

APPENDIX D

TECHNICAL MEMORANDUM #4

FOCUS AREAS AND SCENARIO PLANNING

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BACKGROUND

One of the purposes of the Washington Transportation Plan Phase 2 - Implementation (Phase 2) is to carry out recommendations from the 2035 Washington Transportation Plan 2035 (Phase 1).

Phase 1 includes more than 100 non-prioritized recommendations. The Steering Committee agreed that the Phase 2 Project Team should narrow down the 100 recommendations to a few big, bold ideas (Focus Areas) that need further policy work. The Project Team proposed Action Items for each Focus Area that should achieve the Vision statement. The Project Team also proposed a list of partners from the public and private sector that will work on each Action Item. This work is expected to start in 2018 and last several years. WSDOT will facilitate and track progress.

This technical memorandum describes:

- Draft Focus Areas, Action Items, and potential partners who will help WSDOT accomplish the Action Items.
- The overall process and steps the Project Team used to develop the Focus Areas and Action Items.
- The types of scenario planning exercises that the Project Team conducted.

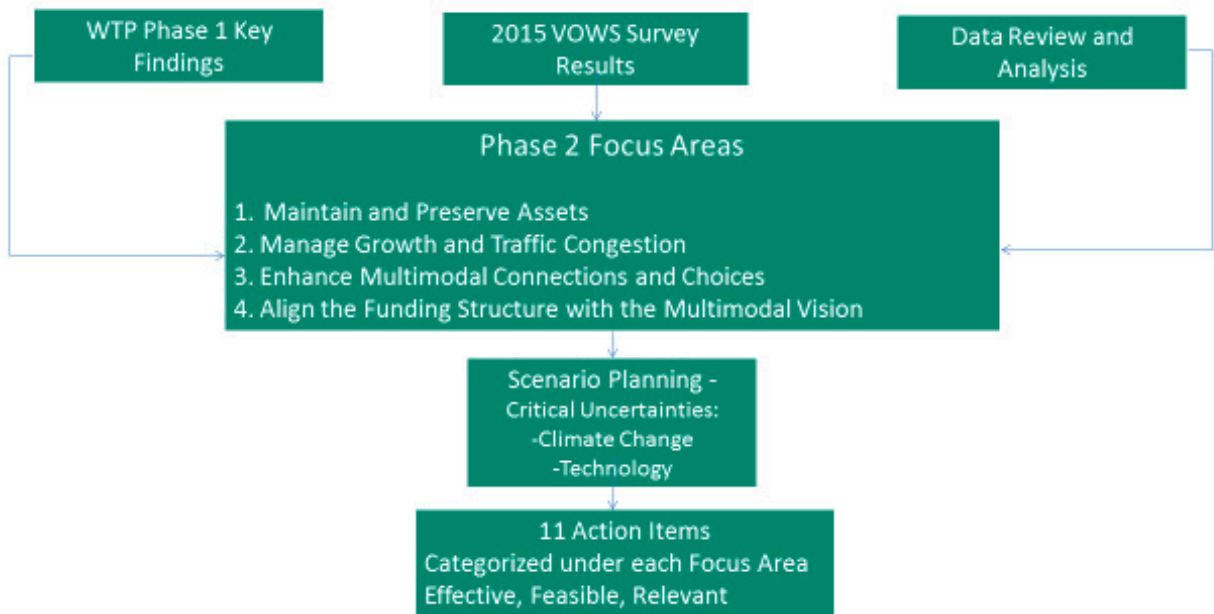
STEPS TO DEVELOP FOCUS AREAS AND ACTION ITEMS

Step 1

The Project Team conducted a workshop at the June 22, 2016 Advisory Group Meeting. The Project Team presented 12 potential Focus Areas to the Advisory Group based on an analysis of:

- Key findings from Phase 1.
- Key issues and data from transportation plans, studies, and reports developed after Phase 1. See Technical Memorandum #3—Current and Future Conditions of the Statewide Transportation System for more information.
- Policies (laws, rules, guidance, executive orders). See Technical Memorandum #1—Vision, Policies, Goals for more information.
- 2015 Voice of Washington State (VOWS) Survey.

Figure 1 - Reaching the Vision: Focus Areas and Action Items



The Project Team asked the participants to:

- Break into groups and review the 12 potential focus areas to:
 - Decide if the focus area is still relevant.
 - Decide if the focus area should receive heavy emphasis in the plan.
 - Document recommendations.
- Regroup and:
 - Report out recommendations.
 - Review each group’s findings.
 - Discuss the most important Focus Areas.
 - Vote on which Focus Areas should be further explored in Phase 2.

The following table detail the 12 potential focus areas with verbatim Phase 1 recommended actions.

Potential Focus Area A: Criteria to Prioritize Investments Recommended Actions from Phase 1
WSDOT should maintain an ongoing public transportation planning process, working with local transit agencies, cities, and counties to identify public transportation corridors of statewide significance. Designation would influence prioritization of the speed and reliability of transit service on designated corridors.
Apply practical design concepts and operational and system management strategies to ensure that transportation improvements are cost-effective and appropriate for the situation.
Partner with the military to prioritize transportation investments that support military related economic activities.
Support the location of transportation facilities, such as transit only lanes, where transit operation in the corridor is critical to maintaining and improving mobility, particularly in urban centers.
Provide expanded travel options by prioritizing projects that improve pedestrian and bicyclist connections to transit, including park-and-ride lots serving regional express bus routes, ferries, and other medium-distance transportation services.
Ensure that the project prioritization process for the transportation improvement program includes objective project evaluation metrics that incorporate the costs and benefits of non-motorized travel. Plan and design bicycle and pedestrian facilities to accommodate future growth in these modes, address safety needs, and avoid future capacity constraints.
WSDOT should coordinate and work with the Transportation Improvement Board, County Road Administration Board, Freight Mobility Strategic Investment Board, and other regional and local transportation partners to establish an implementable set of performance measures and objectives for all state-funded transportation investments.
Include representatives from the public health field in transportation planning to ensure direct and indirect health impacts are considered in transportation investment prioritization. Provide greater connectivity to health services, more consideration of Human Service Plans, and the options for increased physical activity in transportation planning.

Potential Focus Area B: Change Funding Structure Recommended Actions from Phase 1
Counties currently have the authority to impose a local fuel tax, but it is not implemented. This option is authorized as a percent of the state tax rate and requires a public vote.
Transit agencies should explore the feasibility of funding transit system development and operating costs from land value capture, that is, by taxing the additional value of adjacent properties that result from improved transit accessibility.

Potential Focus Area B: Change Funding Structure Recommended Actions from Phase 1
Develop a sustainable statewide strategy for funding transportation that articulates the economic and social benefits of the transportation system, more clearly defines the role of the State in funding non-highway modes, and provides funding options that are flexible and equitable, balancing user-pay with ability-to-pay approaches.
Explore new, sustainable funding opportunities that keep pace with growth and inflation and are not affected by decreases in motor fuel consumption. Options may include further expansion of toll roads and express toll lanes, road usage charges, congestion pricing, employer-funded transportation choices, strategic private sector partnerships, and value-capture strategies.
We recommend increased state funding for paratransit service and a concerted effort to help the state and transit agencies better leverage Federal funding to achieve a more equitable reimbursement for paratransit service.

Potential Focus Area C: Enhance Multimodal Choices Recommended Actions from Phase 1
Identify key multimodal transportation corridors in local, regional, and state land use and transportation plans.
Use Coordinated Human Services Transportation Plans and enhanced regional coordination to efficiently and economically increase the productivity of travel options for the growing elderly population.
Seek enhanced collaboration and coordination between state agencies, regional transportation organizations, and public transportation providers to efficiently and economically increase the productivity of travel options for people with special needs. This may include offering educational opportunities to move people from paratransit services to public bus routes, where possible.
The Legislature and transit agencies should consider the needs of rural areas that currently lack transit, ride sharing, or vanpool options, by enhancing coordination opportunities with human service transportation, and possibly with school transportation providers.
Transit agencies should increase the use of small, on-demand transit vehicles, which may be more cost effective than large buses in many areas of the state.
Identify funding and other sources of state support for paratransit.
Promote “Complete Streets” and Safe Routes to Schools policies and implementation for appropriate arterials and collectors within urban growth areas

Potential Focus Area D: Enhance Tourism and Economic Vitality Recommended Actions from Phase 1
<p>WSDOT should collaborate with the Department of Commerce, the Washington Tourism Alliance, and smaller commercial service airports to explore the feasibility of maintaining or expanding flight offerings between smaller commercial service airports to “hub” airports.</p>
<p>Design, plan, and fund transportation infrastructure that supports tourism, such as non-motorized trail networks, scenic byways, intermodal connections for travelers, and enhanced traveler communication systems.</p>

Potential Focus Area E: Relieve Congestion Recommended Actions from Phase 1
<p>To address congestion and improve reliability of travel times, the state should invest in and collaborate regionally with cities, counties, and transit agencies to maximize the use and effectiveness of HOV lanes, HOT lanes, and transit lanes by managing system demand and efficiently operating the system. At a minimum, this will necessitate coordination with local and regional transit providers to understand operational needs. In some instances, the state may need to invest directly in transit service within a corridor.</p>
<p>Improve the performance and safety of non-access controlled highways by seeking opportunities to close and consolidate multiple access points in urbanized areas. In urbanizing areas, require access to properties through frontage roads rather than individual access points.</p>

Potential Focus Area F: Maintain and Preserve Investments Recommended Actions from Phase 1
<p>Local transportation plans should specifically protect difficult-to-site facilities, such as airports and rail corridors, from encroachment by incompatible land uses. These plans should also provide for the future expansion of such facilities.</p>
<p>Emphasize the importance of roadway system preservation -- along with operating efficiently, managing demand, and adding capacity strategically for continued economic growth and vitality.</p>
<p>Fare differentials should be used to encourage a shift from auto passengers to those who walk or ride on board in order to maximize person-carrying capacity of the WSF fleet.</p>
<p>Establish a long-term system reinvestment strategy that includes criteria to replace or remove infrastructure from service at the end of its life.</p>
<p>Couple land use policy, siting decisions, demand management, and transportation needs to leverage the value of existing and future transportation infrastructure investments.</p>
<p>Support state and regional economic development goals in identified opportunity zones, industry sectors, and innovative partnership zones.</p>

Potential Focus Area G: Accommodate Planned Growth Recommended Actions from Phase 1	
	Support strategies and investments to better link people and commerce, such as transit-oriented development, bicycle and pedestrian networks, park and ride lots, and broadband access.
	Cities and counties should couple land use policy, siting decisions, demand management, and transportation needs to leverage the value of existing infrastructure investments and future transportation investments, such as: (1) Create incentives to concentrate jobs and housing close to transit hubs; (2) Make corridor improvements holistically, including local multimodal street connectivity improvements that support bicycle, pedestrian, car, and truck travel to and from the corridor; (3) Require siting of selected government facilities, such as schools or social services offices, to be accessible by travel modes that meet the needs of the users
	Integrate freight delivery into plans for livable communities, ensuring that freight and small package delivery is an integral component of complete streets, providing efficient access to businesses and residences even in dense, walkable communities.
	WSDOT transportation strategies and investments should align with state environmental goals, air quality and water quality laws, and land use policies including the Growth Management Act, by supporting local efforts to site growth within existing Urban Growth Areas (UGAs) identified in compliant county and city comprehensive plans; encourage infill development in transit-supported corridors; and provide more transportation options.
	Couple land use policy, siting decisions, demand management, and transportation needs to leverage the value of existing and future transportation infrastructure investments.
	Support state and regional economic development goals in identified opportunity zones, industry sectors, and innovative partnership zones.

Potential Focus Area H: Seamless Intermodal System Recommended Action from Phase 1
Encourage partnerships among the state, counties, cities, and transit operators to develop and implement strategies to improve connections between cities, counties, and regions for both freight and passenger modes. Approaches may range from improving multimodal connections, such as completing gaps between adjacent service areas and synchronizing schedules among different service providers, to adding capacity strategically for all modes, including public transportation, by completing the system improvements underway today.
Build on the success of those regional transportation planning agencies that engage and form partnerships with tribal governments, and encourage all MPOs and RTPOs to partner with tribal governments to increase access, mobility, and safety on and to tribal lands.
Similarly, support efforts to improve cooperation and coordination between tribal and non-tribal providers of public transit services.

Potential Focus Area I: Improve Traveler Safety Recommended Action from Phase 1
Invest in sidewalks and other facilities, such as improved crossings, to provide a safer transportation experience for pedestrians.
Also, given recent and anticipated future increases in bicycling, walking, and motorcycling for trips of all purposes, Washington needs to more fully integrate safety considerations into the long-range planning process to help deliver infrastructure improvements that support the safety and mobility for users of these modes.
Develop collaborative, systematic, corridor-based approaches, involving local jurisdictions and rail operators, to address safety and connectivity issues associated with at-grade rail crossings
Implement Results Washington strategies to reduce bicyclist and pedestrian fatalities to zero by 2030.
Embrace the 4 E's of traffic safety (education, enforcement, engineering, and emergency medical services) when planning and implementing transportation safety projects.
Implement the road safety strategies recommended in Target Zero.
The state, city and county agencies with authority for setting speed limits should periodically review posted speed limits in areas or corridors that have experienced changes in development density, traffic volumes, or where specific safety concerns have been identified.
Accelerate efforts to reduce serious injuries and fatal crashes on the roads with highest incident rates, including rural and tribal roads, by implementing low cost safety improvements, and combining engineering with enforcement and public education to achieve the most beneficial impact.
Continue to reduce airspace impacts due to wildlife and man-made structural obstructions to critical airspace near airports.

Potential Focus Area I: Improve Traveler Safety Recommended Action from Phase 1
Identify networks of redundant or alternative routes and choices to maintain mobility, beginning first with corridors critical to commerce and emergency services.
Accelerate efforts to reduce serious injuries and fatal crashes on the roads with high incident rates, including rural and tribal roads.

Potential Focus Area J: Improve Freight Movement Recommended Action from Phase 1
Explore incentives for freight carriers to travel on ferries during off-peak hours.
Help establish an all-weather transportation system, prioritizing investments that will minimize closures affecting agriculture, freight dependent industries, and tourism. Each region should define a core of all-weather state and local roads that meet designated state standards for weight and safety, and improve access from agricultural storage facilities to long-haul routes via county roads.
Through FMSIB or legislative prioritization, establish a cross-jurisdictional approach to maintain and improve connections from producers to distributors for freight to capture those pathways that may be important at a regional or statewide level but not significant or fundable by an individual city or county.
Identify gaps and improve intermodal connectivity for freight movement (e.g., ship to rail or truck, and air to truck).
Maintaining connectivity to each of the state's 75 ports remains important to the state economy.

Potential Focus Area K: Environment (Reduce VMT/Adapt to Climate Change) Recommended Action from Phase 1
Promote bicycling and walking as viable transportation options and as a means to improve public health and maintain environmental quality by identifying and addressing multimodal system gaps, such as sidewalk or trail connections.
Support work to identify areas at high risk of environmental damage due to spills or releases from crude oil shipments, as indicated in Executive Directive 14-06.
Make significant progress toward meeting statewide greenhouse gas reduction goals through vehicle and fuel technology, system management and operations, land use, transportation options, and pricing strategies. Identify both near- and long-term actions appropriate for implementation at both state and regional levels.
Continue to promote employer compliance with Washington's Commute Trip Reduction program, which supports alternatives to driving or driving alone including car/vanpools and telecommuting.

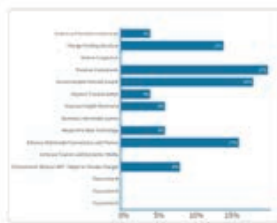
Potential Focus Area K: Environment (Reduce VMT/Adapt to Climate Change) Recommended Action from Phase 1
Use a risk-based assessment approach to continue to build and retrofit transportation facilities and services to withstand severe seismic events, flooding, and other disasters.
Enhance Regional Catastrophic Preparedness and continuity of operations by further defining and communicating regional approaches to coordination and collaboration that will strengthen Washington transportation systems against risks associated with catastrophic events.
Recognize and support transit's role in emergency response efforts, such as evacuating large numbers of people or transporting those with special needs.

Potential Focus Area L: Respond to New Technology Recommended Action from Phase 1
Use technology and research to reduce costs and improve and extend the life of infrastructure.
Increase use of technology for all travel modes to reduce fatalities and serious injuries, such as “red light” cameras and roadside-based collision-avoidance or deterrence systems.
Plan for and accommodate the emergence of more energy efficient modes of transportation, such as electric-assisted bicycles and shared ride services, by encouraging collaboration between planning staff across modes and jurisdictions and promoting greater flexibility in the use of transportation funds.
Anticipate, monitor, and plan for changes in technology that affect how people and goods are transported, such as telework, autonomous vehicles, car-sharing, bike-sharing, and mobile device applications that impact travel behavior and choices.
Partner with Federal agencies, private sector and university researchers, and utility companies to develop energy efficient transportation systems that use advanced communication software and manufacturing techniques developed in our state
Continue to develop and implement ITS improvements, such as signal coordination, integrated traveler information, and customized scheduling and trip planner information.
Encourage transportation agencies to make data available to software application developers to develop and improve real time travel and scheduling information. Develop and maintain traveler information for interregional public transportation connections.

Figure 2 - What focus areas should we emphasize in WTP Phase 2?



What focus areas should we emphasize in WTP Phase 2?



Response options	Count	Percentage
Criteria to Prioritize Investments	2	4%
Change Funding Structure	7	15%
Relieve Congestion	0	0%
Preserve Investments	10	21%
Accommodate Planned Growth	9	19%
Improve Traveler Safety	2	4%
Improve Freight Movement	3	6%
Seamless Intermodal System	0	0%
Respond to New Technology	3	6%
Enhance Multimodal Connections and Choices	8	17%
Enhance Tourism and Economic Vitality	0	0%
Environment (Reduce VMT / Adapt to Climate Change)	4	8%
Focus Area M	0	0%



Step 2

WSDOT modal and regional planners met on September 22, 2016 and advised the Project Team on the viability of the focus areas.

Step 3

- The Project Team consulted with WSDOT internal experts, Advisory Group members, and the Steering Committee and drafted these four proposed focus areas:
- Maintain and Preserve Assets
- Manage Growth and Traffic Congestion
- Enhance Multimodal Connections and Choices
- Align the Funding Structure with the Multimodal Vision

Step 4

The Steering Committee endorsed the draft focus areas and agreed that scenario planning exercises would be an appropriate method to test the resiliency of Action Items to accomplish each Focus Area.

Step 5

The Project Team researched methods of scenario planning. WSDOT is required by Governor Inslee’s Executive Order 14-04 to use scenario analysis during development of Phase 2. Scenario planning is a tool to examine how alternative policies, plans, and programs may affect a community or region. Agencies, companies, and organizations conduct scenario planning exercises to prepare for a range of potential futures because they cannot predict the future, but they can plan for it. Scenario planning provides a framework for thinking about the future in a way that best positions the state to achieve its vision for transportation. The table below describes common types of scenario planning.

Table 1: Common Types of Scenario Planning

Type of Scenario Planning	Description	Applications
Baseline (Predictive Planning)	Projecting historical trends into the future with the assumption that the future will strongly resemble the past. Answers the question, “where will we be in x years if the future looks like the past?”	Best applied when key issues and problems are known and understood, or when the future is expected to look a lot like the past. Associated with trend lines and projections of the past into the future. Most effective for near-term plans or slow-growing areas or stable issues.
End State (Normative) Planning	Emphasis is on identifying a “point in time” future, often a preferred future reflecting community values and desires. Answers the questions, “Where do we want to be in x years?” or “What will it take to accomplish x?”	Best used to articulate a preferred future, often in the form of a vision for the future. This fixed point in time then becomes a target, with plans and investments focused on how to realize that vision. Best applied as a longer range planning tool.
Exploratory (Contingent) Planning	Identifying critical uncertainties and plausible future scenarios resulting from those uncertainties as a means of minimizing blind spots and creating more resilient policies and investments. Answers the question, “what are the biggest driving forces we’re likely to face and how are they likely to affect our ability to meet our goals?”	Best used when the future is uncertain and volatile, and when those uncertainties are highly consequential. Benefits from multiple disciplines with overlapping interests in an issue or outcome. There are no “wrong answers” - value is in the exploration of “what if” questions and the vulnerabilities and opportunities that are revealed. Good for identifying indicators to monitor changing conditions over time and recognize emerging risks and opportunities.

Step 6

The Project Team chose Exploratory Planning which differs from the types of scenario planning that Metropolitan Planning Organizations (MPOs) use:

- MPOs predict traffic and land use based on outputs from regional travel demand models. MPOs propose recommendations to improve baseline performance conditions and include potential regional investments, assumed distribution of population and employment, and estimated costs. This type of planning is detailed in 23 CFR 450.324¹.
- Exploratory planning does not use model outputs or include investments. It identifies critical uncertainties and then describes plausible, not projected, futures.
- The goal of exploratory planning is to determine necessary actions to accomplish the vision under whichever scenario comes to pass given an uncertain future.
- Exploratory planning provides a meaningful opportunity for community engagement with key stakeholders.
- Between 2016 and 2040 major disruptions may occur that will affect the demand for travel, the design and construction of infrastructure, and the way that we pay for transportation, among many other things.

Step 7

The Project Team led scenario planning exercises to identify plausible futures and propose resilient action items with subject matter experts from the following WSDOT offices/divisions:

- Bridges and Structures
- Capital Program Development and Management
- Design
- Economic Analysis
- Emergency and Disaster Management and Response
- Environmental Services
- Finance
- Local Programs
- Planning Policy and Partnerships
- Public Transportation
- Strategic Assessment

1 1 23 CFR 450.324 describes how MPOs can voluntarily conduct scenario planning to develop multiple scenarios when developing metropolitan transportation plans. This type of planning relies on regional travel demand models.

- Traffic Operations
- Tribal and Regional Coordination

The subject matter experts identified seven uncertainties as candidates for the two critical uncertainties. Exhibit 3 show the seven uncertainties that are likely to affect delivery of Phase 2.

Figure 3: Description of Seven Uncertainties

Public Trust	<ul style="list-style-type: none"> •Public trust in government deteriorates, creating more divisiveness and legislative inaction •Public trust in government improves, fostering more agreement and legislative cooperation
Federal Role	<ul style="list-style-type: none"> •Federal regulatory roles harden, dictating priorities to states that differ from our own •Federal regulatory roles devolve, transferring more authorities to states
Funding	<ul style="list-style-type: none"> •Funding for transportation increases and becomes more stable and predictable •Funding for transportation decreases and becomes more volatile and competitive
Climate Change / Natural Disasters	<ul style="list-style-type: none"> •Magnitude 8.9 earthquake in WA necessitates strategic disinvestment of state facilities •Adaptation to climate change effects results in greater resiliency of state facilities
Technology	<ul style="list-style-type: none"> •Technology advances dramatically increase system safety and lower system life cycle costs •Cybersecurity attacks undermine public trust in connected / automated vehicle applications
Economic Stability	<ul style="list-style-type: none"> •Global instability disrupts the US economy, resulting in protracted economic instability •Modest but stable economic growth characterizes the US and global economy
Trade & Freight	<ul style="list-style-type: none"> •Trans-Pacific Partnership results in increased demand for trade between WA and Asia •Opposition to the TPP stifles trade between WA and Pacific Rim nations for decades

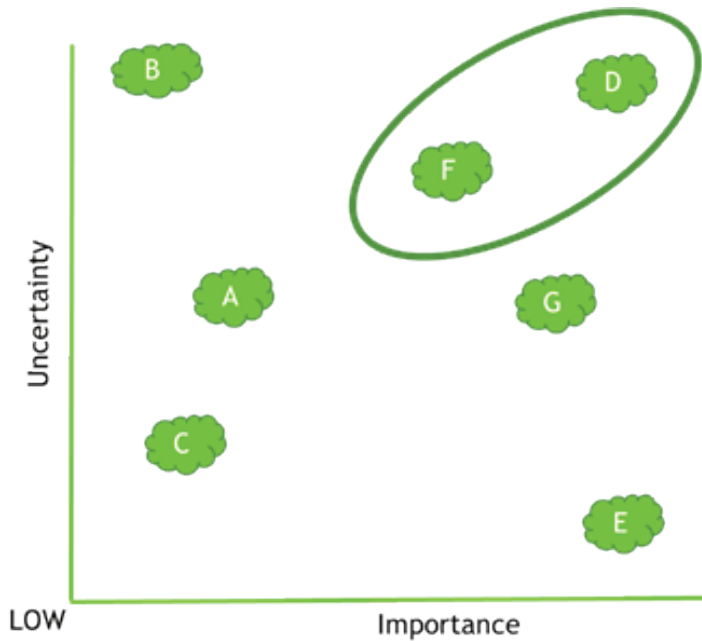
What if...?

Then the subject matter experts were asked to agree on only two critical uncertainties – the things that keep them up at night. The two critical uncertainties are the two factors with the greatest degree of uncertainty and the most impact on the ability to achieve the vision.

The two critical uncertainties were:

- Technological innovations
- Climate change/natural disasters

Figure 4: Illustration of a Critical Uncertainty



High Uncertainty, High Importance

Step 8: October 26, 2016 WTP Advisory Group Workshop

Recap of Breakout Group Exercises

The Advisory Group was divided into four units, each representing a different scenario. Each unit had two primary tasks to accomplish: explore implications associated with its critical uncertainties and identify potential risks or opportunities and any associated strategies for its scenario. This recap provides an overview of the exercise, a brief summary of the results, and some key takeaway messages.

Breakout Exercises

Background for the exercises explained the role of critical uncertainties in framing the scenarios to be developed. There are many uncertainties associated with the delivery of any long-range planning activity. Six uncertainties in particular are likely to affect delivery of the Washington Transportation Plan (WTP), as depicted in Figure 5.

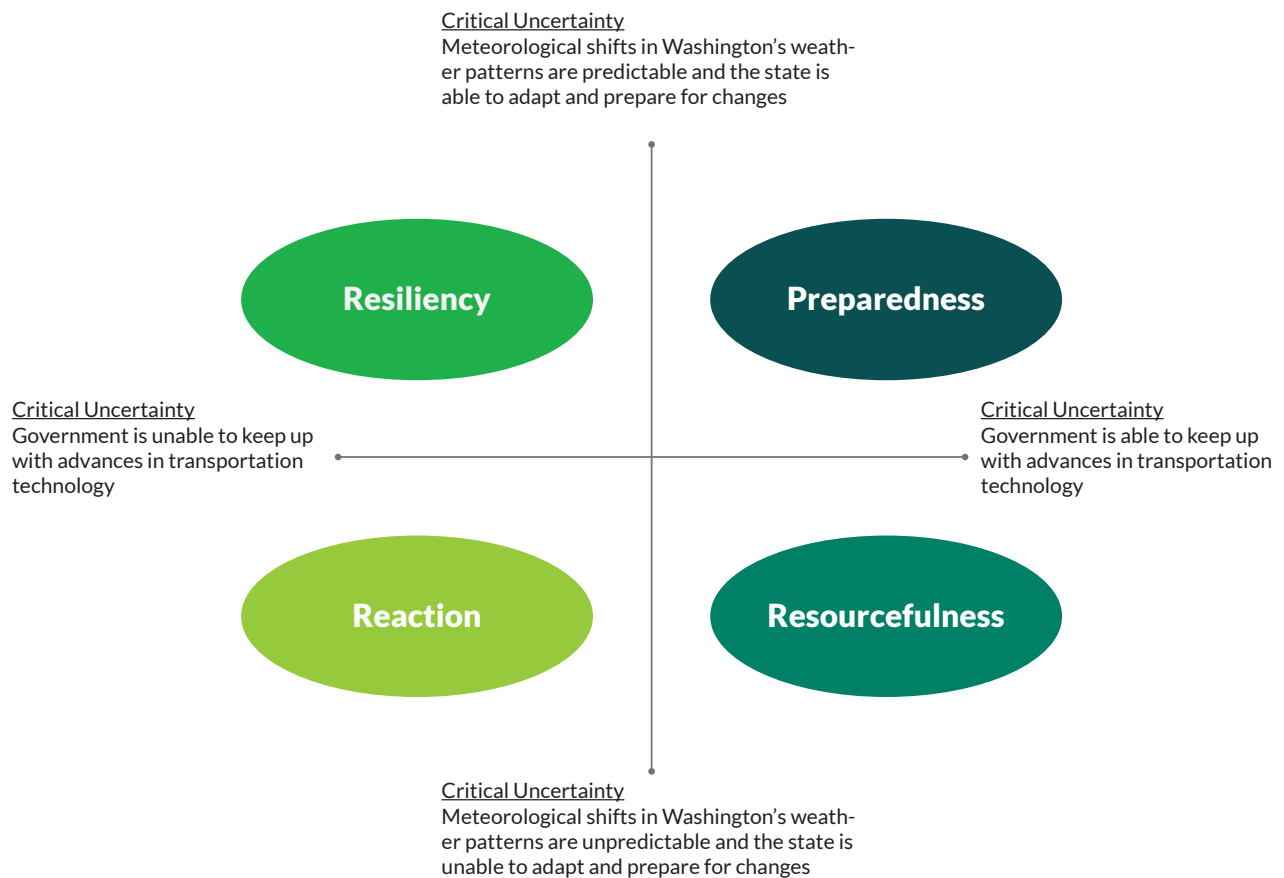
Figure 5: Six Uncertainties



For purposes of this scenario planning exercise, the two most critical uncertainties are used to bound development of four distinct but internally consistent scenarios. Prior to the Advisory Group meeting the WSDOT Technical Team and Steering Committee identified Climate Change / Natural Disasters and Technological Advances as the two factors with the greatest degree of uncertainty and the most impact on the ability to achieve the WTP vision. These are the two uncertainties used to frame the Advisory Group exercises.

As explained in the workshop background presentation, an optimistic outcome and a pessimistic outcome for each of the two uncertainties intersect in a matrix that defines the parameters for four different scenarios. This is illustrated in Figure 6. For one uncertainty, Technological Advances, the two endpoints can be summed up as “government keeps up” and “government doesn’t.” For the second uncertainty, Climate Change / Natural Disasters, the two endpoints can be summed up as “we’re lucky” and “we’re not.” These four endpoints framed the subsequent Advisory Group exercises.

Figure 6: Critical Scenarios Matrix



Each of the four units were assigned one quadrant of this matrix to explore in detail. The upper left quadrant was Scenario 1, the upper right quadrant was scenario 2, the lower right quadrant was Scenario 3, and the lower left quadrant was Scenario 4.

In the first exercise, each unit discussed what kind of future might be described by their two uncertainties. For example, those assigned the upper left quadrant, Scenario 1, discussed what it might be like in the future if the northwest is spared the worst aspects of climate change or natural disasters and is able to adapt and prepare for those changes while at the same time government fails to keep up with rapidly emerging advances in transportation technology. Conversely, those assigned the lower right quadrant, Scenario 3, discussed what the future might be like if government is able to keep up with those rapidly emerging advances in transportation technology but is also faced with increasingly extreme and unpredictable impacts due to climate change or natural disasters.

This discussion served as a warm up to the more substantive scenario development discussion and helped establish a shared understanding of the possible future each group was to describe.

The scenario development exercise began with each person taking a few minutes to write down their early thoughts about likely risks or opportunities posed by their scenario framework. They were asked to identify any strategies they might come up with to address those risks or opportunities. They were also asked whether this applied to any of the four WTP focus areas. The intent was to seed the ensuing discussion with some initial ideas to help the conversation get started. Everyone was encouraged to continue adding to their lists throughout the exercise as new ideas came to them, in case the exercise concluded before all ideas were on the table (Figure 7).

Figure 7: Scenario Development Exercise


WTP Advisory Group
Scenario Development – Group 4

Individual Worksheet

Critical Uncertainties:

- ❖ Government is unable to keep up with advances in transportation technology
- ❖ Meteorological shifts in Washington’s weather patterns are unpredictable and the state is unable to adapt and prepare for changes

Describe the potential risk or opportunity posed by this scenario	Describe potential actions or measures to address this risk or opportunity (if known)	Applies to WTP Focal Areas (check all that apply)			
		Maintain and Preserve Assets	Manage Growth and Traffic Congestion	Enhance Multimodal Connections & Choices	Change Funding Structure



After a few minutes of individual thought each group discussed their various ideas and began building scenarios framed by their two uncertainties and populated with risks and opportunities that could be associated with that future. In addition to their individual worksheets and flip charts, each table had a plot of its scenario quadrant that also listed the other WTP focus areas and the additional uncertainties for reference. They were advised to not limit themselves to discussions only of transportation or to the four focus groups if other issues and ideas emerged.

The exercise concluded with a report out from each group describing its scenario and the emerging narrative of that future. Each group summarized some of the key risks and opportunities associated with its scenario and implications for the future of travel and the WTP if those uncertainties come to pass.

Results

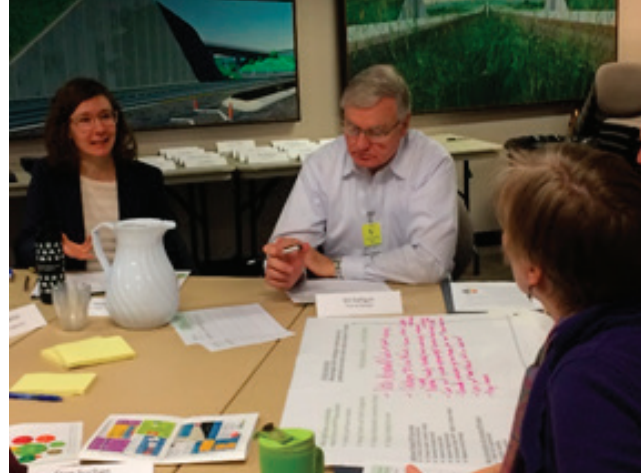
This section provides a high level recap of each scenario, recognizing that the narrative for each is just starting to take shape. These ideas will provide important content for the four resulting scenarios.

Scenario 1 – Resiliency

- Meteorological shifts in Washington’s weather patterns are predictable and the state is able to adapt and prepare for changes.
- Government is unable to keep up with advances in transportation technology.

Discussion of a future in which government is able to adapt and prepare for climate changes revealed a double-edged sword. On the one hand, better predictability will make it easier for government to prepare and respond to disasters such as wildfires. However, the northwest could also be a refuge for tens of thousands of people fleeing unlivable conditions elsewhere. This could put unexpected pressures not just on transportation and demand for travel services but also on community land use patterns and other government services. Such a future could also herald a change in viable agricultural crops which raises questions as to what changes will be needed for the existing freight system to adequately respond to new demands from the agricultural sector.

Government’s inability to keep up with advances in transportation technology poses lots of risk and potential for missed opportunities. As government loses ground in managing evolving system needs the private sector is ready to step in – for a price. Meanwhile the insurance industries are in turmoil, operating in a heavily-regulated world that has not kept pace with technological changes already underway. Private sector recruitments of knowledgeable government IT staff further incapacitate government. Disruptions undermine transit as private sector advances generate faster, cheaper travel options. While that can be a good thing it can also eliminate services for the most vulnerable populations for whom the private sector options are not viable, thus exacerbating unequal access issues. Technological advances in urban areas outpace those in rural, further exacerbating equity concerns.



Scenario 2 – Preparedness

- Meteorological shifts in Washington’s weather patterns are predictable and the state is able to adapt and prepare for changes.
- Government is able to keep up with advances in transportation technology.

Even though this scenario seems to present the best of all worlds, it recognizes that in order to focus on climate change adaptation and keep pace with emerging transportation technologies government has to let go of something else. What is it that is dropped in order to meet these challenges? Difficult choices will have been made, and it is not certain government can provide the same levels of service everywhere at once. This raises questions as to who benefits first, or the most. And are regulations the right vehicle for managing the change in a rapidly evolving world or are incentives more effective? Will the existing regulatory environment hamper government’s ability to be nimble and responsive?

Many opportunities are presented in this future. Even as large numbers of climate change refugees flock to Washington State, coordinated land use plans direct most of that growth into cities where alternatives to driving are most viable. In some cases it even enables efficient non-motorized travel where it didn’t exist before due to increased densities and mix of uses. Practical design, practical solutions, practical regulations are key to realizing the promise and minimizing the risk associated with this future. It is also key to earning and keeping the public’s trust in a time of great uncertainty and upheaval.

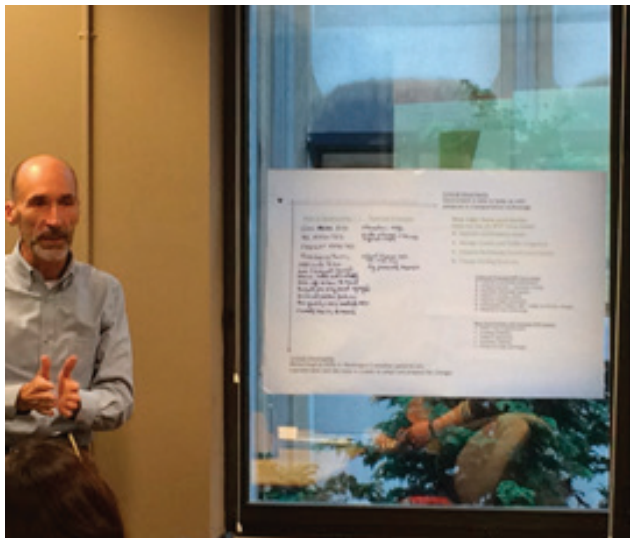
Scenario 3 – Resourcefulness

- Meteorological shifts in Washington’s weather patterns are unpredictable and the state is unable to adapt and prepare for changes
- Government is able to keep up with advances in transportation technology.

This future was summed up as “it was the best of times; it was the worst of times.” The ability to keep up with technological advances is useful in responding to the erratic and extreme climate changes or

impacts of natural disasters. If government is able to keep up then it opens a range of opportunities for data sharing, collaboration, and better information for the traveling public. It enables government to adopt earlier some technologies that can increase the cost-effectiveness of its asset management and preservation programs. It will not be able to do this, though, without some modifications to the regulatory environment that are cumbersome and inefficient; some significant streamlining of regulations will be necessary to be as adaptive and responsive as will be needed to harness the technological opportunities.

This will be compounded by the increasing impacts of extreme weather events that can turn the entire state's economy upside down. These changes are likely to have significant ripple effects throughout the economy and thus, government budgets and programs. This reduction in purchasing power will come at the same time as massive system failures occur, leaving government in a weakened position to respond. This could incentivize the use of drones; unmanned aerial vehicles can access locations when roads and highways are destroyed. In short, government's ability to keep up with advances in transportation technology could help minimize the magnitude of impacts likely to result from increasingly unpredictable and extreme weather events or natural disasters.



Scenario 4 – Reaction

- Meteorological shifts in Washington’s weather patterns are unpredictable and the state is unable to adapt and prepare for changes
- Government is unable to keep up with advances in transportation technology.

This scenario reduces the capacity of all levels of government to function effectively, resulting in reduced coordination and communication, a free-for-all in terms of standards, and no common goals as each community struggles to reconcile their own issues and priorities. Government’s inability to keep pace with advances in technology means that private sector businesses start calling the shots for the state’s transportation system. Unintended consequences of CV/AV deployment result in greater sprawl, undermining local land use plans and making it harder to support transit and active transportation. There are too many players making too many promises; government is as likely to find itself in a bad technology partnership as it is a good one. This fosters growing public distrust of government and dissatisfaction with the system, resulting in wild swings at the voting booth and in public policy.

Meanwhile the increasingly erratic and extreme weather events are playing havoc with the transportation system. A more resilient system would have deployed a wider array of measures to increase system redundancy and ensure greater resiliency but by the time that is apparent, it is too late. An economy in freefall produces an inadequate transportation budget, and difficult choices about where to focus very limited resources result in distinct winners and losers in terms of access. On the upside, the inability of government to respond to challenges pushes greater self-sufficiency among communities as people work together to rebuild their communities and economies.

Major Takeaways

Several meta-themes emerged from the four scenario discussion summaries, ideas that were common to all four scenarios.

- **Equity.** Each of the groups described ways in which inequality could be exacerbated by the uncertainties associated with their scenarios. Winners and losers. Haves and have-nots. Urban versus rural. Each group expressed concerns about how to ensure equity in the distribution of services, the mitigation of impacts, and the access to opportunities posed by its scenario.
- **Regulations.** The role of regulations in an uncertain world is ... uncertain. On the one hand there is opportunity for government to use its regulatory power to minimize impacts and ensure equity; on the other hand, regulations can have unintended consequences. In a rapidly changing world they can keep government from being as nimble and responsive as it needs to be.
- **Collaboration.** Between different levels of government or between government and private sector, collaboration was an important factor in each scenario. Opportunities to increase collaboration and coordination were matched by risks associated with decreased collaboration and increased balkanization and the spillover effects on public trust towards government.

- **Land Use.** Whether depicting a more optimistic future or a more pessimistic one, each scenario described implications for the way Washington's communities grow and with that, the kind of transportation system needed to support those communities and the travel choices available to people.
- **Adaptability.** The importance of adaptability, of government being able to respond and be nimble in its decision-making even in the face of uncertainties and rapidly changing situations – this was central to each of the four scenarios. Adaptability equates to responsiveness; the more dire the circumstances the more critical the need for adaptation and a responsive government. It also corresponds to resiliency and reliability, essential characteristics for the state's transportation system in the face of an uncertain future.

Step 9

The focus areas and scenario planning provide the organizing concepts and broader context for Phase 2, respectively. Using these efforts and the conditions, performance expectations, and needs for the transportation system, the Project Team established a list of action items. While WSDOT is the lead agency for Phase 2, these action items affect all publicly-funded transportation agencies across the state. WSDOT has engaged with the community, particularly with the groups listed as partners, since 2015. The action items identify willing partners that will assist WSDOT in implementing policy recommendations to reach the vision. The Project Team developed action items for each focus area that:

- Are tied to policy recommendations from Phase 1.
- Are based on conditions, performance expectations, and needs.
- Accomplish the Vision.
- Are the list that the partners will address first. While the list may seem short for a long-range planning effort, many of these action items are major undertakings that will take years to accomplish. As partners accomplish action items, new action items will be developed to replace completed ones.
- Are backed by data collection and analysis

Step 10

The Project Team developed:

- A simple ranking system for each proposed action item to show if it is robust across each of the four scenarios as shown in Exhibit 1.5. Action items that were robust under multiple scenarios received priority.
- Up to three action items for each focus area.
- Background information for each action item.

- Steps to accomplish each action item.
- A list of potential partners that will help WSDOT accomplish each action item.

Table 8: Robustness Checklist

Focus Areas	Scenarios			
	Resiliency	Preparedness	Resourcefulness	Reaction
MP1	✓	✓	✓	✓
MP2	?	✓	✓	?
MG1	✓	✓	✓	✓
MG2	✓	✓	✓	✓
MG3	x	✓	✓	x
EC1	x	✓	x	x
EC2	✓	✓	✓	✓
EC3	x	✓	✓	x
FS1	✓	✓	✓	x
FS2	x	✓	x	x
FS3	✓	✓	✓	✓

Focus Area: Maintain and Preserve Assets

Action Item MP1: Maintain, preserve, and operate assets to meet desired performance on multimodal transportation systems before funding expansion projects.

Background: There is inadequate funding to both maintain and expand the transportation system.

Action Steps:

- Identify funding streams from all levels of government that feed into maintenance, preservation, operations, and capacity expansions.
- Work with all parties involved to establish desired performance for multimodal transportation systems.
- Better align funding streams with performance through Practical Solutions to focus on maintenance, preservation, and operations.

Partners to complete MP1: Regional transportation planning organizations, metropolitan planning organizations, County Road Administration Board, Washington State Association of Counties, Association of Washington Cities, Washington Public Ports Association, Freight Mobility Strategic Investment Board, Transportation Improvement Board, Washington State Transit Association, Community Transportation Association of the Northwest, pedestrian organizations, bicycle organizations, tribal governments, and WSDOT (Figure 9)

Action Item MP2: Support ways to help jurisdictions, transportation asset owners, and transportation service providers prepare for, respond to, and become resilient to emergencies and disasters

Background: Emergency and disaster response exercises have revealed gaps to achieving a unified response.

Action Steps:

- Review how planning can support efforts to address Resilient Washington recommendations and actions.
- Ensure that resource sharing and interagency emergency coordination memorandums of understanding and agreements between local, regional, and state transportation agencies are complete and up-to-date and that key personnel are aware of their existence and potential uses.
- Assess data about potential transportation needs in the event of an emergency or disaster, identify gaps and opportunities, and recommend improvements.

Partners: Governor's Office, Department of Commerce, Washington State Military Department, Federal Emergency Management Agency, Washington State Patrol, Washington State Department of Ecology, Washington State Department of Natural Resources, County Road Administration Board, Federal Highway Administration, local governments, public transportation providers, professional associations, equipment rental companies, and WSDOT (Figure 9)

Focus Area: Manage Growth and Traffic Congestion

Action Item MG1: Promote transportation-efficient communities by coordinating state agency technical assistance to enhance planning's link to land use at all levels of government, the private sector, and other organizations.

Background: Past practices have led to congestion and inefficiency across the transportation network.

Action Steps:

- Explore ways to further encourage adoption of strategies that promote transportation-efficient communities.
- Implement strategies that support efficient development patterns, designs, and access to land use.
- Share data, policy briefs, training materials, best practices, and other resources.
- WSDOT will participate in Ruckelshaus Center growth management studies.

Partners: Washington State Department of Commerce, Washington State Department of Ecology, Washington State Department of Health, Washington Clean Air Agencies, Association of Washington Cities, metropolitan planning organizations, regional transportation planning organizations, Tribal Transportation Planning Organization, public transportation providers, Washington Public Ports Association, pedestrian organizations, bicycle organizations, and WSDOT (Figure 9)

Action Item MG2: Prioritize access for people and goods instead of throughput for vehicles to improve multimodal options, livable communities, and economic vitality for people and businesses.

Background: Commonly used measurement methods for vehicle throughput ignore the number of passengers and value of goods transported.

Action Steps:

- Identify methods, data, and tools to measure access for people and goods.
- Evaluate the application of access measures in different transportation planning and decision-making processes.
- Explore connections between established levels of service and ability for condensed growth.
- Develop, disseminate, and adopt best practices for measuring access.

Partners: Metropolitan planning organizations, regional transportation planning organizations, local governments, Freight Mobility Strategic Investment Board, Transportation Improvement Board, Washington Public Ports Association, Washington State Department of Commerce, Washington State Department of Health, and WSDOT (Exhibit 9)

Action Item MG3: Research, evaluate, adapt to, and deploy technologies and innovations in all modes; share best practices.

Background: New transportation technologies and innovations frequently affect travel more quickly than government is able to keep up.

Action Steps:

- Explore plausible and desired futures.
- Research trends in emerging technologies and innovations.
- Determine related transportation system needs.
- Identify opportunities for technologies and innovations to address these needs.
- Deploy technologies and innovations or execute pilot projects to test them; provide and circulate recommendations to interested parties.

Partners: Governor's Office, Seattle Department of Transportation, Washington State Transportation Center (TRAC), Federal Highway Administration, Federal Transit Administration, Federal Railroad Administration, Federal Aviation Administration, private sector companies, and WSDOT (Figure 9)

Focus Area: Enhance Multimodal Connections and Choices

Action Item EC1: Work to achieve better travel time reliability and door-to-door multimodal connections for people of all backgrounds and abilities through continued application of Practical Solutions

Background: Unreliable travel times and poor connections between different travel modes exist throughout the state and local jurisdictions.

Action Steps:

- Propose metrics to track travel time reliability and multimodal connections for all users.
- Develop case studies and best practices for applying Practical Solutions.
- Increase our understanding of how Practical Solutions can improve reliability and multimodal connections.
- Create template for reporting the effect on travel time reliability and multimodal connections.

Partners: Public transportation providers, Washington Public Ports Association, Freight Mobility Strategic Improvement Board, County Road Administration Board, Federal Highway Administration, Federal Transit Administration, Federal Railroad Administration, Federal Aviation Administration, local governments, and WSDOT (Figure 9)

Action Item EC2: Provide transportation facilities and services to support the needs of all communities, including populations with specialized needs, those in rural areas, and those who are under-represented, under-served, or disproportionately affected.

Background: Jurisdictions and agencies are at different stages of accommodation for users with special transportation needs.

Action Steps:

- Document ongoing needs of populations with special transportation needs, those in rural areas, and those who are under-represented, under-served, or disproportionately affected.
- Determine ongoing needs of transportation service providers and asset owners to support these populations.
- Establish and document measurable strategies to improve access for these populations. For example, examine the jobs/housing balance.
- Track the implementation of strategies to provide facilities and services that support the needs of these populations; share leading practices.

Partners: Washington State Transit Association, Community Transportation Association of the Northwest, Tribal Transportation Planning Organization, local governments, non-profit organizations, public transportation providers, transportation service providers, Federal Transit Administration, and WSDOT (Figure 9)

Action Item EC3: Adopt metrics for all modes to align with performance objectives.

Background: Metrics for evaluating investments in multimodal transportation are evolving and have not yet been established in Washington.

Action Steps:

- Research evaluation methods, including identification of investments that affect active transportation.
- Establish metrics and evaluation programs.
- Determine steps for adopting metrics into policy documents.
- Recommend, implement, and disseminate evaluation metrics.

Partners: Metropolitan planning organizations, regional transportation planning organizations, local governments, Transportation Improvement Board, pedestrian organizations, bicycle organizations, Washington State Department of Health, Association of Washington Cities, and WSDOT (Figure 9)

Focus Area: Align Funding Structure With Multimodal Vision**Action Item FS1: Support funding flexibility to reduce barriers to creating an integrated multimodal system that achieves performance objectives.**

Background: Transportation funding is frequently divided up into silos that cause confusion for users (ex: separate payment methods for tolls, transit, ride hailing) and make investments in the transportation network challenging.

Action Steps:

- Identify common circumstances where restrictions exist that prevent use of available funds.
- Document opportunities and risks to providing flexibility in use of these funds.

Recommend steps to improve funding flexibility that includes links to travel time reliability, performance, connections, and modal choice.

Partners: Governor's Office, Washington State Association of Counties, Washington State Department of Commerce, metropolitan planning organizations, regional transportation planning organizations, Association of Washington Business, Washington Public Ports Association, Western Federal Lands Highway Division, local governments, pedestrian organizations, bicycle organizations, and WSDOT (Figure 9)

Action Item FS2: Work to diversify and strengthen transportation revenue sources without compromising existing indebtedness.

Background: Gas tax revenues are predicted to decrease in the future due to increased fuel efficiency and vehicles powered by alternative fuels.

Action Steps:

- Explore alternative transportation funding strategies.
- Assess how different funding methods impact users, potential transportation revenues, and existing indebtedness.
- Propose funding options that can strengthen and diversify our transportation funding structure.

Partners: Washington State Office of Financial Management, Washington State Transportation Commission, National Association of Aviation Officials, County Road Administration Board, Association of Washington Cities, Federal Highway Administration, metropolitan planning organizations, regional transportation planning organizations, private sector companies, public transportation providers, and WSDOT (Figure 9)

Action Item FS3: Address the constraints and opportunities for public-private partnership programs.

Background: Public agencies and private sector companies indicate interest in public-private partnerships generally, but few of them currently move forward.

Action Steps:

- Determine common constraints and opportunities for public-private partnerships.
- Explore options for value capture. Develop strategies to overcome or address these constraints to public-private partnerships.
- Identify areas of opportunity where public-private partnerships can address transportation needs.

Partners: Washington State Transportation Commission, Association of Washington Business, local governments, private sector companies, professional associations, Washington State Office of Financial Management, Washington Roundtable, FHWA, and WSDOT (Figure 9)

Figure 9: Partner Involvement by Action Item

Partners	Action Items										
	MP1	MP2	MG1	MG2	MG3	EC1	EC2	EC3	FS1	FS2	FS3
Association of Washington Business									●		●
Association of Washington Cities	●		●					●		●	
Bicycle Organizations	●		●					●	●		
Community Transportation Association of the Northwest	●						●				
County Road Administration Board	●	●				●				●	
Equipment Rental Companies		●									
Federal Aviation Administration					●	●					
Federal Emergency Management Agency		●									
Federal Highway Administration		●			●					●	●
Federal Rail Administration					●	●					
Federal Transit Administration					●		●				
Freight Mobility Strategic Investment Board	●					●					
Governor's Office		●			●				●		
Local Governments		●				●	●	●	●		●

Figure 9: Partner Involvement by Action Item (continued)

Partners	Action Items										
	MP1	MP2	MG1	MG2	MG3	EC1	EC2	EC3	FS1	FS2	FS3
Metropolitan Planning Organizations	●		●					●	●	●	
National Association of Aviation Officials										●	
Non-Profit Organizations							●				
Pedestrian Organizations	●		●					●	●		
Private Sector Companies					●					●	●
Professional Associations		●									●
Public Transportation Providers		●	●			●	●			●	
Regional Transportation Planning Organizations	●		●					●	●	●	
Seattle Department of Transportation					●						
Transportation Improvement Board	●							●			
Transportation Service Providers							●				
Tribal Governments	●										
Tribal Transportation Planning Organizations			●				●				

Figure 9: Partner Involvement by Action Item (continued)

Partners	Action Items										
	MP1	MP2	MG1	MG2	MG3	EC1	EC2	EC3	FS1	FS2	FS3
Washington Clean Air Agencies			●								
Washington Public Ports Association	●		●			●			●		
Washington Roundtable											●
Washington State Association of Counties	●								●		
Washington State Department of Commerce		●	●						●		
Washington State Department of Ecology		●	●								
Washington State Department of Health			●					●			
Washington State Department of Transportation	●	●	●	●	●	●	●	●	●	●	●
Washington State Military Department		●									
Washington State Office of Financial Management										●	●
Washington State Patrol		●									
Washington State Transit Association	●						●				

Figure 9: Partner Involvement by Action Item (continued)

Partners	Action Items										
	MP1	MP2	MG1	MG2	MG3	EC1	EC2	EC3	FS1	FS2	FS3
Washington State Transportation Commission										●	●
Washington Traffic Safety Commission											
Washington State Transportation Center (TRAC)					●						
Western Federal Lands Highway Division									●		