



Washington State  
Department  
of Transportation  
INVEST  
Study

Winter 2014

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Washington State  
Department of Transportation



**INVEST**  
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# INVEST

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## **Infrastructure Voluntary Evaluation Sustainability Tool**

**Version 1.0**

**INVEST Pilot Study**

**Washington State Department of Transportation**

**Winter 2014**

**Funded in part through a research grant by the**

**Federal Highway Administration**



U.S. Department of Transportation  
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## Table of Contents

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<b>Executive Summary</b> .....	<b>1</b>
Introduction .....	1
WSDOT Interest in the INVEST Program .....	1
<i>System Planning</i> Module: Corridor Planning Studies .....	2
<i>Project Development</i> Module: SR 520 Bridge & HOV Program .....	3
Findings & Recommendations .....	4
Recommendations on WSDOT Corridor Planning .....	4
WSDOT Feedback to FHWA on INVEST.....	4
INVEST Scores .....	7
Action Plan .....	8
Products .....	8
<b>Chapter 1: Introduction</b> .....	<b>9</b>
INVEST Overview.....	9
Modules .....	10
WSDOT Sustainability Programs .....	11
Moving Washington.....	12
Results WSDOT .....	13
Results Washington .....	13
Other WSDOT Sustainability Efforts .....	14
Future Sustainability Efforts .....	15
<i>System Planning</i> Module: Corridor Planning Studies .....	16
SR 516 Corridor Study, SR 167 in Kent to SR 169 in Maple Valley.....	17
SR 520 Multimodal Corridor Planning Study. ....	20
US 2 - Everett Port/Naval Station to SR 9 Corridor Planning Study.....	22
<i>Project Development</i> Module: SR 520 Bridge & HOV Program .....	25
<b>Chapter 2: Methodology and Assumptions</b> .....	<b>28</b>
<i>System Planning</i> Module .....	28
<i>Project Development</i> Module .....	30
<b>Chapter 3: System Planning Findings &amp; Recommendations</b> .....	<b>33</b>
Applicability to WSDOT: Recommendations on WSDOT Corridor Planning.....	33
WSDOT Feedback to FHWA on the <i>System Planning</i> Module .....	46
Connecting Planning with Design .....	46
Summary of <i>System Planning</i> INVEST Scores.....	47
Some Thoughts on the Scoring Process.....	47
Final Scores for the Corridor Planning Studies .....	49
Summary Discussion of <i>System Planning</i> Evaluation by Criterion.....	51

<b>Chapter 4: <i>Project Development Findings &amp; Recommendations</i></b> .....	<b>92</b>
Applicability to WSDOT: Issues Encountered & Lessons Learned .....	92
Do the <i>Project Development</i> Criteria fit with WSDOT Sustainability Goals? .....	92
How could the INVEST Tool Fit into the WSDOT Project Development Process? .....	93
Could INVEST be Used to Bridge the Gap between NEPA and Health Impact Assessments? .....	95
Overall Impressions: Can INVEST Work for WSDOT? .....	96
WSDOT Feedback to FHWA on the <i>Project Development</i> Module .....	97
Flexibility and Context .....	97
Evaluation Process and Timing .....	98
Scale of Project .....	98
Format.....	98
Scoring .....	98
Summary of INVEST Scores .....	99
<b>Chapter 5: <i>WSDOT Action Plan</i></b> .....	<b>101</b>
Implementation of Corridor Planning Recommendations.....	102
Demand Management Guidelines 2013-15 Research Project.....	103

## List of Exhibits

Exhibit 1:	Sample of INVEST Scoring Webpage .....	11
Exhibit 2:	Map of the Puget Sound Area .....	16
Exhibit 3:	Location of the Three Corridor Planning Studies .....	17
Exhibit 4:	Entire Length of SR 516, Des Moines to Maple Valley .....	18
Exhibit 5:	Study Area for the SR 516 Planning Study.....	19
Exhibit 6:	Entire Length of SR 520, Seattle to Redmond .....	20
Exhibit 7:	Study Area for the SR 520 Planning Study.....	21
Exhibit 8:	US 2 through Washington State .....	22
Exhibit 9:	Study Area for the US 2 Planning Study .....	24
Exhibit 10:	SR 520 Bridge & HOV Program Sub-Projects.....	26
Exhibit 11:	Individual Criterion Scores for the Three Planning Studies.....	50
Exhibit 12:	Scorecard for SP-01: Integrated Planning: Economic Development and Land Use .....	54
Exhibit 13:	Scorecard for SP-02: Integrated Planning: Natural Environment .....	57
Exhibit 14:	Scorecard for SP-03: Integrated Planning: Social .....	59
Exhibit 15:	Scorecard for SP-04: Integrated Planning: Bonus .....	60
Exhibit 16:	Scorecard for SP-05: Access and Affordability .....	63
Exhibit 17:	Scorecard for SP-06: Safety Planning .....	67
Exhibit 18:	Scorecard for SP-07: Multimodal Transportation and Public Health .....	69
Exhibit 19:	Scorecard for SP-08: Freight and Goods Movement.....	71
Exhibit 20:	Scorecard for SP-09: Travel Demand Management .....	73
Exhibit 21:	Scorecard for SP-10: Air Quality .....	75
Exhibit 22:	Scorecard for SP-11: Energy and Fuels.....	78
Exhibit 23:	Scorecard for SP-12: Financial Sustainability .....	80
Exhibit 24:	Scorecard for SP-13: Analysis Methods.....	82
Exhibit 25:	Scorecard for SP-14: Transportation Systems Management & Operations.....	84
Exhibit 26:	Scorecard for SP-15: Linking Asset Management and Planning.....	86
Exhibit 27:	Scorecard for SP-16: Infrastructure Resiliency.....	89
Exhibit 28:	Scorecard for SP-17: Linking Planning and NEPA .....	91
Exhibit 29:	Comparison of NEPA and HIA Documentation.....	96
Exhibit 30:	<i>Project Development</i> Scoring Criteria in Descending Order of Maximum Points Available .	100
Exhibit 31:	Action Plan for Implementation of Corridor Planning Recommendations .....	103
Exhibit 32:	Action Plan for Implementation of Demand Management Study & Findings .....	105

## List of Abbreviations

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AASHTO	American Association of State Transportation Officials
ADA	American Disability Act
AMPO	Association of Metropolitan Planning Organizations
ASCE	American Society of Civil Engineers
ATM	active transportation management
B/C	benefit-cost ratio
BCA	benefit-cost analysis
BKR	Bellevue, Kirkland, and Redmond
CAC	collision analysis corridor
CAL	collision analysis location
CAS	collision analysis segment
CFR	code federal regulations
CIPP	Capital Improvement and Preservation Program
CPDM	Capital Program Development and Management office
CTPO	Community Transportation Planning Office
CTR	commute trip reduction
e.g.	for example ( <i>exempli gratia</i> , Latin)
EIS	environmental impact statement
ESO	environmental significance overlay
EST	eastern standard time
ETC	economy, transportation, and community
etc.	and so forth ( <i>et cetera</i> , Latin)
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
GMA	Growth Management Act
HIA	health impact assessment
HOV	high occupancy vehicle
HQ	headquarters
HSEC	Highway Safety Executive Committee
HSIG	Highway Safety Issues Group
HSM	Highway Safety Manual
HSP	Highway System Plan
i.e.	that is ( <i>id est</i> , Latin)
I-5	Interstate 5

IAL	intersection analysis location
INVEST	Infrastructure Voluntary Evaluation Sustainability Tool
LCCA	life cycle cost analyses
L RTP	long range transportation plan
MAP-21	Moving Ahead for Progress in the 21 <sup>st</sup> Century Act
mb	megabyte
MPO	metropolitan planning organization
N/A	not applicable
NCHRP	National Cooperative Highway Research Program
NE	northeast
NEPA	National Environmental Policy Act
P or p	page
PD	Project Development module
pdf	portable document format
PSRC	Puget Sound Regional Council
RCO	Recreation and Conservation Office
RCW	revised code of Washington
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act
SHSP	Strategic Highway System Plan
SP	System Planning module
SR	state route
STIP	state transportation improvement program
STLT	Sustainable Transportation Leadership Team
TDM	transportation demand management
TIP	transportation improvement program
TSM	transportation systems management
TSM&O	transportation systems management and operations
TZD	Toward Zero Death
UPO	Urban Planning Office
US	United States route
USDOT	United States Department of Transportation
VMS	variable message sign
VMT	vehicle-miles of travel
WA	Washington
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WTP	Washington Transportation Plan/Statewide Multimodal Transportation Plan

## Executive Summary

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### Introduction

INVEST stands for **I**nfrastructure **V**oluntary **E**valuation **S**ustainability **T**ool. The INVEST tool is an online self-assessment tool created by the Federal Highway Administration (FHWA) for use by transportation agencies to evaluate and improve the sustainability of their planning, project development, and operations and maintenance programs and processes.

The Washington State Department of Transportation (WSDOT) submitted a proposal to evaluate INVEST by applying it retroactively to three recently completed corridor planning studies and one project which is still in the development phase. The proposal had two major goals:

1. Improve sustainability practices at WSDOT. This would include:
  - Evaluate sustainability in the corridor planning and the project development processes to determine if and where to make improvements.
  - Glean insight and refine a sustainability lens to improve the integration of demand management and public health into WSDOT's planning and project development.
2. Provide FHWA with feedback for improving INVEST by making it more applicable to planning studies and the project development process.

INVEST considers the full life cycle of projects and utilizes three modules to allow users to self-evaluate the life cycle of transportation services: *System Planning*, *Project Development*, and *Operations and Maintenance*. Each of these modules has a separate set of criteria. The criteria pose scoring requirements or definitions of what FHWA considers optimal sustainability practices. Users can then rate themselves against these criteria based on the scoring requirements. WSDOT chose to work primarily with INVEST's *System Planning* and *Project Development* modules.

### WSDOT Interest in the INVEST Program

WSDOT is committed to sustainability and used the INVEST process to help assess how the agency is doing and where it could improve.

In August 2012, the Secretary of Transportation issued an [Executive Order](#) regarding business practices for [Moving Washington](#), a framework for WSDOT investment decisions. Sustainability is a key ingredient of *Moving Washington*, which supports a healthy environment, economy, and communities - the triple bottom line of sustainability. The 2012 Executive Order established the expectation that all WSDOT employees conduct business in a reliable, responsible, and sustainable way.

WSDOT's current draft strategic plan, [Results WSDOT](#), and the statewide strategic plan, [Results Washington](#), solidify WSDOT's commitment to sustainability. Additionally, WSDOT is a national leader in addressing greenhouse gas emissions from projects, incorporating sustainability into agency business, and adapting infrastructure to climate change. Chapter 1 provides more details regarding WSDOT's [Sustainable Transportation](#) program, *Moving Washington*, *Results WSDOT*, and *Results Washington*.

WSDOT was also interested in INVEST because its results could inform several key initiatives underway, including the update of WSDOT's Practical Planning Guidelines (formerly [Transportation Planning Studies Guidelines & Criteria](#)). WSDOT planners statewide use these guidelines to develop corridor planning studies. Incorporating sustainability into planning studies will be a significant focus in this update, scheduled for completion in 2014.

Another key initiative underway is a research project to integrate demand management strategies into WSDOT planning and programming. This research will begin in January 2014 and be complete by March 2015. INVEST helped WSDOT prepare for this new initiative by using a nationally vetted framework to assess the agency's baseline demand management practices. INVEST may also eventually help inform the development of guidelines for demand management integration. Appendix J provides more details on the demand management research project.

Finally, the INVEST evaluation provided timely support for WSDOT's efforts to explore options for incorporating a public health perspective into transportation decision making. WSDOT used the *Project Development* module to evaluate INVEST as a potential tool in this effort as described in Chapter 4.

The WSDOT INVEST project began in July 2013 and was complete in December 2013. The INVEST evaluation resulted in the development of an Action Plan described in Chapter 5 that will be implemented by June 2015.

### **System Planning Module: Corridor Planning Studies**

The *System Planning* module focuses on performing system level analyses in a manner that contributes to the overall sustainability of the transportation network and its projects. *System Planning* criteria are primarily written for scoring a fiscally constrained Metropolitan Planning Organization (MPO) or a statewide long range transportation plan (LRTP). A LRTP includes the agency's transportation planning process, project selection criteria, the state transportation improvement program (STIP/TIP), and project programming. Since WSDOT used INVEST to score corridor planning studies rather than its LRTP, Scorers interpreted the criteria to apply to the corridor level.

WSDOT selected three recently completed corridor studies in the Central Puget Sound area for evaluation. The Central Puget Sound area includes the major metropolitan areas of Everett, Seattle/Bellevue, Tacoma, and Bremerton. These studies represented a variety of contexts, including the type of highway and surrounding land use, different commute patterns and availability of transit, and varying scope, schedule, budget, and stakeholder participation levels.



WSDOT chose the following corridor planning studies for INVEST evaluation:

- [SR 516 Corridor Study, SR 167 in Kent to SR 169 in Maple Valley](#), published January 2013. This study analyzed existing and future transportation conditions along the study corridor. The final report included a traffic and mobility analysis, safety analysis, an environmental overview, recommendations for near-, mid-, and long-term improvements, and planning level cost estimates for the near- and mid-term recommendations.
- [SR 520 Multimodal Corridor Planning Study](#), published April 2013. This study analyzed existing and future transportation conditions along SR 520 from I-405 to its eastern terminus in the city of Redmond. The final report included a traffic and mobility analysis, safety analysis, an environmental overview, recommendations for near-, mid-, and long-term improvements, and planning level cost estimates for the recommendations.
- [US 2 - Everett Port/Naval Station to SR 9 Corridor Planning Study](#), to be published in 2014. This study examined safety and mobility issues and developed recommendations addressing increased population and employment growth in the surrounding communities of Snohomish County. The study also included a small segment of SR 529, which serves as a local street connecting I-5 to the Everett Naval Station at the Port of Everett. The study considered mobility strategies to improve corridor operational efficiency and manage user demand, and identified locations that require strategic capacity expansion when other strategies fail to address congestion. The study prioritized recommendations into lower, medium, and higher cost options, for incremental implementation as funding becomes available.

### ***Project Development Module: SR 520 Bridge & HOV Program***

The *Project Development* module covers the entire project development process from early planning, alternatives analysis, and environmental documentation to preliminary design, final design, and construction. WSDOT evaluated the content of the scoring criteria, timing of INVEST in the project development process, and the potential for the INVEST framework to address public interest in new methods of addressing public health in transportation decision making.

WSDOT selected the unfunded project elements of the [SR 520 Bridge Replacement and HOV Program](#) for evaluation. SR 520 stretches from Seattle to Redmond, crossing over Lake Washington via a 1.44 mile floating bridge. Only part of the highway contains HOV lanes. This project will replace the nearly 50 year old bridge and extend HOV lanes in both directions along the full length of the state route. The funded portion of the project broke ground in 2011 with an expected completion by 2016.

The unfunded portion of the project which was evaluated by the INVEST tool is the 1½ miles at the west end of the highway, between the I-5 Interchange and Montlake Boulevard, west of Lake Washington.

## Findings & Recommendations

The INVEST pilot resulted in substantive recommendations for making corridor planning more sustainable. The study team also developed feedback for FHWA to improve the INVEST tool for both the *System Planning* and the *Project Development* modules. This report divides the findings into the following categories:

- Corridor Planning Recommendations
- INVEST Feedback
- INVEST Sustainability Scores

### Recommendations on WSDOT Corridor Planning

The *System Planning* evaluation team developed the following substantive recommendations for making corridor planning more sustainable:

- **Broader Outreach.** Based on context and budget, WSDOT should engage broader internal and external interests in corridor planning.
- **Stronger Connections to Other Plans.** Corridor plans should reference and integrate a broader set of internal and external plans.
- **Stronger Connections to Other Processes.** WSDOT should strengthen connections between corridor planning, programming, scoping, environmental review, and design.
- **Sustainability Goals.** Corridor plans should include goals and objectives that are quantifiable where appropriate, support sustainability principles, and harmonize the vision and goals of the community and WSDOT.
- **Data and Performance Measurement.** Corridor planners should consider a wider range of data to develop and evaluate planning recommendations.
- **Analysis.** WSDOT may need additional analytical tools to help planners evaluate tradeoffs between diverse goals.
- **Strategy Development.** Corridor plans should document how sustainability goals, objectives, and data informed the analysis, the identification of potential strategies, and the selection of final planning recommendations.
- **Planning Recommendations.** WSDOT should develop guidelines for prioritizing which strategies are better when, where, and for what purpose.

Chapter 3 provides detailed recommendations to improve sustainability practices in WSDOT corridor studies.

### WSDOT Feedback to FHWA on INVEST

WSDOT found that the *System Planning* module of INVEST, with some modification, would support a stronger sustainability focus in corridor studies. WSDOT plans to include relevant planning recommendations from INVEST in its updated planning guidelines, as well as in the guidelines that will be developed during a study for integrating demand management into agency planning and programming during the coming year.

The *Project Development* module of INVEST, or a similar tool, could also be helpful at the project level. While WSDOT decided not to use the current form of INVEST for project development, with modification it could help engineers systematically identify and consider more sustainable project practices. The study team found the best times for WSDOT to use a tool like INVEST would be during project scoping or kick-off and then again at the end of the environmental documentation stage.

Specific feedback on the *System Planning* and the *Project Development* modules is presented below.

### ***WSDOT Feedback to FHWA for Improving the System Planning Module***

The INVEST *System Planning* criteria are generally applicable to corridor planning. However, FHWA wrote the scoring requirements for an agency level planning program, so some scoring requirements had limited applicability to corridor plans. WSDOT recommends FHWA consider modifying INVEST to apply to corridor level planning. While system planning can set the stage for sustainability, corridor planning is the venue for making sustainable decisions. For example, the analysis of greenhouse gas emissions or the implementation of climate change mitigation strategies is most effective at the corridor level. Additionally, transportation agencies update corridor plans more frequently than systemwide plans, and consequently corridor plans are more likely to influence a sustainable outcome.

The feedback for improving the INVEST *System Planning* module fall into these general categories:

- **Applicability to Corridor Studies.** Consider generalizing scoring requirements for corridor studies, developing alternative scoring requirements, or removing inapplicable scoring requirements when scoring corridor plans.
- **Subjectivity.** Because scoring requirements are general and subjective, their robust application requires the knowledge of subject matter experts. INVEST is a good starting point to explore sustainable options, but independent scoring by a general planner would require more detailed definition of terms and greater specificity in the INVEST criteria.
- **Implementation.** Scoring requirements related to implementation (demonstration of sustainable outcomes, achievement of goals, supportive investment) are outside the scope of corridor plans and should be removed for their scoring or reframed for corridor planning. Corridor plans can define the approach to implementation and performance measurement (what data will be used, how and when will it be evaluated, how the results will be used), but the actual process of implementation and monitoring is something that happens outside a corridor plan.

### **INVEST Feedback for Connecting Planning with Design**

Additionally, the INVEST team developed feedback for better connecting planning and design within the INVEST framework. This was an early opportunity identified by the participants in the study, recognizing that even if a transportation agency's plan scores well on sustainability, the ultimate outcome may not be sustainable unless the agency's planning process connects well with the project development and design processes. WSDOT's feedback for better connecting planning with design includes:

- **Multimodal Design.** Add an additional scoring requirement: “Has the context for multimodal transportation been documented and have design issues related to multimodal integration been considered?” The plan should set the context for the project, define the problem or issue, and document the elements that play into a decision or recommendation. For example, if the plan recommends adding bicycle infrastructure, it should document why biking is important in the corridor and how the planning team chose the recommended solution. The plan should provide enough detail about modal factors and potential users to be useful when considering design level options (e.g. sidewalk widths or bike lane design). Standardizing potential contexts and the range of multimodal strategies appropriate for that context may also be helpful.
- **Comprehensive Cost/Benefit Analysis.** Add an additional scoring requirement: “Has a cost/benefit analysis been performed and documented in arriving at the preferred alternative that includes multimodal efficiencies and life cycle costs?” Understanding the analysis of project alternatives at the planning level improves design details at the project level. A rigorous cost/benefit analysis helps engineers at the design level understand the factors that went into the decision so that designers do not revisit these decisions.
- **Context Sensitive Design.** Add an additional scoring requirement: “Does the plan include information that will be useful in considering context sensitive solutions during the design phase?” Defining context in the plan helps document the need for deviations and reduces liability risk at the design level. Planning can reinforce how the state highway accommodates modes based on the documentation of their context.
- **Stakeholders.** Add an additional scoring requirement: “Has the plan established a stakeholder network concerned with design policy whose input is reflected in the recommendations?” Involving a broad stakeholder group at the planning level (including those affected by recommended strategies) will help identify potential issues early, making it easier to identify appropriate design solutions. Transportation agencies should also develop a standard transparent handoff from planning to design to ensure stakeholders experience a seamless transition. Planners should also invite agency designers and maintenance staff to review alternatives to verify their feasibility and help with this transition.
- **Jurisdictional Issues.** Add an additional scoring requirement: “Does the plan address jurisdictional issues related to multimodal design that will be helpful in project programming and project development, particularly when state highways are located within cities?” When a recommendation involves the need for improvements on facilities or modes outside the jurisdiction of WSDOT, an implementation method should be identified (e.g. an intergovernmental agreement).
- **Design Standards.** Add an additional scoring requirement: “Has the applicability of design standards and the potential advantages of flexibility in design to meet community and agency goals been considered?” Planners should be familiar with applicable design standards and understand the flexibility in these standards to help identify recommendations based on context that serve corridor goals and meet community needs.

Chapter 3 and Appendices G and H provide more detail on feedback to improve the *System Planning* module.

### ***WSDOT Feedback to FHWA for Improving the Project Development Module***

Scorers suggested that INVEST, or a similar tool, could support sustainability in project level decision making. Scorer responses also supported the recommendation that WSDOT should not adopt INVEST in its current form. Instead, the INVEST framework could be modified to address different project and business contexts. INVEST feedback to improve this module generally fell into the following categories:

- **Overall.** INVEST has the potential to be a useful tool, but the current version cannot be recommended for WSDOT without modifications.
- **Flexibility and Context.** Scoring requirements should consider more diverse project types and environments. INVEST should be tailored to agency specific context and development processes.
- **Evaluation Process and Timing.** INVEST can frame project expectations about sustainability at the outset of a project and help inform the project's range of alternatives.
- **Format.** INVEST presents a useful framework for informing and supporting project level decision making. The scoring requirement "checklist" format is easy to use and clearly presents scoring requirements.
- **Scale of Project.** INVEST could be improved by adding a menu of more sustainable choices for smaller projects.
- **Public Health.** With some modifications, INVEST could provide a bridge between the National Environmental Policy Act (NEPA) and Health Impact Assessments by identifying stakeholder concerns early in the project development process.

Chapter 4 provides detailed feedback to improve the *Project Development* module.

### **INVEST Scores**

Throughout the INVEST process, the study team emphasized that INVEST scores were less important than the identification of recommendations to improve WSDOT's sustainability practices and the findings to improve the INVEST tool. The study team encouraged the Scorers to evaluate the INVEST scoring requirements honestly to reveal potential areas for improvement. A summary of scores follow and are also detailed in Chapters 3 and 4 and in Appendices G, H, and I.

### ***Corridor Studies***

The maximum number of points possible for evaluation of the 17 criteria in the *System Planning* module was 240. The three studies scored as follows:

- **US 2: 73 points – Bronze Level attained**
- **SR 516: 65 points**
- **SR 520: 79 points – Bronze Level attained**

### **Bridge & HOV Program**

WSDOT evaluated the Bridge and HOV Program against the 29 criteria of the Extended Urban scorecard in the *Project Development* module to help determine if WSDOT could support consideration of public health at the project level. The scoring team also used one criterion from the *System Planning* module, SP-07 Multimodal Transportation and Public Health, for this task.

A total of 127 points were possible for the 29 *Project Development* criteria, and 15 points were possible for the *System Planning* criterion SP-07. **The project scored 55 points in the *Project Development* module, to achieve the Silver Level.**<sup>1</sup> It scored an additional 13 points on the SP-07 criterion from the *System Planning* module.

### **Action Plan**

Following the INVEST study, WSDOT plans to:

- Include relevant planning recommendations in WSDOT's updated planning guidelines.
- Include relevant planning recommendations in WSDOT's guidelines for integrating demand management into agency planning and programming.
- Share findings and feedback with FHWA for improving INVEST.

### **Products**

Products of the study are:

- Folios describing the project and approach. The study team produced two folios: one at the beginning of the study, and one at the end. Both folios are in Appendix K.
- An Action Plan for implementing recommendations. The Action Plan is in Chapter 5.
- Briefing materials for the WSDOT Sustainable Transportation Leadership Team (STLT), the Transportation Secretary, and FHWA.
- This report.

Additionally, relevant INVEST findings and recommendations will be incorporated into WSDOT's updated planning studies guidelines and WSDOT's 2014-15 Demand Management Guidelines research project. The scope of work for the research project is in Appendix J.

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<sup>1</sup> The study team did not receive responses for two criteria that had a combined maximum of five points, which was not enough to change the achievement level.

## Chapter 1: Introduction

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### INVEST Overview

INVEST stands for **I**nfrastructure **V**oluntary **E**valuation **S**ustainability **T**ool. The INVEST tool is an online self-assessment tool created by the FHWA for use by transportation agencies to evaluate and improve the sustainability of their planning, project development, and operations and maintenance programs and processes.

The INVEST tool was developed by FHWA to support the [Feral Highway Administration Strategic Implementation Plan](#) for 2012-2013. Improving the sustainability of the transportation system is a national priority for FHWA, and more widespread use of INVEST is seen as a key part of that goal. FHWA goals contain one or more [National Performance Objectives](#), which include performance measures, targets, and initiatives. National Performance Objective: SP-2 is “Continue to improve system performance in safety and travel time reliability for the movement of people and freight, while reducing harmful emissions and fostering livable communities.” INVEST evaluation and implementation projects directly support Initiative 2.8, which is “Encourage use and deployment of the Sustainability Self-Evaluation Tool, INVEST, by State DOTs, MPOs, and Federal Lands.” The FHWA Office of Natural Environment, which administers the INVEST tool, has this to say about the use of INVEST:

As responsible stewards of our highway system, we must work to build a transportation system that is more sustainable -- economically, socially, and environmentally. To do that, we need to better understand where opportunities for improvement lie and come up with options for implementing additional sustainability practices.<sup>2</sup>

FHWA released the original Beta version set of evaluation criteria in 2010. This version was reviewed and modified based on stakeholder feedback, including WSDOT, which submitted comments on the Beta version through the American Association of State Transportation Officials (AASHTO).<sup>3</sup> A Pilot Version of the tool was then released for testing and evaluated by 19 agencies and programs from around the country. WSDOT did not participate in testing of the Pilot version.

INVEST version 1.0 first opened its [website](#) to the public in October 2012. Since that time, FHWA has continued to refine it with feedback from state transportation agencies, metropolitan/regional transportation planning organizations (M/RTPOs), and other users.

In December 2012, FHWA released a solicitation for pilot studies utilizing the INVEST tool to assess and enhance the sustainability of their projects and programs. FHWA was seeking to establish a broader

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<sup>2</sup> INVEST Implementation Projects, Information for Participating Division Offices, FHWA.

<sup>3</sup> WSDOT’s opinion at that time was to not pursue use of the INVEST tool, but instead develop an internal strategy that was firmly rooted in its own investments in accountability, transparency, environmental quality, community and equity, and fiscal prudence. Communication from FHWA suggested that these comments were considered in the current version of INVEST. (AASHTO letter and comments to FHWA Associate Administrator, Gloria Shepherd, February 28, 2011)

collection of case studies and best practices for evaluating and improving highway sustainability. FHWA aimed this round of improvements at further refinements, including the refinement of its tool to be more appropriate to planning studies. The planning aspect of the tool is currently oriented toward evaluation of metropolitan and statewide long range transportation plans and processes, rather than the many smaller area-wide or corridor studies that help to inform long range and statewide plans. Other pilot and implementation sites are occurring [around the country](#).

WSDOT submitted a proposal to use INVEST to evaluate three recently completed corridor planning studies, along with one project. WSDOT received a \$50,000 grant from FHWA to support the evaluation, which required a \$50,000 match from WSDOT.

The proposal had two major goals:

1. Improve sustainability practices at WSDOT. This would include:
  - Evaluate sustainability in the corridor planning and the project development processes to determine if and where to make improvements.
  - Gain insight and refine a sustainability lens to improve the integration of demand management and public health into WSDOT's planning and project development.
2. Provide FHWA with feedback for improving INVEST by making it more applicable to planning studies and the project development process.

The WSDOT INVEST project began in July 2013 and completed in December 2013. The INVEST evaluation resulted in the development of an Action Plan that will be implemented by June 2015. The Action Plan is in Chapter 5.

## Modules

INVEST considers the full life cycle of projects and utilizes three modules to allow users to self-evaluate the life cycle of transportation services: *System Planning*, *Project Development*, and *Operations and Maintenance*. Each of these modules considered a separate set of criteria. The criteria pose scoring requirements or definitions of what FHWA considers optimal sustainability practices. Users can then rate themselves against these criteria based on the scoring requirements. WSDOT chose to work primarily with INVEST's *System Planning* and *Project Development* modules.

The three modules are:

- **System Planning.** *System Planning* is the first step in the life cycle of a transportation project. This is where an agency analyzes and assesses its systemwide network to identify projects that will improve the safety, capacity, access, operations or other key features of the system. This module focuses on performing system level analyses in a manner that contributes to the overall sustainability of the transportation network and its projects. A Metropolitan Planning Organization uses *System Planning* criteria primarily to score its fiscally constrained statewide LRTP. A LRTP includes an MPO's transportation planning process, project selection criteria, TIP, and STIP.

- **Project Development.** The *Project Development* module covers the entire project development process from early planning, alternatives analysis, and environmental documentation to preliminary design, final design, and construction.
- **Operations and Maintenance.** *Operations and Maintenance* follows *Project Development* and is the final stage in the life cycle of a transportation project. This is where infrastructure is operated and maintained, data is collected, and newly identified project needs are passed back to become information used during *System Planning* evaluation for future projects. This module focuses on system level operations and maintenance activities that contribute to sustainability of the highway network through internal system operations, asset management, and maintenance activities.

INVEST's self-evaluation framework identifies areas for improvement and recognizes outstanding sustainability business practices through a cumulative point system, which allows an agency to achieve a Bronze, Silver, Gold, or Platinum rating. Exhibit 1 shows a sample of the online scoring procedure.

### Exhibit 1: Sample of INVEST Scoring Webpage

Scoring Requirements	
<p><b>Background</b></p> <p>This criterion recognizes that each state and MPO has different land use and economic development regulatory, policy, and institutional frameworks, plans, and goals, and allows for flexibility in the activities and types of plans agencies use to measure integration. The intent of this criterion is to encourage agencies to integrate sustainability into transportation, land use, and economic development planning.</p> <p>For the purpose of this criterion, it is important to define and further explain the following terms:</p> <ul style="list-style-type: none"> <li>• <b>"Integration"</b> - In this case, "integration" means developing transportation, land use, and economic development plans consistently and collaboratively.</li> <li>• <b>"Sustainable"</b> - Actions are sustainable when they maintain or enhance our capacity to endure. The goal of sustainability is the satisfaction of basic social and economic needs, both present and future, and the responsible use of natural resources, all while maintaining or improving the well-being of the environment on which life depends.</li> <li>• <b>"Sustainability Principles"</b> - For the purposes of the INVEST tool, "sustainability principles" refers to the economic, environmental, and social principles of the triple bottom line.</li> <li>• <b>"Economic development and land use plans"</b> - These include policies, plans, maps, regulations, or programs that focus on the use, design, location, density, or related features of land. These include growth</li> </ul>	<p><b>Does the agency use best practice quantitative methods to analyze and evaluate the performance of alternative land use/ transportation scenarios?</b></p> <p><input type="radio"/> Yes (2 points)</p> <p><input type="radio"/> No</p> <p><b>Does the agency provide institutional leadership in encouraging transportation planning that is consistent with land use and economic development plans and that supports sustainability principles?</b></p> <p><input type="radio"/> Yes (2 points)</p> <p><input type="radio"/> No</p> <p><b>Can the agency demonstrate sustainable outcomes?</b></p> <p><input type="radio"/> The LRTP is integrated with land use and economic development plans, and the agency is implementing transportation investments that support sustainability principles. (1 point)</p> <p><input type="radio"/> The LRTP includes sustainability-</p>

## WSDOT Sustainability Programs

WSDOT is committed to sustainability and used the INVEST process to help assess how the agency is doing and where it could improve.

In August 2012, the Secretary of Transportation issued an [Executive Order](#) regarding business practices for *Moving Washington*, a framework for WSDOT investment decisions. Sustainability is a key ingredient

of *Moving Washington*, which supports a healthy environment, economy, and communities - the triple bottom line of sustainability. The 2012 Executive Order established the expectation that all WSDOT employees conduct business in a reliable, responsible, and sustainable way.

With an expected completion date in 2014, WSDOT's current draft strategic plan, *Results WSDOT*, solidifies WSDOT's commitment to sustainability. It includes mission, vision, values and goals sections which dovetail with INVEST objectives. Washington State Governor, Jay Inslee, is likewise working on a statewide strategic plan called *Results Washington*, which also includes many sustainability goals and objectives. More information on *Moving Washington*, the draft WSDOT Strategic Plan, and *Results Washington* follow.

## Moving Washington

*Moving Washington* is WSDOT's framework for making decisions about transportation investments that focus on keeping people and goods moving and supporting a healthy economy, environment, and communities. Anchored in *Moving Washington* is the department's highest priority: maintaining and preserving the safe and long-lasting performance of existing infrastructure, facilities, and services. This is the heart of *Moving Washington* and the primary target of the department's investments.

*Moving Washington* combines three essential transportation strategies to achieve and align the objectives of WSDOT and its partners: manage demand, operate efficiently, and add capacity strategically. It is through the application of these strategies that the Department is able to ensure investments are integrated and solutions are cost-effective.

- **Manage Demand** – Whether shifting travel times, using public transportation, or reducing the need to travel, managing demand on overburdened routes allows the entire system to function better. Strategies include improving the viability of alternate modes; providing traveler information to allow users to move efficiently through the system; and using variable rate tolling in ways that reduce traffic during the most congested times and balance capacity between express and general purpose lanes.
- **Operate Efficiently** – This strategy gets the most out of existing highways by using traffic management tools to optimize the flow of traffic and maximize available capacity. Strategies include using traffic technologies such as ramp meters and other control strategies to improve traffic flow and reduce collisions, deploying incident response teams to quickly clear collisions, optimizing traffic signal timing to reduce delay, and implementing low-cost/high-value enhancements to address immediate needs.
- **Add Capacity Strategically** – Targeting the worst traffic hotspots or filling critical system gaps to best serve an entire corridor, community or region means fixing bottlenecks that constrain the

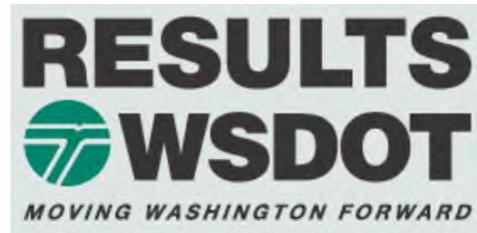


flow. Upgrading a failing onramp merge or hard-shoulder running during peak periods can free up the flow of traffic through a busy corridor. From improving rail crossings and ferry service to working with transit agencies to connect communities, from building direct access ramps for carpools and transit to including paths for pedestrians and bicycles, capacity improvements require strong partnerships with a shared vision for the corridor.

### Results WSDOT

The new WSDOT draft Strategic Plan, [Results WSDOT](#), includes a Vision Statement, which reads: *“Be the best at providing a sustainable and integrated multimodal transportation system.”* WSDOT built sustainability into the heart of the plan, by focusing on its commitment to economic, environmental, and community needs. Some of the principles and goals outlined in the draft document align well with INVEST goals including:

- Improve livable communities and economic vitality.
- Ensure a wide array of perspectives, disciplines, and backgrounds go into decision making; support a culture of multi-disciplinary teams.
- Make decisions and take actions that promote the conservation of resources for future generations.
- Expand and strengthen partnerships and community involvement to inform priorities and decision making.
- Promote environmental stewardship and sustainable practices to reduce greenhouse gas emissions and protect natural habitat and water quality.
- Optimize existing system capacity through better interconnectivity of all transportation modes.
- Implement practical design standards.



### Results Washington

[Results Washington](#) is the Governor’s new set of prioritized and measurable goals, described as a “data-driven performance management and continuous improvement system.” It focuses on the five categories of education, economy, sustainable energy and clean environment, healthy and safe communities, and accountability in government. Overlap with INVEST objectives include:

- Increase the percentage of commuters utilizing alternative transportation modes.
- Improve travel and freight reliability on strategic economic growth corridors.
- Increase person throughput on strategic corridors.
- Reduce the number of pedestrian and bicycle fatalities on public roadways to zero by 2030 (in line with FHWA’s *Toward Zero Deaths* and Washington State’s *Target Zero* programs, discussed more in Chapter 3 under the SP-06 Safety Planning criterion).



- Decrease the number of traffic related fatalities on all roads, focusing on reduction in the categories of impaired driving, speeding, and drivers between the ages of 16-25.
- Reduce transportation related greenhouse gas emissions.
- Increase transportation sector renewable energy use per vehicle-mile traveled.
- Increase the number of alternative fuel, hybrid, and electric vehicles in state fleets that are for passengers use.
- Improve air quality in residential areas.

### Other WSDOT Sustainability Efforts

In addition to *Moving Washington*, *Results WSDOT*, and *Results Washington*, WSDOT is a national leader in addressing greenhouse gas emissions from projects, incorporating sustainability into agency business, and adapting infrastructure to climate change. The WSDOT Sustainable Transportation [webpage](#) describes some of WSDOT's efforts, including:

- A biennial [report](#) to the Governor on reducing greenhouse gas emissions in state government.
- A recently awarded federal grant that allows WSDOT to begin Phase II of a [climate risk reduction study](#).
- [Commute trip reduction](#) (CTR) for WSDOT staff, including carpool/vanpool programs, flexible schedules, teleworking, support for bicycle commuting, and reduced cost transit passes. The CTR program helps reduce drive-alone trips and therefore greenhouse gas emissions for the state as a whole.
- Operation of an online statewide [RideShare Program](#).
- Statewide planning and funding support for [non-motorized](#), [bus](#), and [rail](#) modes.
- A statewide [roundabout program](#).
- Green fleet and alternative fuel [promotion and use](#).
- Involvement in the [West Coast Green Highway](#) program.
- Reduction of pollutants from storm water [runoff](#) and [de-icing](#).
- High tech Active Traffic Management and other [congestion management strategies](#) that reduce idling emissions.
- [Recycling building materials](#) and [extending lifespans](#).
- [Collaborative work with jurisdictions](#) and [community design assistance](#) to help find innovative solutions to local transportation challenges.

The State of Washington and WSDOT were recipients of several 2013 sustainability related awards:

- For the fifth year running, WSDOT's fleet ranked among the top 50 most sustainable and efficient government fleets in North America at the 2013 [Government Green Fleet Awards](#). The fleet was one of the largest and most diverse recognized for sustainably managing a fleet consisting of conventional, hybrid, and alternative fuel vehicles.

- WSDOT's fleet was one of three finalists for the National Association of Fleet Administrators' (NAFA) Excellence in Public Fleet Sustainability Award. [NAFA](#) honors public sector fleets, which operate on business practices committed to sustainability of the environment for future generations.
- Washington State Ferries won an AASHTO national Outstanding State Department of Transportation Leadership and Innovation award for fuel conservation. Washington State Ferries was able to identify a method to save fuel without sacrificing on-time performance for its largest vessel, a 202-car/2,500 passenger ferry on the Kingston/Edmonds route. This effort saved 15,000 gallons of fuel per month, equaling 180,000 gallons per year.
- For the sixth consecutive year, Washington State was awarded the [League of American Bicyclists'](#) No. 1 "Bicycle-Friendly State" in the country.

From long range plans to day-to-day operations, WSDOT strives to make transportation more sustainable. WSDOT therefore wished to use the INVEST process to help assess how it is doing and where improvements could be made.

### Future Sustainability Efforts

Relevant results of the INVEST *System Planning* module will be included in WSDOT's update of its Practical Planning Guidelines (formerly [Transportation Planning Studies Guidelines & Criteria](#)). WSDOT planners statewide use these guidelines to develop corridor planning studies. Incorporating sustainability into planning studies will be a significant focus in this update, scheduled for completion in 2014.

WSDOT is also funding a research project in 2014-15 to integrate demand management strategies into WSDOT planning and programming. INVEST helped WSDOT prepare for this new initiative by using a nationally vetted framework to assess the agency's baseline business demand management practices. INVEST may also eventually help inform the development of guidelines for demand management integration. Contracted to complete the research was the [Center for Urban Transportation Research](#) at the University of South Florida in Tampa, Florida. More details on the demand management research project are available in Appendix J.

Finally, the INVEST evaluation provided timely support for WSDOT's efforts to explore options for incorporating a public health perspective into transportation decision making. WSDOT was interested in using the *Project Development* module to gain insight into including a public health perspective in its projects. WSDOT had previously evaluated options for increasing public input in the design process through Health Impact Assessments and the NEPA processes. WSDOT found that the NEPA process is still the preferred option for identifying environmental impacts and clarifying related commitments, but continues to explore methods for improving the consideration of public input into the NEPA process.

## System Planning Module: Corridor Planning Studies

WSDOT selected three recently completed corridor studies for evaluation in the Central Puget Sound area. The Central Puget Sound area includes the major metropolitan areas of Everett, Seattle/Bellevue, Tacoma, and Bremerton. The Central Puget Sound area was also the subject of an INVEST pilot completed by the [Puget Sound Regional Council](#) (PSRC) in 2011 evaluating the PSRC [Regional Transportation Plan](#). Exhibit 2 presents a map of the four-county area covered by PSRC.

### Exhibit 2: Map of the Puget Sound Area



The three studies provided variety but at the same time dealt with similar issues. The state highways featured in the studies serve different populations and land uses: SR 516 is suburban; US 2 contains a mix of urban and suburban, and SR 520 is mainly urban. The studies also varied in terms of the type of highway, the surrounding land use, different commute patterns and availability of transit, and varying scope, schedule, budget, and stakeholder participation levels. WSDOT deliberately aligned the recommendations of all three corridor studies with *Moving Washington*.<sup>4</sup> Exhibit 3 presents the location of the three study corridors in relation to major transportation networks. Below is some brief information about each study.

<sup>4</sup> Results WSDOT and Results Washington were developed after the corridor studies were performed.

**Exhibit 3: Location of the Three Corridor Planning Studies****[SR 516 Corridor Study, SR 167 in Kent to SR 169 in Maple Valley, January 2013](#)**

SR 516 provides an east-west connection to multiple cities and residents in eastern King County for local trips and for access to major transportation corridors to and from the urban cores of the Puget Sound area. SR 516 begins west of I-5 in the city of Des Moines, goes through the cities of Kent and Covington, and ends at SR 169 in Maple Valley. The highway serves as a commute route, has minimal transit service, and low to medium density residential development along much of its length. The county has zoned unincorporated lands in Maple Valley and Black Diamond for substantial large scale development, and Kent is a designated [Manufacturing/Industrial Center](#). Exhibit 4 highlights the SR 516 study corridor from Des Moines to Maple Valley.

**Exhibit 4: Entire Length of SR 516, Des Moines to Maple Valley**

This study was a planning level analysis of the eastern portion of the highway, from SR 167 in Kent to its eastern terminus in Maple Valley. The study assessed current and future conditions along the highway and developed improvement recommendations to address those conditions. Conditions studied included mobility, growth, maintenance, operations, safety, and the environment.

Exhibit 5 shows the study area.

### Exhibit 5: Study Area for the SR 516 Planning Study



The study process included:

- Developing a corridor vision.
- Gathering input from local officials and the public regarding traffic conditions they see affecting the corridor.
- Reviewing existing regional and local comprehensive plans for planned population and employment growth and funded transportation improvements.
- Collecting and analyzing traffic data such as traffic volumes and safety conditions along the corridor.
- Projecting future travel demand.
- Developing improvement recommendations.

The final report included a traffic and mobility analysis, safety analysis, an environmental overview, recommendations for near-, mid-, and long-term improvements, and planning level cost estimates for the near- and mid-term recommendations.

The SR 516 corridor study provided WSDOT with a strategy for improving the corridor through the year 2030 when funding is available. The result is a list of near-, mid-, and long-term improvement recommendations. Recommendations included implementation of [active traffic management](#),<sup>5</sup> access management, demand management strategies such as commute trip reduction, expanded bus service,

<sup>5</sup> ATM includes strategies to provide advance warning of collisions and resulting congestion management, and includes intelligent transportation systems such as communication and information infrastructure, ramp meters, traffic detectors, and regional Traffic Management Centers.

vanpool promotion, and the completion and expansion of non-motorized facilities along the corridor. The strategic capacity recommendations included intersection improvements and widening of several corridor segments.

### [SR 520 Multimodal Corridor Planning Study, published April 2013.](#)

SR 520 is located in King County, Washington. It begins in Seattle at I-5, crosses Lake Washington on the Evergreen Point Floating Bridge, goes through the city of Bellevue, and ends in southeast Redmond, approximately 13 miles end to end. The SR 520 corridor is characterized by medium to higher density suburban development, and is planned for higher density redevelopment in two designated [Regional Growth Centers](#). A Sound Transit light rail extension is coming to the corridor in 2020. Microsoft and Nintendo headquarters are along this corridor; SR 520 is a “high tech” corridor and has plentiful transit. Actively promoted by Redmond, the area also has an extensive non-motorized network. Both Bellevue and Redmond have concerns regarding the interaction between interchanges and non-motorized infrastructure. The main issues in this corridor are non-motorized integration, the extension of light rail, connectivity, and traffic operations. Exhibit 6 shows the path of SR 520 from Seattle to Redmond.

### Exhibit 6: Entire Length of SR 520, Seattle to Redmond



This study was a planning level analysis of the eastern portion of the highway, from I-405 in Bellevue to its eastern terminus in Redmond. The SR 520 Multimodal Corridor Planning Study assessed current and future travel conditions along the study corridor. Exhibit 7 shows the study area.

### Exhibit 7: Study Area for the SR 520 Planning Study



To develop multimodal recommendations that addressed current and future travel conditions and needs, the study process included:

- Development of a corridor vision defining how the corridor should develop and operate until 2030.
- Input from local officials, businesses, and the public regarding travel conditions along the corridor and what impacts these travel conditions do and could have on communities, businesses, and the environment.
- Review of existing regional and local comprehensive plans for planned population and employment growth and funded transportation improvements.
- Collection and analysis of data such as traffic volumes, pedestrian, and bicycle counts on non-motorized facilities.
- Identification of safety conditions along the corridor.
- Population and employment growth forecasts based on local traffic models.
- Development of multimodal recommendations.

This corridor study developed 22 motorized and non-motorized recommendations that complement each other to address the safety and travel needs of all users of the SR 520 corridor. They include re-paving preservation projects, efficiency improvements through optimized signal timing, demand management strategies such as commute trip reduction and expanded vanpool programs and bus service, parking management, land use management, infrastructure and services to support first/last mile connections, and the completion of non-motorized facilities along the corridor. The strategic

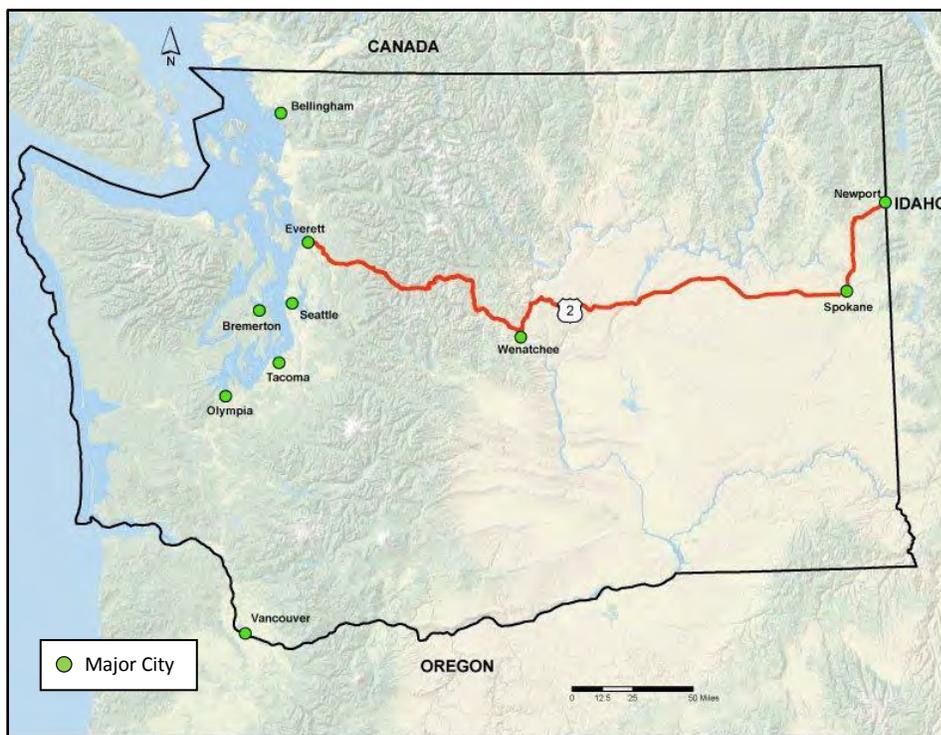
capacity recommendations include interchange and ramp improvements, and several auxiliary lanes along corridor segments including a shoulder-to-bus lane conversion on two freeway segments.

### [US 2 - Everett Port/Naval Station to SR 9 Corridor Planning Study, to be published early 2014.](#)<sup>6</sup>

US 2 is an east-west highway spanning more than 2500 miles across the continental United States. It consists of two segments connected by various roadways in southern Canada. In Washington State, US 2 begins in Snohomish County, at SR 529, just to the west of I-5 in the city of Everett. The route crosses the Cascade Mountains at Stevens Pass, continuing across the state through Wenatchee and Spokane and then into Idaho and onto the East Coast.

US 2 is one of two primary transportation corridors connecting eastern and western Washington; the other is I-90. As a primary route between east and west, US 2 is vital to the state's economy. It is a key freight route connecting western and eastern Washington and is one of three year-round routes that cross the Cascade mountain range. US 2 also provides access to many recreational opportunities in the Cascade range and in eastern Washington. Statewide, it is classified as both a [T1 Freight Route](#) (carrying more than ten million tons annually), and a [Highway of Statewide Significance](#). Exhibit 8 shows the path of US 2 through Washington State.

#### Exhibit 8: US 2 through Washington State

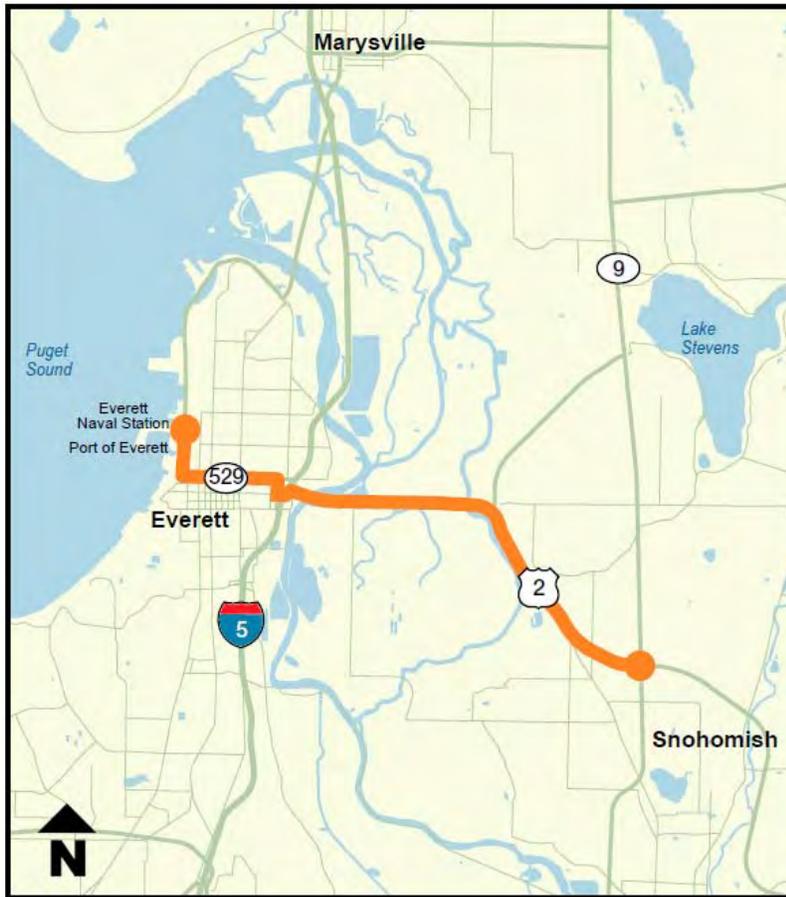


<sup>6</sup> This study and its findings and recommendations are essentially complete, with only minor adjustments left to be made.

US 2 is also part of the [Federal National Highway System](#) and is classified as a [National Scenic Highway](#). This highway ends the “western” segment of its cross-continental path at I-75, just north of the Mackinac Bridge in St. Ignace, Michigan. Its eastern segment goes from US 11 in Rouses Point, New York, to just west of the Canadian border at I-95 in Houlton, Maine, continuing east through Canada as Route 2 in New Brunswick as part of the Trans-Canada Highway. US 2 is the northernmost east-west U.S. Route in the country.

The purpose of this study was to examine safety and mobility issues along the five mile segment of US 2, from its western terminus in Everett, across several waterways via trestle structures in unincorporated Snohomish County, to SR 9, sandwiched between the incorporated cities of Lake Stevens to the north, and Snohomish to the south. WSDOT completed a [route development plan](#) for US 2 east of Snohomish in 2007. The study also included a small segment of SR 529, which serves as a local street connecting I-5 to the Everett Naval Station at the Port of Everett.

This part of US 2 is a multimodal, east-west corridor connecting Everett to the residential communities, businesses, and industries east of the Snohomish River. It is characterized by urban development west of I-5 and rural/suburban development east of I-5. There are more transit options west of I-5 and little to no transit service on SR 9. Paine Field is a designated [Manufacturing/Industrial Center](#). There is a river east of I-5 with only four crossings, which causes congestion. The main issue in this corridor study was the operation and structural integrity of the westbound trestle. WSDOT built the eastbound trestle in the 1990s and the westbound trestle in the late 1960s. WSDOT has completed extensive maintenance and preservation of the westbound trestle, but local jurisdictions would like to see it replaced with something wider. There are also converges at either end of the trestle that create bottlenecks. Exhibit 9 shows the study area.

**Exhibit 9: Study Area for the US 2 Planning Study**

The study involved local jurisdictions, agencies, and the public to help identify transportation related needs and to develop, evaluate, and select recommended improvement projects. To identify transportation needs, the study team considered population and employment growth, where local agencies plan future development, environmental issues and constraints, and future travel demand and deficiencies.

The study considered mobility strategies to improve corridor operational efficiency and manage user demand, and identified locations that require strategic capacity expansion when other strategies fail to address congestion. The study team prioritized recommendations into lower, medium, and higher cost options, which WSDOT and/or its partners can implement incrementally as funding becomes available. The recommendations ranged from \$100,000 per year to \$3.1 million and included an improved incident response program, a residential based demand management program, and an intelligent transportation system program. The intelligent transportation programs included traffic cameras and variable message signs to detect congestion during peak periods, respond faster to incidents, and provide motorists with information about traffic about congestion, incidents, roadwork, or travel times.

The long range recommendation involves the trestle, which is composed of two separate structures. The eastbound structure was recently replaced, but the westbound structure is 45 years old. It is in “fair”

condition following completion of rehabilitation projects in 2011.<sup>7</sup> Continued maintenance of the structure is expected to extend the life of the westbound trestle to approximately 2045.

### ***Project Development Module: SR 520 Bridge & HOV Program***

The project chosen for INVEST evaluation under the *Project Development* module was a portion of the [SR 520 Bridge Replacement and HOV Program](#) project. SR 520 begins at I-5 in the middle of Seattle, travels through the residential neighborhoods of Portage Bay, Montlake, and Madison Park as well as the Washington Park Arboretum, crosses Lake Washington via the Evergreen Point Floating Bridge,<sup>8</sup> and touches down in the small city of Medina, just to the west of Bellevue. From there it continues through the cities of Bellevue and Kirkland and into Redmond, ending in southeast Redmond a little past SR 202. The SR 520 Bridge is a key regional route for commuters and freight; about 115,000 vehicles and more than 190,000 people cross it every day. Exhibit 6 shows the full length of SR 520.

The current SR 520 Bridge is almost 50 years old. The bridge's pontoons have become vulnerable to windstorms and its support columns are vulnerable to earthquakes. Additionally, the existing bridge only has two lanes in each direction, no shoulders, and no HOV lanes. This project will replace the floating bridge and highway with two general purpose lanes in each direction. It will also provide transit/HOV lanes in both directions along the full length of SR 520, and move the existing HOV lanes from the outside to the inside, or left side, of the general purpose lanes.<sup>9</sup> There will be shoulders and a bicycle/pedestrian path added, and transit amenities will be included. This will provide greater transportation reliability and more options for regional traffic growth.

The over \$4 billion project is divided into four sub-projects: the I-5 to Medina Project, the Floating Bridge and Landings Project, the Eastside Transit and HOV Program, and construction of the floating pontoons. Constructed in the city of Aberdeen, on the Pacific Ocean at the western edge of the state, the pontoons are floated through Puget Sound, through the Ballard Locks, across Lake Union, and into Lake Washington. The project still requires an additional \$1.4 billion in funding. The funded portions of the project began construction in 2011 and the new bridge should open by late 2015 or early 2016.

Exhibit 10 shows the location and funding status of the sub-projects, and they briefly described below. The area of the project which was evaluated for INVEST is circled in red. It consists of the 1½ miles at the west end of the highway, between the I-5 Interchange and Montlake Boulevard, west of Lake Washington, and represents the remaining unfunded portion of the project.

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<sup>7</sup> All primary structural elements are sound but may have deficiencies such as minor section loss, deterioration, cracking, spalling, or scour.

<sup>8</sup> SR 520 across the Evergreen Point Floating Bridge became a tolled facility in 2011. Part of the tolling revenues will go toward funding the Bridge & HOV project.

<sup>9</sup> SR 520 currently has eastbound HOV lanes between I-405 and the highway's eastern terminus only. In the westbound direction, HOV lanes begin at the SR 520 eastern terminus and end a short distance before the beginning of the floating bridge. The lanes are on the outside, or right side, of the general purpose lanes in both directions. The rest of the [HOV system](#) in the area has inside, or left side HOV and high occupancy toll lanes.

## Exhibit 10: SR 520 Bridge &amp; HOV Program Sub-Projects



- I-5 to Medina Project.** This sub-project will replace the interchanges and roadway between I-5 in Seattle and the western end of the floating bridge, including the bridge landings. It will also take key steps to prepare for a possible light rail alignment, provide transit enhancements, create a pedestrian friendly urban interchange at Montlake Boulevard, restore park area and connections, and help to manage traffic next to the Washington Park Arboretum. It will reduce noise levels from the Portage Bay Bridge portion of the highway (near the western SR 520 terminus), and transform some of the corridor from I-5 to Montlake into a city parkway with landscaped lids and medians. The schedule for constructing the segments of the corridor between I-5 and the bridge is pending additional funding.
- Floating Bridge and Landings Project.** This sub-project will replace the existing floating bridge and approaches, from the future west approach structure east of Foster Island in Seattle to Evergreen Point Road in Medina. The new floating bridge will be resistant to windstorms up to 89 mph, have two general purpose lanes and one transit/HOV lane in each direction, and wider shoulders that will allow vehicles to pull over in the case of a breakdown. It will also provide a 14 foot wide bicycle and pedestrian path on the north side of the bridge, and the ability to accommodate a possible light rail alignment.
- Eastside Transit and HOV Project.** This takes the project from Medina through Bellevue and Redmond to its eastern terminus. It will complete and improve the HOV system on the highway with an end result of two general purposes lanes and one new transit/HOV lane in each direction. It will also move the existing outside HOV lanes to the inside or left lane, matching the rest of the HOV system in the area. It will provide transit and mobility improvements along with environmental and community enhancements. This includes a regional bicycle and pedestrian path, a [direct access ramp](#) to 108th Avenue NE for carpools and transit, wider shoulders, inside (left side) transit/HOV lanes through the entire Eastside corridor, improvement of the Evergreen Point Road Park and Ride, and new median transit stops. Fish habitat improvements, noise reduction barriers, stormwater treatment and detention facilities, and new lids at Evergreen Point Road, 84th Avenue NE, and 92nd Avenue NE are also included. This sub-project is expected to open summer 2014.

- **To Pontoon Construction Project.** WSDOT and a contractor have built a casting basin facility featuring a concrete batch plant, on site water treatment, and a four acre casting basin, where pontoon construction is under way. Twenty-one of the 33 floating pontoons are 360 feet long, 75 feet wide, and nearly 30 feet tall. Once complete, each batch of pontoons will be floated out of the casting basin, inspected, and embark upon a 260 mile trip up the Pacific Coast. They will go through the Strait of Juan de Fuca and Puget Sound, through the Hiram M. Chittenden Locks, across Lake Union, through Portage Bay and Union Bay, and into place on Lake Washington where they will serve as the floating foundation for the new SR 520 bridge. An additional 44 pontoons are being constructed in Tacoma, WA.

The reasons for choosing the unfunded portion of the I-5 to Medina sub-project as the subject for the *Project Development* evaluation include:

- All project elements were in the post-NEPA phase of project development,<sup>10</sup> which would allow incorporation into the project of any lessons learned.
- The project was the subject of the only Health Impact Assessment prepared for a WSDOT project.
- As small projects may not warrant agency/national best practices, this project was large enough to incorporate them.
- The SR 520 program included some of the most robust public involvement, sustainability, and environmental mitigation efforts used by the agency to date.
- The SR 520 Multimodal Corridor Planning Study (discussed in the *System Planning* module, above) was also part of this INVEST evaluation, so future comparisons between the two pilot efforts would be possible.

In 2008, King County was the lead agency for the first [Health Impact Assessment](#) (HIA) performed for a WSDOT project on the SR 520 Bridge & HOV project in 2008. The NEPA Environmental Impact Statement (EIS) and the HIA for the project area covered many of the same issues but addressed those issues from different perspectives. All four subparts, including the I-5 to Medina sub-project, were included in the EIS.

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<sup>10</sup> Within the SR 520 corridor, other projects were in various stages of development: the Floating Bridge and Landings project and the West Connection Bridge were about to start construction, the Eastside Transit and HOV project was in mid-construction, and the West Approach Bridge North was nearing 90% design.

## Chapter 2: Methodology and Assumptions

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The methodology and assumptions for the *System Planning* and *Project Development* modules differed in a few aspects. Each are described separately below.

### *System Planning Module*

The basic approach for the *System Planning* module evaluations of the three corridor planning studies followed these steps:

- **Selection of the criteria** used for the evaluation.<sup>11</sup> WSDOT decided to evaluate all 17 *System Planning* criteria.
- **Selection of a cross-disciplinary scoring team** consisting of WSDOT staff involved in the planning or project development process. WSDOT also invited a staff person from PSRC who had been involved in PSRC's INVEST evaluation during 2011.<sup>12</sup>
- **Selection of WSDOT staff and external partners considered experts** in their fields used as resources for discussion about the various criteria. Resources differed in the level of their subject matter expertise as well as in their knowledge of corridor studies.
- **The scoring team researched information for each criterion**, documenting how the plans addressed the scoring criteria, including feedback from WSDOT resources, and sometimes consulting other resources, such as those provided on the INVEST website. Scorers used different approaches to engage resources. Research and scoring recommendations were documented on pre-workshop scoresheets based on the INVEST scoring requirements identified for each criterion. Each Scorer then entered their responses to the scoring requirements on the INVEST web site.
- **The project Leaders, Scorers, and other interested parties participated in a scoring workshop** to discuss the scoring of the three corridor studies. The staff member who had primary responsibility for the research and scoring of each criterion explained to the workshop participants how they had arrived at their recommended score for each scoring requirement, where WSDOT has the greatest opportunities to improve, and what suggested feedback could be provided to FHWA to improve the INVEST tool. The scoring workshop participants then discussed these points as a whole. Where the group could not reach consensus and further discussion was necessary, there was a less formal follow-up discussion held.
- **The project Leads met with Design Office staff** to identify opportunities in the INVEST framework to better connect planning and design.

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<sup>11</sup> Each module has a number of different criteria. Use of the modules usually involves choosing a criterion, or several criteria, under each module that would be most helpful and relevant to the topic being evaluated.

<sup>12</sup> PSRC participated in one of the first rounds of INVEST pilot testing. They are planning to revisit their evaluation with a closer look at asset management, particularly preservation/paving, along with travel demand management, where they will focus on how to provide better service to the TDM community. PSRC expects to have a draft out in December 2013.

- The project Leads used the results of the scoring workshop and the meeting with Design to **develop feedback for improvements to INVEST and recommendations and potential actions for WSDOT** to make improvements in agency policy or business practices to help work toward achieving sustainability.
- The project Leads presented the feedback, recommendations, and potential action to the WSDOT STLT. **The project leadership team then selected the most promising actions to implement in an Action Plan.**
- **The project Leads developed an Action Plan for implementation**, including a discussion of implementation costs and benefits.
- The results of the INVEST study and the recommendations will be **integrated** into WSDOT's updated planning guidelines update and the 2014-15 Demand Management Guidelines research project.

The basis for the approach to this study was the assumption that the discussion was more important than the score and that WSDOT feedback to FHWA was an important outcome of the process. Additionally, the INVEST tool was written for systemwide planning and broad agency efforts. The Scorers were charged with applying these as best they could to corridor studies, noting agency-wide efforts but basing the recommended score solely on the corridor study.

Although the Scorers held bi-weekly meetings to discuss and agree on assumptions, methodology, and process, it became apparent at the scoring workshop that each Scorer had taken a somewhat different approach to handling the criteria.

- Some Scorers believed a discussion with experts and resources within and external to the agency were a crucial part of the discovery and learning process, while others simply sent written questions to their resources rather than engaging in a back-and-forth dialogue.
- The group also agreed FHWA had not written the scoring requirements for corridor studies and that each Scorer would therefore need to document how they were interpreting the scoring requirements and why, and discuss this during the scoring workshop. The goal was to interpret the scoring requirements to apply to corridor studies without unduly straying from the spirit of the original scoring requirement.

As an example, one of the scoring requirements from the first criterion, *SP-01: Integrated Planning - Economic Development & Land Use*, reads: "The long range transportation plan is integrated with land use and economic development plans, and the agency is implementing transportation investments which support sustainability principles." The Scorer interpreted this scoring requirement as: "The corridor study made suggestions which integrated well with land use and economic development plans, and which are sustainable in nature."

- Some Scorers found it frustrating to be working with a set of scoring requirements they could not apply easily to the studies; others found it easier to adapt their scoring requirements into a useful form. In several instances, the Scorer found no way in which to apply a scoring requirement to the corridor studies. An example of this is another scoring requirement from the

first criterion, *SP-01: Integrated Planning - Economic Development & Land Use*, which reads: “The agency provides institutional leadership in encouraging transportation planning which is consistent with land use and economic development plans and which supports sustainability principles. Examples include the provision of incentives for partner jurisdictions (such as leveraging funds to provide planning grants, capital grants, model/tool development and/or technical assistance).” The Scorer said, “I am not sure I can reframe this question to apply to corridor studies.” Some possible ways to have reframed this question could have included:

- The agency took a leadership role in creating a process with stakeholders to address land use, economic development, and sustainability goals along the corridor in an integrated, collaborative manner.
- The agency explored collaborating with affected jurisdictions to provide incentives to engage in planning, such as planning grants, capital grants, model/tool development, technical assistance, or other ways to address the integration of land use, economic development, and sustainability along the corridor.
- When it came to the actual scoring, some of the Scorers used a zero for scoring requirements they were unable to apply to the studies. These zeros were indistinguishable from scoring requirements that *had* been applicable to the studies, but scored zero. Other Scorers used a “N/A” designation to differentiate between applicable and non-applicable zero scores.
- As with any team project, the amount of effort put into assessing the scoring requirements varied widely with the Scorer. Documentation of the research, interviews, and scoring decisions vary from a sentence or two to multiple pages of discussion. This documentation for each score is provided in the pre-workshop scoresheets discussed above, and can be found in Appendix G.

Although the styles, approach, and methodology varied, the workgroup nevertheless believed that useful lessons and insights were gained overall from the application of most of the criteria, both for improvements at WSDOT and for the INVEST tool.

### **Project Development Module**

The *Project Development* module of the INVEST tool was evaluated based on WSDOT’s unique context and perspective; the assessment was not meant as an evaluation for the potential use of INVEST by other agencies. While the SR 520 Bridge & HOV project was scored to understand the project’s achievement level per INVEST, the larger goal of the evaluation was to determine if/how the tool could be applied across projects at WSDOT to improve sustainability and address public health related questions at the project level. To achieve this goal, the Scorers evaluated INVEST in the following areas:

- Content of criteria and scoring requirements
- Process and timing
- Overall impressions
- Recommendations for FHWA and for WSDOT

The team evaluated the *Project Development* module differently than the *System Planning* module. The evaluation process attempted to replicate a real life project scenario where staff resources are limited,

either because of competing project responsibilities or because of funding limitations during some project phases.<sup>13</sup> In this case, the SR 520 project office was nearing 90% design on a separate project at the same time as the INVEST evaluation.

The WSDOT Air Quality, Noise, and Energy Policy Manager served as the project Lead for the *Project Development* module and coordinated with the SR 520 project Engineering Manager for Design. Together they selected the project area and identified Scorers based on expertise and familiarity with the project.

The evaluation Lead emailed Scorers a Microsoft Word version of the INVEST criteria and scoring requirements text along with a series of supplemental questions. The email suggested spending approximately one hour for initial responses, with minor additional time for follow-up questions. The *Project Development* evaluation team decided not to use the online scoring option because of potential complications with web navigation and to discourage “poking around” on the site and adding time or altering other Scorers’ responses.

Summarized below, the basic methodology used to evaluate the *Project Development* module differed from the *System Planning* module evaluation:

- The evaluation Lead worked with SR 520 management to **select the project area and identify Scorers** with subject matter expertise or familiarity with the project. Scorers included WSDOT staff from the project office and headquarters, and consultants working on the project.
- There were 22 Scorers asked to **score the project and respond to five supplemental questions**. Two Scorers evaluated one criterion (SP-07), and seven Scorers reviewed multiple criteria.
- The evaluation Lead asked Scorers **follow-up questions**.
- The evaluation Lead used Scorer responses to develop a **draft set of recommendations** for using INVEST, or a related tool, to support more sustainable project level decision making.
- The evaluation Lead **presented the recommendations to the WSDOT STLT**, who selected the most promising actions.
- An **Action Plan** was developed.

The evaluation Lead asked Scorers five supplemental questions after they scored the project:

1. Do you generally see this as a useful tool to inform project level decisions?
2. Are the specific scoring requirements a good way to achieve the goal of the criterion? Do you have suggestions for improvement?
3. At this phase in the project, do you have sufficient information to score the criterion? If not, what would it take (data, time, etc.) to score the criterion, and at what phase in the project development process would this information be available?

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<sup>13</sup> During the INVEST pilot, many of the Scorers were preparing the 90% design plans for a different project.

4. Where do you see this tool being most informative or useful during the project development process?
5. Do you have any other thoughts on the INVEST evaluation?

The project Lead also asked Scorers follow-up questions after the supplemental questions to address evaluation goals.

## Chapter 3: System Planning Findings & Recommendations

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As a result of the INVEST study, the *System Planning* team developed recommendations for improving the sustainability of corridor planning at WSDOT. The INVEST study also resulted in findings which could help to improve the INVEST tool for both the *System Planning* and *Project Development* modules. This chapter discusses the findings and recommendations from the *System Planning* module. Chapter 4 discusses findings from the *Project Development* module.

This report divides the findings into the following categories:

- **Corridor Planning Recommendations.** Acknowledging WSDOT's current sustainability practices, the WSDOT study team looked for possible improvements. Each Scorer was asked to come up with recommendations for the agency as they delved into the research and scoring for each criterion. The project Leads distilled these recommendations down to an Action Plan for implementation. Chapter 5 describes the Action Plan.
- **INVEST Feedback.** One of the two goals for this study was to provide feedback to FHWA on the applicability of utilizing the INVEST tool on corridor planning studies, along with any other suggestions for improvement to the tool as a whole.
- **INVEST scores.** The research team was committed to the idea of trying to evaluate the scoring requirements as honestly and self-reflectively as possible in order to reveal areas for improvement. An often repeated reminder throughout the study was that the scores themselves were not as important as the discussion which resulted from the process and the improvements to WSDOT sustainability practices and outcomes which that discussion may inspire.

### Applicability to WSDOT: Recommendations on WSDOT Corridor Planning

The *System Planning* evaluation team developed the following substantive recommendations for making corridor planning more sustainable:

- **Broader Outreach.** Based on context and budget, WSDOT should engage broader internal and external interests in corridor planning.
- **Stronger Connections to Other Plans.** Corridor plans should reference and integrate a broader set of internal and external plans.
- **Stronger Connections to Other Processes.** WSDOT should strengthen connections between corridor planning, programming, scoping, environmental review, and design.
- **Sustainability Goals.** Corridor plans should include goals and objectives that are quantifiable where appropriate, support sustainability principles, and harmonize the vision and goals of the community and WSDOT.
- **Data and Performance Measurement.** Corridor planners should consider a wider range of data to develop and evaluate planning recommendations.

- **Analysis.** WSDOT may need additional analytical tools to help planners evaluate tradeoffs between diverse goals.
- **Strategy Development.** Corridor plans should document how sustainability goals, objectives, and data informed the analysis, the identification of potential strategies, and the selection of final planning recommendations.
- **Planning Recommendations.** WSDOT should develop guidelines for prioritizing which strategies are better when, where, and for what purpose.

The INVEST process resulted in a number of detailed recommendations for improving the sustainability of WSDOT's corridor plans. The INVEST Scorers made recommendations in their pre-workshop scoresheets, and the INVEST team discussed additional recommendations at the scoring workshop. The INVEST project Leads also identified recommendations after the workshop, drawing on aspects of the three corridor plans where they did score well.

The table below details the recommendations to improve corridor planning at WSDOT by criterion. The far right column indicates the applicable general category for each recommendation.

**SP-01 Integrated Planning: Economic Development and Land Use**

<p><b>1-1</b> Invite the participation of diverse land use and business interests (e.g. freight representatives, Chambers of Commerce, the Commerce Department, major employers, business associations, ports, the county or counties impacted, rural/agricultural interests, etc.), non-motorized groups, the impacted Regional/Metropolitan Transportation Planning Organization(s), and relevant WSDOT staff (e.g. the Freight Office, Development Services, Public Transportation).</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>1-2</b> Include studies and plans from other agencies, such as PSRC's <a href="#">Regional Economic Strategy</a>, city and county comprehensive plans, and transit plans.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>1-3</b> Include studies and plans from other WSDOT offices, such as the State <a href="#">Freight Mobility Plan</a> and <a href="#">Truck Freight Economic Corridors</a>, Community Transportation Planning Organization research (including INVEST, Demand Management integration, Lands at Risk for Development, Main Streets, etc.), find out more about WSDOT grants programs and technical assistance available to other agencies (<a href="#">Public Transportation's Consolidated Grant Program</a>, <a href="#">Community Design Assistance</a>).</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> <li>▪ Stronger Connections to Other Processes</li> </ul>
<p><b>1-4</b> Use tools developed by WSDOT offices: <a href="#">Application for Local Planning and Community Accessibility</a>, Community Planning Portal, the cost/benefit and air impact tools developed by the Modeling Group at the Urban Planning Office, Freight Map application, etc.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>
<p><b>1-5</b> Develop a tool to link transportation improvements with economic development.</p>	<ul style="list-style-type: none"> <li>▪ Analysis</li> </ul>
<p><b>1-6</b> Consider using sustainability related performance measures at the corridor planning level.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>1-7</b> Discuss in the plan how recommended improvements would help or be compatible with planned land use and economic development.</p>	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> <li>▪ Sustainability Goals</li> </ul>

**SP-02 Integrated Planning: Natural Environment**

<b>2-1</b> Engage natural resource agency staff and tribes to understand their priorities and interests in a project area.	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<b>2-2</b> Review and integrate natural resource agencies' plans and other applicable environmental plans that enhance long-term ecological function within the corridor.	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<b>2-3</b> Clearly state goals and objectives, further agency sustainability interests, and identify landscape level goals and WSDOT Environmental Services Office priorities.	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> <li>▪ Stronger Connections to Other Plans</li> </ul>
<b>2-4</b> Link and document more agency level information about the natural environment to the corridor level (e.g. fish passage barriers), including environmental resources or issues evaluated but not relevant to the corridor.	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<b>2-5</b> Strengthen the discussion of resource and recreation lands with a search of the Washington State Recreation and Conservation Office database to identify protected recreational properties (6(f) and 6(f)-type) in the project vicinity, especially if the corridor plan is likely to affect those lands.	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<b>2-6</b> Document how environmental goals and objectives informed the analysis or evaluation of recommendations. Identify minimization or mitigation strategies for large scale impacts.	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> <li>▪ Stronger Connections to Other Processes</li> </ul>

**SP-03 Integrated Planning: Social**

<p><b>3-1</b> Based on the context and the budget of the plan, work to better engage minority populations, the general public, and a broader spectrum of local government stakeholders (e.g. TDM and bike/pedestrian coordinators). Consider going to community fairs and events, especially if no open houses are scheduled.</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>3-2</b> The plan's vision and goals should harmonize the community's vision and goals, the agency's vision and goals (articulated at WSDOT as the <i>Moving Washington</i> approach) and sustainability principles.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> <li>▪ Stronger Connections to other Plans</li> </ul>
<p><b>3-3</b> Develop sustainability related performance measures and monitor the effectiveness of the public involvement process.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>

**SP-04 Integrated Planning: Bonus**

<p><b>4-1</b> Reach out to a broader set of stakeholders.</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>4-2</b> Consider a broad spectrum of issues including jobs, the economy, land use, environmental issues, and fiscal sustainability.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> </ul>
<p><b>4-3</b> Analyze across silos (e.g. considering housing and the economy in a corridor plan).</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> <li>▪ Analysis</li> </ul>

**SP-05 Access and Affordability**

<p><b>5-1</b> Involve special needs communities in planning by:</p> <ul style="list-style-type: none"> <li>• Holding meetings close to special needs populations and selecting accessible venues.</li> <li>• Reaching out to advocacy boards (e.g. Area Agency on Aging or PSRC’s Special Needs Transportation Committee).</li> <li>• Going to targeted community events with translation resources.</li> <li>• Reaching out to community advisors and trusted advocates that serve specific populations (e.g. Aging and Disability Service Advisory Council, Seattle Commission on People with Disabilities) or elected officials that serve on those types of councils or commissions.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>5-2</b> Integrate relevant key points (strategies, objectives, performance goals/indicators) of the United State Department of Transportation’s <a href="#">Strategic Plan Fiscal Year 2014-2018</a>, particularly on topics addressing equity, affordability, accessibility, and safety under the livable communities and security/preparedness focus areas.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>5-3</b> Describe the three dimensions of accessibility and identify data relevant to special needs populations. For example:</p> <ul style="list-style-type: none"> <li>• The nature and distribution of accessibility and affordability concerns</li> <li>• The growth rates of special needs populations</li> <li>• How road conditions such as congestion affects communities (e.g. travel delay of paratransit services, cost to low income populations, air quality impacts)</li> <li>• Existing land use and its connection to travel behavior, access, and affordability</li> <li>• Transit, bicycle, and pedestrian measures</li> <li>• Travel/trip options and mode shift due to affordability</li> <li>• Employment growth data beyond large employers (employment of special needs populations are in different sectors and industries)</li> <li>• Census disability and aging data and specialized data from other state agencies (e.g. Office of Superintendent of Public Instruction, Department of Social and Health Services, etc.)</li> <li>• Mobility management data (e.g. Medicaid transportation, Puget Sound Travel Diary, Dial-a-Ride Transit/Access services)</li> <li>• Access and affordability data from local sources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>

**SP-06 Safety Planning**

<p><b>6-1</b> Address safety planning on all public roadways in the corridor, not just state facilities.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> <li>▪ Stronger Connections to Other Plans</li> <li>▪ Strategy Development</li> </ul>
<p><b>6-2</b> Consider whether corridor studies should include quantitative safety performance measures and projected safety performance.<sup>14</sup></p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>6-3</b> Consider whether to use geographic information system (GIS) for safety analysis at the corridor level as well as the statewide level.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>6-4</b> Safety is an ongoing process. Measurements are constantly in flux. A uniform, consistent, single source of safety data and analysis would be helpful in creating future corridor reports.</p>	<ul style="list-style-type: none"> <li>▪ Analysis</li> </ul>
<p><b>6-5</b> Expand “vulnerable user” tracking.<sup>15</sup> For example, tracking could include people with disabilities, as well as those who are involved in safety situations that do not involve a vehicle (such as between a pedestrian and a cyclist, or the tipping over of a wheelchair due to curbcut slope or uneven pavement).</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>6-6</b> When available, incorporate use of <i>Highway Safety Manual/Safety Analyst</i> macro-predictive models to forecast crashes for a given level of travel demand.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>
<p><b>6-7</b> Consider the use of macro-predictive models (such as PlanSafe<sup>16</sup>) to reliably forecast crashes based on socio-demographic changes in the populations.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>

<sup>14</sup> WSDOT is moving toward the goal of performing a before-and-after analysis on every safety project. Safety Analyst has a built-in methodology to do before-and-after analyses.

<sup>15</sup> Current vulnerable user tracking includes pedestrians, bicyclists, motorcyclists, older users, and children (ages 0-4 and 0-14).

<sup>16</sup> “PlanSafe: Forecasting the Safety Impacts of Socio-Demographic Changes and Safety Countermeasures. TRB’s National Cooperative Highway Research Program #CRP-CD-78 provides safety forecasting software and accompanying guidance that is designed to help independently forecast the safety impacts of changes in socio-demographics and safety investments, both engineering and behavioral.”

<http://www.trb.org/Main/Blurbs/163790.aspx>

**SP-07 Multimodal Transportation and Public Health**

<b>7-1</b> Further integrate transit plans into corridor plans.	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<b>7-2</b> Consider addressing health in corridor plans. Note this will require a big change in perspective and approach.	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> </ul>
<b>7-3</b> Add “safe, comfortable and complete” to goals and objectives for non-motorized transportation.	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> </ul>
<b>7-4</b> Consider using multimodal level of service measures.	<ul style="list-style-type: none"> <li>▪ Analysis</li> </ul>

**SP-08 Freight and Goods Movement**

<b>8-1</b> Review the statewide freight plan as a resource for the corridor plan.	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<b>8-2</b> Develop practical tools for measuring performance, interconnectedness, sustainability, and modal coordination.	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>

**SP-09 Travel Demand Management (TDM)**

<p><b>9-1</b> Invite TDM professionals and other partners into the discussion and consult Public Transportation Division staff to connect to groups concerned with Commute Trip Reduction and to help develop feasible recommendations.</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>9-2</b> Integrate CTR, TDM, and multimodal goals from local, regional, and state plans.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>9-3</b> Include quantifiable TDM goals and objectives in the corridor plan.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> </ul>
<p><b>9-4</b> Develop a comprehensive TDM measurement and reporting plan supported by agency.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>9-5</b> Develop and prioritize common measures for all strategies (e.g. demand management, increasing capacity, transportation systems management) so that a true comparison can be made across alternatives, particularly with regard to life cycle costs.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>
<p><b>9-6</b> Identify the funding that exists for TDM strategies and include the true implementation costs to ensure TDM strategies identified in the plan are feasible to implement.</p>	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> </ul>

**SP-10 Air Quality**

<b>10-1</b>	Consult WSDOT air quality experts when writing about air quality in corridor plans.	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<b>10-2</b>	Document how WSDOT's approaches to systemwide traffic management also reduce emissions. Include existing agreements that may exist between WSDOT and air control agencies.	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Processes</li> </ul>
<b>10-3</b>	Incorporate some area-specific qualitative air quality information into corridor plans. (Quantitative analysis would increase plan preparation costs.)	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>
<b>10-4</b>	Consider evaluating emission benefits from TDM and other congestion reduction strategies to compare a fully implemented plan with the baseline scenario. (Would increase plan preparation costs.)	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measures</li> <li>▪ Analysis</li> </ul>
<b>10-5</b>	The corridor level is the appropriate level of application for analysis of climate change mitigation and greenhouse gas reduction strategies. Not limited by jurisdictional boundaries, greenhouse gas and climate change impacts should require a collaborative community approach to solutions.	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measures</li> <li>▪ Broader Outreach</li> </ul>
<b>10-6</b>	Establish linkages in planning studies between agency strategies like TDM and air quality.	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> </ul>

**SP-11 Energy and Fuels**

<p><b>11-1</b> The new direction WSDOT is receiving from the Governor and Secretary is more interaction and collaboration with communities. Additionally, corridor studies should encompass a wider area than just the highway. Funding will be an important consideration when deciding to take on this type of significant additional work.</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> </ul>
<p><b>11-2</b> Include the reduction of energy and fossil fuel consumption as a goal in the corridor plan and in the evaluation criteria.</p>	<ul style="list-style-type: none"> <li>▪ Sustainability Goals</li> <li>▪ Data &amp; Performance Measurement</li> </ul>
<p><b>11-3</b> There should be a direct connection between corridor plans, long range plans, and reducing energy/fossil fuel consumption.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> <li>▪ Sustainability Goals</li> </ul>
<p><b>11-4</b> Collect and analyze energy data at the planning level.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> </ul>

**SP -12 Financial Sustainability**

<p><b>12-1</b> To communicate that the recommendations in the plan need to be reasonable and affordable, describe the <i>Moving Washington</i> approach and penny chart showing where transportation funds are obligated.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>12-2</b> Strengthen the connection between planning and scoping.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Processes</li> </ul>
<p><b>12-3</b> Along with WSDOT funding limitations, also identify other potential sources of funding for transportation improvements.</p>	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> </ul>

**SP-13 Analysis Methods**

<b>13-1</b>	Continue to apply a robust analytic approach to problems and solutions.	▪ Analysis
<b>13-2</b>	Use micro models when appropriate (e.g. the Bellevue/Kirkland/Redmond model).	▪ Analysis
<b>13-3</b>	Consider using a centralized modeling team within WSDOT capable of analyses anywhere in the state to benefit regions without modeling staff.	▪ Analysis

**SP-14 Transportation Systems Management (TSM) and Operations**

<b>14-1</b>	Consider monitoring progress toward achieving desired outcomes.	▪ Data & Performance Measurement
<b>14-2</b>	Better documentation of all the factors analyzed during the planning process.	▪ Data & Performance Measurement ▪ Analysis
<b>14-3</b>	Include ongoing maintenance costs for existing facilities to communicate that capacity improvements are not a “once done and it’s over and paid for” proposition.	▪ Data & Performance Measurement
<b>14-4</b>	Develop guidelines for prioritizing which strategy is better when, where and for what purpose.	▪ Planning Recommendations
<b>14-5</b>	Consider providing additional funding for TDM activities to aid in implementation.	▪ Strategy Development

**SP-15 Linking Asset Management and Planning.**

<b>15-1</b>	Consider developing a tool for estimating maintenance costs for future projects.	▪ Analysis
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**SP-16 Infrastructure Resiliency**

<p><b>16-1</b> Consult local disaster preparedness plans such as Hazard Identification and Vulnerability Assessments or Threat and Hazard Identification and Risk Assessments to understand better the risks to the corridor and the role of the corridor in emergency responses. Other plans to consider include the Bureau of Reclamation’s Emergency Action Plans for dams in the area and the Department of Natural Resources plans for wildland fires.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>16-2</b> In addition to the hazards addressed (seismic events, climate change, liquefaction hazard, flooding, and point sources of hazardous materials contamination), identify the additional risks of tsunami, volcano/lahar, terrorism, unstable slopes, and infrastructure failure (e.g. dams). The WSDOT Emergency Operations Plan considers these and other risks statewide.</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Stronger Connections to Other Plans</li> </ul>
<p><b>16-3</b> Better integrate hazard risk data into corridor plan analyses and recommendations (e.g. address potential hazards in safety analysis, consider the role of the corridor in the network of “lifeline” or “resilient” routes, and use hazard risk as a criterion in the evaluation of possible solutions).</p>	<ul style="list-style-type: none"> <li>▪ Data &amp; Performance Measurement</li> <li>▪ Analysis</li> <li>▪ Strategy Development</li> </ul>
<p><b>16-4</b> Identify emergency routes, such as Strategic Highway Network routes.</p>	<ul style="list-style-type: none"> <li>▪ Stronger Connections to other Plans</li> </ul>
<p><b>16-5</b> Include or reference adaptation strategies.</p>	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> </ul>
<p><b>16-6</b> Consider whether hazard vulnerability should be a factor in the prioritization of safety strategies.</p>	<ul style="list-style-type: none"> <li>▪ Strategy Development</li> </ul>

**SP-17 Linking Planning and NEPA**

<p><b>17-1</b> Increase public outreach and collaboration with public and natural resource agencies, demonstrate how public comments consider the development of recommendations, and document these efforts to meet the requirements of FHWA and Federal Transit Administration (FTA) for incorporating planning results into NEPA.</p>	<ul style="list-style-type: none"> <li>▪ Broader Outreach</li> <li>▪ Stronger Connection to Other Processes</li> </ul>
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## WSDOT Feedback to FHWA on the *System Planning* Module

The INVEST *System Planning* criteria are generally applicable to corridor planning. However, FHWA wrote the scoring requirements for an agency level planning program, so some scoring requirements had limited applicability to corridor plans. WSDOT recommends FHWA consider modifying INVEST to apply to corridor level planning. While system planning can set the stage for sustainability, corridor planning is the venue for making sustainable decisions. For example, the analysis of greenhouse gas emissions or the implementation of climate change mitigation strategies is most effective at the corridor level. Additionally, transportation agencies update corridor plans more frequently than systemwide plans, and consequently corridor plans are more likely to influence a sustainable outcome.

The feedback for improving the INVEST *System Planning* module fall into these general categories:

- **Applicability to Corridor Studies.** Consider generalizing scoring requirements for corridor studies, developing alternative scoring requirements, or removing inapplicable scoring requirements when scoring corridor plans.
- **Subjectivity.** Because scoring requirements are general and subjective, their robust application requires the knowledge of subject matter experts. INVEST is a good starting point to explore sustainable options, but independent scoring by a general planner would require more detailed definition of terms and greater specificity in the INVEST criteria.
- **Implementation.** Scoring requirements related to implementation (demonstration of sustainable outcomes, achievement of goals, supportive investment) are outside the scope of corridor plans and should be removed for their scoring or reframed for corridor planning.<sup>17</sup>

## Connecting Planning with Design

Additionally, the INVEST team developed feedback for better connecting planning and design within the INVEST framework. This was an early opportunity identified by the participants in the study, recognizing that even if a transportation agency's plan scores well on sustainability, the ultimate outcome may not be sustainable unless the agency's planning process connects well with the project development and design processes. WSDOT's feedback for better connecting planning and design include:

- **Multimodal Design.** Add an additional scoring requirement: "Has the context for multimodal transportation been documented and have design issues related to multimodal integration been considered?" The plan should set the context for the project, define the problem or issues, and document the elements that play into a decision or recommendation. For example, if the plan recommends adding bicycle infrastructure, it should document why biking is important in the corridor and how the planning team chose the recommended solution. The plan should provide enough detail about modal factors and potential users to be useful when considering design level options (e.g. sidewalk widths or bike lane design). Standardizing potential contexts and the range of multimodal strategies appropriate for that context may also be helpful.

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<sup>17</sup> WSDOT is considering how performance measurement can be integrated into the corridor planning process, but has not done so up to this point.

- **Comprehensive Cost/Benefit Analysis.** Add an additional scoring requirement: “Has a cost/benefit analysis been performed and documented in arriving at the preferred alternative that includes multimodal efficiencies and life cycle costs?” Understanding the analysis of project alternatives at the planning level improves design details at the project level. A rigorous cost/benefit analysis helps engineers at the design level understand the factors that went into the decision so that designers do not revisit these decisions.
- **Context Sensitive Design.** Add an additional scoring requirement: “Does the plan include information that will be useful in considering context sensitive solutions during the design phase?” Defining context in the plan helps document the need for deviations and reduces liability risk at the design level. Planning can reinforce how the state highway accommodates modes based on the documentation of their context.
- **Stakeholders.** Add an additional scoring requirement: “Has the plan established a stakeholder network concerned with design policy whose input is reflected in the recommendations?” Involving a broad stakeholder group at the planning level (including those affected by recommended strategies) will help identify potential issues early, making it easier to identify appropriate design solutions. Transportation agencies should also develop a standard transparent handoff from planning to design to ensure stakeholders experience a seamless transition. Planners should also invite agency designers and maintenance staff to review alternatives to verify their feasibility and help with this transition.
- **Jurisdictional Issues.** Add an additional scoring requirement: “Does the plan address jurisdictional issues related to multimodal design that will be helpful in project programming and project development, particularly when state highways are located within cities?” When a recommendation involves the need for improvements on facilities or modes outside the jurisdiction of WSDOT, a method should be identified (e.g. an intergovernmental agreement).
- **Design Standards.** Add an additional scoring requirement: “Has the applicability of design standards and the potential advantages of flexibility in design to meet community and agency goals been considered?” Planners should be familiar with applicable design standards and understand the flexibility in these standards to help identify recommendations based on context that serve corridor goals and meet community needs.

## Summary of *System Planning* INVEST Scores

### Some Thoughts on the Scoring Process

Most of the Scorers were authors or participants in the planning studies evaluated, and three of the ten Scorers had served as Project Managers on the corridor studies. The study team therefore saw it as an important aspect of the study to depersonalize the scores and to focus more on the recommendations for improvement.

The INVEST website has this to say about scoring:

A score is one measure of sustainability at one point in time. It reflects the number of sustainability best practices included and their relative impact on sustainability.

INVEST can be used in a number of ways, including as a planning tool, a decision making tool, and an evaluation tool. The user can choose to what extent to measure success against the absolute scale of how many overall points are achieved by a given project.

INVEST may be used to score a project based on total points achieved. At this early point in its development, the tool contains rough estimations of the different achievement levels (including bronze, silver, gold and platinum). Because INVEST is not based on third party validation of scores or certifications, scores are not considered recognition by FHWA that a project has met the achievement level of sustainability; but rather recognition that the user has self-evaluated their project and met the indicated achievement level.

Though based on the corridor studies scores, Scorers also noted related agency-wide efforts. For example, WSDOT has been a leader in implementing the vision of [Toward Zero Deaths](#), the FHWA strategy for safety improvements on the nation's highways. However, most of that effort happens at an agency-wide level rather than at the level of a corridor study. Corridor studies include and integrate the findings and recommendations of [WSDOT's Safety Program](#) which relate to the specific corridor, but will usually not be involved in the development of the agency Safety Program itself. A feedback loop between the agency program and corridor studies program does exist; however, the Safety Program receives any new safety concern revealed during a corridor study.

Nevertheless, some of the scoring requirements WSDOT would have scored well on at the agency level scored poorly at the corridor level because of the specificity of the scoring requirements. For example, there were many scoring requirements that revolved around safety performance measures. WSDOT is considering how to integrate performance measurement into the corridor planning process, but has never included performance measurement in planning studies up to this point. When evaluating the SP-06 Safety criterion, the Scorer considered that the agency has begun to use Safety Analyst software<sup>18</sup> to perform transportation before-and-after screening on a network-wide basis. However, because performance measures are not included in individual corridor studies, those particular scoring requirements earned "not applicable" or zero on the scorecards. In another example, the scoring requirement was to collect and maintain data for the entire public roadway system. Points were tied to participation in statewide traffic records efforts, using GIS based data files for all public roadways, and utilizing spatial data sets across silos (roadway, operation, asset management, etc.) along with crash data for a more comprehensive understanding. While the agency is doing, or in the process of incorporating, this type of analysis, the analysis is mostly being applied at a statewide level to general typographies, rather than to a specific corridor. For example, an analysis may combine spatial data with horizontal curve and steep hillside data across the state to help identify a major contributing factor of run-off-the-road collisions.

INVEST has been calibrated to make high scores somewhat challenging. During the early pilots of the INVEST tool, most participants achieved platinum on the *System Planning* module. As a result, FHWA altered the achievement levels to require additional effort to achieve higher scores. One of the things

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<sup>18</sup> Safety Analyst is software based on the new *Highway Safety Manual* methodology.

FHWA is looking to get from pilot implementation is advice on where to set achievement levels; the achievement levels are less developed in the *System Planning* module than in the *Project Development* module. WSDOT found it more helpful to use INVEST as guidance for best practices rather than a grading system.

A final note on scoring is that the schedule and budget for the three studies varied widely; the budgets alone ranged from \$150,000 to \$750,000. The scopes for the individual studies reflected the differences in timetables and resources, and therefore could have affected the scores.

### Final Scores for the Corridor Planning Studies

The project Leads decided to use all 17 of the possible criteria in the *System Planning* module to evaluate the three corridor planning studies.<sup>19</sup> Each criterion includes a goal, sustainability linkage, and scoring requirements. Each scoring requirement is assigned a certain number of points by the INVEST tool, as shown by the INVEST scoring website snapshot in Exhibit 1 in the Introduction. Totals for each of the 17 criteria were combined by the INVEST tool into a single scorecard to come out with a rating for each of the studies evaluated.

The maximum number of points possible for evaluation of the 17 criteria was 250. The INVEST tool states that attainment of the following levels represents outstanding achievement in the area of sustainability:

- Bronze Level: 72 points (30% of possible number of points)
- Silver Level: 96 points (40% of possible number of points)
- Gold Level: 120 points (50% of possible number of points)
- Platinum Level: 144 points (60% of possible number of points)

#### Out of a possible total of 250 points, the three studies scored as follows:

- **US 2: 73 points – Bronze Level attained**
- **SR 516: 65 points**
- **SR 520: 79 points – Bronze Level attained**

Scoring by study for each of the criteria is shown in Exhibit 11.

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<sup>19</sup> When asked if most participants utilize all of the criteria within a module, FHWA said that most do. Some agencies choose to perform a cursory evaluation of all the criteria and then go into depth with those they are most interested. However, FHWA believes that an agency will get a more complete picture, and more help with longer-term issues, by utilizing all of the criteria in a module to the extent possible.

Exhibit 11: Individual Criterion Scores for the Three Planning Studies

No.	Criterion	No. of Scoring Elements	Max. Points Available	Points Earned		
				US 2	SR 516	SR 520
SP-01	Integrated Planning: Land Use and Economic Development	5	15	3	3	5.5
SP-02	Integrated Planning: Natural Environment	4	15	9	9	9
SP-03	Integrated Planning: Social	4	15	7	7	7
SP-04	Integrated Planning: Bonus	1	10	0	0	0
SP-05	Access & Affordability	3	15	0	0	0
SP-06	Safety Planning	7	15	6	6	6
SP-07	Multimodal Transportation and Public Health	4	15	1	1	3
SP-08	Freight and Goods Movement	4	15	6	4	4
SP-09	Travel Demand Management	4	15	0	0	5.5
SP-10	Air Quality	2	15	4	2	4
SP-11	Energy and Fuels	4	15	1	2	3.5
SP-12	Financial Sustainability	2	15	0	0	0
SP-13	Analysis Methods	4	15	10	10	10
SP-14	Transportation Systems Management & Operations	4	15	9	9	9
SP-15	Linking Asset Management and Planning	3	15	8	4	4
SP-16	Infrastructure Resiliency	4	15	6	6	6
SP-17	Linking Planning and NEPA	3	15	3	2	3
<b>TOTAL POINTS</b>			<b>250</b>	<b>73</b>	<b>65</b>	<b>79.5</b>

A few notes on the accuracy of the scoring:

- Some of the criteria were inapplicable to corridor studies, such as the SP-06 Safety scoring requirements discussed above. Almost all of the criteria had at least one scoring requirement that could not be interpreted at a corridor level, and many had several. The report discusses these in detail in the following Summary Discussion by Criterion, as well as in Appendices G and H. If the points associated with inapplicable criteria were subtracted from the total number of possible module points, the studies would have rated higher.
- As previously discussed, high scores were not the focus of the study teams. The teams were therefore not rigorous about ensuring a consistent scoring approach, or about validating the interpretation of each criterion as a group. Accurate scoring would have required more consistency along those lines.

### Summary Discussion of *System Planning* Evaluation by Criterion

This section contains the same information previously presented in this chapter, but organizes it by criterion instead of improvement category for the convenience of FHWA. It provides a summary discussion of each of the 17 criterion evaluations in the *System Planning* module. Each summary addresses:

- Criterion Goal
- Sustainability Linkage to the Triple Bottom Line (Social, Economic, and/or Environmental)
- Corridor Planning Recommendations for WSDOT
- INVEST Feedback for FHWA
- Scoring Requirements and Discussion of Results
- Summary Scorecard (lists scoring requirements by line item and totals)

Full documentation of Scorer research, scoring decisions, and recommendations is provided in the pre-workshop scoresheets in Appendix G and the scoring workshop summary in Appendix H. A compendium of the complete *System Planning* criteria from the INVEST website is provided in Appendix E.

### *SP-01: Integrated Planning: Economic Development and Land Use*

**Goal:** Integrate statewide and metropolitan Long Range Transportation Plans (LRTP) with statewide, regional, and/or local land use plans and economic development forecasts and goals. Proactively encourage and facilitate sustainability through the coordination of transportation, land use, and economic development planning.

**Sustainability Linkage to the Triple Bottom Line: Economic.** Integrating transportation planning with economic development and land use supports the economic triple bottom line principle by creating opportunities to improve access and mobility, and increase the social, environmental, and economic returns on both public and private investments in transportation projects and programs.

#### Corridor Planning Recommendations

Recommendations to improve the integration of land use and economic development into corridor studies were:

- Invite the participation of diverse land use and business interests (e.g. freight representatives, Chambers of Commerce, the Commerce Department, major employers, business associations, ports, the county or counties impacted, rural/agricultural interests, etc.), non-motorized groups, the impacted Regional/Metropolitan Transportation Planning Organization(s), and relevant WSDOT staff (e.g. the Freight Office, Development Services, Public Transportation).
- Include studies and plans from other agencies, such as PSRC's [Regional Economic Strategy](#), city and county comprehensive plans, and transit plans.
- Include studies and plans from other WSDOT offices, such as the State [Freight Mobility Plan](#) and [Truck Freight Economic Corridors](#), Community Transportation Planning Organization research (including INVEST, Demand Management integration, Lands at Risk for Development, Main Streets, etc.), find out more about WSDOT grants programs and technical assistance available to other agencies ([Public Transportation's Consolidated Grant Program](#), [Community Design Assistance](#)).
- Use tools developed by WSDOT offices: [Application for Local Planning and Community Accessibility](#), Community Planning Portal, the cost/benefit and air impact tools developed by the Modeling Group at the Urban Planning Office, Freight Map application, etc.
- Develop a tool to link transportation improvements with economic development.
- Consider using sustainability related performance measures at the corridor planning level.
- Discuss in the plan how recommended improvements would help or be compatible with planned land use and economic development.

## INVEST Feedback

Suggestions to improve the SP-01 criterion in the INVEST tool were:

- The Scorer believed this was probably an overly complex criterion with very high standards, and suggested a broader interpretation of the standards to allow for partial points for agencies who are considering incorporating sustainability into their business practices.
- Agencies could use help defining terms such as “current requirements” and “land use and economic development agencies.”
- All of the scoring requirements need rewording to be appropriate to corridor studies. Specific rewording suggestions for each scoring requirement are available in the pre-workshop scoresheets in Appendix G.

## Scoring Requirements and Discussion of Results

**The total score received by US 2 and SR 516 for this criterion was 3, and by SR 520 was 5.5, out of a possible 15 points.** Generally, the three corridor studies included either no economic development and land use agencies, or met current requirements but did not go “above and beyond,” which was required for some of the scoring. SR 520 did the best job of going a bit “above and beyond” by engaging partner agencies and including local comprehensive plans. None of the three studies discussed freight mobility beyond current requirements. Several of the scoring items were not applicable to corridor level planning.

## Scorecard

Exhibit 12 presents a summary scorecard for this criterion.<sup>20</sup>

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<sup>20</sup> Note that the Scorer gave SR 520 ½ points for several items under this criterion. Because the INVEST tool does not accept partial points, the two ½ points for SR 520 for “Develop and Adopt Goals and Objectives” were combined into one point (for the top item) when scoring online.

**Exhibit 12: Scorecard for SP-01: Integrated Planning: Economic Development and Land Use**

<b>SP - 1 Integrated Planning: Economic Development and Land Use</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Develop and Adopt Goals and Objectives</b>	<b>0</b>	<b>0</b>	<b>1</b>
1 Pt - Sets goals and objectives for integrating transportation, economic development and land use planning beyond current requirements.	0	0	½ *
1 Pt - Goals and objectives are consistent with economic development and land use plans beyond current requirements.	0	0	½ *
<b>3 Pts - Engage Partner Agencies</b>	<b>0</b>	<b>0</b>	<b>1.5</b>
2 Pts - Regularly engages land use and economic development agencies.	0	0	1*
1 Pt - Uses institutional mechanisms to facilitate engagement (such as ad hoc or standing technical advisory committees).	0	0	½*
<b>2 Pts - Use Best Practice Quantitative Methods</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Uses best practice quantitative models to evaluate alternative land use/transportation scenarios and incorporates the results.	2	2	2
<b>2 Pts - Provide Leadership</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
2 Pts - Provides institutional leadership to encourage transportation, land use and economic development plans that support sustainability (such as leveraging funds to provide planning grants, capital grants, model/tool development and/or technical assistance).	N/A	N/A	N/A
<b>6 Pts - Demonstrate Sustainable Outcomes</b>	<b>1</b>	<b>1</b>	<b>1</b>
1 Pt - Integrates land use and economic development plans. Implements investments that support sustainability principles.	1	1	1
2 Pts - Includes sustainability related performance measures for integrating transportation, land use and economic development.	N/A	N/A	N/A
3 Pts - Monitors progress against performance measures. Can demonstrate achievement of goals and objectives.	N/A	N/A	N/A
<b>TOTAL (Out of 15)</b> *Not possible to use partial points on INVEST website.	<b>3</b>	<b>3</b>	<b>5.5*</b>

### **SP-02: Integrated Planning: Natural Environment**

**Goal:** Integrate ecological considerations into the transportation planning process, including the development of the long range transportation plan (LRTP) and TIP/STIP. Proactively support and enhance long-term ecological function through the coordination of transportation and natural resource planning.

**Sustainability Linkage to the Triple Bottom Line: Environmental.** Integrating transportation planning with natural resource planning supports the environmental triple bottom line principle by ensuring the transportation system supports and enhances sustainable ecological function.

#### Corridor Planning Recommendations

Recommendations to improve the integration of natural environment considerations into corridor studies were:

- Engage natural resource agency staff and tribes to understand their priorities and interests in a project area. This requires more than just researching GIS information. Do a query of the State Agency Group on Environmental Stewardship regarding resources and regulatory agency consideration.
- Review and integrate natural resource agencies' plans and other applicable environmental plans that enhance long-term ecological function within the corridor.
- Clearly state goals and objectives, further agency sustainability interests, and identify landscape level goals and WSDOT Environmental Services Office priorities. Identify sustainability goals supported by the agency, even if only as articulated in a Regulatory Code of Washington.
- Link and document more agency level information about the natural environment to the corridor level, including environmental resources or issues evaluated but not relevant to the corridor. One way to track sustainable outcomes and to measure performance would be to track and monitor fish passage barriers, which are often a component of transportation projects.
- Strengthen the discussion of resource and recreation lands with a search of the Washington State Recreation and Conservation Office database to identify protected recreational properties (6(f) and 6(f)-type) in the project vicinity, especially if the corridor plan is likely to affect those lands.
- Document how environmental goals and objectives informed the analysis or evaluation of recommendations. Identify minimization or mitigation strategies for large scale impacts.
- It may be possible to coach planning teams on appropriate ways to fulfill the requirements for this criterion.

#### INVEST Feedback

Suggestions to improve the SP-02 criterion in the INVEST tool were:

- Change the first scoring requirement to "Has the plan done a good job of incorporating the goals and objectives for integration?"

- Clarify what “goals and objectives” means. Goals and objectives should be clearly stated and include landscape level goals. Those goals should direct the analysis and mitigation sequencing, and further the agency’s sustainability interests. Landscape level goals should also focus on efficiencies to improve NEPA processing times.
- In terms of identifying opportunities to avoid or minimize potential project impacts and opportunities to enhance long-term ecological function, it would be helpful to provide examples, such buying into an existing mitigation bank.
- Clarify what types of actions would provide evidence of applying the evaluation techniques.
- This criterion is agency-focused. Using a specific corridor study to measure agency focus is not a good way to measure success.

### Scoring Requirements and Discussion of Results

**The total score received on each study for this criterion was 9 out of a possible 15 points.** All three studies included goals and objectives for integrating transportation with environmental plans, policies, and goals. WSDOT does not directly engage natural resource and regulatory agencies on corridor planning studies. Three studies used system or landscape scale environmental evaluation techniques, and all three studies scored full points on demonstrating outcomes, particularly for fish passage barriers.

### Scorecard

Exhibit 13 presents a summary scorecard for this criterion.

**Exhibit 13: Scorecard for SP-02: Integrated Planning: Natural Environment**

<b>SP - 2 Integrated Planning: Natural Environment</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Develop and Adopt Goals and Objectives</b>	<b>1</b>	<b>1</b>	<b>1</b>
1 Pt - Sets goals and objectives for integrating transportation with environmental plans, policies and goals.	1	1	1
1 Pt - Goals and objectives are consistent with or surpass local, metropolitan, and statewide environmental plans, policies and goals.	0	0	0
<b>3 Pts - Engage Natural Resource and Regulatory Agencies</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Goes beyond consultation requirements by regularly engaging natural resource/regulatory agencies and incorporating feedback.	0	0	0
1 Pt - Uses institutional mechanisms to facilitate engagement.	0	0	0
<b>4 Pts - Apply System or Landscape-Scale Evaluation Techniques</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Applies system or landscape-scale evaluation techniques using natural resource data. Assesses ecological conditions and identifies opportunities to avoid/minimize potential impacts. <b>OR</b>	2	2	2
4 Pts - Additionally identifies opportunities to support and enhance long-term sustainable ecological function.	0	0	0
<b>6 Pts - Demonstrate Sustainable Outcomes</b>	<b>6</b>	<b>6</b>	<b>6</b>
1 Pt - Integrates environmental plans, policies, and goals. Implements investments that support/enhance long-term ecological function.	1	1	1
2 Pts - Includes performance measures for long-term ecological function.	2	2	2
3 Pts - Monitors progress against performance measures. Can demonstrate sustainable outcomes.	3	3	3
<b>TOTAL (Out of 15)</b>	<b>9</b>	<b>9</b>	<b>9</b>

### SP-03: Integrated Planning: Social

**Goal:** The agency's Long Range Transportation Plan (LRTP) is consistent with and supportive of the community's vision and goals. When considered in an integrated fashion, these plans, goals and visions support sustainability principles. The agency applies context sensitive principles to the planning process to achieve solutions, which balance multiple objectives to meet stakeholder needs.

**Sustainability Linkage to the Triple Bottom Line: Social.** Integrating transportation planning with the community's vision and goals for sustainability supports the social triple bottom line principle by ensuring transportation investments reflect the unique vision, goals, and values of the community.

#### Corridor Planning Recommendations

Recommendations to improve the integration of community vision and sustainability goals with the WSDOT corridor study methodology were:

- Based on the context and the budget of the plan, work to better engage minority populations, the general public, and a broader spectrum of local government stakeholders (e.g. TDM and bike/pedestrian coordinators). Consider going to community fairs and events, especially if there are no open houses scheduled.
- The plan's vision and goals should harmonize the community's vision and goals, the agency's vision and goals (articulated at WSDOT as the *Moving Washington* approach) and sustainability principles.
- Develop sustainability related performance measures and monitor the effectiveness of the public involvement process.

#### INVEST Feedback

Suggestions to improve the SP-03 criterion in the INVEST tool were:

- Are there recommendations/guidelines to determine the scope of public outreach? Should there be consideration of the entire travel shed, the local proximity, effect on users and non-users, or other criteria?
- Are local governments an acceptable entity to perform outreach to at-risk populations?

#### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 7 out of a possible 15 points.**

Visions and goals developed with stakeholders guided the recommendations on all three studies. WSDOT engaged a diverse range of stakeholders and public participants and used a transparent process to incorporate their input. Although none of the studies used additional or diverse public involvement techniques to help engage low income, minority, disabled, or linguistically isolated populations. The Scorer considered the points related to demonstration of sustainable outcomes not applicable to corridor studies. There was a determination at the scoring workshop that although engaging a local stakeholder group is also an outreach to their constituency, real engagement requires a higher investment of time.

## Scorecard

Exhibit 14 presents a summary scorecard for this criterion.

**Exhibit 14: Scorecard for SP-03: Integrated Planning: Social**

<b>SP - 3 Integrated Planning: Social</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Work Toward a Shared Vision</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Shares the community's vision for sustainability and transportation goals and adopts consistent objectives.	2	2	2
<b>4 Pts - Engage a Diverse Range of Stakeholders and Public Participants</b>	<b>2</b>	<b>2</b>	<b>2</b>
1 Pt - Identifies and regularly engages a diverse range of stakeholders and public participants.	1	1	1
2 Pts - Gives special consideration to engaging low income, minority, disabled, and linguistically isolated populations and uses diverse public involvement techniques.	0	0	0
1 Pt - Includes an education component so stakeholders understand the transportation planning process.	1	1	1
<b>3 Pts - Use a Transparent Process and Demonstrate the Incorporation of Stakeholder Input</b>	<b>3</b>	<b>3</b>	<b>3</b>
1 Pt - Uses a transparent process to inform stakeholders how their input will be used and follows through.	1	1	1
2 Pts - Demonstrates to stakeholders how their input was used to inform and affect transportation planning decisions.	2	2	2
<b>6 Pts - Demonstrate Sustainable Outcomes</b>	<b>0</b>	<b>0</b>	<b>0</b>
1 Pt - Implements transportation investments that support the community's vision and goals and help achieve sustainable outcomes.	0	0	0
2 Pts - Includes sustainability related performance measures to assess the effectiveness of the public involvement process.	0	0	0
3 Pts - Monitors the effectiveness of public involvement against performance measures and makes changes as needed.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>7</b>	<b>7</b>	<b>7</b>

**SP-04: Integrated Planning: Bonus**

**Goal:** The agency has a continuing, cooperative, and comprehensive transportation planning process. Planners and professionals from multiple disciplines and agencies (e.g. land use, transportation, economic development, energy, natural resources, community development, equity, housing, and public health) work together to incorporate and apply all three sustainability principles when preparing and evaluating plans.

**Sustainability Linkage to the Triple Bottom Line: Social, Environmental, & Economic.** Long-range, integrated planning at the state and metropolitan levels provides the most robust framework for responding to sustainability goals. This integration supports all of the triple bottom line principles.

**Corridor Planning Recommendations**

While the group did not score this criterion, it did discuss it at the scoring workshop and offered these recommendations:

- Reach out to a broader set of stakeholders.
- Consider a broad spectrum of issues including jobs, the economy, land use, environmental issues, and fiscal sustainability.
- Analyze across silos (e.g. considering housing and the economy in a corridor plan).

**INVEST Feedback**

Not applicable.

**Scoring Requirements and Discussion of Results**

**The total score received by each of the studies for this criterion was 0 out of a possible 10 points.** To gain points under this criterion, an agency must have achieved a score of ten or higher on each of the first three INVEST *System Planning* criteria. WSDOT did not achieve ten points for any of the corridor studies on criteria SP-01 through SP-03.

**Scorecard**

Exhibit 15 presents a summary scorecard for this criterion.

**Exhibit 15: Scorecard for SP-04: Integrated Planning: Bonus**

SP - 4 Integrated Planning: Bonus (Must Score 10 or Higher on SP-1 to SP-3 to Evaluate)	US 2	SR 516	SR 520
<b>10 Pts - Transportation Planning Occurs within an Integrated and Collaborative Planning Process</b>	<b>0</b>	<b>0</b>	<b>0</b>
5 Pts - Making progress toward an interdisciplinary planning process, but the three sustainability principles are not fully integrated.	0	0	0
5 Pts - Has an interdisciplinary planning process evaluated by outside stakeholders through a sustainability lens. Integrates sustainability principles.	0	0	0
<b>TOTAL (Out of 10)</b>	<b>0</b>	<b>0</b>	<b>0</b>

### *SP-05: Access and Affordability*

**Goal:** Enhance accessibility and affordability of the transportation system to all users and by multiple modes.

**Sustainability Linkage to the Triple Bottom Line: Social, Environmental, & Economic.** Improved access and affordability benefit the social and economic sustainability principles by improving employment opportunities and enhancing opportunities to interact with the community. Increasing the modal choices available to the public supports the environmental principle by offering alternatives to motorized travel.

#### Corridor Planning Recommendations

Recommendations to improve the integration of access and affordability goals into corridor studies were:

- Involve special needs communities in planning by:
  - Holding meetings close to special needs populations and selecting accessible venues.
  - Reaching out to advocacy boards (e.g. Area Agency on Aging or PSRC’s Special Needs Transportation Committee).
  - Going to targeted community events with translation resources.
  - Reaching out to community advisors and trusted advocates that serve specific populations (e.g. Aging and Disability Service Advisory Council, Seattle Commission on People with Disabilities) or elected officials that serve on those types of councils or commissions.
- Integrate relevant key points (strategies, objectives, performance goals/indicators) of [USDOT’s Strategic Plan FY 2014-2018](#), particularly on topics addressing equity, affordability, accessibility, and safety under the livable communities and security/preparedness focus areas.
- Describe the three dimensions of accessibility and identify data relevant to special needs populations. For example:
  - The nature and distribution of accessibility and affordability concerns.
  - The growth rates of special needs populations (e.g. the elderly).
  - How road conditions such as congestion affects communities (e.g. travel delay of paratransit services, cost to low income populations, air quality impacts).
  - Existing land use and its connection to travel behavior, access, and affordability.
  - Transit, bicycle, and pedestrian measures.
  - Travel/trip options and mode shift due to affordability.
  - Employment growth data beyond large employers (there are special needs populations employed in different sectors and industries).
  - Census disability and aging data and specialized data from other state agencies (e.g. Office of Superintendent of Public Instruction, Department of Social and Health Services).

- Mobility management data (e.g. Medicaid transportation, Puget Sound Travel Diary, Dial-a-Ride Transit/Access services).
- Access and affordability data from local sources.

### INVEST Feedback

Suggestions to improve the SP-05 criterion in the INVEST tool were:

- Giving 6 points to Performance Measures and Regular Monitoring seems disproportionately high.
- The documentation indicates this criterion is related to Freight and Goods Movement, but there seems to be little to no relationship.

### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 0 out of a possible 15 points.**

None of the studies scored any points on this criterion. The Scorer shared the scoring requirements with three external partners with expertise in access and affordability. The Scorer averaged the partners' scores to arrive at the final score, resulting in scores that were less than half a point for all items. Part of the issue is that SR 520 and US 2 are limited access facilities; SR 516 has the most access to communities and therefore scored somewhat (fractionally) higher.

### Scorecard

Exhibit 16 presents a summary scorecard for this criterion.

**Exhibit 16: Scorecard for SP-05: Access and Affordability**

<b>SP-05 Access and Affordability</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>4 Pts - Discussion/Consideration in Transportation Planning Documents</b>	<b>0.00</b>	<b>0.33</b>	<b>0.00</b>
2 Pts - Analyzes the three dimensions of accessibility and identifies affected groups or areas. Discusses time and cost barriers and consequences. The TIP/STIP includes programs or improvements that address access issues.	0	0.25	0
2 Pts - Documents targeted, enhanced outreach or communications to engage these population groups. Goes beyond current requirements to ensure meeting are accessible by using innovative methods.	0	0.08	0
<b>5 Pts - Quantitative Analysis</b>	<b>0.05</b>	<b>0.05</b>	<b>0.11</b>
2 Pts - Quantitatively evaluates the nature and distribution of accessibility and affordability concerns.	0	0	0
3 Pts - Analyzes how planning improves access and the affordability of travel choices and housing.	.05	.05	.11
<b>6 Pts - Performance Measures and Regular Monitoring</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
3 Pts - Includes performance measures to monitor effects on transportation accessibility and affordability.	0	0	0
3 Pts - Monitors progress against the performance measures and adjust efforts to meet goals.	0	0	0
<b>Total Points (out of 15)</b>	<b>0.05</b>	<b>0.38</b>	<b>0.11</b>

### *SP-06: Safety Planning*

**Goal:** Agency integrates quantitative measures of safety into the transportation planning process, across all modes and jurisdictions.

**Sustainability Linkage to the Triple Bottom Line: Social.** Reducing fatal and serious injuries contributes to the social and economic triple bottom line principles by reducing the impacts associated with personal and public property damage, injury, and loss of life.

#### Corridor Planning Recommendations

Recommendations to improve the integration of safety planning into corridor studies were:

- Address safety planning on all public roadways in the corridor, not just state facilities.
- Consider whether corridor studies should include quantitative safety performance measures and projected safety performance.
- Consider whether to use GIS for safety analysis at the corridor level as well as the statewide level.<sup>21</sup>
- Safety is an ongoing process. Measurements are constantly in flux. A uniform, consistent, single source of safety data and analysis would be helpful in creating future corridor reports.
- Expand “vulnerable user” tracking. For example, tracking could include people with disabilities, as well as those who are involved in safety situations that do not involve a vehicle (such as between a pedestrian and a cyclist, or the tipping over of a wheelchair due to curbcut slope or uneven pavement).
- Incorporate use of the [Highway Safety Manual](#)/Safety Analyst macro-predictive models to forecast crashes for a given level of travel demand when available.
- Consider the use of macro-predictive models (such as PlanSafe) to reliably forecast crashes based on socio-demographic changes in the population.

#### INVEST Feedback

Suggestions to improve the SP-06 criterion in the INVEST tool were:

- This criterion should probably include American Disability Act requirements and transition plans.
- It would be helpful to define the terms used in the scoring criteria. For example, FHWA should further define “intention to cooperate and collaborate across all levels of government,” “multi-disciplinary and integrated approaches,” and “systemwide.”
- Reframe the scoring requirements for corridor studies.

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<sup>21</sup> WSDOT does not currently use GIS applications on local networks, or to identify specific safety locations on a given highway segment. WSDOT does utilize GIS to analyze safety on statewide facilities, combining it with Safety Analyst software to determine crash averages by roadway type. GIS is also used for the WSDOT long-range plan, the [Highway System Plan](#), which includes unfunded projects only. At the corridor planning level, however, specific safety locations use WSDOT safety priority array procedures combined with the Safety Analyst for identification.

### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 6 out of a possible 15 points.**

*Toward Zero Death* is the national safety plan for highways. Washington State has *Target Zero*, which actually goes a step further because it addresses both fatal and serious injury collisions, and WSDOT was one of its primary authors. All three corridor studies incorporated *Target Zero*; SR 520 and US 2 did so in more detail. All three studies also integrated quantitative safety considerations into the recommendations. This criterion requires a “systemwide approach” which includes all public roadways in the area, not just state facilities. WSDOT does not collect and maintain data on the public roadway system at the corridor study level, nor does it currently provide safety information through GIS for WSDOT planners. WSDOT also does not currently include performance measures in its corridor studies.

There were several requirements that earned N/A or zero scores:

- **Develop a Plan that Incorporates Safety into Short- and Long-Range Transportation Planning (Score: 0).** This item requires safety analysis and performance measurement of all public roadways, including local roads. WSDOT does not currently analyze local roads for corridor planning studies.
- **Integrate Quantitative Safety Performance Measures into the Transportation Planning Process. (Score: N/A).** WSDOT does not include performance measurement in corridor planning studies.
- **Integrate Statistically Sound Approaches to Determine Projected Safety Performance into the Long-Range Transportation Planning Process (Score: N/A).** This item requires “macro-level predictive models to provide a quantitative and statistically reliable forecast of crashes for a given future travel demand (using output from travel demand models), and socio-demographics,” such as PlanSafe.<sup>22</sup> WSDOT uses the Highway Safety Manual/Safety Analyst methodology for safety analysis, which does not currently include future demand forecasts or socio-demographics.<sup>23</sup> WSDOT does not perform long-range safety projections in general, on either a statewide or a corridor study level. PSRC uses UrbanSim<sup>24</sup> to calibrate land use assumptions into their travel demand model, but this is not a socio-demographic model like PlanSafe.

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<sup>22</sup> “PlanSafe: Forecasting the Safety Impacts of Socio-Demographic Changes and Safety Countermeasures. TRB’s National Cooperative Highway Research Program #CRP-CD-78 provides safety forecasting software and accompanying guidance that is designed to help independently forecast the safety impacts of changes in socio-demographics and safety investments, both engineering and behavioral.”  
<http://www.trb.org/Main/Blurbs/163790.aspx>

<sup>23</sup> The *Highway Safety Manual* is published by the [American Association of State Highway & Transportation Officials](#), and is the most widely accepted tool available to quantitatively assess the impact of infrastructure decisions on safety. It includes countermeasures, project prioritization, alternatives comparison, and tools to quantify and predict the safety performance of roadway elements considered in planning, design, construction, maintenance, and operation.

<sup>24</sup> UrbanSim is a software-based simulation system for supporting planning and analysis of urban development, incorporating the interactions between land use, transportation, the economy, and the environment.  
<http://www.urbansim.org/Main/WebHome>

- **Collect and Maintain Data (Safety and Non-Crash Information) for the Public Roadway System to Incorporate Safety into the LRTP Process:**
  - Participates and supports the state Traffic Records Coordinating Committee and jointly funds improvements and linkage initiatives (Score: N/A). WSDOT is active on the Washington State Traffic Records Committee but this question does not translate to a corridor level study.
  - Develops, maintains, and uses GIS data for the entire public roadway system in planning for safety and for input into the LRTP (Score: 0). This system is still being implemented at WSDOT.<sup>25</sup> As discussed above, WSDOT is not currently using GIS applications on local networks.
  - Creates, maintains, and uses GIS data for safety analysis in the LRTP. (Score: 0) WSDOT uses GIS to analyze safety on state facilities, but not all public roads as discussed above.
- Spatially joins roadway, operation, asset management, medical, crash and other data to analyze/prioritize safety improvements (Score: 0). WSDOT does currently use joined roadway, operational, and collision data for statewide analysis. WSDOT is working with other agencies in the state, as a member of the [Washington Traffic Safety Commission](#) Data Integration Committee, on joining data across agency datasets. However, this is done on a statewide basis only and not at a corridor planning level.

### Scorecard

A summary scorecard for this criterion is presented in Exhibit 17.

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<sup>25</sup> FHWA has developed Model Minimum Uniform Crash Criteria (MMUCC) & Model Inventory of Roadway Elements (MIRE). MMUCCs and MIREs are an attempt at standardization of transportation roadway and safety data. WSDOT is among the leaders in having many of the MMUCC & MIRE elements, and is also considered a leader in using GIS for analysis of crash data along with roadway data elements.

**Exhibit 17: Scorecard for SP-06: Safety Planning**

	US 2	SR 516	SR 520
<b>SP-06: Safety Planning</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Collaborate and Participate in the Development and Implementation of the State Strategic Highway Safety Plan</b>	<b>2</b>	<b>2</b>	<b>2</b>
1 Pt - Collaborates in the creation of the Strategic Highway System Plan (SHSP) but is not implementing it in planning or programming. <b>OR</b>	0	0	0
2 Pt - Collaborates in the creation of the SHSP and implements it in planning and programming activities.	2	2	2
<b>1 Pt - Integrate the <i>Toward Zero Death</i> Vision into the Agency's Vision for Transportation Planning</b>	<b>1</b>	<b>1</b>	<b>1</b>
1 Pt - Incorporates the <i>Toward Zero Death</i> vision and implements it in planning activities.	1	1	1
<b>1 Pt - Develop a Plan that Incorporates Safety into Short- and Long-Range Transportation Planning</b>	<b>0</b>	<b>0</b>	<b>0</b>
1 Pt - Uses a systemwide (all public roadways) approach to identify programs, projects, and activities that reduce fatal and serious injuries.	0	0	0
<b>1 Pt - Integrate Quantitative Safety Performance Measures into the Transportation Planning Process</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
1 Pt - Uses quantitative safety performance measures, including network screening, which includes tracking of user groups.	N/A	N/A	N/A
<b>3 Pts - Integrate Quantitative Safety Considerations in the Selection and Evaluation of Strategies during the Transportation Planning Process</b>	<b>3</b>	<b>3</b>	<b>3</b>
2 Pts - Integrates quantitative safety considerations into selection and evaluation of strategies for different user groups.	2	2	2
1 Pt - Selects strategies that include systemic treatments with proven effectiveness in reducing fatal and serious injuries.	1	1	1
<b>3 Pts - Integrate Statistically Sound Approaches to Determine Projected Safety Performance into the Long-Range Transportation Planning Process</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
3 Pts - Integrates advanced, statistically sound, quantitative methods to determine long-range safety performance. Uses macro models that incorporate predicted future travel demand and socio-demographic forecasts.	N/A	N/A	N/A
<b>4 Pts - Collect and Maintain Data (Safety and Non-Crash Information) for the Public Roadway System to Incorporate Safety into the LRTP Process</b>	<b>0</b>	<b>0</b>	<b>0</b>
1 Pt - Participates and supports the state Traffic Records Coordinating Committee and jointly funds improvements and linkage initiatives.	N/A	N/A	N/A
1 Pt - Develops, maintains, and uses GIS data for the entire public roadway system in planning for safety and for input into the LRTP.	0	0	0
1 Pt - Creates, maintains, and uses GIS data for safety analysis in the LRTP.	0	0	0
1 Pt - Spatially joins roadway, operation, asset management, medical, crash and other data to analyze/prioritize safety improvements.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>6</b>	<b>6</b>	<b>6</b>

### ***SP-07: Multimodal Transportation and Public Health***

**Goal:** Expand travel choices and modal options by enhancing the extent and connectivity of multimodal infrastructure. Support and enhance public health by investing in active transportation modes.

**Sustainability Linkage to the Triple Bottom Line: Social & Economic.** A multimodal transportation network supports the social and economic triple bottom line principles by increasing transportation options, reducing traffic congestion and emissions, and encouraging the use of active modes to enhance public health.

#### Corridor Planning Recommendations

Recommendations to improve the integration of multimodal transportation and public health into corridor studies were:

- Further integrate transit into studies, although integration is challenging because funding, governance, and planning for WSDOT transportation system are not integrated. Additionally, transit agencies may not necessarily welcome state involvement. In the PSRC model, Sound Transit, Metro, and roadway planning are all integrated. The model assumes a certain level of transit usage.
- Consider addressing health in corridor plans. Note this will require a big change in perspective and approach. The [American Planning Association](#) has materials on how to perform health impact assessments on a transportation project.
- Include “safe, comfortable, and complete” to goals and objectives for non-motorized transportation. Crime Prevention through Environmental Design is an area of practice related to safety for non-motorized and transit users.
- Consider using multimodal level of service measures. Metro uses them and assesses standardized letter scores based on the experience of people riding the bus.

#### INVEST Feedback

Suggestions to improve the SP-07 criterion in the INVEST tool were:

- Does this tool get WSDOT to where WSDOT needs to go when the studies score all zeroes? (Is the bar set too high?)
- Add “safe, comfortable, and complete” to the non-motorized goals and objectives.

#### Scoring Requirements and Discussion of Results

**The total score received for this criterion was 1 point each for the US 2 and SR 516 studies, and 3 for SR 520, out of a possible 15 points.** Overall, the study team felt this criterion really pushed the envelope on what WSDOT typically does for corridor studies. Although the team expressed support for this type of approach, WSDOT is not there yet. All three studies were multimodal and all three studies addressed bike/pedestrian issues, but none of them directly addressed public health issues.

## Scorecard

Exhibit 18 presents a summary scorecard for this criterion.

**Exhibit 18: Scorecard for SP-07: Multimodal Transportation and Public Health**

<b>SP-07: Multimodal Transportation and Public Health</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Develop Goals and Objectives</b>	<b>0</b>	<b>0</b>	<b>0</b>
1 Pt - Develops goals and objectives for enhancing the extent and connectivity of multimodal infrastructure.	0	0	0
1 Pt - Develops goals and objectives related to active transportation and the improvement of public health.	0	0	0
<b>2 Pts - Engage Stakeholders</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Regularly engages public health and active mode stakeholders and incorporates their feedback.	0	0	0
<b>5 Pts - Develop a Systemwide Plan</b>	<b>1</b>	<b>0</b>	<b>2</b>
1 Pt - Prioritizes active, non-motorized transportation projects and programs.	1	0	1
1 Pt - Integrates transit, pedestrian, bicycle and roadway networks so intermodal connections are safe and convenient.	0	0	1
3 Pts - Evaluates health impacts to determine whether planned investments will support public health and active transportation goals.	0	0	0
<b>6 Pts - Measure Progress and Demonstrate Sustainable Outcomes</b>	<b>0</b>	<b>1</b>	<b>1</b>
1 Pt - Implements transportation investments that expand travel choices and modal options and support and enhance public health.	0	1	1
2 Pts - Incorporates multimodal and public health related performance measures and monitors progress toward meeting goals.	0	0	0
3 Pts - Documents it has met its multimodal transportation and public health goals and objectives.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>1</b>	<b>1</b>	<b>3</b>

### **SP-08: Freight and Goods Movement**

**Goal:** Implement a transportation system plan that meets freight access and mobility needs while also supporting triple bottom line sustainability principles.

**Sustainability Linkage to the Triple Bottom Line: Economic, Environmental, & Social.** Freight and goods movement planning provides multiple sustainability benefits, including economic (supporting economic prosperity through improved freight efficiency and reliability), environmental (reducing fuel consumption and related emissions), and social (reduced adverse impacts of freight on communities, etc.).

#### Corridor Planning Recommendations

Recommendations to improve the integration of freight and goods movement into corridor studies were:

- Review the statewide [Freight Mobility Plan](#) as a resource for the corridor study.
- WSDOT needs practical tools for measures of performance, interconnectedness, sustainability, and modal coordination. Reliability is one of the most important measures for shippers. (The WSDOT Freight Office is working on a freight bottleneck plan that could provide performance measures for freight.)

#### INVEST Feedback

Suggestions to improve the SP-08 criterion in the INVEST tool were:

- WSDOT needs more clarity in what to measure, how to measure it, and how to apply it to sustainability.
- In the current WSDOT situation (with a focus on maintenance and preservation), improvements may be problematic.

#### Scoring Requirements and Discussion of Results

**The total score received for this criterion was 4 out of a possible 15 points for the SR 520 and SR 516 studies; the US 2 study scored 6 points.** The US 2 corridor study was the only one that really engaged stakeholders, including the port and the military. All of the corridor studies involved a congestion study, which analyzed freight needs in connection with other travel needs; however, US 2 was the only corridor study that involved a major freight facility. SR 516 is not a major freight corridor, but the plan did look at how rail interacted with SR 516 at the interchange with SR 167. All three studies included sustainability related freight mobility performance measures, but none of the studies considered intermodal freight connections, as this is not a typical component of corridor studies.

#### Scorecard

Exhibit 19 presents a summary scorecard for this criterion.

**Exhibit 19: Scorecard for SP-08: Freight and Goods Movement**

<b>SP-08: Freight and Goods Movement</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>3 Pts - Engage Stakeholders</b>	<b>2</b>	<b>0</b>	<b>0</b>
2 Pts - Regularly engages freight service providers, stakeholders, workers, and representatives.	2	0	0
1 Pt - Uses institutional mechanisms to facilitate engagement.	0	0	0
<b>4 Pts - Freight Mobility Needs</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Considers multimodal freight mobility needs and includes freight mobility goals and evaluation criteria.	2	2	2
2 Pts - Include and monitors sustainability related freight mobility performance measures.	0	0	0
<b>4 Pts - Freight Reliability</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Includes specific provisions for maintaining and improving freight reliability and interconnectedness between freight modes.	0	0	0
2 Pts - Includes and monitors sustainability related freight reliability performance measures.	2	2	2
<b>4 Pts - Intermodal Freight Connectors</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Evaluates, maintains, and improves intermodal freight connectors at all levels (federal, state and local). Includes performance measures and criteria to encourage coordination among modes.	0	0	0
2 Pts - Includes and monitors sustainability related performance measures for intermodal freight connectors.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>6</b>	<b>4</b>	<b>4</b>

### *SP-09: Travel Demand Management*

**Goal:** Reduce vehicle travel demand throughout the system.

**Sustainability Linkage to the Triple Bottom Line: Economic, Environmental, & Social.** TDM provides multiple sustainability benefits, including environmental (reduced energy consumption and related emissions), social (improved awareness of available travel choices), and economic (reduced costs of travel and congestion to the economy).

#### Corridor Planning Recommendations

Recommendations to improve the integration of demand management into corridor studies were:

- Invite TDM professionals and other partners into the discussion and consult Public Transportation Division staff to connect to groups concerned with Commute Trip Reduction and to help develop feasible recommendations.
- Integrate Commute Trip Reduction, TDM, and multimodal goals from local, regional, and state plans.
- Include quantifiable TDM goals and objectives in the corridor plan.
- Develop a comprehensive TDM measurement and reporting plan supported by agency.
- Develop and prioritize common measures for all strategies (e.g. demand management, increasing capacity, TSM) so that a true comparison can be made across alternatives, particularly with regard to life cycle costs.
- Identify the funding that exists for TDM strategies and include the true implementation costs to ensure TDM strategies identified in the plan are feasible to implement.

#### INVEST Feedback

Suggestions to improve the SP-09 criterion in the INVEST tool were:

- There needs to be more flexibility to adapt the INVEST tool to corridor studies.
- The “Implement a TDM Program” criterion should say “Recommend TDM Strategies in the Plan,” because all a corridor study can do is make recommendations.

#### Scoring Requirements and Discussion of Results

**The total score received for this criterion was 0 out of a possible 15 points for the US 2 and SR 516 studies; the SR 520 study scored 5.5 points.** All studies featured *Moving Washington* heavily at the beginning of the study and all studies included at least some TDM. Although the [WSDOT Commute Trip Reduction program](#) has a long history of data measurement and reporting, there is no broader agency-wide performance measurement strategy, so corridor studies did not reflect performance measures. All the studies went into the travel model and took out 5% of demand based on TDM implementation. The 5% reduction refers to reductions in total modeled volumes, not just CTR sites. A TDM discussion should also include reducing travel for freight; WSDOT tends to look only at reducing personal travel.

- SR 520 included a discussion of which strategies would achieve the 5% reduction goal. The plan estimated an annual cost for these additional strategies at \$500k per year for improved transit service and bicycle and pedestrian improvements. This estimate seemed low to the Scorer. The SR 520 study did not mention state or local goals for TDM.
- The US 2 study recommendations included TDM strategies, but no goals or objectives. For the US 2 study, only Everett is CTR-affected.
- On SR 516, there were recommendations to expand TDM that included some general suggestions, but no overall TDM goals or objectives. The plan identified the annual cost for these additional strategies as \$214,000 not including staff, an estimate that seemed low to the Scorer. The only CTR-affected area for SR 516 is Kent; a reduction of more than five percent for peak hour trips should be reasonable for that jurisdiction.

Scorecard

Exhibit 20 presents a summary scorecard for this criterion.

Exhibit 20: Scorecard for SP-09: Travel Demand Management

SP-09: Travel Demand Management	US 2	SR 516	SR 520
<b>2 Pts - Set TDM Goals and Objectives</b>	<b>0</b>	<b>0</b>	<b>1.5</b>
1 Pt - Develops quantifiable TDM goals and objectives.	0	0	1
1 Pt - TDM goals and objectives are consistent with relevant state and/or metropolitan goals and objectives for reducing travel demand.	0	0	0.5
<b>4 Pts - Implement a TDM Program</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Implements a TDM program that includes 2-3 TDM strategies. <b>OR</b>	0	0	0
4 Pts - Implements a comprehensive TDM program that includes four or more TDM strategies.	0	0	0
<b>4 Pts - Develop TDM Performance Measures and Monitor Progress</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Has quantifiable TDM performance measures, but is not monitoring them. <b>OR</b>	0	0	0
4 Pts - Has quantifiable TDM performance measures and can demonstrate ongoing monitoring of the TDM program.	0	0	0
<b>5 Pts - Demonstrate Sustainable Outcomes</b>	<b>0</b>	<b>0</b>	<b>4</b>
3 Pts - Documents measurable progress toward meeting TDM goals and objectives. <b>OR</b>	0	0	0
5 Pts - Documents it has met its TDM goals and objectives and that the TDM program has contributed to those outcomes.	0	0	4
<b>TOTAL (Out of 15)</b>	<b>0</b>	<b>0</b>	<b>5.5</b>

### *SP-10: Air Quality*

**Goal:** To plan, implement, and monitor multimodal strategies to reduce emissions and to establish a process to document emissions reductions.

**Sustainability Linkage to the Triple Bottom Line: Environmental & Social.** Reducing emissions and improving air quality provides multiple sustainability benefits, including environmental (reducing emissions) and social (improving human health).

#### Corridor Planning Recommendations

Recommendations to improve the integration of air quality goals into corridor studies were:

- Consult WSDOT air quality experts when writing about air quality in corridor plans.
- Document how WSDOT's approaches to systemwide traffic management also reduce emissions. Include existing agreements that may exist between WSDOT and air control agencies.
- Incorporate some area-specific qualitative air quality information into corridor plans. (Quantitative analysis would increase plan preparation costs.)
- Consider evaluating emission benefits from TDM and other congestion reduction strategies to compare a fully implemented plan with the baseline scenario. (Would increase plan preparation costs.)
- The corridor level is the appropriate level of application for analysis of climate change mitigation and greenhouse gas reduction strategies. Not limited by jurisdictional boundaries, greenhouse gas emissions and climate change impacts require a collaborative community approach to solutions.
- Establish linkages in planning studies between agency strategies like TDM and air quality.

#### INVEST Feedback

Suggestions to improve the SP-10 criterion in the INVEST tool were:

- Perhaps this criterion was from the *Project Development* module, and that is why the wording focuses on implementation. The focus on implementation is not strongly relevant to planning. Implementation scoring requirements are more applicable agency-wide.
- In particular, consider moving dust controls from *System Planning* to the *Project Development* module.

#### Scoring Requirements and Discussion of Results

**The total score received for this criterion was 2 out of a possible 15 points for the SR 516 study; the US 2 and SR 520 studies each scored 4 points.** Many of the items in this criterion are not relevant to corridor level planning. For example, INVEST gives two examples for implementing dust control: paving unpaved roads and implementing strategies to control dust from construction. Local roads are usually not analyzed in corridor studies beyond their intersections with state facilities. The choice to pave an unpaved road would be a local agency decision and unlikely to be included in a corridor study. Since dust

emissions from construction vary by project and location, this scoring requirement would be more appropriate under the *Project Planning* module.

All three studies had some inaccurate comments on air quality regarding nonattainment and maintenance status.

#### Scorecard

Exhibit 21 presents a summary scorecard for this criterion.

#### Exhibit 21: Scorecard for SP-10: Air Quality

SP-10: Air Quality	US 2	SR 516	SR 520
<b>10 Pts - Implement Strategies to Reduce Emissions</b>	<b>4</b>	<b>2</b>	<b>4</b>
2 Pts - Implements transportation demand management strategies.	2	2	2
2 Pts - Implements transportation system management strategies.	2	0	2
2 Pts - Implements vehicle technologies.	0	0	0
2 Pts - Implements fuel technologies.	0	0	0
2 Pts - Implements dust controls.	0	0	0
<b>5 Pts - Conduct Emissions Analysis</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Conducts a qualitative assessment of the emissions reduction potential of all strategies. <b>OR</b>	0	0	0
5 Pts - Conducts a quantitative emissions analysis to document emissions reductions for all strategies.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>4</b>	<b>2</b>	<b>4</b>

### ***SP-11: Energy and Fuels***

**Goal:** Reduce the energy and fossil fuel consumption from the transportation sector and document it in the transportation planning process.

**Sustainability Linkage to the Triple Bottom Line: Environmental, Social, & Economic.** Reducing energy and fossil fuel consumption from the transportation sector provides multiple sustainability benefits and supports all of the triple bottom line principles by reducing fuel spending, greenhouse gas emissions, and energy dependence.

#### Corridor Planning Recommendations

Recommendations to improve the integration energy and fuels goals into corridor studies were:

- The new direction WSDOT is receiving from the Governor and Secretary is more interaction and collaboration with communities. Additionally, corridor studies should encompass a wider area than just the highway. Funding will be an important consideration when deciding to take on this type of significant additional work.
- Include the reduction of energy and fossil fuel consumption as a goal in the corridor plan and in the evaluation criteria.
- There should be a direct connection between corridor plans, long range plans, and reducing energy/fossil fuel consumption. For example, PSRC assumes an increased use of 2+ carpools and transit in the future. Corridor studies could take credit for energy savings from this assumption, both qualitatively and perhaps quantitatively.
- Collect and analyze energy data at the planning level, as postponement to a later date is unnecessary. When WSDOT was looking at analyzing greenhouse gas emissions, the team thought the best place for this type of analysis was at the corridor study level because the modeling can be more exact. The traffic models run for corridor studies should be able to come up with an estimate of energy use based on the model output. It would be important to know how frequently the MPO traffic model (upon which WSDOT models for corridor studies are based on) updates technological changes and new policies, such as changing fuel economy standards.

#### INVEST Feedback

Suggestions to improve the SP-11 criterion in the INVEST tool were:

- The Energy and Fuels criterion is more set up for long-range transportation plans—it does not fit as well with corridor studies. Might it be possible to add a module or enable flexibility so it can work better with corridor studies?
- There is overlap between this criterion and the TDM criterion. There is also overlap between TDM and air quality.

### Scoring Requirements and Discussion of Results

**The total scores received by each of the studies out of a possible 15 points for this criterion were as follows:**

- **US 2: 1**
- **SR 516: 2**
- **SR 520: 3.5**

None of the studies included fossil fuel energy reduction goals or referenced system level data collection and forecasting, although a few studies indicated future analysis would take place. All of the studies did include TDM and operational efficiency strategies that would result in reduced energy consumption. However, none of the studies called out specific energy or fossil fuel usage strategies. SR 516 and 520 discussed TDM and efficiency strategies qualitatively, with SR 516 doing the best job. Although set up as a multimodal plan, SR 516's funding recommendations were all capital. SR 520 identified an overall target for TDM and included energy conservation as a performance measure. The other potential points were not relevant at the corridor study level because corridor studies do not implement strategies.

Despite not explicitly including energy and fossil fuel reduction as a goal, all three plans recommended strategies that, in practice, reduce energy and fossil fuel reduction (including demand management, incident response, operations, ITS strategies, etc.). These recommended strategies, based on criteria unrelated to energy and fossil fuel reduction, are associated with energy and fossil fuel reduction as a co-benefit. Therefore, the Scorer recommended partial credit for this criterion.

### Scorecard

Exhibit 22 presents a summary scorecard for this criterion.

## Exhibit 22: Scorecard for SP-11: Energy and Fuels

SP-11 Energy and Fuels	US 2	SR 516	SR 520
<b>2 Pts - Set Goals and Objectives</b>	<b>0</b>	<b>0</b>	<b>1</b>
1 Pt - Develops energy and/or fossil fuel reduction goals and objectives.	0	0	1
1 Pt - Goals and objectives are consistent with state/metropolitan goals and objectives for reducing energy and fossil fuel consumption.	0	0	0
<b>4 Pts - System Level Data Collection and Forecasting</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Develops and maintains a baseline inventory of current energy/fossil fuel consumption.	0	0	0
2 Pts - Uses an appropriate model or method to forecast energy and fuel consumption associated with the plan.	0	0	0
<b>4 Pts - Develop a Plan and Implement Strategies to Reduce Transportation-related Energy and/or Fossil Fuel Usage</b>	<b>1</b>	<b>2</b>	<b>1.5</b>
2 Pts - Includes energy and fossil fuel reduction strategies.	1	2	1.5
2 Pts - Agency implements transportation strategies to reduce energy and fossil fuel consumption. <i>(NOT AS RELEVANT FOR CORRIDOR STUDIES)</i>	N/A	N/A	N/A
<b>5 Pts - Measure Progress and Demonstrate Sustainable Outcomes</b>	<b>0</b>	<b>0</b>	<b>1</b>
1 Pts - Incorporates energy and fossil fuel reduction performance measures.	0	0	1
2 Pts - Agency demonstrates ongoing monitoring of progress toward reducing energy and fossil fuel consumption. <i>(NOT AS RELEVANT FOR CORRIDOR STUDIES)</i>	N/A	N/A	N/A
2 Pts - Agency documents it has met its energy and fossil fuel consumption goals. <i>(NOT AS RELEVANT FOR CORRIDOR STUDIES)</i>	N/A	N/A	N/A
<b>TOTAL (OUT OF 15, or 9 MOST RELEVANT FOR CORRIDOR STUDIES)</b>	<b>1</b>	<b>2</b>	<b>3.5</b>

### SP-12: Financial Sustainability

**Goal:** Evaluate and document that financial commitments made in transportation planning documents are reasonable and affordable.

**Sustainability Linkage to the Triple Bottom Line: Economic.** Financial sustainability supports the economic triple bottom line principle by improving economic prosperity for current and future generations, and ensuring that there are sufficient financial resources to advance the projects and program goals of the community.

#### Corridor Planning Recommendations

Recommendations to improve the integration of financial sustainability into corridor studies were:

- To communicate that the recommendations in the plan need to be reasonable and affordable, describe the *Moving Washington* approach and penny chart showing where transportation funds are obligated.
- Strengthen the connection between planning and scoping. There is a disconnection between planning and scoping. The WSDOT offices that perform the corridor planning studies, and the offices which decide which projects move from corridor studies into scoping for a project, are separate. Although not currently part of the study process, incorporation of scoping information into the corridor studies would be helpful.
- Along with WSDOT funding limitations, also identify other potential sources of funding for transportation improvements.

#### INVEST Feedback

Suggestions to improve the SP-12 criterion in the INVEST tool were:

- Eliminate this criterion for corridor studies.

#### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 0 out of a possible 15 points.**

Advanced revenue forecasting does not belong in a corridor study. WSDOT does revenue forecasting at the agency level on a quarterly basis. Corridor studies do include “planning level” cost estimates, using a formula-based tool developed by WSDOT. These rules-of-thumb cost estimates identify a cost range, rather than a specific cost estimate. They also discuss funding “next steps” through grants and other revenue sources available.

WSDOT corridor studies currently address financial sustainability in the following ways:

- WSDOT identify funding limitations and provide guidelines to stakeholders for seeking funding elsewhere.
- Inclusion of *Moving Washington* and the “[penny chart](#)” in order to communicate that the recommendations in the plan need to be reasonable and affordable. An example of

incorporation of financial sustainability in corridor studies is that the US 2 trestle was not recommended for replacement.

One of the challenges faced at WSDOT is that the state legislature controls funding of WSDOT projects, and such funding decisions are not necessarily based on a corridor plan. In addition, when study recommendations are funded, they are rarely funded as a complete package. Each project recommended from the study usually goes through programming on a stand alone basis.

Scorecard

Exhibit 23 presents a summary scorecard for this criterion.

**Exhibit 23: Scorecard for SP-12: Financial Sustainability**

SP-12: Financial Sustainability	US 2	SR 516	SR 520
<b>7 Pts - Advanced Revenue Forecasting</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Engages in regular coordination and information sharing among affected agencies when developing revenue forecasts.	0	0	0
3 Pts - Undertakes systematic forecast updates. Significant changes in forecast revenues are addressed in planning.	0	0	0
2 Pts - Established process for engaging stakeholders about the implications of changes in revenue forecasts.	0	0	0
<b>8 Pts - Advanced Cost Estimating</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - As projects progress through planning and construction, accurate records are kept of changes to project scope and impacts on costs.	0	0	0
3 Pts - As project development progressed, formula-driven cost estimating procedures were avoided in favor of project-specific methods.	0	0	0
3 Pts - Completes regular systematic cost updates, including operations and maintenance costs.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>0</b>	<b>0</b>	<b>0</b>

### **SP-13: Analysis Methods**

**Goal:** Agencies adopt and incentivize best practices in land use, socioeconomic, and transportation systems analysis methods.

**Sustainability Linkage to the Triple Bottom Line: Social, Environmental, and Economic.** The use of analysis methods can help an agency measure progress toward meeting its sustainability goals by providing the means to estimate, evaluate, and communicate the expected social, environmental, and economic outcomes of changes in transportation policies, services, and the built environment.

#### Corridor Planning Recommendations

Recommendations to improve the integration of sustainable analysis methods into corridor studies were:

- Continue to apply a robust analytic approach to problems and solutions.
- Use micro models when appropriate (e.g. the Bellevue/Kirkland/Redmond model).
- Consider using a centralized modeling team within WSDOT capable of analyses anywhere in the state to benefit regions without modeling staff.

#### INVEST Feedback

Suggestions to improve the SP-13 criterion in the INVEST tool were:

- The goal is “Agencies adopt and incentivize best practices in land use, socioeconomic, and transportation system analysis methods.” However, the scoring requirements do not really reflect the “incentivize” part of the goal.

#### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 10 out of a possible 15 points.**

Corridor studies use PSRC’s regional model, with some adjustments; WSDOT then performs its own analysis on corridor studies. All three corridor studies therefore received full points for data quality. The PSRC vets its regional model extensively. Additionally, the SR 520 study had a technical committee and WSDOT had the analysis reviewed by the stakeholders, as well as two separate offices within WSDOT. The corridor studies therefore also received full points for technical committee review. WSDOT has a strategic plan for managing data and many resources for maintaining data, but no strategic plan for improving analysis. The studies therefore received two out of the possible four points for program support. Since peers reviewed the PSRC model and corridor study models, the studies received three out of six possible points for peer review.

#### Scorecard

Exhibit 24 presents a summary scorecard for this criterion.

**Exhibit 24: Scorecard for SP-13: Analysis Methods**

<b>SP-13 Analysis Methods</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>3 Pts - Quality of Data</b>	<b>3</b>	<b>3</b>	<b>3</b>
1 Pt - Analysis founded in observed data suitable for tools that model land use, socio-economic, transport, and environmental systems.	1	1	1
2 Pts - Demonstrates data used in planning analysis are evaluated and updated on a regular basis.	2	2	2
<b>2 Pts - Technical Committee</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Technical committee reviews data collection/quality, planning assumptions, and forecasting methods.	2	2	2
<b>4 Pts - Program Support</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - A strategic plan/program exists for maintaining data and improving analysis. Some program support resources are in place. <b>OR</b>	2	2	2
4 Pts - A strategic plan/program exists for maintaining data and improving analysis. All program support resources are in place.	0	0	0
<b>6 Pts - Peer Review</b>	<b>3</b>	<b>3</b>	<b>3</b>
3 Pts - A peer review of at least one major analytical tool has been conducted. <b>OR</b>	3	3	3
6 Pts - All of the agency's analysis methods, tools, and practices have been peer reviewed.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>10</b>	<b>10</b>	<b>10</b>

### **SP-14: Transportation Systems Management & Operations (TSM&O)**

**Goal:** Optimize the efficiency of the existing transportation system.

**Sustainability Linkage to the Triple Bottom Line: Economic, Social, Environmental.** Improving the efficiency of the existing transportation system provides multiple sustainability benefits, including economic (reduced funding needs), social (improved mobility and reduced congestion), and environmental (reduced resource consumption).

#### Corridor Planning Recommendations

Recommendations to improve the integration of TSM into corridor studies were:

- Consider monitoring progress toward achieving desired outcomes.
- Better documentation of all the factors analyzed during the planning process.
- Include ongoing maintenance costs for existing facilities to communicate that capacity improvements are not a “once done and it’s over and paid for” proposition.
- Develop guidelines for prioritizing which strategy is better when, where and for what purpose. Different corridors have different opportunities for deploying TDM strategies.
- Consider providing additional funding for TDM activities to aid in implementation.

#### INVEST Feedback

Suggestions to improve the SP-14 criterion in the INVEST tool were:

- Define “financially support.”
- Provide guidance for the development of meaningful performance measurement. Then determine how to measure and/or monitor it.

#### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 9 out of a possible 15 points.** All three studies included TSM&O goals and objectives where appropriate. The studies also included a 5% reduction in peak hour trips based on TDM strategies; they therefore scored full points in the *Set TSM&O Policies, Goals and Objectives* category. All three studies discussed TSM strategies and therefore scored full points in the *Develop a Plan* category for including and discussing TSM&O strategies and discussion of impacts, but not in the category of prioritizing TSM&O strategies equally with capacity expansion. For *Support or Implement Strategies*, the studies received full points for prioritizing some TSM&O strategies, but no points for supporting all of them. Due to limited funding sources, it was critical to look at low cost TSM strategies only. In the *Establish Performance Goals and Monitor Progress* category, the studies earned three points based on the 5% reduction goal for TDM and the cost estimates developed for implementation. However, implementation of the strategies has not occurred yet, so the studies did not receive points for having met their TSM&O goals and objectives.

#### Scorecard

Exhibit 25 presents a summary scorecard for this criterion.

**Exhibit 25: Scorecard for SP-14: Transportation Systems Management & Operations**

<b>SP-14 Transportation Systems Management and Operations</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Set TSM&amp;O Policies, Goals and Objectives</b>	<b>2</b>	<b>2</b>	<b>2</b>
1 Pt - Develops clearly defined TSM&O policies, goals and objectives for improving transportation system efficiency.	1	1	1
1 Pt - TSM&O policies, goals and objectives are consistent with relevant state/metropolitan goals and objectives.	1	1	1
<b>4 Pts -Develop a Plan for TSM&amp;O Strategies</b>	<b>2</b>	<b>2</b>	<b>2</b>
1 Pt - Includes TSM&O strategies.	1	1	1
1 Pt - Discusses impacts of including TSM&O strategies.	1	1	1
2 Pts - Considers and prioritizes TSM&O strategies and considered in lieu of, or strategically in conjunction with, capacity expansion.	0	0	0
<b>4 Pts - Support or Implement TSM&amp;O Strategies</b>	<b>2</b>	<b>2</b>	<b>2</b>
2 Pts - Some, but not all TSM&O strategies identified as priorities are implemented or financially supported through the TIP/STIP. <b>OR</b>	2	2	2
4 Pts - All TSM&O strategies identified as priorities are implemented or financially supported through the TIP/STIP.	0	0	0
<b>5 Pts - Establish Performance Goals and Monitor Progress</b>	<b>3</b>	<b>3</b>	<b>3</b>
3 Pts - Develops TSM&O performance measures and can demonstrate progress toward meeting goals and objectives. <b>OR</b>	3	3	3
5 Pts - Develops TSM&O performance measures, has met its TSM&O goals and objectives and TSM&O strategies contributed to the outcome.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>9</b>	<b>9</b>	<b>9</b>

### SP-15: Linking Asset Management and Planning

**Goal:** Leverage transportation asset management data and methods within the transportation planning process to make informed, cost-effective program decisions and better use existing transportation assets.

**Sustainability Linkage to the Triple Bottom Line: Environmental, Economic.** Incorporating transportation asset management data and economic analysis methods throughout system planning supports the environmental and economic triple bottom line principles by improving the cost-effectiveness of decisions, extending the life of assets, and reducing the demand for raw materials.

#### Corridor Planning Recommendations

Recommendations to improve the integration of asset management into corridor studies were:

- Consider developing a tool for estimating maintenance costs for future projects.

#### INVEST Feedback

No suggestions were made for improving the INVEST tool for the Linking Asset Management and Planning criterion.

#### Scoring Requirements and Discussion of Results

**US 2 received a total score of 8, and SR 516 and 520 each received a total score of 4 out of a possible 15 points for this criterion.** WSDOT does not have a process for leveraging asset management performance measures for planning. WSDOT does have one of the best asset management tools for pavement that exists, but it is not for planned facilities, only existing.<sup>26</sup> The three studies therefore scored a zero for the *Incorporate Asset Management Based Performance Measures* category. WSDOT does not include life cycle cost analysis in project evaluation and prioritization, but does perform comprehensive benefit cost analysis, so received full points under the 2<sup>nd</sup> item in the *Incorporate Asset Management Data and Economic Analysis to Prioritize Investments* category. The US 2 study recommended waiting on replacement of the westbound trestle due to the recent completion of a comprehensive rehabilitation. In the other two corridor studies, the recommendations focused on new infrastructure rather than delaying capital expenditures, although both SR 516 and SR 520 did look at historical data for maintenance expenditures, extrapolating that into the future to provide a sketch of the level of funding required for maintenance. US 2 received full points under the *Prioritize Maintenance and Preservation* category, but SR 526 and 520 did not.

#### Scorecard

Exhibit 26 presents a summary scorecard for this criterion.

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<sup>26</sup> Outside of the corridor planning process, WSDOT uses the Maintenance Accountability Process to monitor how facilities are faring and identify when there is a need for additional funding. WSDOT also has a pavement management system and bridge condition inventory. Some assets, like culverts, stormwater facilities, and wetlands are not included in the asset management systems.

**Exhibit 26: Scorecard for SP-15: Linking Asset Management and Planning**

<b>SP-15 Linking Asset Management and Planning</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>3 Pts - Incorporate Asset Management Based Performance Measures</b>	<b>0</b>	<b>0</b>	<b>0</b>
3 Pts - Leverages performance-based planning and programming components of asset management to analyze and evaluate tradeoffs. Identified at least one performance measure for each goal and objective.	0	0	0
<b>8 Pts - Incorporate Asset Management Data and Economic Analysis to Prioritize Investments</b>	<b>4</b>	<b>4</b>	<b>4</b>
4 Pts - Leverages life cycle cost analysis to evaluate project alternatives and prioritize investments.	0	0	0
4 Pts - Leverages comprehensive benefit cost analysis to compare projects and prioritize investments.	4	4	4
<b>4 Pts - Prioritize Maintenance and Preservation</b>	<b>4</b>	<b>0</b>	<b>0</b>
4 Pts - Prioritizes transportation decisions that support the maintenance and good repair of existing transportation assets.	4	0	0
<b>TOTAL (Out of 15)</b>	<b>8</b>	<b>4</b>	<b>4</b>

### SP-16: Infrastructure Resiliency

**Goal:** Anticipate, assess, and plan to respond to vulnerabilities and risks associated with current and future hazards (including those associated with climate change) to ensure multimodal transportation system reliability and resiliency.

**Sustainability Linkage to the Triple Bottom Line: Economic, Social, Environment.** Planning for infrastructure resiliency in the face of potential hazards supports all of the triple bottom line principles by reducing spending from infrastructure replacement, improving the safety and security of multimodal transportation system users, and providing energy savings from long-lasting investments, among others.

#### Corridor Planning Recommendations

Recommendations to improve the integration of infrastructure resiliency into corridor studies were:

- For a better understanding of risks to the corridor and the role of the corridor in emergency responses, consult local disaster preparedness plans such as:
  - Hazard Identification and Vulnerability Assessments
  - Threat and Hazard Identification and Risk
  - Emergency Action Plans for dams in the area (Bureau of Reclamation)
  - Plans for wildland fires (Department of Natural Resources)
- In addition to the hazards addressed (seismic events, climate change, liquefaction hazard, flooding, and point sources of hazardous materials contamination), identify the additional risks of tsunami, volcano/lahar, terrorism, unstable slopes, and infrastructure failure (e.g. dams). These and other statewide risks are in the WSDOT Emergency Operations Plan.
- Better integrate hazard risk data into corridor plan analyses and recommendations (e.g. address potential hazards in safety analysis, consider the role of the corridor in the network of “lifeline” or “resilient” routes, and use hazard risk as a criterion in the evaluation of possible solutions).
- Identify emergency routes, such as Strategic Highway Network routes.
- Include or reference adaptation strategies.
- Consider whether hazard vulnerability should be a factor in the prioritization of safety strategies.

#### INVEST Feedback

Suggestions to improve the SP-16 criterion in the INVEST tool were:

- Write the criteria more broadly to allow for non-GIS based analysis.
- Allow points for qualitative risk assessments and adoption of policies for project level assessments.
- Better define the difference between a vulnerability and a risk assessment in the INVEST criterion.

- Financial sustainability, asset management, and infrastructure resiliency are all tied together.
- Allow modification or deletion of documents after upload to INVEST site (general suggestion).

### Scoring Requirements and Discussion of Results

**The total score received by each of the studies for this criterion was 6 out of a possible 15 points.** All three studies scored full points in the *Hazard Identification* category. They used geographic data to identify hazards, including seismic risks, liquefaction hazards, floodplains, point sources of hazardous materials contamination, and climate change vulnerability. The climate change vulnerability assessment considered sea level rise, precipitation change, temperature change, and fire risks, and then identified the state transportation infrastructure most vulnerable to those changes. The three studies also received full points under the *Vulnerability Assessment* category; WSDOT conducted a climate vulnerability assessment statewide in 2011 and all three corridor studies referenced this assessment and included the results. Under the next two categories, *Risk Assessment* and *Develop and Implement Adaptation Strategies*, all three studies scored zero. WSDOT did a qualitative assessment of climate change risk that did not assign probabilities to impacts, which WSDOT considered a necessary to qualify as risk assessment.<sup>27</sup> The US 2 and SR 520 studies did not include adaptation strategies. The SR 516 plan included some language about incorporating features to provide greater resilience from events associated with climate change in future studies and corridor improvements, but did not include enough detail to qualify for points.<sup>28</sup>

### Scorecard

Exhibit 27 presents a summary scorecard for this criterion.

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<sup>27</sup> FHWA INVEST staff, however, determined that WSDOT's evaluation could be considered a risk assessment because of the likelihood and magnitude of future climate changes.

<sup>28</sup> As an agency, WSDOT does implement adaptation strategies (such as the Bridge Seismic Retrofit Program, Bridge Scour Mitigation Program, Chronic Environmental Retrofit, and WSDOT's Emergency Management Program), but these are not part of the corridor planning process.

**Exhibit 27: Scorecard for SP-16: Infrastructure Resiliency**

<b>SP-16 Infrastructure Resiliency</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>2 Pts - Hazard Identification</b>	<b>2</b>	<b>2</b>	<b>2</b>
1 Pt - Conducts GIS-based system level assessment of potential hazards.	1	1	1
1 Pt - Identifies locations at risk and discusses implications to the transportation system.	1	1	1
<b>4 Pts - Vulnerability Assessment</b>	<b>4</b>	<b>4</b>	<b>4</b>
2 Pts - Conducts a vulnerability assessment and considered hazard consequences for some facilities. <b>OR</b>	-	-	-
4 Pts - Conducts a vulnerability assessment and considered hazard consequences for all facilities.	4	4	4
<b>4 Pts - Risk Assessment</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Conducts a risk assessment for some facilities. <b>OR</b>	0	0	0
4 Pts - Conducts a risk assessment for all facilities.	0	0	0
<b>5 Pts - Develop and Implement Adaptation Strategies</b>	<b>0</b>	<b>0</b>	<b>0</b>
2 Pts - Develops but has not yet implemented adaptation strategies. <b>OR</b>	0	0	0
5 Pts - Develops and implements adaptation strategies.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>6</b>	<b>6</b>	<b>6</b>

### SP-17: Linking Planning and NEPA

**Goal:** Integrate transportation system planning process information, analysis, and decisions with the project level environmental review process, and reference it in NEPA documentation.

**Sustainability Linkage to the Triple Bottom Line: Environmental, Social, Economic.** The NEPA process encompasses sustainability principles typically at the project level. This criterion ensures that information and decisions made in the system planning process generate useful information regarding sustainability impacts, and that data and sources are consistent between system-level and project-level planning.

#### Corridor Planning Recommendations

Recommendations to improve the integration NEPA into corridor studies were:

- Increase public outreach and collaboration with public and natural resource agencies, demonstrate how public comments were considered in the development of recommendations, and document these efforts to meet the requirements of FHWA and FTA for incorporating planning results into NEPA.

#### INVEST Feedback

Suggestions to improve the SP-17 criterion in the INVEST tool were:

- Describe what evidence supports consultation with NEPA practitioners.
- Be more specific about the environmental linkages desired.
- The “Apply System Planning Results to NEPA” item appears to require project level documentation at the planning level. The timing of that may be challenging; the environmental review may expire before the project is ready to start.

#### Scoring Requirements and Discussion of Results

**The total score received by the US 2 and SR 520 studies for this criterion was 3 out of a possible 15 points; SR 516 received 2 out of 15.** The three corridor studies included some NEPA wording, earning partial points for the “undocumented procedures” item in the *Document Linkages Between Transportation System Planning and NEPA* category. The planning level estimates include a certain amount of environmental review; analysts pull their own maps and look at the same environmental data that planners use for the environmental resources section of corridor studies. The planning level estimates may be partially based on what level of environmental analysis will be required, which is determined by the type of project and the identified environmental issues.

For the *Consult NEPA Practitioners* category, the US 2 and SR 520 studies included a sidebar on NEPA and so received partial points. None of the studies scored points in the *Apply System Planning* category, as they did not apply system planning results to NEPA projects.

#### Scorecard

Exhibit 28 presents a summary scorecard for this criterion.

**Exhibit 28: Scorecard for SP-17: Linking Planning and NEPA**

<b>SP-17 Linking Planning and NEPA</b>	<b>US 2</b>	<b>SR 516</b>	<b>SR 520</b>
<b>5 Pts - Document Linkages between Transportation System Planning and NEPA</b>	<b>2</b>	<b>2</b>	<b>2</b>
3 Pts - Undocumented procedures exist that cover consultation, public review, consistent data sources, and documentation of planning decisions, or documented procedures exist that cover one or two of these areas. <b>OR</b>	2	2	2
5 Pts - Documented procedures exist that cover all four areas listed above.	0	0	0
<b>4 Pts - Consult NEPA Practitioners</b>	<b>1</b>	<b>0</b>	<b>1</b>
2 Pts - NEPA practitioners are consulted occasionally to ensure materials are consistent with downstream needs. <b>OR</b>	1	0	1
4 Pts - NEPA practitioners are fully integrated in planning process to ensure materials are consistent with downstream needs.	0	0	0
<b>6 Pts - Apply System Planning Results to NEPA Projects</b>	<b>0</b>	<b>0</b>	<b>0</b>
3 Pts - System level planning information and documentation are occasionally included /referenced in project level NEPA documents. <b>OR</b>	0	0	0
6 Pts - System level planning information and documentation are fully integrated in project level NEPA documents.	0	0	0
<b>TOTAL (Out of 15)</b>	<b>3</b>	<b>2</b>	<b>3</b>

## Chapter 4: *Project Development Findings & Recommendations*

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The INVEST study resulted in findings which could help to improve the INVEST tool for both the *System Planning* and *Project Development* modules. This chapter discusses the findings and recommendations from the *Project Development* module. Chapter 3 discusses findings from the *System Planning* module.

This report divides the findings into the following categories:

- Applicability to WSDOT: Issues Encountered & Lessons Learned
- WSDOT Feedback to FHWA on the *Project Development* Module
- Summary of INVEST scores

### **Applicability to WSDOT: Issues Encountered & Lessons Learned**

WSDOT scored the unfunded portions of the SR 520 Bridge & HOV project using INVEST to evaluate the following:

- If INVEST criteria fit with WSDOT's sustainability goals
- If, and/or how, the INVEST tool can fit into WSDOT's project development process
- If INVEST can be used to bridge the gap between NEPA and Health Impact Assessments
- If INVEST can work for WSDOT

### **Do the *Project Development* Criteria fit with WSDOT Sustainability Goals?**

There was agreement from Scorers that the sustainability criteria topics and sustainability goals were mostly compatible with WSDOT goals. Scorers generally liked the criteria content, but also suggested improvements. The main challenge was that criteria scoring requirements lacked flexibility to consider project context, agency best practices, lessons learned, or successful existing business practices utilizing different tools. Scorers also requested more performance-based scoring.

The project Lead included supplemental and then follow-up questions for each Scorer. One of the supplemental questions related to a good fit between WSDOT and INVEST was: "Are the specific scoring requirements a good way to achieve the goal of the criteria?" Scorer responses were:

- Yes = 15
- No = 10
- Maybe = 2
- No response = 3

The 15 positive comments praised the general nature of the criteria and requirements, the benefit of calling attention to certain project elements, and the straightforward nature of the online scoring "checklist" format. Reasons for the "no" responses varied and included the following:

- Disconnect between the scoring value and the additional level of effort/cost in meeting the requirement.<sup>29</sup>
- Lack of clarity in scoring requirements.<sup>30</sup>
- Inconsistency between high scoring choices and agency policy.<sup>31</sup>
- Lack of flexibility and no consideration of project or resource context.<sup>32</sup>
- Agency experience suggests higher value, and similar results, from alternative measures.<sup>33</sup>

### **How could the INVEST Tool Fit into the WSDOT Project Development Process?**

Scorers generally felt that the scoring requirements were helpful for promoting project sustainability practices, but would require more flexibility and more of a results/performance orientation to fit into the WSDOT project development context. Scorers also felt that the INVEST evaluation process would be most useful at project kick-off and then again near completion of environmental documentation.

#### ***Flexibility and Context***

INVEST applies one set of criteria to all projects nationally. There are obvious challenges to developing a single set of scoring requirements for projects throughout the country. The SR 520 Bridge & HOV Program, which includes reconstruction of a major roadway through an urban area, on a structure, and over water, exacerbated these challenges.

Scorers generally agreed with the content of the INVEST criteria, but also suggested improvements. Comments suggest that greater flexibility and consideration of project context is needed for this tool to be useful for state DOTs.<sup>34</sup> The requested flexibility is important to promote context sensitive solutions and to avoid unintended consequences.

#### ***Results and Performance Orientation***

Another comment echoed by multiple Scorers was that the current scoring requirements could be more results- or performance-oriented.<sup>35</sup> The tool does a good job of asking if a project did “something,” but does less well evaluating how that “something” worked out. For example, the intent of PD-24: Contractor Warranty is to “improve quality and minimize life cycle costs.” WSDOT’s experience has shown better results, with fewer contracting issues, through strict quality control during pavement production than by using a contractor warranty. However, there were no award points in the INVEST system for WSDOT’s proven approach that achieves the same goal through different means.

The tool is a static checklist, so adding performance-based scoring would be difficult for some criteria. For example, how does a project measure the success of public involvement? One criterion where INVEST currently uses performance-based scoring is PD-08: Stormwater. However, the challenge here is

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<sup>29</sup> PD-01, PD-02

<sup>30</sup> PD-08

<sup>31</sup> PD-08

<sup>32</sup> PD-15, PD-21, PD-27

<sup>33</sup> PD-24

<sup>34</sup> PD-07, PD-10, PD-12, PD-13, PD-16, PD-18, and PD-26

<sup>35</sup> PD-05, PD-07, PD-17, PD-24, PD-27.

that INVEST's best management practices are incomplete<sup>36</sup> and do not include practices recommended by WSDOT's [Highway Runoff Manual](#), which is based on proven success in Washington State.

### *Evaluation Process and Timing*

WSDOT Scorers suggested that INVEST would be most useful early in project development, such as during the environmental/early design phases, and that sufficient information was typically available during this phase to enable evaluation of most of the criteria.

The following are recommendations on the process and timing of INVEST, if WSDOT elects to use it in the future:

- A sustainability self-evaluation tool could be used during scoping or project kick-off to frame project expectations about sustainability and then again near completion of the environmental document. Scoring project alternatives would help to inform selection of the preferred alternative(s).
- Using the tool at the beginning of the project would help to identify more sustainable options for project design and would initiate the early solicitation of stakeholder feedback about project goals. This is similar to the FHWA [Context Sensitive Solutions](#) recommendations and/or the HIA process. The results of this step would also support the NEPA process.
- The second evaluation would occur near the completion of environmental documentation to evaluate (or "score") the project. For larger projects, this evaluation would compare project alternatives to inform selection of the preferred alternative(s). For smaller projects, the process would support sustainability performance measurement at the agency level.

Criteria and scoring requirements that are more appropriate to consider during final design or construction are also the items best addressed at the region or agency level, such as construction noise mitigation, quality control, and waste management.<sup>37</sup> The agency could define expectations for these criteria at the kick-off meeting, and detailed evaluation could occur after contract award.

The process outlined above would have three primary benefits:

1. Initial project review would help the project team understand what sustainable options are available.
2. Second review, near the completion of environmental documentation, supports continuous improvement by the agency through clarification of if/how/why any sustainable elements considered initially were or were not included and related lessons learned.
3. The process would support early public input on a project and help communicate public health and other benefits of the proposed project.

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<sup>36</sup> The Scorer commented that INVEST did not allow use of all known and reasonable technologies and lacked clarity about the eligibility of biofiltration swales.

<sup>37</sup> PD-27, PD-28, PD-29, respectively.

Two of the supplementary questions posed to Scorers directly address the question of timing:

1. *At this phase in the project, do you have sufficient information to score the criteria? (The project had completed environmental documentation.)*<sup>38</sup>
  - Yes = 18
  - No = 8
  - No response = 4
1. *Where do you see this tool being most informative or useful during the project development process? Scorers and/or the project Lead divided responses into four general project development phases:*<sup>39</sup>
  - Planning = 3
  - Environmental/Early Design = 21
  - Final Design = 5
  - Construction = 1

Responses suggest that the best time to use INVEST is the environmental/early design phase, as there is sufficient information available to score most criteria. The environmental/early design phase can last for multiple years and Scorers commented that sustainability evaluations would be most effective early in project development so that changes could be refined in the environmental documentation and incorporated into final design.<sup>40</sup>

### **Could INVEST be Used to Bridge the Gap between NEPA and Health Impact Assessments?**

WSDOT would like to further incorporate community interests and address public health into the transportation process, from planning to project construction. One goal of the evaluation was to see if/how INVEST could support that effort.

In WSDOT's experience, the NEPA and HIA processes attempt to address many of the same questions, but approach the questions from different perspectives. The outcomes of the two approaches can also differ in terms of types of language, analysis, and expectations. The HIA process tends to be qualitative and address project challenges and goals from the perspective of community stakeholders. In contrast, for NEPA, technical experts typically use language that targets regulatory compliance. HIA documentation may also include stakeholder concerns that extend beyond the project footprint, while NEPA ties more closely to potential effects within the official project limits. Exhibit 29 compares the NEPA and HIA approaches on several documentation issues.

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<sup>38</sup> The project had completed NEPA documentation at the time of this evaluation, so the environmental/early design phase was also considered complete.

<sup>39</sup> Assumptions were made by the evaluation Lead for criteria with no response.

<sup>40</sup> PD-02, PD-03, PD-05, PD-07, PD-08, PD-09, PD-10, PD-11, PD-12, PD-14, PD-15, PD-16, PD-17, PD-18, PD-26.

**Exhibit 29: Comparison of NEPA and HIA Documentation**

Issue	NEPA	HIA
Timing	Early project design	Undefined
Language	Quantitative, regulatory-focused	Qualitative, community-based
Scope	Focus on direct effects, with consideration of indirect effects	Can extend beyond the project footprint and include desired community improvements with loose ties to the project
Commitments	Documentation becomes formal project commitments	Incorporation of results is at the project's discretion

FHWA does not state that INVEST is intended for specifically addressing public health issues. The clearest nexus to public health is in the *Systems Planning* module, SP-07 Multimodal Transportation and Public Health:

*Expand travel choices and modal options by enhancing the extent and connectivity of multimodal infrastructure. Support and enhance public health by investing in active transportation modes.*

SP-07 includes four scoring requirements to capture progress towards this goal.

1. Develop goals and objectives for enhancing connectivity of multimodal infrastructure, including transit and non-motorized modes.
2. Regularly engage public health and active mode stakeholders throughout the transportation planning process and incorporate their feedback.
3. Develop a systemwide plan that integrates multimodal and active mode infrastructure.
4. Measure progress and demonstrate sustainable outcomes by expanding travel choices, developing performance measures, and documenting attainment of public health goals.

While SP-07 scoring requirements are part of the *System Planning* module, the evaluation used for the SR 520 Bridge & HOV Program also used this criterion from the *Project Development* perspective. It scored 13 of the 15 total points available. The high score reflected the extensive public outreach on this project. The score also reflects some Scorer discretion, since public health terminology was vague (e.g. “public health stakeholders”). Scorers concluded that addressing this element during planning would be best for all projects except for the very largest, where the current language may be more appropriate.

**Overall Impressions: Can INVEST Work for WSDOT?**

Below are Scorer responses to the supplemental question: *Do you generally see this as a useful tool to inform project level decisions?*

- Yes = 22
- No = 5
- No response = 3

Eighty-one percent of Scorers responded that the INVEST process would be useful for informing project level decision making. However, ten of those respondents<sup>41</sup> included qualifiers, such as perceived inconsistency between the sustainability goal and scoring requirements.<sup>42</sup> For example, for PD-18: Site Vegetation, a project engineer agreed with how the criteria set up a different frame of reference that demands more than by-the-book responses and works toward true interdisciplinary coordination. However, she also observed that the goal, sustainability linkage, and scoring requirements should be more coherent and consistent with each other.

Reasons for the “no” responses varied, but included comments about timing,<sup>43</sup> the fact that the agency already incorporates similar concepts into standard operating practices,<sup>44</sup> and disagreement with the scoring emphasis.<sup>45</sup> A number of Scorers made similar recommendations, regardless of whether they responded “yes” or “no” to this question.

### **WSDOT Feedback to FHWA on the *Project Development* Module**

The *Project Development* review team found that INVEST could support more sustainability at the project level with the changes described below, but also felt that the agency should not adopt INVEST in its current form. However, WSDOT may be able to use INVEST if FHWA addresses the changes described below.

Listed in priority order are the general categories summarizing feedback to FHWA from Scorers and observations from the evaluation Lead:

- Flexibility and Context
- Evaluation Process and Timing
- Scale of Project
- Format
- Scoring

WSDOT recognizes that the suggested changes might complicate comparisons between projects because different criteria could be included in the evaluations. However, the additional incentive for project teams to pursue higher award levels should be a counterbalance, regardless of project context.

#### **Flexibility and Context**

WSDOT recommends that FHWA modify INVEST, or allow INVEST to be modified, to account for the diversity of state business practices and project contexts nationally where/when this diversity results in sustainability best practices at the local, state, or regional levels. WSDOT proposes the following options to address this challenge in future updates to INVEST:

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<sup>41</sup> PD-02, PD-6, PD-07, PD-09, PD-16, PD-18, PD-20, PD-23, PD-24, PD-27

<sup>42</sup> PD-18: Site Vegetation, and PD-27: Construction Noise Mitigation

<sup>43</sup> PD-22: Long Life Pavement Design

<sup>44</sup> PD-17: Energy Efficiency, and PD-08: Stormwater

<sup>45</sup> PD-15: Historical, Archaeological, Cultural Preservation

- FHWA approve modifications to existing criteria and/or scoring requirements proposed by transportation agencies.
- FHWA provide “credentialing” or another approval process for transportation agencies that develop modified versions of the full INVEST tool.
- FHWA create a broader menu of options for the scoring requirements to account for greater diversity in project type, geographic location, business practices, etc.
- FHWA support development of state and/or regional efforts (e.g. peer exchanges) to develop appropriate scoring criteria, requirements, etc.

### Evaluation Process and Timing

The current guidance suggests that INVEST can be used throughout the project development process (both prospectively and retrospectively), but does not specifically recommend how or when to perform the self-evaluation. WSDOT determined when use of the evaluation would be most helpful in its own project development process. However, specific guidance on when and how to incorporate INVEST into the project development process is needed from FHWA for general users.

### Scale of Project

FHWA should include more information about how to use INVEST on small versus large projects, beyond the current process of using fewer criteria for certain project types. One option is for the project sponsor to identify a number of sustainable choices for various project types at the agency level. The project sponsor and/or FHWA could then develop a “menu” of standardized options for smaller projects to consider prior to design. The project team would make the final selection of sustainable options based on project context, funding, etc.

Larger projects that follow the *Evaluation Process and Timing* recommendations above could benefit from INVEST by informing sustainable design decisions and comparing relative scores between project alternatives, and later, between different projects. Large projects are more likely to get a high score because they typically have more potential impacts, more mitigation, and more opportunities for innovation.

### Format

The INVEST criteria online “checklist” format is straightforward, easy to use, portable, and clearly presents the scoring requirements. This checklist format is compatible with the changes suggested in this section, especially the changes to improve flexibility of the scoring requirements.

### Scoring

WSDOT recommends that FHWA allow project sponsors to remove criteria that do not apply to a certain project. WSDOT also recommends that FHWA base achievement levels on the percent of total points, rather than the total points achieved. Basing the level on total points leaves no way to recognize the actual achievement level when criteria that do not fit the project are removed. The combination of these recommendations would result in a more fair assessment of project sustainability.

## Summary of INVEST Scores

The *Project Development* module provides guidance on which criteria fit best with different project types and locations. There are six separate scorecards available based on both the type of project (paving, basic or extended) and the location (rural or urban).

1. **Paving:** For projects devoted exclusively to pavement preservation; restoration projects to extend the life of existing facilities and enhance safety; or projects that restore pavement structure, ride quality, and spot safety. This scorecard is for both rural and urban locations.
2. **Basic Rural:** For small, rural reconstruction or rural bridge replacement projects which do not increase capacity.
3. **Basic Urban:** For small urban reconstruction or bridge replacement projects which do not increase capacity.
4. **Extended Rural:** For rural projects that construct a new facility; construction of new structures; and major reconstruction that adds travel lanes to an existing roadway or bridge.
5. **Extended Urban:** For urban projects with a new roadway facility; construction of new structures; and major reconstruction that adds travel lanes to an existing roadway or bridge.

The project location (urban or rural) and scope (basic or extended)<sup>46</sup> determine which of the 29 *Project Development* criteria to score. For example, “Urban Extended” uses all 29 criteria, while “Rural Basic” only scores 21. For projects that do not fit well into these six categories, there is also a custom scorecard option that allows the user to develop a unique set of criteria more appropriate for the project.

WSDOT used the Extended Urban scorecard that has a maximum of 127 points. The INVEST tool states that attainment of the following levels represents outstanding achievement in the area of sustainability:

- Bronze Level: 38 points (30% of possible number of points)
- Silver Level: 50 points (40% of possible number of points)
- Gold Level: 63 points (50% of possible number of points)
- Platinum Level: 76 points (60% of possible number of points)

WSDOT evaluated the 29 *Project Development* criteria and one *System Planning* criterion, SP-07, for the Bridge & HOV Program. The 29 criteria include 24 Planning and Design criteria and five Construction criteria. The INVEST achievement level was determined by the total score from the 29 *Project Development* criteria only; the SP-07 score was evaluated separately.

**The project scored 55 points out of a possible total of 127 points for a Silver level of achievement. It also scored 13 out of 15 possible points for the SP-07 criterion.**

Exhibit 30 lists the scoring criteria for the *Project Development* module in descending order of available points. Appendix I provides detailed comments about project scoring and supplemental questions.

<sup>46</sup> Paving is a separate category without division by urban or rural.

**Exhibit 30: Project Development Scoring Criteria in Descending Order of Maximum Points Available**

No.	Criterion	No. of Scoring Elements	Maximum Points Available	Points Earned
SP-07	Multimodal Transportation and Public Health (from <i>System Planning</i> module)	3	15	13
PD-04	Highway and Traffic Safety	4	10	0
PD-08	Stormwater	3	8	6
PD-17	Energy Efficiency	3	8	2
PD-19	Reduce and Reuse Materials	6	8	8
PD-20	Recycle Materials	3	8	0
PD-21	Earthwork Balance	1	8	3
PD-13	Freight Mobility	1	7	0
PD-01	Economic Analyses	2	5	0
PD-03	Context Sensitive Project Development	4	5	5
PD-06	Tracking Environmental Commitments	2	5	2
PD-12	Transit and HOV Access	1	5	4
PD-14	ITS for System Operations	1	5	5
PD-22	Long-Life Pavement Design	1	5	5
PD-28	Construction Quality Control Plan	2	5	0
PD-02	Life Cycle Cost Analyses	1	3	0
PD-07	Habitat Restoration	1	3	3
PD-09	Ecological Connectivity	1	3	1
PD-15	Historical, Archaeological, and Cultural Preservation	1	3	3
PD-16	Scenic, Natural, or Recreational Qualities	1	3	0
PD-18	Site Vegetation	1	3	2
PD-23	Reduced Energy and Emissions in Pavement Materials	2	3	0
PD-24	Contractor Warranty	3	3	0
PD-29	Construction Waste Management	2	3	0
PD-05	Educational Outreach	1	2	2
PD-10	Pedestrian Access	1	2	1
PD-11	Bicycle Access	1	2	2
PD-26	Construction Equipment Emission Reduction	5	2	0
PD-27	Construction Noise Mitigation	2	2	0
PD-25	Construction Environmental Training	4	1	1
<b>Total Points (<i>Project Development</i> module only)</b>			<b>130</b>	<b>55</b>

## Chapter 5: WSDOT Action Plan

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One of WSDOT's goals for the INVEST study was to implement recommendations to improve agency sustainability. FHWA is also interested in implementation, suggesting in its INVEST solicitation that studies identify how recommendations will be implemented and "quantify as best as possible costs and cost savings as well as benefits to environmental, economic, and social outcomes."

The Action Plan resulting from the INVEST study is broken into two parts:

- Implementation of Corridor Planning Recommendations
- Demand Management Guidelines 2013-15 Research Project

The INVEST project Leads met with the WSDOT STLT to discuss the study findings and recommendations, and to determine the next steps for INVEST at WSDOT. The STLT decided:

- Planning is the immediate and most effective opportunity for incorporating broader sustainability considerations into agency practices.
- WSDOT will use the INVEST approach as a "best practice" for corridor planning studies and include the recommendations which came out of the *System Planning* module in the updated planning study guidelines where applicable.
- INVEST will be used for study scoping.
- INVEST may also be used for retrospective evaluation of other completed studies.
- WSDOT will not use INVEST for project development at this time.

Practical design is an approach to engineering and system management that focuses on maximizing targeted transportation improvements for the lowest cost, resulting in full utilization of all available resources and the best return on investment. A broader sustainability framework in planning sets the stage for practical design by:

- Developing and articulating the full community, financial, environmental, modal, and technological context for recommendations.
- Defining the problem and documenting the elements that influence a decision in order to help avoid the need for revisiting those decisions during the design phase.
- Establishing a stakeholder network and reflecting their input in study recommendations.
- Identifying specifications to help scope projects and establishing performance expectations.

The STLT emphasized the importance of 1) ensuring that outcomes of a planning effort that considers larger societal goals are consistent with practical design; and 2) that engineers do not see practical design as an excuse for disregarding sustainability.

The INVEST study resulted in the following corridor planning recommendations:

- **Broader Outreach.** Based on context and budget, WSDOT should engage broader internal and external interests in corridor planning.
- **Stronger Connections to Other Plans.** Corridor plans should reference and integrate a broader set of internal and external plans.
- **Stronger Connections to Other Processes.** WSDOT should strengthen connections between corridor planning, programming, scoping, environmental review, and design.
- **Sustainability Goals.** Corridor plans should include goals and objectives that are quantifiable where appropriate, support sustainability principles, and harmonize the vision and goals of the community and WSDOT.
- **Data and Performance Measurement.** Corridor planners should consider a wider range of data to develop and evaluate planning recommendations.
- **Analysis.** WSDOT may need additional analytical tools to help planners evaluate tradeoffs between diverse goals.
- **Strategy Development.** Corridor plans should document how sustainability goals, objectives, and data informed the analysis, the identification of potential strategies, and the selection of final planning recommendations.
- **Planning Recommendations.** WSDOT should develop guidelines for prioritizing which strategies are better when, where, and for what purpose.

WSDOT plans to implement these recommendations through the planning guidelines update, as well as through the demand management research project.

### Implementation of Corridor Planning Recommendations

WSDOT is updating its guidelines for conducting corridor, subarea, and modal plans. The primary purposes of the updated “practical guidelines” are to ensure WSDOT planners are given:

- A practical approach to conducting studies
- Common definitions and a consistent strategic framework
- Information necessary to develop actionable recommendations
- Information necessary to develop recommendations that inform investment decisions

The action items presented in Exhibit 31 comprise the Action Plan for implementation of the corridor planning recommendations that came out of this study. June 2014 is the scheduled implementation completion date.

**Exhibit 31: Action Plan for Implementation of Corridor Planning Recommendations**

1. Multimodal Planning Division Director instructs planning guidelines update team to integrate an INVEST approach.	Done
2. INVEST <i>System Planning</i> Lead meets with guidelines team to review INVEST findings and recommendations.	Done
3. INVEST <i>System Planning</i> Lead and guidelines team develop a plan for integrating INVEST findings and recommendations.	Done
4. INVEST <i>System Planning</i> Lead presents INVEST findings and recommendations to Planning Managers.	February/March 2014
5. INVEST <i>System Planning</i> Lead participates in drafting and reviewing content of the guidelines as needed.	February - June 2014

Because this work is underway, there is no additional cost for integrating the INVEST planning recommendations into the updated planning guidelines.

One of the greatest benefits of integrating INVEST into WSDOT's updated planning guidelines will be to help planners view their work through a sustainability lens built upon a well developed and nationally vetted framework. This provides a methodology for planners to begin implementing WSDOT's sustainability values into their everyday work.

**Demand Management Guidelines 2013-15 Research Project**

The [Center for Urban Transportation Research](#) at the University of South Florida is under contract to perform a demand management research project entitled "Developing Guidelines for Incorporating Managing Demand into WSDOT Planning and Programming." The work commenced January 2014.

This project focuses on integrating demand management strategies into WSDOT planning and programming practices. WSDOT's *Moving Washington* and *Results WSDOT* policy directs agency employees to integrate demand management, operations, and strategic capacity strategies to achieve a reliable, responsible, and sustainable transportation system that supports the state's healthy economy, environment, and communities. To meet the intent of *Moving Washington* and *Results WSDOT*, this research project will help WSDOT's planning and programming evolve to evaluate the costs, benefits, and effectiveness of a more diverse set of transportation solutions, including those that require implementation by partnering jurisdictions. This will enable WSDOT to identify and implement the least cost, practical solutions to meet transportation challenges within limited resources.

Relevant WSDOT business practices include:

- Corridor planning studies, statewide transportation plans, modal plans, and quick response planning initiatives.
- Program development, including agency recommended investment packages and the development and prioritization of project lists.
- State Environmental Policy Act mitigation requests related to local development impacts.

- Growth Management Act comments related to local policy and regulatory actions to mitigate the traffic impacts of planned development.
- WSDOT construction project traffic mitigation.
- Award of grant funds and distribution of discretionary federal and state funds to external partners.

The Demand Management project will develop guidelines for each business area to help identify, implement, and measure the performance of appropriate strategies within different contexts. It will also identify existing research and data that support the guidelines, and include a research program to address gaps of information and data. Finally, the project will test the guidelines in one or more pilot projects.

The WSDOT Lead for the *INVEST System Planning* evaluation will also serve as the technical monitor for the Demand Management Guidelines Research project, which will facilitate integration of the INVEST results into this research.

WSDOT considers demand management to include the following strategies:

- Education, promotion and outreach to promote travel-efficient choices.
- Collaboration to engage employers and communities to reduce drive-alone trips.
- Coordinated land use and transportation to reduce overall travel demand and support transit, bicycle, and pedestrian travel.
- User fees to encourage efficient travel choices and shift demand to alternate modes, routes and times.

This research will result in performance measures and guidelines that support the implementation of INVEST SP-01 Integrated Planning: Land Use and Economic Development, SP-07 Multimodal Transportation and Public Health, and SP-09 Travel Demand Management. March 2015 is the scheduled completion date for the project.

The following action items shown in Exhibit 32 comprise the Action Plan for the Demand Management Study, which will be complete by March 2015. The full Problem Statement for the WSDOT Demand Management Research Program is available in Appendix J.

**Exhibit 32: Action Plan for Implementation of Demand Management Study & Findings**

1. <b>Documentation of Business Needs.</b> Use INVEST results as a basis for documenting how demand management could be better integrated in planning practices.	February 2014
2. <b>Synthesis of Current Materials, Research, and WSDOT Guidance.</b> Identify effective corridor level demand management performance measures.	April 2014
3. <b>Develop Guidelines.</b> Create guidelines for integrating demand management into corridor planning.	June 2014
4. <b>Beta Test the Guidelines.</b> Consider a corridor plan process as a potential pilot to test the guidelines.	October 2014
5. <b>Final Report.</b>	March 2015

Because this contract is underway, there is no additional cost for integrating the INVEST planning recommendations into the demand management guidelines.

These action steps will benefit Washington State by establishing support for WSDOT's business areas to evaluate the costs, benefits, and effectiveness of demand management strategies. This approach will reduce duplication of effort, improve consistency across the agency, and perhaps most importantly facilitate a more timely transition to business practices that integrate demand management. Ultimately, enabling WSDOT staff to consider demand management strategies objectively will empower them to collaborate more closely with transportation partners and deliver more optimal solutions to transportation issues, while supporting healthy economies, environments, and communities. These approaches will also ensure WSDOT uses its limited resources wisely to provide the most cost-effective transportation solutions.

## Appendices

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<b>A. FHWA Solicitation Letter .....</b>	<b><a href="#">A-1</a></b>
<b>B. WSDOT Letter of Interest to FHWA.....</b>	<b><a href="#">B-1</a></b>
<b>C. WSDOT Award Letter &amp; FHWA Implementation Information.....</b>	<b><a href="#">C-1</a></b>
<b>D. Study Scope, Schedule, &amp; Budget .....</b>	<b><a href="#">D-1</a></b>
Scope .....	<a href="#">D-1</a>
Task 1: Project Planning .....	<a href="#">D-1</a>
Task 2: Evaluation Preparation .....	<a href="#">D-1</a>
Task 3: <i>System Planning</i> Evaluation & Findings .....	<a href="#">D-1</a>
Task 4: <i>Project Development</i> Evaluation & Findings.....	<a href="#">D-2</a>
Task 5: Recommendations & Action Plan Development .....	<a href="#">D-2</a>
Task 6: Final Report.....	<a href="#">D-2</a>
Schedule .....	<a href="#">D-3</a>
Budget .....	<a href="#">D-4</a>
<b>E. Criteria Compendiums .....</b>	<b><a href="#">E-1</a></b>
<i>System Planning</i> .....	<a href="#">E-1</a>
<i>Project Development</i> .....	<a href="#">E-1</a>
<i>Operations &amp; Maintenance</i> .....	<a href="#">E-1</a>
<b>F. WSDOT Orientation Workshop for INVEST Study .....</b>	<b><a href="#">F-1</a></b>
Meeting Agenda .....	<a href="#">F-1</a>
Meeting Summary .....	<a href="#">F-2</a>
Attendees.....	<a href="#">F-2</a>
Introduction to INVEST .....	<a href="#">F-2</a>
Using INVEST at WSDOT .....	<a href="#">F-5</a>
Overview of Selected Corridor Plans .....	<a href="#">F-6</a>
SR 516.....	<a href="#">F-6</a>
SR 520.....	<a href="#">F-7</a>
US 2.....	<a href="#">F-7</a>
Overview of the SR 520 Program (Bridge & HOV Program) .....	<a href="#">F-8</a>
<b>G. <i>System Planning</i> Module Pre-Workshop Scoresheets.....</b>	<b><a href="#">G-1</a></b>
SP-01: Integrated Planning: Economic Development and Land Use .....	<a href="#">G-1</a>
SP-02: Integrated Planning: Natural Environment .....	<a href="#">G-13</a>
SP-03: Integrated Planning: Social .....	<a href="#">G-17</a>
SP-04: Integrated Planning: Bonus .....	<a href="#">G-21</a>
SP-05: Access and Affordability .....	<a href="#">G-21</a>
SP-06: Safety Planning .....	<a href="#">G-30</a>
SP-07: Multimodal Transportation and Public Health .....	<a href="#">G-41</a>
SP-08: Freight and Goods Movement.....	<a href="#">G-44</a>
SP-09: Travel Demand Management .....	<a href="#">G-48</a>
SP-10: Air Quality .....	<a href="#">G-54</a>

SP-11: Energy and Fuels.....	<a href="#">G-56</a>
SP-12: Financial Sustainability .....	<a href="#">G-61</a>
SP-13: Analysis Methods.....	<a href="#">G-64</a>
SP-14: Transportation Systems Management and Operations .....	<a href="#">G-68</a>
SP-15: Linking Asset Management and Planning.....	<a href="#">G-71</a>
SP-16: Infrastructure Resiliency.....	<a href="#">G-75</a>
SP-17: Linking Planning and NEPA .....	<a href="#">G-81</a>
<b>H. System Planning Module Scoring Workshop Summary.....</b>	<b><a href="#">H-1</a></b>
Meeting Agenda .....	<a href="#">H-1</a>
Scoring Workshop Notes.....	<a href="#">H-2</a>
SP-01: Integrated Planning: Economic Development and Land Use .....	<a href="#">H-2</a>
SP-02: Integrated Planning: Natural Environment .....	<a href="#">H-4</a>
SP-03: Integrated Planning: Social .....	<a href="#">H-5</a>
SP-04: Integrated Planning: Bonus .....	<a href="#">H-6</a>
SP-05: Access and Affordability .....	<a href="#">H-6</a>
SP-06: Safety Planning .....	<a href="#">H-7</a>
SP-07: Multimodal Transportation and Public Health .....	<a href="#">H-8</a>
SP-08: Freight and Goods Movement.....	<a href="#">H-9</a>
SP-09: Travel Demand Management.....	<a href="#">H-10</a>
SP-10: Air Quality .....	<a href="#">H-11</a>
SP-11: Energy and Fuels.....	<a href="#">H-12</a>
SP-12: Financial Sustainability .....	<a href="#">H-13</a>
SP-13: Analysis Methods.....	<a href="#">H-14</a>
SP-14: Transportation Systems Management and Operations .....	<a href="#">H-15</a>
SP-15: Linking Asset Management and Planning.....	<a href="#">H-16</a>
SP-16: Infrastructure Resiliency.....	<a href="#">H-16</a>
SP-17: Linking Planning and NEPA .....	<a href="#">H-18</a>
<b>I. Project Development Module Scoring Summary.....</b>	<b><a href="#">I-1</a></b>
<b>J. WSDOT Demand Management Research Program .....</b>	<b><a href="#">J-1</a></b>
<b>K. WSDOT INVEST Study Folios .....</b>	<b><a href="#">K-1</a></b>
WSDOT INVEST Study Introductory Folio.....	<a href="#">K-1</a>
WSDOT INVEST Study Final Folio.....	<a href="#">K-2</a>
<b>L. Parties Involved, Roles, &amp; Responsibilities .....</b>	<b><a href="#">L-1</a></b>
FHWA Staff .....	<a href="#">L-1</a>
WSDOT Sustainable Transportation Leadership Team Oversight.....	<a href="#">L-1</a>
WSDOT Project Leads.....	<a href="#">L-1</a>
Scoring Team – <i>System Planning</i> (WSDOT) .....	<a href="#">L-2</a>
Scoring Team – <i>Project Development</i> (WSDOT & Consultants) .....	<a href="#">L-2</a>
WSDOT Subject Matter Resources – <i>System Planning</i> .....	<a href="#">L-2</a>
External Subject Matter Resources – <i>System Planning</i> .....	<a href="#">L-3</a>
Report Authors & Contributors .....	<a href="#">L-3</a>

## Appendix A: FHWA Solicitation Letter

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### Solicitation for INVEST Implementation Projects

The Federal Highway Administration (FHWA) is seeking to partner with State departments of transportation (DOTs), metropolitan planning organizations (MPOs), Federal lands, and local governments on utilizing INVEST 1.0, FHWA's voluntary self-assessment tool, to assess and enhance the sustainability of their projects and programs.

### Background

INVEST (Infrastructure Voluntary Evaluation Sustainability Tool) is a practical, web-based, collection of voluntary best practices and criteria designed to help transportation agencies integrate sustainable practices into their projects, plans, and programs. INVEST helps transportation agencies improve investment decisions while considering limited resources by addressing the sustainability triple bottom line -- enhancing economic, social, and environmental outcomes.

INVEST 1.0 is the result of a collaborative, multi-phased effort. FHWA developed the contents with input from and in cooperation with state and local transportation agency officials and professional organizations such as the AASHTO, AMPO and ASCE. The tool was piloted across the country in 2011 and improved to reflect lessons learned. FHWA formally launched INVEST 1.0 in October 2012. FHWA is now partnering with agencies across the country to utilize INVEST 1.0 as part of their efforts to improve the sustainability of their programs and projects.

By offering transportation agencies a collection of best practices, INVEST serves two purposes. First, it enables transportation agencies to gauge their performance in adopting sustainability practices. Second, and more importantly, it helps agencies identify workable solutions that allow them to further incorporate sustainability into pending planning or project decisions, or to identify potential changes to business processes. Many of the best practices presented by INVEST save money as well as improve sustainability. For example, items such as quality construction, designing pavement for long life, life cycle concepts, recycled materials, and improved safety can all show overall lower cost as well as benefits to society.

### Description of Opportunity

FHWA's ultimate goal is to improve the sustainability triple bottom line – social, economic, and environmental outcomes – of highway programs and projects. To further this goal, FHWA is seeking implementation of INVEST 1.0 at DOTs, MPOs, Federal lands, and local governments to assess and improve sustainability outcomes. FHWA seeks to establish a broader collection of case studies and best practices in evaluating and improving highway sustainability. These examples can be shared with other agencies interested in how sustainability can be integrated into their projects and programs. Finally, FHWA seeks the continuous improvement of the INVEST tool and requests feedback on further enhancement of the tool. FHWA would like to work in partnership with a set of transportation agencies on gathering lessons learned from implementing INVEST 1.0. A limited pool of funding is available to assist in these activities. In addition to the agencies that receive implementation funding, it is anticipated that many agencies will choose to implement INVEST without need for additional funding, as the tool is free and easy to use.

## Appendix A: FHWA Solicitation Letter

**Eligible Activities**

State DOTs, MPOs, and other transportation agencies may take a variety of approaches. Eligible approaches include:

- Utilizing INVEST to assess and improve the sustainability of specific transportation projects under development, or learn from projects already completed.
- Utilizing INVEST to assess and improve the sustainability of a set of transportation projects.
- Utilizing INVEST to conduct a programmatic evaluation of agency planning and/or construction practices and opportunities for sustainability improvements.
- Utilizing INVEST to review operations and maintenance programs at the district or statewide level.
- Utilizing INVEST to inform the update of the MPO's long range transportation plan.
- Utilizing INVEST to improve the statewide transportation planning process.

Funding may be used for staff or consultant time to use the tool, to conduct additional analyses, to develop reports on lessons learned, to identify changes that can be made to projects or processes, to develop cost estimates for improved practices, to estimate benefits of improved practices, and to develop and evaluate action plans to implement these changes.

Assessing the sustainability of current action is only the first step of the process. Making changes to improve sustainability is the desired result. As such, FHWA is interested in projects that utilize INVEST to assess the sustainability of current practice, identify opportunities for improvement, and implement improvements. Projects should also quantify as best as possible costs and cost savings as well as benefits to environmental, economic, and social outcomes.

**Final Product**

Each INVEST implementation project should result in a final report that details the work performed, parties involved, roles and responsibilities, issues encountered, lessons learned, sustainability improvements identified, sustainability improvements implemented, analyses of costs and benefits of implementing particular sustainability best practices, recommendations for future action, and recommendations on improving INVEST and adding to the state of the practice. The final report should be in a form that is sharable with other agencies, and may be posted to the FHWA website.

**Funding**

Multiple awards of approximately \$25,000 to \$150,000 are anticipated, though projects may be larger or smaller depending on the context, scope, and approach. By Federal statute, a 100% non-Federal match (50-50 cost share) is required. In-kind contributions such as staffing can be counted towards the match requirement.

**Process**

Agencies interested in the funding opportunity are asked to submit a four to five page letter of interest to the respective FHWA division office via email. Division offices will review and send letters forward to headquarters.

## Appendix A: FHWA Solicitation Letter

Projects will be selected based on the following criteria:

- Demonstrated interest and support. For instance, support from senior management, past work in this area, support from local elected officials, public support, etc.
- Impact on decision making. How the results of the INVEST evaluation will lead to implementation of sustainability best practices. How INVEST results will influence pending planning or project decisions.
- Availability of local match and necessary staffing and resources.
- Willingness and plans to provide case studies and lessons learned to share with others as well as providing feedback to improve INVEST 1.0.
- Diversity of project types. INVEST has three modules: *System Planning*, *Project Development*, and *Operations and Maintenance*. In addition, the *Project Development* module has six different scorecards based on project type (basic and extended) and location (urban and rural), as well as separate scorecards for paving projects and a custom scorecard. FHWA would like to see examples of INVEST implementation for a broad range of project types.

After selection, the recipient will participate in a conference call with FHWA to discuss the project. FHWA will provide feedback on the draft work plan, the goals of the project and any additional assistance/resources that FHWA may have available. A revised work plan should be submitted and approved by FHWA before commencing work.

Submitting a letter of interest is not a guarantee of funding.

In addition to the agencies that receive implementation funding, it is anticipated that many agencies will choose to implement INVEST without need for additional funding, as the tool is free and easy to use.

### Timeline

Letters of interest will be received and funding allocated on a rolling basis and as funding is available. FHWA is targeting the month of March to fund several projects; letters of interest received by February 15 will be considered for the round of funding targeted for March. Letters of interest are however welcome after that date as well. There is not a set timeframe for project completion. Some projects may be quick turn-around, with timelines as short as one month, while others may take 18 to 24 months because of the stage of the plan update cycle or the project development process.

### Required Contents for Letters of Interest

The letter of interest must be no longer than five pages and must include the following elements:

- Description of agency interest in using INVEST, goals for sustainability, and management support for the effort.
- Description of the proposed effort. This section should include the purpose and a detailed description of the effort to be funded. It should explain plans to conduct the INVEST evaluation and use the results. It should also include the phases of work, budget, work products, and timing. If contractor assistance is planned to support the effort, that support and estimated level of effort should be included.
- Impact on decision making. This section should describe how the results of the INVEST evaluation will lead to implementation of sustainability best practices.

## Appendix A: FHWA Solicitation Letter

- Collaboration. This section should describe plans to provide feedback for improving the tool, case studies, and, lessons learned.
- Description of dedicated staffing/resources. This section should fully describe the funding and assets that will be dedicated to the project, and demonstrate how the non-Federal match requirement will be met.

**Contacts**

- Tina Hodges, Office of Natural Environment, 202-366-4287, Tina.Hodges@dot.gov
- Rob Hyman, Office of Natural Environment, 202-366-5843, Robert.Hyman@dot.gov

**Resources**

Please visit <https://www.sustainablehighways.org/> to learn more about INVEST 1.0, watch a recording of the launch, browse the criteria, and view videos and case studies of State DOTs and MPOs that have used INVEST.

Please visit <http://www.sustainablehighways.dot.gov/> to learn about FHWA's Sustainable Highways Initiative, hear news of FHWA sustainability activities, and view sustainability-related publications and resources.

An online demo will be available via webinar on Friday, February 1 at 2pm EST. A recording of the demo will be posted on the website shortly thereafter. Information on how to connect to the webinar will soon be available at <http://www.sustainablehighways.dot.gov/>.

## Appendix B: WSDOT Letter of Interest to FHWA

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**Washington State  
Department of Transportation**  
Paula J. Hammond, P.E.  
Secretary of Transportation

Transportation Building  
310 Maple Park Avenue SE  
Olympia, WA 98504-7300  
360-705-7000  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

February 15, 2013

Daniel Mathis, Division Administrator  
Federal Highway Administration  
711 S Capitol Way Ste 501  
Olympia, WA 98501-1284

Dear Mr. Mathis:

In response to FHWA's December 12, 2012, solicitation for INVEST implementation projects, WSDOT proposes to use INVEST to perform an evaluation of several recently completed corridor studies and a project development process. These evaluations will help us:

- Determine current performance.
- Identify programmatic barriers to sustainability.
- Develop recommendations for future planning and project development efforts.
- Apply recommendations to one or more current planning processes or projects.
- Support collaboration with external partners to further sustainability in the transportation system.

WSDOT's goal is to build internal capacity with INVEST to improve integration of sustainability into our agency business practices, with a focus on demand management and public health.

#### **WSDOT's Commitment to Sustainability**

WSDOT is committed to sustainability. In August 2012, Secretary of Transportation Paula Hammond issued an executive order establishing the expectation that all WSDOT employees "will conduct business in a way that is reliable, responsible, and sustainable." WSDOT is a national leader for addressing greenhouse gas emissions from projects, incorporating sustainability into agency business and adapting infrastructure to climate changes. Most recently, the Western Clean Cities Coalition awarded WSDOT the 2012 *Alternative Fuels Sustainable Commitment Award*.

#### **Institutional Support for the INVEST Pilot**

The executive order established a Sustainable Transportation Leadership Team, which includes the three WSDOT divisions sponsoring this project: Strategic Planning, Environmental Services, and Public Transportation. Staff from these divisions will collaborate to conduct the assessments, development recommendations, and prepare a shared action plan to implement the results.

#### **Implementing Sustainability at WSDOT**

[Moving Washington](#) is WSDOT's framework for making transparent, cost-effective decisions that keep people and goods moving and support a healthy economy, environment and communities (the triple bottom line of sustainability). The heart of Moving Washington is maintaining and preserving the safe and long-lasting performance of existing infrastructure, facilities, and services.



Additionally, Moving Washington integrates three essential transportation strategies: operating efficiently, managing demand, and adding capacity strategically.

#### **Proposed Use of INVEST**

WSDOT effectively integrates strategic capacity and operations strategies, but demand management is a newer focus with new challenges. WSDOT is funding a research project in 2013-15 to advance the integration of demand management strategies into WSDOT business practices. An INVEST assessment will help prepare us for that research project by using a nationally vetted framework to assess our baseline business practices and develop initial recommendations for improvement. The INVEST results will also be implemented through the research project: which will result in guidelines for integrating demand management in WSDOT's planning and programming and their use in at least one planning effort selected as a pilot.

In addition to better integrating demand management, this pilot will provide timely support for forthcoming efforts by WSDOT to incorporate a public health perspective into its transportation decision-making. A public health perspective will help WSDOT better evaluate transportation choices, active transportation options, and exposure to air pollution during transportation planning and project development. Considering the health implications of transportation policy is also a topic of current interest in the state legislature.

WSDOT proposes using both the INVEST system planning module (led by WSDOT's Community Transportation Planning Office and the Public Transportation Division) and the INVEST project development module (led by the Environmental Services Division).

WSDOT plans to:

- Select three recently completed corridor studies for evaluation in the Central Puget Sound area that represent a variety of contexts (e.g. land use, commute patterns, availability of transit). The Central Puget Sound was the subject of an earlier INVEST metropolitan transportation plan pilot completed by the Puget Sound Regional Council).
- Evaluate the SR 520 Bridge Replacement and HOV Program project. This project will enhance safety by replacing the aging floating bridge and will keep the region moving with vital transit and roadway improvements through the corridor.

WSDOT will use the results of these assessments to identify promising opportunities for improving sustainability and removing barriers to its achievement.

#### **Approach**

Our initial project concept has the lead staff conducting the planning and project development assessments in parallel processes, starting in early summer 2013 and concluding by December 2013. Each process will include the following steps:

- Step 1: The lead staff will select the corridor studies to evaluate.
- Step 2: The lead staff will select a scorecard (project development module) and review the criteria (both modules) to determine which are relevant.
- Step 3: The lead staff will assemble a cross-disciplinary scoring team consisting of WSDOT staff involved in the planning or project development process as well as subject

## Appendix B: WSDOT Letter of Interest to FHWA

matter experts. WSDOT will also invite staff of the Puget Sound Regional Council involved in the previous INVEST pilot to participate in the scoring team.

- Step 4: The scoring team will collect and analyze appropriate information for each criterion.
- Step 5: The lead staff will host a scoring workshop to score the plan or project based on the INVEST criteria, determine where the agency has the greatest opportunities to improve, and provide feedback to FHWA on the INVEST tool.
- Step 6: The lead staff will review the results of the workshop and develop recommendations and potential actions for improvements in agency policy or business practices that would help WSDOT work toward achieving sustainability.
- Step 7: The lead staff will present the recommendations and list of potential actions to WSDOT's Sustainable Transportation Leadership Team. The Leadership Team will select the most promising actions to develop in a more detailed action plan.
- Step 8: The lead staff will collaborate on a more detailed action plan for implementing recommendations including an evaluation of implementation costs and benefits.
- Step 9: The lead staff will collaborate on a final report. The final report will include:
- A description of the work performed.
  - Documentation of the parties involved and their roles and responsibilities.
  - Documentation of the scoring process for future INVEST assessments.
  - Documentation of the issues encountered and lessons learned.
  - Description of sustainability improvements identified and implemented.
  - Evaluation of the costs and benefits of selected improvements.
  - Recommendations on improving INVEST and using the INVEST tool.
- Step 10: The lead staff will also provide a final briefing to WSDOT's Sustainable Transportation Leadership Team, WSDOT's Secretary of Transportation, and to FHWA if interested.
- Step 11: The results of the INVEST pilot will be applied and tested in WSDOT's 2013-15 demand management guidelines research project.

#### Work Products

- A folio describing the project and approach.
- A final report.
- A detailed action plan for implementing recommendations.
- WSDOT Sustainable Transportation Leadership Team and Secretary's Office briefing.
- FHWA briefing (if desired).

#### Timing

The project will begin July 1, 2013, and the INVEST portion of the project will be complete by December 31, 2013. The application of the INVEST results through WSDOT's research project will be complete by June 30, 2015.

#### Use of Results and Impacts on Decision-Making.

WSDOT will use the results of the INVEST evaluation as follows:

- To identify potential improvements to WSDOT's planning and project development, particularly emphasizing the integration of demand management and public health guidelines and procedures into agency decision-making.
- INVEST recommendations will be developed further in a WSDOT research project funded in 2013-15. The research project will result in guidelines for better incorporating demand

## Appendix B: WSDOT Letter of Interest to FHWA

state transportation corridors. Prior to working at WSDOT, Karena managed an economic development grant program at a regional council of governments and served as a city councilor.

Demand Management Lead:

*Kathy Leotta, Demand Management Data and Evaluation Manager, Public Transportation.*

Kathy has worked as a transportation planner/researcher for more than 16 years in both the public and private sectors. She has worked on a wide range of transportation planning, transportation demand management, climate change, and transportation research projects. For the past four years, Kathy has worked at WSDOT in the Public Transportation Division as Demand Management Data and Evaluation Manager, overseeing survey data collection, analysis, and evaluation for our statewide Commute Trip Reduction program.

Environment and Health Lead:

*Tim Sexton, Air Quality, Acoustics, and Energy Policy Manager, Environmental Services Office.*

Tim Sexton has degrees in Anthropology, International Business, Urban Planning, and Environmental Health. He has been working in the air quality field since 2004 and has been with WSDOT since 2006. Tim is a member of TRB Air Quality standing committee (ADC20) and chairs the AASHTO Air Quality, Energy, and Climate Change subcommittee.

Scoring Team Lead (System Planning):

*Richard Warren, Corridor Planning Manager, Urban Planning Office.*

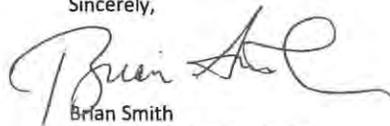
As Corridor Planning Manager for the Urban Planning Office in the Strategic Planning and Programming Division, Richard oversees development of corridor studies that assess needs and determine multi-modal recommendations utilizing sustainability and Moving Washington practices.

Elizabeth Robbins, Manager of the Community Transportation Planning Office, will oversee the INVEST pilot along with the following members of the Sustainable Transportation Leadership Team:

- Brian Smith, Strategic Planning Director
- Megan White, Environmental Services Director
- Brian Lagerberg, Director of Public Transportation

Thank you for your consideration. Please contact my staff lead, Karena Houser, 360.705.7876, [houserk@wsdot.wa.gov](mailto:houserk@wsdot.wa.gov) if you have any questions, or require further information. Please note we believe this project is scalable depending on the level of resources available and we would invite the opportunity to discuss any suggestions you may have to improve the pilot.

Sincerely,



Brian Smith  
Strategic Planning Director

BS:kh

cc: Tina Hodges, FHWA Office of Natural Environment; Rob Hyman, FHWA Office of Natural Environment; Megan White, Environmental Services Director; Brian Lagerberg, Director of Public Transportation

## Appendix C: WSDOT Award Letter & FHWA Implementation Information

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U.S. Department  
of Transportation  
**Federal Highway  
Administration**

# Memorandum

**SENT VIA ELECTRONIC MAIL**

**HEPN-0313-4L3E-0013**

Subject: **ACTION:** Authority to Obligate Funds  
*/S/Original signed by C. Michael Culp for*

Date: March 26, 2013

From: April Marchese  
Director, Office of Natural Environment

In Reply Refer To:  
HEPN-30

To: Mr. Daniel Mathis  
Division Administrator (HDA-WA)  
Olympia, WA

This memorandum allocates \$50,000 of Surface Transportation Environment and Planning Cooperative Research Program funds to the Washington Division, in collaboration with the Washington Department of Transportation to implement INVEST, FHWA's sustainability self-evaluation tool. The project will assess and improve sustainability practices at Washington DOT and will provide case studies and lessons learned to FHWA on INVEST that can be shared nationally. The INVEST implementation is being led by the Office of Planning, Environment, and Realty in conjunction with the Division offices.

Washington DOT will use the INVEST *System Planning* module to evaluate three recently completed corridor studies in the Puget Sound area and use the Project Development module to evaluate the SR 520 Bridge Replacement and HOV Program project. Washington DOT will document lessons learned and conduct activities as described in the letters of interest dated February 15, 2013.

By copy of this memorandum, we are requesting that the Office of the Chief Financial Officer, Finance Division (HCFM-30), make \$50,000 available for obligation by the Washington Department of Transportation. These funds should be obligated through the Fiscal Management Information System (FMIS) using FHWA program code 4L3E and paid through the State's current billing. The State's obligation limitation will be increased by the amount of this allocation. The Federal share of these activities is 50 percent. In-kind contributions may be used as a match as long as the requirements 49 CFR 18.24 are met. The Division must obligate these funds by August 30, 2013.



**Washington State  
Department of Transportation**

## Appendix C: WSDOT Award Letter &amp; FHWA Implementation Information

<b>Amount</b>	<b>Program Code</b>	<b>Fund Year</b>
\$50,000	4L3E	2012

Tina Hodges in the Office of Natural Environment (HEPN) is the HQ contact for this overall effort and can be reached at (202) 366-4287. Please send two copies of the executed agreement to her, along with one copy to Deborah Johnson (HEPH-40). This allocation memo has been discussed with Sharon Love of your office.

## Appendix D: Study Scope, Schedule, & Budget

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### Scope

This project will focus on evaluation of WSDOT business practices for corridor planning and project development with regard to sustainability best practices. Recently completed corridor planning studies and project(s) that are still in the project development phase will be evaluated. The outcomes will be:

- Feedback to FHWA on improvement of the INVEST tool
- Improvement of WSDOT sustainability practices in the areas of planning studies and project development
- Sustainability evaluation in the form of INVEST scores for the studies and project(s)

### Task One: Project Planning

Select studies and project(s) to be evaluated, select evaluation criteria, identify internal and external Resources, assemble a scoring team, host a site visit for FHWA staff, hold a kick-off meeting for the study team, complete administrative tasks, obtain approval of project approach from the STLT, and prepare a study fact sheet or folio.

Deliverables:

- Finalized list of studies and project(s) to be evaluated
- Finalized set of relevant evaluation criteria from the *System Planning* and *Project Development* modules selected for the evaluations
- Finalized list of internal and external Resources, and invitations to participate
- Assignments of selected evaluation criteria to individual Scorers for evaluation preparation and pre-scoring
- Finalized composition of scoring team consisting of cross-disciplinary subject matter experts from WSDOT and Puget Sound Regional Council
- Site visit for FHWA staff
- Kick-off meeting for study team and meeting summary
- Finalized administration plan, work plan, and timeline
- Folio describing project approach

### Task Two: Evaluation Preparation

Perform background research to prepare for evaluation of corridor planning studies and project(s).

Deliverables:

- Collection of informational material as needed for evaluation
- Completed set of interviews and research notes for each criterion
- Completed set of pre-workshop scoresheets documenting collection and analysis for each selected criterion

### Task Three: System Planning Evaluation & Findings

Hold a scoring workshop to score the corridor planning studies based on the INVEST *System Planning* module, determine where WSDOT has the greatest opportunities to improve, and agree on feedback to FHWA on the INVEST tool.

## Appendix D: Study Scope, Schedule, &amp; Budget

## Deliverables:

- Scoring workshop and summary
- Draft list of improvement suggestions which might help INVEST tool to work better and/or be more appropriate to planning studies
- Draft list of potential actions for improvements in agency policy or business practices that can help WSDOT work toward achieving sustainability in the area of corridor planning studies
- INVEST sustainability scores

**Task Four: Project Development Evaluation & Findings**

Hold a scoring workshop to score the selected project(s) based on the INVEST *Project Development* criteria, determine where WSDOT has the greatest opportunities to improve, and agree on feedback to FHWA on the INVEST tool.

## Deliverables:

- Scoring workshop and summary
- Draft list of improvement suggestions which might help INVEST tool to work better and/or be more appropriate to WSDOT projects
- Draft list of potential actions for improvements in agency policy or business practices that can help WSDOT work toward achieving sustainability in the area of project development
- INVEST sustainability score(s)

**Task Five: Recommendations & Action Plan Development**

Present a draft set of recommendations and potential actions to WSDOT's Sustainable Transportation Leadership Team (STLT). Develop an Action Plan with cost estimates and cost savings, as well as benefits to environmental, economic, and social outcomes as a result of implementation.

## Deliverables:

- Draft Action Plan
- Presentation to STLT
- Finalized Action Plan

**Task Six: Final Report**

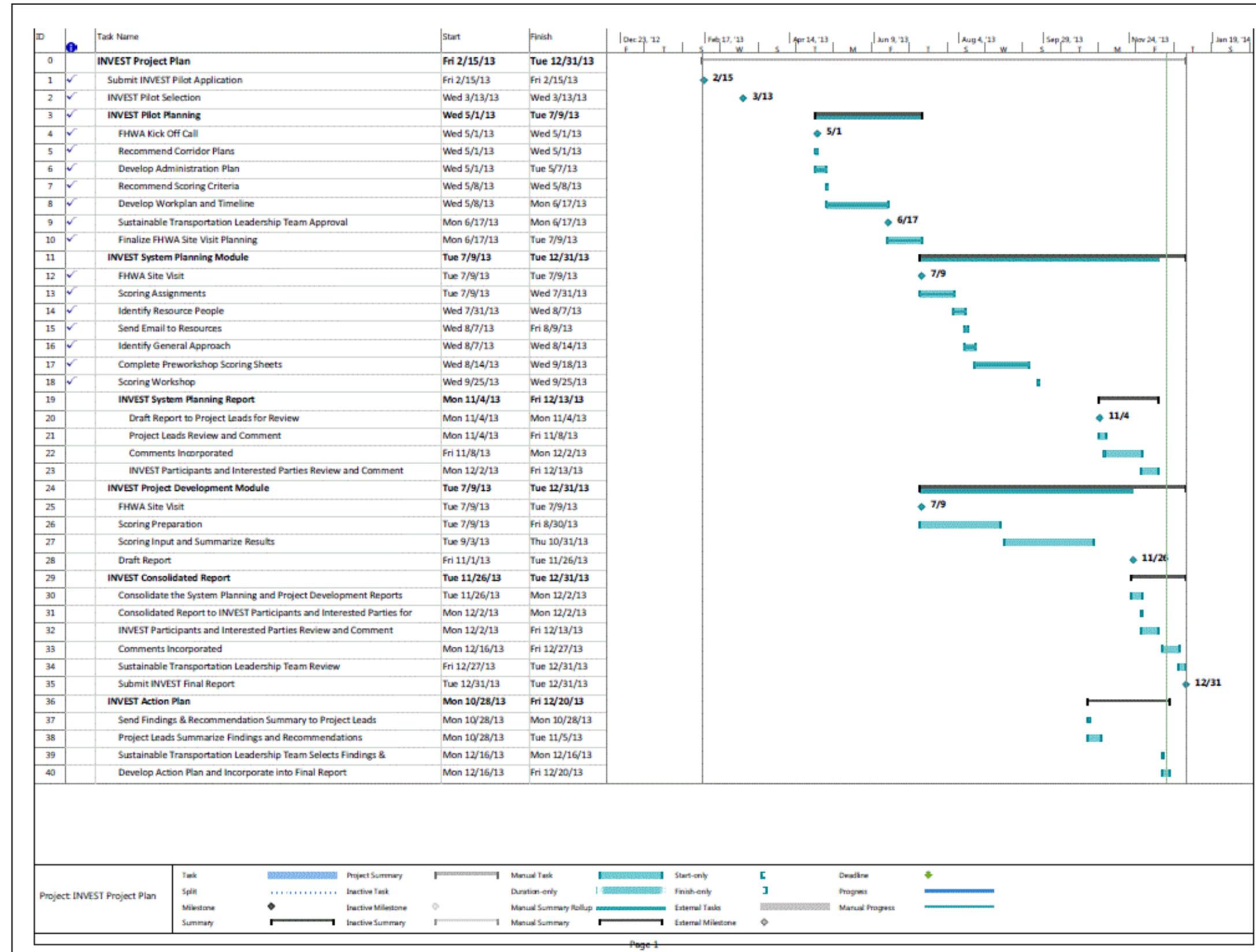
Develop a draft report, send to reviewers, and finalize.

## Deliverables:

- Submit final report to FHWA and post on WSDOT website
- Folio highlighting study Findings and Action Plan posted on WSDOT website

Appendix D: Study Scope, Schedule, & Budget

Schedule



## Appendix D: Study Scope, Schedule, &amp; Budget

**Budget****WSDOT INVEST Study**

<b>Project Role</b>	<b>FTE<sup>1</sup></b>	<b>Duration</b>	<b>Federal Share</b>	<b>State Share</b>	<b>Total</b>
Project Manager	0.33	07/13 - 12/13	\$14,000	\$4,000	\$18,000
Demand Management Lead	0.33	07/13 - 12/13	\$9,000	\$9,000	\$18,000
Environmental/Health Lead	0.33	07/13 - 12/13	\$9,000	\$9,000	\$18,000
Scoring Team (Includes Lead and 2 Staff)	0.33	07/13 - 12/13	\$17,000	\$3,000	\$20,000
Travel for Workshops	N/A	07/13 - 12/13	\$1,000	\$0	\$1,000
State Portion of WSDOT 2013-15 Research: Demand Management Integration Guidelines	N/A	07/13 - 06/15	\$0	\$25,000	\$25,000
<b>TOTAL</b>			<b>\$50,000</b>	<b>\$50,000</b>	<b>\$100,000</b>

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<sup>1</sup> Full time equivalent employment position.

## Appendix E: Criteria Compendiums

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Criteria Compendiums for all three of the INVEST modules can be found at: [INVEST Sustainable Highways Self-Evaluation Tool](#) (pdf 4.1 mb)

Beginning page numbers for the three modules are:

- *System Planning*, pdf p 11
- *Project Development*, pdf p 58
- *Operations & Maintenance*, pdf p 123

## Appendix F: WSDOT Orientation Workshop for INVEST Study

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### Agenda



## AGENDA

### INVEST Site Visit

**Tuesday, July 9, 2013, 9:00 a.m. - 12:00 p.m.**  
**Goldsmith Conference Room 350, Seattle**

- |       |  |         |
|-------|--|---------|
| 9:00  | Welcome and Introductions  | (WSDOT) |
| 9:10  | Introduction to INVEST   | (FHWA)  |
|       | <ul style="list-style-type: none"><li>• Overview</li><li>• Tips on How to Use INVEST</li><li>• Examples from Other States</li><li>• Questions and Discussion</li></ul>   |         |
| 10:10 | Using INVEST at WSDOT  | (WSDOT) |
|       | <ul style="list-style-type: none"><li>• Approach and Workplan</li><li>• Roles and Responsibilities</li><li>• Communication</li><li>• Discussion and Feedback</li></ul>   |         |
| 11:15 | Overview of Selected Corridor Plans and Project  | (WSDOT) |
|       | <ul style="list-style-type: none"><li>• SR 516 Corridor Planning Study from SR 167 to SR 169</li><li>• US 2: Everett Port/Naval Station to SR 9 Corridor Planning Study</li><li>• SR 520 Multimodal Corridor Planning Study</li><li>• SR 520 Bridge &amp; HOV Construction Project</li></ul> |         |
| 11:55 | Follow up  |         |
| 12:00 | Adjourn  |         |
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## Meeting Summary

**July 9, 2013, WSDOT Urban Planning Office, Goldsmith Building, Seattle**

### Attendees

Leah Bolotin, Noel Brady, Keith Cotton, Mike Culp, Brigid Dean, Karena Houser, Carol Hunter, Brian Lagerberg, Kathy Leotta, Kathy Lindquist, Judy Lorenzo, Sharon Love, Leni Oman, Elizabeth Robbins, Stephanie Rossi, Tim Sexton, Brian Smith, Seth Stark, Stacy Trussler, Richard Warren, Tom Washington, Megan White, Shuming Yan

### Introduction to INVEST - Mike Culp

INVEST was launched in October 2012 as part of the Sustainable Highways Initiative, a working group within the Federal Highway Administration. INVEST was created to fill a gap in the sustainability profession for transportation projects. Initially, they tried to define sustainability, but abandoned that in favor of looking at concrete things people do and linking them back to the principles of sustainability.

The original idea was to create a LEED<sup>2</sup>-like rating system for transportation projects, but the project evolved into a self-evaluation. A key concept is that the tool goes above and beyond compliance. If you just comply with regulations, you get no INVEST credit. This does produce some “zero anxiety” because people do not like to give themselves scores of zero.

Three characteristics of the tool include:

- FHWA does not look at the info you put into INVEST
- The INVEST criteria relate to things people actually do
- INVEST is available at no cost to you

INVEST is organized into three modules: *System Planning*, *Project Development*, and *Operations and Maintenance*.

Q: What is the outcome INVEST is trying to achieve?

A: Sustainability is the outcome. In INVEST, the criteria define the sustainable outcome.

The *System Planning* component of INVEST was crafted to address broad planning efforts. FHWA is interested in WSDOT’s experience using INVEST to evaluate corridor planning.

Q: What does the *Project Development* component include?

A: Everything from environmental review to open for traffic. *Operations and Maintenance* is what you do with the infrastructure after it’s built.

The INVEST Web Site includes tabs to Learn, Browse and Score. After the initial pilot, FHWA added “My Workspace” for folks doing multiple projects or documenting multiple scores. You can use the

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<sup>2</sup> [Leadership in Energy & Environmental Design](#). LEED is a green building tool that addresses the entire building life cycle recognizing best-in-class building strategies.

## Appendix F: WSDOT Orientation Workshop for INVEST Study

collaborate function to enter user accounts for people you want to share your INVEST scoring with. They can then open your INVEST account and add to the files or change the content.

Each criterion is associated with a Goal and a Linkage to Sustainability. The Linkage to Sustainability indicates which of the three sustainability bottom lines is primarily addressed (social, economic, or environment). You enter a score for the criterion in the bar on the right hand side of the web page. Sometimes there are nested questions based on your response to the first question. You can also download all of the criteria in a package (compendium).

The *System Planning* Scorecard adds each criterion's scores. INVEST is calibrated to make it a little hard to get a high score. In the pilots, everyone got platinum on *System Planning*. Perhaps this is because there is more interpretation involved in *System Planning* compared to the other components and also the *System Planning* criteria are more process-oriented. As a result of the pilot, FHWA altered the achievement levels to require additional effort to achieve higher scores. One of the things FHWA is looking to get from pilot implementation is advice on where to set achievement levels. The achievement levels are less developed for *System Planning* than for *Project Development*.

Q: Is there a point where you step from *System Planning* to *Project Development*? In real life this seems to be something of a gray area.

A: Corridor planning is part of the *System Planning* component. You have not initiated the environmental review yet. Once you initiate the environmental review, then *Project Development* starts. The criteria can help you see where you are in the process. Although the transition is a gray area, some of it is defined by what you want to get out of it. For example, linking planning and NEPA is in the *System Planning* module but could also be *Project Development* depending on the outcome you want to achieve.

Q: Is there a criterion on the *Project Development* side that says to look back at what planning did to make sure you are bringing forward information?

A: The short answer is no; FHWA did not include a connection to planning in the *Project Development* component because a lot of the environmental issues tackled in planning are addressed with specific criteria instead.

FHWA should think about including the link between planning and project development in INVEST, because it is too easy to move forward without looking at the planning. WSDOT should consider whether we have set up a hand-off from planning to *Project Development* in this INVEST study.

FHWA loves feedback—they went into this project knowing they did not know all the answers. Many things in the tool now are based on feedback from previous pilots.

The group discussed *Project Development* criterion PD-06 - tracking environmental commitments. This criterion always comes up at the construction end of the process, but it actually starts at the very beginning if you look at it from the permitting process perspective. It is not sufficient if you start over at the *Project Development* phase or just look at commitments without looking back at larger scale mitigation set up at the planning level. The timing of addressing environmental commitments is a question; maybe this work should precede NEPA. Environmental commitments might really be better addressed at the planning level.

## Appendix F: WSDOT Orientation Workshop for INVEST Study

In 2010, FHWA released a beta version of INVEST. WSDOT commented on the beta version, as did many others (AASHTO submitted a 48 page letter). FHWA entered each comment into a tracking database and addressed each one. The initial pilot test was to get structured written feedback targeted to specific items.

Pilot sites from the first round varied based by module. There were fewer *Operations and Maintenance* pilots. PSRC was a first round pilot. An issue the pilot identified with *Project Development* was that there was a big list of criteria for every project. Based on that feedback, FHWA went through the criteria and came up with unique subsets for what would make sense to evaluate in different contexts. This is important because opportunities to incorporate some criteria are not equal across all projects due to scope. You can use the “custom” feature to make your own criteria subset.

Several [pilots](#) are highlighted on the INVEST web site. The pilot implementation sites right now are PSRC, WSDOT, TriMet (Portland), Western Federal Lands, and the Ohio DOT. TriMet will use INVEST on a transit project. Western Federal Lands has done a lot of INVEST pilots (including one on Mt. Rainier). The Ohio DOT is incorporating INVEST into their construction contract for the Cleveland Innerbelt Bridge project, requiring proposers to show how they will achieve silver for *Project Development*.<sup>1</sup>

Feedback from previous pilots indicates that getting a multi-disciplinary group together to discuss sustainability is good. These cross-disciplinary connections are generally lacking. Scoring is part of a process – the change that comes out of the process is what really matters.

Other examples of how INVEST is being used include:

- MPOs use it to look at their long-range plans retrospectively and target a few areas to improve.
- Arizona is evaluating its statewide roundabout program.
- Illinois Tollways is looking at using INVEST across its entire business. They might use all three modules as a standard for all their major projects as an enterprise approach.

WSDOT is interested in learning more about the Illinois Tollway project. Mike Culp offered to facilitate a conversation between the Tollway and WSDOT.

Q: In INVEST, does multimodal mean integrated or agnostic?

A: The INVEST criteria are based on the joint Federal Transit Administration (FTA)/FHWA planning process as it is administered at state DOTs today, and looking at incremental change of that process.

Visit the [INVEST web site](http://www.sustainablehighways.org) (www.sustainablehighways.org) for additional resources. FHWA will soon be posting a user tool kit and fact sheet. A quick start guide will also be available. In addition, FHWA is going to demonstrate the criteria in action – we will take a select set of criteria and go through exactly how an agency scored something. We document why they gave themselves the score they did. You can use the “Provide Comments” portion of the web site to provide feedback.

Q: Is there going to be a time when you feel the tool is complete? How far along are you?

A: That is up to the users. Changes in the statutory and regulatory environment may change where the “above and beyond” line is drawn for achievement levels. That will be a moving target over time. INVEST is reflective of professional practices, and those do not stay the same because procedures and technologies change. The big decisions for us are not incremental changes within existing

## Appendix F: WSDOT Orientation Workshop for INVEST Study

criteria. The big decisions for us are whether to add criteria or take criteria out. We will save these sorts of changes for the next major version.

### Using INVEST at WSDOT – Karena Houser

WSDOT's INVEST pilot study is being led through a partnership of the Strategic Planning Division, the Public Transportation Division, and the Environmental Services Office. The objectives of the study include:

- Providing feedback to FHWA on INVEST
- Identifying potential improvements to WSDOT planning and project development, with a special focus on on demand management and public health
- Documenting current business practices for a research project underway that will result in the development of guidelines for integrating demand management in WSDOT planning and programming
- Developing a baseline against which progress toward sustainability can be measured
- Establishing an expectation for how WSDOT will collaborate with local and regional governments

WSDOT will implement the *System Planning* and *Project Development* evaluations on parallel tracks. Generally, the INVEST team will work on documenting the basis for scoring in July and August, scoring will occur in September, and a report will be produced by the end of December. The project is being guided by the STLT. Project Leads will organize the process, coordinate with those involved with the study, facilitate communication, and prepare the report. Scoring Leads will compile scoring documentation. Resources will provide subject matter expertise to the scoring Leads.

Q. When would WSDOT's comments be most helpful to FHWA?

A: Within the next year to year and a half is the right time frame for comments. Minor changes to INVEST are possible in Versions 1.1 or 1.2. Version 2.0 changes are further out. Version 2.0 will be released in the next two to three years.

The group discussed how PSRC might be involved in the study. There may be commonalities between their pilot and WSDOT's study related to demand management. We could look at harmonizing how we are doing the scoring. We may also want to work together on getting local and transit agency input on the demand management criteria.

Q: How is PSRC approaching the pilot?

A: PSRC was part of the initial set of pilots. We are going to go back and take a closer look at asset management and travel demand management. We will use consultant services for the asset management evaluation. One of the areas the PSRC Board wants to look at is the preservation piece of the regional plan – everyone does it differently in terms of pavement scoring and we are interested in taking a more regional look. For travel demand management, we will focus on how we can bring better service to the travel demand management community. We plan to have a draft plan sometime in December.

## Appendix F: WSDOT Orientation Workshop for INVEST Study

One thing that interests FHWA is feedback on the *System Planning* criteria, and whether they generate confusion about the different responsibilities of state DOTs and MPOs. FHWA is also interested in how well the *System Planning* module relates to corridor planning.

The group discussed that the SP-01 to SP-07 criteria in the *System Planning* module seem to be more oriented toward the type of planning performed for the whole system. The other criteria start to hit on more of the corridor and project levels, so may be more applicable.

The group also discussed at what point in the process public health should be addressed. It is hard to talk about public health at the project level because many of the decisions that affect public health have already been made (e.g. whether or not the broader built environment supports active transportation). If you use the INVEST criteria, it starts to force you into a more integrated perspective.

Q: How do we address the evolution of roles and responsibilities? Do state, regional, and local transportation providers have a shared vision, and how are we aligning our roles and responsibilities to achieve that vision? The INVEST tool is based on a structure that may change in three years.

A: The INVEST *System Planning* framework assumes there are no wholesale changes in the structure of the process. It assumes a similar process follows over time.

Q: Is it common to address all the criteria in a pilot?

A: Most agencies do address all of the criteria. Or, they may do a cursory evaluation of all the criteria, but dig into those they are most interested in. Everyone is encouraged to look at them all. The picture will not be complete and may not help in some of your longer term issues if you do not look at all the criteria.

Q: Do you have a recommended approach to scoring (e.g. workshops, focus groups)?

A: Both of the approaches (workshops and focus groups) have worked. There is value in having multiple disciplines talk about a single thing - it leads to interesting conversations and is a learning opportunity.

The group discussed that perhaps the core INVEST team (STLT, project Leads, and scoring Leads) would come together to do the scoring. However, there was also discussion about the value of ensuring that everyone who had input would have a chance to see the results, possibly through a webinar. This would enable everyone to learn and benefit from the process.

### Overview of Selected Corridor Plans – Richard Warren

Corridor studies are funded by legislative proviso and/or local contributions. Corridor studies pull together stakeholder groups and develop vision statements for 20 years. The three selected corridor plans deliberately aligned their recommendations with *Moving Washington*. It is a challenge for us to get local partners to understand this. They see needs and they want certain solutions now, but WSDOT might be driven toward different outcomes based on *Moving Washington*.

### SR 516

The SR 516 Corridor Study extended from SR 167 to Maple Valley. This highway segment cuts through Kent, Covington, and Maple Valley. It is a commute route, has minimal transit service, and is characterized by low to medium density residential development. Unincorporated lands in Maple Valley and Black Diamond are zoned for substantial large scale development. Kent is a designated

## Appendix F: WSDOT Orientation Workshop for INVEST Study

Manufacturing and Industrial Center in the Regional plan. Average Annual Daily Traffic is 12,000 to 38,000 (traffic is lower in Maple Valley and higher toward Kent).

The study started with the legislature asking for an analysis of rail issues because of rail impacts to traffic operations in the area, as well as a bottleneck at a fish barrier culvert in Jenkins Creek in Covington where the highway goes from four to two lanes. This study is a good example of addressing transportation needs in a suburban area. The main recommendation was to defer intersection improvements, but take a closer look at the Jenkins Creek bottleneck.

### SR 520

The SR 520 corridor is characterized by medium to higher density suburban development, and is planned for higher density redevelopment in the BelRed and Overlake Village areas. The BelRed area is currently developed as warehousing. A Sound Transit light rail extension is coming to the corridor in 2020 and will initially terminate near the Overlake area, but eventually continue to Redmond. Microsoft and Nintendo headquarters are along this corridor. SR 520 is considered a “high tech” corridor and has plentiful transit. The area also has an extensive non-motorized network and Redmond actively promotes non-motorized travel.

The surrounding jurisdictions have big concerns regarding how interchanges interact with non-motorized infrastructure. Average Annual Daily Traffic is 32,000 to 125,000, increasing from Redmond to Bellevue. The main issues in this corridor are non-motorized integration, the extension of light rail, connectivity, and traffic operations. The HOV lane will be moved from the outer (right side) lane to the inner (left side) lane. As for the ramps and auxiliary lanes, 148<sup>th</sup> serves Microsoft and 124<sup>th</sup> feeds the BelRed area, with access to the Spring District. Another issue identified in the study is that the interchange at 124<sup>th</sup> provides access to the westbound lanes only.

### US 2

Everett and Snohomish County went to the legislature to ask for a study of US 2 from the Port of Everett Naval Station to Snohomish. A study of US 2 east of Snohomish has already been completed. The US 2 corridor is characterized by urban development west of I-5 (e.g. Everett, Boeing’s Paine Field, the Mukilteo Ferry Terminal) and rural/suburban development east of I-5. There are more transit options west of I-5 and little to no transit service on SR 9. The Sounder train to Seattle does run through the corridor. Paine Field is a regionally designated Manufacturing and Industrial Center. There is a river east of I-5 with only four crossings, which causes congestion.

The main issue in this corridor study was the operation and structural integrity of the westbound trestle. WSDOT rebuilt the eastbound trestle in the 1990s, but the westbound trestle is the original structure from the late 1960s. WSDOT is doing a lot of maintenance and preservation of the westbound trestle, but the locals want it replaced. There are converges at the east end of the trestle that create a bottleneck, and another bottleneck further west towards I-5. The study recommended not replacing the westbound trestle anytime soon – it will stand until 2045. There is \$16 million available to strengthen the structure, and the bridge engineers are confident that will be sufficient to maintain the integrity of the westbound structure.

Q: In the corridor studies led by WSDOT, what is the relationship between the stakeholder group and PSRC? Do you have guidance that lays out a process? What are the relationships and how do you determine when a joint study makes sense? How do you connect technical analysis, such as the PSRC modeling that goes into system studies, to corridor studies?

## Appendix F: WSDOT Orientation Workshop for INVEST Study

A: PSRC does not do corridor studies, although some MPOs do. Stakeholders typically consist of local planning and engineering staff, local policy level staff, and PSRC. The Urban Planning Office also includes internal stakeholders in corridor study groups (e.g. Public Transportation, Freight, and the Transportation Planning offices). The bicycling community was not involved in the study all the way along, but when we were developing the non-motorized component they were brought in. We look at all of the stakeholders that would interact with the corridor and involve them. We should tap our maintenance folks more than we do; maintenance and operational issues can influence design. Our modeling team does the technical analysis based on the PSRC regional traffic forecasting. There is a plethora of data, including traffic counts from Northwest region.

Q: Does the corridor level planning refer back to the system level?

A: Yes, our traffic model is based on PSRC's traffic model. On SR 516, PSRC had performed local modeling for the area so we used that. We did some additional modeling on the railroad issue.

### Overview of SR 520 Program (Bridge & HOV Program) – Tim Sexton

The 520 Program is a series of projects. It is unique for Washington in that it is a series of mostly funded projects happening in quick succession. There are four projects: I-5 to Medina Bridge Replacement and HOV Program (West of the Lake), Lake Washington Congestion Management Project, and on the east side there is Medina to SR 202, pontoon construction, and tolling. Everything from Montlake Boulevard east has been funded, but the connection from between I-5 and Montlake Boulevard is not yet funded. Because it has not yet been funded, there is still room for improvements in the project development area. It is for this reason that this section of the overall project was chosen for evaluation with the *Project Development* module.

The floating bridge is the driver for the project because there is a risk of failure due to structural deficiency. The bridge will be going from two general purpose lanes in each direction to one transit/HOV lane and two general purpose lanes in each direction (total of six lanes). On the eastside, HOV lanes and lids are going in and the roadway is being widened. Pontoon construction is happening on the coast. The next construction phase is the West Approach Bridge North, affecting a number of wealthy communities and an arboretum. WSDOT is trying to advertise the project in the fall, which will affect how we plan to engage the Scorers.

A Health Impact Assessment covered the whole stretch of SR 520. It was the first Health Impact Assessment in the state. WSDOT had issues with the process and timing of the assessment, but recognized that it raised many interesting points in a different way than NEPA. NEPA covers public health issues well, but the Health Impact Assessment covers them differently. There was a different stakeholder involvement process – King County was the Lead, but WSDOT was an active partner. The Environmental Impact Statement and all approvals for the SR 520 Program are done. We will be looking retrospectively at the program in this INVEST study. WSDOT thinks the corridor level is the smallest level where Health Impact Assessments could be effective.

Q: Is the appeal period over for the Environmental Impact Statement?

A: Yes. There was a lawsuit, but it was dismissed.

The SR 520 Program emphasized sustainability from the beginning. In 2010, they formalized a sustainability focus and program. In 2011, the “Golden Thread” thematic approach was woven through the project. In 2012, the community design process engaged stakeholders with sustainability as a key

## Appendix F: WSDOT Orientation Workshop for INVEST Study

focus, and they are currently working on their first programmatic sustainability report and creating sustainability specs for a design/build contract.

The Golden Thread approach includes:

- Reduce, reuse or recycle
- Reclaim sites and facilities
- Reduce greenhouse gases
- Improve access (including the social component and active transportation)

Our hope is that the FHWA INVEST study can help us understand:

- When and where public health should be addressed in the process
- How the gap between NEPA and Health Impact Assessments can be bridged
- Whether the INVEST criteria fit with WSDOT's sustainability goals
- Whether the INVEST criteria fit into WSDOT's project development process
- Whether we should incorporate the INVEST tool in whole or in part into WSDOT processes
- Whether INVEST could provide public health information that addresses the public's interests
- How INVEST might meet WSDOT's needs compared to other tools

Tim is working with the SR 520 office to develop a scoring process. Because of time constraints, they asked themselves, "how streamlined can we make this tool and still get good feedback from Scorers?" They intend to work with the SR 520 management to identify Scorers. Each Scorer will complete and submit an excel spreadsheet based on the INVEST criteria. The spreadsheet will simplify the INVEST criteria by framing them as yes or no questions. The Scorers will then convene in person for a half-day workshop to discuss the scores and develop recommendations.

Mike noted that previous pilots did not like yes/no scoring criteria, so FHWA went back and added gradation. This added complexity but reduced "zero anxiety."

The group discussed this approach. Some concerns were expressed regarding whether you might lose some nuance by converting everything to a yes or no question, whether the spreadsheet interface introduced a new system versus testing the existing INVEST system, and whether some of the educational component of INVEST would be lost by using this approach.

Q: Are we evaluating the INVEST process or the product?

A: The INVEST criteria are a little of both; some are process-oriented and some are outcome-oriented. The engineers did not like the process scoring requirements. They liked analytical scoring requirements and creating a score based on what could be measured. This increased their confidence in the score. The process scoring requirements are more open to interpretation.

The group discussed FHWA's interest in having the study evaluate the tool as it is, as opposed to shifting and changing the tool. Using the INVEST criteria to craft a new tool makes INVEST seem like more of a guidance document than a tool. Altering INVEST also makes the results of the study less comparable across states and projects. Tim and Mike agreed to coordinate more on the project approach.

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<sup>1</sup> Based on post-meeting follow up, Mike Culp indicated Ohio DOT is no longer requiring a specific achievement threshold (e.g. "Silver"), but is requiring that the contractor create a sustainability plan and conduct an INVEST

## Appendix F: WSDOT Orientation Workshop for INVEST Study

scoring workshop to identify a target. Here is a link to their [bidding information](#). For the sustainability information for bidders in [Addendum 7](#) (the latest), see page 5 of Exhibit C (page 70 of the pdf). Also, Mike asked them, “How do you anticipate dealing with criteria within the INVEST tool that are outside the scope of a typical design-build contract? For example, some of the *Project Development* criteria apply to processes that would typically be done as part of project planning and environmental review. Would you simply give them plug scores for these criteria? It would be difficult for a bidder to ensure they will get a silver rating if several criteria are outside their sphere of control.” Ohio DOT responded, “We changed the requirement due to the questions we got. The new requirement reads: The Sustainability Plan shall identify the number of points that the project will score as determined in a joint developer/department/FHWA INVEST workshop following the INVEST 1.0 *Project Development* module and using the Urban Extended scorecard. The proposer shall indicate the number of points that project will score as follows: points scored that are attributable to previous department work, points scored by the developer executing the project scope, and points that will be provided by the actions of the developer.”

## Appendix G: System Planning Pre-Workshop Scoresheets

### SP-01: Integrated Planning: Economic Development and Land Use

#### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Leah Bolotin

Evaluation Date: 9.20.13

Email Address: [leah.bolotin@wsdot.wa.gov](mailto:leah.bolotin@wsdot.wa.gov)

#### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-01 Integrated Planning: Economic Development and Land Use
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Criteria Points Earned: **3**

Total Possible Points: **15**

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Integrate statewide and metropolitan Long Range Transportation Plans (LRTP) with statewide, regional, and/or local land use plans and economic development forecasts and goals. Proactively encourage and facilitate sustainability through the coordination of transportation, land use, and economic development planning.

#### Sustainability Linkage

Integrating transportation planning with economic development and land use supports the economic triple bottom line principle by creating opportunities to improve access and mobility, and increase the social, environmental, and economic returns on both public and private investments in transportation projects and programs.

#### Develop and Adopt Goals and Objectives (2 points)

Score: US 2 and SR 516: 0

SR 520: 1

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**1 point.** The agency has developed goals and objectives for the integration of metropolitan and/or statewide transportation planning with economic development and land use planning

## Appendix G: System Planning Pre-Workshop Scoresheets

above and beyond current requirements. The goals and objectives further the prospects for transportation investments that support sustainability.

**Additional 1 point.** The goals and objectives are consistent with applicable economic development and land use plans above and beyond current requirements. If existing local, metropolitan, and/or statewide economic development and land use plans cannot be said to further sustainability principles, the agency may earn the point by working with its partner jurisdictions to establish a joint vision for land use and economic development within the planning area that supports sustainability principles.

### Introductory Discussion

#### *Agency Level Evaluation (suggested)*

PSRC has already done a lot of this work, in the Regional Transportation Plan *Vision 2040*, and in their requirements for comprehensive plan certification. Does the first point relate to WSDOT in terms of “statewide transportation planning”? Probably at the system planning level, such as the *Highway System Plan (HSP)* and the *Statewide Multimodal Transportation Plan/Washington Transportation Plan (WTP)*.

The first point revolves around how and to what extent economic development and land use planning has been integrated “above and beyond current requirements.” Therefore the term *current requirements* needs to be defined.

There are several levels of requirements to consider:

- **Federal.** All three of these studies fell within the [SAFETEA-LU](#)<sup>3</sup> time period (Jul 2007 – Jul 2012)
- **State.** Revised Code of Washington (RCW) 47.04.280, Transportation System Policy Goals (2007, amended 2010 to include Economic Vitality)
- **Agency.** Although it is currently being updated, the *2007 Transportation Planning Studies Guidelines & Criteria* is the current baseline for WSDOT

For an agency level evaluation, I would suggest assuming that the Federal and State levels constitute “current requirements,” and that anything more than those requirements included in the *HSP* and *WTP* could be considered “above and beyond.” (Beyond current scope of this project.)

#### *Study-Level Evaluation*

“Statewide transportation planning” would not relate to most corridor studies. So for a study-level evaluation, the first point was reframed as follows: “The corridor study integrated transportation planning with economic development and land use planning, above and beyond current requirements. The goals and objectives of the corridor study furthered the prospects for transportation investments that support sustainability.”

For the sake of this evaluation, I would suggest assuming that all three levels (Federal, State, and Agency) constitute “current requirements,” and that anything more which was included in any of the three studies would be considered “above and beyond.”

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<sup>3</sup> SAFETEA-LU: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. SAFETEA-LU was an FHWA re-authorization of funding for the Highway Trust Fund enacted in 2005. It was superseded by [MAP-21](#) (Moving Ahead for Progress in the 21<sup>st</sup> Century) in 2012.

## Appendix G: System Planning Pre-Workshop Scoresheets

Without going into a detailed list of the three levels of requirements, elements relating to economic development and land use can be summarized by these requirements:

1. Support of the **economic vitality** of both metropolitan and non-metropolitan areas.<sup>4</sup>
2. **Consistency** with state, regional, and local planned growth and economic development patterns.<sup>5</sup>
3. **Mobility**. This would by definition include preservation, safety and security of the system, efficient operations and maintenance, congestion management, and integration of the transportation system between modes for both people and freight.
4. **Integration** with existing and planned land uses that are both adjacent to, and served by, the corridor.
5. **Accessibility** for both people and freight.

None of the corridor studies addressed economic development as an independent element. However, I think an argument can be made that:

- Planned land use and development were included in the modeling done for all three studies. The land use and economic development goals and assumptions of PSRC's adopted policies are reflected in the PSRC travel demand model. It is informed by major corporations and the jurisdictions, and translated into household and employment future assumptions. The Urban Planning Office (UPO) modeling group calibrated the PSRC model for each study based on local input and conditions.
- Anything that improves the mobility, preservation, safety, and accessibility of the transportation system, and particularly the highway system, supports and enables economic life along the corridor and to all areas served by that corridor.

That being said, each study is discussed in terms of the five basic requirements listed above and then summarized.

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<sup>4</sup> Enable global competitiveness, productivity, and efficiency. Develop a strategy to enhance existing and new development while still preserving the intrinsic qualities of the corridor, including any special requirements related to designated *Scenic Highways* and *All-American Roads*. This also includes understanding and support of the regional and local economy. For corridors predominately located in urban areas, the corridor plan should include information focusing to a great extent on mobility. Corridors located in a rural area warrant a greater focus on economic development and agricultural, seasonal, preservation, and environmental issues. For corridors located in areas with a mixed urban and rural character, or that are considered to be in transition from one to the other, special considerations are warranted. Additional land use analysis, modeling, and review of local comprehensive and regional plans should be done. -- *2007 Transportation Planning Studies Guidelines & Criteria*, WSDOT, 2007.

<sup>5</sup> For King and Snohomish counties, planned growth and economic development patterns are outlined by PSRC's *Vision 2040* and the *Regional Economic Strategy*. Population and employment targets are developed by the Washington State Office of Financial Management, distributed by PSRC to the four counties, and then divided within each county's cities by mutual agreement between the county and city governments. The *Regional Growth Strategy* identifies *designated regional growth centers* and *manufacturing/industrial centers* within which most of the growth is to take place. Cities then delineate plans to accommodate the planned growth in their comprehensive plans.

## Appendix G: System Planning Pre-Workshop Scoresheets

**US 2:**

- 1. Economic Vitality:** Not addressed per se, but it is inherently addressed through modeling assumptions and mobility analysis. The cities of Lake Stevens and Snohomish thought that the population and employment forecasts should be increased quite a bit from what the county had allocated, so the UPO model took that into account. The County was on the stakeholder group so could contribute its perspective on economic development.
- 2. Consistency with Plans:** The *HSP*, *WTP*, *Transportation 2040*, and *Vision 2040* are mentioned but not discussed in detail. Local comprehensive plans are mentioned but without details as to how they may or may not dovetail with the suggestions in the study. There was no discussion of transit plans.
- 3. Mobility:** *Moving Washington*, the Department’s investment framework to “keep people and goods moving and support a healthy economy, environment, and communities,” is discussed in some detail and integrated into the study suggestions. Community Transit service, park-and-ride lots along the corridor, vanpool services, *the Curb the Congestion Program* to encourage alternative modes of travel, CTR ordinances, the new Everett Station, and recent transit-supportive improvements made by the city of Everett are well documented in the report.
- 4. Integration with Land Use:** Chapter 3 goes into detail, asking the question “What are the population, employment, and land use growth assumptions of the study area?” Those three points are summarized for the county, cities, and tribes in the area. In this area the effort probably went above and beyond requirements, including a discussion of the [Growth Management Act](#) (GMA) and its ties to the modeling effort, employment and population forecasts, summaries of jurisdiction histories, discussion of some of the larger employers, plans for Port expansion, annexation histories, descriptions of geography, and details about the Department of Fish & Wildlife acreage on Ebey Island.
- 5. Accessibility:** Freight use and freight accessibility is well covered in the study. There is very limited discussion of accessibility for people, in terms of either non-motorized modes or American Disability Act (ADA) issues.

The current requirements were mostly met in this study, although several of them could have been more detailed. Looking at the future plans in jurisdictional comprehensive plans may have provided additional insight into planned land use and development, but since the cities were on the stakeholder group it should be safe to assume they would have brought up any points that were not being adequately addressed.

**SR 516:**

- 1. Economic Vitality:** Not addressed per se, but it is inherently addressed through modeling assumptions and mobility analysis. The study specifically states the goals of ETC – economy, transportation, and community. Also, PSRC and the County were part of the stakeholder group, so were able to bring their perspectives on economic development.
- 2. Consistency with Plans:** The *HSP*, *Transportation 2040*, and *Vision 2040* are described in some detail in terms of their relationship to the corridor; the *WTP* is briefly mentioned. The transportation plan list from the local comprehensive plans of Covington and Maple Valley are presented, but no other visioning or development from the comp plans is discussed, and discussion of the comp plans from Kent and Black Diamond are missing. There was no discussion of transit plans. Planned development in Black Diamond and Maple Valley, as well as the Jenkins

## Appendix G: System Planning Pre-Workshop Scoresheets

Creek recommendations, were linked into study findings and suggestions. The UPO modeling group did ask me for a list of funded development in the current capital improvement plan or TIP and unfunded development in the adopted comp plans of Kent and Covington towards the beginning of their modeling effort for this study.

3. **Mobility:** *Moving Washington*, the Department’s investment framework to “keep people and goods moving and support a healthy economy, environment, and communities,” is discussed in some detail and integrated into the study suggestions. Transit service is described, and park-and-ride lots are also presented. One of the objectives of this study was to analyze several interchange areas near at-grade crossings of the Union Pacific and BNSF<sup>6</sup> rail lines.
4. **Integration with Land Use:** The land use section is very limited.
5. **Accessibility:** There is a paragraph describing freight usage of the corridor, and bike facilities and sidewalks are detailed. There is very limited discussion of accessibility for people, in terms of either non-motorized modes or ADA issues.

The current requirements were mostly met in this study, although several of them could have been more detailed. The *Guidelines* have this to say about corridor plans that encompass both urban and rural areas: “For corridors predominately located in urban areas, the corridor plan should include information focusing to a great extent on mobility. Corridors located in a rural area warrant a greater focus on economic development and agricultural, seasonal, preservation, and environmental issues. For corridors located in areas with a mixed urban and rural character, or that are considered to be in transition from one to the other, special considerations are warranted. Additional land use analysis, modeling, and review of local comprehensive and regional plans should be done.”

Looking at the future plans in jurisdictional comprehensive plans may have provided additional insight into planned land use and development, but since the cities were on the stakeholder group it should be safe to assume they would have brought up any points that were not being addressed. The land use section could have gone into a lot more detail and transit plans could have been discussed. Integration with existing and planned land uses that are both adjacent to, and served by, the corridor, was missing.

**SR 520:**

1. **Economic Vitality:** Promoting economic development and job creation is stated as one of the study goals, but economic development is not addressed per se. It is inherently addressed through modeling assumptions and mobility analysis; the PSRC model was particularly calibrated to this corridor, due in part to the economic downturn. There were a lot of projects planned along the corridor that the PSRC’s 2006 base data did not reflect. The “BKR model” – Bellevue, Kirkland, and Redmond combined – helped to inform these adjustments, and Sammamish forecasts were adjusted as well. The study specifically states the goals of ETC. Also, Group Health Cooperative, Kemper Development, Microsoft, and Wright Runstad & Company were all on the stakeholder committee, along with PSRC and the County.
2. **Consistency with Plans:** Funded projects in the Capital Improvement and Preservation Program (CIPP), and programmed projects in the *Regional Transportation Plan* and *HSP* are presented in detail. The RCW governing transportation investments is cited as well. *Vision 2040* is described in more detail than in the other two studies, and the *WTP* received a mention. There is a nice section discussing growth targets, regional forecasting, and its tie-in to modeling. Local

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<sup>6</sup> Burlington Northern Santa Fe railway.

## Appendix G: System Planning Pre-Workshop Scoresheets

comprehensive plans are summarized in detail, including subarea economic development plans. Plans for the East Link Light Rail are described and shown in a map. There is also a section on population, employment growth, and transit investments along the study corridor, along with a map showing the distribution of Microsoft employees in the Central Puget Sound region. However, the future plans for King County Metro and Sound Transit are not described other than a section on the East Link Light Rail project. Future plans for expansion of the bicycle and pedestrian facilities are discussed and integrated into the study suggestions.

3. **Mobility:** *Moving Washington*, the Department’s investment framework to “keep people and goods moving and support a healthy economy, environment, and communities,” is discussed in some detail and integrated into the study suggestions. *Connecting Washington* is cited, and transit service is presented. Sound Transit, The Connector, vanpool and carpool services, and park-and-ride lots are all well described. The comprehensive bicycle and pedestrian network in the area is described and shown in a map. Bicycle and pedestrian facilities are described in extensive detail, including gaps in existing trails. The project also had input from biking and pedestrian community groups.
4. **Integration with Land Use:** Existing and planned land use is described in detail, including a discussion of the GMA and its ties to the modeling effort, employment and population forecasts, descriptions of geography, summaries of jurisdiction and annexation histories and plans, discussion of some of the larger employers, plans for subarea development, and existing PSRC Center designations. Anticipated changes to land use in the BelRed areas as a result of the East Link Light Rail project is also described. Several of the ramp and auxiliary lane study suggestions were based on expected development.
5. **Accessibility:** There was a detailed non-motorized aspect to this study. There was a lot of discussion about where Sound Transit was going in and how it will affect buses on 520. There was no discussion of freight usage on the corridor, and very limited discussion of ADA issues.

**Overall:**

1. **Economic Vitality:** NO, I did not find that any of the studies went beyond requirements.
2. **Consistency with Plans:** NO for US 2 and 516. YES for 520. I think the 520 study went beyond requirements with its detailed inclusion of *Regional Transportation Plan* and *HSP* planned projects, subarea plans, and descriptions of existing non-motorized facilities, their gaps, and their inclusion in the study suggestions.
3. **Mobility:** NO, none of the studies really discussed freight sufficiently.
4. **Integration with Land Use:** NO for US 2 and 516. YES for 520, with a detailed description of planned land use along the corridor and local community concerns with transportation and the 520 corridor in particular.
5. **Accessibility:** NO, neither freight nor ADA accessibility was discussed sufficiently.

For the 520 project, I would award it ½ a point if possible for meeting 2 out of 5 of the above points.

**Suggestions:**

There is a new Freight Map Application that provides detailed truck performance measure and freight information. Some type of a tool linking transportation improvements with economic development would be handy.

## Appendix G: System Planning Pre-Workshop Scoresheets

- Going above and beyond current requirements for economic development issues could have involved things like more directly including business interests such as inviting freight representatives, the Chamber of Commerce, the Commerce Department, or employer input, or including information from the *State Freight Mobility Plan*, the Freight Office’s identification of *Truck Freight Economic Corridors*, or PSRC’s *Regional Economic Strategy*. Inclusion of rural interests would have also been appropriate for the SR 516 study. Inviting PSRC would probably be helpful as well.
- Inviting non-motorized interest groups would probably be helpful on mobility issues. Also including transit plans.

**Engage Partner Agencies (3 points)****Score: US 2 and SR 516: 0****SR 520: 1.5**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**2 points.** The agency regularly engages land use and economic development agencies in its jurisdiction throughout the transportation planning process, to reduce barriers and further the prospects for implementation of its goals and objectives as identified above.

**1 additional point.** The agency utilizes institutional mechanisms (such as ad hoc or standing technical advisory committees) to facilitate the engagement.

**Agency Level Evaluation (suggested)**

Jurisdictional Comp Plans, and Countywide and Multi-County Planning Policies address these through Commerce via GMA requirements, particularly the detailed requirements for Transportation Elements. The INVEST criteria were developed for national use; Washington State has its own GMA requirements, and may be unique in the way growth management is handled by its economic development arm, the Commerce Dept.

For an agency level evaluation, I would suggest looking at who is involved with both the *HSP* and *WTP*, as well as smaller studies. (Beyond current scope of this project.)

**Study-Level Evaluation**

The first question to grapple with is who and what are “land use and economic development agencies”? After requesting input from many sources, I came up with the following list, which is by no means exhaustive:

- **PSRC.** The Puget Sound Regional Council has laid the groundwork for future land use and economic development for the four-county area in their *Vision 2040* document.
- **Commerce.** The Washington State Department of Commerce is in charge of implementation of the GMA. This inherently sets up coordination between planning and economic development. They could probably be used as a resource in our studies. They are also on the front lines of helping to create a “business-friendly” environment in terms of state policy and statutes.
- **Ports.** For obvious reasons. May be a good idea to include them even if the corridor segment being studied is a bit removed from any airports or waterways.

## Appendix G: System Planning Pre-Workshop Scoresheets

- **County.** They may also have some goals for land use and economic development.
- **Local Chambers of Commerce.**
- **Small Business Associations.**
- **Agricultural Interests,** for those corridors which pass through rural/agricultural land uses.
- **Jurisdictional Comp Plans.** Cannot think of a better source for planned land use, both County and City.
- **Freight Community.** This could be done directly or via the WSDOT Freight Office.
- **Major employers.** While not agencies, I think that the inclusion of some of the larger employers in the 520 study was important and helpful.
- **WSDOT Offices.** One of Richard Warren’s suggestions was that we should double-check to make sure we have the right internal parties at the table, especially the Freight Office. Also, that we could do a better job of reflecting how the suggested improvements would help or work with planned land use and economic development, as well as the *Moving Washington* and the RCW requirements. I am thinking the Development Office for that region might have a good grasp of what they see coming down the pike.
- **Results Washington.** Has a shared vision of the linkage between transportation and the economy.

**US 2:**

Included none of the above except for the Port of Everett. Freight use and freight accessibility is well covered in the study, but not in the participant list.

**SR 516:**

Included none of the above except PSRC.

**SR 520:**

Included PSRC, the County, jurisdictional comp plans. Improvement over the other two studies, but still could have included more participants from the above list.

**Overall:**

No, I do not think we did too good of a job engaging land use and economic development agencies in the transportation planning process on these three corridor studies. For the 520 project, I would award it ½ a point if possible for including three of the above agency suggestions.

**Use Best Practice Quantitative Methods (2 points)****Score: 2**

The agency uses best practice quantitative methods (e.g. integrated land use and transportation models) to analyze and evaluate the performance of alternative land use/transportation scenarios. The agency incorporates the results into the LRTP. Technical assistance and resources are available through FHWA’s Travel Model Improvement Program, FHWA’s Toolkit for Integrating Land Use and Transportation Decision Making, and FHWA’s Toolbox for Regional Policy Analysis.

**Agency Level Evaluation (suggested)**

If I understand correctly from my conversation with the UPO modeling group, an “integrated land use and transportation model” would be something that combines traditional travel demand modeling with something like UrbanSim.<sup>7</sup> PSRC uses UrbanSim to calibrate land use assumptions into their travel demand model, but it is not automatically linked to the transportation model; the adjustments still have to be made manually. There is some movement towards linking the two models but it has not yet been done. We do not have UrbanSim at UPO.

Once PSRC has linked the two models, or has moved to a fully integrated model, then we would be off to a better start with this issue. I would recommend someone with modeling expertise to head up an evaluation on this point.

**Study-Level Evaluation**

Neither we nor PSRC, from whence our modeling comes, do not have this type of a model. That being said, the integrated land use/transportation model is given as an example, not a requirement, so there are probably other ways to interpret using “best practice quantitative methods” from the jurisdictions related to these three studies. Also, the fact that PSRC is manually integrating their land use and transportation models should also count towards compliance. I will therefore give this scoring requirement full points.

**Provide Leadership (2 points)**

**Score: N/A**

The agency provides institutional leadership in encouraging transportation planning that is consistent with land use and economic development plans and that supports sustainability principles. Examples include the provision of incentives for partner jurisdictions (such as leveraging funds to provide planning grants, capital grants, model/tool development and/or technical assistance).

**Agency Level Evaluation (suggested)**

I believe that WSDOT is out front with some of the sustainability planning. However, I am not sure how much it is integrated into land use and economic development. From looking at our [Sustainable Transportation website](#), it seems we are engaged in the following:

- In Phase II of a federally-funded climate risk reduction study
- Rideshare/telework/TDM.
- Electric and alt fuel green highway involvement.
- Green purchasing, green fleet.
- National award for ferries fuel conservation.
- Reduction of pollutants from storm water runoff and de-icing.
- High tech ATM, traffic harmonization, and other congestion management strategies which reduce greenhouse gas (GHG) emissions through idling.
- Recycling building materials and extending lifespans, “sustainable asphalt,” etc.

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<sup>7</sup> [UrbanSim](#) is a software-based simulation system for supporting planning and analysis of urban development, incorporating the interactions between land use, transportation, the economy, and the environment.

## Appendix G: System Planning Pre-Workshop Scoresheets

- Turning in progress reports to the Governor about reducing GHG emissions
- We have a contact for [community design assistance](#) on the website to help find “innovative solutions to your community's transportation challenges” - complete streets, road diets, green streets, woonerfs, multimodalism, livable places, etc.

All of the above seem like they are about making our own processes better, but not so much about utilizing, integrating with, and/or helping to improve what everyone else is doing with the exception of the first and last bullet points above. None of the above is about project interface.

The WSDOT [Community Transportation Planning Office](#) (CTPO) provides leadership in collaborative planning with our jurisdictions, and has just this year opened a new [GIS tool](#) to enhance collaborate planning. An agency level evaluation would want to look at the types of studies and research being done by the CTPO and other offices, and find out more about our grants programs and technical assistance. Some of the Development offices at WSDOT are very pro-actively involved with their jurisdictions as well.

### Study-Level Evaluation

I am not sure I can reframe this scoring requirement to apply to corridor studies.

### Demonstrate Sustainable Outcomes (6 points)

#### Score: 1.

Scoring for this requirement is based on the following, cumulative elements. The first two elements must be accomplished to earn the third.

**1 point.** The LRTP is integrated with land use and economic development plans, and the agency is implementing transportation investments that support sustainability principles.

**2 points.** The LRTP includes sustainability-related performance measures for the integration of transportation planning with economic development and land use planning. Examples of sustainability-related performance measures can be found in National Cooperative Highway Research Program (NCHRP) Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies.

**3 additional points.** The agency monitors progress against the performance measures and can demonstrate the achievement of its goals and objectives.

### Agency Level Evaluation (suggested)

As an agency, WSDOT has been developing and implementing a lot of sustainability policies and procedures. The specific points above would have to be evaluated based on the methodology used to develop the *HSP* and *WTP*.

In terms of “implementing transportation investments that support sustainability principles,” please see my comments above on the previous leadership scoring requirement. The agency as a whole could also be evaluated on the basis of its *Moving Washington* program, as well as its implementation of the new governor's *Results Washington* program.

I would also note that PSRC is engaged in developing feedback loops and evaluating demonstrable outcomes/performance evaluation for all of its transportation, land use, and economic development strategies.

## Study-Level Evaluation

A re-phrasing of these points for study-level evaluation might be:

- 1 point. “The corridor study made suggestions which integrated well with land use and economic development plans, and which are sustainable in nature.”
- 2 points. “The corridor study suggested sustainability-related performance measures.”
- 3 additional points. “The corridor study suggested a way to monitor performance measure progress and demonstrate achievement of its goals and objectives.”

The second two points are probably beyond the scope of how we currently do corridor studies, though that may be changing. The first point, however, can be discussed by study.

### US 2:

Recommendations include safety, preservation, and short-range solutions. The short-range solutions were congestion management strategies of TDM, ITS, and incidence response.

Safety, preservation, and congestion management projects impact mobility, which is a key ingredient to any type of economic success for the area. Since the service area for this corridor is expected to grow in both population and employment, these projects would support land use and economic development plans.

Safety, preservation, and congestion management also all fall squarely under the sustainability umbrella. Safety and preservation are part of mobility, and anything that helps with congestion management is going to reduce idling and therefore GHGs. All of these approaches fall under the TSM category, which is making the most out of existing infrastructure and therefore also applicable to sustainability.

### SR 516:

From the Executive Summary:

In addition to levels of service and speed performance of the system the evaluation criteria also considered how a proposed improvement affected “Economy, Transportation, and Community” or “ETC”. The intent of looking at ETC was to get a fuller picture of how a recommended improvement would benefit the community as a whole, not just the study corridor itself. For example, would a proposed recommendation enhance freight movement or improve access to Transit Oriented Development, promote energy conservation, or improve safety?

Recommendations were:

- Widening SR 516 to five lanes and adding bike lanes and sidewalks at two locations, and an undermined capacity improvement along a third segment
- SR 516 intersection improvements at eight locations

The widening projects are about capacity improvements along with improved pedestrian/bicycle facilities, safety, fish barrier removal, transit reliability, and support of local development. I would say that this meets the requirements of making suggestions which integrated well with land use and economic development plans, and which are sustainable in nature.

**SR 520:**

From the Executive Summary:

The development of the recommendations was also guided by the vision adopted by the stakeholders for the corridor. The SR 520 corridor vision is of a transportation corridor that:

- Is safe to travel
- Serves intra-regional travel
- Enables business and residential growth in the local communities
- Enhances multimodal travel and system integration
- Strengthens connections between major economic and job centers

Recommendations include preservation, TSM (ITS, ATM, signal optimization), trail improvements and grade separations, interchange improvements and auxiliary lanes, and improved/expanded pedestrian, bicycle, and transit facilities.

Preservation projects impact mobility, which is a key ingredient to any type of economic success for the area. Capacity improvements will enable the corridor to better serve this area which is expected to grow in both population and employment. Pedestrian, bicycle, and transit improvements all fall within sustainability goals. I would say that the study suggestions also meet the requirements of integrating well with land use and economic development plans, and which are sustainable in nature.

**Overall:**

Overall I think our three corridor studies scored quite well on the first point, but not the second or third.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

- *US 2 - Everett Port/Naval Station to SR 9 Corridor Planning Study*, WSDOT, Final Draft 7/25/13 (not yet published) <http://www.wsdot.wa.gov/projects/us2/everettnavalstationtosr9/>
- *SR 520 Multimodal Corridor Planning Study from I-405 to Avondale Road*, WSDOT, 2013 <http://www.wsdot.wa.gov/planning/Studies/SR520EastCorridor/>
- *SR 516 Corridor Study, SR 167 in Kent to SR 169 In Maple Valley*, WSDOT, 2013 <http://www.wsdot.wa.gov/planning/Studies/SR516Corridor/>
- Interviews with applicable WSDOT staff, including the Urban Planning Office modeling group, the project managers for the three projects, author of one of the Land Use chapters, and a specialist from the CTPO office.
- SAFETEA-LU planning requirements <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=4326b3462801c075d9d260366f1f811e&rgn=div5&view=text&node=23:1.0.1.5.1.1&idno=23#23:1.0.1.5.11.2.1.4>
- State of Washington RCW 47.04.280, Transportation System Policy Goals <http://apps.leg.wa.gov/RCW/default.aspx?cite=47.04.280>

## Appendix G: System Planning Pre-Workshop Scoresheets

- *Transportation Planning Studies Guidelines & Criteria*, WSDOT, 2007  
<http://www.wsdot.wa.gov/NR/rdonlyres/8B2B613F-D6F1-4515-82E5-23417C7C321D/0/NovFinalTPSGC.pdf>
- *Vision 2040*, PSRC, 2009 <http://www.psrc.org/growth/vision2040>
- *Regional Economic Strategy for the Central Puget Sound Region*, PSRC, 2012  
<http://www.psrc.org/econdev/res>

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

This was probably an overly complex criterion with very high standards. Would suggest maybe watering these down a bit, and allowing partial points for agencies transitioning to higher sustainability standards. Also need to help agencies define terms such as “current requirements” and “land use and economic development agencies.” Need to re-word scoring requirements to be appropriate to corridor studies as noted above.

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## SP-02: Integrated Planning: Natural Environment

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Brigid Dean

Evaluation Date:

Email Address: [deanb@wsdot.wa.gov](mailto:deanb@wsdot.wa.gov)

### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-02 Integrated Planning: Natural Environment	
Criteria Points Earned: 9	Total Possible Points: 15

### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

## Appendix G: System Planning Pre-Workshop Scoresheets

**Goal**

Integrate ecological considerations into the transportation planning process, including the development of the long range transportation plan (LRTP) and TIP/STIP. Proactively support and enhance long-term ecological function through the coordination of transportation and natural resource planning.

**Sustainability Linkage**

Integrating transportation planning with natural resource planning supports the environmental triple bottom line principle by ensuring the transportation system supports and enhances sustainable ecological function.

**Develop and Adopt Goals and Objectives (2 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**1 point.** The agency has developed goal and objectives for the integration of metropolitan and/or statewide transportation planning with applicable environmental plans, policies, and goals. The goals and objectives are incorporated into the LRTP and encourage transportation investments that support and enhance long-term ecological function. Examples of transportation investments that support and enhance ecological function include those that improve surface water quality, maintain or enhance groundwater recharge (e.g., through innovative stormwater design features), or improve habitat connectivity (e.g., by increasing wildlife crossings, etc.), among others.

**1 additional point.** The goals and objectives are consistent with or surpass local, metropolitan, and/or statewide environmental plans, policies, and goals, as applicable.

US 2: 1

SR 516: 1

SR 520: 1

Overall: 1

Discussion/suggestions: Goals of increasing planning and environment linkages has been discussed for years. The scoring criterion, however, does not match the discussion in the Corridor Plan. This criterion is agency focused. Using a specific corridor plan to measure agency focus is not a good way to measure success. If the criterion could be changed to ask “has the plan done a good job of incorporating the goals and objectives for integration?” it would be easier to measure. It would be important to clarify the goals and objectives as part of the evaluation tool. And, it may be possible to coach planning teams on appropriate ways to fulfill the requirement.

The goals should focus on landscape level sustainability goals and efficiencies to improve NEPA processing times. Landscape level goals should include environmental significance overlay (ESO) identified priorities. Efficiency goals should be specific to the mechanics of NEPA analysis (ESO work on NEPA compliance strategy gets to some of these elements).

**Engage Natural Resource and Regulatory Agencies (3 points)**

Scoring for this requirement is based on the following, cumulative elements.

## Appendix G: System Planning Pre-Workshop Scoresheets

**2 points.** The agency goes above and beyond current consultation requirements by regularly engaging natural resource and regulatory agencies throughout the transportation planning process and incorporates their feedback into the creation of transportation planning documents.

**1 point.** The agency utilizes institutional mechanisms (such as ad hoc or standing technical advisory committees) to facilitate the engagement.

US 2: 0 Discussion in excerpt from the plan referenced using GIS and report data, but did not discuss consultation with any resource agency. Furthermore, discussion of resource and recreation lands could be strengthened with search of Recreation and Conservation Office (RCO) database to determine 6(f) and 6(f)-type properties in the project vicinity, especially if corridor plan is likely to impact those lands.

SR 516: 0 Report describes efforts to engage tribes, but the engagement sounded limited and no other resource agency was identified as being consulted. Furthermore, discussion of resource and recreation lands could be strengthened with search of RCO database to determine 6(f) and 6(f)-type properties in the project vicinity, especially if corridor plan is likely to impact those lands.

SR 520: 0 Study describes email discussion with WSDOT regarding fish barriers in the project area, but no other collaboration with resource agencies or tribes is noted. Furthermore, discussion of resource and recreation lands could be strengthened with search of RCO database to determine 6(f) and 6(f)-type properties in the project vicinity, especially if corridor plan is likely to impact those lands.

Overall:0 Engaging resource agencies to understand their priorities and interests in a project area is more than researching GIS information. The State Agency Group on Environmental Stewardship is the kind of group that could be queried regarding resource and regulatory agency consideration. Tribes should be mentioned specifically.

**Apply System or Landscape-Scale Evaluation Techniques (4 points)**

The agency has applied system or landscape-scale evaluation techniques using natural resource data to (1) assess ecological conditions throughout the system, (2) identify opportunities to avoid and/or minimize potential impacts of planned transportation projects to the natural environment, and (3) identify opportunities to support and enhance long-term sustainable ecological function through planned transportation investments. Note that landscape-level natural resource data is collected at a higher resolution than project level data and may be available through natural resource and regulatory agencies and/or non-profit organizations, such as the Nature Conservancy. An example of a landscape-level evaluation technique includes, but is not limited to, the regional ecosystem framework methodology as described in the Eco-Logical Ecosystem Approach.

Conducting system or landscape-level evaluations during the transportation planning process has many benefits, including potentially identifying major environmental issues before project level TIP/STIP decisions are made. Additionally, a system or landscape-level analysis can help lay the groundwork for satisfying future project level federal environmental review requirements (see SP-17 Linking Planning and NEPA). Note that doing project level NEPA analyses on transportation projects does not meet the intent of this requirement.

One of the following scores applies:

**0 points.** The agency does not apply system or landscape-scale evaluation techniques using natural resource data during the transportation planning process.

## Appendix G: System Planning Pre-Workshop Scoresheets

**2 points.** The agency applies system or landscape-scale evaluation techniques using natural resource data during the transportation planning process and has completed the first two items cited in the paragraph above.

**4 points.** The agency applies system or landscape-scale evaluation techniques using natural resource data during the transportation planning process and has completed all three of the items cited in the paragraph above.

US 2: 2 The study investigated GIS data and other reports to identify resources of interest in the project area. However, data is not always specific to the corridor, and landscape-scale evaluations do not get to all the resources that matter, ways to avoid/mitigate, or opportunities to enhance long-term sustainability.

SR 516: 2 The study investigated GIS data and other reports to identify resources of interest in the project area. However, data is not always specific to the corridor, and landscape-scale evaluations do not get to all the resources that matter, ways to avoid/mitigate, or opportunities to enhance long-term sustainability.

SR 520: 2 The study investigated GIS data and other reports to identify resources of interest in the project area. However, data is not always specific to the corridor, and landscape-scale evaluations do not get to all the resources that matter, ways to avoid/mitigate, or opportunities to enhance long-term sustainability.

Overall: 2 As stated in the first criterion of this investigation, goals and objectives should be clearly stated and include landscape level goals. Those goals should direct the analysis, mitigation sequencing, and further agency sustainability interests. Landscape level goals should include ESO identified priorities.

Discussion, suggestions: it would be helpful to have an example such as buying into an existing mitigation bank. Also: clarify what types of actions in a plan would provide evidence of applying evaluation techniques.

### **Demonstrate Sustainable Outcomes (6 points)**

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The LRTP is integrated with applicable environmental plans, policies, and goals, and the agency implements transportation investments that support and enhance long-term ecological function.

**2 points.** The LRTP includes performance measures for long-term ecological function. Examples of sustainability-related ecological performance measures include, but are not limited to, “the number of projects programmed consistent with regional ecosystem framework(s)” and the “the number of projects programmed to maintain or improve water quantity or quality,” among others. Additional examples of sustainability-related performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies.

**3 points.** The agency monitors progress against the performance measures and can demonstrate sustainable outcomes.

US 2: 6

SR 516: 6

SR 520: 6

## Appendix G: System Planning Pre-Workshop Scoresheets

**Overall: 6** While there is no extended description of integration within the Corridor Plan, it is because the scoring criterion as articulated is not a good fit to the narrative structure of the Corridor Plan. Corridor plans summarize only briefly the relationship between recommended projects and the environmental resources in a given corridor. This criterion is agency focused, and agency level data are used via GIS and consulting with agency biologists to monitor progress towards specific environmental goals such as reducing barriers to fish passage and the dedicated inventory of wetland mitigation sites. In general, using a specific corridor plan to measure agency focus is not a good way to measure success. Further work should be done to define the applicable environmental plans, policies, and goals that enhance long-term ecological function to be used in this assessment.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

**SP-03: Integrated Planning: Social****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Richard Warren

Evaluation Date: 9-18-13

Email Address: [richard.warren@wsot.wa.gov](mailto:richard.warren@wsot.wa.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-03 Integrated Planning: Social

**Criteria Points Earned: 7**

Total Possible Points: 15

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

The agency's Long Range Transportation Plan (LRTP) is consistent with and supportive of the community's vision and goals. When considered in an integrated fashion, these plans, goals and visions support for sustainability principles. The agency applies context sensitive principles to the planning process to achieve solutions that balance multiple objectives to meet stakeholder needs.

**Sustainability Linkage**

Integrating transportation planning with the community's vision and goals for sustainability supports the social triple bottom line principle by ensuring transportation investments reflect the unique vision, goals, and values of the community.

**Work toward a Shared Vision (2 points)**

Metropolitan and/or statewide transportation planning agencies share the community's vision for overall sustainability efforts, and transportation-related goals and objectives are consistent with that vision (as articulated in adopted community vision plans, sustainability plans, and/or community development plans, among others). The agency may also earn the points by working with its stakeholders and the broader community to create visions and goals (if they do not already exist) and to determine the role of transportation in helping to achieve sustainability outcomes.

**US 2:**

Everett, Snohomish County, Marysville, Snohomish, and Lake Stevens all participated in developing the corridor vision. All cities long range plans and PSRC's *Transportation 2040* were also included and cited (but not always recommended) within the corridor plan. The Port of Everett was also included in the process.

**SR 516:**

Kent, Covington, Maple Valley, and PSRC all participated in developing the corridor vision. All of the cities' long range plans and PSRC's *Transportation 2040* were also included and cited (but not always recommended) within the corridor plan.

**SR 520:**

Bellevue, Kirkland, Bellevue, and Sammamish all participated in developing the corridor vision. All cities long range plans and PSRC's *Transportation 2040* were also included and cited (but not always recommended) within the corridor plan. Vision reached for corridor plan was also coordinated with community business interests (Microsoft, Wright-Runstad, Kemper Development).

Overall: Overreaching policy goals stated in *Moving Washington* were applied with additional input from all stakeholders to reach a final corridor vision.

**SCORE 2 POINTS****Engage a Diverse Range of Stakeholders and Public Participants (4 points)**

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency successfully identifies a diverse range of stakeholders and public participants, which include, at a minimum, all interested parties (as defined by current

## Appendix G: System Planning Pre-Workshop Scoresheets

regulations), in addition to all other parties potentially affected by changes to the transportation system. The agency regularly engages the identified stakeholders and public participants throughout the transportation planning process.

**2 points.** The agency gives special consideration and attention to the engagement of low-income, minority, disabled, and linguistically isolated populations, and uses a diverse and innovative range of public involvement techniques to ensure the engagement process is inclusive. Examples include, but are not limited to, conducting outreach in multiple languages, ensuring public meetings are coordinated with transit schedules, and using web-based surveys and/or social media to collect input, among others.

**1 point.** The agency includes an education component so that stakeholders understand the transportation planning process and are able to better provide informed and meaningful input.

US 2:

Five stakeholder meetings, multiple updates and data collection visits to staff and community members, including the port and the navy base in Everett, web site creation and maintenance with full public access to updates/notifications.

SR 516:

Three stakeholder meetings, multiple updates to city councils, staff, web site creation and maintenance with full public access to updates/notifications.

SR 520:

Five stakeholder meetings, two technical committee meetings, multiple updates to community/business groups, web site creation, and maintenance with full public access to updates/notifications.

Overall:

Limited low-income, minority, disabled, and linguistically isolated populations identified within the corridor study areas.

## SCORE 2

### Use a Transparent Process and Demonstrate the Incorporation of Stakeholder Input (3 points)

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency uses a transparent process to inform stakeholders how their input will be used and then follows through accordingly. An example of a transparent process includes the use of an established hierarchy of public participation (such as the IAP2<sup>8</sup> Public Participation Spectrum or Arnstein's Ladder of Citizen Participation).

**2 points.** The agency demonstrates to stakeholders how their input was used to inform and affect transportation planning decisions.

US 2: See below

SR 516: See below

SR 520: See below

<sup>8</sup> International Association for Public Participation.

## Appendix G: System Planning Pre-Workshop Scoresheets

Overall: All corridor plans were developed with stakeholder identification, requests for additional interest groups to be included, explanation of *Moving Washington* policy guidelines and rationale, submission of modeling techniques and analysis for review and comment, what standards and criteria to be used, initial draft releases of chapters and full document drafts, with full access to all stakeholders and general public to comment/revise. All comments provided were addressed and documented.

**SCORE 3****Demonstrate Sustainable Outcomes (6 points)**

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency is implementing transportation investments that support the community's vision and goals and help achieve sustainability outcomes.

**2 point.** The LRTP includes sustainability-related performance measures to assess the effectiveness of its public involvement process. Examples of sustainability-related performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies.

**3 points.** The agency monitors the effectiveness of its public involvement process against the performance measures, makes changes to improve the process as needed, and demonstrates sustainable outcomes.

US 2: See below

SR 516: See below

SR 520: See below

Overall: No sustainability outcomes or performance measures developed for individual corridor plans. Effectiveness of public involvement process and measures to improve not established at this time.

**SCORE 0****LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Meeting minutes and general records from the corridor plans, Individual comprehensive plans from the jurisdictions, comment summary and response records.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

Are there recommendations/guidelines to determine scope of outreach? Entire travel shed? Local proximity? Users? Non-users? Are local governments an acceptable entity to try and address outreach to at-risk(?) populations?

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### SP-04: Integrated Planning: Bonus

This criterion provided bonus points for agencies scoring a minimum of ten points on the previous three criteria. WSDOT did not meet this minimum, and so this criterion was not evaluated.

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### SP-05: Access and Affordability

#### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Jason Beloso

Evaluation Date: September 5, 2013

Email Address: [jason.beloso@wsdot.wa.gov](mailto:jason.beloso@wsdot.wa.gov)

#### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-05 Access and Affordability
--

Criteria Points Earned: See scores below

Total Possible Points: 15

<b>DISCUSS SCORING CRITERIA REQUIREMENTS</b>
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Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.
--

#### Goal

Enhance accessibility and affordability of the transportation system to all users and by multiple modes.

#### Scoring Team Notes:

1. Criteria should be clear on addressing target population – appears to be targeted towards special needs populations, populations with access and/or functional needs.
2. Consider properly defining populations with special needs (beyond physical disabilities) e.g. limited English proficiency, low-income, veterans, etc. Each subpopulation may have a different transportation need that the plan should be addressing.

## Appendix G: System Planning Pre-Workshop Scoresheets

**Sustainability Linkage**

Improved access and affordability benefit the social and economic sustainability principles by improving employment opportunities and enhancing opportunities to interact with the community. Increasing the modal choices available to the public supports the environmental principle by offering alternatives to motorized travel.

Scoring Team Notes:

1. Equity has a much stronger relationship to access and affordability than sustainability, i.e. addressing equitable access and affordability of diverse users supports sustainability principles.
2. Like sustainability, defining equity also requires a careful description, along with a definition of who benefits.

**Discussion/Consideration in Transportation Planning Documents (4 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**2 points:** The LRTP includes an analysis of the **three dimensions of accessibility** and **identifies specific population groups or areas where access is an issue**. The analysis includes a **discussion of time and cost barriers**, as well as their **consequences**. The TIP/STIP includes specific, **planned programs or improvements that address access issues**.

US 2:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address 3 dimensions of accessibility
Irene Stewart	0	Did not address 3 dimensions of accessibility
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address 3 dimensions of accessibility
Average Score	0	No points scored

SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0.5	Identified immigrant populations/neighborhoods, but not the type element is looking for
Irene Stewart	0	Did not address equity
Sri Rome	Not available	Not available
Jacque Mann	1	Some degree of demographic analysis
Average Score	0.25	1.5 (earned) / 6 (possible cumulative) = 0.25

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not identify element is looking for
Irene Stewart	0	Did not address 3 dimensions of accessibility
Sri Rome	Not available	Not available
Jacque Mann	0	Addressed some degree of accessibility, primarily focused on commuters
Average Score	0	No points scored

Scoring Team Notes:

1. Three dimensions of accessibility was not explained fully in these planning studies – consider providing description and explaining how metrics are applied to special needs populations.
2. Identifying access and affordability data for special needs populations may not be readily available – consider involving special needs community in planning processes.
3. Instead of using conventional transportation deficiency descriptors, e.g. throughput, consider explaining how congestion and road conditions could impact communities within the study area, e.g. travel delay for paratransit services, cost to low income populations.
4. Land use factors have a direct relationship to transportation, especially in context with special needs populations, e.g. housing affordability, walkability, etc. – consider expanding land use analysis and correlation to access and affordability.

2 additional points: The LRTP includes documentation of targeted, enhanced outreach or communications that have been used to engage these population groups or areas in the transportation planning process. The agency goes above and beyond requirements to ensure public meetings are accessible by using innovative methods to involve these groups. Examples of innovative methods include, but are not limited to, taking the meeting to them (so they do not have to make a special trip), and providing materials in multiple languages and formats (e.g., ensuring compatibility with “readers” used by the visually impaired, etc.), among others.

## US 2:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## Appendix G: System Planning Pre-Workshop Scoresheets

SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0.5	Spoke to groups beyond major employers, e.g. bicycle club and environmental groups
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0.08	0.5 (earned) / 6 (possible cumulative) = 0.08

SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

Scoring Team Notes:

1. Outreach to special needs populations was not conducted – consider reaching out to advocacy boards, e.g. Area Agency on Aging, engaging Puget Sound Regional Council’s Special Needs Transportation Committee, or going to specific community events with proper translation resources.
2. Consider holding meetings close to special needs populations and select venues that are accessible.
3. Consider identifying community advisors and trusted advocates that serve specific populations, e.g. Aging and Disability Services Advisory Council and Seattle Commission on People with Disabilities (elected officials may serve as council/commission members).

**Quantitative Analysis (5 points)**

Scoring for this requirement is based on the following, cumulative elements.

**2 points:** The agency uses **travel model, census, geospatial, and other data** to quantitatively evaluate the nature and distribution of accessibility and affordability concerns in its jurisdiction.

## Appendix G: System Planning Pre-Workshop Scoresheets

## US 2:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

Scoring Team Notes:

1. Employment growth data was limited to large employers – many special needs populations are employed in different sectors and industries.
2. While a quantitative throughput analysis and was conducted, no useful analysis was made on the nature and distribution of accessibility and affordability concerns.
3. Consider the growth rate and profile of special needs populations, e.g. aging elderly population (65+ population and 85+ population).

Appendix G: System Planning Pre-Workshop Scoresheets

4. Consider the land use and behavioral factors, particularly those of an aging population, e.g. aging-in-place.
5. Consider using Census disability and aging data, including specialized data from other state agencies, e.g. Office of Superintendent of Public Instruction, Department of Social and Health Services, etc.

**3 points:** The agency analyzes how its transportation planning documents address or improve issues such as:

- **Access to commercial centers, jobs, hospitals, schools,** and other civic institutions and social and emergency services,
- The **affordability of travel choices,** and
- The **affordability of housing** through its relationship to transportation investments.

US 2:

Reviewer	Score	Reason
Jon Morrison Winters	0.5	Some discussion on bicycle/pedestrian improvements
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0.05	0.5 (earned) / 9 (possible cumulative) = 0.05

SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0.5	Some discussion on bicycle/pedestrian improvements
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0.05	0.5 (earned) / 9 (possible cumulative) = 0.05

## Appendix G: System Planning Pre-Workshop Scoresheets

SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	1.0	Some discussion about access, trail data
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0.11	1 (earned) / 9 (possible cumulative) = 0.11

Scoring Team Notes:

1. Access to jobs was the primary focus with little to no association to affordability.
2. Consider using transit and bicycle/pedestrian data, including information from municipal programs, e.g. City of Seattle One Less Car, Communities Count, etc.
3. Consider using mobility management data, e.g. Medicaid transportation, Puget Sound Travel Diary.
4. Local systems may provide more detailed access and affordability data.

**Performance Measures and Regular Monitoring (6 points)**

Scoring for this requirement is based on the following, cumulative elements.

**3 points:** The LRTP includes **sustainability-related performance measures** that can be used to monitor the effects of plan implementation on transportation accessibility and affordability.

US 2:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	No implementation detail
Sri Rome	Not available	
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Some implementation detail, but insufficient
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

Scoring Team Notes:

1. Performance measures were not provided.

**3 points:** The agency is monitoring progress against the performance measures and adjusts its efforts as necessary to meet its goals.

## US2:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 516:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

## SR 520:

Reviewer	Score	Reason
Jon Morrison Winters	0	Did not address element
Irene Stewart	0	Did not address element
Sri Rome	Not available	Not available
Jacque Mann	0	Did not address element
Average Score	0	No points scored

Scoring Team Notes:

1. Performance measures were not provided i.e. no monitoring – no adjustment.
2. Point allocation for this element (6 points) seems disproportionate to the other elements.
3. Performance measures to consider:
  - a. Paratransit service travel time delay
  - b. Travel/trip options available
  - c. Weekend/evening transit service
  - d. User satisfaction/customer complaint
  - e. Mode shift due to affordability
  - f. Sidewalk and bike lane measurement: miles and separation

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

## Scoring Team

1. Jon Morrison Winters, Hopelink – representing transportation broker/mobility management, [JWinters@hope-link.org](mailto:JWinters@hope-link.org).

## Appendix G: System Planning Pre-Workshop Scoresheets

2. Jacque Mann, Puget Sound Educational Services District – representing Pierce County, volunteer transportation, [jmann@psed.org](mailto:jmann@psed.org).
3. Irene Stewart, City of Seattle, Human Services/Aging and Disability Services – representing elderly populations, sustainable communities, [irene.stewart@seattle.gov](mailto:irene.stewart@seattle.gov).
4. Sri Rome, Community Transit – Snohomish County, special needs populations, [Sri.Rome@commtrans.org](mailto:Sri.Rome@commtrans.org) (Not Available – due to a medical emergency, Sri was not able to attend the September 5<sup>th</sup> scoring meeting).

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

Scoring Team Notes:

1. When addressing the special needs transportation, there is little to no distinct relationship with SP-8: Freight and Goods Movement as stated in the compendium.
2. Recognize that accessibility and affordability are also considered to be competing priorities for those that service special needs populations.
3. Conduct targeted outreach to special needs communities.
4. Plans would improve if SP-5 criteria are followed.
5. Integrate relevant key points (strategies, objectives, performance goals/indicators) of the [USDOT's Strategic Plan FY 2014-2018](#), particularly on topics addressing equity, affordability, accessibility, and safety under the livable communities and security/preparedness focus areas.

**SP-06: Safety Planning****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Leah Bolotin

Evaluation Date: 9.23.13

Email Address: [leah.bolotin@wsdot.wa.gov](mailto:leah.bolotin@wsdot.wa.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-06 Safety Planning

Criteria Points Earned: 6

Total Possible Points: 15

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Agency integrates quantitative measures of safety into the transportation planning process, across all modes and jurisdictions.

**Sustainability Linkage**

Reducing fatal and serious injuries contributes to the social and economic triple bottom line principles by reducing the impacts associated with personal and public property damage, injury, and loss of life.

**Collaborate and Participate in the Development and Implementation of the State Strategic Highway Safety Plan (2 points)**

**Score: 2.**

One of the following scores applies:

**0 points.** The agency is not involved in the development of the State Strategic Highway Safety Plan (SHSP).

**1 point.** The agency actively collaborates in the creation of the SHSP, but is not implementing the SHSP as part of agency-specific planning and programming activities.

**2 points.** The agency actively collaborates in the creation of the SHSP and is implementing the SHSP in agency-specific planning and programming activities.

**Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

- **Collaboration:** As an agency, WSDOT would score the maximum number of points on this scoring requirement. WSDOT was one of the primary participants in the development of *Target Zero*, and has completely re-tooled their safety programming along *Target Zero* policies and goals. In fact, all of the Highway Safety Executive Committee (HSEC) members are on the statewide committee which is updating *Target Zero*, along with WSDOT's Local Programs Director.
- **Implementation:** WSDOT is currently developing a Ten Year Strategic Investment Plan to address *Target Zero* factors, which will be released along with the revised edition of *Target Zero*. WSDOT is focused on the priorities defined by *Target Zero* in order to maximize the potential for reducing fatal and serious injury crashes. A "Safety Planning, & Programming" process is currently being developed by WSDOT's Safety Executives to identify the steps for translating *Target Zero* goals into a specific set of prioritized activities and capital projects. This process will integrate safety into corridor plan selection and development.

WSDOT has been very successful at reducing fatal and serious injury collisions, which have dropped by 7-8% per year since *Target Zero* implementation in 2005. I believe Washington State is recognized as being one of the national leaders in this effort.

### Study-Level Evaluation

I think the 2 point scoring requirement could be rephrased for a study-level evaluation like this: “The study incorporated *Target Zero* goals and policies into its research, analysis, and study suggestions.”

Overall:

The safety chapters in our corridor studies are structured around the policies and goals of *Target Zero*. US 2 and SR 520 incorporated a safety section which discussed *Target Zero* procedure and programming, and SR 516 states the *Target Zero* policy and points the reader toward the *Target Zero* website for more details. They also identified any locations in the study area appearing on the safety priority arrays (Collision Analysis Corridors (CACs), Collision Analysis Locations (CALs), or Intersection Analysis Locations (IALs)) and incorporated those into study suggestions.

### **Integrate the Toward Zero Death Vision into the Agency’s Vision for Transportation Planning (1 point)**

**Score: 1**

The agency office has incorporated the *Toward Zero Death (TZD)* vision and is implementing *TZD* as part of its transportation planning activities (i.e. using multi-disciplinary and integrated approaches to reduce fatal and serious injuries in crashes). The agency vision for transportation planning reflects the intention to cooperate and collaborate across all levels of government.

### Agency Level Evaluation (suggested)

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

- TZD incorporation: The Washington State Highway Strategic Plan, *Target Zero*, is based on *TZD*. As discussed above, WSDOT has incorporated and implemented *Target Zero* into its transportation planning activities.
- Multi-disciplinary, integrated approaches & governmental collaboration: The agency vision on the WSDOT safety [website](#) states that *Target Zero* was written “with our partners in law enforcement and education” and that “WSDOT’s Pedestrian and Bicycle Safety Grants program was established to address the nearly 400 fatal and injury collisions involving pedestrians and bicyclists each year.” It also states “In conjunction with national research groups, WSDOT is working to identify cost-effective solutions.” The website has links to WSDOT Safe Routes to Schools [funding](#) and bicycle/pedestrian [funding programs](#) for local agencies. It also provides a [link](#) to a separate WSDOT *Target Zero* page.

### Study-Level Evaluation

I think this scoring requirement could be rephrased for a study-level evaluation like this: “The study incorporated *Target Zero* vision and incorporated it into analysis and study suggestions. The study reflected cooperation and collaboration across all levels of government in general but particularly with regard to safety issues in the corridor.”

Overall:

As discussed in the previous point above, all three studies incorporated *Target Zero* vision and policy in their study suggestions. “Cooperating and collaboration across all levels of government” in terms of *Target Zero* implementation probably is open to some interpretation. Both the US 2 and 520 studies

discuss *Target Zero* community task forces, which have had the most success at affecting driver behavior. SR 516 did not mention this, but does direct the reader to the *Target Zero* website where community task forces are recommended. “Multi-disciplinary and integrated approaches” probably requires some definition. However, I think the studies accomplished the gist of this scoring requirement overall.

### **Develop a Plan that Incorporates Safety into Short- and Long-Range Transportation Planning (1 point)**

**Score: 0**

Develop a plan that incorporates safety into short- and long-range transportation planning that:

- Presents a systemwide approach to reduce the risk of fatal and serious injuries based on data-driven, systematic, and scientific methods and approaches. These methods and approaches account for regression-to-the-mean and incorporate performance thresholds (quantify base performance).
- Includes safety-specific strategies and lead agencies.
- Supports integrated and multi-disciplinary approaches to reduce the number of fatal and serious injuries on the entire public highway system in the region.
- Demonstrates a commitment from the agency to include quantitative safety into the programming of projects and activities. The plan could be a single statewide plan or a combination of Standard Operating Procedures (SOPs) at headquarters and district/regional levels, or a plan for a county, metropolitan area, or regional council area.

The plan could be a single statewide plan or a combination of SOPs at headquarters and district/regional levels, or a plan for a county, metropolitan area, or regional council area.

One of the following scores applies:

**0 points.** The agency has not developed a plan that incorporates safety into short- and long-range transportation planning. For MPOs, transportation plans do not align with the State SHSP; for state DOTs, the other safety plans for the state (LRTP, HSP, Highway Safety Improvement Program, Commercial Vehicle Safety Plan) do not align with the SHSP.

**1 point.** The agency has developed a systemwide approach to identify expenditures on programs, projects, and activities that target a reduction in fatal and serious injuries in the region. This could be a single statewide or regional safety plan as part of a collaborative effort across all, or a combination of SOPs at headquarters and district/regional levels of government (federal, state, and local).

### **Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

As discussed in the scoring requirements above, WSDOT has indeed “developed a systemwide approach to identify expenditures on programs, projects, and activities that target a reduction in fatal and serious injuries.” However, per discussion of this scoring requirement with the author of the criterion,

## Appendix G: System Planning Pre-Workshop Scoresheets

systemwide approach” means all public roads in the state, not just state highways.<sup>9</sup> It is unclear at this point that the department is ready to begin programming expenditures on local roads. Per the author, the intent of the (SAFETEA-LU/MAP-21) legislation is to facilitate collaboration between state DOTs, regional agencies, and local jurisdictions in order to support transportation safety planning for the entire public network.

The Capital Program Development and Management (CPDM) office is now using Safety Analyst to analyze systemwide data for potential collision locations.<sup>10</sup> Once those locations are identified, more analysis is performed to see if a safety project should be proposed. CPDM generates a list of potential safety project locations which is prioritized by CPDM according to *Target Zero* principals and priorities. This list has replaced the CAC, CAL, and IAL safety priority arrays, and meets the “systemwide approach to identify expenditures on programs, projects, and activities that target a reduction in fatal and serious injuries in the region” requirement. The use of the Safety Analyst software also meets the “quantitative safety,” “regression to the mean,” and “data-driven, systematic, and scientific” methodology requirements.

The list is then sent to the Regions for checking and fine-tuning. The Regions suggest location-specific solutions, which are run by a Review Panel made up of Region and HQ safety and traffic staff. The solutions are then either approved, or the Panel asks for more analysis. Once the list is finalized and approved, it goes into the CIPP and then to the legislature for funding. CPDM has a flowchart that describes the process. It has been a gradual process of tool development and then switching over to the new approach.

CPDM has developed several tools, including a GIS tool to identify where collisions are occurring on the local network (based on limited data that was geocoded by University of Washington); however, the predictive capabilities of Safety Analyst are only being used on state highways at this point. The Department is close to being able to assist locals in analyzing all collisions on all roadways, but at this point is prevented by law from using WSDOT funding to implement on local networks. The WSDOT Highways and Local Programs office is a member of the Highway Safety Issues Group (HSIG) and the HSEC, both high level decision making groups within WSDOT, which is where the decision will ultimately be made about how to include or not include local streets in predictive analysis.

What are “performance thresholds”? Specifically, this means the *predicted average crash frequency* in the *Highway Safety Manual (HSM)*/Safety Analyst methodology. The intent of the criterion is to use performance thresholds for the entire public roadway network (“systemwide approach”). At this point, Safety Analyst is used by the department to perform planning level network screening using performance thresholds, but, as described above, currently only includes data from the state highway network.

As to whether our current methodology supports “integrated and multi-disciplinary approaches,” that would have to be defined a bit more. Does utilizing *Target Zero* community task forces meet this requirement?

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<sup>9</sup> This changes the parameters quite a bit from the more common assumption that the language was referring to statewide facilities only! Both SAFETEA-LU and MAP-21 push state DOTs towards working with local jurisdictions to include all public roadways, and to target investments thru Highways and Local Programs and put funding together w/jurisdictions thru the Transportation Improvement Boards.

<sup>10</sup> Safety Analyst is software based on the new *Highway Safety Manual* methodology.

## Study-Level Evaluation

This scoring requirement can re-phrased for study-level evaluation as: “The study used a systemwide (all public roadways) approach to identify study safety suggestions that targeted a reduction in fatal and serious injury collisions on and around the corridor. The approach was part of a statewide or regional safety plan that involved local, state, and federal agencies, and was based on data-driven methodologies which included performance thresholds and integrated/multi-disciplinary approaches.”

Overall:

The US 2 and 520 corridors had safety analysis performed based on the (older) CAC, CAL, and IAL methodology, primarily because the *HSM* had not yet come out with analysis modules for urban freeways. However, the “older” methodology still had a data-driven approach to prioritizing fatal and serious injury collisions. The *HSM* modules did exist, however, for urban and rural highways, so Safety Analyst software was utilized on the SR 516 study.

In all three cases, systemwide methodology which identified countermeasures to reduce fatal and serious injury collisions, and which was part of the *Target Zero* plan involving state and federal agencies, was used. The findings were incorporated into the study suggestions.

Where we did not meet the requirements of this scoring requirement would be 1) performing the analysis on all parts of the transportation network including local roads, and 2) “performance thresholds (quantify base performance)” were not developed for study suggestions. Those two requirements are beyond the scope of what we currently include in corridor studies. And I still think that “integrated/multi-disciplinary approaches” requires definition. I would therefore have to go with a score of zero on this one (or if possible, ½ point.)

### **Integrate Quantitative Safety Performance Measures into the Transportation Planning Process** **(1 point)**

Score: N/A.

One of the following scores applies:

**0 points.** The agency has not integrated safety performance measures into the transportation planning process, or the agency uses crash rates as a measure to identify system needs.

**1 point.** The agency has integrated quantitative safety performance measures into the transportation planning process. The agency uses quantitative safety performance measure(s) to quantify safety performance in terms of the number of crashes or severity. For example, the number of fatal and serious injury crashes, the number of fatal and serious injuries, or the number of fatal and injury crashes involving vulnerable users (pedestrians, bicyclists, motorcyclists, older users, and children). Network screening, as presented in Chapter 4 of the AASHTO Highway Safety Manual, presents advanced measures that account for regression to the mean and offer higher statistical reliability than, for example, crash rate methods.

### **Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

## Appendix G: System Planning Pre-Workshop Scoresheets

- Performance Measures: As discussed above, WSDOT is using the Safety Analyst software based on the *HSM* to perform network screening. The Safety Analyst list must be updated a minimum of every two years in order to submit our biennial request to the legislature. However, we are moving towards analyzing the network every year to see how the network is changing and stay on top of things. Safety Analyst also has a built-in methodology to do before-and-after analysis. That is one of its features, and the Department has hired the author of this criterion to teach WSDOT staff how to utilize it. The goal is to eventually perform a before-and-after analysis on every safety project.
- Vulnerable Users: Performance measures on “vulnerable users” needs to be clearly defined. The annual collision summary and reviews for *Target Zero* identifies particular population cohorts. Our collision data currently include information on collisions involving pedestrians, bicyclists, motorcycles, older users, and children, but do not identify individuals with disabilities. WSDOT is currently working on updating standard summaries for corridors that includes summaries of collisions involving pedestrians, bicyclists, motorcycles, older users, and children (ages 0-4 and 0-14). HSIG and HSEC are determining what WSDOT wants to classify as a vulnerable user. With the available data (2002-2012), the standard summaries can also include time trends across cohorts for 2002 through 2012 by corridor. The ability to expand the definition to include people with disabilities (and possibly other groups)<sup>11</sup> will depend on changing the Washington State Patrol (WSP) and local police forms. All of WSDOT collision data currently come from reports filed by WSP responding officers. Our data are therefore limited to what is on the WSP forms, and how accurately the forms are filled out by the responding officers. On a related topic, HSEC has committed to address all ADA issues on state highways within the next ten years. Title II of the ADA states that “new construction and altered facilities” must be accessible to and usable by people with disabilities, but WSDOT has decided to not wait for new construction or paving; WSDOT will be submitting a *Transition & Investment Plan* by Oct 2013 to the FHWA. WSDOT intends to work w/H&LP and cities to integrate ADA improvements along with other bicycle/pedestrian improvements. WSDOT is responsible for roadways “between the curbs,” which includes curb cuts and transition areas; WSDOT would like to have the locals do the sidewalks at the same time.
- Use of network screening to track performance: There were some performance measures being done under the last governor’s Government Management Accountability and Performance program, but it is unclear whether the new governor will be continuing that program. The HQ Design Office has done some research and analysis of the effects of cable median barriers and rumble strips that may answer this scoring requirement in the affirmative. However, the use of Safety Analyst’s before-and-after capability will most closely adhere to the requirements of Chapter 4 in the *HSM*.

### Study-Level Evaluation

I am not sure I can reframe this scoring requirement to apply to corridor studies, as performance measures are not typically included in corridor studies. There was quite a bit of extra analysis done on

<sup>11</sup> For example, WSP records usually only exist for collisions that involved a vehicle. Unless a fatality is involved, other types of crashes, such as between a pedestrian and a cyclist, or a wheelchair user that tipped over uneven ground or a steeply sloped curbcut, would not be accounted for. There are probably other population groups and transportation system users that could potentially fall into the “vulnerable” category as well.

non-motorized modes in the 520 study, but I do not think that meets the requirements of what is being discussed in this scoring requirement. Rather than scoring this a zero, I am going to go with N/A.

**Integrate Quantitative Safety Considerations in the Selection and Evaluation of Strategies during the Transportation Planning Process (3 points)**

**Score: 3.**

**2 points.** The agency has incorporated and integrated quantitative safety considerations into the selection and evaluation of strategies for different user groups (for example, pedestrians, bicyclists, motorcyclists, vehicle occupants).

**1 point.** The agency has selected strategies that include systemic treatments with proven effectiveness in reducing fatal and serious injuries (may be operational or safety-specific in nature).

**Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

As discussed above, quantitative analysis is being used to analyze safety issues on a statewide and local basis. The agency has selected systemic treatments with proven effectiveness, e.g. the installation of median cable barrier and centerline rumble strips has been enormously successful. The agency has also incorporated quantitative safety analysis for difference user groups, although that aspect of the methodology may need to be refined, depending upon the definition that is finally settled on for vulnerable users.

**Study-Level Evaluation**

Overall:

This scoring requirement can be reframed for corridor studies like this: “The study considered the application of system treatments along the corridor to address safety problems, if applicable. It also looked at solutions for different user groups such as pedestrians, bicyclists, motorcyclists, or vehicle occupants.”

The safety issues of non-motorized modes received attention in all three corridor studies. Systemic safety solutions would have only been applicable in the event that any of the corridor study segments were on the Collision Analysis Corridor (or Segment) list. There were no CAC or CAS sites identified on the three corridors in question.

**Integrate Statistically Sound Approaches to Determine Projected Safety Performance into the Long-Range Transportation Planning Process (3 points)**

**Score: 0.**

The agency has adopted and integrated advanced, statistically sound, quantitative methods into the long-range transportation planning process to set performance baselines and estimate future safety performance. The agency is using tools that rely on macro-level predictive models to provide a quantitative and statistically reliable forecast of crashes for a given future travel demand (using output

## Appendix G: System Planning Pre-Workshop Scoresheets

from travel demand models), and socio-demographics (if no particular improvements in safety culture, infrastructure, Emergency Medical Services, and other areas occur other than what exists at the base year of the analysis). PlanSafe is an example of such an analysis tool (developed and updated through NCHRP).

**Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

- Are we using statistical methods to set performance baselines and estimate future safety performance? No, WSDOT is not currently generating long-range safety projections but is working on it. By October 2013, all collisions on all public roadways will be geocoded, which is an essential first step to be able to perform this type of analysis.
- Are we using macro-predictive models to reliably forecast crashes for a given level of travel demand? Do we use travel demand forecasts as part of our future safety performance analysis? No, the *HSM/Safety Analyst* methodology does not currently include future demand forecasts, but it will in the future.
- Are we using macro-predictive models to reliably forecast crashes based on socio-demographic changes in the populations, such as PlanSafe?<sup>12</sup> No, this type of analysis is not currently part of WSDOT methodology.

Note: I read into “socio-demographics categories which would affect safety” things like the aging population cohort, and language/literacy/immigration issues and barriers, possibly educational levels as well.

**Study-Level Evaluation**

Overall:

No, the agency does not perform long-range safety projections, on either a statewide or corridor study level.

**Collect and Maintain Data (Safety and Non-Crash Information) for the Public Roadway System to Incorporate Safety into the Long-Range Transportation Planning Process (4 points)**

**Score: 0.**

- A. 1 point.** The agency actively participates and supports the state Traffic Records Coordinating Committee and jointly funds initiatives related to the improvement of data management and linkage initiatives.
- B. 1 point.** The agency develops, maintains, and uses GIS-based data files for the entire public roadway system, including crash and non-crash information, for use in planning for safety and incorporating safety into the long-range transportation planning process.

<sup>12</sup> “PlanSafe: Forecasting the Safety Impacts of Socio-Demographic Changes and Safety Countermeasures. The Transportation Research Board’s National Cooperative Highway Research Program (NCHRP) CRP-CD-78 provides safety forecasting software and accompanying guidance that is designed to help independently forecast the safety impacts of changes in socio-demographics and safety investments, both engineering and behavioral.” <http://www.trb.org/Main/Blurbs/163790.aspx>

## Appendix G: System Planning Pre-Workshop Scoresheets

- C. **1 point.** The agency creates, maintains, and uses GIS-based data for safety analysis and for use in the consideration of safety as part of the long-range planning process. NOTE: for MPO or regional agencies, this point does not include the creation of a GIS-based crash data file but includes support to the state in the development of a GIS-based roadway layer for all public roadways in the state.
- D. **1 point.** The agency routinely joins roadway, operation, asset management, medical, and other datasets spatially with crash data in the analysis to identify potential safety improvements and prioritize planning programs, projects, and activities.

**Agency Level Evaluation (suggested)**

This type of an agency level evaluation would best be done by those heading up the effort. That being said, here are some insights gained from my WSDOT interviews:

- A. Traffic Records Coordinating Committee: Participate and jointly fund? Yes, to both scoring requirements. Dan Davis, Head of the Statewide Traffic & Collision Data Office, is WSDOT's representative on the [Washington State Traffic Records Committee](#), and is heading up the development of the [Collision Analysis Software Application](#)<sup>13</sup> which will make the WSDOT safety database available to other jurisdictions. WSDOT will be paying for input into this database. Dan is active in both the local and national safety communities.
- B. GIS for public roadways: Almost. The system is there but is still being implemented. FHWA has developed Model Minimum Uniform Crash Criteria (MMUCC) & Model Inventory of Roadway Elements (MIRE). MMUCCs and MIREs are an attempt at standardization of transportation roadway and safety data. WSDOT is among the leaders in having many of the MMUCC & MIRE elements, and is considered a leader in using GIS for analysis of crash data along with roadway data elements. As discussed above, WSDOT is not currently using GIS applications on local networks.
- C. GIS for state facilities: Yes, we use GIS to analyze safety on state facilities, but not all public roads as discussed above. WSDOT will be using both Safety Analyst and GIS to analyze averages by roadway type. That will allow us to determine if a corridor or corridor segment is performing at the median value or above or below it.

We do use GIS for the long-range plan, the *HSP*. The last approved *HSP* includes unfunded projects only, and therefore does not include any specific locations for safety projects, but it does look at the big picture. For example, looking at the state system as a whole, head-on collisions were significantly decreased through the installation of median cable barrier and centerline rumble strips. We also have a Ten-Year Safety Investment Plan endorsed by the Highway Safety Executives. This will reflect the most common collision types: run-off-the road, cross-overs, intersections, plus ADA needs. Since the commencement of both *Target Zero* policy and GIS analysis in 2005, the number of statewide fatal and serious injury collisions has been steadily declining.

- D: Use of joint spatial datasets: Yes. We are currently using joined roadway, operational, and collision data for analysis. WSDOT is also working with other agencies in the state, as a member of the Data Integration Committee on the [Washington State Transportation Safety Commission](#), on joining data across agency datasets.

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<sup>13</sup> This project will acquire and implement a collision analysis software application for use by various transportation and public safety professionals throughout Washington. This application will provide a user-friendly interface and robust analysis capabilities to all levels of government.

## Appendix G: System Planning Pre-Workshop Scoresheets

CPDM has made some creative and productive use of spatial data combined with safety data. They have been able to combine safety data with geographic information to help analyze collisions, such as:

- Run-off-the-road, which is the largest category of collisions. They combined that with sharp horizontal curves and steep roadsides to determine where some of the major causes were located.
- A similar exercise was performed with bridges.
- Collisions involving youngsters within a ¼ mile radius of schools were plotted.

WSDOT is also currently evaluating a “line visualization tool” that would support visualization of multiple datasets for the same facility. It would have a common horizontal axis depicting the highway milepost, and information for the highway would be presented as stacked graphs on the same page. This would be very helpful to more easily identify opportunities for further investigation and support a better understanding of contributing factors to collisions.

### Study-Level Evaluation

Overall:

- A. I am not sure that Traffic Records Committee participation and funding is an appropriate corridor-study level issue. N/A.
- B. Was GIS used to analyze public roadways around the study corridors? No.
- C. Was GIS used to analyze the state highways in question? No, the safety priority arrays and Safety Analyst were used. However, GIS was used to produce interactive Collision Analysis Tool (iCAT) maps to display collision information in two of the three studies.
- D. Were joint spatial datasets used for safety analysis? No.

Although the agency would probably score a 3 on this scoring requirement, the corridor studies would have to receive a zero.

#### LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

- *US 2 - Everett Port/Naval Station to SR 9 Corridor Planning Study*, WSDOT, Final Draft 7/25/13 (not yet published) <http://www.wsdot.wa.gov/projects/us2/everettnavalstationtosr9/>
- *SR 520 Multimodal Corridor Planning Study from I-405 to Avondale Road*, WSDOT, 2013 <http://www.wsdot.wa.gov/planning/Studies/SR520EastCorridor/>
- *SR 516 Corridor Study, SR 167 in Kent to SR 169 In Maple Valley*, WSDOT, 2013 <http://www.wsdot.wa.gov/planning/Studies/SR516Corridor/>
- **Interviews** with applicable WSDOT staff, including the WSDOT State Traffic Engineer, several members of CPDM Office, and a safety engineer hired to bring WSDOT up to speed in terms of HSM/Safety Analyst agency-wide, and who authorized this criterion for FHWA and assisted in the development of PlanSafe.

## Appendix G: System Planning Pre-Workshop Scoresheets

- **State Website:** [Target Zero](#)
- **WSDOT Websites:** [Safety](#) and [Target Zero - Strategic Highway Safety Plan](#)
- **Document:** [Washington State’s Strategic Highway Safety Plan 2010: Zero Deaths | Zero Serious Injuries | 2030 | Target Zero](#), Washington State, 2010.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

- SP-06 should probably include scoring requirements about ADA compliance and transition plans.
- It would be helpful to define some of the terms, such as “multi-disciplinary and integrated approaches” and “vulnerable users.”
- A lot of these scoring requirements were not applicable to corridor studies, as described in detail above.

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## SP-07: Multimodal Transportation and Public Health

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Stan Suchan

Evaluation Date: September 23, 2013

Email Address: [suchans@wsdot.wa.gov](mailto:suchans@wsdot.wa.gov)

### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-07 Multimodal Transportation and Public Health
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Criteria Points Earned:

Total Possible Points: 15

US2: 1

SR 516: 1

SR 520: 3

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Expand travel choices and modal options by enhancing the extent and connectivity of multimodal infrastructure. Support and enhance public health by investing in active transportation modes.

**Sustainability Linkage**

A multimodal transportation network supports the social and economic triple bottom line principles by increasing transportation options, reducing traffic congestion and emissions, and encouraging the use of active modes to enhance public health.

**Develop Goals and Objectives (2 points)**

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency has developed goals and objectives for enhancing the extent and connectivity of multimodal infrastructure within its jurisdiction, including transit and non-motorized modes.

**1 point.** The agency has developed goals and objectives related to active transportation and the improvement of public health.

US 2: 0

SR 516: 0

SR 520: 0

Overall: 0

**Engage Stakeholders (2 points)**

The agency regularly engages public health and active mode stakeholders throughout the transportation planning process and incorporates their feedback into the creation of transportation planning documents.

US 2: 0

SR 516: 0

SR 520: 0

Overall: 0

**Develop a Systemwide Plan (5 points)**

The agency's LRTP integrates multimodal and active mode infrastructure needs, projects, and programs. Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second. The third element is independent.

**1 point.** The agency includes and prioritizes active, non-motorized transportation projects and programs as a component of the LRTP. Examples of projects include the expansion of transit, pedestrian, and bicycle infrastructure, facilities, and services. Examples of programs include the implementation of Safe Routes to School.

**1 additional point:** The agency's LRTP integrates transit, pedestrian, bicycle, and roadway networks so that intermodal connections are safe and convenient.

## Appendix G: System Planning Pre-Workshop Scoresheets

**3 points.** The agency has evaluated the health impacts of the LRTP to determine whether the planned transportation investments will help the agency to meet its public health and active transportation goals.

US 2: 1

SR 516: 0

SR 520: 2

Overall: 3

**Measure Progress and Demonstrate Sustainable Outcomes (6 points)**

The agency evaluates its progress toward meeting its multimodal and public health goals and makes adjustments as necessary. Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency is implementing transportation investments that expand travel choices and modal options and support and enhance public health.

**2 points:** The agency has incorporated multimodal and public health-related performance measures into its LRTP and can demonstrate ongoing monitoring of its progress toward meeting its goals.

**3 points:** The agency can document that it has met its multimodal transportation and public health goals and objectives.

US 2: 0

SR 516: 1

SR 520: 1

Overall: 2

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Corridor plans.

Consultation with staff from a transit agency, public health agency, active transportation advocacy group and corridor plan project managers.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

**Was any part of the scoring criteria process unclear?**

The criteria were clear, but not applicable to WSDOT corridor plans based upon current direction, funding and partner and public expectations.

**Do you have any unanswered questions? Was there anything missing from the criterion details?**

It is unclear how these criteria apply to a highway corridor plan and, if they were included, what influence the criteria would have on planning, funding and design decisions.

**Were the requirements for scoring points practical and measurable?**

Practical: no, not given our current policy direction, funding and understanding of state and local roles and responsibilities. Measurable: yes.

**Did the points assigned to each component of the scoring seem reasonable?**

That depends upon our purpose for including this scoring criterion. Right now our corridor plans have very little influence on funding, programming and design decisions related to public health and multimodal transportation. As a result, stakeholders interested in these topics put their time and effort to other conversations and processes.

**Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.**

Consider using multimodal level of service measures.

Consider further integrating transit into corridor plans.

Adding health to corridor plans requires a big change in perspective and approach.

Add “safe, comfortable and complete” to Goals and Objectives for non-motorized transportation.

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**SP-08: Freight and Goods Movement****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Tom Washington

Evaluation Date:

Email Address: [washint@wsdot.wa.gov](mailto:washint@wsdot.wa.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-08 Freight and Goods Movement

<b>US 2 Criteria Points Earned:</b>	<b>6</b>	<b>Total Possible Points:</b>	<b>15</b>
<b>SR 516 Criteria Points Earned:</b>	<b>4</b>	<b>Total Possible Points:</b>	<b>15</b>
<b>SR 520 Criteria Points Earned:</b>	<b>4</b>	<b>Total Possible Points:</b>	<b>15</b>

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Implement a transportation system plan that meets freight access and mobility needs while also supporting triple bottom line sustainability principles.

**Sustainability Linkage**

Freight and goods movement planning benefits all of the triple bottom line principles by supporting economic prosperity through improved freight efficiency and reliability, reducing fuel consumption and related emissions, and reducing adverse impacts of freight on communities.

**Engage Stakeholders (3 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**2 points.** The agency regularly engages a wide variety of freight service providers, stakeholders, workers, and representatives in developing transportation planning documents to ensure freight activity supports sustainable economic activity that fits well in the context of the metropolitan area and community.

**1 additional point.** The agency utilizes institutional mechanisms to facilitate the engagement of freight stakeholders. Examples of institutional mechanisms include decision making boards, or advisory committees, that include freight representatives.

US 2: Port of Everett included as stakeholder Issues included city center height restrictions, radii, and multiple permit requirements. Navy Base interviewed at onset of study.

SR 516: Outreach to Union Pacific railroad for data. No data shared.

SR 520: Microsoft, Wright Runstad, and Kemper Development were all included as stakeholders.

Overall: All three studies included freight classifications with yearly tonnage carried. Freight division invited to comment and review studies. Freight division is engaged in the development and adoption of a Washington State Freight Mobility Plan update. Includes involvement from 60 representatives of the state's key freight-dependent industry sectors, freight carriers, local governments & ports, environmental organizations, labor, and others. WSDOT participates in a number of freight related planning groups such as; Freight Action Strategy Corridor Partnership (at PSRC), The Great Northern Corridor, North/West Passage, Inland Pacific Hub, and the International Mobility & Trade Corridor Program. WSDOT Freight Alert System is a database for reaching 4,000 subscribers via e-mail/text.

## Appendix G: System Planning Pre-Workshop Scoresheets

**Score**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>0</b>
<b>SR 520</b>	<b>0</b>

**(Score is assigned from an individual corridor plan perspective. Criteria is agency oriented and not applicable to individual corridor plans.)**

**Freight Mobility Needs (4 points)**

Scoring for this requirement is based on the following, cumulative elements.

**2 points:** The agency considers multimodal freight mobility needs (aviation, marine, rail, interstate, pipeline, and intermodal) in the transportation planning process. Freight mobility goals and evaluation criteria are included in transportation planning documents.

**2 points:** The agency includes and monitors sustainability-related freight mobility performance measures in transportation planning documents. Examples of performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies.

US 2: Truck -regional travel demand models to estimate the truck travel time

SR 516: Truck- regional travel demand models to estimate the truck travel time, Rail

SR 520: Truck- regional travel demand models to estimate the truck travel time

Overall: (As applied to the Freight Plan)

Direct truck operating cost - WSDOT bases the value of time on information from national truck carrier surveys, the formula is: change in commercial vehicle hours traveled X truck operating cost per hour = change in direct truck operating cost.

Truck engine emissions - The Environmental Protection Agency's Motor Vehicle Emission Simulator (MOVES) modeling system estimates emissions for mobile sources covering a broad range of pollutants and allows multiple scale analysis. WSDOT uses regional factors derived from MOVES for our analysis.

Economic output - defined as employment and economic output. As part of the Freight Plan, WSDOT developed and tested a transparent and robust methodology to account for the economic output of highway projects with truck freight benefits.

**Score**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**All modes considered, as appropriate for the corridor being studied**

**(Score is assigned from an individual corridor plan perspective. Criteria is agency oriented and not fully applicable to individual corridor plans.)**

**Freight Reliability (4 points)**

Scoring for this requirement is based on the following, cumulative elements.

**2 points:** The agency includes in the LRTP, or other appropriate transportation planning documents (for example, a freight rail plan), specific provisions for maintaining and improving

## Appendix G: System Planning Pre-Workshop Scoresheets

freight reliability and interconnectedness between freight modes for both inter- and intra-city freight, in ways that enhance sustainability (e.g. improve safety and fuel economy and/or reduce noise and emissions). Examples of provisions include information exchange, infrastructure investments, technology, and other best practices.

**2 points:** The agency includes and monitors sustainability-related freight reliability performance measures in the appropriate transportation planning document(s).

US 2: Truck- regional travel demand models to estimate the truck travel time Recommendations address congestion in general

SR 516: Truck- regional travel demand models to estimate the truck travel time Recommendations address congestion in general

SR 520: Truck- regional travel demand models to estimate the truck travel time Recommendations address congestion in general

Overall:

Network resiliency - defined as the ability to reduce closures of the state's designated truck freight economic corridors that are due to severe weather or natural disasters and last 24 hours or more

Reliability - using spot speed collected as part of the Transportation Performance Management program, the formula for the 80th percentile reliability index is:  $\text{Freight RI}_{80} = (\text{80th Percentile Travel Time}) / (\text{Agency Travel Time})$

"Provisions" need to be explained. Does this imply funding allocations?

**Score**

US 2	2
SR 516	2
SR 520	2

**(Score is assigned from an individual corridor plan perspective. Criteria is agency oriented and not applicable to individual corridor plans.)**

**Intermodal Freight Connectors (4 points)**

Intermodal freight connectors are the public roads leading to major intermodal terminals. Although they account for less than one percent of National Highway System mileage, they are key conduits for the timely and reliable delivery of goods. Scoring for this requirement is based on the following, cumulative elements.

**2 points:** The agency provides for planning, evaluating, maintaining, and improving intermodal freight connectors at all levels (federal, state, and local). Measures and criteria to encourage coordination among the freight modes (e.g. rail, port, airport, and other) in ways that enhance sustainability are included.

**2 points:** The agency includes and monitors sustainability-related performance measures for intermodal freight connectors in the appropriate transportation planning document(s).

US 2: No

SR 516: No

SR 520: No

## Appendix G: System Planning Pre-Workshop Scoresheets

Overall: WSDOT is in the process of identifying first/last mile connectors for the first time.

**Score**

US 2	0
SR 516	0
SR 520	0

**(Score is assigned from an individual corridor plan perspective. Criteria is agency oriented and not applicable to individual corridor plans.)**

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Corridor plan authors, WSDOT Freight Division (Washington State Freight Mobility Plan - scheduled to be complete in Q1 2014)

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

Several terms need further definition as to their meaning and their use for scoring purposes. Examples are “provisions”, “sustainability”, “sustainability-related performance measures”, etc.

Application to individual corridor plans is problematic. All modes and freight

All studies used for evaluation were legislatively mandated as a result of constituent requests. Issues often identified prior to analysis. Stakeholders often have specific priorities.

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## SP-09: Travel Demand Management

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we

## Appendix G: System Planning Pre-Workshop Scoresheets

ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Kathy Johnston

Evaluation Date:

Email Address: [kathy.johnson@wsdot.wa.gov](mailto:kathy.johnson@wsdot.wa.gov)

### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-09 Travel Demand Management
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Criteria Points Earned:

Total Possible Points: 15

US2: 0

SR 516: 0

SR 520: 5.5

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Reduce vehicle travel demand throughout the system.

#### Sustainability Linkage

Transportation Demand Management (TDM) supports all of the triple bottom line principles by reducing energy consumption and related emissions, improving awareness of available travel choices, and reducing costs of travel and congestion.

#### Set TDM Goals and Objectives (2 points)

**1 point.** The agency has developed quantifiable TDM goals and objectives for reducing travel demand for the transportation network within its jurisdiction. Examples of TDM goals and objectives include vehicle-miles of travel (VMT) reduction goals and/or mode split targets.

**Additional 1 point.** The TDM goals and objectives are also consistent with relevant state and/or metropolitan goals and objectives for reducing travel demand.

US 2: 0

No quantifiable goals indicated in the plan. There were references to aligning with climate change initiatives/legislation (Executive Order 07-02 and 09-05; 2009 laws, CTR law). Stakeholders developed the corridor vision and study goals, including an improved corridor that enhances multimodal travel. In alignment with *Moving Washington*, TDM was listed as a near term recommendation. Specifically the study recommended building upon Snohomish County's "Curb the Congestion" program at a cost of \$200,000/year for staff, incentives, postage. Within the study area, Everett is CTR affected. The city and the state both have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled per employee by 13% at CTR worksites by 2015.

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 516: 0

No quantifiable goals and objectives indicated in the plan. There were, however, overarching goals for implementing *Moving Washington* and a specific list of demand management strategies was included as part of the recommendations. Accompanied with the strategy is a suggested timeline, approximate cost, estimate of trips removed, and basis for the assumptions. Traffic and modeling analysis shows that a 5% reduction in peak hour trips in 2030 would remove 450 daily commute trips from the highway and could result in an approximate \$8 to \$10 million in roadway capacity construction savings. Removing quantified trips from the system was not listed as a goal. Corridor plan vision and study goals were developed. Kent is the only CTR affected jurisdiction in the study area. The city and the state both have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled per employee by 13% at CTR worksites by 2015.

## SR 520: 1.5

The stated purpose of the plan is to develop a proactive, multimodal, integrated transportation corridor plan to address transportation demands along the corridor. The vision for the corridor includes the following: enhances multimodal travel and system integration. There are 22 recommendations in the study characterized as motorized or non-motorized. A list of seven demand management strategies were listed. A 5% reduction in future traffic volumes is the target for the strategies, assumed to be achieved within 20 years. The estimated cost is projected to reach up to \$500,000 per year by the twentieth year. The estimate assumes improved transit service on the corridor, ongoing support for foundational TDM activities, and bicycle/pedestrian improvements. The jurisdictions in the study are CTR affected; the cities and the state have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled per employee by 13% at CTR worksites by 2015.

## Overall:

There needs to be more of a connection between state/local TDM goals and corridor plans.

**Implement a TDM Program (4 points)**

The agency is implementing a comprehensive TDM program that includes several of the various types of TDM strategies described in the Background paragraph above.

One of the following scores applies:

**0 points.** The agency is implementing less than two of the TDM strategies described in the Background paragraph above.

**2 points.** The agency is implementing a TDM program that includes two or three of the TDM strategies described in the Background paragraph above.

**4 points.** The agency is implementing a comprehensive TDM program that includes several (four or more) of the TDM strategies described in the Background paragraph above.

## US 2: 0

Commuters utilizing this corridor travel to CTR worksites to the north, the south, and the west. WSDOT distributes funding to several jurisdictions where those worksites are located. CTR is a major worksite-based mandate and funding is insufficient to cover a non-mandated residential-based TDM and non-CTR employer outreach program such as “Curb the Congestion”. Community Transit is implementing a pilot program that is corridor based but it is geographically restricted to SW Snohomish County. The city of Everett is implementing a traditional CTR plan for their major worksites.

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 516: 0

WSDOT distributes CTR funding to implement CTR at 30 affected worksites in Kent per the local CTR plan and biennial work plan. The funding is used to deploy several of the TDM strategies listed in the background. Funding is insufficient to cover a comprehensive program, much less the specific strategies listed in the plan, and it barely covers the cost for 1 FTE to administer the program. Currently the city is allocated \$53,003 a year, or \$106,007 for the 2013-2015 biennium. That funding is used to implement the program at 30 major worksites which may not necessarily address the corridor issues.

Recommendations to expand demand management for this corridor include expanded bus service, vanpool promotion, employer engagement, vanpool relocation, and multimodal community-based coaching/outreach/incentives. A continued focus on completing the walk and bike routes along the corridor is also recommended. The annual costs for those additional strategies total \$214,000 not including staff to implement. It is estimated that these strategies would result in 500 daily commute trips removed.

## SR 520: 0

WSDOT distributes CTR funding to jurisdictions in the study for program implementation at affected worksites. Funding is insufficient to cover a comprehensive program, much less an expanded program as listed in the plan. The funding is used to implement the program at all major worksites which may not necessarily address the corridor issues. Recommended demand management strategies include: expand CTR to small and medium businesses, expand vanpool programs, minor transit enhancements. Parking management, outreach/incentives/promotions targeted to worksite and residential markets, infrastructure and services to support first and last mile connections. The estimate of \$500,000/year assumes improved transit service on the corridor, ongoing support for foundational TDM activities, and bicycle/pedestrian improvements.

## Overall:

The agency is not an implementer; however, WSDOT does provide CTR funding per mandate and it is limited in scope and funding. There needs to be more of a connection between state/local TDM goals and corridor plans.

**Develop TDM Performance Measures & Monitor Progress (4 points)**

The agency has quantifiable TDM performance measures and can demonstrate ongoing monitoring of its TDM program. Examples of common TDM performance measures include non-SOV mode share, VMT reduced, and vehicle trips reduced. Additionally, TDM performance measures may assess the success of TDM education and outreach programs by tracking the number of participants in various TDM programs or surveys. Additional examples of performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Performance Measures for Transportation Agencies. One of the following scores applies:

**0 points.** The agency does not have TDM performance measures and is not conducting ongoing monitoring of their TDM program.

**2 points.** The agency has quantifiable TDM performance measures, but is not conducting ongoing monitoring of their TDM program.

**4 points.** The agency has quantifiable TDM performance measures and can demonstrate ongoing monitoring of their TDM program.

## US 2: 0

Everett and the state both have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled

## Appendix G: System Planning Pre-Workshop Scoresheets

per employee by 13% at CTR worksites by 2015. The performance of the program has been well documented since their first report to the legislature in 1995. Measurement of the CTR program performance is based on surveys of employees at participating CTR worksites. Progress is based on comparing the most recent surveys data to baseline survey data. Surveys are conducted every two years. The CTR Board reviews progress towards implementing CTR plans and programs, the associated costs and benefits, and reports recommendations to the legislature and the Governor. The study did not directly reference measurement. The program needs additional resources and agency support for measurement and monitoring a corridor-based TDM program.

## SR 516: 0

The city and the state both have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled per employee by 13% at CTR worksites by 2015. The performance of the program has been well documented since their first report to the legislature in 1995. Measurement of the CTR program performance is based on surveys of employees at participating CTR worksites. Progress is based on comparing the most recent surveys data to baseline survey data. Surveys are conducted every two years. The CTR Board reviews progress towards implementing CTR plans and programs, their costs and benefits, and reports recommendations to the legislature and the Governor. The study did not directly reference measurement, and likely did not factor that into the cost calculations for demand management. The program needs additional resources and agency support for measurement and monitoring. The study did estimate benefit cost ratio for strategic capacity addition strategies/recommendations based on time savings for motorized traffic. The agency should develop and prioritize common measures for all strategies so that a true comparison can be made, particularly in regards to life cycle costs. Mobility performance measures address vehicle throughput, not person throughput (productivity). TDM can extend the life of facilities, can maximize performance of facilities/efficiency of system, and can delay or eliminate costly road expansion costs.

## SR 520: 0

The cities and the state have goals and objectives for reducing travel demand for the transportation network. The CTR program goals are to reduce the drive-alone rate by 10% and vehicle-miles traveled per employee by 13% at CTR worksites by 2015. The performance of the program has been well documented since their first report to the legislature in 1995. Measurement of the CTR program performance is based on surveys of employees at participating CTR worksites. Progress is based on comparing the most recent surveys data to baseline survey data. Surveys are conducted every two years. The CTR Board reviews progress towards implementing CTR plans and programs, their costs and benefits, and reports recommendations to the legislature and the Governor. The study did not directly reference measurement, and likely did not factor that into the cost calculations for demand management. The study may have assumed that the CTR surveys would be used for monitoring and reporting, however it may not be the right tool for the recommended strategies. The program needs additional resources and agency support for measurement and monitoring.

## Overall:

The agency is not an implementer; however, WSDOT does provide CTR funding per mandate and it is limited in scope and funding. There needs to be more of a connection between state/local TDM goals and corridor plans.

**Demonstrate Sustainable Outcomes (5 points)**

This requirement may be scored on a scale of 0-5, in proportion to the agency's estimate of its progress toward meeting this requirement. The following guidelines apply:

## Appendix G: System Planning Pre-Workshop Scoresheets

**0 points.** The agency cannot document that they have met or are making measurable progress toward meeting their TDM goals and objectives.

**3 points.** The agency can document that they have made measurable progress toward meeting their TDM goals and objectives.

**5 points.** The agency can document that it has met its TDM goals and objectives and that its TDM program has contributed to those outcomes. For example, the agency can show that VMT has been reduced or that non-SOV mode-share has increased for its jurisdiction (in accordance with its TDM goals and objectives), and can reasonably attribute a proportion of that to its TDM program.

US 2: 0

No TDM goals or objectives were developed for this plan, however, the agency can and does document that jurisdictions are making progress or have met their goals in relation to the CTR program or TDM initiatives.

SR 516: 0

No TDM goals or objectives were developed for this plan, however, the agency can and does document that jurisdictions are making progress or have met their goals in relation to the CTR program or TDM initiatives.

SR 520: 4

The study did not directly reference measurement but there may have been an assumption that the CTR survey will be used for progress reporting. The CTR survey may not be the right tool to measure and report results for the recommended strategies. The program needs additional resources and agency support for measurement and monitoring an expanded program. The agency can and does document that jurisdictions are making progress or have met their goals in relation to the CTR program or TDM initiatives.

Overall:

There needs to be more of a connection between state/local TDM goals and corridor plans. Additional resources would need to be devoted to measuring performance.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

It was challenging to orient this scoresheet to corridor plans and to TDM.

There needs to be more of a connection between state/local TDM goals and corridor plans.

## SP-10: Air Quality

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Brigid Dean

Evaluation Date:

Email Address: [deanb@wsdot.wa.gov](mailto:deanb@wsdot.wa.gov)

#### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-10 Air Quality
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Criteria Points Earned:

Total Possible Points: 15

US 2: 4

SR 516: 2

SR 520: 4

Average score: 3.33 out of 15 possible points.

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

To plan, implement, and monitor multimodal strategies to reduce emissions and to establish a process to document emissions reductions.

#### Sustainability Linkage

Reducing emissions and improving air quality supports the environmental and social principles by reducing emissions and improving quality of life.

#### Implement Strategies to Reduce Emissions (10 points)

The agency is implementing multimodal strategies as part of a transportation plan to reduce emissions. The agency receives 2 points for implementing strategies from each of the categories listed below, for a total of 10 points. A report published in 2010: NCHRP 25-25 (Task 59): Evaluate the Interactions between Transportation-Related Particulate Matter, Ozone, Air Toxics, Climate Change, and Other Air Pollutant Control Strategies.

Scoring for this requirement is based on the following, cumulative elements.

## Appendix G: System Planning Pre-Workshop Scoresheets

**2 points.** The agency is implementing transportation demand management strategies, including land use strategies and strategies that reduce vehicle-miles travelled, increase transit services, and promote non-motorized modes of transportation.

**2 points.** The agency is implementing transportation system management strategies, including congestion relief and traffic management strategies such as pricing or idling restrictions.

**2 points.** The agency is implementing vehicle technologies, including diesel emissions reduction strategies such as truck stop electrification, funding school bus retrofits, retrofits of state or local maintenance and construction equipment, and clean vehicle strategies such as replacing diesel buses with CNG or hybrid buses.

**2 points.** The agency is implementing fuel technologies, including renewable energy measures (which reduce emissions from power plants or fuel consumption) such as: solar lighting, solar or wind energy at rest areas, renewable electricity generation or biofuel crops in ROW, and mandates for the use of biofuels in fleet or construction vehicles, etc.

**2 points.** The agency is implementing dust controls, including paving unpaved roads, and strategies to control construction-related dust.

US 2: 4

– the report discusses non-motorized, ramp-metering, and transit improvements. Discussion of related regional policies

– promotes employer outreach for CTR programs, express lanes, and HOV.

SR 516: 2

– the report discusses TDM strategies to reduce 2030 peak demand by 5%.

SR 520: 4

– includes discussion of related strategies, including reducing VMT, transit enhancements, LU strategies, and car/vanpool programs.

– discussion of HOV and high occupancy toll lanes.

Average score between the three studies: 3.33 out of 10 possible points on this criteria.

### **Conduct Emissions Analysis (5 points)**

Conduct emissions analysis to document emissions reductions from the transportation strategies implemented. One of the following scores applies:

**0 points.** No emissions analysis is performed.

**2 points.** The agency conducts a qualitative assessment of the emissions reduction potential of all the strategies implemented.

**5 points.** The agency conducts a quantitative emissions analysis to document emissions reduction for all the strategies implemented.

US 2: 0

SR 516: 0

SR 520: 0

Overall:

Corridor planning studies do not conduct emissions analysis. This criteria is not applicable to corridor planning studies. NA

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Tim Sexton, NW Region Air Quality, Noise, Energy Policy Manager

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

**SP-11: Energy and Fuels****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Kathy Leotta

Evaluation Date: September 18, 2013

Email Address: [kathy.leotta@wsdot.w.gov](mailto:kathy.leotta@wsdot.w.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-11 Energy and Fuels

Criteria Points Earned: US2: **1** SR 516: **2** SR520: **3.5**

Total Possible Points: 15 (but 9 relevant to corridor plans)

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Reduce the energy and fossil fuel consumption from the transportation sector and document it in the transportation planning process.

**Sustainability Linkage**

Reducing emissions and improving air quality supports the environmental and social principles by reducing emissions and improving quality of life. Reducing energy and fossil fuel consumption from the transportation sector provides multiple sustainability benefits and supports all of the triple bottom line principles by reducing fuel spending, greenhouse gas emissions, and energy dependence.

**Set Goals and Objectives (2 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**1 point.** The agency has developed energy and/or fossil fuel reduction goals and objectives for the transportation system within its jurisdiction.

**1 additional point.** The goals and objectives are consistent with relevant state and/or metropolitan goals and objectives for reducing energy and fossil fuel consumption.

**Score for US 2: 0**

No energy/fossil fuel reduction goals and objectives indicated for this plan. The plan indicates that potential future analysis may be required, including “Energy and natural resources (amount required/rate of use/efficiency, source/availability, nonrenewable resources, conservation and renewable resources, scenic resources)”.

Under “goals” and “vision” is where this corridor plan should have included goals related to energy conservation and reducing fossil fuel usage.

**Score for SR 516: 0**

No energy/fossil fuel reduction goals and objectives indicated for this plan. The study indicates in text that the evaluation criteria also considered how a proposed improvement affected “Economy, Transportation, and Community” or “ETC.” For example, would a proposed recommendation enhance freight movement or improve access to Transit Oriented Development, promote energy conservation, or improve safety? However, nothing else is found in the study corridor report about criteria that include promoting energy conservation. The section “Corridor Plan Vision and Study Goals” should include energy/fossil fuel reduction goals.

**Score for SR 520: 1.0**

The study does include energy conservation as a performance criterion. This report indicates that future analysis may include energy and natural resources (amount required/rate of use/efficiency, source/availability, nonrenewable resources, conservation and renewable resources, scenic resources). Under “Study Goals” should include energy/fossil fuel reduction as corridor goals. Half point for performance criteria, and half point that it is consistent with state plans (although not quantifiably consistent).

**Agency Overall:**

Washington State has GHG reduction targets, although no GHG targets have been set for the transportation sector specifically. Washington State has also established VMT/capita reduction benchmarks that are intended to help meet the GHG reduction goals, but no VMT/capita benchmarks have been established at the regional/local level. Recently, new performance measures that include energy/related goals and measures have been developed for our statewide transportation system.

## Appendix G: System Planning Pre-Workshop Scoresheets

Overall:

Corridor plans should include goals and objectives related to energy / fossil fuel reduction.

**System Level Data Collection and Forecasting (4 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**2 points.** The agency (or cooperating agencies) has developed and maintains a baseline inventory of current energy and/or fossil-fuel consumption (for all fuel types and modes) from transportation.

**2 additional points.** The agency uses an appropriate model or method to forecast energy and fuel consumption associated with its LRTP, including business-as-usual and alternative scenarios (as appropriate). The agency uses this information to inform transportation decision making and the development of the LRTP. Resources related to conducting transportation energy data, inventories, and forecasts can be found on the US Department of Transportation (USDOT) website here: <http://climate.dot.gov/ghg-inventories-forecasts/index.html>.

Score for US 2: **0**

No energy/fossil fuel consumption data is reported in this plan. The plan indicates that potential future analysis may be required, including “Energy and natural resources (amount required/rate of use/efficiency, source/availability, nonrenewable resources, conservation and renewable resources, scenic resources)”. The corridor plan could estimate energy consumption and fossil fuel consumption. However, I do not believe the model explicitly forecasts energy consumption.

Score for SR 516: **0**

No energy/fossil fuel consumption data is reported in this plan. The study indicates in text that the evaluation criteria also considered how a proposed improvement affected “Economy, Transportation, and Community” or “ETC.” For example, would a proposed recommendation enhance freight movement or improve access to Transit Oriented Development, promote energy conservation, or improve safety? However, nothing else is found in the study corridor report about criteria that include promoting energy conservation. I do not believe the model explicitly forecasts energy consumption.

SR 520: **0**

No energy/fossil fuel consumption data is reported in this plan. This report indicates that future analysis may include energy and natural resources (amount required/rate of use/efficiency, source/availability, nonrenewable resources, conservation and renewable resources, scenic resources). I do not believe the model explicitly forecasts energy consumption.

Agency Overall:

WSDOT estimates annual VMT and transportation fuel consumption, and develops annual forecast of transportation energy consumption.

Overall:

Typically energy consumption data is reported as part of the more detailed environmental analysis phase of the plan or project. Because these corridor studies typically rely on regional modeling data, I believe the models used to not explicitly forecast energy consumption. I believe estimates of energy/fossil fuel consumption could be reported even at this corridor planning level.

**Develop a Plan and Implement Strategies to Reduce Transportation-related Energy and/or Fossil Fuel Usage (4 points)**

Scoring for this requirement is based on the following, cumulative elements.

**2 points.** Energy and fossil fuel reduction strategies are included in the LRTP, and the LRTP includes a discussion of the impacts of including these strategies.

**2 points.** The agency (or cooperating agencies) implements transportation strategies to reduce transportation-related energy and fossil fuel consumption and related emissions (such as those described in the Background section above). These may include strategies implemented primarily to reduce energy use, as well as strategies implemented primarily for other purposes (e.g. congestion relief, air quality, vehicle travel demand reduction, etc.).

Score for US 2: **1**

Strategies that can reduce fossil fuel consumption in this plan include transportation demand management, incident response, and ITS strategies. See also criteria related to demand management and GHG emissions. However, the impacts (presented in terms of GHG reductions) are presented only qualitatively (e.g. “slight impact”). Second part not applicable for this plan although the agency does implement some strategies.

Score for SR 516: **2**

The plan recommends a wide variety of operational and demand management strategies that can reduce energy consumption (although the plan does not specifically indicate that these are strategies to help reduce energy/fossil fuel consumption. Impacts of these strategies are reported. See also criteria related to demand management and GHG emissions. Second part not applicable for this plan although the agency does implement some strategies.

SR 520: **1.5**

Strategies that can reduce fossil fuel consumption in this plan include transportation demand management and ITS/ATM. Targets for reducing vehicle trips from demand management have been established but specific impacts not estimated/reported. See also criteria related to demand management and GHG emissions. Second part not applicable for this plan although the agency does implement some strategies.

Agency Overall:

The 2007 long-term highway system plan includes, as one goal, enhancing Washington’s quality of life through transportation investments that promotes energy conservation, enhance healthy communities and protect the environment. However, the plan does not really include much in the way of strategies. The long range plan, however, may be updated (not sure timeline for that).

Our agency does implement strategies to reduce transportation related energy and fossil fuel consumption, such as our commute trip reduction program, bicycle/pedestrian infrastructure projects, EV charging infrastructure, community/neighborhood planning, and operational efficiency improvements.

Overall or Comments:

Although the plans did not indicate that any specific strategies were intended to help reduce energy/fossil fuel consumption, I took a “broad” view and considered strategies that would have this impact even not if specifically identified for this purpose (e.g. TDM, operational efficiency improvements, etc.) The second part of this scoring requirement seems to relate to the agency and

## Appendix G: System Planning Pre-Workshop Scoresheets

does not seem to fit well for a corridor plan assessment. Mixing the plan and the agency together does not seem appropriate. If we just look at the agency (WSDOT) we would indicate yes and give two points to each above, but essentially treating it as N/A.

### **Measure Progress and Demonstrate Sustainable Outcomes (5 points)**

Scoring for this requirement is based on the following, cumulative elements.

**1 point.** The agency has incorporated energy and fossil fuel reduction performance measures into its LRTP. Examples of performance measures include fuel expenditure reductions, gallons of fuel consumed, and greenhouse gases reduced, among others. Additional examples of performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Transportation Measurement and the Environmental Policy Act's Guide to Sustainable Transportation Performance Measures.

**2 points.** The agency demonstrates ongoing monitoring of its progress toward reducing energy and fossil-fuel consumption.

**2 points.** The agency can document that they have met its energy and fossil-fuel consumption goals.

Score for US 2: **0**

No energy/fossil fuel performance measures have been developed for this plan. The last two elements relate more to agency operations rather than a corridor plan, so not very applicable to this use of INVEST.

Score for SR 516: **0**

No energy/fossil fuel or related performance measures have been developed for this plan. The last two elements relate more to agency operations rather than a corridor plan, so not very applicable to this use of INVEST.

SR 520: **1**

One Project Evaluation Criteria - Performance Measure in this plan is Energy Conservation. The last two elements relate more to agency operations rather than a corridor plan, so not very applicable to this use of INVEST.

Agency Overall:

Recently, WSDOT has begun to incorporate energy/fossil fuel consumption related performance measures into our performance reporting, under the umbrella of the Governor's *Results Washington* initiative. Statewide transportation energy related goals include:

- Reduce transportation related greenhouse gas emissions from 44.9 mmt<sup>14</sup>/year (projected 2020) to 37.5 mmt/year (1990) by 2020.
- Increase transportation sector renewable energy use per vehicle-mile travelled (specific metrics to be determined).
- (Related) Increase the percentage of Washingtonians using alternative transportation commute methods to 33% by 2015.

We will also be monitoring these performance measures.

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<sup>14</sup> Million metric tons.

**Overall:**

The last two elements relate more to agency operations rather than a corridor plan, so not very applicable to this use of INVEST.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Resources included the study plans, Seth Stark, and Brooke Hamilton.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

Assuming a corridor plan emerges after a long-range plan, there should be a direct connection between the two and reducing energy/fossil fuel consumption (including specific goals and metrics) should be in both. If the long range plan does not include energy/fossil fuel reduction, the corridor plan should still move forward that consideration since statewide GHG goals support reducing energy/fossil fuel consumption and the long range plan may just not be up to date on issue.

For the sub-criteria “Develop a Plan and Implement Strategies to Reduce Transportation-related Energy and/or Fossil Fuel Usage”, this does not work very well for a corridor plan since it precedes implementation. The element worth 2 points that focuses on the agency implementing strategies to reduce transportation energy/fossil fuel consumption does not fit well with a corridor plan evaluation because there may be little to no connection with the corridor plan even if the agency does implement some strategies.

For the sub-criteria, “Measure Progress and Demonstrate Sustainable Outcomes”, the last two elements relate more to agency operations rather than a corridor plan, so not very applicable to this use of INVEST.

**SP-12: Financial Sustainability****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Carol Hunter

Evaluation Date: 9/16/13

Email Address: [carol.hunter@wsdot.wa.gov](mailto:carol.hunter@wsdot.wa.gov)

### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-12 Financial Sustainability
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Criteria Points Earned: 0

Total Possible Points: 15

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Evaluate and document that financial commitments made in transportation planning documents are reasonable and affordable.

#### Sustainability Linkage

Financial sustainability supports the economic triple bottom line principle by improving economic prosperity for current and future generations, and ensuring that there are sufficient financial resources to advance the projects and program goals of the community.

#### **Advanced Revenue Forecasting (7 points)**

Use an inter-agency, cooperative approach for advanced revenue forecasting practices to develop a reasonable finance plan that considers risk and includes contingencies. Advanced revenue forecasting is a dynamic process that considers a wide range of sources, “nontraditional” financing mechanisms, risk management techniques, and forecasts that are updated on a regular basis. Include cost estimations and actual costs of ongoing operations and maintenance of systems in LRTPs and TIPs/STIPs. Scoring for this requirement is based on the following, cumulative elements.

**2 points:** The agency engages in regular and comprehensive coordination and information sharing among affected agencies (including State DOTs, MPOs, and transit operators) during the development of revenue forecasts.

**3 points:** The agency undertakes systematic forecast updates. Significant changes in forecast revenues are addressed in the transportation planning process to prevent unsustainable deficits or funding gaps.

**2 points:** The agency has an established process for engaging stakeholders in a dialogue about the implications of any changes in revenue forecasts.

Evidence of the use of advanced revenue forecasting practices could include:

- Evidence of leadership emphasis on rigorous fiscal discipline;
- Incorporation of risk management techniques into revenue forecasts;
- Inclusion of local and state sources as part of the revenue forecast and coordination with other potential funding sources;
- Involvement of appropriately qualified revenue estimating organizations for the state or local unit of government responsible to elected officials for overall revenue estimates;
- Coordination of STIP and Metropolitan LRTP development with state budget development to mirror respective fiscal constraints;

## Appendix G: System Planning Pre-Workshop Scoresheets

- Involvement of a professional economist in revenue forecasting;
- Use of committees to establish consensus regarding the revenue forecast;
- Evidence of policies or guidelines for monitoring and updating forecasts, especially at major decision points for projects and plans;
- Objective analysis of “nontraditional”, innovative financing mechanisms and the expected revenues from those approaches; and
- Evaluation of past revenue forecasts and understanding why they did or did not turn out as expected.

US 2: 0 points

SR 516: 0 points

SR 520: 0 points

Overall: WSDOT conducts advanced revenue forecasts on a quarterly basis at the agency level. The revenue forecast does not take place in the corridor planning phase of the project development process.

### **Advanced Cost Estimating (8 points)**

Use an inter-agency, cooperative approach for advanced project cost estimating practices that considers both capital and life cycle costs (which would include maintenance and operations), risks, and contingencies. An example of advanced cost estimating includes factoring in a variety of land use/transportation growth scenarios and associated future infrastructure construction and maintenance costs. Scoring for this requirement is based on the following, cumulative elements.

**2 points:** As projects progress through the transportation planning process and ultimately construction, the agency keeps accurate records of all changes to the project scope and documents their impact on costs.

**3 points:** As the project development process progresses, the agency avoid formula-driven cost estimating procedures in favor of project-specific methods.

**3 points:** The agency completes systematic cost updates regularly, including cost estimates for ongoing system operations, and maintenance and changes to costs as projects develop. Cumulative or major changes in project costs are reflected in updated financial plans and the fiscal constraint determinations of subsequent transportation planning documents, including the TIP/STIP.

US 2: 0 points

SR 516: 0 points

SR 520: 0 points

Overall: Corridor plans develop planning level cost estimates that are formula driven. As corridor plan recommendations progress through the project development process, cost estimates are refined and updated.

#### **LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

**Resources:**

Faris Al-Memar, System Analysis and Planning Manager  
 Richard Warren, SR 520 Project Manager, Corridor Planning Manager  
 Tom Washington SR 516 Project Manager

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

**SP-13: Analysis Methods**

**Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Tom Washington  
 Evaluation Date: 9-17-13  
 Email Address: [washint@wsdot.wa.gov](mailto:washint@wsdot.wa.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-13 Analysis Methods

<b>US 2</b>	<b>10pts</b>	<b>Total Possible Points: 15</b>
<b>SR 516</b>	<b>10pts</b>	<b>Total Possible Points: 15</b>
<b>SR 520</b>	<b>10pts</b>	<b>Total Possible Points: 15</b>

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Agencies adopt and incentivize best practices in land use, socioeconomic, and transportation systems analysis methods.

## Appendix G: System Planning Pre-Workshop Scoresheets

**Sustainability Linkage**

The use of analysis methods can help an agency measure progress toward meeting its sustainability goals by providing the means to estimate, evaluate, and communicate the expected social, environmental, and economic outcomes of changes in transportation policies, services, and the built environment.

**Quality of Data (3 points)**

The transportation data resources used as the basis for the analysis and the development of tools such as travel demand models are of a sufficient quality and coverage to support the conclusions. Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**1 point.** The agency demonstrates that the analysis has a strong foundation in observed data suitable for developing tools which model the land use, socio-economic, transport, and environmental systems.

**2 additional points.** The agency demonstrates that the data used in planning analysis are evaluated and updated on a regular basis.

Overall: The modeling for corridor studies, at least for UPO, is done well. The data used in the modeling analysis is vetted on a regular basis “Sufficient” should be defined but how? As an agency we can always do better in collecting and updating the data, but we are heavily dependent upon the MPOs for doing this effort since we do not have the resources to do so. PSRC’s data and model likely receive more scrutiny than other regional MPOs in the area.

US 2: Private consultants. Bottleneck at SR 204 and US 2

SR 516: Internal analysis. Rail analysis/simulation at UP line for delay and queuing length for different scenarios.

SR 520: Internal analysis. Analysis extended to include local intersections for total system performance and developing operational recommendations including transit and non-motorized movements.

Overall: All modeling data, assumptions, methodology, and criteria were reviewed and approved by the stakeholders and MPO (PSRC) as well as a review and approval process internally with Olympia. Forecasting data supplied by the regional MPO model with additional refinements from local jurisdictions.

**SCORE**

<b>US 2</b>	<b>3</b>
<b>SR 516</b>	<b>3</b>
<b>SR 520</b>	<b>3</b>

**Technical Committee (2 points)**

The agency’s organizational structure includes a technical committee to review data collection/quality, planning assumptions, and forecasting methods. This committee may be comprised of state and local transportation planning professionals, private consultants, and other individuals having interest in the forecasting process. The technical committee’s role is to provide review and feedback on the analytical methods and tools utilized by the agency.

## Appendix G: System Planning Pre-Workshop Scoresheets

**SCORE**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**Program Support (4 points)**

The agency has a plan (or equivalent) which includes a specific multi-year development program for maintaining transportation data resources and improving analysis methods. The specifications for the data resources and methods explicitly address sustainability principles. The plan identifies an adequate level of funding required to implement the data collection and modeling tasks, and this is reflected in the Unified Planning Work Program or equivalent. Those resources include support for experienced technical management and a mix of technical staff and/or contract staff. One of the following scores applies:

**0 points:** Agency does not have a current strategic plan, program, or equivalent.

**2 points:** A strategic plan, program, or equivalent exists; only some of the areas described in the above paragraph are addressed.

**4 points:** A strategic plan, program, or equivalent is in place and it addresses all of the areas described in the paragraph above.

US 2: See below

SR 516: See below

SR 520: See below

Overall: As part of the “T” program, funding is supplied and used by WSDOT expressly for data collection and analysis on a statewide level for the state transportation system. PSRC additionally has the responsibility and governmental funding for data collection and analysis on a regional level, including land use and growth projections. “Explicitly address sustainability principles” is an unknown modeling/analysis category.

**SCORE**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**Peer Review (6 points)**

The agency has convened a peer review of its analysis methods (e.g. the peer review program offered by the Travel Model Improvement Program (TMIP): <http://www.fhwa.dot.gov/planning/tmip/>). The review included an assessment of the primary data used to develop the analytical tools and an assessment of the calibration and validation results of the tools, methods, and practices. In addition, the review has demonstrated that the methods are sensitive to the actions being tested, such as the expected and desired changes in transportation policies, supply, services, and the built environment. Results of the peer review are used as inputs to the plan and describe improvements to the analytical methods. One of the following scores applies:

**0 points:** A peer review of the agency’s analytical methods, tools, and practices has not been conducted.

## Appendix G: System Planning Pre-Workshop Scoresheets

**3 points:** A peer review of at least one of the agency’s major analytical tools, such as the travel demand model, has been conducted.

**6 points:** All of the agency’s analysis methods, tools, and practices have been peer reviewed.

US 2: See below

SR 516: See below

SR 520: See below

Overall: “Peer review” seems to be similar to “Technical committee” in nature. All data assessment and analysis tools/methods/models used for all corridor reports are MPO (PSRC) model based, and the PSRC model has been reviewed and used by a number of states and MPOs nationally. (With the possible exception of the rail delay analysis developed for SR 516) I am assuming that this shared review and use is the equivalent of Peer Review.

**SCORE**

<b>US 2</b>	<b>3</b>
<b>SR 516</b>	<b>3</b>
<b>SR 520</b>	<b>3</b>

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Corridor study records, review comments, PSRC model, Gray Book, TDO and materials.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

The phrase “adequate level of funding required to implement the data collection and modeling tasks” (Program Support) is vague. Is there an established level of funding for data collection?

Some definition of the criteria “The specifications for the data resources and methods explicitly address sustainability principles” is needed.

## SP-14: Transportation Systems Management and Operations

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Tom Washington  
Evaluation Date:  
Email Address: [washint@wsdot.wa.gov](mailto:washint@wsdot.wa.gov)

#### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-14 Transportation Systems Management and Operations

#### Criteria Points Earned:

<b>US 2</b>	<b>9pts</b>	<b>Total Possible Points: 15</b>
<b>SR 516</b>	<b>9pts</b>	<b>Total Possible Points: 15</b>
<b>SR 520</b>	<b>9pts</b>	<b>Total Possible Points: 15</b>

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Optimize the efficiency of the existing transportation system.

#### Sustainability Linkage

Improving the efficiency of the existing transportation system supports all of the triple bottom line principles by improving mobility and reducing funding needs, congestion, and resource consumption.

#### Set TSM&O Policies, Goals, and Objectives (2 points)

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

**1 point.** The agency has developed clearly defined TSM&O policies, goals, and objectives for improving the efficiency of the transportation system within its jurisdiction.

**Additional 1 point.** The TSM&O policies, goals, and objectives are also consistent with relevant state and/or metropolitan goals and objectives for improving transportation system efficiency.

US 2: Recommendations include transit, vanpool and park-and-ride improvements, access management, and variable message signs (VMS). Tolling and ramp metering were considered but not determined to be workable in this area.

## Appendix G: System Planning Pre-Workshop Scoresheets

SR 516: Recommendations include transit, vanpool and park-and-ride improvements, signalization coordination, access management

SR 520: Recommendations include transit, vanpool and park-and-ride improvements, signalization coordination in interchange areas, ramp metering, VMS, and Incidence response.

Overall: *Moving Washington* identifies state transportation investment principles. Of primary importance are both Efficiency and Demand Management. TSM strategies are applied to all three corridor plans and account for a 5% overall volume reduction over each plan's life. Northwest Region also has a specific ITS Plan that includes active traffic management, tolling, traffic management centers, traffic cameras, variable message signs, ramp meters, signal coordination, and incident response. All are consistent with the MPO (PSRC) plan, *Transportation 2040*.

**SCORE**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**Develop a Plan for TSM&O Strategies (4 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second and/or third.

**1 point.** TSM&O strategies are included in the LRTP, or other transportation planning documents, as appropriate.

**1 additional point.** The LRTP, or equivalent, includes a discussion of the impacts of including TSM&O strategies.

**2 additional points.** The TSM&O strategies are considered and prioritized in the LRTP, or other transportation planning documents. Where appropriate, these strategies are considered in lieu of, or strategically in conjunction with, capacity expansion.

US 2: Recommendations include transit, vanpool and park-and-ride improvements, access management, and VMS. Tolling and ramp metering were considered but not determined to be workable in this area.

SR 516: Recommendations include transit, vanpool and park-and-ride improvements, signalization coordination, access management

SR 520: Recommendations include transit, vanpool and park-and-ride improvements, signalization coordination in interchange areas, ramp metering, VMS, and Incidence response.

Overall: *Moving Washington* identifies state transportation investment principles. Of primary importance are both Efficiency and Demand Management. TSM strategies are applied to all three corridor plans and account for a 5% overall volume reduction over each plan's life. Northwest Region also has a specific ITS Plan that includes active traffic management, tolling, traffic management centers, traffic cameras, variable message signs, ramp meters, signal coordination, and incident response. All are consistent with the MPO (PSRC) plan, *Transportation 2040*. All TSM&O strategies were prioritized and recommended prior to any capacity improvements.

## Appendix G: System Planning Pre-Workshop Scoresheets

**SCORE**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**Support or Implement TSM&O Strategies (4 points)**

One of the following scores applies:

**0 points.** TSM&O strategies are not being implemented or financially supported by the agency.

**2 point.** Some, but not all, TSM&O strategies identified as priorities are being implemented by the agency or financially supported through inclusion in the TIP/STIP for which the agency has responsibility.

**4 points.** All of the TSM&O strategies identified as priorities are being implemented by the agency or financially supported through inclusion in the TIP/STIP for which the agency has responsibility.

US 2: Recommendations made but funding not identified or provided. (Funding is not typically connected to corridor planning recommendations)

SR 516: Recommendations made but funding not identified or provided. (Funding is not typically connected to corridor planning recommendations)

SR 520: Recommendations made but funding not identified or provided. (Funding is not typically connected to corridor planning recommendations)

Overall: WSDOT has a funding source (Q program) to help fund minor (low-cost) operational and technology projects. Approximately 3.6% of the total operating budget of \$1.5 billion (\$51.8 million)

**SCORE**

<b>US 2</b>	<b>2</b>
<b>SR 516</b>	<b>2</b>
<b>SR 520</b>	<b>2</b>

**Establish Performance Goals and Monitor Progress (5 points)**

This requirement may be scored on a scale of 0-5, in proportion to the agency's estimate of its progress toward meeting this requirement. The following guidelines apply:

0 points. The agency has not developed TSM&O performance measures.

3 points. The agency has developed TSM&O performance measures and can demonstrate steady progress towards meeting its TSM&O goals and objectives. Examples of performance measures can be found in NCHRP Report 708: A Guidebook for Sustainability Performance Management for Transportation Agencies.

5 points. The agency has developed TSM&O performance measures, and can document that it has met its TSM&O goals and objectives and that the implementation of its TSM&O strategies contributed to this outcome.

US 2: See below

SR 516: See below

SR 520: See below

## Appendix G: System Planning Pre-Workshop Scoresheets

Overall: Agency performance measures unknown from a state wide basis. For each of the corridor studies, a 5% reduction in future traffic volumes is assigned as achievable due to multiple TSM techniques being applied. This reduction assumption is tied to defined actions that would achieve the goals. However, many TSM actions and implementations are not typically within the purview of WSDOT so the recommended techniques are dependent on other providers.

**SCORE**

<b>US 2</b>	<b>3</b>
<b>SR 516</b>	<b>3</b>
<b>SR 520</b>	<b>3</b>

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

*Moving Washington*     <http://wsdot.wa.gov/MovingWashington/>

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

**SP-15: Linking Asset Management and Planning****Pre-Workshop Scoresheet**

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Carol Hunter

Evaluation Date: 9/17/13

Email Address: [hunterc@wsdot.wa.gov](mailto:hunterc@wsdot.wa.gov)

**SCORING CRITERIA EVALUATION SUMMARY**

Criteria Number and Name: SP-15 Linking Asset Management and Planning
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Criteria Points Earned:

Total Possible Points: 15

US2: 8

SR 516: 4

SR 520: 4

**DISCUSS SCORING CRITERIA REQUIREMENTS**

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

**Goal**

Leverage transportation asset management data and methods within the transportation planning process to make informed, cost-effective program decisions and better use existing transportation assets.

**Sustainability Linkage**

Incorporating transportation asset management data and economic analysis methods throughout system planning supports the environmental and economic triple bottom line principles by improving the cost-effectiveness of decisions, extending the life of assets, and reducing the demand for raw materials.

**Incorporate Asset Management Based Performance Measures (3 points)**

Leverage performance-based planning and programming components of asset management to analyze and evaluate tradeoffs in the long-range transportation planning process. An agency has identified at least one performance measure for each asset management goal and objective in order to track progress over time. These performance measures should help evaluate and communicate the impacts and implications of different plan alternatives, and provide criteria for analyzing and evaluating tradeoffs. Examples of asset management related performance measures include, but are not limited to: pavement condition; bridge condition; remaining service life; percentage of total planned maintenance complete; cost-effectiveness; route continuity; corridor completion; state of good repair for transit rolling stock, signal systems, guideways, and facilities; and sidewalk and bicycle inventories.

**US 2: 0 points**

WSDOT has an Asset Management System for pavement life cycle cost of existing pavements. The agency does not have an Asset Management System for planned or other existing facilities.

**SR 516: 0 points**

WSDOT has an Asset Management System for pavement life cycle cost of existing pavements. The agency does not have an Asset Management System for planned or other existing facilities.

WSDOT has an Asset Management System for pavement life cycle cost of existing pavements. The agency does not have an Asset Management System for planned or other existing facilities.

**SR 520: 0 points**

WSDOT has an Asset Management System for pavement life cycle cost of existing pavements. The agency does not have an Asset Management System for planned or other existing facilities.

**Overall:** WSDOT has an Asset Management System for pavement life cycle cost of existing pavements. The agency does not have an Asset Management System for planned or other existing facilities.

**Incorporate Asset Management Data and Economic Analysis to Prioritize Investments (8 points)**

Incorporate asset management data and leverage economic analyses, including Life Cycle Cost Analyses (LCCA) and Benefit-Cost Analysis (BCA) to apply basic cost and performance data to screen a large number of potential project alternatives, assisting in the development of program budgets and areas of program emphasis. Scoring for this requirement is based on the following, cumulative elements.

**4 points.** Leverage LCCA to evaluate project alternatives and prioritize investments. LCCA is used to compare the life cycle costs of two or more alternatives to accomplish a given project or objective, enabling the least cost alternative to be identified. LCCA is an engineering economic analysis tool that allows transportation officials to quantify the differential costs of alternative investment options for a given project. LCCA can be used to study either new construction projects or to examine preservation strategies for existing transportation assets. For more information, refer to FHWA's website on Asset Management Life Cycle Cost Analysis at <http://www.fhwa.dot.gov/infrastructure/asstmgmt/lcca.cfm>.

**4 points.** Leverage BCA to compare projects and prioritize investments. BCA attempts to capture all benefits and costs accruing to society from a project or course of action, regardless of which particular party realizes the benefits or costs, or the form these benefits and costs take. Used properly, BCA reveals the economically efficient investment alternative (i.e. the one that maximizes the net benefits to the public from an allocation of resources). For more information, refer to FHWA's website on Asset Management Benefit-Cost Analysis at <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm>.

**US 2: 4 points**

The US 2 Corridor Plan used the MP3 toll to determine the benefit/cost (B/C) ratio of individual projects. The B/C ratio was factor in determining the recommendation.

**SR 516: 4 points**

The SR 516 Corridor Plan used the MP3 toll to determine the B/C ratio of individual projects. The B/C ratio was factor in determining the recommendation.

**SR 520: 4 points**

The SR 520 Corridor Plan used the MP3 toll to determine the B/C ratio of individual projects. The B/C ratio was factor in determining the recommendation.

Overall: WSDOT uses the MP3 tool to determine the B/C ratio of individual Corridor Plan recommendations. The prioritization of projects occurs on a statewide level and occurs within the Highway System Plan process.

**Prioritize Maintenance and Preservation (4 points)**

The agency prioritizes transportation decisions that support the maintenance and good repair of existing transportation assets. Documentation includes the extent to which maintenance, preservation, and repair projects are included in the STIP/TIPs. Unified Planning Work Programs, and other similar annual work plans are the direct result of the identification, prioritization, and selection of projects in the LRTP process and/or the extent to which those projects are completed.

In order to demonstrate this, monitor performance and demonstrate attainment of the agency's maintenance and preservation goals over at least a one-year period. These goals may be linked to

## Appendix G: System Planning Pre-Workshop Scoresheets

infrastructure condition and should also be focused on the need and investment in maintenance and preservation activities. Examples of metrics that would accomplish this include:

- The percent completion of annual maintenance and preservation plan;
- Pavement maintenance and/or preservation funding;
- Funds for a preservation program—cash flow planned vs. actual expenditures; or
- The dollar value of deferred maintenance needs.

**US 2: 4 points**

Using the *Moving Washington* principle of “fix it first”, the US 2 Corridor Study recommends delaying the replacement of the westbound US 2 Trestle until after 2045. The department recently completed a \$16 million rehab project that, with standard maintenance, is expected to extend the life of the trestle until 2045.

**SR 516: 0 points**

The cities along the SR 516 corridor are responsible for maintaining the road so they prioritize maintenance funds. The corridor plan did not base recommendations on maintenance/preservation projects.

**SR 520: 0 points**

The SR 520 Corridor Plan identifies programmed preservation projects (re-pavement of the mainline and 9 ramps) but did not base recommendations on maintenance/preservation projects

Overall:

WSDOT uses a Pavement Life Cycle Cost Analysis tool. The LCCA is an engineering economic tool used to compare economic investments for new construction, reconstruction, rehabilitation and maintenance projects.

WSDOT has the Maintenance Accountability Process that it is implemented outside of the Corridor Planning process. The Maintenance Accountability Process provides Level of Service performance measures for maintenance. WSDOT prioritizes preservation and maintenance projects on a region/statewide basis using “M” Program funds.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Resources:

Faris Al-Memar, System Analysis and Planning Manager  
Richard Warren, SR 520 Project Manager, Corridor Planning Manager  
Tom Washington SR 516 Project Manager

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you

think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

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## SP-16: Infrastructure Resiliency

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Karena Houser

Evaluation Date: September 18, 2013

Email Address: [karena.houser@wsdot.wa.gov](mailto:karena.houser@wsdot.wa.gov)

#### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-16 Infrastructure Resiliency

Criteria Points Earned: 6

Total Possible Points: 15

#### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Anticipate, assess, and plan to respond to vulnerabilities and risks associated with current and future hazards (including those associated with climate change) to ensure multimodal transportation system reliability and resiliency.

#### Sustainability Linkage

Planning for infrastructure resiliency in the face of potential hazards supports all of the triple bottom line principles by reducing spending from infrastructure replacement, improving the safety and security of multimodal transportation system users, and providing energy savings from long-lasting investments, among others.

#### **Hazard Identification (2 points)**

Scoring for this requirement is based on the following, cumulative elements. The first element must be accomplished to earn the second.

- 1 point.** The agency has conducted a GIS-based system level assessment of potential hazards such as seismic events, relative sea level rise, storm activity/intensity, temperature and heat waves, precipitation events, lake levels, stream flow, etc.

Appendix G: *System Planning* Pre-Workshop Scoresheets

**1 additional point.** The agency has identified locations potentially vulnerable and/or at risk as a result of current and future hazards, and includes a discussion of the potential implications on the transportation system in the LRTP, or other appropriate transportation planning document.

## US 2:

Includes the following geographic data and maps of potentially vulnerable areas and roadways: seismic hazard risk, climate change vulnerability (addresses sea level rise, precipitation change, temperature change, and fire risk), liquefaction hazard, floodplains, and point sources of hazardous materials contamination (p.77-88).

- In the “Environmental Resources Overview” section, discusses specific impacts to state roadways in the study area and potential travel disruptions that may result from climate change (p 85).
- The descriptive text related to other risks simply restates the information in the maps (p 77-88).
- The appendix includes a qualitative evaluation of whether the recommended projects affect greenhouse gas emissions (p. 139).

Recommended Score: 2 Points.

## SR 516:

- Includes a climate change vulnerability map that identifies roadways at risk. The climate change vulnerability assessment addresses sea level rise, precipitation change, temperature change, and fire risk (p. 59-60).
- Text also addresses hazardous materials (leaking underground storage tanks, p. 61) and unstable slopes (p. 45), but these risks are not depicted in a map.
- In the “Environmental Overview” section, discusses roadways at risk from climate change and recommends additional study during the design phase to incorporate features that will provide greater resilience and function in the event of projected impacts from severe weather conditions brought on by climate change (p. 59).
- Recommends reviewing hazardous materials databases and performing site assessments in the event of maintenance work or corridor improvements in the area (p. 61).
- Recommends drainage improvements needed to prevent flooding as a condition for permitting any additional development (p. 87).

Recommended Score: 2 Points.

## SR 520:

- Mentions seismic retrofits recently completed on several bridges in the area (p. 82).
- Includes the following geographic data and maps of potentially vulnerable areas and roadways: seismic hazard risk, climate change vulnerability (addresses sea level rise, precipitation change, temperature change, and fire risk), liquefaction hazard, floodplains, and point sources of hazardous materials contamination (p 163-181).
- Discusses risks to specific roadways, such as temporary operational failure where the Microsoft access road hooks into the West Lake Sammamish Parkway (p. 171).

Recommended Score: 2 Points.

## Appendix G: System Planning Pre-Workshop Scoresheets

## Overall:

- None of the plans discussed: tsunami, volcano/lahar, terrorism, or infrastructure failure (e.g. dams). Only SR 516 discussed unstable slopes. These and other risks are considered statewide in the *WSDOT Emergency Operations Plan*.
- Hazard risk data could be better integrated and considered in corridor plan analyses (e.g. address potential hazards in safety analysis, consider the role of the corridor in the network of “lifeline” or “resilient” routes, consider hazard risks when developing and evaluating the costs and benefits of potential recommendations).

**Vulnerability Assessment (4 points)**

A vulnerability assessment focuses on how existing or planned transportation facilities may fare given current and future hazards. A vulnerability assessment should cover transportation assets in the planning area or a substantial subset of that area, as appropriate. Asset data on key existing and planned assets should be used. This could include elevations of the assets (not just the land), drainage capabilities, types of pavements and their ability to withstand excessive heat, more intense freeze-thaw cycles, and a variety of stress factors through time.

Investigating past events and resulting impacts can inform the assessment of vulnerabilities to seismic and storm events, and the impacts of long-term climate change effects. By comparing historical events with historical maintenance and repair needs, agencies can estimate how well specific assets might withstand certain stressors.

For example, agencies could consider effects of past weather events on emergency response and evacuations required or on the services provided by an asset (e.g. changes in VMT and/or the value of goods transported). One of the following scores applies:

**0 points.** The agency has not conducted a vulnerability assessment of its assets.

**2 points.** The agency has conducted a vulnerability assessment and considered hazard consequences for some of its planned, programmed, and existing facilities throughout the transportation system.

**4 points.** The agency has conducted a vulnerability assessment and considered hazard consequences on all planned, programmed, and existing facilities throughout the transportation system.

## US 2:

Results of the statewide climate vulnerability assessment are included in the plan (p. 85-86). A map is provided showing the level of risk (high, medium or low) to US 2 and surrounding state roadways. Narrative descriptions of potential impacts to the study area are also included.

Recommended Score: 4 Points.

## SR 516:

Results of the statewide climate vulnerability assessment are included in the plan (p. 59-60). A map is provided showing the level of risk (high, medium or low) to SR 516 and surrounding state roadways. Narrative descriptions of potential impacts to the study area are also included.

Recommended Score: 4 Points.

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 520:

Results of the statewide climate vulnerability assessment are included in the plan (p. 171-172). A map is provided showing the level of risk (high, medium or low) to SR 520 and surrounding state roadways. Narrative descriptions of potential impacts to the study area are also included.

Recommended Score: 4 Points.

## Overall:

- In 2011, a [Climate Impacts Vulnerability Assessment](#) was conducted statewide and the results are incorporated into all three corridor plans. The vulnerability assessment applied the FHWA conceptual climate risk assessment model. The assessment was based on a discussion of scenarios with local experts in a series of statewide workshops. The result was a qualitative assessment of climate vulnerability on WSDOT's assets in each region. The assessment evaluated the following assets owned and managed by WSDOT: airports, ferry terminals and operations, 4 WSDOT-owned rail lines in eastern Washington, state routes and interstate roadways (including all bridges, culverts, ramps, and adjacent pedestrian and shared use paths within the right of way), roadsides and mitigation sites, and WSDOT-owned buildings (e.g. maintenance sheds, radio towers). The assessment considered both the criticality of the asset and the potential impacts of several climate change scenarios to those assets. It then assigned an integrated qualitative assessment of risk to each asset (high, medium or low).
- WSDOT's Environmental Procedures Manual requires all project teams to examine available information about climate trends and use the results of WSDOT's vulnerability assessment to satisfy WSDOT's directive to consider ways to make proposed projects more resilient to future climate impacts and severe storm events (Section 412-05).

**Risk Assessment (4 points)**

A risk assessment is a method for estimating the likelihood of a particular impact resulting from a defined set of stressors, including climate change related impacts, and also assesses the consequences of the impact in terms of how it affects the surrounding community, metropolitan area, or state. One of the following scores applies:

**0 points.** The agency has not conducted a risk assessment of its assets.

**2 points.** The agency has conducted a risk assessment for some of its planned, programmed, and existing facilities throughout the transportation system.

**4 points.** The agency has conducted a risk assessment and considered the consequences on all planned, programmed, and existing facilities throughout the transportation system.

Assumptions: A risk assessment requires assigning numeric probabilities to potential impacts.

## US 2:

WSDOT has not conducted a planning level quantitative climate risk assessment.

Recommended Score: 0 Points.

## SR 516:

WSDOT has not conducted a planning level quantitative climate risk assessment.

Recommended Score: 0 Points.

## Appendix G: System Planning Pre-Workshop Scoresheets

## SR 520:

WSDOT has not conducted a planning level quantitative climate risk assessment.

Recommended Score: 0 Points.

Overall: WSDOT chose a qualitative analysis of risk because it is the preferred approach when information is limited or only available in the form of intuition, personal judgment, or subjective opinions, and/or when a lengthy quantitative analysis is more than is required. WSDOT intends to use the assessment at the planning level as an initial screening or review of assets and their vulnerability to climate change. WSDOT has no plans to do a statewide risk assessment and believes climate vulnerability should be an input to risk assessment at the project level. Because WSDOT's qualitative approach did not assign probabilities to an impact, WSDOT considers its work a vulnerability assessment rather than a risk assessment in the traditional sense.

**Develop and Implement Adaptation Strategies (5 points)**

Adaptation strategies are actions taken to respond to the vulnerabilities and risks associated with current and future hazards (including those associated with climate change) to ensure transportation system reliability and resiliency. Examples of strategies include, but are not limited to, the relocation of critical infrastructure, evacuation route planning, and disaster preparedness programs, among others. Additional examples are available on the USDOT website and in Transportation Research Board E-Circular E-C152. This requirement may be scored on a scale of 0-5, in proportion to the agency's estimate of its progress toward meeting this requirement. One of the following scores applies:

**0 points.** The agency has not developed adaptation strategies.

**2 points.** The agency has developed, but not yet implemented, adaptation strategies to manage the impacts the agency can reasonably expect to occur.

**5 points.** The agency has developed and is implementing adaptation strategies to manage all of the impacts the agency can reasonably expect to occur based on its completed vulnerability and risk assessments.

## US 2:

No adaptation strategies are identified in the corridor plan.

Recommended Score: 0 Points.

## SR 516:

Plan states that future plans should incorporate features that will provide greater resilience from events associated with climate change and recommends that if corridor improvements move forward additional study during the design phase should be considered. The plan also recommends drainage improvements to prevent flooding as a condition for permitting additional development.

Recommended Score: 0 Points.

## SR 520:

No adaptation strategies are identified in the corridor plan.

Recommended Score: 0 Points.

## Overall:

Climate Change Adaptation Strategies:

- All project level environmental reviews must consider climate change and extreme weather events and consider ways to make proposed projects more resilient to future climate impacts and severe storm events.

## Appendix G: System Planning Pre-Workshop Scoresheets

- WSDOT is working on developing adaptation strategies for some projects. For example, WSDOT incorporated resiliency features into the SR 522 project bridge design, floodplain and wetland mitigation, and stormwater flow control features.
- WSDOT is also working on developing planning level adaptation strategies, For example, WSDOT is working on a climate risk reduction study, “Preparing Interstate and State Routes in the Skagit River Basin,” which will explore site specific adaptation options.

## Other Hazard Mitigation Strategies:

- Bridge Seismic Retrofit Program. WSDOT prioritizes emergency access routes for retrofit.
- Washington State Ferries Terminal Seismic Retrofit Program
- Bridge Scour Mitigation Program. WSDOT has developed a plan of action for each scour critical bridge.
- Unstable Slopes Mitigation Program.
- Chronic Environmental Retrofit.
- WSDOT Emergency Management Program

Because all disasters are local, WSDOT planners should consult local disaster preparedness plans. State law requires each local government to complete a Hazard Identification and Vulnerability Assessment (HIVA) as the basis for a comprehensive emergency management plan. Some local communities may also complete a Threat and Hazard Identification and Risk Assessment, which expand on the Hazard Identification and Vulnerability Assessment by broadening the hazards considered and involving the community in the planning process. Consulting these plans could help WSDOT planners better understand risks to the corridor and the role of the corridor in emergency responses. Other plans to consider include the Bureau of Reclamation’s Emergency Action Plans for dams in the area and the Department of Natural Resources plans for wildland fires.

## Some general questions to consider:

- Safety analyses seem to be based entirely on historical collision data, should hazard vulnerability be a factor in how safety projects are prioritized?
- Hazards identified in the plans appear to be treated mostly as constraints that would need to be addressed at the project level. How might they be factored in as potential benefits during the decision making that occurs at the planning level (e.g. perhaps making a particular project recommendation rank higher because it would improve the resiliency of the entire system)?
- To what extent should corridor plans include adaptation strategies? Carol Lee Roalkvam, WSDOT Environmental Policy Branch Manager, suggests planning level climate adaptation strategies be developed in a regional plan and referenced in the corridor plan.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

**Persons Interviewed:**

Carol Lee Roalkvam, WSDOT Environmental Policy Branch Manager  
 John Himmel, WSDOT Emergency and Security Operations Manager  
 Dewayne Wilson, WSDOT Bridge Management Engineer

## Appendix G: System Planning Pre-Workshop Scoresheets

WSDOT Emergency Operations Plan (internal document)

[WSDOT Climate Vulnerability Assessment](#) (pdf 5.6 mb)

[WSDOT Environmental Procedures Manual](#) (pdf 4.5 mb)

[WSDOT Gray Notebook, Edition 46, June 30, 2012, Page 13](#) (pdf 2.5 mb)

[WSDOT Gray Notebook, Edition 50, June 30, 2013, Page 4](#) (pdf 560 kb)

*WSDOT Type II Adaptation and Integration Pilot: Preparing Interstate and State Routes in the Skagit River Basin*, embedded below:



WSDOT Skagit Basin  
Pilot Jan 22 2013.doc

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

- The hazard identification criterion requires “a GIS-based system level assessment of potential hazards.” The criterion should be written more broadly to recognize different approaches to analysis that may not be GIS based.
- Quantitative risk assessments may not be needed at the planning level, but more appropriately applied at the project level. Consider amending this criterion to (1) allow some points for conducting a qualitative risk assessment, and (2) allow some points for agencies who adopt policies to conduct quantitative risk assessments at the project level.
- The wording of the vulnerability and risk assessment criteria does not seem quite right. For example, WSDOT has not conducted a vulnerability assessment on all planned facilities, but has adopted a policy to do so during project level environmental review. Maybe the criterion should say “The agency has conducted a vulnerability assessment and considered hazard consequences on all existing facilities throughout the transportation system and adopted policies to perform an assessment on all future planned and programmed facilities.
- It would be nice to be able to modify or delete documents after they are uploaded to the INVEST Scoring site.

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## SP-17: Linking Planning and NEPA

### Pre-Workshop Scoresheet

The following scoresheet was developed to facilitate your research and preliminary scoring on individual FHWA INVEST criteria. These summary sheets will be used to help develop the final content of the scoring workshop scheduled for September 25, 2013. To help facilitate preparation for the workshop we ask that you please forward a copy of the completed form to Karena Houser by September 18, 2013. Thank you for your participation.

Evaluator Name: Brigid Dean

Evaluation Date:

Email Address: [deanb@wsdot.wa.gov](mailto:deanb@wsdot.wa.gov)

### SCORING CRITERIA EVALUATION SUMMARY

Criteria Number and Name: SP-17 Linking Planning and NEPA
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Criteria Points Earned: US 2: 3

Total Possible Points: 15

SR 516: 2

SR 520: 3

Average score between the three studies: 2.67 out of 15 possible points.

### DISCUSS SCORING CRITERIA REQUIREMENTS

Explain how each criteria requirement was or was not met, the number of points earned per requirement, and other justification surrounding the requirements of the criteria.

#### Goal

Integrate transportation system planning process information, analysis, and decisions with the project level environmental review process, and reference it in NEPA documentation.

#### Sustainability Linkage

The NEPA process encompasses all of the triple bottom line principles, typically at the project level. This criterion ensures that information and decisions made in the system planning process generate useful information regarding sustainability impacts, and that data and those sources are consistent between system level and project level planning.

#### Document Linkages between Transportation System Planning and NEPA (5 points)

The agency has documented the following procedures that link system level planning analyses to project level NEPA analysis:

- The agency has formal agreements or procedures in place to consult with and involve resource/environmental agencies (including state, local, tribal, and federal agencies, including FHWA) during system level transportation planning.
- The agency provides public review of system level transportation planning studies. Both the public and agencies have a reasonable opportunity to comment during the system level transportation planning process.
- The agency utilizes data sources for transportation system planning that are as consistent as possible with the needs of project level NEPA analyses (e.g. GIS software, census year, etc.).
- The agency produces documentation of transportation system planning decisions that assists in meeting NEPA documentation requirements. For example, purpose and need statements are developed for major projects recommended in the LRTP, or examination and elimination of alternatives are adequately assessed and documented at the system level to meet NEPA needs in later phases.

Documented procedures could include official documentation (such as policy and procedures, manuals, or similar guidance documents), or unofficial documentation (such as flowcharts, best practices, or other similar documents).

## Appendix G: System Planning Pre-Workshop Scoresheets

One of the following scores applies:

**0 points.** No documented procedures exist, or undocumented procedures exist that do not cover all four of the bullets above.

**3 points.** Undocumented procedures exist that cover all four of the bullets above, or documented procedures exist that cover one or two of the bullets above.

**5 points.** Documented procedures exist that cover all four of the bullets above.

US 2: 2 There is no documented procedures in the corridor plan. However, some effort has been made to include resource agencies and tribes and the public, to utilize GIS information, and some effort is given to understand key elements necessary for NEPA documentation.

SR 516: 2 There is no documented procedures in the corridor plan. However, some effort has been made to include resource agencies and tribes and the public, to utilize GIS information, and some effort is given to understand key elements necessary for NEPA documentation.

SR 520: 2 There is no documented procedures in the corridor plan. However, some effort has been made to include resource agencies and tribes and the public, to utilize GIS information, and some effort is given to understand key elements necessary for NEPA documentation.

Overall: 2 This criterion is agency focused. Using a specific corridor plan to measure agency focus is not a good way to measure success. If we are drafting corridor plans to meet this measure, our process should change to incorporate these measures into the planning charter.

#### **Consult NEPA Practitioners (4 points)**

The agency consults with NEPA practitioners throughout the transportation system planning process to ensure the material produced is consistent with the needs of downstream use (e.g. project level NEPA) so that it:

- Can be incorporated into subsequent NEPA documents in accordance with Council on Environmental Quality regulations, and FHWA and FTA guidelines;
- Will aid in establishing or evaluating the purpose and need of the projects, reasonable alternatives, impacts on the built and natural environment, or mitigation measures; and
- Is in a form that is accessible during the NEPA scoping process and can be appended or referenced in the NEPA document.

One of the following scores applies:

**0 points.** NEPA practitioners are not consulted during the transportation system planning process.

**2 points.** NEPA practitioners are consulted occasionally but not systematically to help ensure materials are consistent with downstream needs as noted above.

**4 points.** NEPA practitioners are fully integrated in the transportation system planning process to help ensure materials are consistent with downstream needs as noted above

US 2: 1

SR 516: 0

SR 520: 1

Average score between the three studies: .66 out of 4 possible points on this criteria.

## Appendix G: System Planning Pre-Workshop Scoresheets

Overall: There is little or no documentation in the plans regarding the involvement of NEPA practitioners in the planning process. This criterion is agency focused. Using a specific corridor plan to measure agency focus is not a good way to measure success. If we are drafting corridor plans to meet this measure, our process should change to incorporate these measures into the planning charter. Funding NEPA staff could be seen as a challenge to meeting this measure.

**Apply System Planning Results to NEPA Projects (6 points)**

The agency successfully incorporates information (e.g. analyses, decisions, and documents from the transportation system planning process) into project level NEPA documents. In addition, clear documentation of conversations, meetings, and decisions is passed from the system level planning phase to the project manager of specific projects.

The information for FHWA & FTA review and consideration can be used in several ways, including the following:

- The foundation for projects' purpose and need statements;
- Inputs to the preliminary screening of alternatives and the elimination of unreasonable alternatives;
- Inputs to the projects' potential impacts on the environment;
- Methods to mitigate the projects' environmental impacts;
- Evaluations of indirect and cumulative effects;
- Linkages with housing, development, economic, and environmental goals.

One of the following scores applies:

**0 points.** System level transportation planning information is not included in project level NEPA documents.

**3 points.** System level transportation planning information and documentation are occasionally, but not systematically, included or referenced in project level NEPA documents.

**6 points.** System level transportation planning information and documentation are fully integrated in project level NEPA documents.

US 2: 0

SR 516: 0

SR 520: 0

Overall:

The corridor plans do not describe how it will take planning level information and incorporate that data into NEPA analysis.

**LIST OR DESCRIBE SOURCES USED TO MEET CRITERIA SCORING REQUIREMENTS:**

List all sources used to evaluate credit requirements. Provide a brief explanation as to why that source was selected to show the project met the requirement. Please note that possible sources are listed in the self-evaluation tool, but other sources may be used. (If applicable, attach sources to this sheet and list file names)

Consulted with WSDOT Headquarters environmental staff who specialize in biology, policy, and State/National Environmental Policy Acts.

**COMMENTS / QUESTIONS / SUGGESTIONS:**

Was any part of the scoring criteria process unclear? Do you have any unanswered questions? Was there anything missing from the criterion details? Were the requirements for scoring points practical and measurable? Did the points assigned to each component of the scoring seem reasonable? Can you think of any recommendations for improving the process or scoring requirements? Enter your comments, questions, or suggestions here.

## Appendix H: *System Planning Module Scoring Workshop Summary*

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### Agenda



### AGENDA

**INVEST Scoring Workshop – *System Planning* Module  
Wednesday, September 25, 2013, 9:00 a.m. – 3:30 p.m.  
Goldsmith Conference Room 350, Seattle**

9:00	Welcome and Introductions
9:05	Background and Process <ul style="list-style-type: none"><li>• Meeting Purpose</li><li>• Expected Outcomes</li><li>• Scoring Process</li><li>• Basic Assumptions</li></ul>
9:20	Criteria Evaluation (SP 1, 3-5, 15 minutes each)
10:20	BREAK
10:30	Criteria Evaluation (SP 6-11, 15 minutes each)
12:00	WORKING LUNCH (NO HOST)
12:20	Criteria Evaluation (SP 2, 12-17, 15 minutes each)
2:05	BREAK
2:15	Review and Discuss Final Score
2:30	Focus Areas for Improvements
3:00	Feedback for FHWA
3:20	Workshop Wrap-up and Next Steps
3:30	ADJOURN

# INVEST System Planning Scoring Workshop Notes

September 25, 2013, WSDOT Urban Planning Office, Goldsmith Building, Seattle

## Attendees

Leah Bolotin, Mike Culp, Brigid Dean, Karena Houser, Carol Hunter, Kathy Johnston, Kathy Leotta, Elizabeth Robbins, Stephanie Rossi, Tim Sexton, Brian Smith, Seth Stark, Stan Suchan, Richard Warren, Tom Washington, Shuming Yan, Carol Lee Roalkvam

## Meeting Purpose and Outcomes

At this meeting we will be using the INVEST criteria to evaluate three corridor plans, sharing feedback on the INVEST tool to provide to FHWA, and identifying possible improvements to corridor planning practices. We expect to complete the INVEST scorecard by the end of the meeting. Our discussion will be documented in the final INVEST report. The outcome of this process will be the development of next steps for our agency.

## Scoring Process

The Scorers working on this project completed pre-workshop scoring sheets after reviewing the plans and interviewing resource people. Some resource people were subject matter experts and some were involved in corridor planning. At today's meeting, the Scorers will recommend a score for each INVEST criterion and report their suggestions for improving the corridor planning process and the INVEST tool. If final scores are not determined today, we may form a subgroup to continue the discussion.

## Basic Assumptions

Our approach to this study is based on the assumptions that the discussion is more important than the score and that our feedback to FHWA is an important outcome of the process. Additionally, the INVEST tool was written for systemwide planning and broad agency efforts. The Scorers were charged with applying these as best they could to corridor plans, noting agency-wide efforts but basing the recommended score solely on the corridor plan.

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## SP-01: Integrated Planning: Economic Development and Land Use

### A. Criteria

Develop and Adopt Goals and Objectives. Economic development and land use planning is integrated in the three corridor studies, but not beyond current requirements. SR 520 did the best job of including local comprehensive plans. None of three studies discussed freight mobility beyond current requirements.

Engage Partner Agencies. US 2 did not include any economic development agencies except the port. SR 516 did not include any economic development agencies except PSRC. SR 520 included PSRC, the county, and jurisdictional comprehensive plans – but still could have included more economic development and land use agencies.

## Appendix H: System Planning Module Scoring Workshop Summary

Use Best Practice Quantitative Methods. WSDOT uses PSRC’s model. PSRC uses UrbanSim, which is then calibrated to the traffic model. SR 516 was completed before the UrbanSim model was online.

Provide Leadership. This criterion was not applicable at the corridor system level.

Demonstrate Sustainable Outcomes. All three studies did integrate land use and economic plans so this criterion scored one point. The five additional points relate to performance measures, which we do not use at the corridor study level.

**B. Planning Suggestions**

- Use WSDOT’s freight map application to review detailed truck performance measures.
- Develop a tool to link transportation improvements with economic development.
- Invite diverse land use and business interests to participate in corridor planning as well as non-motorized groups.
- Include information from the statewide freight plan, the regional economic strategy, and transit plans.
- Consider using performance measures at the corridor planning level.

**C. INVEST Suggestions**

- This criterion was an overly complex criterion with high standards.
- There should be more opportunities to score partial points for agencies in transition.
- It would be helpful if FHWA would define terms such as “current requirements” and “land use and economic development agencies.”
- Reword the criterion to apply to corridor studies.
- Because current requirements differ from state to state, this criterion may mean different things in different places, which may affect the validity and comparability of the score.
- The following criteria are not applicable to corridor studies: provide institutional leadership and monitor progress against performance measures.

**D. Discussion**

- There is an inherent conflict built into modeling. For example, some smaller cities want to grow more and so may make different growth assumptions in their models than the region. Integrating what is at odds is difficult. The locals push local models but the state uses the regional model.
- Certain people are “trained” to participate in corridor plans and recognize their stake in the process. Other people have a stake but are hard to engage. For example, land use or environmental advocates may not see a direct benefit to participating when there is no money in it for them, they are skeptical their involvement will change the outcome, and they have so many other things to do.
- The “beyond current requirements” wording was meant to level the playing field for states with no requirements and states with more rigorous laws.

**E. Decisions**

- Because INVEST does not recognize partial points, combine the two ½ points for SR 520 for “Develop and Adopt Goals and Objectives” and “Engage Partner Agencies” into one point overall.

## SP-02: Integrated Planning: Natural Environment

### A. Criteria

The scoring Lead interviewed Carol Lee, Chris Regan, and Michelle Mead for this criterion. If we had answered these scoring requirements for the agency, the score would be much higher.

Develop and Adopt Goals and Objectives. All three plans included goals and objectives for integrating transportation with environmental plans, policies, and goals.

Engage Natural Resource and Regulatory Agencies. WSDOT does not directly engage natural resource and regulatory agencies on corridor planning studies. Although, we do engage them at the agency level and the project level. When we do corridor planning studies, we get environmental data from regulatory agencies even though we do not consult in person.

Apply System or Landscape Scale Evaluation Techniques. When WSDOT does corridor studies, we use system or landscape scale techniques.

Demonstrate Sustainable Outcomes. None of the Resources interviewed assigned a score to “Demonstrate Sustainable Outcomes.” However, chronic environmental deficiencies and fish passage barriers are discussed in each plan. The identification of these issues are based on performance measures. Additionally, WSDOT monitors these programs to gauge progress.

### B. Planning Suggestions

- Link more agency level information about the natural environment to the corridor level and document it.
- Identify sustainability goals if supported by the agency, even if it is only articulated in RCW.
- Even if the corridor did not involve critical habitats, the plans should mention that.
- The next step is not just consulting site-specific data, but actually looking at the natural resource agencies’ plans. (WSDOT did do that for Ebey Island in the US 2 study).

### D. Discussion

- Regulatory agencies often say they cannot participate at the planning level.
- Perhaps the additional points for demonstrating sustainable outcomes are not valid, because you would not see that information discussed in the plan.
- What the criteria seems to drive is for the transportation agency to find out what all the natural resource agencies see for the area addressed in the plan. Our work on fish passage is just one problem, not a comprehensive landscape look.

### E. Decisions

- Revisit this criterion at a later date.

## SP-03: Integrated Planning: Social

### A. Criteria

Work Toward a Shared Vision. During all three corridor planning efforts, WSDOT sat down with stakeholders and agreed on the vision and goals for that corridor. Those visions and goals guided the recommendations.

Engage a Diverse Range of Stakeholders and Public Participants. All three corridors included stakeholders from PSRC, the cities, and the counties. Tribes were invited to participate. WSDOT staff also briefed city and county councils on projects and plans. When WSDOT has open houses, we put brochures out in different languages, but we have not had open houses on these plans due to lack of funds. All three corridor planning processes included an educational component related to communicating the *Moving Washington* strategy.

Use a Transparent Process and Demonstrate the Incorporation of Stakeholder Input. The meetings associated with all three corridor plans are public and the notes are posted on our web sites. When stakeholders ask us to consider things during the development of recommendations, we do go through them and explain why they will or will not work. Stakeholder input is used at times, strategically. All ideas go through a vetting process.

Demonstrate Sustainable Outcomes. It is hard to demonstrate outcomes for a corridor plan because its recommendations are not implemented yet due to budget. Additionally, the legislature ends up picking the projects that receive funding.

### B. Planning Suggestions

- Work within limited budgets to better engage minority populations and people who do not have a direct stake in transportation.
- Go to community fairs and events when we are not holding open houses.
- Work on better engaging a broader spectrum of local government stakeholders (e.g. TDM and bicycle/pedestrian coordinators).

### C. INVEST Suggestions

- It is hard to demonstrate sustainable outcomes when corridor plans just develop recommendations.

### D. Discussion

- Engaging a local stakeholder group is also outreach to their constituency.
- Real engagement requires a higher investment of time.

## SP-04: Integrated Planning: Bonus

To score points on this criterion, you have to score a minimum of ten points on each of the first three INVEST *System Planning* criteria. WSDOT did not meet that requirement.

### D. Discussion

- INVEST has a very high bar on this criterion; it is intended to push the envelope on sustainability.
- INVEST requires consideration of a very broad spectrum of issues: jobs, the economy, land use, environmental issues, fiscal sustainability. Some local stakeholders may object to expanding the scope of corridor plans because it may conflict with their pre-conceived agendas for the plans.
- INVEST also requires reaching out to a broader set of stakeholders. Direct public engagement may not be required if you bring in professionals and planners from different disciplines more fully.
- INVEST pushes us toward analysis across silos (e.g. considering housing or the economy in a corridor plan).
- The integrated planning bonus came about because there were three integrated planning pieces, but those were not integrated. FHWA wanted to give extra points to folks who pulled it all together.

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## SP-05: Access and Affordability

### A. Criteria

None of the plans scored very high on this criterion. The scoring requirements were shared with external partners with expertise in access and affordability. Their scores were averaged to arrive at the final score, resulting in scores less than ½ point for all criteria.

### B. Planning Suggestions

- Involve special needs communities in planning.
- Analyze the nature and distribution of accessibility and affordability concerns and the growth rates of special needs populations (e.g. elderly).
- Integrate USDOT's strategic plan.
- Include relevant performance measures.

### C. INVEST Suggestions

- Giving 6 points to Performance Measures and Regular Monitoring seems disproportionately high.
- The documentation indicates this criterion is related to Freight and Goods Movement, but there seems to be little to no relationship.

### D. Discussion

- SR 520 and US 2 are limited access facilities. SR 516 has the most access to communities.

### E. Decisions

- Because the points are all less than ½ point, just enter zeros.

## SP-06: Safety Planning

Ida Van Schalkwyk from the WSDOT Capital Program Development and Management office actually wrote this criterion for FHWA. Overall as an agency, we are doing safety planning really well. We incorporate *Target Zero* and GIS in our safety analysis. Collision rates have gone down about 7% every year since 2005. WSDOT is the poster child for quality safety planning and would have scored very highly on this criterion at the agency level. However, that does not necessarily translate to full INVEST points for corridor studies.

### A. Criteria

Collaborate and Participate in the Development and Implementation of the State Strategic Highway Safety Plan. WSDOT wrote *Target Zero*. All three corridor studies incorporated *Target Zero*; SR 520 and US 2 did so in more detail. All three corridor studies analyzed Collision Analysis Corridors and Collision Analysis Locations, but there were no such locations in the areas of the studies.

Integrate the Toward Zero Death Vision into the Agency's Vision for Transportation Planning. Toward Zero Death is the national version of *Target Zero*. *Target Zero* actually goes a step further because it addresses both serious and fatal incidents.

Develop a Plan that Incorporates Safety into Short- and Long-Range Transportation Planning. The corridor plans did a safety analysis and identified countermeasures for state facilities and ramp termini. But the system wide approach required by this criterion means we should have looked at all public roadways in the area, not just our own.

Integrate Quantitative Safety Performance Measures into the Transportation Planning Process. WSDOT does not include performance measures in its corridor plans—the criterion does not apply.

Integrate Quantitative Safety Considerations in the Selection and Evaluation of Strategies During the Transportation Planning Process. The studies considered the application of system treatments along the corridor to address safety problems and addressed different user groups. They also looked at system treatments (e.g. ITS, TSM). All three studies discussed non-motorized modes. Systemic safety solutions would have applied if the highway segments were on the priority array, but that was not the case.

Integrate Statistically Sound Approaches to Determine Projected Safety Performance into the Long-Range Transportation Planning Process. WSDOT is working on projecting safety performance into the future and incorporating demand forecasting into the process, but it is not doing so now.

Collect and Maintain Data (Safety and Non-Crash Information) for the Public Roadway System to Incorporate Safety into the Long Range Transportation Planning Process. WSDOT does collect and maintain data for the public roadway system, but that is not something we do at the corridor study level. WSDOT is working on providing safety information through GIS for WSDOT planners.

### B. Planning Suggestions

- Address safety planning on all roadways in the corridor, not just our own.
- Consider whether corridor studies should include any of the criteria marked N/A above.
- Consider whether to incorporate GIS for corridor-level analysis or keep it at the statewide level.

Appendix H: *System Planning* Module Scoring Workshop Summary**C. INVEST Suggestions**

- This criterion should probably include ADA and transition plans.
- It would be helpful to define the terms used in the scoring criteria. For example, FHWA should further define “intention to cooperate and collaborate across all levels of government,” “multi-disciplinary and integrated approaches,” and “systemwide.”
- Reframe the scoring requirements for corridor studies.

**D. Discussion**

- Safety statistics do not identify vulnerable users. It might be helpful to look at safety data with a population demographics perspective.
- Collisions are not considered unless they involve a vehicle (e.g. bike/pedestrian collisions, or someone using a wheelchair tips over because the slope of the pathway is wrong).

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**SP-07: Multimodal Transportation and Public Health**

An external scoring team evaluated this criterion. The team was comprised of public health, transit and bike/pedestrian people. Overall, the team felt this criterion really pushes the envelope. There was a lot of support for this type of approach, but WSDOT is not there yet. All three plans were multimodal and all three plans addressed bike/pedestrian issues, but following the criteria – none of the plans scored well.

**A. Criteria****B. Planning Suggestions**

- Consider using multimodal level of service measures. Metro uses them and assesses standardized letter scores based on the experience of people riding the bus.
- Further integrate transit into plans. Integration is challenging because funding, governance and planning for our transportation system are not integrated. Additionally, transit agencies may not necessarily welcome state involvement.
- Addressing health in corridor plans requires a big change in perspective and approach.

**C. INVEST Suggestions**

- Does this tool get us to where we need to go when we are scoring all zeroes? (Is the bar set too high?)
- Add safe, comfortable and complete to the goals and objectives for non-motorized.

**D. Discussion**

- Crime Prevention Through Environmental Design is an area of practice related to safety for non-motorized and transit users.
- In the PSRC model, Sound Transit and Metro are integrated with roadway planning. A certain level of transit usage is assumed in the model output.
- APA has materials on how to do a health impact assessment on a transportation project.
- WSDOT was a stakeholder in the health impact assessment done on SR 520. It was led by Puget Sound Clean Air and King County Public Health.

## SP-08: Freight and Goods Movement

### A. Criteria

Engage Stakeholders. The US 2 corridor plan was the only one that really engaged stakeholders, including the port and the military.

Freight Mobility Needs. The corridor plans all involved a congestion study, which analyzed freight needs in connection with other travel needs. US 2 was the only corridor plan that involved a major freight facility. SR 516 is not a major freight corridor, but the plan did look at how rail interacted with SR 516 at the interchange with SR 167.

Freight Reliability. All three plans included sustainability related freight mobility performance measures.

Intermodal Freight Connectors. None of the plans scored points because intermodal freight connectors are not part of our planning process.

### B. Planning Suggestions

- Review the statewide freight plan as a resource for the corridor plan (it will be done in 2014).
- The freight evaluation criteria are currently congestion related.
- We need practical tools for measures of performance, interconnectedness, sustainability and modal coordination.

### C. INVEST Suggestions

- We need more clarity in what should be measured, how it should be measured, and how it applies to sustainability.
- In our current situation (focus on maintenance and preservation), improvements may be problematic.

### D. Discussion

- Intermodal freight connectors are things like rail hubs or port to truck facilities.
- Wen Juan in the Freight Office is working on a freight bottleneck plan that could provide performance measures for freight.
- WSDOT already has data on truck bottlenecks. There may be a possible connection with sustainability.
- It might be easiest to attach freight benefits to things we already measure.
- Reliability is one of the most important measures for shippers.
- Every corridor is different regarding what modes are important, what tonnage might be, and what solutions are feasible.
- The Freight Office is working on truck freight economic corridors for the freight plan, but this data is not yet available. The basis for the economic corridors is the route's classification as a T1 or T2 corridor.

## SP-09: Travel Demand Management

### A. Criteria

All plans included TDM and featured *Moving Washington* heavily. The challenge was the distinction between what the agency does and what is included in the corridor plan.

Set TDM Goals and Objectives. There were no TDM goals or objectives for the US 2 or SR 516 plans. SR 520 targeted a 5% peak hour trip reduction and tried to figure out which strategies would achieve that goal. It did not mention state or local goals for TDM.

Implement a TDM Program. The US 2 study recommendations included TDM strategies. On SR 516, there were recommendations to expand TDM that included some general suggestions. The plan identified the annual cost for these additional strategies as \$214,000, not including staff. The estimate for SR 520 was \$500,000 per year for improved transit service and bicycle and pedestrian improvements. These estimates seemed low.

Develop TDM Performance Measures and Monitor Progress. The CTR program has long history of data measurement and reporting. But there is not a broader agency-wide performance measurement strategy and performance measures are not reflected in the corridor plan.

Demonstrate Sustainable Outcomes. For the US 2 and SR 516 plans, since there were no TDM goals or objectives, and no measures in place to monitor progress, demonstrating sustainable outcomes by documenting measurable progress toward meeting TDM goals and objectives was not possible.

### B. Suggestions

- Need to think about the funding that really exists for TDM strategies and include the true implementation costs.
- TDM strategies identified in the plan should be feasible to implement.
- Include quantifiable TDM goals and objectives in the corridor plan.
- Integrate CTR/TDM/multimodal goals with local, regional, and state plans.
- Invite TDM professionals and other partners into the discussion.
- Develop a comprehensive TDM measurement and reporting plan supported by agency.
- Use Public Transportation Division staff to contact groups concerned with CTR. Also putting in recommendations that are implementable

### C. INVEST Suggestions

- There needs to be more flexibility to adapt the INVEST tool to corridor plans.
- The “Implement a TDM Program” criterion should maybe say “Recommend TDM Strategies in the Plan,” because there should be credit offered for recommending TDM strategies in the plan.

### D. Discussion

- The only CTR affected area for SR 516 is Kent, and it seems like we could do better than a 5% peak hour trip reduction there. For the US 2 study, Everett is also CTR affected. The 5% reduction refers to reductions in total modeled volumes, not just CTR sites.
- SR 516 also used a 5% reduction of peak hour trips as an assumption, although it is not documented in the plan.

Appendix H: *System Planning* Module Scoring Workshop Summary

- The TDM discussion should also include a discussion about reducing travel for freight. We tend to look only at reducing personal travel.
- WSDOT Public Transportation Division provided the cost estimates, citing relevant studies along the same corridor.
- It seems inconsistent that the SR 520 plan scored 4 points while the other plans scored nothing on “Demonstrate Sustainable Outcomes.” All three studies used the same tools. All studies were working toward the same goal. Maybe 520 was better in documenting it. All the studies went into the travel model and took out 5% of demand based on TDM implementation. The 5% was pretty aggressive.

**E. Decisions**

- Revisit this criterion at a later date.

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**SP-10: Air Quality****A. Criteria**

Implement Strategies to Reduce Emissions. Many of these points are not relevant to corridor level planning. For example, dust control. There is not a reason to talk about this at the corridor level. We do have an agreement with Puget Sound Clean Air agency regarding dust control so we are covered at the project level.

Conduct Emissions Analysis. Either US 2 or SR 516 had inaccurate comments on air quality regarding nonattainment and maintenance status. The plan used a blurb from the grey notebook about air quality that was not actually applicable to the area.

**B. Planning Suggestions**

- It would be easy to incorporate some area specific qualitative information into corridor plans. Adding quantitative analysis would take some time and money.
- Check in with agency experts like Tim Sexton when writing about air quality in corridor plans.
- Provide better documentation of how WSDOT approaches to systemwide traffic management also pay off for emissions reduction.
- Establish linkages in planning studies between agency strategies like transportation demand management and air quality.

**C. INVEST Suggestions**

- The focus on implementation is not strongly relevant to planning.
- Dust controls apply at the project level for construction.

**D. Discussion**

- Perhaps this criterion was lifted from *Project Development*, and that is why the wording is so focused on implementation.
- It seems appropriate to have more focus on transportation demand management and transportation system management at the corridor plan level than at the project level.
- The implementation scoring requirements are more applicable agency-wide. Plans almost never implement strategies.

## SP-11: Energy and Fuels

### A. Criteria

Set Goals and Objectives. None of the plans included fossil fuel energy reduction goals. SR 520 did not specifically call out energy and fuels, but it did get one point because energy conservation was included as a performance credit.

System Level Data Collection and Forecasting. None of the plans referenced system level data collection and forecasting. A few plans indicated future analysis would take place.

Develop a Plan and Implement Strategies to Reduce Transportation-Related Energy and/or Fossil Fuel Usage. None of the plans called out specific energy or fossil fuel usage strategies. However, all of the plans did include demand management and operational efficiency strategies that would result in reduced energy consumption. Two of the plans discussed these strategies qualitatively. SR 516 did the best job. SR 520 identified an overall target for transportation demand management.

Measure Progress and Demonstrate Sustainable Outcomes. SR 520 included energy conservation as a performance measure. The other potential points were not relevant at the corridor planning level because corridor plans do not implement strategies.

### B. Planning Suggestions

- Collect and analyze energy data at the planning level; it does not have to be postponed to a later date.
- Include reducing energy and fossil fuel consumption as a goal in the corridor plan and in the evaluation criteria.

### C. INVEST Suggestions

- The Energy and Fuels criterion is more set up for long-range transportation plans—it does not fit as well with corridor plans. Might it be possible to add a module or enable flexibility so it can work better with corridor plans?
- There is overlap between this criterion and the TDM criterion. There is also overlap between TDM and air quality.

### D. Discussion

- It seems hard to address energy and fossil fuel reductions on the systemwide level. The corridor plan may actually be the better place to do this work.
- Similarly, when WSDOT was looking at analyzing greenhouse gas emissions, the team thought the best place to do this analysis was at the corridor planning level because the modeling can be more exact.
- It sounds like we are moving to a model with more interaction with communities. It will be challenging to do a corridor plan with a broad outlook and a proactive approach to including the community when the future might change significantly down the line.
- WSDOT is indirectly addressing energy and fuel reduction with the deployment of *Moving Washington*, but not in a measurable way.

## Appendix H: System Planning Module Scoring Workshop Summary

- The traffic models run for corridor plans should be able to come up with an estimate of energy use based on the model output. It would be important to know how frequently the regional models are updated to incorporate technological changes and new policies (e.g. fuel economy standards).
- The PSRC model has 2+ carpools and transit assumed in the traffic model. The plan could explicitly cover that in a paragraph to take credit for energy savings from using that approach.
- Funding is a consideration when deciding to take on additional work like this.
- One of the challenges with identifying a package of strategies is that a whole suite of projects from a plan never gets funded, only pieces of it get plucked out and funded.
- Interestingly, SR 516 was set up as a multimodal plan, but its funding recommendations are all capital.
- When local governments contribute financially to a plan, they come with their own expectations regarding the scope and approach of the plan.
- Plans are often identified by the legislature that are not necessarily the areas WSDOT would have studied.
- Corridor plans are supposed to be wider than the route.

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## SP-12: Financial Sustainability

### A. Criteria

Advanced Revenue Forecasting. Revenue forecasting does not belong in a corridor plan. We do revenue forecasting at the agency level on a quarterly basis and we involve a lot of people in that. If we were looking at the agency, we would have scored really well, but that was not the task assigned. Our revenue forecasting process does get mentioned at a very high level when the plan uses language that helps manage expectations, but it does not dig into details, because corridor plans are reader-friendly documents and we need to balance what information we include. Toward the end of the plans, we discuss funding next steps through grants and other revenue sources available.

Advanced Cost Estimating. The planning studies use a formula-based tool developed by Delwar Murshed at the Urban Planning Office for cost estimation. Cost estimates are based on “rules of thumb.” This method identifies a cost range, rather than a specific cost estimate.

### C. INVEST Suggestions

- Eliminate this criterion for corridor studies.

### D. Discussion

- An example of how our corridor plans address financial sustainability is we identify our funding limitations and let people know where else they can go to look for money.
- One of the challenges we face is that the legislature controls the funding of the projects, and their decisions may or may not be based on the plan.
- Additionally, the recommendations of the plan are rarely funded as a package. Rather, projects are plucked from the recommendations to go through programming on a stand alone basis.
- Another example of how the corridor plans reflected financial sustainability was the recommendation that the US 2 trestle not be replaced. The inclusion of *Moving Washington* in the

Appendix H: *System Planning* Module Scoring Workshop Summary

plan and the penny chart are ways the corridor plans communicated that the recommendations in the plan needed to be reasonable and affordable.

- There is a dis-connect between planning and scoping. It would be nice to have scoping information in corridor plans, but it does not happen that way. Someone else decides which projects move into scoping.

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### SP-13: Analysis Methods

WSDOT earned a lot of points for this criterion. The Urban Planning Office’s Traffic & Toll Modeling Group does the analysis on corridor studies. The corridor plans used PSRC’s regional model, with some adjustments. For example, the SR 516 plan incorporated some local models from Covington and Kent because they were more refined than the regional model. For SR 520, the regional model forecasts were adjusted downward because the regional model was run prior to the tanking of the economy. The US 2 model forecasts were adjusted upward because the stakeholders insisted on it. Also, the regional model sometimes shows growth occurring in areas that are not really growing so we adjust it to match reality.

#### A. Criteria

Quality of Data. All three corridor plans get full points for this criterion.

Technical Committee. The regional model is vetted extensively. Additionally, the SR 520 study had a technical committee and the Urban Planning Office ran the analysis by the stakeholders. WSDOT Headquarters and the Northwest Region also reviewed the model.

Program Support. WSDOT has a strategic plan for managing data and many resources for maintaining data.

Peer Review. The PSRC model and corridor plan models were reviewed by peers.

#### B. Planning Suggestions

- Keep doing what we are doing.
- Use more microscopic models for some areas (e.g. the BKR model).

#### C. INVEST Suggestions

- The goal is “Agencies adopt and incentivize best practices in land use, socioeconomic, and transportation system analysis methods.” The “incentivize” part of that goals is not really reflected in the criteria.

#### D. Discussion

- The level of modeling detail varies by region. PSRC’s model is the most robust, which is appropriate given the urban density of the region.
- The Urban Planning Office does the technical review of the models very well, but that is not consistent across the state.
- Our models incorporate what goes on beyond the highway to some degree—a lot of it hinges on the population and employment growth assumptions. The PSRC model currently uses the outputs of the UrbanSim model which includes land use and economic data. However, the three studies were completed prior to the use of UrbanSim.

## SP-14: Transportation Systems Management and Operations

This evaluation is based on the perspective of the Urban Planning Office. Staff from the Northwest Region and Headquarters were contacted but did not provide input. Transportation Systems Management and Operations (TSM) is assumed to be more than signal coordination or variable message signage—it also includes Transportation Demand Management (TDM).

### A. Criteria

Set TSM Policies, Goals and Objectives. All three studies included TSM goals and objectives where appropriate. The studies also included the 5% reduction in peak hour trips based on TDM strategies.

Develop a Plan for TSM Strategies. All three plans discussed TSM strategies (e.g. TDM measures, signal synchronization).

Support or Implement TSM Strategies. Because of limited funding sources, it was critical to look at low cost TSM strategies.

Establish Performance Goals and Monitor Progress. The three point recommendation is based on the 5 percent reduction for Transportation Demand Management assumption and the cost estimates developed for implementation. However, none of the strategies are implemented yet, so we cannot yet say whether the goals and objectives have been met.

### B. Planning Suggestions

- We have a full toolbox for TSM and TDM, but guidelines for prioritizing which strategy is better when and for what would be helpful.
- Different corridors have different opportunities for deploying TDM strategies.
- Additional funding for TDM activities would aid in implementation.
- Monitoring progress may be helpful.
- Better document in the plan all the factors analyzed during the planning process.

### C. INVEST Suggestions

- Define what is meant by “financially support.”
- Provide guidance for the development of meaningful performance measures and how they are to be measured and/or monitored.

## SP-15: Linking Asset Management and Planning

### A. Criteria

Incorporate Asset Management Based Performance Measures. We do not have a process for leveraging asset management performance measures for planning. We do have one of the best asset management tools for pavement that exists, but it is not for planned facilities.

Incorporate Asset Management Data and Economic Analysis to Prioritize Investments. We do benefit cost analysis across the state.

Prioritize Maintenance and Preservation. The US 2 study recommends we put off the westbound trestle replacement because we had just sunk money into a rehabilitation project. In the other two corridor plans, the recommendations are more about building new infrastructure instead of delaying capital expenditures. SR 520 and SR 516 did look at historical data for maintenance expenditures and extrapolated that into the future to provide a sketch of the level of maintenance funds invested in the roadway.

Outside of the corridor planning process, WSDOT uses the Maintenance Accountability Process to monitor how our facilities are doing and identify when additional funding is needed. WSDOT also has a pavement management system and bridge condition inventory. Some assets, like culverts, stormwater facilities, and wetlands are not included in our asset management systems.

### B. Planning Suggestions

- Consider developing a tool for estimating maintenance costs for future projects.
- 

## SP-16: Infrastructure Resiliency

### A. Criteria

Hazard Identification. All three plans used geographic data to identify hazards, including seismic risks, liquefaction hazards, floodplains, point sources of hazardous materials contamination, and climate change vulnerability. The climate change vulnerability assessment considered sea level rise, precipitation change, temperature change, and fire risks, and identified the state transportation infrastructure most vulnerable to those changes.

Vulnerability Assessment. WSDOT conducted a climate vulnerability assessment statewide in 2011 and all three corridor plans referenced this assessment and included the results.

Risk Assessment. WSDOT has decided to do a qualitative assessment of climate change risk, identifying state transportation infrastructure at low, moderate, and high risk. The assessment did not assign probabilities to impacts; therefore WSDOT does not consider it a risk assessment. However, FHWA INVEST staff thought this work could be considered a risk assessment because it did consider the likelihood and magnitude of future climate changes.

Develop and Implement Adaptation Strategies. The US 2 and SR 520 plans did not include adaptation strategies. The SR 516 plan included some language about incorporating features to provide greater resilience from events associated with climate change in future plans and corridor improvements. But

Appendix H: *System Planning* Module Scoring Workshop Summary

this did not really go far enough to qualify for points. As an agency, WSDOT does implement adaptation strategies (e.g. the Bridge Seismic Retrofit Program, Bridge Scour Mitigation Program, Chronic Environmental Retrofit, and WSDOT's Emergency Management Program), but these are not part of the corridor planning process.

**B. Planning Suggestions**

- Address all the potential hazards WSDOT includes in its emergency operations planning including: tsunami, volcano/lahar, terrorism, unstable slopes, and infrastructure failure (e.g. dams).
- Better integrate hazard risk data in the assessment and development of recommendations.
- Consult local disaster preparedness plans such as Hazard Identification and Vulnerability Assessments or Threat and Hazard Identification and Risk Assessments.
- Include or reference adaptation strategies.
- Identify emergency routes, such as Strategic Highway Network routes.

**C. INVEST Suggestions**

- Write the criteria more broadly to allow for non-GIS based analysis.
- Allow points for qualitative risk assessments and adoption of policies for project level assessments.
- Allow documents to be modified or deleted after uploading to INVEST site.
- Better define the difference between a vulnerability and a risk assessment in the INVEST criteria.
- Financial sustainability, asset management, and infrastructure resiliency are all tied together.

**D. Discussion**

- We could give ourselves credit for the risk assessment based on FHWA's interpretation. However, they are not using the traditional definition of a risk assessment.
- Our existing vulnerability assessment specifically states that it is not a risk assessment. To take points for doing a risk assessment may cause confusion about past messaging.
- Capital Programs Development and Management may consider emergency routes in their programming criteria.

**E. Decisions**

- WSDOT will not take credit for having completed a risk assessment.

## SP-17: Linking Planning and NEPA

### A. Criteria

Document Linkages Between Transportation System Planning and NEPA. The three corridor plans included some NEPA wording, earning partial points for the undocumented procedures criterion. Some environmental review is hidden in the planning level estimates. The analyst pulls his own maps and looks at the same environmental data that the planners use for the Environmental Resources chapter of the corridor plans. The planning level estimates may be based in part on what level of environmental analysis will be required based on the type of project- and the identified environmental issues.

Consult NEPA Practitioners. The SR 520 and US 2 plans included a sidebar on NEPA.

Apply System Planning. None of the plans applied system planning results to NEPA projects.

### B. Planning Suggestions

- We do not do NEPA at the corridor planning level, with a few exceptions for megaprojects. That does not mean we could not do a little more with just a little more effort to help make our projects more shovel-ready.
- If we knew we were going to do some level of scoping, we would be more likely to link planning and NEPA.
- Currently, our planning efforts do not involve as rigorous a public outreach as what is required by FHWA and FTA to incorporate planning results into NEPA. If our goal is to have better linkages with NEPA, then we would need to expand or modify current practices. Doing and documenting public outreach is critical to the INVEST scores. If we want the plan outcomes to stick, we have to demonstrate that we collaborated with the public and natural resource agencies. To be adequate for NEPA we must demonstrate how we have considered public comments in the development of our recommendations.

### C. INVEST Suggestions

- INVEST works best if you answer the scoring requirements online.
- Describe what evidence supports the consultation with NEPA practitioners.
- Be more specific about the environmental linkages desired.
- The “Apply System Planning Results to NEPA” criterion appears to require project level documentation at the planning level. The timing of that may be challenging. The environmental review may expire before the project is ready to start.

**Appendix I: Project Development Module Scoring Summary**

<p align="center"><b>SR 520 Bridge &amp; HOV Project Scoring Summary</b></p> <p align="right">Total Points Available (PD) = 132 Total Score for PD = 55 SP score elements = 13</p>							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
<b>INVEST System Planning Criteria</b>							
SP-07	<a href="#">Multimodal Transportation and Public Health</a>	Expand travel choices and modal options by enhancing the extent and connectivity of multimodal infrastructure. Support and enhance public health by investing in active transportation modes. --- Requirements are at designed for Systems Planning but applied here to one Project.	Develop Goals and Objectives for the agency: (1) to enhance the extent and connectivity of transit and non-motorized model infrastructure and (1) for active transportation and the improvement of public health.	2	2	13	Even without the HIA, these criteria were integral to project planning and public outreach.
			Develop a System-wide Plan, or LRTP, at agency level to integrate multimodal and active mode infrastructure needs, projects, and programs. Points are cumulative. (1) prioritizes active, non-motorized transportation projects and programs in the LRTP. (1) LRTP integrates transit, pedestrian, bicycle, and roadway networks and makes intermodal connections safe and convenient (3) evaluate health impacts of LRTP to determine if planned investments will help meet public health and active transportation goals.	5	5		Tailored to SR 520 program and project – didn't assess LRTP.
			Evaluates progress towards multimodal and public health goals and makes adjustments as necessary. Points are cumulative. (1) Implements investments to expand travel choices and modal options to support and enhance public health. (2) Incorporates multimodal and public health-related performance measures into LRTP and demonstrates ongoing monitoring of its progress. (3) Documents that goals are met.	6	6		Public acceptance is key to project success and the project elements that enhance community access and multi-modal issues helped win public support for the project.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
<b>INVEST Project Development Criteria</b>							
PD-01	<a href="#">Economic Analyses</a>	Using the principles of benefit-cost analysis (BCA) or economic impact analysis (EIA), provide evidence that the user benefits, including environmental, economic, and social benefits, and justify the full life-cycle costs.	The BCA must use minimum acceptable industry practices.	2	0	0	No formal BCA was completed for the unfunded portion of the program but elements of the BCA were part of the NEPA EIS. BCA's cannot be precede funding. Once funding is secured, a formal BCA is required to add the project to the financially-constrained STIP.
			The EIA must forecast and quantify project revenues and cost, quantify benefits, including social, environmental, and economic factors, quantify impacts to regions, land values, and businesses.	3	0		No formal EIA has been completed for the unfunded portion of the I-5 to Medina project. However, a subjective analysis of elements of the EIA were considered as part of the NEPA Environmental Impact Statement for the project.
PD-02	<a href="#">Lifecycle Cost Analyses</a>	Reduce life-cycle costs and resource consumption through the informed use of life-cycle cost analyses of key project features during the decision-making process for the project. ---- Points for each LCCA, 3 pts max.	LCCA of key project features according to generally accepted engineering economics practices. 1 point each for performing LCCA on the following: all pavement structure alternatives, all stormwater infrastructure, and the project's major features.	6	0	0	No formal LCCA was completed for the pavement structures, stormwater infrastructure, or major features. Elements of the criteria were considered in the conceptual design, but no formal analysis has been conducted at the preliminary level of engineering conducted to date.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-03	<a href="#">Context Sensitive Project Development</a>	Deliver projects that harmonize transportation requirements and community values through effective decision-making and thoughtful design.	6-step framework for CSS-based Project Development: 1. Develop decision-making process and management structure; 2. Define the problem; 3. Develop the project and evaluation framework; 4. Determine alternatives; 5. Screen the alternatives; and 6. Evaluate and select an alternative.	2	2	5	All 6 steps were done multiple times as part of the SR 520 project over the last 15 years.
			Deployment of a Multi-disciplinary Team that features "cradle-to-grave," project team.	1	1		
			Create external "champions" from the affected community who are engaged and proactive in supporting the project.	1	1		
			Acceptance of project-level "Problems, Opportunities, and Needs" among stakeholders.	1	1		
PD-04	<a href="#">Highway and Traffic Safety</a>	Safeguard human health by incorporating science-based quantitative safety analysis processes within project development that will reduce serious injuries and fatalities within the project footprint.	Explicit Consideration of Safety using Quantitative, Scientifically Proven Methods: 1 point - during scoping; 2 pts - to develop alternatives; 3 pts - during preliminary and final design.	6	0	0	The Preferred Alternative was not defined based on safety data or analysis.
			Evaluate safety performance of the project after implementation using statistically reliable methods.	1	0		There is no budget or study funded to perform this level of post project safety benefit.
PD-05	<a href="#">Educational Outreach</a>	Increase public, agency, and stakeholder awareness of the integration of the principles of sustainability into roadway planning, design, and construction.	Perform a minimum of two different educational elements: include Sustainability in PD process; incl. sustainability in Public Involvement; install point-of-interest; project website; stakeholder guide; school presentations; professional presentations.	2	2	2	The Seattle Community Design Process helped the project achieve at least two of the required elements.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-06	<a href="#">Tracking Environmental Commitments</a>	Ensure that environmental commitments made by the project are completed and documented in accordance with all applicable laws, regulations, and issued permits.	Beginning in project development, use a comprehensive environmental compliance tracking system to identify how environmental commitments will be identified, tracked, fulfilled, and verified throughout design and construction. (additional 1 Point) The environmental tracking system has formal mechanism to communicate commitments from planning through design, construction and maintenance.	3	2	2	The environmental team is not currently moving forward on the “project” since it is currently unfunded. WSDOT track environmental commitments for the program in spreadsheets and in a formalized database at the programmatic-level for I-5 to Medina and at the project/phase level after funding is secured. As each phase receives funding and design proceeds, the environmental and design teams work together to develop a project/phase-specific commitments list based on the program level list.
			Owner requires the principal project constructor to assign an independent environmental compliance monitor to provide QA and report directly to and make recommendations to the regulatory and lead agencies.	2	0		The project is not in construction yet, so no environmental compliance staff yet assigned. (Also – I’m not clear what “independent” means in this case. An independent third-party/stakeholder? Typically, our environmental compliance monitors are WSDOT employees.)
PD-07	<a href="#">Habitat Restoration</a>	Avoid, minimize, and compensate the loss and alteration of natural (stream and terrestrial) habitat caused by project construction and/or restore, preserve, and protect natural habitat beyond regulatory requirements.	Points based on highest level achieved: minimize impacts (1); avoid impacts (2); enhance features for project required to mitigation habitat impacts (3); enhance features when mitigation is not required.	3	3	3	3 points based on the criteria for “Enhance features (for projects required to mitigation habitat impacts through restorative practices).”

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-08	<a href="#">Stormwater</a>	Improve stormwater quality from the impacts of the project and control flow to minimize their erosive effects on receiving water bodies and related water resources, using management methods and practices that reduce the impacts associated with development and redevelopment.	Water Quality - required to treat ≥80% of total annual runoff, additional points for pollutants and treated impervious, based on provided table. Max points for treating 90% + total runoff, sediment and metals, and >125% of added target impervious.	3	3	6	The SR 520 Program will treat 91% of the mean annual runoff volume in accordance with current design requirements. If the “Target Impervious Surface” is supposed to be the post-SR 520 Program impervious surface that is treated as a % of the added impervious surface, then there would be 3 points. The amount of post-SR 520 Program impervious that is treated in TDAs 7 – 14 (excluding TDA 8) as a % of added impervious surface is 220%.  0 points because all discharges from stormwater systems are to waterbodies exempt from flow control.  The net addition in impervious surfaces for TDAs 7 through 14 is +28.1 acres. The post-SR 520 Program impervious to be treated is 48.5 acres (220% of the additional impervious area).
			Flow Control - required to manage flow from ≥80% of total runoff, based on controlling peak flows or durations based on provide table. Max points for managing 90% + total runoff, and controlling flow durations for >125% of added target impervious.	3	0		
			Effective BMPs - Max points for treating >125% of target impervious for specific pollutant. Only 2 points possible for rural projects.	3	3		
PD-09	<a href="#">Ecological Connectivity</a>	Avoid, minimize, or enhance wildlife, amphibian, and aquatic species passage access, and mobility, and reduce vehicle-wildlife collisions and related accidents.	Points based on highest level achieved: minimize impacts (1); avoid impacts (2); enhance features for existing projects - retrofits (3); enhance features for new alignments that are approved by resource staff (3); restore features by re-establishing past habitats to re-establish corridors and habitats (3).	3	1	1	Improve Ecological Connectivity using predetermined methods in addition to site-specific ecological assessment - The project did meet the prerequisite. I first scored it as a zero because of the 50% requirement in the first minimization criteria but recalled that the project had planned two bridges and is now considering only one due to impacts on salmonids migration. It could have scored a 2 pts but didn't meet the “any and all” part of the criteria. This is a tough one because the project did go above and beyond to avoid environmental impacts from pile driving, overwater cover, and work bridges. This does relate to habitat connectivity for fish but not in the traditional sense.

Appendix I: Project Development Module Scoring Summary

<b>SR 520 Bridge &amp; HOV Project Scoring Summary</b>							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-10	<a href="#">Pedestrian Access</a>	Improve the safety and convenience of pedestrian networks for people of all ages and abilities by providing or enhancing facilities within the project footprint.	Add new or improve existing features for pedestrian facilities. Current facilities do not qualify without additional efforts. (additional 1 point) Ensure the new pedestrian facility address safety, comfort, connectivity, and aesthetics.	2	1	1	The project must accommodate pedestrians of all ages. SR 520 I-5 to Medina Program constructs a new Class 1 non-motorized regional shared-use path (hereafter RSUP) facility for pedestrians and bicyclists and along the north side of the SR 520 floating bridge across Lake Washington where non-vehicular access was not previously available except by bus or automobile.
PD-11	<a href="#">Bicycle Access</a>	Promote bicycling in communities by providing or enhancing safe and convenient bicycling facilities within the project footprint.	Must include bicycle facilities that foster use and go beyond minimum standards. Not applicable in areas where bicyclists are specifically prohibited. Implement safety, aesthetic, safety and connectivity for existing bicycle facilities (1 pt) or for new bicycle facilities (2 pts). New facilities must be Class 1 or 2.	2	2	2	Implement features for new bicycle facilities that enhance safety, connectivity, aesthetics, comfort, and environment - the project constructs a new Class 1 non-motorized regional shared-use path facility for bicyclists and pedestrians along the north side of the SR 520 floating bridge across Lake Washington where non-vehicular access was not previously available
PD-12	<a href="#">Transit and HOV Access</a>	Promote use of public transit and carpools in communities by providing new transit and high occupancy vehicle (HOV) facilities, or by upgrading existing facilities within the project footprint.	Points based on highest level achieved per provided range of specific efforts, e.g., (1) smaller enhancements and amenities to (5) physical changes that provide exclusive transit access within ROW.	5	4	4	
PD-13	<a href="#">Freight Mobility</a>	Enhance mobility of freight movements, decrease fuel consumption and emissions impacts, and reduce freight-related noise.	Points based on highest level achieved per provided range of specific efforts, e.g., (1) No-idling policy and signage to (5) conversion/construction of truck-only lane for facilities with minimum of 10%/1,300 trucks per lane hour.	7	0	0	

Appendix I: Project Development Module Scoring Summary

<b>SR 520 Bridge &amp; HOV Project Scoring Summary</b>							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-14	<a href="#">ITS for System Operations</a>	Improve the efficiency of transportation systems without adding infrastructure capacity in order to reduce emissions and energy use, and improve economic and social needs.	Points awarded for inclusion of each ITS category specified: electronic payment/pricing, emergency management, enforcement, information dissemination, information management, ITS infrastructure, lane management, ramp control, response and treatment, weather management, surveillance.	5	5	5	Of the 11 listed "Allowable ITS Applications for intelligent Transportation Systems, the 520 Program is implementing at least 9 of them. The only two that are questionable are Winter Maintenance (not so applicable to this region) and Road Weather Management.
PD-15	<a href="#">Historical, Archaeological, and Cultural Preservation</a>	Preserve, protect, or enhance cultural and historic assets, and/or feature National Scenic Byways Program (NSBP) historic, archaeological, or cultural intrinsic qualities in a roadway.	2 prerequisites: must have NRHP or eligible properties <u>or</u> be along an "American Byway." Points based on highest level achieved per provided range of specific efforts: (1) minimize impacts/"adverse effects", (2) avoid impacts to eligible features, (3) enhance historic, archeological, or cultural resources.	3	3	3	Enhance features: protect, preserve, and/or enhance historical, arch., or cultural resources. For the portions of the project under evaluation, the programmatic agreement includes minimization measures (e.g., a community construction management plan to reduce construction effects on historic properties); avoidance measures (restrictions on modifications to historic properties such as Lake Washington Boulevard), and enhancement measures (interpretive signage, documentation measures).
PD-16	<a href="#">Scenic, Natural, or Recreational Qualities</a>	Preserve, protect, and/or enhance routes designated with significant scenic, natural, and/or recreational qualities in order to enhance the public enjoyment of facilities.	2 prerequisite: any portion along an "American Byway" <u>and</u> project does not remove any existing access to scenic, natural, or recreation qualities. Points based on highest level achieved per provided range of specific efforts: (1) minimize impacts/"adverse effects" or provide $\geq 1$ access from project to designated area, (2) avoid impacts to relevant features, (3) enhance scenic, natural, and/or recreational qualities along the roadway.	3	0	0	If the project had met the 1st prerequisite, it would have also met the second and scored 3 points.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-17	<a href="#">Energy Efficiency</a>	Reduce energy consumption of lighting systems through the installation of efficient fixtures and the creation and use of renewable energy.	Evaluate energy needs for the project and implement alternatives to reduce power consumption while still meeting lighting and safety standards.	1	1	2	It is not possible to calculate KWH/yr reductions at this stage of design because these technologies have not yet been determined.
			Points awarded by the % reduced power use as a comparison of annual power consumption for the baseline compared to an energy efficient electrical system design. Calculations consumption are provided.	6	0		
			Establish a plan for auditing energy use after the project is complete, as part of operations and maintenance.	1	1		
PD-18	<a href="#">Site Vegetation</a>	Promote sustainable site vegetation within the project footprint that does not require long-term irrigation, consistent mowing, or invasive/noxious weed species removal.	Prerequisite: All site vegetation shall use non-invasive species only, use non-toxic species only, use seeding that does not require consistent mowing for a viable stand of grass, and minimize disturbance of native species. 1 point for each of the following - not to exceed 3 pts. Non-mechanical maintenance, no long-term irrigation, greywater or reclaimed water irrigation during plant establishment or ongoing, native species, long-term vegetation planning.	3	2	2	Assumes lids at Montlake -Native Species (1 point) - • 80% of new plants are native species. • Retaining existing vegetation where possible. Long-term Vegetation Planning (1 point) 1. Monitoring mitigation areas for ten years. 2. Have drafted the Tree and Vegetation Management and Protection Plan that will be a section in the Community Construction Management Plan. 3. Would try to establish maintenance agreements with Seattle and/or communities for lid landscapes.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-19	<a href="#">Reduce and Reuse Materials</a>	Reduce lifecycle impacts from extraction and production of virgin materials by recycling materials. -- Points are cumulative but cannot exceed 8 points total.	Perform pavement preservation activities such as crack sealing, chip sealing, slurry sealing, microsurfacing, or thin ACP overlays to extend remaining service life of pavements. (1) 1-3 years, (2) 2-5 years, (3) 5-7 years, (4) 7-10 years.	4	4	8	
			Reduce the amount of new pavement materials needed through soil stabilization methods that incorporate existing pavement structures into new pavement structures. (1) 50-74%, (2) 75-99%, (3) 100%.	3	0		
			Perform bridge preservation activities that extend the remaining service life of bridges. (2) 2-5 years, (3) 5-7 years, (4) 7-10 years.	4	4		
			Retrofit existing bridge structures to reduce the need for new structures and materials. (2) 2-5 years, (3) 5-7 years, (4) 7-10 years.	4	0		
			Reuse existing pavements, structures, or structural elements for a new use by repurposing them for a use that requires equal or less loading. (1) 25-49%, (2) 50-74%, (3) ≥75%.	3	0		
			(2) Reuse industrial by-products in pavement materials, ancillary structures, and other roadway elements. (1) Use foundry sand or other industrial by-products in pipe bedding and backfill.	2	0		

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-20	<a href="#">Recycle Materials</a>	Reduce lifecycle impacts from extraction, production, and transportation of virgin materials by recycling materials. -- Points cumulative, cannot exceed 8 pts.	Use RAP or RCA in new pavement, granular base course or embankments. Points based on Average Recycled Content (ARC) calculation provided. For recycling in pavements, 1 pt for every 10% above 0% , up to 50% (5 pts). For base course or embankments 1 pt for every 10% above 10% , up to 60% (5 pts).	5	0	0	Recycled Asphalt Pavement or Recycled Concrete Aggregate (1-5 points) - There is not enough information to assess whether recycled materials will be used on this project
			Recycle pavement materials in place using cold-in-place recycling, hot-in-place recycling, and full depth reclamation. Points based on percent of pavement area recycled compared to entire area of existing pavement materials and vary by method: CIR, HIR, FDR.	6	0		
			Relocate and reuse at least 90 percent of the minor structural elements, including existing luminaires, signal poles, and sign structures that are required to be removed and/or relocated onsite.	1	0		
PD-21	<a href="#">Earthwork Balance</a>	Reduce the need for transport of earthen materials by balancing cut and fill quantities. -- Points cumulative, cannot exceed 8 pts.	Show that that design volumes or actual construction volumes meet criteria for the following materials (3 points each): soil stabilizer materials or other soil additives, removed topsoil materials, and unused cut or imported fill materials placed in stockpiles. <u>Or</u> , 1 point each if only construction banking is used, according to prescribed requirements.	8	3	3	Design values equal 22% , which is greater than the 10% required for 3 points.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-22	<a href="#">Long-Life Pavement Design</a>	Minimize life-cycle costs by designing long-lasting pavement structures.	Design at least 75 percent of the total new or reconstructed pavement surface area for regularly trafficked lanes of pavement to meet long-life pavement design criteria <u>and</u> design pavement according to a design procedure that is formally recognized, adopted and documented by the project owner.	5	5	5	Design at least 75% of the total new or reconstructed pavement surface area for regularly trafficked lanes of pavement to meet long-life pavement design criteria. WSDOT designs all new pavement designs as perpetual pavements. HQ pavement's understanding is that the roadway section will be concrete. The estimated pavement section will consist of 12 to 13 inches of PCCP over 4 inches of asphalt base over 4 inches of crushed aggregate base course. 100% of the pavement section for mainline SR 520 will be designed for long life.
PD-23	<a href="#">Reduced Energy and Emissions in Pavement Materials</a>	Reduce energy use in the production of pavement materials.	Use low-energy material for ≥50% of total pavement material (HMA) or concrete) by weight. Low-energy material defined as: Asphalt - Warm Mix Asphalt or burn recycled oil, waste materials, or reduce conventional fuel us by ≥25% for HMA plant. Raw Material - ENERGY STAR® certified cement production plant or reduce conventional fuel us by ≥25% for HMA plant. Concrete - use concrete plant that demonstrates a carbon footprint and embodied energy 15% below national averages, from a NRMCA Sustainable Concrete Plant Certified Silver, or blended cement using limestone addition.	3	0	0	There is not enough information to assess the reduced energy and emissions in pavement materials for this project. The project is only in the planning stages.

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-24	<a href="#">Contractor Warranty</a>	Improve quality and minimize life-cycle costs by promoting the use of extended contractor warranties for pavement.	The construction contract includes a warranty for the constructed pavement structure that includes surfacing and underlying layers. (1) 3-year warranty and (5) 5-year warranty.	3	0	0	There is not enough information to assess whether a warranty will be used on this project. Based on other WSDOT Mega Projects, it is likely that a warranty will be used.
PD-25	<a href="#">Construction Environmental Training</a>	Provide construction personnel with the knowledge to identify environmental issues and best practice methods to minimize impacts to the human and natural environment.	Require the Contractor to plan and implement a formal environmental awareness training program for construction. The plan should go beyond regulatory requirements and cover all potential environmental issues.	1	1	1	The goal statement above is being partially met by the project. As listed below, there are many tools being developed that partially satisfy the intent of the goal; therefore - could also see 1/2 point being applicable for scoring.
PD-26	<a href="#">Construction Equipment Emission Reduction</a>	Reduce air emissions from non-road construction equipment -- Points cumulative, cannot exceed 2 pts.	Implement the prescribed methods to reduce non-road emissions for 1 point each: (1) 50% of non-road construction equipment meets current EPA standards, 50% of diesel equipment has emission retrofits, no-idle policy, use larger hauling equipment, and (2) 75% of non-road construction equipment meets current EPA standards, 75% of diesel equipment has emission retrofits.	2	0	0	
PD-27	<a href="#">Construction Noise Mitigation</a>	Reduce or eliminate annoyance or disturbance to surrounding neighborhoods and environments from road construction noise, and improve human health.	Contractor establishes, implements, and maintains a formal Noise Mitigation Plan (NMP) during construction with details information on dates, means, and methods of construction, noise monitoring plans, noise permits, and public feedback mechanism.	1	0	0	Nearby projects developed a NMP but means and methods, responsible parties, etc. won't be known with specificity until closer to final design, or post-AD. The project will include many of these requirements for night work, but not daytime. As described, this would apply to day and night work, which would have major cost implications.
			Require contractor to monitor noise and mitigation measures throughout construction to ensure compliance with the NMP.	1	0		

Appendix I: Project Development Module Scoring Summary

SR 520 Bridge & HOV Project Scoring Summary							
No.	Criteria	Description	Scoring Requirements	Available Points	Points Earned	Total Score	Explanation
PD-28	<a href="#">Construction Quality Control Plan</a>	Improve quality by requiring the contractor to have a formal Quality Control Plan (QCP).	Require Contractor to plan and implement QC measures throughout construction above and beyond requirements in specifications and regulations in a formal QCP.	3	NA	0	No response received from Construction Office.
			Leverage Quality Price Adjustment Clauses to link payment and performance of constructed products.	2	NA		No response received from Construction Office.
PD-29	<a href="#">Construction Waste Management</a>	Utilize a management plan for road construction waste materials to minimize the amount of construction-related waste destined for landfill.	Require Contractor to establish, implement, and maintain a formal Construction and Demolition Waste Management Plan (CWMP) during roadway construction, or its functional equivalent, during construction.	1	NA	0	No response received from Construction Office.
			(1) Divert ≥ 50% of construction waste from landfills. (2) Divert ≥75% percent of construction waste from landfills.	2	NA		No response received from Construction Office.

## Appendix J: WSDOT Demand Management Research Program

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### WSDOT Research Program Office of Research and Library Services (ORLS) Problem Statement for 13-15 BN

DUE NO LATER THAN OCTOBER 1, 2012 TO THE APPROPRIATE RESEARCH MANAGER

Problem statement concepts may come from any source but must have a WSDOT sponsor for submittal.

#### 1. PROBLEM STATEMENT TITLE

Developing guidelines for incorporating managing demand into WSDOT planning and programming.

#### 2. ESTIMATED COST AND TIMING

**Cost:** \$125,000

*Remember to include equipment, travel, and tuition for graduate student and overhead in addition to researcher costs. See the ORLS Budget check list to help cost out your project.*

**Anticipated Start Date:** Month/Year July 1, 2013

*Is this another phase of an existing research project?* No

*If yes, what project?* N/A

#### 3. RESEARCH PROBLEM DESCRIPTION Please be as specific as possible in answering these questions.

##### ***What is the problem?***

WSDOT's *Moving Washington* policy directs agency employees to integrate demand management, operations, and strategic capacity strategies to achieve a reliable, responsible, and sustainable transportation system that supports our state's healthy economy, environment, and communities. To meet the intent of *Moving Washington*, WSDOT's planning and programming efforts must evolve to evaluate the costs, benefits, and effectiveness of a more diverse set of transportation solutions, including those that require implementation by partnering jurisdictions. Only through this broader lens will our agency be able to identify and implement the least cost, practical solutions that will help us meet transportation challenges within our budgeted resources. Current WSDOT business practices more effectively integrate strategic capacity and operations strategies, while demand management is a newer focus and more challenging to integrate.

Integrating demand management strategies is challenging because these strategies include a great variety of programs, services, policies, and regulations that cannot be applied equally and effectively in all conditions. The strategies take various lengths of time for development and implementation,

and they fall under the jurisdiction of different agencies, governments, and authorities.

This project is focused on advancing the integration of demand management strategies into WSDOT business practices. Relevant WSDOT business practices include:

- Corridor planning studies, statewide transportation plans, modal plans, and quick response planning initiatives.
- Program development (including agency recommended investment packages and the development and prioritization of project lists).
- State Environmental Policy Act mitigation requests related to local development impacts.
- Growth Management Act comments related to local policy and regulatory actions to mitigate the traffic impacts of planned development.
- WSDOT construction project traffic mitigation.
- Award of grant funds and distribution of discretionary federal and state funds to external partners.

***Why does WSDOT need to solve this problem?***

WSDOT needs to evolve to meet 21<sup>st</sup> Century transportation challenges—to do more with less. The agency cannot afford to address deficiencies on the transportation system using traditional approaches. Because road capacity cannot keep pace with growing demand, given limited financial resources, WSDOT needs to use the infrastructure we have more efficiently. Aligning partners and prioritizing investments and policy decisions that best meet our shared objectives by implementing the managing demand component of the *Moving Washington* approach will help WSDOT achieve those efficiencies.

***What is the significance/scope of the problem? (Include any objective data that you can such as how many structures, locations, or modes are impacted)***

WSDOT's 2013-15 proposed budget reflects a \$490 million shortfall of the revenues needed just to maintain, operate, and preserve our highway, ferry, and rail systems at current levels of service. The Governor's Connecting Washington Task Force identified the needs of our state's multimodal system at \$50 billion over 10 years. Prospects of significant revenues for current and new infrastructure investments and services are limited. WSDOT's *Moving Washington* strategies, with their emphasis on preservation and safety first, and then tiered improvement strategies of managing demand, operating the system efficiently, and strategically adding capacity, is a strategic response to the reality of these fiscal challenges.

Each individual business area at WSDOT is struggling with how to determine the cost, benefits, and effectiveness of demand management strategies to meet the intent of *Moving Washington*. This research will take a comprehensive look at the needs of these business areas for integrating demand management strategies. The project will develop guidelines for each business area to help them identify, implement, and measure the performance of appropriate demand management strategies within different contexts. It will also identify existing research and data that support the guidelines, as well as a research program to address gaps of information and data. Finally, the project will test the guidelines in one or more pilot projects.

## RESEARCH OBJECTIVE

### ***What is the proposed research objective and scope to address the problem?***

The objective of this research is to develop guidelines for WSDOT business areas to identify and select potential demand management strategies appropriate to the context of the land use and transportation environment to meet their objectives.

The scope of the research includes:

#### ***TASK ONE: UNDERSTAND WSDOT BUSINESS NEEDS AND BENCHMARK CURRENT PRACTICES.***

- Review documentation of relevant WSDOT business processes.
- Review current practices for integrating demand management.
- Identify successful examples of integration.
- Engage staff from each of WSDOT’s relevant business areas to understand their objectives, identify key measures of effectiveness that may be impacted by demand management strategies, and identify specific needs that would help them incorporate demand management into their business practices.

#### **TASK ONE DELIVERABLE: Documentation of each WSDOT business area’s needs for integrating demand management into their business practices.**

#### ***TASK TWO: LITERATURE REVIEW.***

Synthesize current materials and research, including internal WSDOT guidance, to:

- Identify and describe data sources, guidance and other information for evaluating the societal, environmental, and economic costs and benefits of demand management strategies.
- Identify the conditions and range of effectiveness for demand management strategies in different contexts for meeting the objectives of each WSDOT business area.

#### **TASK TWO DELIVERABLES: Summary of literature review.**

#### ***TASK THREE: DEVELOP GUIDELINES FOR INTEGRATING DEMAND MANAGEMENT STRATEGIES INTO EACH WSDOT BUSINESS AREA.***

*Based on the documentation of each WSDOT business area’s needs identified in Task One and the literature review in Task Two:*

- Identify existing data and information necessary to support estimating the impacts of demand management strategies on the identified measures of effectiveness.
- Identify additional data and information necessary to support the estimation of the impacts of demand management strategies that is not currently available.
- Identify opportunities to coordinate with external partners that can support development of demand management solutions.
- Create a set of general guidelines for integrating demand management into WSDOT business areas.

**TASK THREE DELIVERABLE: Develop guidelines for testing in pilot projects.****TASK FOUR: IMPLEMENT THE GUIDELINES IN ONE OR MORE PILOT PROJECTS**

Test the guidelines for at least one WSDOT business area:

- Identify project objectives.
- Identify and select potential demand management strategies.
- Determine the cost-effectiveness of the demand management strategies in meeting the project objectives, and evaluate how such strategies may change the timing and scope of other potential solutions.
- Coordinate with internal and external partners to plan for the implementation of the selected demand management strategies.
- Evaluate the effectiveness of the guidelines for addressing the needs of the selected WSDOT business area and summarize lessons learned.

**TASK FOUR DELIVERABLE: Application of the guidelines to at least one pilot project.****TASK FIVE: NEXT STEPS**

- Recommend additional actions required to implement the guidelines in current WSDOT processes and practices, including:
  - Develop a research program to address data deficiencies identified in Task Three.
  - Summarize policy and administrative issues to resolve.

**TASK FIVE DELIVERABLE: Recommendations for next steps, including the development of a research program and an assessment of policy and administrative implementation issues.**

#### 4. IMPLEMENTATION

***Which programs in the department does this problem impact?***

Planning, public transportation, traffic operations, highways and local programs, program development and management, environmental services, and development services.

***What benefits is this project anticipated to deliver and how do you anticipate the results will be used within WSDOT (include specific deliverables)?***

Each of WSDOT's business areas will eventually need to grapple with the fundamental question of how to compare the tradeoffs of different policy and investment options using the *Moving Washington* approach. This research will help kick start that process by establishing support for these business areas to evaluate the costs, benefits, and effectiveness of demand management strategies for meeting their needs. This approach will reduce duplication of effort, improve consistency across the agency, and perhaps most importantly facilitate a more timely transition to business practices that implement *Moving Washington*. Ultimately, enabling WSDOT staff to

## Appendix J: WSDOT Demand Management Research Program

consider demand management strategies objectively will empower them to collaborate more closely with our transportation partners and deliver the optimal solutions to transportation issues, while supporting healthy economies, environments, and communities. These approaches will also ensure we are using our limited resources wisely to provide the most cost-effective transportation solutions.

## Deliverables:

- Documentation of each WSDOT business area’s needs for integrating demand management.
- Summary of literature review.
- Guidelines for evaluating the costs, benefits, and effectiveness of demand management strategies to meet WSDOT’s business needs.
- Application of the guidelines to at least one WSDOT business area as a pilot.
- Research program.
- Assessment of policy and administrative implementation issues.

This research proposal achieves the following strategic objectives for research:

- Stewardship: Identify and Articulate System Needs. Identify transportation system investments that meet priority needs based on performance, economic, and environmental benefits.
- Stewardship: Sustainable Transportation. Research best practices to manage and operate the transportation system using policies and strategies that preserve the environment, encourage livable communities, and meets society’s present needs without compromising the ability of future generations to meet their own needs.
- Stewardship: Planning and Prioritization. Research best practices to provide long-term plans and investment programs that are strategic, data-based, multimodal, integrated, prioritized, and supported by the Legislature and public.

## 5. LITERATURE SEARCH

At a minimum, check the literature in the [Transportation Research Information Services](#) and [Research in Progress](#) databases. You can also request a literature search from the [WSDOT Library](#).

***Please provide a summary of the literature search results and attach the literature search as an appendix to the problem statement.***

While a considerable body of research exists on the costs, benefits, and effectiveness of various capital, demand management, and operational strategies, a much smaller universe of research goes beyond conceptual explorations or frames a comprehensive approach to comparing their tradeoffs within the context of state department of transportation business practices.

[“Transportation Demand Management: A Guide for Including TDM Strategies in Major Investment Studies and in Planning for Other Transportation Projects”](#) (WSDOT 1996) identifies appropriate transportation demand management (TDM) strategies for different contexts (e.g. urban or suburban, commute or non-commute) and implementation time frames (short, medium, long). It also recommends a process for developing a TDM alternative for planning or programming and provides screening criteria for selecting appropriate TDM alternatives. It also identifies a range of

potential effectiveness for TDM strategies. While this research is very relevant to this research request, it is now 16 years old, does not quantify costs or benefits, and only measures effectiveness in terms of reductions in vehicle-miles traveled. It also is limited to demand management strategies, and so does not offer a single comparative framework that would allow side-by-side comparison with capacity and operational strategies.

[“Incorporating Assumptions for TDM Impacts in a Regional Travel Demand Model”](#) (CUTR<sup>15</sup> 2010) developed a sketch planning modeling approach to incorporate TDM into WSDOT’s travel demand model. This tool does provide a low cost method to help WSDOT plan TDM strategies as part of its overall transportation planning process. However, it does not help decision-makers identify and choose the most cost-effective mix of program elements for improving traffic and air quality conditions in a corridor. This tool built upon TRIMMS© 2.0,<sup>16</sup> described in [“Quantifying the Net Social Benefits of Vehicle Trip Reductions: Guidance for Customizing the TRIMMS© Model. Final Draft Report”](#) (CUTR 2009).

Another tool for evaluating TDM strategies is the [Transportation Demand Management Tool](#) developed by the Bay Area Air Quality Management District based on the California Air Pollution Control Officers Association’s (CAPCOA) [“Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures”](#) (CAPCOA 2010). The Transportation Demand Management Tool is an excel-based spreadsheet meant to bring reliable quantification of mitigation into a project level analysis under the California Environmental Quality Act. This, in turn, is intended to help a land use development project identify strategies to reduce their vehicle-miles traveled and emissions. This tool is an interesting application of existing research to a project level analysis that is very relevant to some of WSDOT’s business practices (e.g. development mitigation and comprehensive plan review), however because its emphasis is on evaluating environmental impacts, it does not address economic or community impacts adequately. Also, its project level focus means the Transportation Demand Management Tool requires additional evaluation for larger planning level analysis, as noted in [“Validating VMT Reductions for Transportation Demand Management Measures”](#) (Fehr and Peers 2011).

[“Integrating Transportation Demand Management Into the Planning and Development Process: A Reference for Cities”](#) (SANDAG<sup>17</sup> 2012) may be helpful for identifying the TDM strategies that are applicable to WSDOT business practice of reviewing and commenting on local comprehensive plans, however it is primarily a conceptual guidebook rather than a detailed approach to evaluating which strategies are the best.

[“Integrating Active Traffic and Travel Demand Management: A Holistic Approach to Congestion Management”](#) (FHWA 2011) provides an overview of active traffic management and travel demand management and document the need for and benefits of integrating the concepts into efforts to address congestion. However, while it outlines a general policy approach, it provides no specific details on how to integrate the concepts.

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<sup>15</sup> Center for Urban Transportation Research.

<sup>16</sup> Trip Reduction Impacts of Mobility Management Strategies.

<sup>17</sup> San Diego Regional Planning Agency.

For a more detailed approach to evaluating operations strategies, the [“Operations Benefit/Costs Analysis Desk Reference: Providing Guidance to Practitioners in the Analysis of Benefits and Costs of Management and Operations Projects”](#) (FHWA 2012) is an excellent resource. This is a desk reference with an associated spreadsheet tool intended to provide practitioners with guidance on how to estimate the benefits and costs of operations strategies (including TDM strategies) effectively and reliably. However, while the desk reference, cautions the reader about the challenges of fitting a management and operations benefit/cost analysis into a traditional capacity analysis process, it does provide specifics on how to do so. The [“Operations Guide to Improving Highway Capacity”](#) (Transportation Research Board 2012) is another resource that identifies principles for estimating the effect of a traffic operational improvement on highway capacity, but it does not recommend a specific methodology for applying these principles.

[Integrated corridor management](#) is a related research field focused on intelligent transportation systems and operations strategies within a multimodal corridor. Integrated corridor management involves optimizing the use of available infrastructure by directing travelers to underutilized capacity in a transportation corridor. Strategies include motorists shifting their trip departure times, routes, or modal choices, or departments of transportation dynamically adjusting capacity by changing metering rates at entrance ramps or adjusting traffic signal timings to accommodate demand fluctuations. [“Multimodal Corridor System Management – Incorporating Analysis of Transit, Demand Management Programs, and Operational Strategies”](#) (William Loudon 2011) illustrates the application of this approach in Santa Barbara and Ventura Counties in California.

[“Integrated Corridor Management for Urban Transport”](#) (Samuel Zimmerman, Said Dahdah, and Wei Wang 2012) describes the integrated corridor management approach and details methods for corridor selection and problem diagnosis, identification and evaluation of improvement options, and implementation. Caltrans has also done some work on integrated multimodal corridor management, including the development of [corridor system management plans](#).

There is also an NCHRP research project in progress (NCHRP 17-46 [“Comprehensive Analysis Framework for Safety Investment Decisions”](#)) that is intended to develop a comprehensive analysis framework for safety investment decisions across engineering, education, enforcement, and emergency medical services that are transferable across federal, state, and local governments. While perhaps not specifically addressing demand management or operations strategies, the methodology for comparing multiple strategies across various programs to achieve a specific transportation objective may be relevant.

Other evaluation frameworks that may be relevant to review include: FHWA’s [INVEST](#) sustainability evaluation system, FHWA’s [Energy and Emissions Reduction Policy Analysis Tool](#), PRISM,<sup>18</sup> [STARS](#),<sup>19</sup> and the Institute for Sustainable Infrastructure’s [Envision](#) framework. The Strategic Highway Research Program’s capacity and reliability track projects may also have relevant research to review.

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<sup>18</sup> Policy Responsive Integrated Strategy Model.

<sup>19</sup> Sustainability Tracking, Assessment & Rating System.

## Appendix J: WSDOT Demand Management Research Program

**6. Do you have a preferred Principal Investigator (PI) for this research problem?**

NO  YES *If yes, who and why?*

***Can the PI provide additional funding (i.e. PacTrans<sup>20</sup> or other program funds)?***

NO  YES *If yes, please list source of funds.*

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<sup>20</sup> Pacific Northwest Transportation Consortium.

## **Appendix K: WSDOT INVEST Study Folios**

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# WSDOT INVEST Pilot

Summer 2013

## What is INVEST?

INVEST was developed by the Federal Highway Administration (FHWA) to help make highway projects more sustainable. INVEST is a practical, web-based collection of voluntary best practices and criteria transportation agencies can use to learn about sustainability principles and evaluate the sustainability of their own projects, plans, and programs. More information is available at the INVEST web site:

[www.sustainablehighways.org](http://www.sustainablehighways.org)

## How is WSDOT involved in INVEST?

WSDOT was selected by FHWA in March 2013 to evaluate three recently completed corridor planning studies and a project development process using INVEST criteria.

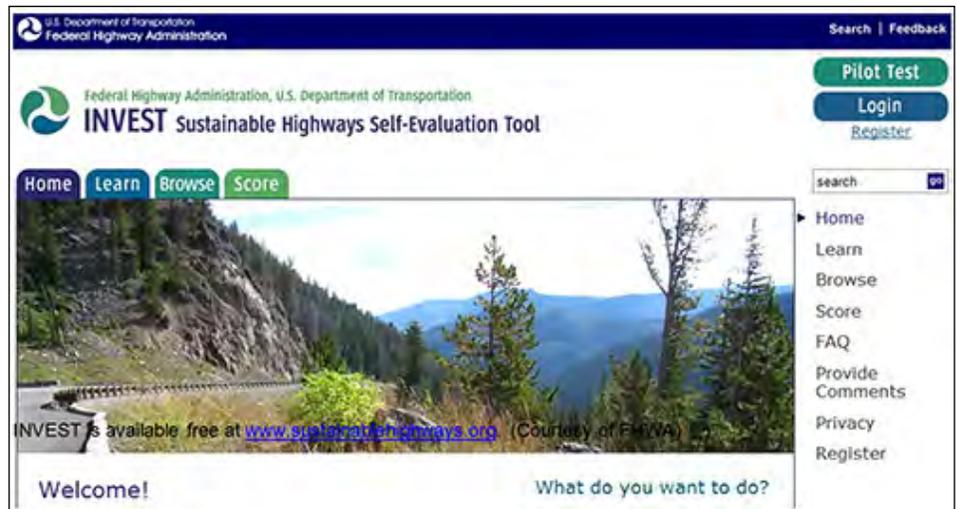
WSDOT will provide feedback to FHWA on the INVEST pilot, documenting how we used the tool and what we learned.

## What is WSDOT's goal for the pilot?

WSDOT's goal for the INVEST pilot is to improve the integration of sustainability into agency business practices, with an emphasis on demand management and public health.

Recommendations for changes to policy or practice that result from the pilot may be incorporated into guidelines currently under development for corridor planning and for integrating demand management into WSDOT plans and investment programs.

The INVEST pilot may also serve as a baseline against which progress toward sustainability in planning and project development can be measured.



## Which WSDOT plans and projects will be evaluated with INVEST?

WSDOT will use the INVEST criteria to score the following plans and projects:

- SR 516 Corridor Planning Study from SR 167 to SR 169.
- US 2 Corridor Planning Study: from Everett Port/Naval Station to SR 9.
- SR 520 Multimodal Corridor Planning Study.
- SR 520 Bridge Replacement and High Occupancy Vehicle Program.

## What is WSDOT's approach to the pilot?

WSDOT's INVEST pilot will involve three steps:

- **Scoring Preparation.** Staff from the Urban Planning Office and the SR 520 Project Office will review documentation of the planning and project development processes and facilitate the input of internal and external experts to provide a basis for scoring the INVEST criteria. Input may be solicited through tools such as focus groups, surveys, or interviews.

- **Scoring.** Based on the record prepared by the scoring teams, a score will be established for each of the applicable System Planning Criteria (17 total) and Project Development Criteria (29 total).
- **Reporting.** WSDOT will prepare a report documenting the scoring process, lessons learned, and feedback on INVEST. The report may also include recommendations for changes in policy or practice to achieve WSDOT's sustainability goals.

## When will the pilot occur?

The INVEST pilot began in July 2013 with a meeting of FHWA INVEST staff and WSDOT staff involved in implementing the pilot. Scoring preparation will continue through September. A draft report will be available in late fall and finalized by the end of the year.

## Questions?

Contact the project manager: Karena Houser, Community Transportation Planning Office, [houserker@wsdot.wa.gov](mailto:houserker@wsdot.wa.gov), 360.705.7876.



# WSDOT INVEST Pilot

February 2014

## What is INVEST?

The Federal Highway Administration (FHWA) developed the Infrastructure Voluntary Evaluation Sustainability Tool (INVEST) as a web-based collection of voluntary best practices and criteria transportation agencies can use to learn about sustainability and evaluate the sustainability of their own projects, plans, and programs. More information is available at the INVEST web site:

[www.sustainablehighways.org](http://www.sustainablehighways.org)

## How is WSDOT involved with INVEST?

In March 2013, FHWA selected WSDOT to pilot test INVEST by evaluating three corridor plans and one project:

- SR 516 Corridor Planning Study.
- US 2 Corridor Planning Study.
- SR 520 Multimodal Corridor Planning Study.
- SR 520 Bridge Replacement and HOV Program - Unfunded Portion.

## What were WSDOT's goals for the pilot?

- Evaluate the sustainability of WSDOT's corridor planning process to determine where to make improvements.
- Determine if and how INVEST could be used to improve sustainability and address public health at the project level.
- Provide FHWA with recommendations for improving INVEST.

## How does INVEST work?

FHWA built INVEST around three modules with unique criteria: System Planning, Project Development, and Operations and Maintenance. Each criterion includes a goal, sustainability linkage, and scoring requirements.

Scorers answer a series of questions about agency practices from the scoring requirements section. INVEST awards points to sustainability efforts that go beyond standard practice or regulatory requirements. The final score is associated with achievement levels (platinum, gold, silver, and bronze).

## How did WSDOT approach the pilot?

1. Scoring Preparation. Members of the scoring team evaluated one or more criteria by reviewing the plans or project and seeking input from internal and external experts. Scorers also suggested improvements to INVEST and to WSDOT business practices.
2. Scoring. System planning scorers discussed and determined a final score for each criterion in a workshop. The project lead assembled and summarized the project development scores.
3. Reporting. WSDOT prepared a report documenting the scoring process, lessons learned, and feedback on INVEST. The report also includes recommendations for improving sustainability practices for WSDOT planning and project development.

## Questions?

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### System Planning Criteria

- Integrated Planning (Includes Bonus):
  - Economic Development & Land Use
  - Natural Environment
  - Social
- Access & Affordability
- Safety Planning
- Multimodal Transportation & Public Health
- Freight and Goods Movement
- Travel Demand Management
- Air Quality
- Energy and Fuels
- Financial Sustainability
- Analysis Methods
- Systems Management & Operations
- Linking Asset Management & Planning
- Infrastructure Resiliency
- Linking Planning & NEPA

### Project Development Criteria

- Economic Analysis
- Life-Cycle Cost Analysis
- Context Sensitive Project Delivery
- Highway & Traffic Safety
- Educational Outreach
- Tracking Environmental Commitments
- Habitat Restoration
- Stormwater
- Ecological Connectivity
- Pedestrian Access
- Bicycle Access
- Transit & HOV Access
- Freight Mobility
- ITS for System Operations
- Historical, Archaeological, & Cultural Preservation
- Scenic, Natural, or Recreational Qualities
- Energy Efficiency
- Site Vegetation
- Reduce and Reuse Materials
- Recycle Materials
- Earthwork Balance
- Long-Life Pavement Design
- Reduced Energy & Emissions in Pavement
- Contractor Warranty
- Construction Environmental Training
- Construction Equipment Emission Reduction
- Construction Noise Mitigation
- Construction Quality Control Plan
- Construction Waste Management

## What were the results of WSDOT's INVEST pilot?

WSDOT sees planning as the immediate and most effective opportunity for incorporating broader sustainability considerations into agency practices. Therefore, WSDOT will integrate relevant planning recommendations from the System Planning module of INVEST into its practical planning and demand management guidelines, currently under development.

The Project Development module of INVEST, or a similar tool, may also have value at the project level. While WSDOT decided not to use the current form of INVEST for project development, with modification it could help engineers systematically identify and consider more sustainable practices.

## How could INVEST be improved?

The INVEST System Planning criteria are generally applicable to corridor planning. However, because FHWA wrote the scoring requirements for an agency level planning program, some had limited applicability to corridor plans. WSDOT recommends FHWA consider modifying INVEST to apply to corridor level planning. While agency level planning can set the stage for sustainability, corridor planning is a key venue for making sustainable decisions.

WSDOT found the INVEST project development criteria are generally consistent with WSDOT sustainability goals. However, the scoring requirements for each criterion lacked flexibility to consider project context and agency best practices. WSDOT recommends FHWA modify scoring requirements to consider more diverse project types and environments and tailor INVEST to agency-specific content and development processes.

### WSDOT Feedback to FHWA on INVEST

#### Project Development

- **Overall.** INVEST has the potential to be a useful tool, but the current version cannot be recommended for WSDOT without modifications.
- **Flexibility and Context.** Scoring requirements should consider more diverse project types and environments. INVEST should be tailored to agency-specific content and development processes.
- **Evaluation Process and Timing.** INVEST can frame project expectations about sustainability at the outset of a project and help inform project range of alternatives.
- **Format.** INVEST presents a useful procedural framework for informing and supporting project level decision making. The checklist format is easy to use and clearly presents scoring requirements.
- **Scale of Project.** INVEST could be improved by adding a menu of more sustainable choices for smaller projects.
- **Public Health.** With some modifications, INVEST could provide a bridge between NEPA and Health Impact Assessments by identifying stakeholder concerns early in the project development process.

#### Planning

- **Applicability to Corridor Studies.** Consider generalizing scoring requirements for corridor studies, developing alternative scoring requirements, or removing inapplicable scoring requirements when scoring corridor plans.
- **Subjectivity.** Because scoring requirements are general and subjective, their robust application requires the knowledge of subject matter experts. INVEST is a good starting point to explore sustainable options, but independent scoring by a general planner would require more detailed definition of terms and greater specificity in the INVEST criteria.
- **Implementation.** Scoring requirements related to implementation (demonstration of sustainable outcomes, achievement of goals, supportive investment) are outside the scope of corridor plans and should be removed for scoring or reframed for corridor planning.

### Recommendations on WSDOT Corridor Planning

In addition to the INVEST feedback, the planning team developed substantive recommendations for making corridor planning more sustainable.

- **Broader Outreach.** Based on context and budget, WSDOT should engage broader internal and external interests in corridor planning.
- **Stronger Connections to Other Plans.** Corridor plans should reference and integrate a broader set of internal and external plans.
- **Stronger Connections to Other Processes.** WSDOT should strengthen connections between corridor planning, programming, scoping, environmental review, and design.
- **Sustainability Goals.** Corridor plans should include goals and objectives that are quantifiable where appropriate, support sustainability principles, and harmonize the vision and goals of the community and WSDOT.
- **Data and Performance Measurement.** Corridor planners should consider a wider range of data to develop and evaluate planning recommendations.
- **Analysis.** WSDOT may need additional analytical tools to help planners evaluate tradeoffs between diverse goals.
- **Strategy Development.** Corridor plans should document how sustainability goals, objectives, and data informed the analysis, the identification of potential strategies, and the selection of final planning recommendations.
- **Planning Recommendations.** WSDOT should develop guidelines for prioritizing which strategies are better when, where, and for what purpose.

## Appendix L: Parties Involved, Roles, & Responsibilities

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## Appendix L: Parties Involved, Roles, &amp; Responsibilities

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