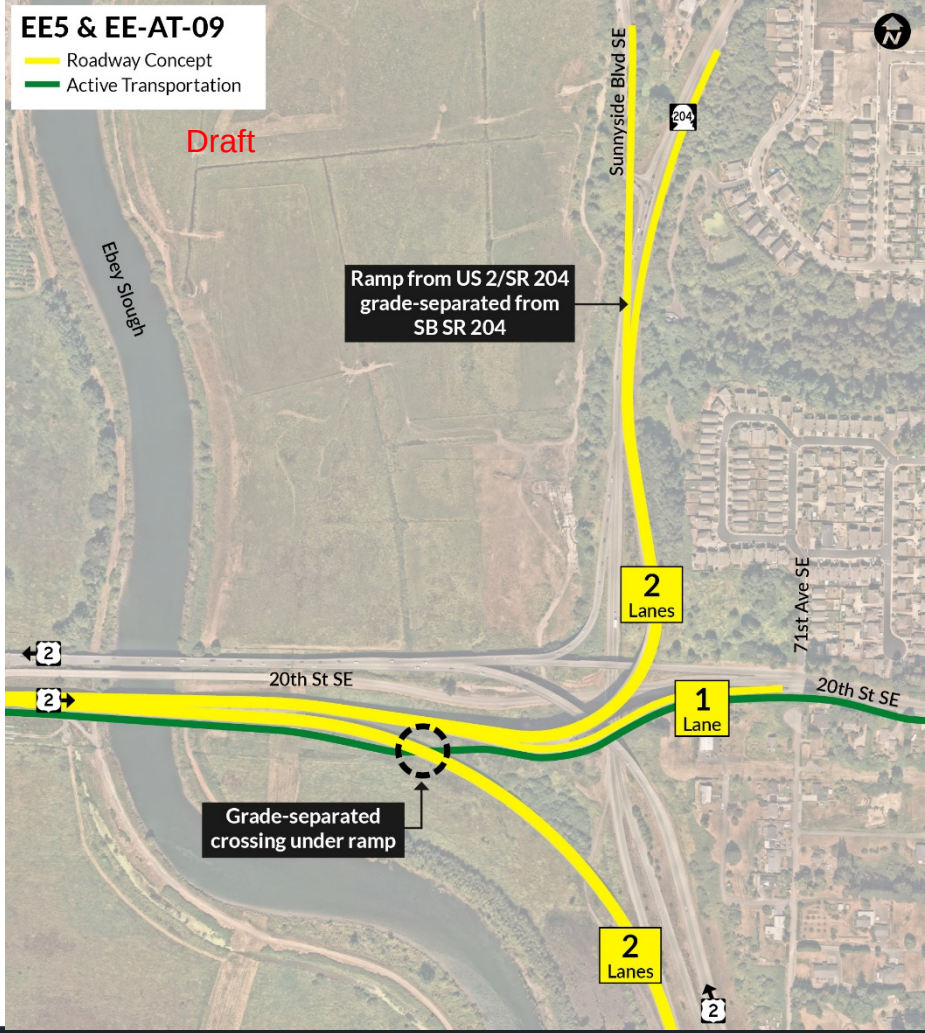


# Level 1 Draft Screening Results:

## East Interchange - EB

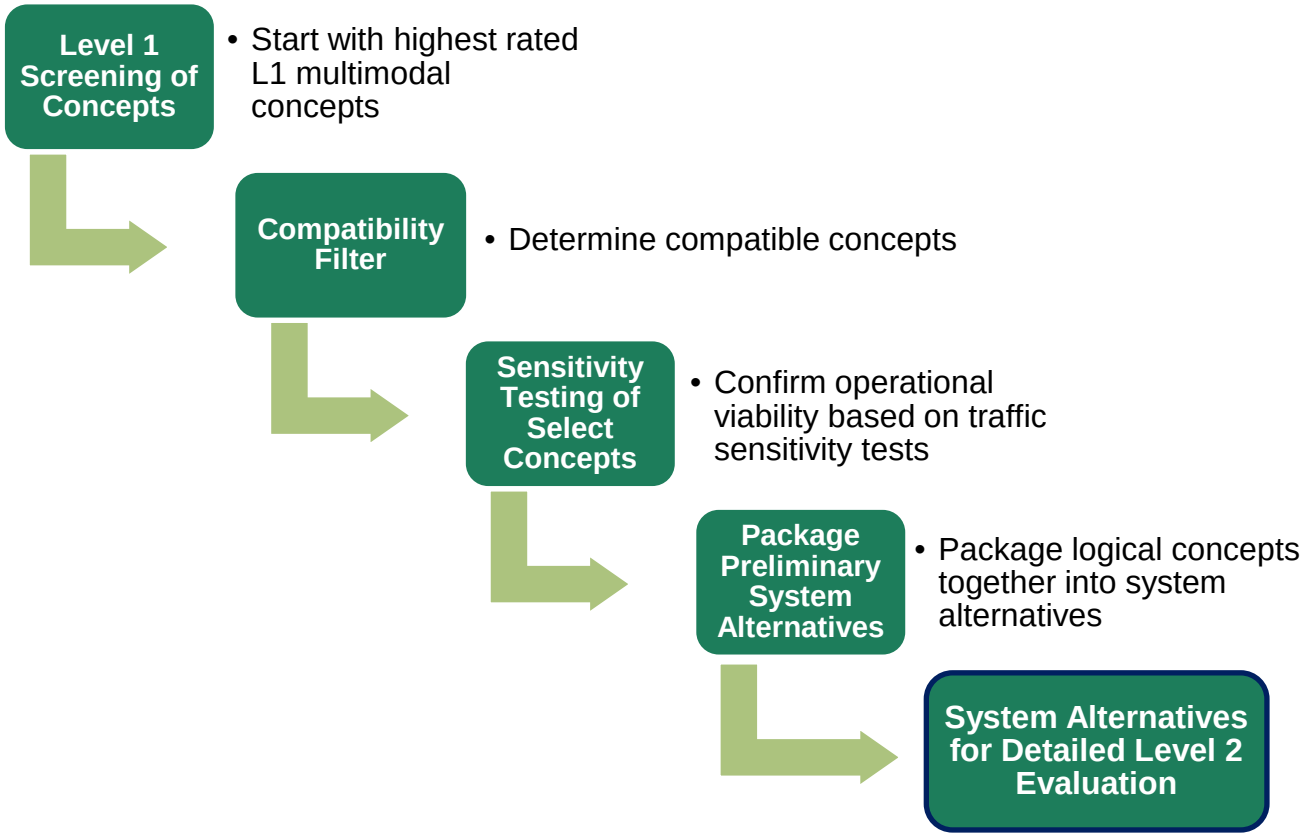
# Level 1 Draft Screening Results:

## East Interchange - EB



# System-level Alternatives Development

# Developing Level 2 System Alternatives



# Traffic Sensitivity Testing

1. Identify interchange concepts that provide similar "benefit" and could be compared with simple traffic operations analysis

2. Outline single hour to evaluate the concepts

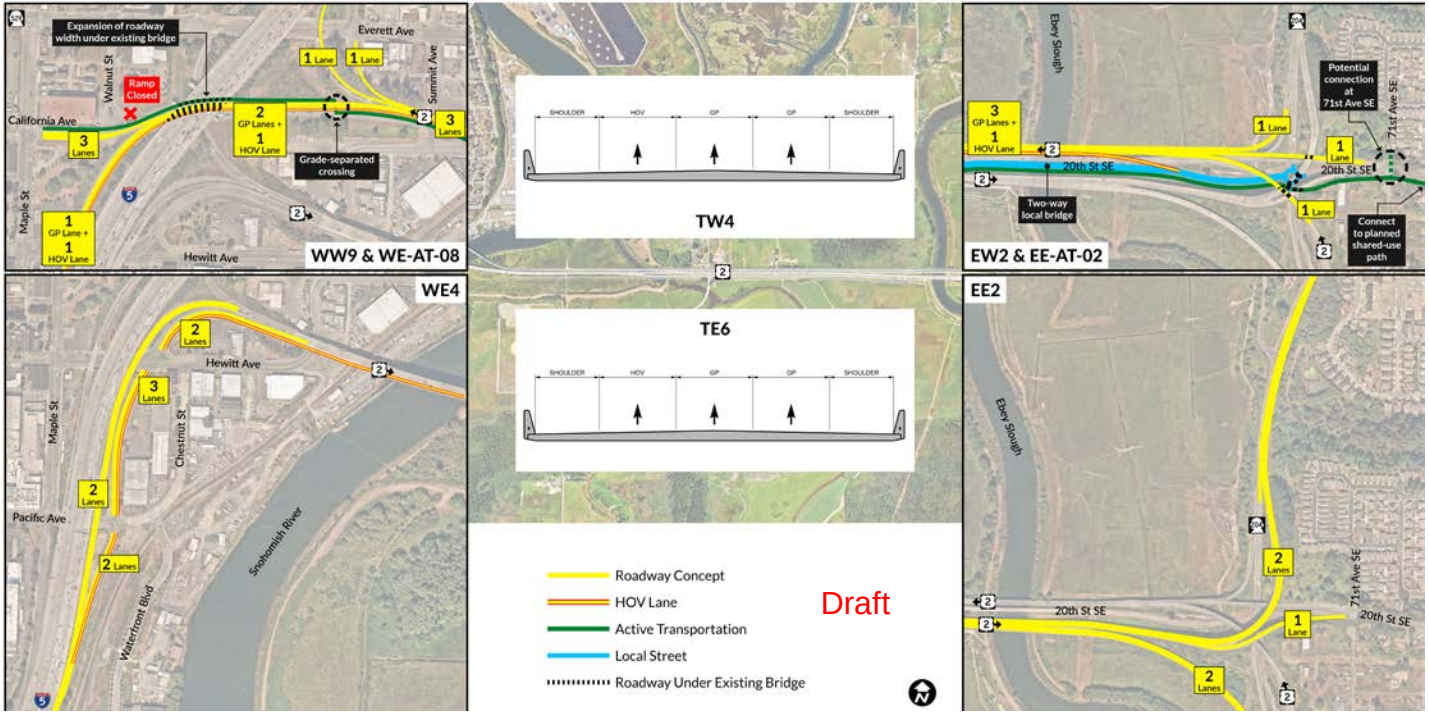
3. Cut VISSIM model to focus on specific area (save time running models)

4. Compare output for travel time and delay

5. Rank concepts by performance

**Example:** *Compare two concepts that show two different access points to City of Everett. How well do they perform during morning peak hour? Could also compare with a single access point to the City.*

# Example System Alternative



# Draft Level 2 Evaluation Criteria: Vehicular

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Travel Times | • Peak hour travel times between set origin-destination (OD) pairs using output from VISSIM or DTA model<br>• Peak hour person hours of delay within the study model analysis area as produced by the DTA model or VISSIM model<br>• Assess how many hours out of a typical weekday that the US 2 trestle and its connecting interchanges are congested. Use SoundCast model hourly volumes and v/c ratios as measures. v/c > 0.9 = congested hour<br>• General purpose reliability qualitatively based on changes in congestion levels and improved ability to clear disabled vehicles (e.g., wide enough shoulders), and reduced potential of crashes and logjam clearing impacts<br>• Travel time related to VPOCs based on SoundCast model (SoundCast model used to provide flexibility in OD zone locations and differing times of day travel may be made) |
| Person Hours of Delay | |
| Hours of Congestion | |
| Travel time reliability | |
| Travel times between VPOCs and essential services* | |

***Note:** *VPOC zones and associated OD pairs to be analyzed, including locations of essential services, in the criteria below will be informed by data compiled in the Environmental Existing Conditions and Environmental Effects and Benefits Reports and developed with input from project stakeholders, including community-based organizations (CBOs.)*

Multimodal Mobility

# Draft Level 2 Evaluation Criteria: Freight

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Freight peak period delay | • Freight travel times based on VISSIM or DTA model results<br>• Freight travel reliability qualitatively based on changes in congestion levels and improved ability to clear disabled vehicles (e.g., wide enough shoulders) |
| Freight travel time reliability | |

Multimodal Mobility

# Draft Level 2 Evaluation Criteria: HOV and Transit

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Transit travel time | • Peak hour travel times for transit routes using the US 2 trestle based on output from VISSIM or DTA model<br>• Person throughput based on transit and HOV modes of travel from the SoundCast model and assumed vehicle occupancy for each mode<br>• Transit/HOV reliability based on degree of transit/HOV lanes/priority strategies provided or if in mixed traffic changes in congestion levels, improved ability to clear disabled vehicles (e.g., wide enough shoulders)<br>• Transit system accessibility and connectivity measured by number of new or improved transit access facilities, new or improved transit connections provided, including new park-and-ride lot capacity |
| Person throughput (persons/hour) | |
| Transit travel time reliability | |
| Improved accessibility and connectivity | |

Multimodal Mobility

# Draft Level 2 Evaluation Criteria: Active Transportation

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Level of traffic stress (LTS) for bicycles and pedestrians | • Bicycle & Pedestrian Level of traffic stress (LTS) for routes accessing the trestle corridor and on the trestle corridor<br>• Directness of route measured by how much out of direction travel is required<br>• Elevation changes qualitatively assessed based on number of hills encountered and steepness of grade<br>• Active transportation connections based on degree of connection to local active transportation networks and the trestle, and along the US 2 trestle corridor |
| Directness of route to key destinations | |
| Elevation changes | |
| Active transportation connections | |

Multimodal Mobility

# Draft Level 2 Evaluation Criteria: Safety Need

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Motorized Vehicle Safety:<br>• Predicted Crash Analysis<br>• Transit /HOV safety | • Daily traffic volumes will be based on output from the SoundCast model. Daily volumes and geometric cross-sections will be included in the ISATe analysis.<br>• Will not assess safety for HOV facilities quantitatively (unable to); will instead assess qualitatively via speed differential considerations, conflict points, and lane changes. |
| Active Transportation Safety:<br>• Bicycle Safety<br>• Pedestrian Safety | • Qualitative assessment of effects of changes for pedestrian and bicycle safety using a comparison of traffic volumes, conflict points, and applicable crash modification factors (CMFs) associated with design. |

Safety

# Draft Level 2 Evaluation Criteria: Seismic Resilience

| ***Level 2 Draft Evaluation Criteria*** | ***General Methodology*** |
|---|---|
| Seismic resilience | • Percentage of corridor that meets current seismic design criteria |

Resilience

# Draft Level 2 Evaluation Criteria: Asset Management

| ***Level 2 Draft Evaluation Criteria*** | ***General Methodology*** |
|---|---|
| Asset Management | • Percentage of the corridor that meets current roadway design standards & structural standards<br>• Ability of alternative to affect the reduction of logjam occurrences under the bridge(s) across Ebey Slough |

Resilience

# Draft Level 2 Evaluation Criteria: Climate and Natural Hazard Resilience

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Climate and natural hazard resilience | • Percentage of the corridor that meets current drainage design standards |

Resilience

# Draft Level 2 Evaluation Criteria: Operational Resilience

| *Level 2 Draft Evaluation Criteria* | *General Methodology* |
|---|---|
| Operational resilience | • Percentage of corridor roadway that has design standard shoulder widths and pull-outs provided<br>• Provision of redundancy in connections into downtown Everett |

Resilience

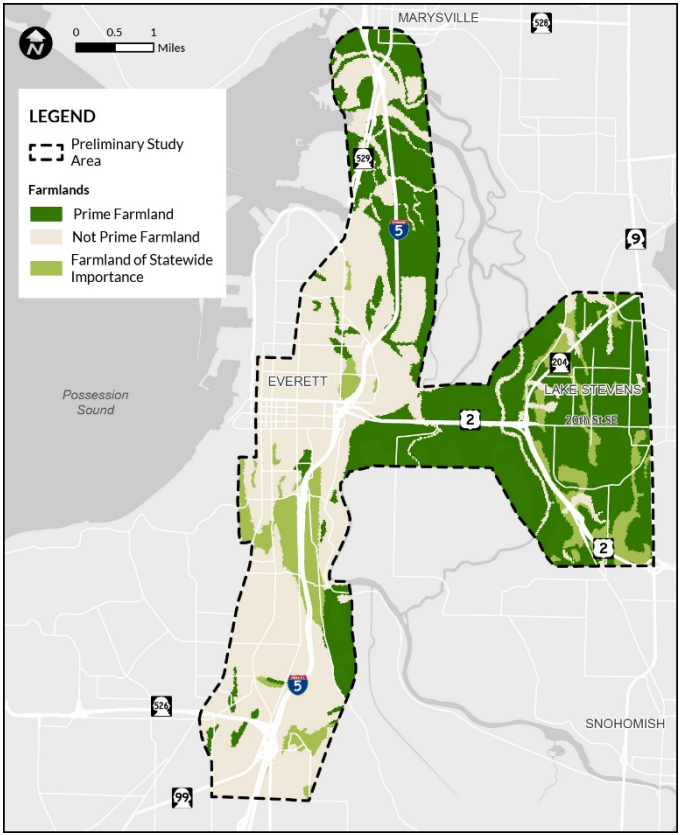
# Environmental Existing Conditions

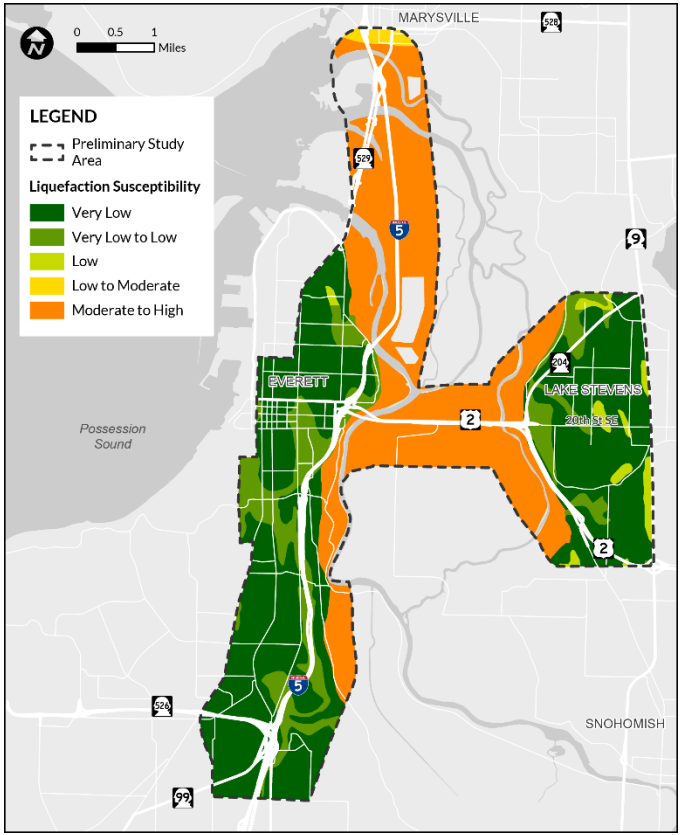
# Environmental Existing Conditions Report Topics

1. Earth (geology and soils)
2. Air quality
3. Greenhouse gas emissions
4. Stormwater best management practice sites and retrofit priorities
5. Wetlands and other waters (including mitigation sites and navigable waters)
6. Chronic environmental deficiencies
7. Climate vulnerability
8. Special flood hazard areas
9. Habitat connectivity
10. Fish passage barriers
11. Threatened and endangered species (plants and wildlife)
12. Noise walls
13. Hazardous materials contamination sites
14. Publicly owned parks, recreational areas, and refuges
15. Cultural resources
16. Environmental Justice/HEAL Act (community profile)

# Environmental Existing Conditions

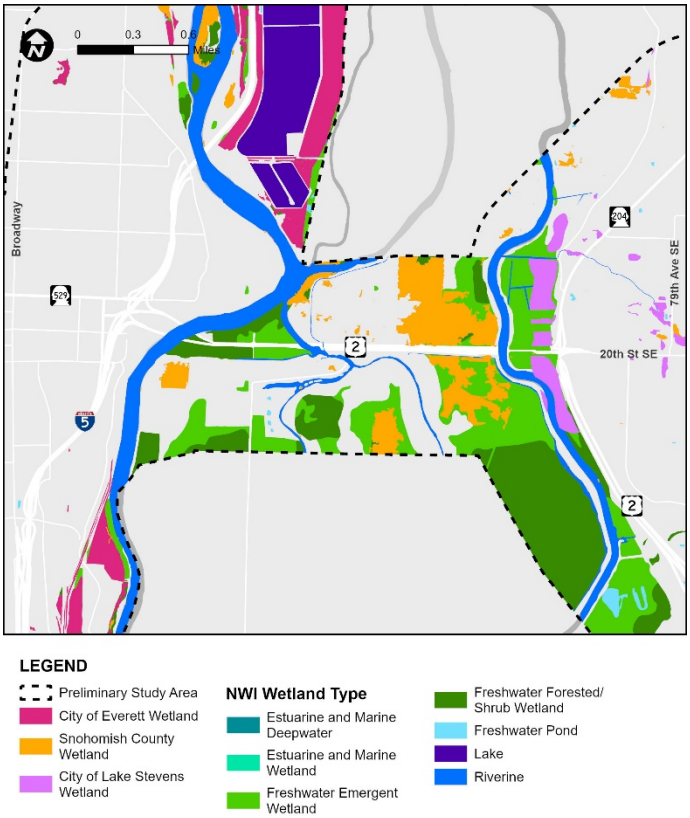
## Earth (Geology and Soils)



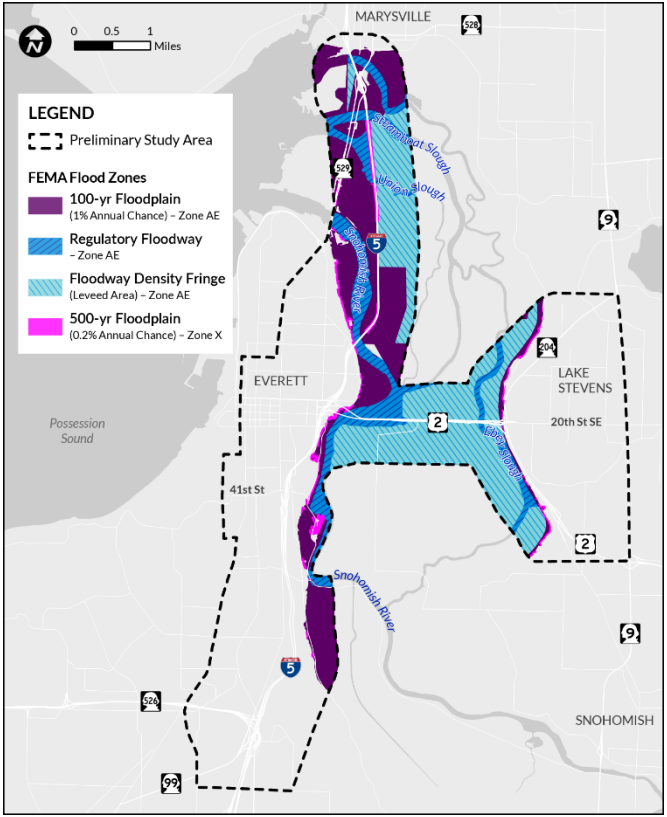
# Environmental Existing Conditions

## Wetlands and WSDOT Environmental Mitigation Sites



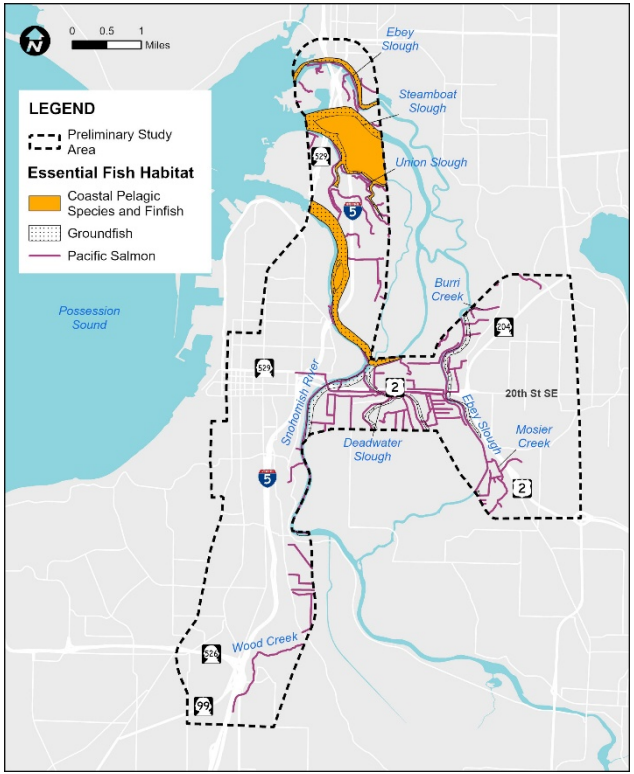

# Environmental Existing Conditions

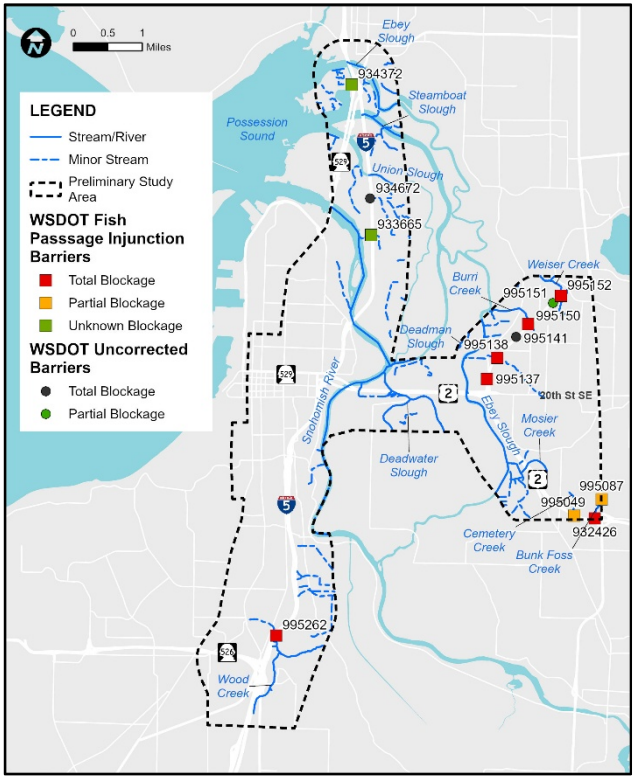
## Navigable Waterways and Flood Zones

# Environmental Existing Conditions

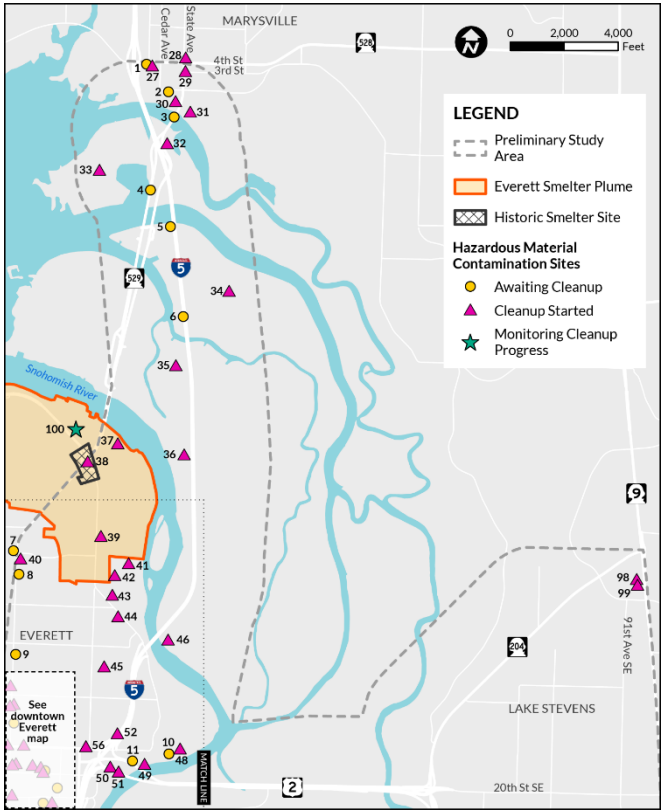
## Essential Fish Habitat and Fish Passage Barriers

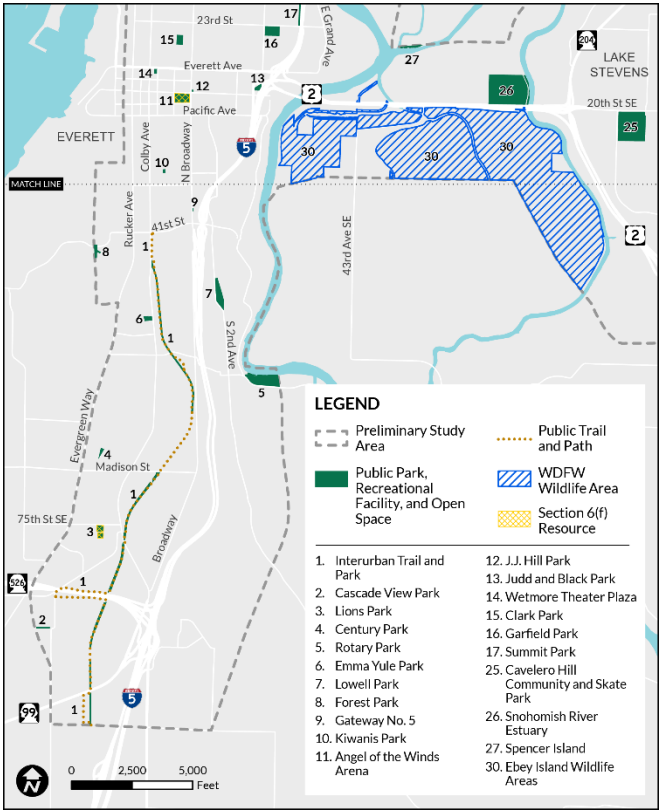


# Environmental Existing Conditions Report

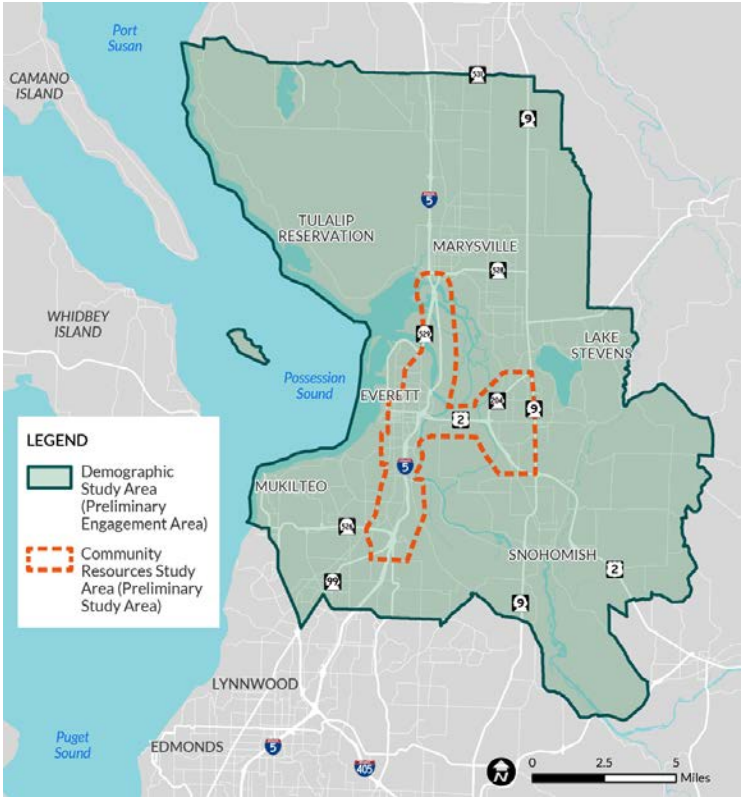
## Hazardous Material Sites and Parks and Recreation Areas



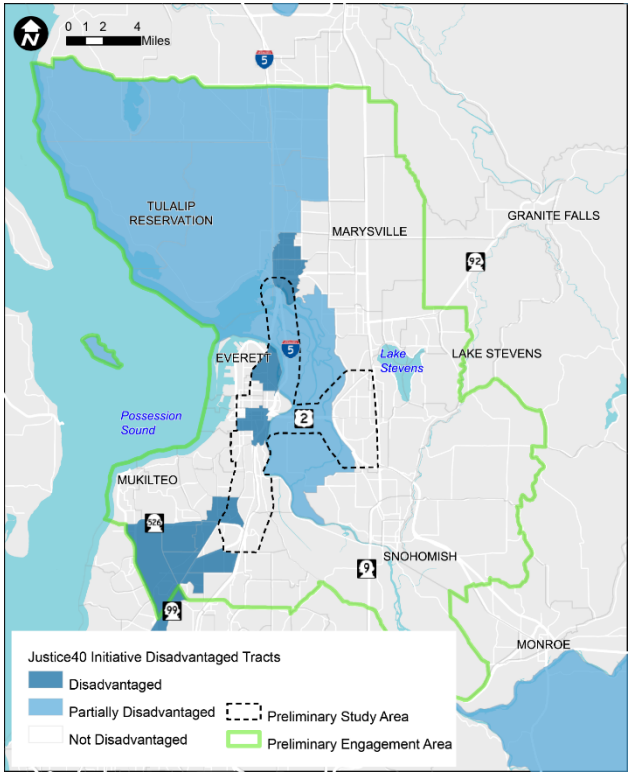



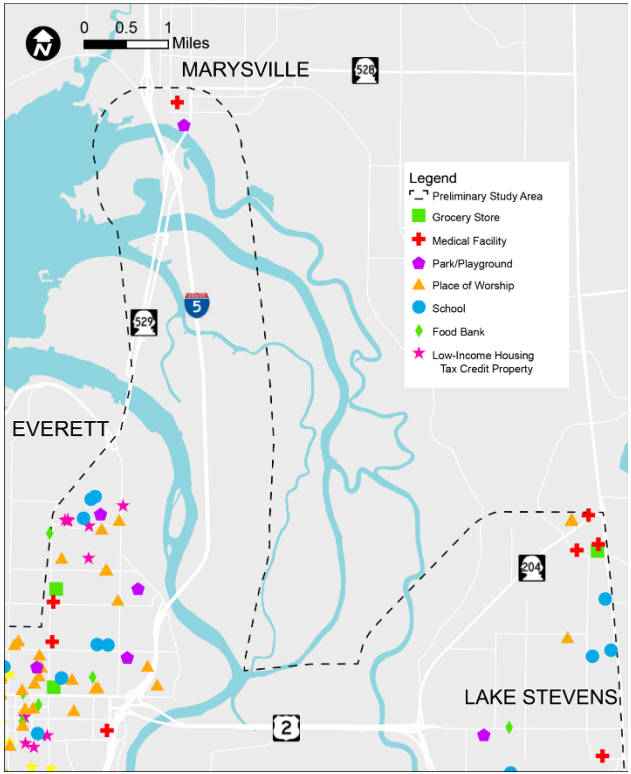
# Environmental Existing Conditions Report
## Environmental Justice/HEAL Act

- Community profile of larger demographic study area, consistent with community engagement area
- Community resources identified within Preliminary Study Area



# Environmental Existing Conditions Report
## Environmental Justice/HEAL Act



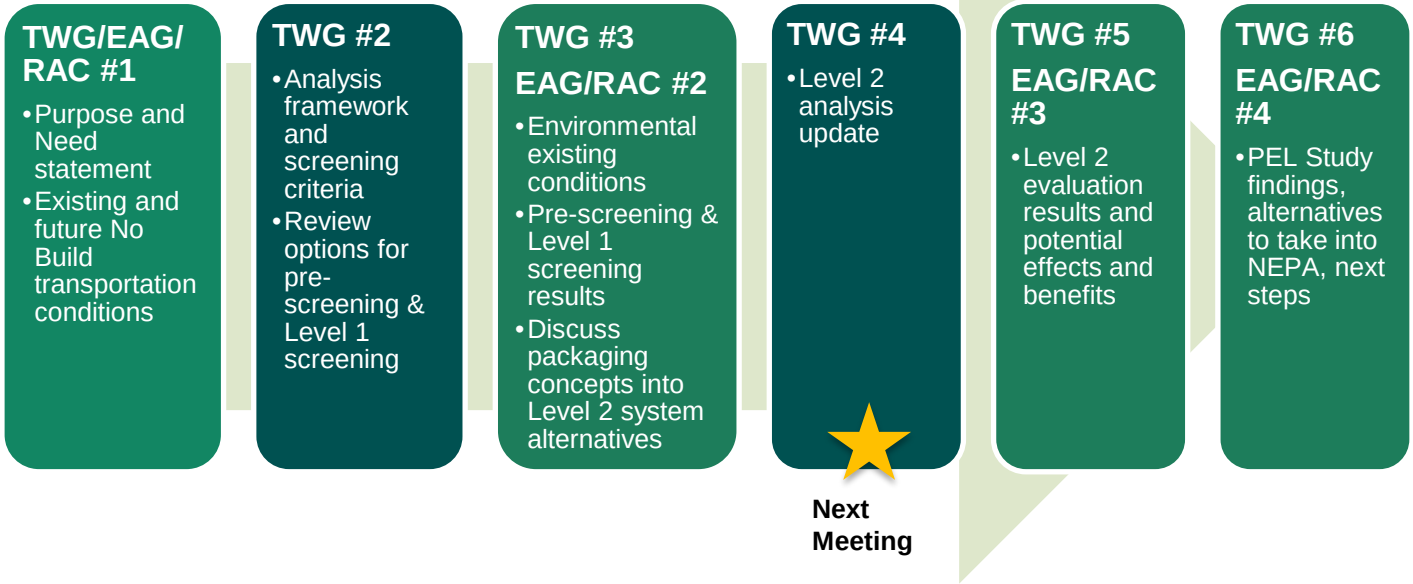



# Next Steps

# Community Engagement Milestones

| Timeline | Outreach Milestones |
|---|---|
| **Winter 2024** | ✓ Publish website<br>✓ Finalize communications plan<br>✓ Conduct listening sessions |
| **Spring 2024** | ✓ Establish and facilitate first PEL committee meetings<br>✓ Purpose and Need online open house |
| **Summer/Fall 2024** | ✓ TWG Meeting 2<br>✓ Online open house follow-up |
| **Winter 2025** | ❑ **TWG Meeting 3 and EAG/RAC Meeting 2** |
| **Spring/Summer 2025** | ❑ Public review of draft alternatives |
| **Winter 2026** | ❑ Public review of the draft PEL report |

# PEL Committee Meeting Schedule




TWG = Technical Working Group
EAG = Executive Advisory Group
RAC = Resource Agency Committee

# Thank you!

**Send comments/questions to:**

**Jennifer Rash**
**Study Engagement**
rashjen@consultant.wsdot.wa.gov

**Oteberry Kedelty**
**WSDOT Project Manager**
KedeltO@wsdot.wa.gov

**Meeting materials posted on the study website:**
https://wsdot.wa.gov/construction-planning/search projects/us-2-trestle-capacity-improvements-westbound-trestle-replacement