# Table of Contents

## Program Overview
- SPR Funding and Reporting ................................................................. 1

## Part 1: Planning ....................................................................................... 6
### Area 1: Multimodal System Planning .................................................. 7
- Subarea 1.1: Washington Transportation Plan – Phase 2 - Implementation .................................................. 8
- Subarea 1.2: Statewide Modal Planning Integration .................................. 10
- Subarea 1.3: Planning Policy Development and Guidance .......................... 13
- Subarea 1.4: Planning Analysis and Plan Development ............................. 14
- Subarea 1.5: Corridor and Network Planning ........................................... 16
- Subarea 1.6: Prioritization and Programming of Capital Improvement Projects .................................................. 17

### Area 2: Planning Partnerships ............................................................... 18
- Subarea 2.1: MPO Program Management ............................................... 20
- Subarea 2.2: Metropolitan Planning Funding .......................................... 22
- Subarea 2.3: RTPO Planning Funding .................................................... 24
- Subarea 2.4: Tribal & Regional Coordination ........................................... 26
- Subarea 2.5: Enhanced Local Collaboration ............................................ 28
- Subarea 2.6: Community Engagement Plan Implementation .................... 31

### Area 3: System Performance and Analysis ........................................... 32
- Subarea 3.1: Performance & Accountability Analysis .............................. 33
- Subarea 3.2: Financial Planning .............................................................. 37
- Subarea 3.3: Economic Forecasting & Analysis ....................................... 38
- Subarea 3.4: Modeling & Analysis ......................................................... 39

### Area 4: Data and Planning Applications .............................................. 41
- Subarea 4.1: Travel Data Analysis ......................................................... 42
- Subarea 4.2: Federal Annual Reporting of Vehicle and Financial Statistics .................................................. 43
- Subarea 4.3: Crash Data Analysis ........................................................... 44
- Subarea 4.4: GIS and Roadway Data ....................................................... 45

## Part 2: Research ...................................................................................... 48
### Area 1: Program and Research Management ......................................... 50
### Area 2: Research Projects ...................................................................... 51
### Area 3: Strategic Highway Research Program (SHRP2), Every Day Counts (EDC), State Transportation Innovation Council (STIC) and Accelerated Innovation Deployment (AID) .................................................. 58
### Area 4: Transportation Pooled fund (TPF) Projects ................................. 62
Program Overview

Introduction

Transportation has a profound effect on the character of a community and provides access to jobs, education, recreation, health and wellness opportunities, and goods and services. To make good decisions about transportation - a major factor in economic vitality and quality of life - we need to plan well using good information.

“Planning” is where data are analyzed to inform and direct decisions made to keep transportation (people and goods) moving. Planning is the early arena for seeking out and incorporating public comment on how to best manage the transportation system. Decisions made in planning must be fed forward in time to other key milestones (environmental permitting, preliminary and design engineering, alternatives analysis, project siting, construction, etc.) and Planning is the point in time where many decisions can be made to minimize duplicative, unnecessary, and costly future steps in these other discipline areas.

Planners focus on the needs of maintaining, operating, managing, and financing the transportation system to advance immediate-, short-, and long-term responses to the needs of the system. Planning ensures that the transportation system performs well by working with our public and turning these needs, strategies and goals into a series of responsible, efficient, affordable transportation projects. A strong planning process is key to achieving agency vision:

**The Washington State Department of Transportation’s vision is to be the best in providing a sustainable and integrated multimodal transportation system.**

To work toward this vision, WSDOT emphasizes community and partner engagement, efficiency and innovation, and a multimodal approach to transportation system management. The agency’s work program for State Planning and Research activities in 2017-2019 is consistent with agency direction to strengthen partnerships, increase credibility, drive priorities, and inform decision-making.
Results WSDOT Goals: 
www.wsdot.wa.gov/Secretary/ResultsWSDOT.htm

Strategic Investments: 
Effectively manage system assets and multimodal investments on corridors to enhance economic vitality

Modal Integration: 
Optimize existing system capacity through better interconnectivity of all transportation modes

Environmental Stewardship: 
Promote sustainable practices to reduce greenhouse gas emissions and protect natural habitat and water quality

Organizational Strength: 
Support a culture of multi-disciplinary teams, innovation, and people development through training, continuous improvement, and Lean efforts

Community Engagement: 
Strengthen partnerships to increase credibility, drive priorities, and inform decision making

Smart Technology: 
Improve information system efficiency to users and enhance service delivery by expanding the use of technology

WSDOT uses a Practical Solutions approach to enable more flexible and sustainable transportation investment decisions. It encourages this by increasing the focus on project purpose and need throughout all phases of project development. It engages local stakeholders at the earliest stages of defining scope to ensure that their input is included at the right stage of planning and project design.

State Planning and Research activities are critical to the successful implementation of Practical Solutions.
Purpose of the Work Program

This State Planning and Research (SPR) work program for the 2017-2019 biennium meets federal requirements for the implementation of a comprehensive, cooperative, and continuing planning process to ensure continued eligibility to receive and use federal transportation funds. There will be adequate resources to support identified activities—emerging needs are prioritized against the existing program and adjustments made as necessary.

WSDOT’s SPR biennial work program development process defines the policy direction for the SPR work program and identifies priorities for activities. This policy direction includes funding levels, source of funds, and – in some instances – guidance about project scope. Taken as a whole, the WSDOT SPR program recognizes that the state’s transportation system is multimodal and inextricably linked to Washington’s economy, environment, and politics, driven in large part by the pattern of our communities’ physical development and social fabric. This approach supports the federal statewide planning framework and the transportation policy goals in state statutes.

This work program includes both federal and state funds. Since neither the federal planning factors nor the state policy goals are prioritized, the program seeks to balance overarching policies for safety and asset preservation, with the need to develop strategies to address both current and, anticipated future system performance needs.
### Work Program Priorities

Connections between WSDOT’s Strategic Plan, Federal Planning Factors and State System Policy Goals

<table>
<thead>
<tr>
<th>Federal Planning Factors</th>
<th>Goal 1</th>
<th>Goal 2</th>
<th>Goal 3</th>
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<th>Goal 6</th>
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<tr>
<td><strong>Title 23 of the United States Code, section 134(h) describes Federal Planning Factors issued by Congress for statewide planning and programming to address.</strong></td>
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<td>Support the economic vitality of the United States, the states, metropolitan areas, and nonmetropolitan areas, especially by enabling global competitiveness, productivity, and efficiency.</td>
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<td>Increase the safety of the transportation system for motorized and non-motorized users.</td>
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<td>Increase the security of the transportation system for motorized and non-motorized users.</td>
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<td>Increase accessibility and mobility of people and freight.</td>
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<td>Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.</td>
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<td>Enhance the integration and connectivity of the transportation system, across and between modes, throughout the state, for people and freight.</td>
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<td>Promote efficient system management and operation.</td>
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<td>Emphasize the preservation of the existing transportation system.</td>
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<td>Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.</td>
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<td>Enhance travel and tourism.</td>
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<table>
<thead>
<tr>
<th><strong>Statewide Transportation System Policy Goals</strong></th>
<th>WSDOT’s Strategic Plan</th>
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<tr>
<td><strong>State Transportation System Policy Goals (RCW 47.04.280) are the basis for establishing detailed and measurable objectives and related performance measure.</strong></td>
<td>Goal 1</td>
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<tr>
<td>Economic Vitality: To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy.</td>
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<tr>
<td>Preservation: To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services.</td>
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<td>Safety: To provide for and improve the safety and security of transportation customers and the transportation system.</td>
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<td>Mobility: To improve the predictable movement of goods and people throughout Washington state.</td>
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<td>Environment: To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment.</td>
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<td>Stewardship: To continuously improve the quality, effectiveness, and efficiency of the transportation system.</td>
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**SPR Funding and Reporting**

**Program Funding**
The state Legislature provides state and federal appropriation authority for the SPR program on a biennial basis, from July 1 through June 30 of odd-numbered years. The state appropriation is used to provide a 20 percent match to the 80 percent federal funds available, as well as provide for a certain level of nonfederal expenditures. The federal appropriation establishes a limit for federal expenditures for SPR funds based on estimates of availability of these funds for the biennium. This limit can be increased if more federal funding becomes available than was anticipated at the time of the biennial appropriations, with a corresponding decrease to the state funds appropriation. However, this limit must be approved before any expenditure of additional funds can be made. The federal appropriation can also be increased when other unanticipated federal funds become available through supplemental appropriations or unanticipated receipts. Supplemental appropriations are made by the Legislature; unanticipated receipts are approved by the Office of Financial Management through the Finance and Administration Division.

Because the federal fiscal year begins October 1 and new apportionments are not available until that time, WSDOT reserves enough of the prior federal fiscal year’s apportionment to finance the new work program for the first three months of each state fiscal year. Additional obligation documents are submitted to the Federal Highway Administration (FHWA) Washington Division when additional federal funds become available to fully finance the approved work program.

**2017-2019 Reporting**
WSDOT will monitor implementation of the 2017-2019 SPR work program and provide periodic progress reports to federal partners consistent with requirements. Performance and expenditure reports will compare performance with specific established goals and describe specific progress with corresponding financial information.

**Timing:**
- Jan 2018 – progress report.
- July 2018 – progress report.
- Jan 2019– progress report.
- July 2019 – FY 17-19 closeout report.
Part 1: Planning

- Section 1: Multimodal System Planning
- Section 2: Planning Partnerships
- Section 3: System Performance and Analysis
- Section 4: Data and Planning Applications
- Section 5: Management and Administration

Planning Connections to Federal Planning Factors and Statewide Transportation System Goals

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<td>Stewardship</td>
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Area 1: Multimodal System Planning

Transportation has a profound effect on the character of a community and provides access to jobs, education, recreation, health and wellness opportunities, and goods and services. To make good decisions about transportation – a major factor in economic vitality and quality of life – we need to have good information.

The transportation planning process evaluates how the existing system is performing, and the transportation issues likely to exist in the future. Planning also identifies ways to address problems and improve system performance. Planning is where government, business, and communities come together to solve problems and support decision-making.

Planners develop strategies to operate, manage, maintain, and finance a well-run transportation system for society. Planning ensures responsible, efficient, affordable transportation projects. Failure to do transportation planning would result in a loss of federal funding for transportation.

This work element includes the following sub-areas:
- Subarea 1.1: Washington Transportation Plan - Phase 2
- Subarea 1.2: Statewide Modal Planning Integration
- Subarea 1.3: Planning Policy Development and Guidance
- Subarea 1.4: Planning Analysis and Plan Development
- Subarea 1.5: Corridor and Network Planning
- Subarea 1.6: Prioritization and Programming of Capital Improvement Projects

Estimated Costs for Multimodal System Planning

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Subarea 1.1: Statewide Long-Range Transportation Planning

The Statewide Long-Range Transportation Plan (also known as WTP Phase 2) is a blueprint for transportation investment in Washington state. The plan is built around the state transportation policy goals listed in RCW 47.04.280 (Economic Vitality, Preservation, Safety, Mobility, Environment, and Stewardship). The plan also addresses the planning factors spelled out in federal rule, 23 CFR 450.206. The Statewide Long-Range Transportation Plan is guided by a Steering Committee composed of WSDOT, the Washington State Transportation Commission, and a representative from the MPOs.

WSDOT will adopt the Statewide Long-Range Transportation Plan no later than December 31, 2017. This is an umbrella plan that will recommend policy-level actions for big, unresolved policy issues that rise to the statewide level. These issues are identified through public and stakeholder involvement, particularly through numerous consultations with the Steering Committee, Advisory Group, and WSDOT staff.

Tribal outreach has and will be continued to be conducted through collaboration with WSDOT’s Tribal Liaison as described in the following documents:
- WSDOT’s tribal communication protocol; and WSDOT’s Process for Consulting with Non-Metropolitan Local Officials, Tribes, and Federal Land Management Agencies. Public Involvement has and will continue to be conducted consistent with WSDOT’s Community Engagement Plan and will be detailed in the appendix. Methods and strategies for public and stakeholder participation were developed in consultation with FHWA, FTA, WSDOT’s Office of Equal Opportunity, and WSDOT regions and includes plan-specific strategies to reach out to underserved populations.

WSDOT activities to finalize the Statewide Long-Range Transportation Plan include:
- Conducting stakeholder, tribal, and public outreach. WSDOT has secured invitations on the agendas of MPOs and RTPOs and is also arranging for briefings upon request. Presentations will be combined with State Freight Plan outreach, where possible.
- Consulting with stakeholders to finalize the action items and agreeing to the list of partners for each action item.
- Coordinating planning activities among transportation modes to determine which recommendations from modal plans should be included in the Statewide Long-Range Transportation Plan action items.
- Describing any performance measures or targets developed per federal transportation legislation.
- Providing logistical and administrative support to Advisory Group and Steering Committee.
- Developing draft and final Statewide Long-Range Transportation Plan documents, appendices, and outreach materials.
- Certifying to the FHWA and FTA that WSDOT meets or substantially meets federal statewide planning requirements.

Activities to implement the Statewide Long-Range Transportation Plan include:
- Implementing the action items. Products from this effort may include recommendations to develop new or amended state policies, rules, and laws. Tasks may include:
  o Coordinate, consult, and cooperate with interagency teams (the “3C” approach). These teams include representatives from MPOs, RTPOs, tribal governments, federal land management agencies, transit agencies, state agencies, private businesses, advocacy groups, and WSDOT interdisciplinary staff.
 Coordinate with WSDOT’s and MPOs’ performance programs to find opportunities for the Action Items to support achievement of respective performance measures;

- Develop and implement a process to track and report progress towards completing Action Items.

- Inform the community on progress through webpage; fact sheets, and presentations consistent with WSDOT’s Community Engagement Plan.

Statewide planning activities not specifically tied to the Statewide Long-Range Transportation Plan include:

- Coordinate and consult with the Washington State Transportation Commission on scoping and developing their transportation planning efforts to ensure consistency with WSDOT planning efforts.

- Share planning data and analysis with the Commission, MPOs, RTPOs, and Federal Land Management Agencies.

- Review and comment on other transportation agency’s transportation plans. Recommend ways their plans can be consistent with the Statewide Long-Range Transportation Plan.

- Coordinate, consult, and cooperate with interagency and interdisciplinary staff to develop new or updated department guidance and/or policies, especially as relate to long-range planning, statewide action items, and in preparation for future long-range planning, that:
  - Analyze greenhouse gas emissions in corridor planning.
  - Implement creative place making, a collaborative process to reimagine and reinvent public spaces in communities. This work will focus on locations where state highways pass over or through communities.
  - Integrate growth management policies with transportation.
  - Recommend how or if personal and public health can be considered in transportation planning.

WSDOT, in concert with our planning partners, will also begin formulating objectives and a scope of work to prepare for our next long-range statewide transportation plan.

Requirements: RCW 47.06.040, 23 CFR 450.208, 23 CFR 450.210, 23 CFR 450.216, 23 CFR 450.220, 23 CFR 420.111 require these activities and are eligible for SPR funding under 23 USC Sec 505 (planning under sections 135).

Estimated Costs for Statewide Long-Range Transportation Plan

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Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 1.2: Statewide Modal Planning Integration

WSDOT develops separate system plans that describe the state’s interests in different transportation “modes”: ferries, state highways, rail, aviation, freight, active transportation, and public transportation. These are typically known as “modal” plans and are funded by state funds or through specific agreements with USDOT agencies. WSDOT includes Strategic Highway Safety Plan activities in this subarea.

- **Strategic Highway Safety Plan**
  - Multimodal Planning Division expects to use SPR funds to support the implementation and development of this plan with these activities: Provide statewide planning policy expertise to ensure consistency with statewide plans, policies, and requirements;
    - Provide crash data as requested;
    - Develop GIS planning mapping services as requested; and
    - Review and comment on any drafts and appendices if the plan is updated in the biennium.

- **Washington Aviation System Plan**
  - WSDOT’s Aviation Division secured FAA funds to update the Aviation System Plan. The Multimodal Planning Division and the Rail, Freight, and Ports Division expects to use SPR funds to support the implementation and development of this plan with these activities:
    - Provide policy expertise to ensure consistency across statewide plans, policies, and requirements;
    - Provide technical expertise on air cargo/surface connections; information and the economic; data;
    - Provide GIS mapping products;
    - Coordinate implementation of the Aviation System Plan’s recommendations that apply to local governments.

- **Freight System Plan**
  - Perform the following activities using SPR funds:
    - Complete the development of the Washington State Freight Plan using SPR funds to meet FAST Act and FHWA requirements/guidance by:
      - Coordinating development with MPOs, RTPOs, Tribes, and ports.
      - Conducting outreach consistent with the WSDOT Community Engagement Plan.
      - Combining outreach with the Statewide Long-Range Transportation Plan outreach. This includes providing joint presentations at meetings hosted by MPOs, RTPOs, and Tribal Transportation Planning Organization
      - Collaborating with the Multimodal Planning Division to ensure the freight plan is consistency with the statewide long-range transportation plan’s Vision Statement and Focus Areas.

- **Public Transportation**
  - The Multimodal Planning Division will assist the Public Transportation Division by performing the following activities using SPR funds:
    - Provide policy expertise to ensure consistency with statewide plans, policies, and requirements.
• Research data and information.
• Develop Action Items for the statewide long-range transportation plan that are consistent with and not duplicative of the Statewide Public Transportation Plan’s Action Items.

• Washington State Ferry System Long-Range Plan
  o The Multimodal Planning Division will assist the Ferries Division with the update to the Washington State Ferries Long-Range Plan by performing the following activities using SPR funds:
    • Provide policy expertise to ensure consistency with statewide plans, policies, and requirements.
    • Research data and information.
    • Ensure consistency with the statewide long-range transportation plan Action Items.
    • Offer advice on how the Washington State Ferries Long-Range Plan can support the statewide long-range transportation plan’s Vision Statement.

WSDOT’s Ferries Division (WSF) is developing a long-range plan as per RCW 47.06.050 and will use SPR funds to conduct public and stakeholder involvement consistent with the WSDOT Community Engagement Plan.

• Accessible Pedestrian Walkways and Bicycle Transportation Facilities
  o The Multimodal Planning Division will assist the Active Transportation Division with the update to the Washington State Bicycle Facilities and Pedestrian Walkways Plan (aka Active Transportation Plan) by performing the following activities using SPR funds:
    • Provide policy expertise to ensure consistency with statewide plans, policies, and requirements.
    • Research data and information.
    • Ensure consistency with the statewide long-range transportation plan Action Items.
    • Offer advice on how the Active Transportation Plan can support the statewide long-range transportation plan’s Vision Statement.
  o The Active Transportation Division will:
    • Produce statewide active transportation plan, and continue to collaborate with other WSDOT planners to ensure that active transportation elements are addressed for an integrated multimodal approach.
    • Identify and improve the way we consider and address active transportation in processes and decisions.
    • Provide consistent messaging, advocacy materials, and training during development of a WSDOT Active Transportation Program. One goal of the program is to communicate the value of Active Transportation in the multimodal transportation system so the message will live on beyond changes in personnel and administration.
Regions will:

- Communicate policies, guidance, and procedures to improve multimodal transportation connections related to active transportation.
- Hold periodic regional coordination meetings with pedestrian/bicycle organizations and local agency partners.
- Coordinate a region pedestrian/bicycle group in planning and development.
- Partner with local entities for non-motorized data collection by loaning temporary data collectors and assisting with data download/analysis.
- Be the advocate for bicycle, pedestrian and transit users on WSDOT projects, active transportation planning, and interaction with the public in these areas.

Requirements: RCW 47.06.060, RCW 47.06.045, RCW 47.06.050, RCW 47.06.100, RCW 47.06.110, 23 USC Sec 148, 23 USC Sec 167 require these activities and are eligible for SPR funding under 23 USC Sec 505 (planning under sections 135, 148, and 167).

Estimated Costs for Statewide Modal Planning Integration

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Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 1.3: Planning Policy Development and Guidance

Work in this area assists WSDOT in developing and implementing new policy directives, initiatives, strategies, and practices. Work here also provides guidance and training related to transportation planning issues, such as growth management and transportation-efficient land use; integration of state, regional, and local plans; multimodal accessibility and connectivity; system and facilities asset management and preservation; operations and demand management; safety and security; economic growth and prosperity; accessibility and mobility; environmental quality and health; and climate, energy, and sustainability issues.

Activities include:
- Develop guidance for implementation of practical solutions planning (performance-based planning). This includes developing research statements, proposing policies, and developing strategies to integrate the following into transportation plans and planning studies:
  - Active transportation.
  - Climate change adaptation.
  - Managed lanes.
  - Emerging issues.
- Develop policy to analyze and propose performance measures that are multimodal, contextual, and address an array of transportation system users. This area includes developing and implementing the Practical Solutions Performance Framework, including an assessment of how WSDOT currently manages performance, alignment of WSDOT’s policy goals with our partners, identification of relevant measures, development of criteria and a process for adoption of metrics, and promulgation of data and tools to implement the framework.
- Transportation Efficient Communities Team: With Washington State Departments of Commerce, Ecology, and Health, develop joint information and data resources, guidance materials, and related tools for local government agencies to update their transportation elements of GMA.
- Provide related staff development and training, including a WSDOT Planners Statewide Meeting/Conference.

One of the key areas of planning policy development and guidance is implementing WSDOT’s Practical Solutions initiative, which, in part, is WSDOT’s performance-based approach to planning and programming and is still evolving, and in particular the Practical Planning part of the initiative. WSDOT is using Practical Solutions to enable more flexible and sustainable transportation investment decisions, increasing the focus on system performance.

Requirements: These activities meet the requirements in RCW 47.06.040, 23 CFR 450.206, and 23 CFR 450.208 and are eligible for SPR funding under 23 USC Sec 505.

Estimated Costs for Planning Policy Development and Guidance

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Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 1.4: Planning Analysis and Plan Development

This work element provides detailed planning analysis on priority issues identified in corridor sketches and other collaborative planning work. Each effort will be implemented with specific scope, schedule, budget, to address the identified performance issue(s) consistent with federal regulations, practical solutions principles, WSDOT’s Community Engagement Plan, and agency endorsement process for planning.

The first round of the corridor sketch initiative (CSI) generated many strategies throughout the state by working closely with our partners. To advance these strategies to the next steps in the practical solutions process, data, tools, and analysis, it will be necessary to assure that these strategies will improve the performance and achieve the desired outcome. Tasks in the subarea focus on developing tools and methodologies to analyze the system to identify performance issues and evaluate solutions and strategies to address these issues. These may include traffic analysis, benefit/cost analysis, and planning-level estimating.

Update and revise the Highway System Plan (HSP) to incorporate WSDOT’s Strategic Plan Elements, Moving Washington Forward and Practical Solutions principles. The development of these plans supports the federal requirements for statewide planning and state highway performance management. The scope of the HSP update is still being finalized, but the update should include a programmatic approach as well as a corridor approach for identifying transportation performance gaps and cost-effective strategies to address them.

The HSP update will use the Corridor Sketch initiative to integrate WSDOT’s Practical Solutions principles as well as Moving Washington Framework for all state highways. Specifics include:

- Collaboratively develop a scope of work for the Highway System Plan update.
- Develop a communications plan to describe how WSDOT will conduct internal and external outreach for the HSP update consistent with WSDOT’s Community Engagement Plan.
  - Include five elements identified in state requirements
    - System Preservation
    - Highway Maintenance
    - Capacity and Operational Improvement
    - Scenic and Recreational Highways
    - Paths and Trails (non-motorized transportation)
  - Account for changes since the previous publications (2007 HSP)
  - Document known trends

Major activities in this subarea will also include developing tools and methodologies to analyze data related to the multimodal transportation network. This work should, as a result, identify performance issues, such as mobility, safety, economic vitality, etc. With these issues identified, next activities will include working collaboratively with WSDOT partners to develop and analyze solutions and then prepare plans and studies to communicate the results.

Activities will also include training staff around the state on using data and tools to analyze proposed multimodal strategies. Analysis may extend to intermodal data such as pedestrian, bicycle, passenger and freight.
Other activities include:

- Expand the use of online GIS tools to share performance information about the transportation network.
- Work with Multimodal, Multidisciplinary and Multiagency teams (M³) to develop and update tools and methods for identifying mobility performance gaps on statewide basis related to issues such as accessibility, reliability, and other measures beyond vehicle congestion.
- Develop a set of performance measures for identifying issues related to economic vitality.
- Develop a list of performance gaps related to economic vitality.
- Collaborate with WSDOT partners to develop solutions and analyze the effectiveness in addressing the performance gaps.
- Collect and analyze local network and modal data required for addressing mobility and economic vitality issues.
- Continue to work on developing a clear link between the Highway System Plan (HSP) and corridor planning studies, prioritization process, and projects summaries for capital highway projects, including the scope, schedule, and budget.
- Continuously review, analyze, improve, and update the different components of the 20-year HSP.
- Review and recommend WSDOT headquarters’ approval of planning studies.
- Manage, track, coordinate, and recommend approval of funded planning studies.
- Coordinate with various transportation subject matter experts on issues such as safety, pavement and bridge preservation, and traffic congestion to identify locations that operate below WSDOT’s performance thresholds. Work with these experts on developing cost-effective incremental solutions to address them. These performance issues and solutions will be summarized and included in the HSP.
- Continue to work with M³ teams to develop criteria for ranking strategies, identifying corridor performance gaps, and providing guidance to the regions.
- Participate in the delivery of I-5 Operations improvements and Demand Management Integrated Scoping pilot. This is a pilot study focused on using work completed in Corridor Sketch Initiative in the next step of the practical solutions process “refine solutions.” This work is called integrated scoping, which is focused on evaluating packages of operational improvement and demand management solutions and advancing them through the programming process.”
- Deliver corridor and network planning studies. This section is focused on highway corridors or system. Performance gaps are typically identified on the highway system but we have expanded the solutions to include multimodal options that improve the performance of the transportation network.

Requirements: 23 CFR 450.206, 23 CFR 450.208, and 23 USC Sec 119 authorize these activities, therefore they are eligible for SPR funding under 23 USC Sec 505 (statewide planning, state highway performance management).

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<thead>
<tr>
<th>Estimated Costs for Planning Analysis and Plan Development</th>
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</table>

Contact: Name: Faris Al-Memar, System Analysis & Planning Manager, 360-705-7956
Subarea 1.5: Corridor and Network Planning

The focus for this work element in the 2017-2019 biennium will be to continue developing and implementing planning methods (consistent with federal regulations) to evaluate the state’s multimodal transportation network, identify performance issues, and analyzing proposed strategies to resolve these issues. Statewide (HSP), corridor and network plans (or Planning Studies) will be based on information contained in “corridor sketches.” These plans provide information that supports WSDOT’s statewide planning.

Corridor Sketch: WSDOT is continuing this initiative to use performance-based planning to identify what is working well and what needs to change, telling the story for every corridor. Work this biennium will build on Phase I and Phase II to deepen analysis and strengthen partnerships.

Regions will:
- Develop planning studies and refine corridor sketches.
- Identify and document potential cost-effective strategies to address newly identified performance gaps. This includes a discussion of what’s working and what needs to change.
- Integrate inputs and output of the corridor sketch process in the state, regional, and local multimodal plans that support the corridor, network and system performance.
- Solicit and document feedback from internal and external partners that provides clarification, transparency, accountability, and supports the linkage between planning and programming processes and investments.
- Continue coordination with MPOs, RTPOs, and local jurisdictions in the development and collection of pedestrian/bicycle data.
- Develop options for sharing information about long-term mobility needs, and biennial safety needs, in list and map formats, with internal and external customers.
- Perform traffic modeling for internal needs and in conjunction with other agencies.
- Continue to assist with model post-processing of future year volumes.
- Integrate findings of WSDOT’s statewide pilot, Climate Impacts Vulnerability Assessment.
- Develop a plan for community engagement and public outreach, consistent with WSDOT’s Community Engagement Plan.

Requirements: RCW 47.06.050 requires these activities. 23 CFR 450.206, 23 CFR 450.208, and 23 USC Sec 119 authorize these activities, therefore they are eligible for SPR funding under 23 USC Sec 505 (statewide planning, state highway performance management).

Estimated Costs for Corridor and Network Planning

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</tr>
</thead>
</table>

Contact: Name: Faris Al-Memar, System Analysis & Planning Manager, 360-705-7956
Subarea 1.6: Prioritization and Programming of Capital Improvement Projects (State Highway Performance Program)

- Develop options for sharing information about long-term biennial safety needs in list and map formats with internal and external customers.
  - Expand the use of geospatial analysis and presentation of existing and future processes, including expansion of existing map library.
  - Implement an asset management process for state highway features consistent with FHWA’s final rules on asset management and update or coordinate changes to meet established performance objectives.
    - Develop criteria and a model that prioritize WSDOT’s capital assets.
    - Participate in the ongoing discussion on the ADA transition plan and instructional letter. This has been submitted to FHWA for its review.
    - Continue to work with the Traffic Office and the Washington State Traffic Safety Commission on implementing “Target Zero,” which is in USC Sec 148.
    - Develop a process and update the cost of the department’s fish barrier program. Also, identify fish barriers that exist within mobility projects, as well as the policy and criteria to address the barriers.
    - Participate in the development of the High Friction Surface Treatment Development Plan.
    - Develop the prioritization methodology used to select Major Electrical projects.
    - Update WSDOT project scoping and program management manuals.
    - Develop new project summary technology solution, train region and HQ staff on the solution.
- Work with WSDOT’s Asset Stewards to develop a ten-year plan.
- Document and implement a programming policy; including timing/content of Project Definition, Project Summary, and Work Order Authorization, and their relation to phase starts.
- Update the project summary suite to include the basis of design. In addition, identify areas within the P/S where efficiencies can be gained. The basis of estimate is included with the P/S.
- Evaluate and implement a series of project performance estimates based on specific investment scenarios.
- Identify a process for a robust project scenario analysis given differing funding and revenue assumptions.
- Identify, standardize, and implement a method for tracking changes and communicating scope of projects as they move through the development and delivery process.
- Implement a standardized scoping process for capital improvement and preservation projects.
- Develop a ten-year plan for retrofitting existing impervious roadway surfaces for storm water treatment. Primary emphasis will be placed on urbanizing areas in the Puget Sound Basin.

Requirements: These activities are required or authorized under 23 USC Sec 119 and 23 USC Sec 148 and are eligible for SPR funding under 23 USC Sec 505 (state highway performance program, highway safety program).

Table: Estimated Costs for Prioritization and Programming of Capital Improvement Projects

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</table>

Contact: Jay Alexander, Director-Capital Program Dev & Mgmt., 360-705-7121
Area 2: Planning Partnerships

Plans in Washington state enrich one another, answering different questions to support decision-making. The Federal Government and State Legislature set policy and regulation, which guides planning efforts. Plans are conducted at different levels and by different jurisdictions, addressing different geographies, subject areas and stakeholders. Each answers unique questions from a unique perspective. Actively engaging in planning efforts led by Tribal, regional, and local partners is a critical part of a comprehensive, cooperative, and continuing planning process and is essential to achieve consistency among statewide, regional, and local plans.

Consistent with WSDOT’s Community Engagement Plan, staff will solicit and document feedback that provides clarification, transparency, accountability, and supports the linkage between planning and programming.

Transportation Planning Connections and Consistency

WSDOT invites local governments, Tribes, regional organizations including MPOs, RTPOs, community groups, affected citizens and the traveling public into the decision-making process. We also place emphasis on collecting input from populations traditionally underserved in transportation decision making. This approach is central to Results WSDOT and integral to many SPR work program activities.
This work element includes the following sub-areas:

- Subarea 2.1: MPO Program Management
- Subarea 2.2: Metropolitan Planning Funding
- Subarea 2.3: RTPO Planning Funding
- Subarea 2.4: Tribal & Regional Coordination
- Subarea 2.5: Enhanced Local Collaboration
- Subarea 2.6: Community Engagement Plan Implementation

Estimated Costs for WSDOT to conduct activities in Planning Partnerships

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</table>
Subarea 2.1: MPO Program Management

Major activities for WSDOT's oversight of the 12 MPOs include:

- **Provide Guidance:**
  - Regional coordinators are identified to coordinate planning with each MPO. This coordinator regularly checks in with the MPO and provides advice and administrative oversight. Advice is given by phone, email, conference call, or in person. WSDOT bases advice on regular review and analysis of existing and proposed federal requirements and through regular discussions with FHWA and FTA. (Ongoing)
  - Review and update Unified Planning Work Programs (UPWPs) development guidance in consultation with the MPOs, Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). This guidance is followed at annual UPWP on-site coordination meetings. (Annually and ongoing)
  - Meet with all MPO directors to share information, discuss guidance, and learn best practices. (Quarterly)

- **Air Quality:**
  - Participate in and provide technical and coordination assistance for the Air Quality Interagency Consultation Group to ensure regional conformity with air quality. (Ongoing)

- **Follow Ongoing Processes:**
  - WSDOT and each MPO jointly certify that the metropolitan transportation planning process is being carried out in accordance with applicable requirements. Major activities associated with certification include:
    - Review and update (if necessary) worksheets for MPOs to document compliance
    - Review and comment on MPOs' Title VI, EJ, and LEP plans, and contact FHWA and/or FTA to discuss questions.
    - Review and comment on MPO public involvement processes.
    - Review MPOs' self-certifications and recommend approval to FHWA and FTA.
  - Agreements:
    - Facilitate agreements among WSDOT, MPOs, and public transportation operator(s) serving the MPA. (As needed)
  - TIPs and TIP Amendments
    - Review and process MPOs' Transportation Improvement Programs (TIPs). (Annually)
    - Review and process MPOs' TIP amendments. (Monthly)
  - Fiscal:
    - Administer the Federal Highway Administration (FHWA) PL and Federal Transit Administration (FTA) 5303 pass-through funds for 12 MPOs. (Ongoing)
    - Determine new allocation formulas for planning funding distribution in collaboration with these organizations. (As needed, usually every 2 years)
    - Develop biennial money agreements. (Every 2 years)
    - Receive, review, and submit annual performance and expenditure reports to FHWA and FTA. (Annually)
  - Participate with FHWA and FTA in advanced planning reviews and in certification reviews of MPOs administering Transportation Management Areas (TMAs), which includes development and implementation of the Congestion Management Process. (As needed)
  - Reports
    - Submit CMAQ Program Annual Report to FHWA as per CMAQ regulations. (Annually)
MTPs:
- Participate in the review of the updates to the Metropolitan Transportation Plans. (As needed)
- Tribal and Regional Coordination will forward updates to FHWA and FTA. (As needed)
  - Prepare and submit MPO boundary changes. (As needed)
  - Review and comment on MPOs’ Public Participation (Involvement) Plans. (As needed)
- Special Projects
  - Coordinate MPO discussions regarding the proposed WSDOT Statewide Travel Demand Model. (Ongoing)
  - Facilitate development of proposed MPO Performance Measures. This includes discussing MAP-21 target setting procedures and processes between WSDOT and the MPOs. (Ongoing)


Estimated Costs for WSDOT to manage MPO Program

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</table>

Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 2.2: Metropolitan Planning Funding

A Metropolitan Planning Organization (MPO) is a federally mandated organization of representatives from local government and transportation agencies in urbanized areas that have 50,000 or more in population. MPOs provide a forum and governing group for local decision-making on transportation issues of a regional nature. The metropolitan planning process promotes consistency between transportation improvements and state and local planned growth and economic development patterns. MPOs cover urbanized areas only and receive federal funding in support of their planning efforts.

State law requires the MPO to be the planning lead agency when its boundaries overlap with an RTPO. Federal rules require WSDOT to provide fiduciary oversight and stewardship for the MPOs. State law and rules require WSDOT to perform similar functions for RTPOs. When an MPO is acting as lead for an RTPO, it uses non-SPR funding. When it is acting as lead for an MPO, it uses SPR funding. There are 12 MPOs in the state, and 10 of these serve as the RTPO lead agency.

<table>
<thead>
<tr>
<th>Metropolitan Planning Organization</th>
<th>SFY 2018</th>
<th>SFY 2019</th>
<th>2017 - 2019 Biennium Total</th>
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<td>Walla Walla Valley MPO</td>
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2017-19 State Planning and Research Biennium Work
Whatcom Council of Governments: $295,562, $77,661
Yakima Valley Conference of Governments: $256,966, $57,269

TOTAL Metropolitan Planning Organizations*: $19,362,240

Requirements: 23 CFR 420.109 requires these activities and they are eligible for SPR funding under 23 USC Sec 505.

Estimated State Appropriation to 12 MPOs to Conduct MPO Planning

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<tr>
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</table>

The estimated MPO appropriation is based on the FFY 2015 allocations from FHWA and FTA.

Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 2.3: RTPO Planning Funding

A Regional Transportation Planning Organization (RTPO) is a state funded, voluntary association of local governments within a county or contiguous counties that includes membership from cities, counties, WSDOT, Tribes, ports, transportation service providers, private employers and others. RTPOs were authorized by Washington State’s 1990 Growth Management Act to ensure local and regional coordination of transportation plans. RTPOs can cover both urban and rural areas. MPOs and RTPOs serve the same basic transportation planning functions – develop a long-range plan, coordinate within a region, and prepare a transportation improvement program. The federal MPO and state RTPO requirements of these organizations are complementary. The lead agency for an RTPO is also the lead agency for the MPO within the region (except Lewis-Clark Valley MPO because it is a bi-state organization).

State law requires the MPO to be the planning lead agency when their boundaries overlap with an RTPO. Federal rules require WSDOT to provide fiduciary oversight and stewardship for the MPOs, and state law and rules require WSDOT to perform similar functions for RTPOs. WSDOT recognizes RTPOs as nonmetropolitan local officials representing units of general-purpose local government and/or local officials with responsibility for transportation. The process WSDOT uses to consult with RTPOs as required in 23 CR 450.210 (b) is located at http://www.wsdot.wa.gov/NR/rdonlyres/610774DA-C5FB-4323-8B54-C9790D1F104F/0/2011NonMetroLocalOfficialConsultationFinal.pdf

There are 15 RTPOs in the state. Five RTPOs are stand-alone and do not have an MPO as a lead agency.
<table>
<thead>
<tr>
<th>Regional Transportation Planning Organization</th>
<th>SFY 2018</th>
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* Okanogan County is anticipating being designated as an RTPO in SFY 2018.
** Walla Walla Valley MPO serves as a sub-RTPO under Benton Franklin Council of Governments.
*** RTPO allocation funding available is $4,400,000. $39,610 is reserved for special regional planning projects.

Requirements: RCW 47.80.050 requires these activities. They are not eligible for SPR funding.

Estimated State Appropriation to 15 RTPOs to Conduct RTPO planning:

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</table>

2017-19 State Planning and Research Biennium Work
Subarea 2.4: Tribal & Regional Coordination

Tribal Coordination
Tribal Coordination: The following are state planning activities funded with SPR funds.
- Participate in Tribal conferences and trainings, and provide guest speakers if required.
- Coordinate periodic Tribal/WSDOT regional meetings.
- Continue to ensure Tribal transportation goals and projects are considered in WSDOT transportation planning.
- Attend Tribal Transportation Planning Organization (TTPO) to share information and coordinate planning activities.

TTPO Support: The following are SPR-eligible activities that are funded with 100 percent state funds due to the lack of adequate SPR funds.
- Support Tribal Transportation Planning Organization (TTPO), a forum for increasing tribal transportation planning capacity.
- Analyze policies, develop guidance, and provide technical assistance to TTPO.
- Reimburse tribal governments’ travel expenses to the TTPO quarterly meetings and the periodic State Tribal Transportation Conferences, symposiums, and Affiliated Tribes of the Northwest Indians (ATNI) events for trainings.
- Provide assistance and participate in Tribal planning project discussions; to include assistance to Tribes, as it relates to state facilities, in the development of their Tribal Transportation Program (TTP) inventory system.
- Work with Tribes individually to conduct planning analysis and pursue grant funding.
- Attend quarterly Tribal Transportation Planning Organization meetings.
- Develop and provide letters of agreement for inclusion of state highways into the BIA Tribal Transportation Program (TTP) inventory as required.

Regional Coordination
In Washington state, regional planning is performed by 12 Metropolitan Planning Organizations and 15 Regional Transportation Planning Organizations. WSDOT has a long history of working with these organizations individually and collectively through the quarterly meetings of the MPO/RTPO/WSDOT Coordinating Committee. Regional coordination includes coordinating WSDOT’s planning activities with MPOs and with RTPOs in their capacity as nonmetropolitan local officials. It does not include WSDOT’s state-required duties to manage the RTPO Program.

WSDOT will perform the following regional coordination activities:
- Serve as member and/or alternate member of MPO and local government agencies’ transportation technical advisory committees. As a member, participate in regional planning activities, grant proposal review/selection, MTP development, public transportation coordination/development, Human Services Transportation Plan development, and other activities.
- Attend technical advisory committee and policy board meetings, provide information from WSDOT, review and assist on planning studies. Provide input or review on various other plans such as MTP, UPWP and Human Services Transportation Plan.
- Continue to advocate for the interest of the state in metropolitan/regional transportation decisions. Enhance the planning process in the regions by ensuring the connection of regional transportation plans and the statewide multimodal transportation plan and multimodal plans.
- Attend MPO/RTPO/WSDOT coordinating meetings.
• Represent WSDOT at meetings of subarea boards in the Puget Sound region counties.

Regional Plan Development
• Coordinate WSDOT planning efforts with MPOs and nonmetropolitan local officials (RTPOs) that are working on long-range transportation plans for bicycle/pedestrian, freight, and public participation, aviation, rail, highway/road/street plans.
• Develop input for regional plans including policy input that reflects state transportation goals and objectives.

Requirements: 23 CFR 450.206, 23 CFR 450.208, and 23 CFR 450.210 authorize these activities and they are eligible for SPR funding under 23 USC Sec 505 (statewide planning).

Estimated Costs for Tribal & Regional Coordination

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The state match is this table does not include the state funds WSDOT uses to manage the RTPO Program.

Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
Subarea 2.5: Enhanced Local Collaboration

In Washington state, local comprehensive planning for planned growth and economic development patterns is the foundation for all other planning, including that of WSDOT and the regional and metropolitan organizations. Local land use and transportation decisions and patterns of land development can significantly influence the safety and efficiency of the state transportation system and once local decisions are made, they are difficult to reconsider later. Local governments are updating their comprehensive plans in 2015-2017 and the state has a limited window to influence those decisions to improve consistency with state transportation plans and investment programs. It is less productive to engage later on a project-by-project basis. Federal planning requirements also recognize the critical role of local-level planning for statewide and metropolitan levels of transportation planning, requiring the state planning program to protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planning growth and economic development patterns.” [23 USC 450.206 (a) 5]

Governor’s Executive Order 14-04, Washington Carbon Pollution Reduction and Clean Energy Action, also sees local comprehensive planning as foundational, directs WSDOT to support the update of local comprehensive plans to produce travel and land-use patterns that maximize efficiency in movement of goods and people, and reduce costs and greenhouse gas emissions.

Local jurisdictions regularly initiate local planning efforts that require WSDOT engagement and response and on-going action. Understanding the local concerns developed through years of regular contact, we anticipate and respond to those requests through collaboration with local jurisdictions and local advocacy groups. These collaborative efforts help achieve mutual benefits for the local interests and fulfill our responsibility to the citizens of the State for the operation and management of the state transportation system and the sustainable management of the physical assets in which we have long invested. Collaboration often requires conversations with local agencies over periods of time, in addition to review of plan draft and emerging implementing legislation. Many local and regional planning efforts may be active at any given time.

WSDOT engages with local jurisdictions to ensure that statewide transportation perspectives are considered, distinct from the more regional or urbanized area perspective of regional and metropolitan organizations. Transportation planning priorities for Washington supported by local collaboration include: multi-jurisdictional and multimodal integration, community engagement, and strategic investment. Collaboration at this level also ensures that WSDOT meets its federal responsibilities to consider and analyze factors in the transportation planning process based on the scale and complexity of “transportation systems development, land use, employment, economic development, human and natural environment, and housing and community development.” [23 CFR 450.206 (a) 8b]

What are WSDOT’s objectives for participating in local plans?

- To understand the existing context and future vision for the areas our state transportation facilities serve, including supporting the economic vitality, safety, security, accessibility and mobility of people and freight.
- To integrate local and state information for roadways, non-motorized facilities, transit operations, freight, and other transportation modes to identify common problems and solutions.
- To work with communities toward a common understanding of the desired performance,
condition, and needs of our shared transportation system which helps WSDOT implement a performance-based practical approach to planning and management the transportation system in the state.

- To progress toward a consistent framework for analysis of transportation deficiencies and solutions for state transportation facilities in the city or county that reflect our agency’s more flexible approach to design.
- To explore solutions to transportation needs, identify opportunities for further collaboration that are mutually beneficial to the state and local communities, and make a plan for how partnership can meet our mutual needs.
- To implement least cost, practical solutions that support community, economy, and the environment.
- To share the opportunities WSDOT’s new Practical Solutions approach provide for more flexibility in highway design and tools to address our common goals.
- To identify opportunities to align our efforts and leverage resources to accomplish more than either of us can achieve alone.

Activities: WSDOT is coordinating with local jurisdictions and regional transportation agencies to assist in our continuing, cooperative, and comprehensive efforts to provide a resilient transportation network.

WSDOT will continue efforts throughout the 2017-19 biennium, including:

- Exchanging information on current conditions and travel forecasts for a variety of transportation modes, with emphasis on cost-effective and efficient multimodal solutions when developing these plans in conjunction with state facilities. This work will require our participation in the assessment, education and strategizing of ways to implement plans that support their land use and development expectations and community visions while meeting statewide needs.
- Developing partnerships through knowledge and understanding of local concerns.
- Coordinating collaboration with modal and specialty offices to provide the opportunity for a well-rounded review of comprehensive plans that impact WSDOT’s interests.
- Continuing collaborative efforts with MPO/RTPOs and local governments to ensure bicycle and pedestrian, freight, planning, research, and data collection supports their planning and modeling efforts.
- Supporting enhanced collaboration efforts with local governments through continuation of the comprehensive plan review workgroup; analysis of policy issue and proposed resolution; development of tools, training, guidance and information resources; and periodic reporting on enhanced collaboration efforts.
- Providing specialized GIS tools for analysis and visualization to support decision-making (Community Planning Portal).
- Providing state transportation system information to inform transportation planning alternatives assessment.
- Reviewing and commenting on WSDOT’s interests in comprehensive plan updates and amendments, sub-area plans, planned actions, development regulations, etc.
- Participating in updates of comprehensive plans and associated documentation.
- Assisting in the development of regional plans. Help assure consistency among jurisdictions and between state, regional, and local plans.
- Reviewing and responding to cities and counties on their comprehensive plans and implementing legislation that affect WSDOT’s interests, as required.
- Participating in discussions with local transportation advocacy groups.
- If needed, assisting the Washington State Department of Ecology in updating the State
Implementation Plan consistent with the Clean Air Act. Requirements: 23 CFR 450.206 and 23 CFR 450.208 authorize these activities and they are eligible for SPR funding under 23 USC Sec 505 (statewide planning).

Estimated Costs for Enhanced Local Collaboration

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Contact: Elizabeth Robbins, Planning Policy & Partnerships Manager, 360-705-7371
**Subarea 2.6: Community Engagement Plan Implementation**

WSDOT’s [Community Engagement Plan](#) is an important part of the agency's emphasis on greater community engagement, inclusion, workforce development, and practical solutions. The plan is an important milestone in achieving the Community Engagement goal of Results. WSDOT and in meeting federal requirements for a documented public involvement process for statewide planning. It guides how WSDOT engages with partners, stakeholders, Tribes, communities, and the public for all WSDOT efforts “stem to stern.” It also lets people know what they can expect from WSDOT during engagement periods and activities.

Activities: WSDOT Headquarters:
- Is working with FHWA Washington Division, FTA Region 10, and the internal Community Engagement Working Group to identify emphasis areas for the 2017 update.
- Will submit a schedule to FHWA no later than December 31, 2017, that details how WSDOT will continue to implement the Community Engagement Plan.
- Lead the agency-wide Community Engagement Working Group to share best practices and develop guidance, tools, and resources, and provide training.

WSDOT Headquarters and Regions will:
- Develop and follow communication plans that describe internal and external outreach for appropriate planning activities.
- Provide points of contact and coordination for transit agencies on transit issues.
- Provide points of contact and coordination for bicycle and pedestrian issues.
- Respond to requests for information, as appropriate.
- Respond to community concerns, as appropriate.
- Develop external outreach materials and tools such as fact sheets, maps, and webpages.
- Coordinate activities and share information. This includes participating in the Community Engagement Working Group and in other regular internal forums.
- Participate in external and internal meetings and forums to share information on planning activities.

Requirements: 23 CFR 450.210 (a) (Interested parties, public involvement, and consultation.) requires this activity and it is eligible for SPR funding under 23 USC Sec 505 (statewide planning).

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Contact: Kerri Woehler, Director Multimodal Planning Division, 360-705-7958
Area 3: System Performance and Analysis

Consistent with WSDOT’s Community Engagement Plan, staff will solicit and document feedback that provides clarification, transparency, accountability, and supports the linkage between planning and programming.

This work element is:
- Focused on translating infrastructure, operational and financial data into meaningful information to support budgeting, planning, operations and asset management.
- Increasingly important under MAP-21, which requires states to set and track performance targets.

This work element includes the following sub-areas:
- Subarea 3.1: Performance & Accountability Analysis
- Subarea 3.2: Financial Planning
- Subarea 3.3: Economic Forecasting & Analysis
- Subarea 3.4: Modeling & Analysis

Estimated Costs for System Performance and Analysis

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Subarea 3.1: Performance & Accountability Analysis

Work in this subarea assures agency-wide strategic alignment, enhanced partnerships, and increased efficiencies by providing tactical guidance in support of Results WSDOT, including the Agency Emphasis Areas (Practical Solutions, Workforce Development and Inclusion), Results Washington, federal transportation legislation, and other key initiatives.

This subarea:

- Facilitates processes that lead to strategically aligned performance measures, policy recommendations and agency-wide strategic direction to achieve results and deliver programs.
- Provides tools such as Grey Notebook, Corridor Capacity Report, Map-21 folios, work plans, etc. for articulating policy decisions, building trust, supporting collaboration and increasing efficiency by leveraging resources.
- Assures that WSDOT tactically aligns its agency priorities with local, state and federal priorities.
- Provides best practices to other states, MPOs, AASHTO and USDOT on federally required performance management.

Activities in this subarea include:

Statewide, Modal, Program, and Project Analysis:

- WSDOT’s Results Washington Program: Lead WSDOT’s Results Washington Program through coordination with WSDOT programs and other state agencies to develop and maintain measures that align with the Governor’s and national goals. Lead cross-agency teams to coordinate and develop content for the Results Washington program reports and action plans. Supply and support the reporting requirements in the Results Washington reporting system (Open Performance). Provide policy direction and recommendations for WSDOT programs that contribute to the Results Washington process. Participate in and prepare WSDOT executives for each of the Governor’s five goal councils. WSDOT is directly responsible for nine measures in the Goal 2: Prosperous Economy Goal Council and has interest in several measures in three other Goal Councils. Contribute to Goal Council 2’s cross-agency research team efforts.
- Review and maintain policy alignment needs between state directions/priorities and federal transportation legislation requirements.
- Lead WSDOT’s Analysis and performance Reviews for OFM Reports: This activity includes the quarterly update of the Results through Performance Management (RPM) report, the biennial update of the Transportation Attainment Report, and the annual Ferries Performance Report.
  - RPM is an OFM managed web-based program that state agencies use to meet the state RPM quarterly as a part of the Gray Notebook process.
  - The biennial Transportation Attainment Report, required by RCW 47.04.280, is a legislative report published by OFM. The purchase of this report is to assess progress toward the goals and contribute to the overall performance of the transportation system. Rather than report on agency-specific performance, the focus is on overall system performance. Many of measures and supporting data are used to make investment decisions, develop strategies and programs, provide accountability, and promote stronger internal management. Provides extensive research, review, and input into the final report. This research requires working with multiple WSDOT programs to ensure their performance information is accurately reflected in the
report. Perform a comprehensive review of the report and provide OFM with suggested edits prior to publication.

Agency Accountability & Analysis:

- Prepare and publish WSDOT’s nationally recognized quarterly performance report. Participating in the “Gray Notebook Process” provides policy direction and recommendations for the agency and its respective programs, builds collaboration among programs and engenders public trust. The Gray Notebook (GNB) development process assures fully vetted performance information that demonstrates alignment with Results WSDOT, including the WSDOT’s Agency Emphasis Areas, the Secretary’s State of Transportation Address and Results Washington. Produced quarterly, The Gray Notebook and the Gray Notebook Lite (summary) are posted online and provide performance information focusing on capital project delivery, performance highlights, notable results, and budget information when possible. The GNB and GNB Lite are distributed to more than 1,800 subscribers electronically and through the mail each quarter.

- Review and maintain policy alignment needs between state directions/priorities and federal transportation legislation requirements.

- Facilitate processes providing technical assistance and expertise that promote program performance, reflect priorities, best practices, efficiency improvements and project delivery measures. Provide technical outreach to internal and external partners including, but not limited to, coordination of meetings, data analysis, and assistance in report development.

- Assure agency-wide strategic alignment, enhance partnerships, and increase efficiencies by providing tactical guidance in support of Results WSDOT, including the Agency Emphasis Areas, Results Washington, federal transportation legislation, and other initiatives.

- Facilitate processes that align performance measures, policy recommendations and agency-wide strategic direction. Provide tools for articulating policy decisions, building trust, supporting collaboration and increasing efficiency by leveraging resources. Assure that WSDOT tactically aligns its agency priorities with state and federal priorities.

- For Office of Fiscal Management (OFM), the Governor’s office, TIGER grant application, and other customers, conduct economic analysis on WSDOT’s agency budget and individual programs such as highway projects, ferries, rail and other modes to quantify jobs created by programs and projects. Deliverables include assessment of comprehensive jobs impact specific to the request.

System Performance Analysis:

- Refine Mobility Analysis Software: Continue to refine the new computer software program to process, analyze, and streamline vast amounts of travel time data (private sector data and WSDOT loop data) for MAP-21 (3rd NPRM for System Performance) and to provide additional analysis to improve efficiency and quality while supporting agency initiatives such as Practical Solutions. The mobility analysis software is used to pioneer research on new mobility measures (for example, commute congestion cost, greenhouse gas emissions, etc.) prior to incorporating them into the Digital Roadway Interactive Visualization and Evaluation Network (DRIVE Net) platform. The Mobility Analysis Software program is also used to streamline and enhance multimodal measures and data graphing capabilities.

- Review and maintain policy alignment needs between state directions/priorities and federal transportation legislation federal transportation legislation requirements.

- Continue to develop workflow templates for improved accuracy and efficiency in producing the performance measures related to the 3rd NPRM on System Performance rule and other agency key initiatives and projects.
• Continue to work with transit and planning agencies to develop and implement multimodal capacity methods. In addition, develop software / templates to streamline transit data processing and performance evaluation from various transit agencies. This includes capturing societal costs associated with trip-based and facility-based (person, corridor) measures while providing efficient reporting of greenhouse gas and transit measures. These improvements also allow for probe data analysis along with the WSDOT loop data.

• Support and lead Congestion Working Group. The Congestion Working Group makes recommendations for critical decisions on appropriate performance measures for mobility related needs. For example, MAP-21 (3rd NPRM on System Performance rule) and Results Washington. The result of this work informs WSDOT policy makers, planners and engineers as they examine multimodal capacity opportunities for state highways.

• Participate in and support WSDOT workgroups on Multimodal Safety, Sustainable Transportation, Climate Change, Accessibility, Practical Solutions, etc. to assure strategic alignment and collaboration.

• Continue to develop and publish interactive web based application (e.g. ArcGIS online) to communicate mobility performance data to internal and external stakeholders and the public.

• Facilitate Peer Exchange, Research, Innovations, and Best Practices: Supporting FHWA requests for peer exchange. Research special topics related to transportation system performance to determine innovations and trends from other states and countries for implementation of best practices. Prepare professional papers related to transportation system performance analysis, reporting and accountability. Continue to support FHWA, USDOT, TRB, AASHTO, and NCHRP systems analysis and performance measurement activities. Continue to provide leadership in performance measurement research arena, develop materials for and chair committees. Provide assistance and guidance to state DOTs and international peers that approach WSDOT for support and input in the development of their own performance management systems.

• Provide strategic direction, analysis and coordination of federal transportation legislation:
  o Conduct analysis of final federal rules for federal transportation legislation performance measures for safety, pavement, bridge, freight, congestion, and on-road mobile source emissions.
  o Understand and communicate the rule-making process with WSDOT program leads. Coordinate and collaborate with other DOTs, MPOs, and AASHTO on specific aspects of each rule.
  o Provide federal transportation legislation final rule analysis for each rule: safety, pavement, bridge, freight, congestion, and on-road mobile source emissions, etc. Provide on-going input to FHWA/USDOT through conference calls, webinars with AASHTO and FHWA-USDOT regarding federal transportation legislation coordination processes and technical details. https://www.fhwa.dot.gov/tpm/rule.cfm
  o Coordinate and develop a target setting process in collaboration with MPOs and program leads. Develop a federal transportation legislation target setting process, develop supporting documents for final rules and target setting processes for MPOs, Tribes and other stakeholders, develop and establish a target setting framework schedule in line with federal transportation legislation performance measures; develop WSDOT’s approval process for target setting recommendations; develop a formal recommendation process. Develop and provide communication materials including data for MPOs. Develop and conduct WSDOT’s Executive review and approval process.

• Develop and Publish Annual Systems Reports including:
- Asset Management Performance Reports: address WSDOT assets such as bridge, pavement, safety rest areas, ferry vessel and terminals, maintenance, ITS, and more. Asset Management Reports provide performance information on transportation infrastructure assets.
- Multimodal Safety Reports: address WSDOT safety performance measurement in such areas as highway, transit, rail, ferries, bike, pedestrian, and aviation. Multimodal Safety Reports provide safety performance information for various modes of travel.
- Conduct Before and After Studies: Develop and publish before and after evaluations of mobility, safety, and other projects to articulate WSDOT’s program delivery record in support of the agency’s strategic policy directions and needs assessments.

Requirements: RCW 47.04.280 and 23 CFR 450.206 authorize these activities and they are eligible for SPR funding under 23 USC Sec 505 (Statewide Planning).

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Contact: Daniela Bremmer, Director Strategic Assessment & Perf. Analysis, 360-7057953
Subarea 3.2: Financial Planning

- Provide financial planning to support the development and implementation of the state transportation budget, including the planning for long-term debt issuance and tolling.
- Analyze and recommend the size of bond sales and develop related Official Statements and Rating Agency presentations.
- Monitor and analyze the agency’s cash flow requirements and cash flow plans for projects and provide recommendations.
- Assure compliance with the Master Bond Resolutions, certificates, and federal loan agreements. Prepare Official Statements for the sale of general obligation bonds, various purpose general obligation bonds, and certificates of participation.
- Ensure compliance with Internal Revenue Service (IRS) regulations as they relate to the assignment and use of bond proceeds.
- Maintain the financial plans for transportation accounts as a tool for cash management.
- Develop new enterprise-wide financial planning system.
- Manage debt service payments for outstanding bond issues.
- Prepare presentation materials for the Washington State Secretary of Transportation.
- Support in developing Federal Financial plans.
- Production of Fuel taxes: A State-by-State Comparison and assist in development of the Grey Notebook.
- Forecast WSDOT business revenues quarterly.
- Monitor monthly tax collections.
- Support analysis of toll-rate setting and other tolling issues.
- Analyze state and national fee revenue issues to assess the impacts on transportation policies, plans, and programs.
- Coordinate preparation of grant applications for STP, CMAQ, and other funding sources.

Requirements: Chapter 43.09 RCW requires these activities and these activities do not receive SPR funds.

Estimated Costs for Financial Planning

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Contact: Nguyen Dang, Assistant Director, Financial Planning, 360 705-7512
Subarea 3.3: Economic Forecasting & Analysis

- Produce and coordinate quarterly long-term forecasts and monthly cash flow forecasts of transportation revenues
  - Motor fuel taxes.
  - License, permits, and fees.
  - Federal funds.
  - Fuel prices and other economic variables.
- Forecast fuel prices and highway construction cost indices quarterly for use in setting budgets.
- Publish a quarterly forecast summary report and detailed tables describing the forecast, and make presentations on transportation revenue issues.
- Complete quarterly fuel price and vehicle trends reports.
- Prepare annual vehicle miles traveled and local transit revenue long-term forecasts.
- Develop and update econometric models used in forecasting and document the forecast models.
- Complete fiscal notes and bill analysis for legislative transportation revenue proposed changes.
- Create local government long-term forecasting guidelines document to assist local government with best “practices” for creating long-term forecasts and financial plans.
- Analyze upcoming issues.
  - New federal and state legislation.
  - New revenue proposals.
- Maintain a WSDOT-ESD data sharing agreement of employment data so WSDOT staff has access to employer level employment data.
- Conduct Economic Impact Analysis of Selected Transportation Projects
  - Oversee a WSDOT-REMI-Transight contract each year
  - Update a technical work group to review the Connecting Washington transportation projects for economic impact analysis.
  - Supervise and assist a group of WSDOT staff members on using the Washington state REMI-Transight economic impact model for Washington state transportation.
  - Train and supervise WSDOT staff on highway system HERS-ST software which evaluates the travel time and operator cost savings benefits from highway investments.
  - Coordinate the results from various long-term economic impact analysis and prepare summary reports on economic impacts.
  - Evaluate the short-term economic jobs impact from Washington transportation investments of certain projects –ad-hoc basis.

Requirements: These activities do not receive SPR funds.

Estimated Costs for Economic Forecasting & Analysis

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Contact: Lizbeth Martin-Mahar, Asst. Director, Economic Analysis, 360-705-7942
Subarea 3.4: Modeling & Analysis

The activities below support achieving the following federal planning factors:

- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight.
- Promote efficient system management and operation.
- Enhance travel and tourism.
- Provide staff and management support for travel demand modeling and analysis, performance measurement, traffic operation and simulation modeling, and reporting.
- Maintain software upgrades and maintenance for travel demand and operational modeling software.
- Provide expertise in cost-efficient and smart technology modeling methodologies; apply state-of-the-art modeling techniques such as Dynamic Traffic Assignment (DTA) models and simulation models necessary for traffic forecasting, engineering analyses, corridor studies and Green House Gas (GHG) emission projections consistent with state and regional plans.
- Provide help to toll projects with modeling, review of results etc.
- Conduct technical modeling and analysis for corridor projects for WSDOT and WA regions.
- Perform traffic simulation and operational analysis for transportation projects and corridor planning studies, congestion relief studies, toll projects etc.
- Provide support to mobility screening and MAP-21 and other mobility performance measures; support Corridor Sketch Initiative efforts in mobility system screening.
- Use National Performance Management Research Data Set (NPMRDS) for performance measures for transportation studies.
- Develop and maintain highway monitoring and travel data collection program for both NHS and non-NHS roadways.
- Develop seasonal group, axle corrections and other conversion/expansion factors applied to short duration traffic counts in the development of truck and car highway usage info.
- Develop procedure and methodology for providing Interim Liquidated Damages for statewide construction projects that will close lanes, shoulders, or interrupt ITS equipment.
- Provide technical support for special projects requiring unique analyses and techniques and manages before and after travel time studies.
- Develop statewide policy and implements changes to meet planning travel data requirements based on current and changes in Federal and State policies.
- Provide support for Gray Notebook and Corridor Capacity Report activities by assembling, analyzing, and developing performance measures.
- Bring TRACFLOW process from UW TRAC to in-house. This will help to clean Puget Sound area permanent counter data and getting them ready for Corridor Capacity analysis.
- Conduct planning-level project cost estimation using Planning Level Cost Estimation (PLCE) tool and benefit-cost analysis for projects.
- (PLCE) tool will be updated 2017-18 with recent data; the PLCE manual will be updated to reflect the changes in the tool; and cost of travel data/document.
- Conduct greenhouse gas emissions analysis using US EPA MOVES2014A or similar model http://www.epa.gov/otaq/models/moves/ for transportation projects.
- Manage freight data analysis work for FGTS report.
- Develop REMI TranSight models for assessing broader economic impacts of transportation.
projects and policies, and thus help select WSDOT strategic investments for regional and statewide transportation plans and programs.

- Conduct economic analyses when seeking grant funding opportunities by generating statewide and regional economic impacts (i.e., return for investments in transportation) of projects.
- Provide training to WSDOT region staff and consultants on the application of the PLCE tool.
- Develop and apply analysis tools to help analyze alternative scenarios, system improvement strategies and system performance.
- Support data and analysis needs for Corridor Sketch Initiative - a statewide plan for identifying deficiencies of corridors.
- Lead all activities related to supporting and providing data such as HPMS, Long Term Pavement Performance (LTPP) Program, Strategic Highway Research Program (SHRP), etc.
- Lead special studies (WSDOT, FHWA, NCHRP etc.).

Requirements: 23 CFR 450.206 authorizes these activities and they are eligible for SPR funding under 23 USC Sec 505 (statewide planning).

Estimated Costs for Modeling & Analysis

| SPR   | $1,345,600 | State | $336,400 | Total   | $1,682,000 |

Contact: Mark Finch, Asst. Director, Multimodal Planning Div., 360-570-2369
Area 4: Data and Planning Applications

WSDOT collects, processes, analyzes and reports safety data (crash, roadway and traffic) on over 80,000 miles of state and other public roadways and vehicle and financial statistics for 280 local cities and 39 counties.

The agency also provides specialized GIS products and services, which, combined with data services, support WSDOT’s State Planning and Research (SPR) functions and partners statewide.

This work program area:
- Meets critical federal requirements.
- Provides a foundation necessary to support planning and asset management.
- Provides vehicle and financial statistics necessary to receive federal transportation funding.
- Provides products and data services for WSDOT and partners statewide.

This work element includes the following sub-areas:
- Subarea 4.1: Travel Data Analysis
- Subarea 4.2: Federal Annual Reporting of Vehicle and Financial Statistics
- Subarea 4.3: Crash Data Analysis
- Subarea 4.4: GIS and Roadway Data

Estimated Costs for Data and Planning

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Subarea 4.1: Travel Data Analysis

Install, maintain, update, and repair continuous traffic counting equipment, short duration travel data collection equipment, pedestrian and bicycle counting equipment, weigh-in-motion equipment, digital imagery equipment, and geographic coordinate data collection equipment, all used for WSDOT’s travel data collection and reporting program. WSDOT’s travel data collection and reporting program includes both motorized and non-motorized modes of transportation, which includes all service, utility, software, and equipment charges required to maintain this program.

- IT Deliverables: A portfolio of applications that meet the planning business needs across Crash, GIS and Travel Data Analysis for collecting, storing, securing, processing and reporting crashes, rumble strip locations, traffic volumes, speeds, lengths, weights, and classifications. These applications are used by TDGMO, the Washington State Patrol, and County Engineers while the data processed by these applications is used by all WSDOT Regions and Divisions, the Federal Highways Administration, other Federal, State and local agencies, institutions, and the public.
- Provide support to WA Regions by collecting data from the field or purchasing data like “probe” vehicle data or helping with conducting origin/destination surveys where needed and provide technical data analyses in the context of Corridor Sketch Initiatives.
- Produce special data reporting such as Freight and Goods reports, data for statewide system congestion analysis, data and segment analysis for statewide system plan, travel time, origin destination studies, and traffic forecasting.
- Provide data products to WSDOT regions and divisions as well as Federal Highways Administration, other state agencies, local governments, institutions, and the public.
- Review current data collection equipment and processing methods; evaluate available new technology to modernize equipment and automated processing procedures to increase efficiency accuracy and reliability. Develop a plan to introduce new technology and modern methods.
- Review FHWA’s NPMRDS data for Washington state’s use and analyses. Develop plans to verify NPMRDS data with local speed/travel time data sampling program.
- IT Data Support. This is a dedicated IT support team for several planning functions. Work includes project management, business analysis, application development, and support services to the Transportation Data, GIS and Modeling Office (TDGMO). The IT Data Support team coordinates and develops IT projects with Federal, State, and Local agencies for the assigned business area.
  - Deliverables: A portfolio of applications that meet the planning business needs for collecting, storing, securing, processing and reporting crashes, traffic and roadway data. These applications are used by TDGMO, the Washington State Patrol, and County Engineers while the data processed by these applications is used by all WSDOT Regions and Divisions, the Federal Highway Administration, other Federal, State and local agencies, institutions, and the public.

Requirements: 23 USC Sec 119, 23 CFR Parts 420 and 470 require these activities and they are eligible for SPR funding under 23 USC 505.

Estimated Costs for Travel Data Analysis

| SPR       | $6,486,540 | State    | $1,622,060 | Total     | $8,108,600 |

Contact: Mark Finch, Asst. Director, Multimodal Planning Div., 360-570-2369
Subarea 4.2: Annual Reporting of Vehicle and Financial Statistics

Administer and update the financial reporting system for 280 local cities and 39 counties in the state. This provides WSDOT with local transportation related financial revenues and expenditures.

- Collect and evaluate data for FHWA financial and statistical reports in order to receive federal transportation funding.
- Update and maintain state and local financial and statistical information in databases in preparation of 12 reports to FHWA annually. Complete financial and statistical reports for FFY 2017 and FFY 2018:
  - State motor fuel tax collections and distributions.
  - Motor vehicle registrations and fees.
  - State bonding activities:
    - Transportation obligations issued.
    - Status of transportation debt.
  - Highway income and expenditures.
  - Highway capital outlays.
  - Toll facility income and expenditures – Washington State Ferries and toll facilities.
  - Driver licenses and fees.
  - Receipts from motor carriers.
  - Local government transportation related revenues and expenditures.

Work with the State Auditor’s Office to assist in collecting local governments’ transportation-related revenue and expenditures.

Requirements: These activities do not receive SPR funds.

Estimated Costs for Federal Annual Reporting of Vehicle and Financial Statistics

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<tr>
<th>SPR</th>
<th>-50-</th>
<th>State</th>
<th>Total</th>
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<tr>
<td></td>
<td></td>
<td>$247,000</td>
<td>$247,000</td>
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Contact: Lizbeth Martin-Mahar, Asst. Director, Economic Analysis, 360-705-7942
Subarea 4.3: Crash Data Analysis

Work in this subarea supports Highway Safety Improvement Program (HSIP), which is a data-driven process that requires the use of timely, accurate and complete crash data to help identify safety improvement projects.

- Maintain the statewide crash database using standard coding methodologies specific to data provided by law enforcement officers on the Police Traffic Collision Report (PTCR). These data are analyzed using mapping tools, data linkages, and other resources to enhance the location and add 49 data elements to the crash record as defined by the federal Minimum Uniform Crash Criteria (MMUCC 5th Edition) guideline along with requirements set by other local and state safety partners to obtain the information required to analyze, identify and prioritize engineering, education and enforcement safety projects, and conduct performance measurements and analysis.
- Fulfill WSDOT Public Disclosure Requests for crash data from the public, media, legislature, research institutions, etc., within the legal boundaries of RCW42.56 while ensuring the protection afforded on 23 U.S. Code, Sections 148 and 409. Provide crash data to other state, county and city engineering offices, MPO/RPTOs, Washington Department of Licensing and the Washington Department of Health as well as provide data for the Washington State Strategic Highway Safety Plan known as Target Zero, as well as the Annual Collision Summary Report.
- Provide stewardship, support and management of the Crash Data Mart and WSDOT’s Crash Data Portal. Provide crash data technical support and training to WSDOT planners and engineers.
- Represent WSDOT on the state’s Traffic Records Committee and the statewide Electronic Traffic Information Processing initiative known as eTRIP.
- IT Data Support. This dedicated IT support team supports several planning functions. Work includes project management, business analysis, application development, and support services to the Transportation Data, GIS and Modeling Office (TDGMO). Support, coordinates and develops IT projects with Federal, State, and Local agencies for the assigned business area.
- Deliverables: A portfolio of applications that meet the planning business needs for collecting, storing, securing, processing and reporting crashes, rumble strip locations, traffic volumes, speeds, lengths, weights, and classifications. These applications are used by TDGMO, the Washington State Patrol, and County Engineers while the data processed by these applications are used by all WSDOT Regions and Divisions, the Federal Highway Administration, other Federal, State and local agencies, institutions, and the public.
- State funds ($51,000) will be passed through to WaTech to support the Justice Information Network Data Exchange (JINDEX), which is responsible for routing electronic tickets and crash reports to all agencies that require the data in order to meet their business obligations. Timely, completed and accurate electronic crash data is essential to support WSDOT’s goal in reducing serious injuries and fatalities on Washington state roadways.

Requirements: Chapter 42.56 RCW and 23 USC Sec 148 require these activities and they are eligible for SPR funds under 23 USC 505 (highway safety improvement program).

Estimated Costs for Crash Data Analysis

<table>
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<th></th>
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</thead>
</table>

Contact: Mark Finch, Asst. Director, Multimodal Planning Div., 360-570-2369
Subarea 4.4: GIS and Roadway Data

Stewardship of GIS data resources (geometry, attributes, metadata). Develops new production data sets to support planning operations. Provides technical support for GIS data products. Provides spatial data analysis. Evaluates, selects, and supports new data editing management tools and products. Coordinates with other state and local entities on statewide data development and support. Coordinates with the Information Technology Division (ITD) database and server Administrators in support of these activities. Steward numerous GIS databases that support planning functions and other business areas, including FHWA ARNOLD reporting.

  - LRS is the state route measures that provide location information on each state highway necessary for planning.

- Manage WSDOT’s Highway Performance Monitoring System (HPMS). HPMS data collection, analysis and processing. Stewardship of the statewide HPMS GIS data products. Deliverables: Federally mandated data used to advise Congress of system condition and performance for apportionment purposes. These data represent Washington’s 82,000 miles of public roads including the National Highway System and Federal Aid System. Also reported is a complete GIS of all Washington roads required to support the Federal All Roads Network of Linear Referenced Data (ARNOLD).

- Collect, analyze, process, and report data to support the functional classification of all public roads. Coordinate with local agencies, other WSDOT and federal offices. Manage WSDOT’s Functional Classification (FC) Program. Deliverables: Statewide GIS database of Functionally Classified public roads, consulting and reporting services.

- Design, develop, and support GIS custom software applications and systems across various platforms, such as mobile, browser, server, and desktop in support of planning operations. Provides system hardware, software, and network architecture services and support, GIS and non-GIS software systems integration. Supports and integrates cloud-based services within WSDOT IT infrastructure necessary in order to develop and support systems and applications used for planning functions such as the Community Planning Portal.

- Develop and maintain enterprise cartographic map services to meet WSDOT planning business needs. Develop custom map products. Provides stewardship of cartographic products to the statewide GIS portal. Deliverables: GIS map services, custom printed and digital map products, and consulting services.

- Provide project management support for custom GIS solutions in support of planning activities.

- Represent the interests of WSDOT within the scope of the Washington Geographic Information Council (WAGIC) and the Geographic Information Technology (GIT), Collaborate and coordinate with other state and federal agencies and organizations on GIS activities. Deliverables: GIS strategic alignment with agencies outside of WSDOT necessary to conduct planning.

- Provide GIS technical support and training to WSDOT planners. Administration and management of WSDOT’s cloud based ArcGIS Online Organization. Deliverables: GIS technical support to WSDOT GIS users. GIS training for WSDOT staff.
Requirements: 23 USC Sec 119 authorizes these activities and they are eligible for SPR funding under 23 USC 505.

Estimated Costs for GIS and Roadway Data

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<thead>
<tr>
<th></th>
<th>SPR</th>
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</table>

Contact: Mark Finch, Asst. Director, Multimodal Planning Div., 360-570-2369
Area 5: Management and Administration

- Assistant Secretary’s Office: Provide for policy formulation and executive administration. Costs incurred to this item are salaries, benefits, travel expenses, materials, supplies, and other expenses of the Assistant Secretary and an executive assistant.

- Multimodal Planning Division: Provides for the policy formulation and executive administration of the Multimodal Planning Division. Provides policy, technical, and fiduciary oversight of planning activities including preparation of the federally required SPR Work Program. Other management and support activities include budget development and monitoring assistance, accounting services, and financial systems services for the Multimodal Planning Division. Costs incurred to this item are salaries, benefits, travel expenses, materials, supplies, and other expenses of the director, an executive assistant, and the division’s Communications & Engagement Planner. Also included are funds to support Transportation Data and GIS Office Management and Administration.

- Budget Support: Prepare and manage a transportation planning and research program plan, which optimizes available revenue. Provide support to the Planning Division and the Office of Research and Library Services in the following areas: program development, accounting and financial management, budget support, work orders, contracts, and agreements.

Estimated Costs for Management and Administration

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<tr>
<th></th>
<th>SPR</th>
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<tbody>
<tr>
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<td></td>
<td>$1,972,000</td>
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</table>

Contact: Kerri Woehler, Director Multimodal Planning Division, 360-705-7958
Part 2: Research

The WSDOT Office of Research and Library Services (ORLS) develops and manages innovative, specialized research studies to produce information to help inform strategic decisions, adapt new smart technologies, and create new products and work practices. The transportation library serves engineers, researchers, consultants, universities, and the general public with up to date information from the past to the present using a world network of resources to increase knowledge and provide answers to customers’ inquiries.

Consistent with WSDOT’s Community Engagement Plan, staff will solicit and document feedback that provides clarification, transparency, accountability, and supports the linkage between planning and programming.

ORLS partners with universities, national and regional transportation institutions, federal, state, and local agencies, and private companies to conduct research using the most knowledgeable experts. These researchers conduct studies that find solutions and recommendations that help WSDOT plan, construct, and operate a vast multimodal transportation system.

ORLS aligns transportation research funding strategically to maximize resources by sharing costs and information with federal, state, and local agencies that share similar research needs. In addition to the SPR funded projects that are described in this work program, other research programs are also funded. WSDOT leads 11 Transportation Pooled Fund (TPF) projects involving almost 40 other state transportation agencies in addition to participating in 26 other TPF projects.

Quick Response (QR) projects address emerging issues requiring research support. Student research studies bridge the need for limited research inquiries with college students to gain work experience in the transportation field. Funds and in kind resources are also used to provide matching requirements for research led by the three University Transportation Centers in our geographic region. The Washington Transportation Center (TRAC) is supported by a partnership with WSDOT, University of Washington, and Washington State University to link research needs with the knowledge and technologies at the universities.
### Research Connections to Federal Planning Factors and Statewide Transportation System Goals

| Federal Planning Factors                                                                 |  |
|----------------------------------------------------------------------------------------|--|---|
| Support the economic vitality of the United States, the States, nonmetropolitan areas, metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency. | x |
| Increase the safety of the transportation system for motorized and non-motorized users. | x |
| Increase the security of the transportation system for motorized and non-motorized users. | x |
| Increase accessibility and mobility of people and freight.                              | x |
| Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns. | x |
| Enhance the integration and connectivity of the transportation system, across and between modes, throughout the State, for people and freight. | x |
| Promote efficient system management and operation.                                       | x |
| Emphasize the preservation of the existing transportation system.                        | x |

### Statewide Transportation System Policy Goals

<table>
<thead>
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<th>Economic Vitality</th>
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<tbody>
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<tr>
<td>Safety</td>
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<tr>
<td>Mobility</td>
<td>x</td>
</tr>
<tr>
<td>Environment</td>
<td>x</td>
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<tr>
<td>Stewardship</td>
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</table>

Requirements: These activities are eligible for SPR funding under 23 USC 505 (research). 23 CFR Part 420 requires this program and they are eligible for SPR funds under this same CFR.

### Estimated Costs for Research

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2017-19 State Planning and Research Biennium Work
Area 1: Program and Research Management

The research project selection for 2017-19 started with five workshops during the summer of 2016 with over 100 participants from various transportation disciplines and experts from 4 universities. RLS evaluated 37 research problem statements totaling $6 million and rated each against criteria established in the solicitation and screened for their contributions to the WSDOT’s Practical Solutions Goals. Eighteen projects were approved for funding for the 2017-19 biennium totaling $2,922,000.

Proposed Research and Library Activities

- Participate in solicitations from NCHRP, SHRP 2, AID, EDC, and STIC and other funding opportunities to increase resources for research, library, and technology/knowledge transfer activities.
- Carry out efficiently and with 100 percent compliance all agreements, contracts, task orders and other administrative requirements in the conduct of research and library services.
- Administer research funding for ongoing and new start SPR projects. Evaluate project requests for Quick Response Funding and assess match fund requests from University Transportation Centers.
- Continue support for Client Sponsored Research through contracting, study design and knowledge transfer activities.
- Participate in Peer Exchanges with other States to broaden range of options for modernizing the research and library services.
- Recruit college students to perform limited research studies to gain transportation related experience to enhance job opportunities and perform research that is unfunded across various transportation programs.
- Participate in the State Transportation Innovation Council (STIC) to seek ideas and innovative solutions to explore and share with other jurisdictions.
- Continue to develop and deploy technology and knowledge transfer activities to ensure research results are implemented and that information is readily accessible by a wide range of users.
- Continue to provide library services and assistance to customers. Continue the digitization of historical documents and videos to improve access to the collection.
- Develop and implement a research communication program to target audiences using a wide range of methods including internet, webinars, training and events, electronic documents, and printed media.
- Continue to review and update WSDOT Research Manual as needed.
- Certify the SPR Research Program.
Area 2: Research Projects


Rumble Strip Noise Evaluation
$60,000
Rumble strip designs were examined to determine if modifications could reduce road noise and preserve the safety integrity of the road treatment.

3D Numeric Evaluation of Seismic Forces on Bridge Abutments
$150,000
A design methodology is developed to estimate earthquake-induced lateral spreading forces in embankments that take into considerations the 3D effects.

Liquefaction-Induced Downdrag on Shafts/Piles
$150,000
Liquefaction-induced downdrag on piles and drilled shafts examined to understand the implication for new designs and remedial measures for existing structures.

3D Numerical Evaluation of Seismically Induced Lateral Spreading Forces on Bridge Abutments – Phase II
$120,000
This research developed and validated design methodology to estimate earthquake induced lateral forces in embankments that take into considerations the 3D effects.

2 Lane Rural Road Prioritization
$150,000
Safety Performance Factors (SPF) will be identified to apply to programming improvements to rural roads so that strategic countermeasures can be applied.

Suburban/Urban Arterial SPF
$150,000
Safety Performance Factors (SPF) will be identified to apply to arterials for identifying priority project improvements.

Expected Life and Best Practices for Pavement Maintenance Treatments
$150,000
Research will identify best practices for pavement maintenance and produce guidelines on how each maintenance treatment affects the pavement life.

DRIVE Net Phase II - Addition for safety performance assessment ($50,000)
$250,000
The DRIVE Net system will be expanded to include additional data sources and new, desired analytical functions.
Design Guidance and Long-Term Monitoring of Flow Deflection Structures
$125,000
This phase II work will field test the instrumentation to produce data for the development of design guidelines for flow deflection structures.

Assessment of Lube Oil Management and Self-Cleaning Oil Filter Feasibility in WSF Vessels
$120,000
A new oil management system will be deployed and evaluated on Washington State Ferries (WSF) vessels. A cost benefit analysis will determine whether to switch to the new methods.

Shear Design Expressions for CFT and RCFT Bridge Components
$250,000
The research objective is to develop design models to predict the shear resistance of CFT and RCFT members. It is expected that there will be different expressions for the elastic and inelastic behavior as well as different locations in the member. Results will be in a format that can easily be adopted into the Bridge Design Manual as well as the AASHTO LRFD Specifications.

Project Inspection Using Mobile Technology – Phase II
$300,000
Phase II of the research effort will evaluate the benefits of transitioning job and documentation functions that are performed by a project inspector to a mobile device data platform. The research will develop appropriate tools and methodologies to capture additional field data elements (Field Note Records, Pay Items, and Force Account) using the data collection platform developed during Phase I. Based on findings from Phase I, WSDOT inspectors are wasting over $400,000 per month in lost productivity that could be prevented with broader usage of mobile applications.

Maintenance of WSDOT/UW Travel Weather Information System
$128,000
This research project provides the system software and hardware for the University of Washington to provide travel weather information for over 60,000 computer hits per day.

Use of Electronic Fare Transaction Data for Transportation Planning & Travel Demand Management
$225,000
This research project will utilize modern data analytics on electronic transit fare data in the Puget Sound Region to guide strategies for demand management and congestion reduction programs.

Implementing the Routine Computation and Use of Roadway Performance Measures with WSDOT
$400,000
This project will provide WSDOT with overall roadway performance measures that are specifically oriented toward truck freight movement.

Support and Align Operational and Demand Strategies and Business Process with Planning & Programming with WSDOT
$200,000
This research project will help to change the WSDOT culture into one that more effectively integrates Transportation System Management and Operations strategies into the planning and programming process in a multidisciplinary way.
Traffic Office Support
$400,000
This research effort will provide analytical assistance and data resources to the various WSDOT groups at the requests of the Headquarters Traffic Office. The assistance will take the form of analytical results (data, graphs, presentation materials, and reports) produced the UW TRAC office.

Enhancing Traffic Incident Management
$50,000
In collaboration with the Mobility Innovation Center (MIC), the Center for Collaborative Systems for Security, Safety, and Regional Resilience (CoSSaR) at the University of Washington (UW) is conducting research that will take a foundational step towards the design and delivery of an enhanced traffic incident management (TIM) system and related services for the Washington State Department of Transportation (WSDOT) and the city of Seattle. In the larger scheme, these services will enhance the capabilities of traffic managers, first responders and others involved in traffic incident management to take actions to prepare for, cope with and recover from traffic congestion and associated delays.
New Projects 2017-2019 Biennium

Develop Analytical Tool for Ranking Existing Bridges Built using Hollow Pile Columns
$200,000
This research will result in an analytical tool for ranking WSDOT’s existing bridges built using hollow precast, pre-stressed concrete pile-columns (approximately 25 total) in order of importance for retrofit, and a retrofit method, including design procedures and details. The hollow columns pose a serious seismic risk for WSDOT, especially because some of the bridges are on major highways such as I-5, for which the consequences of a failure would be disastrous, in terms of potential loss of life, repair costs and business interruption. The primary problem is that they fail prematurely by implosion when bent into the inelastic range during a major earthquake, and the usual solution of external confinement does nothing to prevent this failure mode.

Design of Coarse Bands and Channel Shape for Stream Simulation Culverts
$215,000
The objective of this project is to evaluate the hydraulic performance and sediment transport characteristic of stream beds containing coarse bands of different layouts, cross section geometries, and grain size distributions. The study will consist of a survey of design practices for stream simulation culverts and mobile bed laboratory flume experiments. WSDOT is required by Federal Court injunction to fix a significant number of fish blocking culverts in Western WA and this research will provide a science based design criteria for stream channel bed design that are required to install coarse bands.

Best Practices of Using Shotcrete for Wall Fascia & Slope Stabilization (Phase 2)
$120,000
As a continuation to the Phase I study, the goal of this project aims to address the impeding issues (i.e. cracking, curing practices, short & long-term performance, LCA & cost benefits, etc.) identified in Phase I and to ensure the proper use of shotcrete for wall fascia and slope stabilization as well as other potential applications. Results of this research will provide assurances with respect to construction practices, field performance, and long-term durability as well as test methods and acceptance guidelines in the field for shotcrete application.

Field Analysis of Wood Guardrail Post Decay
$92,000
Building upon the Phase 1 study, this project would utilize the stress wave device developed in Phase 1 to collect non-destructive, real time data about wood decay condition on wood guardrail posts. The information would be used to help improve guardrail design guidance, specification and construction practices, and ultimately reduce the occurrence of post deterioration in the future.

Statewide Road Weather Information System (RWIS) Plan
$175,000
The research will provide direction on future RWIS deployment, implementation and overall sustainment activities; determine a set of data and criteria for winter snow and ice fighting performance measurement; and provide accurate and timely roadway weather data to users and stakeholders. The cost of a typical RWIS station is $60,000 and this project will ensure future deployment will be done in a strategic manner and RWIS assets managed within the agency asset management plan.
Simulation Environment to Optimize Public Investments in Electric Vehicle Charging Infrastructure
$100,000
The proposed research will provide a decision support tool that WSDOT staff or contractors can use to evaluate how well different investments in EV charging infrastructure will support WSDOT’s goals of improving transportation efficiency, equity, and sustainability. The tool will help WSDOT staff to prioritize investments in EV charging infrastructure, and to estimate how much, if any, public support is needed to encourage private sector actors to invest in such stations. A single DCFC station typically costs between $100,000 and $150,000. Thus, the benefit to WSDOT will exceed the cost if this research allows the agency to avoid even one wasted investment in a DCFC station.

Recycled Asphalt Pavement (RAP) Reset
$170,000
Enhance WSDOT Hot Mix Asphalt (HMA) materials selection, mix design process, and standard specifications to responsibly optimize the use of recycled materials based on recent readily implementable technology in collaboration with stakeholders for improved pavement performance. Benefits to include improved mix design, improved pavement life, improved environmental conditions (reduction in greenhouse gases and carbon footprint) and cost savings.

WSLIQ Update: Probabilistic Liquefaction
$85,000
The objective of the proposed research is to develop, implement, and test new probabilistic liquefaction hazard analysis (PLHA) procedures and to update the WSlig program to incorporate the resulting improvements. This affects the design of bridges, fish passage structures, walls, etc., especially in western WA where earthquake ground motions are larger. The research will improve WSDOT's designs for liquefaction effects on structures and reduce conservatism for routine liquefaction design. Reduced design conservatism would translate into significant project cost reduction.

Aviation Emergency Response Airport Infrastructure Resource Manual
$125,000
This research will compile information related to the physical layout and infrastructure attributes of selected airports in Western Washington. This information is critical in case of a large earthquake so responders can get the airports up and running quickly to bring in needed supplies and emergency personnel if, and, when the big one hits.

Open Sidewalks: Standardizing and Maintaining Sidewalk Connectivity Data for Accessible Trip Planning
$175,000
Produce high quality, high granularity sidewalk map data & automate the process of identifying the connectedness of sidewalk segments, with an initial goal of improving automatic routing services for pedestrians. This project will fill a longstanding gap in data about key roadway attributes associated with sidewalks.

Enhancing Roadway Safety Using Real-Time DSRC Messaging in the Connected and Autonomous Vehicles Context
$250,000
This project will benefit WSDOT in the following ways: (1) Enhanced traffic safety through the dedicated short-range (radio) communications (DSRC) supported technologies; (2) Implementation of DSRC-related technologies will put WSDOT in a competitive position among state DOTs by demonstrating a will to take on challenging, cutting-edge research problems to help usher in the imminent era of connected and autonomous vehicles; and (3) Findings and deliverables of this project will likely have implications on
access to future funding of connected vehicle-related projects as national agencies such as USDOT will be more likely to support agencies with a proven track record in this research field, as well as those that have already established the necessary supporting infrastructure (i.e., DSRC-enabling devices).

**Ferry Vessel Propeller Wash Effects on Scour at Terminal Structures**
$175,000
Recent studies have shown an alarming trend of scour at various ferry terminals due to vessel propeller wash. This research will measure vessel propeller wash and its dissemination through the water towards the soil around structures. The research will produce guidelines & modeling techniques for estimating the effects of prop wash onto the surrounding soils & how to account for scour over the design life of the terminal structure.

**Advancing Multimodal Safety through Pedestrian Risk Reduction**
$150,000
The project will develop pedestrian risk models for identifying pedestrian risk locations at urban & suburban locations throughout the WSDOT roadway network. The locations identified will be analyzed & potential contributing factors selected so lower cost pedestrian counter measures can be applied.

**Asset Management: Bridge Elements Deterioration Rates & Curves for WSDOT Bridges**
$60,000
The scope of this research is to develop deterioration rate curves for specific WSDOT bridge elements. These curves will allow the bridge office to assign cost to existing bridge elements and assign monetary value to efficiently prioritize their bridge inventory for timely repair, rehabilitation, and replacement.

**Preparing for Traffic Signal Operations in a Multi-modal Connected and Autonomous Vehicle Environment**
$200,000
The proposed research is expected to recommend an approach for how WSDOT can prepare to control signal operations in a Connected Vehicle environment to yield significant reductions in traffic congestion while considering sustainable life-cycle cost implications. It also will allow WSDOT to find the best locations for implementation of connected corridors with highest expected pay-offs and least technological issues.

**CAVFS Compost Blanket Application**
$200,000
To evaluate the stormwater treatment performance of a modified-VFS (3-inch compost-blanket application) compared to a standard CAVFS installation. Stormwater mgmt. is a major expense and concern for WSDOT and this is continuing research to help alleviate the problem.

**Hot Mix Asphalt (HMA) Reset**
$230,000
Update WSDOT asphalt pavement policy, mix design, and specifications to reflect what has been learned in-state and nationwide over approximately the last 15 years. This effort is termed an “HMA reset”. This would lead to improved pavement performance by reducing the risk of early pavement failure from mix design or construction issues and an associated reduction in cost.
Preventing Animals from Accessing the Highway at Intersecting Roadways
$200,000
This research will tell us whether electrified concrete is effective, and, therefore represents a new tool for reducing wildlife-vehicle collisions and increasing the ecological sustainability of the highway system. The old cattleguard type system is not effective for all animals.
Area 3: Strategic Highway Research Program (SHRP2), Every Day Counts (EDC), State Transportation Innovation Council (STIC) and Accelerated Innovation Deployment (AID)

The second Strategic Highway Research Program (SHRP2) is a national partnership of key transportation organizations: the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the Transportation Research Board. Together, these partners conduct research and deploy products that will help the transportation community enhance the productivity, boost the efficiency, increase the safety, and improve the reliability of the Nation’s highway system.

SHRP2 has undertaken more than 100 research projects designed to address critical state and local challenges, such as aging infrastructure, congestion, and safety. The research results are available in a series of effective solutions that will improve the way transportation professionals plan, operate, maintain, and ensure safety on America’s roadways.

In 2009, the Federal Highway Administration (FHWA) launched Every Day Counts (EDC) in cooperation with the American Association of State Highway and Transportation Officials (AASHTO) to speed up the delivery of highway projects and to address the challenges presented by limited budgets. EDC is a state-based model to identify and rapidly deploy proven but underutilized innovations to shorten the project delivery process, enhance roadway safety, reduce congestion and improve environmental sustainability.

Proven innovations and enhanced business processes promoted through EDC facilitate greater efficiency at the state and local levels, saving time and resources that can be used to deliver more projects for the same money. By advancing 21st century solutions, the highway community is making every day count to ensure our roads and bridges are built better, faster and smarter.

The Federal Highway Administration (FHWA) State Transportation Innovation Council (STIC) Incentive program provides resources to help support this state-based initiative. A STIC brings public and private transportation stakeholders together to evaluate innovations and spearhead deployment in their state. This puts each state’s transportation community in the driver’s seat when it comes to selecting innovations that best fit their program needs and then putting those innovations into practice quickly.

The STIC Incentive program offers federal funding of up to $100,000 per state, per federal fiscal year to support or offset some of the costs of standardizing innovative practices in a state transportation agency or other public-sector STIC stakeholder. STICs consider innovations from a variety of sources, including but not limited to FHWA’s Every Day Counts initiative to deploy proven technologies and practices, the American Association of State Highway and Transportation Officials’ Innovation Initiative, and the second Strategic Highway Research Program

Similar to STIC, FHWA’s Accelerated Innovation Deployment (AID) Demonstration program also provides funding assistance to state DOT’s to accelerate implementation and adoption of the proven innovations to deliver highway transportation projects faster, better and smarter.

The following are the programs under SHRP2, EDC, STIC, AID and the WSDOT projects underway under each program:
Strategic Highway Research Program (SHRP2)
The second SHRP program has undertaken more than 100 research projects designed to address critical state and local challenges, such as aging infrastructure, congestion, and safety. The research results are available in a series of effective solutions that will improve the way transportation professionals plan, operate, maintain, and ensure safety on America’s roadways. SHRP2 builds on the success of the first SHRP program.

Roadway Lighting & Crashes
$100,000
Examines how roadway lighting characteristics affect safety performance & driver behavior for different types of roadways and intersections. The outcome of this research will inform decisions about the use of road lighting as a safety countermeasure and cost-sensitive lighting design standards and policies that can improve safety and lower energy consumption.

Examination of Episodic Speeding on Washington State Roads
$100,000
Examines speeding behaviors in Washington state, to collate speeding episodes across drivers and trips, and to determine if specific aspects of the infrastructure are consistently associated with higher speeds, once other factors (e.g., personality factors, demographics, time-of-day) have been accounted for. The outcome of this research will result in designs that have a higher potential of driver speed selection being consistent with design intent.

I-5 Accessibility Analysis in Lynwood
$300,000
This project will look at the growing travel demand on an already congested segment of I-5 and reduce transportation-related greenhouse gas emissions in the Lynnwood area by producing a collaborative mobility plan to increase auto, transit, bicycle and pedestrian accessibility to the Lynnwood Transit Center and future light rail station.

R01A – 3D Utility Data Repository
$150,000
This project will to deploy/implement R01A tools on select projects for subsurface utility engineering (SUE) investigation and development of a data repository using the collected 3D data. Three components would be explored with respect to R01A: 1) develop a stand-alone 3D data repository using a combination of Bentley’s ProjectWise for engineering content management and ESRR’s ArcGIS software for geospatial storage, 2) explore incorporating 3rd party 3D utility data into WSDOT’s GIS/CAD model (under development) to make 3D project as-built and field measured data available within the GIS platform, and 3) explore opportunities to utilize the on-line utility permitting system “GoeNoesis” to incorporate and access collected 3D data.

R15B – Identifying and Managing Utility Conflicts
$100,000
This SHRP2 Implementation assistance project will be used by design teams and utility engineers for utility conflict identification and provides a common platform for communicating utility conflicts between agency and utility company stakeholders. The R15B project includes training modules through the TRB research team that will be presented to and used by WSDOT Region design teams and utilities coordinators.
R26 – Training for High Volume Roadway Maintenance Treatments
$100,000
The program will develop and provide just-in-time training materials specifically designed for WSDOT, primarily in electronic formats that the agency can use for training District Supervisors and others involved in delivering preservation programs. The R26 product will be incorporated into the P1 Maintenance efforts.

Regional Operations Forum (L36)
$100,000

Reliability Data and Analysis Tools
$100,000

State Transportation Innovation Councils (STIC)
The STIC Network is about establishing a group of representatives from various levels of the highway community in each State to comprehensively and strategically consider all sources of innovation.

GIS Connector Project
$30,000
This STIC project proposal focuses on the completion of a tool set (Bentley Project Wise GIS Connector) and workflow where design teams provide intelligent elements in the project data files, and construction inspection validates each element. The validation results would populate a statewide geospatial database. This database can be directly accessed in real time by any GIS interface tool and queried for available elements and their associated characteristics. The end product is a GIS database of engineering CADD data (ROW, drainage features, etc.) for the purpose of asset management. The tool will benefit multi-agencies (State DOT, counties, cities, etc.) with their asset management. The project will develop the tool set, data workflow, and maintenance methods necessary to implement with a pilot project.

Programmatic Agreement - Bull Trout BO
$100,000
The USFWS and the Corps of Engineers have both been approached by FHWA and WSDOT Local Programs and are in agreement at this time with a proposal to develop a Programmatic Biological Opinion that would eliminate the need to consult on Bull Trout on a project-by-project basis. The Programmatic Biological Opinion would be based on WSDOT’s existing Programmatic with USFWS, but unlike WSDOT’s it would provide Endangered Species Act coverage only for Bull Trout. This approach minimizes the time and cost to prepare a Biological Opinion. For this project WSDOT would hire a consultant to develop the required documentation, which is estimated to cost $105,000. This amount would include funding for the consultant to develop the Programmatic Biological Opinion, as well as to spend the time working with USFWS and the Corps of Engineers to gain final agreement on the Programmatic.

County Bridge Bundle Project
$100,000
This WASTIC project will evaluate and determine the best approach to utilizing bridge bundling in Washington. The project will look at which types of projects would benefit from bundling, which project delivery method should be utilized and how permit streamlining could be implemented. The project will develop a recommendation for a pilot program for funding consideration. This project also provides an opportunity to implement several Every Day Count initiatives including Design-Build, Programmatic Agreements, Use of In-Lieu Fee and Mitigation Banking, Accelerated Bridge Construction, Improving Collaboration & Quality Environmental Documentation, Regional Models of Cooperation and potentially other applicable EDC initiatives.
Ground Penetrating Radar
$100,000
This WASTIC project will evaluate the use of Ground Penetrating Radar (GPR) to assess, evaluate and measure the density of new asphalt pavement for quality assurance of freshly placed pavement density. Newer technology in the area of GPR has shown the ability to measure the density of new asphalt pavements quickly and with better coverage than the nuclear density gauge currently used. If trial projects are successful with the GPR, the goal would be to integrate the GPR as a new method to determine asphalt density on pavements within the next five years.

Accelerated Innovation Deployment (AID)
The AID Demonstration program provides funding as an incentive for eligible entities to accelerate the implementation and adoption of innovation in highway transportation.

Practical Solutions Project
$750,000
The Washington State Department of Transportation (WSDOT) will employ established lean methodology to streamline processes and knowledge management practices to disseminate and institutionalize new practices. This project will work with targeted capital projects to align knowledge resources with WSDOT’s new Practical Solutions strategy. The practical solutions strategy involves identifying effective low cost solutions to address safety, mobility and asset management. Practical Solutions is now being incorporated into least cost planning and practical design for the development of transportation projects and strategies are also being applied to the operations and maintenance of the existing transportation network. The expected result is improved efficiency, productivity, and cost savings as new practices are integrated into all aspects of transportation lifecycle. Savings from applying practical solutions to capital projects may also be used for other needed transportation projects.

Light-Emitting Diode (LED) Adaptive Roadway Lighting on Interstate 5
$1,000,000
The project will convert a 7-mile interstate lighting system to a Light-Emitting Diode (LED) Adaptive Roadway Lighting System and provide an opportunity to encourage public acceptance of adaptive, reduced, and curfew lighting while expanding the use of adaptive controls as part of a larger statewide LED conversion project. It will improve the sustainability, efficiency, and service life of the system. The new lighting system has been installed and is operational in an area on I-5 near Olympia WA. Monitoring performance and collecting data on motorist’s experience as well as energy savings will occur over the next two years. This project is expected to result in significant operational and maintenance savings.
Area 4: Transportation Pooled Fund (TPF) Projects

The following Transportation Pooled Fund projects are either led by or WSDOT is participating in:

**TPF-5(035) Pacific Northwest Snowfighters**
Create regional specifications for winter maintenance chemicals and optimize application rates. Also, the agency utilizes a qualified products list.

**TPF-5(099) Evaluation of Low Cost Safety Improvements**
Over 30 states are participating in this project to develop priority strategies and evaluations of new low cost safety improvements suggested by NCHRP Report 500 Guidebooks and Guidance for Implementation of the AASHTO Strategic Highway Safety Plan.

**TPF-5(181) Transportation Research Program Management Database (RPMD)**
Research into state needs regarding tracking and monitoring research projects. Also, develop a modified California DOT RPMD for use in other states.

**TPF-5(114) Roadside Safety Research Pooled Fund**
This is an eleven state and FHWA pooled fund project led by WSDOT. The goal is to identify research on roadside safety features and to collaborate on emerging federal policy and standards that affect traveler safety.

**TPF-5(198) Urban Mobility Pooled Fund**
The objectives of the pooled fund are: 1) Form a steering committee, which will decide on the congestion reduction methods to include in the new methodology and which cities will be included in study; 2) Continuously refine the Congestion Index to include multimodal operations or regional operational improvement programs (i.e., ITS service, incident detection and response, travel demand management, transportation systems management, and computerized signal control coordination); 3) Maintain existing congestion measures; 4) Add additional urban areas; and, 5) Respond to requests for mobility data.

**TPF-5(241) Western States Rural Transportation Consortium**
This consortium promotes innovative partnerships, technologies and educational opportunities to facilitate and enhance safe, seamless rural travel throughout the western U.S.

**TPF-5(255) Highway Safety Manual (HSM) Implementation Pooled Fund**
The objectives of the study are (1) to advance ongoing efforts by lead states to implement the HSM, and (2) to expand implementation to all states. This study would be coordinated with other ongoing and planned implementation activities sponsored by the American Association of State Highway & Transportation Officials (AASHTO), FHWA, and Transportation Research Board (TRB), including National Cooperative Highway Research Program (NCHRP) Project 17-50 "Lead States Initiative for Implementing the Highway Safety Manual."

**TPF-5(276) Full-Scale Shake Table Testing to Evaluate Seismic Performance of Reinforced Soil Walls**
The objective of this project is to perform numerical studies and use the LHPOST to investigate the dynamic performance of one or two full-scale (7m) reinforced soil retaining walls constructed using realistic materials and methods.
TPF-5(284) Near Road Air Quality
This study objective is to address current and future challenges resulting from newer EPA requirements associated with national air quality standards that will result in tighter emission standards and their influence on transportation project development.

TPF-5(291) Development of an SPS-2 Pavement Preservation Experiment
The Strategic Study of Structural Factors for Rigid Pavements is the most comprehensive ongoing concrete research effort in the nation. It represents the largest a national investment of on the order of $15-20 million for the construction, sampling and testing, monitoring, and analysis of concrete pavements.

The Montana Department of Transportation (lead state) is partnering with the Center for Health and Safety Culture (CHSC) within the Western Transportation Institute (WTI) at Montana State University to: 1) conduct research to solve specific culture-based traffic safety problems; 2) create training and education materials to enhance workforce understanding and application of traffic safety culture methods; and 3) provide technology transfer of best practices in traffic safety culture methods to all stakeholders. Together, these efforts will support the transformation of traffic safety culture within the families, communities, and organizations of the participating states.

TPF-5(312) Western Maintenance Partnership Pooled Fund (TPF 5-312)
The participating agencies provide a focused look at maintenance, and will partner with the Western Association of State Highway Transportation Officials (WASHTO) states to share experiences, innovations, expertise and solutions to the complex management of highway assets. Maintenance issues include policies, practices, specifications, field investigations, applied research, materials, and training. It is expected that a roundtable and sharing of field experience via hands on demonstration of features will be key elements of the annual meetings.

TPF-5(313) Technology Transfer Concrete Consortium
The purpose of this pooled fund project is to identify, support, facilitate and fund concrete research and technology transfer initiatives. Contributions support the pooled fund and allow one WSDOT materials engineer to attend semi-annual meetings.

TPF-5(315) National Accessibility Evaluation Pooled Fund
This project has two main objectives. First, it will create a new, national Census block-level accessibility dataset that can be used by partners in local transportation system evaluation, performance management, planning, and research efforts. Second, it will produce and publish a series of annual reports describing accessibility to jobs by driving and by transit in metropolitan areas across America.

TPF-5(319) Transportation Management Center (TMC) Pooled Fund
The goal of the TMC Pooled Fund is to assemble regional, state, and local transportation management agencies and the FHWA to: 1) identify human-centered and operational issues; 2) suggest approaches to addressing identified issues; 3) initiate and monitor projects intended to address identified issues; 4) provide guidance and recommendations and disseminate results; 5) provide leadership and coordinate with others with TMC interests; and 6) promote and facilitate technology transfer related to TMC issues nationally.

TPF-5(322) HOV (High Occupancy Vehicle)/Managed Use Lane Systems Pooled Fund
The goal of this study is to assemble regional, state, and local agencies, service providers, and FHWA to: 1) identify issues that are common among agencies that manage roadway lanes as a tool to reduce congestion and optimize facility usage; 2) suggest projects and initiatives to advance practice; 3) select and initiate
projects intended to address identified issues; 4) identify recommendations and potential solutions, and 5) disseminate results.

**TPF-5(323) Underwater Noise Attenuation Experimental Methods Pooled Fund**
These studies will test experiment attenuation treatments for structural pile driving to address environmental regulations protecting listed species and marine mammals.

**TPF-5(330) No Boundaries Roadway Maintenance Practices Pooled Fund**
This is a pooled fund research effort that provides a forum for State DOTs to share their maintenance innovations with each other, support technology transfers activities and develop marketing and deployment plans for the implementation of selected innovations. Resources will be provided for implementing the innovations that includes travel, training and other technology transfer activities.

**TPF-5(331) Toolkit for Deployment of Alternative Vehicle and Fuel Technologies Pooled Fund**
The objectives of this project are twofold: 1) implementation of 8-10 regional/topic-based workshops for state and local transportation agencies, their state counterparts and stakeholders to discuss the current status of alternative vehicle and fuels technologies in their specific region; and 2) development of a “toolkit” for state and local transportation agencies who are interested in advancing the deployment of alternative vehicle and fuels technologies. The toolkit will be tailored to the specific needs of each region.

**TPF-5(332) Performing Forensic Evaluations of LTPP Remaining Sections Before They Leave Service**
Investigates LTPP test sections as they prepare to go out of service, capturing data on exactly why the section failed and had to be removed from service. This may entail trenching and coring, measuring lift deflection, and potential lab testing of field samples for materials characteristics. The pooled fund will pay the costs to perform the forensic evaluation in the field and limited lab testing from field samples.

**TPF-5(337) Avalanche Research Pooled Fund**
The study’s mission is to support collaborative research efforts in the field of avalanche hazard assessment and mitigation, with the goal of improving the safety, efficiency, and quality of control efforts, along with providing better information gathering and analysis techniques and seamless integration of new technologies to further these goals.

**TPF-5(343) Roadside Safety Research for MASH Implementation**
The objective of the Roadside Safety Pooled Fund Program is to provide a cooperative approach to conducting research on roadside safety hardware. Emphasis will be placed on assisting State DOTs with their implementation of MASH and addressing other roadside safety needs of common interest.

Another objective of this pooled fund research to provide each participating state an opportunity to send a representative to an annual meeting to collaborate with other state DOT safety engineers to assess best practices, new regulatory issues, risk management strategies, and other matters pertaining to roadside safety. Participation in this meeting is funded through the state’s annual program contribution.
TPF-5(349) Western Alliance for Quality Transportation Construction (WAQTC) Pooled Fund
The Western Alliance for Quality Transportation Construction (WAQTC) is a partnership of western state and federal highway agencies in cooperation with industry associations. This organization was formed to assure qualified personnel for the transportation construction workforce as well as act as a unified body to meet today’s challenge of improving the transportation products and services that we provide to the public. WAQTC is focused in three main areas: Standardizing test methods (WAQTC, AASHTO, and ASTM), accreditation of the Transportation Technician Qualification Program (TTQP), and working together on national programs of significance including research, training, and technology deployment. This pooled fund will fund the continued development and refinement of the TTQP, including maintaining and revising the six existing WAQTC TTQP training and certification courses in coordination with member state agencies; distributing training materials, including training manuals, PowerPoint presentations, and written and practical exams, to member states; maintaining the WAQTC website; and developing and presenting proposed revisions and new standards to the AASHTO Subcommittee on Materials. http://www.waqtc.org/

TPF-5(352) Recycled Materials Resource Center (RMRC) – 4th Generation
The RMRC-4G pooled fund will focus on recycled bound materials (e.g., asphalt and Portland cement concrete), unbound materials (e.g., base, sub-base, structural fill), the highest and best use of these materials in transportation infrastructure, stabilization of materials using industrial byproducts (e.g. fly ash, lime, other binders) and other related research projects. Factors that affect long-term physical and environmental performance of recycled materials will be evaluated using scientific principles and applied research.

TPF-5(353) Clear Roads Pooled Fund (TPF 5-353)
This Clear Roads project will maintain its focus on advancing winter highway operations nationally through practical, practice-ready research related to materials, equipment and methods. State departments of transportation are aggressively pursuing new technologies, practices, tools, and programs to improve winter highway operations and safety while maintaining fiscal responsibility.

TPF-5(355) Stormwater Testing and Maintainability (STTC) Center Pooled Fund
The STTC will verify the maintainability performance characteristics and costs of innovative commercial-ready stormwater treatment technologies that have the potential to improve protection of water quality and the environment. STTC will provide designers, owners, and permittees of stormwater treatment technologies with an independent and credible assessment of the technology they are purchasing or permitting. The STTC will also have the capability to test three technologies simultaneously for compliance with the Washington Department of Ecology’s Technology Assessment Protocol – Ecology (TAPE) guidelines.

TPF-5(357) Implementing ShakeCast Across Multiple State Departments of Transportation for Rapid Post-Earthquake Response Pooled Fund
ShakeCast, short for ShakeMap Broadcast, is a fully automated system for delivering specific ShakeMap products to critical users and for triggering established post-earthquake response protocols. This collaborative effort will bring participating DOTs into full ShakeCast operation for post-earthquake assessment of state and local bridge inventories. The project will provide a mechanism to actively engage representatives from state DOTs with the common interests in implementing and expanding the application of ShakeCast technologies to improve emergency response capabilities.

TPF-5(358) Wildlife Vehicle Collision Reduction & Habitat Connectivity
The scope of the project is proposed to include the following items: 1) develop, select and provide support for priority research of new wildlife mitigation solutions; 2) explore and encourage collaboration for research and implementation of wildlife mitigation measures by state DOTs, land management agencies, wildlife
agencies and their partners; and 3) convene an annual meeting of the Pooled Fund’s Technical Advisory Committee and invited guests.

TPF-5(361) Strategic Highway Research Program (SHRP) Naturalistic Driving Study Pooled Fund: Advancing Implementable Solutions
This study will support groundbreaking research using data from the second Strategic Highway Research Program (SHRP 2) Naturalistic Driving Study (NDS). The goal is to advance the development of implementable solutions for state and local transportation agencies with an emphasis on the broad areas of Safety, Operations, and Planning. This will be a Federal Highway Administration (FHWA) led pooled fund with very active participation from member state and local agencies to determine the research that is undertaken.

TPF-5(365) National Hydraulic Engineering Conference
The purpose of this pooled fund is to hold three hydraulic engineering conferences (2018, 2020, & 2022) for collaboration, technology deployment, and best practice information sharing among transportation hydraulic engineers and practitioners to improve the state of the practice of transportation hydraulic engineers and practitioners.

TPF-5(366) Long Term Pavement Performance (LTPP) Forensics (Flexible Pavement)
The intent is to investigate LTPP test sections as they prepare to go out of service, capturing data on exactly why the section failed and had to be removed from service. This may entail trenching and coring, measuring lift deflection, and potential lab testing of field samples for materials characteristics. The pooled fund will pay the costs to perform the forensic evaluation in the field and limited lab testing from field samples. Additional work will include building tracking lists of remaining sites, contacting states for updates on site status and planning action for sites about to go out of service.

TPF-5(371) Evaluation of Low Cost Safety Improvements Pooled Fund
The goal of this research is to develop reliable estimates of the effectiveness of the safety improvements that are identified as strategies in the National Cooperative Highway Research Program (NCHRP) Report 500 Guidelines. These estimates are determined by conducting scientifically rigorous before-after evaluations at sites in the U.S. where these strategies are implemented.

1441 - Fostering Innovation in Pedestrian and Bicycle Transportation Pooled Fund Study
This soon to be TPF study will supplement existing research venues and fill an important missing gap by emphasizing short turnaround practical research on issues immediately relevant to practitioners. It will address national goals and priorities identified through input from local, state, and national partners in FHWA’s Strategic Agenda for Pedestrian and Bicycle Transportation.
Area 5: National Research Programs

WSDOT participates in the following National Research Programs.

National Cooperative Highway Research Program (NCHRP)
Administered by the Transportation Research Board (TRB) and sponsored by the member departments (individual state departments of transportation) of the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration (FHWA), NCHRP was created in 1962 as a means to conduct research in acute problem areas that affect highway planning, design, construction, operation, and maintenance nationwide.

Three problem statements submitted by WSDOT staff were selected for funding in 2018 –

B-07 – Methods for State DOT’s to Reduce Greenhouse Gas Emissions from the Transportation Sector

B-08 – Applications and Use of Crash Severity Safety Performance Functions

C-15 – Benchmarking Study of Software for One-Dimensional, Nonlinear Seismic Response Analysis with Pore Water Pressure Generation

Transportation Research Board (TRB) Core Program
WSDOT invests in TRB’s Core Program, which provides a forum for transportation professionals to identify, facilitate, and share research and information related to transportation. The contribution is based on distributing the cost of the approved budget to all sponsors. The state DOT share is prorated to the amount of State Planning and Research funding received.

Our investment provides the framework for a significant amount of collaboration on transportation research. The Core Program supports the TRB Standing Committees, Transportation Research Information Database, Research in Progress database, Research Needs Statements database, State DOT visits, and planning for the TRB annual and mid-year meetings.
## Addendum: SPR Work Program Areas and Activities (WSDOT Organizations)

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<td>Division Director Contact</td>
<td>Kerri Woehler</td>
<td>Jeff Carpenter</td>
<td>Jay Alexander</td>
<td>Doug Vaughn</td>
<td>Daniela Bremmer</td>
<td>Ron Pate</td>
<td>Barb Chamberlain</td>
<td>Brian Lagerberg</td>
<td>Patty Rubstello</td>
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### Multimodal System Planning
- Washington Transportation Plan 2035 - Phase 2: x
- Statewide Modal Plan Integration: x
- Corridor and Network Planning: x
- Prioritization and Programming of Capital Improvement Projects: x
- Planning Policy Development and Guidance: x
- Planning Analysis and Plan Development: x

### Planning Partnerships
- MPO Program Management: x
- Tribal & Regional Coordination: x
- Enhanced Local Collaboration: x
- Community Engagement Plan Implementation: x

### System Performance and Analysis
- Performance & Accountability Analysis: x
- Financial Planning: x
- Economic Forecasting & Analysis: x
- Modeling & Analysis: x

### Data Planning and Application
- Travel Data Analysis: x
- Federal Annual Reporting of Vehicle and Financial Statistics: x
- Crash Data Analysis: x
- GIS and Roadway Data: x
- Management and Administration: x

### Research
- Program and Research Management: x
- WSDOT Library: x
- Research Projects: x
- Pooled Fund Studies: x

This table shows primary responsibilities for each WSDOT organization corresponding to their Program T funding. It is not a full representation of each organization’s involvement in SPR activities.
Addendum: Statewide Transportation Improvement Program

Objectives and Functions

WSDOT’s Local Programs (LP) Division develops and manages the Statewide Transportation Improvement Program (STIP). The STIP is a four-year, fiscally constrained prioritized program of transportation projects, compiled from local and regional plans, along with the 2007-2026 Statewide Long-range Transportation Plan. These projects have been identified through local, regional and state planning processes, as the highest priority for the available funding to preserve and improve the state’s transportation network. The STIP lists state and local projects that have secured federal funds and/or are regionally significant over the next four years. The 2017-2020 STIP includes more than 1,000 projects statewide, representing Washington’s highest priority projects.

Included in the STIP are state and local roadway, bridge, safety, bicycle, pedestrian, and public transportation (transit) projects, funded with revenues from federal, state, and local sources. The STIP is developed by WSDOT working in cooperation with Metropolitan Planning Organizations, Rural Transportation Planning Organizations, county lead agencies, Tribes, and others, as applicable. Projects included in the STIP are funded by a combination of federal, state, and/or local funds per 23 CFR 450.

Activities, 2017-2019 Biennium

- Continue to work with FHWA, FTA, MPOs, RTPOs, and other partners in meeting the federal STIP requirements (from four-year programming to fiscal constraint by year).
- Develop, prepare and submit the 2018-2021 and 2019-2021 STIP to FHWA and FTA for approval.
- Develop monthly amendments for the STIP as applicable throughout this timeframe.
- After federal approval, continue to provide public access via the web http://www.wsdot.wa.gov/LocalPrograms/ProgramMgmt/STIP.htm. Provide annual training, best practices and on-call training for the web-based STIP. Provide on-call assistance and troubleshooting as issues arise with the program for all users.
- Continue to review and update the public involvement process, as applicable.
- Research and coordinate for inclusion of performance measures, as applicable.
Addendum: Future SPR Work Program Development

Development of the SPR Work Program for 2019-2021

This future work program will be built within the appropriation levels established by the legislature. The draft work program reviewed by federal partners in May will be based on the WSDOT’s budget request to the legislature. The final work program submitted to federal partners in June will, if possible, reflect the appropriation levels and priorities as passed by the legislature. WSDOT needs to have an approved work program in place by July 1 in order to proceed with forecasted set of activities. If timing does not allow for the final work program to be adjusted for legislative decisions, then the first update that is prepared will reflect the required legislative changes.

- February 2019 – outline
- April 2019 – draft
- June 2019 – final