U.S. Department of Transportation

Mount Baker – Snoqualmie National Forest Alternative Transportation Feasibility Study

Phase I Final Report

May 2012

Images of the Forest from SR-542, US-2, I-90, and SR-410. Source: Volpe Center (June 2011).

John A. Volpe National Transportation Systems Center

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Mount Baker-Snoqualmie National Forest (MBSNF) is located in close proximity to the Puget Sound metropolitan area in western Washington State. The Forest is facing a number of transportation issues, such as increasing congestion and decreasing availability of parking, which may negatively impact resources and visitors. The study is intended to assess transportation issues, and evaluate solutions for those issues, on and along the four major highway corridors through the MBSNF that offer winter and summer recreational opportunities: State Route (SR) 542, U.S. Route 2 (US-2), Interstate 90 (I-90), and SR 410. Due to the study's large regional scope and multi-modal approach, the limited availability of funding, and the desire to lead to specific implementation projects, the study was divided into two phases. Phase I was the scoping phase and was intended to identify how the remainder of the funding could be best used, given the multiple corridors and issues and limited resources. Phase II is based on the recommendations from Phase I.

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Report Notes

This report was funded by the Federal Transit Administration (FTA) Paul S. Sarbanes Transit in Parks (TRIP) program. The TRIP program is an annual grant program that distributes roughly $25 million to parks and public lands for planning and implementation of alternative transportation systems. Alternative transportation systems eligible for the TRIP program must provide transportation benefits (as opposed to solely recreational benefits) and must provide alternatives to travel in privately owned vehicles.

Participants in the development of this report included Aleta Eng and Felix Nishida of the Mount Baker-Snoqualmie National Forest; Greg Humphreys of the Federal Highway Administration's Western Federal Lands Highway Division; Lindsey Morse, Benjamin Cotton, and Jonathan Frazier of the U.S. Development of Transportation Volpe National Transportation Systems Center's Transportation Planning Division; Robert Burns of West Virginia University; and Amy Thomas of the U.S. Forest Service Pacific Northwest Region. A description of each agency follows:

- Mount Baker-Snoqualmie National Forest (MBSNF) (Everett, WA). The Forest is located east of Seattle and consists of 1.7 million acres that cover portions of Whatcom, Skagit, Snohomish, King, and Pierce Counties.

- Western Federal Lands Highway Division (WFLHD) (Vancouver, WA). WFLHD is part of the Federal Highway Administration's Office of Federal Lands Highway, serving the transportation engineering and planning needs of agencies that manage Federal land in Oregon, Washington, Idaho, Montana, Alaska, and the Yellowstone and Grand Teton National Parks in Wyoming.

- U.S. Department of Transportation (DOT) Volpe National Transportation Systems Center (Volpe Center) (Cambridge, MA). The Volpe Center is part of the Research and Innovative Technology Administration and is a Federal, fee-for-service organization that performs transportation work for Federal, state, local, and international agencies and entities.

- West Virginia University (WVU) (Morgantown, WV). Staff from WVU have conducted visitor surveys and focus groups on the Forest previously and will be conducting similar work as part of Phase II of this study.

- U.S. Forest Service (USFS) Pacific Northwest Region (Region 6) (Portland, OR). Region 6 provides technical assistance to the 17 national forests and four other Forest Service sites located within Oregon and Washington.

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Executive Summary

Mount Baker-Snoqualmie National Forest (MBSNF or the Forest) is located in close proximity to the Puget Sound metropolitan area in western Washington State. The Forest is facing a number of transportation issues, such as increasing congestion and decreasing availability of parking, which may negatively impact resources and visitors. In 2008, the Forest received a Federal Transit Administration (FTA) planning grant to examine these issues by conducting an alternative transportation study. This report is the result of the first of two phases of the study, which was conducted from May 2011 to January 2012.

What is alternative transportation and how did the study come about?

Alternative transportation encompasses a broad array of modes and strategies, including infrastructure for pedestrian, bicycle, and transit options and supporting information technology and management policies. Alternative transportation studies can vary in scope – in terms of geographic scale, topic, and participation – but typically follow the planning process and result in the identification of management considerations and next steps toward pursuing implementation projects.

Federal land management agencies, in particular the National Park Service, have been considering alternative transportation and conducting alternative transportation studies for decades. However, since 2005, there has been a specific federal funding source for alternative transportation studies and projects. The FTA's Paul S. Sarbanes Transit in Parks (TRIP) Program is an annual competitive grant program that distributes grants to parks and public lands for planning and implementation of alternative transportation systems.

What is the study and what are its phases?

The study is intended to assess transportation issues, and evaluate solutions for those issues, on and along the four major highway corridors through the MBSNF: State Route (SR) 542, U.S. Route 2 (US-2), Interstate 90 (I-90), and SR 410. All of these four corridors offer winter and summer recreational opportunities and provide direct access to a specific ski area. Other significant corridors, such as the Mountain Loop Scenic Highway (Forest Road 20 / SR 9, 92 and 530), which is used primarily in summer, and SR 20 (North Cascade Highway), which primarily serves North Cascades National Park, are not included within the scope of this study but are considered important by the Forest for future consideration.

Due to the study's large regional scope and multi-modal approach, the limited availability of funding, and the desire to lead to specific implementation projects, the Forest, working with Western Federal Lands Highway Division (WFLHD), determined the study would be divided into two phases. Phase I was the scoping phase and was intended to identify how the remainder of the funding could be best used, given the multiple corridors and issues and limited resources. Its approach and findings are described below. Phase II will be based on the recommendations from Phase I and will take place from 2012 to 2013.

Phase I Results

Phase I consisted of goal identification, data assessment, stakeholder meetings, and development of a statement of work for Phase II.

Goal Identification

Phase I defined goals for both transportation on the Forest and specifically for this study. As a result of reviewing key federal, U.S. Forest Service, U.S. Department of Transportation, and Forest management documents, the scoping team identified the following goal areas for transportation in the context of the Forest: visitor experience; resource protection; access to all; partnership and community support; safe, economically and environmentally sound transportation system; and coordination with others. For goals for this study, Forest staff identified the following:

- Examine visitor use trends and transportation issues;
- Engage stakeholders and explore partnership opportunities for alternative transportation implementation;
- Improve travel options and information about travel options; and
- Identify options for additional alternative transportation planning or implementation projects.

Stakeholder Involvement

Phase I consisted of targeted stakeholder outreach that included an email distribution list, in-person meetings, and development of a website. The purpose of the stakeholder involvement was to provide information on the study, solicit feedback on corridor characteristics, issues, and data gaps, and identify partners and potential solutions for addressing those issues and data gaps.

Data Assessment

The data assessment focused on compiling previous and ongoing studies and initiatives, identifying characteristics, issues, and data gaps common to the Forest and specific to each corridor, but also began to document potential strategies. The assessment was completed by reviewing relevant materials, conducting the stakeholder outreach described above, and completing a site visit and meetings with Forest staff.

Characteristics identified include corridor designations and previous or ongoing plans; visitation and important origins and destinations for summer and winter); and alternative transportation characteristics. Issues, data gaps, and potential strategies to address both were identified at both the regional level and for each corridor individually and are summarized in the table below.

Types of Issues/Data Gaps	Types of Potential Strategies
• Visitation management • Visitor demographics and preferences • Bicycle and pedestrian access and use • Safety • Roadway congestion and parking demand • Traveler information / travel demand management • Transit	• Data collection • Research • Transit feasibility studies • Off-road bicycle facility feasibility studies • Bicycle signage plans • Pedestrian improvement studies • Traveler information study

Recommendations for Phase II

The goals and results from the data assessment and stakeholder meetings informed the prioritization and recommendation of potential tasks for Phase II. The scoping team determined that it is important for actions to be taken for each corridor included in the study but that Phase II would not able to sufficiently address all four corridors or address all the potential strategies identified. Corridors and strategies were prioritized based on anticipated impact on Forest visitation and use, available partnerships and resources, and severity of issues and data gaps addressed. In addition, corridors were assessed based on impact on goals and strategies were assessed based on cost and feasibility.

The table below lists the four recommended tasks for Phase II and the corridors addressed by each.

Tasks / Corridors	SR-542	US-2	I-90	SR-410
1) Stakeholder and Public Outreach Strategy	X	X	X	X
2) Data Collection & Analysis	Limited	Limited	X	
3) Traveler Information Assessment	X	X	X	X
4) Transit Feasibility Assessment			X	

The findings and recommendations of Phase I were presented to the Forest Leadership Team in January 2012 for their consideration and critique and to the Forest Supervisor for approval. The report was revised accordingly. With the completion of this report, the next step will be to devise a detailed work plan and schedule for the recommended tasks and begin coordination of the Phase II team. The Forest has selected the Volpe Center to conduct Phase II, with assistance from WFLHD and West Virginia University.

I. Introduction

Mount Baker-Snoqualmie National Forest (MBSNF or the Forest) is located in close proximity to the Puget Sound metropolitan area in western Washington State. The Forest is facing a number of transportation issues, such as increasing congestion and decreasing availability of parking, which may negatively impact resources and visitors. This chapter provides background information on alternative transportation, why the MBSNF is pursuing an alternative transportation study, and what that study consists of.

What is alternative transportation?

Alternative transportation encompasses a broad array of modes and strategies, including infrastructure for pedestrian, bicycle, and transit options and supporting information technology and management policies (see Figures 1-4). For the purpose of this study, alternative transportation was defined broadly and included the following transportation strategies:

- Transit (e.g., buses, vans, ferries, trains, etc.);
- Nonmotorized transportation (e.g., pedestrian and bicycle routes);
- Traveler information, including intelligent transportation systems (ITS) and virtual information (e.g., trip planning websites, webcams, and smartphone applications); and
- Travel demand management (e.g., ridesharing and price incentives).

In addition to these alternative transportation categories, this study addresses transportation safety and congestion, visitor behavior and characteristics, resource protection, and other management considerations important to the U.S. Forest Service (USFS).

Figure 1 - Bicycle wayfinding signage
Source: City of Gresham, Oregon

Figure 2 - Franconia Notch Bicycle path
Source: NH Division of Forest and Lands

Figure 3 - Schulykill River National and State Heritage Area online trip itinerary planner
Source: Schulykill River Greenway Association

Figure 4 - Bureau of Land Management/Lassen Rural Bus shuttle
Source: Bureau of Land Management

What is an alternative transportation study?

Alternative transportation studies can vary in scope but typically follow the planning process and result in the identification of management considerations and next steps toward pursuing implementation projects. Studies can vary in scope geographically, from a site-specific study to a corridor or regional study. They can also vary in scope in terms of focusing broadly on alternative transportation or on a specific issue or mode, such as parking or safety. Finally, studies can vary in the role and level of involvement by partners, depending on interested stakeholders and available resources. The planning process generally consists of data collection, analysis, and research; goal and problem identification; and evaluation of strategies and alternatives. Results can support and inform management decisions, develop or improve partnerships, and identify further analysis required or projects that can be implemented following additional environmental compliance, design, and analysis.

Federal land management agencies, in particular the National Park Service, have been considering alternative transportation and conducting alternative transportation studies for decades. However, since 2005, there has been a specific federal funding source for alternative transportation studies and projects. The Federal Transit Administration (FTA) Paul S. Sarbanes Transit in Parks (TRIP) Program, formerly known as the Alternative Transportation in Parks and Public Lands Program, is an annual competitive grant program that distributes approximately $25 million to parks and public lands for planning and implementation of alternative transportation systems.

TRIP was introduced under the current transportation authorization bill, SAFETEA-LU, in 2005, but was preceded by a 2001-2004 nation-wide scan of alternative transportation

needs in public lands,[1,2] which provided justification for the program's creation. Approximately 40 to 50 projects are funded each year, and on average, USFS is awarded eight projects. Projects are evaluated based on several criteria, including the following set of goals:

- Conserve natural, historical, and cultural resources;
- Reduce congestion and pollution;
- Improve visitor mobility and accessibility;
- Enhance visitor experience; and
- Ensure access to all, including persons with disabilities.

The TRIP program defines ATS as "transportation by bus, rail, or any other publicly available means of transportation and includes sightseeing service. It also includes non-motorized transportation systems such as pedestrian and bicycle trails."[3] In addition, traveler information systems, including wayfinding signage, traveler information websites, or transportation safety studies, are eligible funding activities under the TRIP program because these elements may improve resource management, visitor experience and mobility, automobile congestion, and air, noise, and visual pollution.[4] However, alternative transportation systems eligible for the TRIP program must provide transportation benefits (as opposed to solely recreational benefits) and must provide alternatives to travel in privately-owned vehicles.

Why is the Forest conducting an alternative transportation study?

Forest staff have identified regional population growth and demand for recreation as having implications for transportation infrastructure, natural and cultural resources, and visitor experience. At the same time, the Forest is experiencing declining operations and maintenance budgets. These issues and how they relate to alternative transportation were initially documented in field reports for the Stevens Pass Ski Area, Mount Rainier National Park, and North Cascades National Park for the nation-wide study that was a precedent to TRIP. These reports indicated the potential for transit, bicycle, and pedestrian improvements.

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[1] Federal Lands Alternative Transportation Systems Study. Prepared by Cambridge Systematics, Inc. and the BRW Group, Inc. for Federal Highway Administration and Federal Transit Administration. August 2001.

[2] Federal Lands Alternative Transportation Systems Study. Prepared by Cambridge Systematics, Inc. and Salish Kootenai College for Federal Highway Administration, Federal Transit Administration, and the U.S. Department of Agriculture Forest Service. January 2004.

[3] Alternative Transportation in Parks and Public Lands, Program Manual. January 2007. U.S. Department of Transportation, Federal Transit Administration. FTA-MA-20-1001-06.1 Accessed January 25, 2011. P. 13 <http://www.fta.dot.gov/documents/ATPPL_Manual_1-9-07.pdf>

[4] *Ibid.*

To further evaluate transportation issues and opportunities, the Forest, in partnership with Mount Rainier National Park, participated in a Transportation Assistance Group (TAG) visit in 2007. TAGs – which usually consist of a two- to three-day site visit by an interagency team of transportation professionals – are intended to provide technical assistance and recommendations for next steps to improve transportation to and within the study area. The MBSNF TAG was funded by the Federal Transit Administration and the Department of Interior and coordinated by the U.S. Department of Transportation (DOT) Volpe Center. The resulting TAG report recommended that the Forest apply for funding to evaluate existing transportation issues and to produce a unified plan for transportation to and within the Forest.

Following the TAG, the Forest applied for and received a TRIP planning grant from the Federal Transit Administration for $500,000 in 2008.

What is the study and why are there two phases?

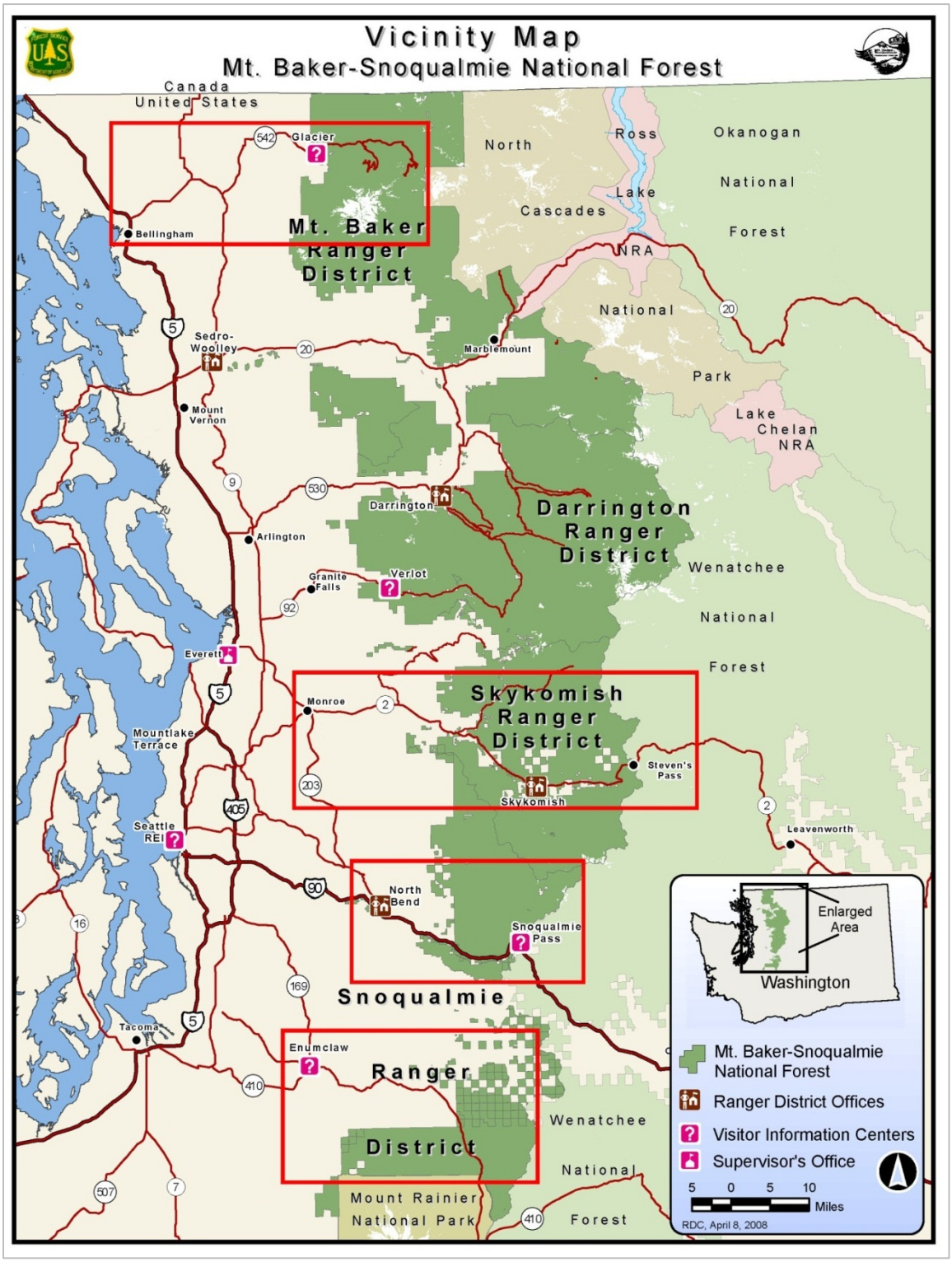
The TRIP planning grant received by the Forest is for the Mount Baker-Snoqualmie National Forest Alternative Transportation Feasibility Study (MBSNF ATFS). This section describes the scope of the study, including the study area, and the rationale for having two phases, as well as what those phases are.

Study Area

The study is intended to assess transportation issues, and evaluate solutions for those issues, on and along the four major highway corridors through the MBSNF: State Route (SR) 542, U.S. Route 2 (US-2), Interstate 90 (I-90), and SR 410. The study is focused on connecting destinations within the Forest as well as connecting Forest destinations to external sites, such as gateway communities, the Puget Sound metropolitan area (Everett, Seattle, and Tacoma), Canada, and the Okanogan-Wenatchee National Forest (see Figure 5).

All of these four corridors offer winter and summer recreational opportunities and provide direct access to a specific ski area. Other significant corridors, such as the Mountain Loop Scenic Highway (Forest Road 20 / SR 9, 92 and 530), which is used primarily in summer, and SR 20 (North Cascade Highway), which primarily serves North Cascades National Park, are not included within the scope of this study but are considered important by the Forest for future consideration.

Figure 5 Study Area Map



Scope and Phases

As demonstrated by the study area, the MBSNF ATFS as proposed is regional in scope, but with a focus on four corridors. It is also multi-modal and considers a broad range of issues. The grant proposal included traffic, visitor capacity, and natural resource condition assessments; marketing, economic, and partnership analyses; and the development of alternatives. It also is intended to involve corridor-specific and regional stakeholders.

Due to this large scope, the limited availability of funding, and the desire for the study to lead to specific implementation projects, the Forest, working with Western Federal Lands Highway Division (WFLHD), determined the study would be divided into two phases. Phase I was the scoping phase and was intended to identify how the remainder of the funding could be best used, given the multiple corridors and issues and limited resources. Phase I consisted of goal identification, data assessment, stakeholder meetings, and development of a statement of work for Phase II. The Forest and WFLHD selected the Volpe Center to work on Phase I, which was conducted from May 2011 to January 2012. Phase II will occur from 2012 to 2013 and will involve selecting and working with one or more entities to conduct the work outlined in the statement of work.

Phase I

The scoping team relied on literature and data review, site visits, and stakeholder and Forest staff involvement to inform its Phase I assessment and Phase II recommendations. This section describes the four main tasks for Phase I; two of the tasks are further described in the next two chapters.

Goal Identification

Phase I defined goals for both transportation on the Forest and specifically for this study. Goals broadly direct study efforts and investments and provide the framework by which issues can be identified and prioritized; they also can be used to evaluate whether a study has achieved what was intended.

For goals for transportation on the Forest, the scoping team reviewed key federal, USFS, U.S. DOT, and Forest management documents for goals relevant to alternative transportation (see Table 8 in Appendix A). Identification of these documents and their goals and relating them to this project achieves the following:

- Enables the agency to be consistent and coordinated across its activities and plans and thus strengthens the agency purpose;
- Makes a case for internal and external audiences for why and how ATS fits into broader goals of the Forest, USFS, and federal government; and
- Informs how to evaluate next steps and determine priorities.

The Mount Baker-Snoqualmie Forest Plan (1990) does not speak directly to alternative transportation planning; however, it does speak to visitor access and the current and expected transportation system. Future Forest Plan Revision efforts will consider public transportation and access.

From the list in Table 8, the following were identified by the scoping team as important goals of transportation in the context of the Forest:

- *Visitor experience.* Provide a range of outdoor recreational experiences that are safe, convenient, and attractive to access.
- *Resource protection*. Protect natural resources from everyday physical damage and wear-and-tear from exceeding carrying capacity as well as from activities that contribute to long-term issues such as air pollution and climate change.
- *Access to all.* Increase access by underrepresented and underserved populations and youth, particularly those in urban areas, by providing alternative transportation options.
- *Partnership and community support.* Consider implications of Forest actions on the economic vitality of local communities and work with communities to address issues together.
- *Safe, economically and environmentally sound transportation system.* Invest in actions that develop a multimodal transportation system that is safe and sustainable.
- *Coordination with others*. Participate in local, regional, and transportation planning to support Forest goals.

These goal areas are matched with the main transportation issues identified in Chapter 2 and in Table 2, at the end of that chapter, and are used to prioritize corridors and strategies for Phase II.

For goals for this study, Forest staff identified the following:

- Examine visitor use trends and transportation issues;
- Engage stakeholders and explore partnership opportunities for alternative transportation implementation;
- Improve travel options and information about travel options; and
- Identify options for additional alternative transportation planning or implementation projects.

Stakeholder Involvement

Phase I consisted of targeted stakeholder outreach that included an email distribution list, in-person meetings, and development of a website. The purpose of the stakeholder involvement was to provide information on the study, solicit feedback on corridor

characteristics, issues, and data gaps, and identify partners and potential solutions for addressing those issues and data gaps.

The scoping team developed a list of stakeholders who represent organizations and agencies considered to be important existing or potential partners in planning, transportation, and recreation. It is anticipated that this list will continue to be modified as others are identified throughout the duration of the project.

The first in-person outreach was conducted in June 2011 as part of the initial site visit and focused on representatives from each corridor's respective Forest District, local governments, and ski area. The second outreach occurred in October 2011 and consisted of five meetings held throughout the region: Everett, Bellingham, North Bend, Enumclaw, and Seattle. Each meeting consisted of a presentation and discussion, as well as time to view and provide written comments on posters depicting an overview of each corridor, with a focus on alternative transportation. Stakeholders were asked to identify any missing or incorrect information. Notes were taken on the discussion that occurred at each meeting and on the comments attached to the posters.

The scoping team developed a project website (http://publiclands.volpe.dot.gov/usfs-alternative-transportation/MBSNF/index.asp) to share study materials and provide an opportunity to submit comments. Draft materials posted prior to the October 2011 stakeholder meetings included the study area map, overview, draft data assessment report, and posters on each corridor. Five comments were received via the website and incorporated into the draft report. This report will be posted to the website and updates to the site will continue throughout the duration of the project.

Data Assessment

The scoping team developed a list of relevant types of issues, documents, and data and identified existing resources by reviewing relevant materials, conducting the stakeholder outreach described above, and completing a site visit and meetings with Forest staff. Materials were provided from the 2007 TAG team and Forest, a scan of relevant agency websites, and stakeholders. The data assessment focused on identifying characteristics, issues, and data gaps common to the Forest and specific to each corridor, but also began to document potential strategies. The data assessment findings are documented in Chapter 2 of this report.

Scope of Work for Phase II

The goals and results from the data assessment and stakeholder meetings informed the prioritization and recommendation of potential tasks for Phase II, which is documented in Chapter 3 of this report.

II. Phase I Data Assessment Findings

The purpose of this chapter is to provide a review and assessment of existing data, studies, and research on transportation access and visitor use and to identify major characteristics, data gaps, and transportation/access issues on the four highway corridors included in the study. The findings have been captured in three formats: narrative, tables, and corridor information graphics.

Table 1 provides a summary of known previous and ongoing studies and initiatives related to the Forest and alternative transportation. These efforts were referenced for context and identification of issues and potential solutions throughout Phase I.

Characteristics for each corridor are captured in tables in Appendix A and corridor information graphics, which provide a visual representation of each corridor and are included in Appendix B. These characteristics include corridor designations and previous or ongoing plans; visitation and important origins and destinations for summer and winter); and alternative transportation characteristics.

An initial assessment of transportation-related conditions and issues is provided in the narrative below, first for those elements common to all four corridors, referred to as Forest-wide or at the Forest level, and then for each corridor individually. A summary of the issues, and related data gaps, is provided at the end of the chapter in Table 2 while a summary of Forest-wide data gaps is provided in Table 3. Finally, Table 12 in Appendix A provides a list of ways to address those issues and gaps, from data collection to further studies, identified by previous studies, Forest staff, stakeholders, and the scoping team.

Forest Assessment

This section describes current issues that are relevant to transportation and common to all of the corridors. The characteristics of each issue are based on site observations, previous studies (see Table 1), available data, and conversations with Forest staff and stakeholders. The intent of this section is to provide a broader context for the corridor assessment that follows and to identify Forest-wide data gaps, which are summarized in Table 3 at the end of the chapter.

The scoping team recognizes that the issues described in this section are in addition to the issues of limited funding, staffing, and property security, such as vandalism of signage and vehicle break-ins at trailheads.

Table 1 Previous and Ongoing Studies

Study Category	Forest-wide	SR-542	US-2	I-90	SR-410
Planning / Development Documents	• Forest Plan (1990) • Northwest Forest Plan (1994)		Stevens Pass Master Development Plan (2007)	• Snoqualmie Ski Area Plan (2008) • Mountains to Sound Greenway Heritage Study (in process of completion)	Crystal Mountain Ski Resort Expansion Master Plan and FEIS (2006)
Transportation Planning Documents	• Federal Lands Alternative Transportation Study and Forest Service Supplement (Cambridge Systematics, 2001 and 2004). • North Cascades Field Report (2001) • Left By the Side of the Road: Puget Sound Regional Bicycle Network Study: Assessment and Recommendations (2005) • MBSNF TAG Report (2007) • MBSNF TRIP application (2008) • Washington State Bicycle Facilities and Pedestrian Walkways Plan (2008) • Washington Transportation Plan 2030 (2010) • Washington State Scenic And Recreational Highways Strategic Plan (2010)	• Mount Baker Highway Corridor Management Plan (1997) • Whatcom Transportation Plan (2007) • Mount Baker Highway Scenic Byway Management Plan (2009) • WSDOT Northwest Regionwide Planning	• Stevens Pass Greenway Corridor Management Plan (1999) • Mount Baker-Snoqualmie National Forest – Stevens Pass Ski Area Transit Expansion Field Report (2004) • WSDOT U.S. 2 Route Development Plan (2007) • Puget Sound Regional Council Transportation 2040 (2010)	• Mountains to Sea Greenway Implementation Plan (1998) • Puget Sound Regional Council Transportation 2040 (2010)	• Mount Rainier Transport Study (1997) • Chinook Byways Corridor Planning and Management Guidebook (1999) • Mount Rainier Field Report (2001) • Chinook Scenic Byway Charette (2000) • Carbon River Corridor Charette (2003) • Nisqually Rural Transit Feasibility Study (2007)

Study Category	Forest-wide	SR-542	US-2	I-90	SR-410
Visitor Information	• National Visitor Use Monitoring Survey (2005) • Burns, Covelli, Graefe, and Dong. Summer 2005 Mount Baker-Snoqualmie Recreation Use Study: An Examination of Constraint and Negotiation Strategies by Traditional and Non-Traditional users. (2007) (and related papers) • Pacific Northwest Ski Area Association Annual Visitation Spreadsheet (2010-11) • National Ski Area Association Industry Stats and Reports (2010-11) • National Visitor Use Monitoring Survey (2010; will be completed in 2012) • MBSNF Outfitter and Guide Needs Assessment (to be completed in 2012)				

Visitation

Actual visitation to the Forest is unknown due the multiple sites and broad accessibility of the Forest. However, Forest staff estimate approximately 5.4 million visits, drawing upon the Puget Sound metropolitan area and the Vancouver, British Columbia, metropolitan area as well as surrounding small cities and rural areas. The USFS National Visitor Use Monitoring Survey (NVUM, 2005) estimates at least 1.3 million visits across different sites and seasons, but the four ski areas receive nearly 1.5 million visits each winter.

The Forest Plan (1990) assessed the current and future demand for recreation on the Forest and found that the demand for developed recreation (such as alpine skiing and campgrounds) and for dispersed recreation (such as backcountry hiking or Forest road access) was below capacity, and likely to remain so until 2030, when population growth would start having impacts. The Plan found that wilderness is nearing its capacity and would exceed capacity by 2010. These estimates are being revisited and the NVUM (2005) found that over 60 percent of visitors surveyed rated Day Use Developed Sites to be overcrowded (eight or higher on scale of 10) while undeveloped and wilderness areas received much lower ratings. The Forest staff report increasing visitation and an expectation for visitation to increase as the regional population increases.

Visitation Management

The scoping team identified three main visitation management challenges that have implications for transportation.

The first challenge, which occurs in winter, is the limited availability of winter recreation destinations and parking within the Forest. Although downhill skiing is a major winter draw for visitors, other activities include backcountry skiing and snowshoeing, snowplay, sledding, and snow viewing. These activities, in particular snowplay, sledding, and snow viewing, which do not require equipment, special skills, or additional fees, are becoming increasingly popular, according to ski area and Forest staff. As a result, these visitors are using the parking areas owned and maintained by the ski areas, thus competing with paying ski area visitors. This issue could potentially impact parking capacity and congestion, although current levels of use have not yet caused any negative impact. A second result is that these visitors are engaging in unsupervised activities that carry safety risks, such as sledding near parking areas and roads. Traditional transportation solutions, such as increasing parking, charging for parking, or limiting parking use to skiers, may be considered, but there are important non-transportation considerations. For example, the provision of alternative recreation sites may be desirable.

The second challenge, which occurs in summer, is the uneven distribution of visitation to trailheads and other destinations. Hiking is a popular activity, along with wildlife viewing, resource harvesting, camping, and other activities. Some trailhead parking is full to

capacity, resulting in unofficial parking and overcrowded trail use that may be unsafe and harmful to resources and lead to diminished visitor experience, while other parking and trails are underutilized. For some trailheads that lead to designated wilderness areas, crowded conditions are counter to relevant regulations of use for those areas. This uneven distribution may be a result of several factors, including proximity of popular trailheads to populous areas, lack of alternative trailheads, lack of access to or awareness of alternative trailheads, perceived popularity of some trailheads versus others, and lack of enforcement of illegal parking or larger group sizes. This challenge has implications for transportation information needs and whether it may be desirable to provide increased access through alternative transportation without decreasing vehicular access.

The final challenge is regarding the Northwest Forest Pass, which provides some revenue to cover a variety of visitor facilities including, but not limited to, parking and restrooms. The Northwest Forest Pass is currently tied to the number of vehicles parking at sites. It also causes confusion among visitors who are unfamiliar and for those who are trying to navigate the Forest rules and the requirements for similar but different passes for adjacent lands.

The causes of the first two challenges need to be better understood, potentially through surveys, so as to evaluate what transportation and other strategies can address them most effectively. The third challenge requires consideration of how promotion of alternative transportation may impact Forest revenues and how the Northwest Forest Pass can be made more user-friendly for visitors.

Visitation Demographics

According to the National Visitor Use Monitoring Survey (2005), 95 percent of Forest visitors are Caucasian; according to 2010 Census, the Puget Sound metropolitan area has a population that is approximately 80 percent Caucasian. This difference between the regional population and Forest visitors is also reflected in ethnic and socioeconomic status characteristics. Surveys conducted in 2005 by the West Virginia University have shown that transportation is among the barriers confronting non-traditional populations. Other constraints include lack of information and awareness of opportunities, cultural preference, and constraints on time, money, and competing activities. In recognition of these constraints, the Forest works with a number of nonprofit groups to provide outreach to youth, including providing transportation for field trips from the Puget Sound metropolitan area to the Forest. Through this work, there is recognition that different populations have different interests and expectations in regard to the Forest; for example, some populations prefer group travel, some are mostly interested in cultural resources and Forest products, and some may require additional orientation information to become aware of the opportunities on the Forest and how to access those opportunities.

Transportation

This section summarizes transportation characteristics common to all or multiple corridors; transportation characteristics for each corridor can be found in Table 10.

Roadway Congestion and Parking

Some level of congestion and park shortages were reported by Forest staff for peak summer and winter weekends and at certain trailheads and the ski areas. The Washington State Department of Transportation (WSDOT) has information on average annual daily trips (bi-directional) for various mile markers along the corridors, but data for weekends and summer are not readily available. In addition, there is very little information available on projected increases in traffic, especially for recreational traffic.

Bicycling

None of the corridors have bicycle signage or pavement markings and there are limited on-road facilities or alternative, off-highway bicycle routes. I-90 has a parallel off-road, gravel trail called the John Wayne Pioneer Trail. SR 410 has four-feet shoulders and US-2 has a shoulder on the eastbound lane. Road bicycling popularity varies by corridor but there are annual bicycle events and related training activities that use US-2, SR 542, and SR 410.

Pedestrian Access

Due to the regional scope of this study and the length and nature of the corridors, there are limited opportunities to identify issues at the pedestrian scale. However, overall, sidewalks and transportation trail connections between destinations are limited among the four corridors. There are some specific pedestrian safety concerns that are identified by corridor. Pedestrian connections are viewed by stakeholders as both safety and economic opportunities, as they could connect communities with local businesses.

Traveler Information

Information on how to access Forest sites, which areas may have congestion or parking shortages, real-time information on traffic status, weather conditions, and other traveler-related information can help visitors make choices that reduce transportation issues and can improve the visitor experience. This information may be communicated by radio, website, email alerts, Twitter, or variable-message signs (VMS). The Forest currently provides information online on road and trail conditions and recreational opportunities for each of the four corridors and has an alerts and notices page.[5] The Forest website encourages visitors to call or visit the ranger stations or visitor centers for information. However, stakeholders reported that the Forest does not have the staff or real-time information available to respond efficiently and effectively to calls. The Washington Trails

[5] See http://www.fs.usda.gov/detail/mbs/recreation/?cid=stelprdb5126323, http://www.fs.usda.gov/recarea/mbs/recreation/recarea/?recid=17520, and http://www.fs.usda.gov/alerts/mbs/alerts-notices.

Association operates an online hike finder and map along with detailed information and trail reports from the public, but has limited to no transportation information.[6]

WSDOT does have some level of traffic and weather information online for each of the four corridors and mountain passes, although the extent of the information varies from updated text to real-time traffic camera reports (see Table 10). WSDOT has a smartphone application to access the website information, and offers email and Twitter updates. However, it is difficult and unsafe to access this information while driving, many areas do not have adequate cell service, and not all visitors have a smartphone. Neither the Forest nor WSDOT, including its hiking and walking trails maps site,[7] link to each other's websites. WSDOT also operates a 511 traveler information phone line and operates VMS on US-2 and I-90,

Some of the ski areas provide information on alternative options, including private transit and ridesharing, on their websites. Finally, there is a private citizen who maintains a website (backpackingbybus.com) that provides information on how to access trails in the region by public transit.

Travel demand management

The Forest does not currently have policies or programs in place to encourage visitors to change behavior through pricing or information. Some of the ski areas provide carpool matching websites for employees and visitors and offer priority parking for carpools. The ski areas for each corridor reported interest in promoting alternative transportation, in particular transit, to increase skiing capacity without adding parking capacity, thereby lowering environmental impacts and appealing to the market of skiers who would prefer not to drive.

Public transit

No Forest site is currently served directly by public transportation, although some are within walking, hiking, or biking distance of stops. This is an issue for the carless as well as the carfree (those who do not have or use a car by choice, including those who may desire not to drive due to winter weather conditions). In addition, lack of transit is a challenge for efforts to reduce vehicular travel for parking shortages or other reasons. As mentioned under traveler information, there is limited information on existing connections although there is a private website (backpackingbybus.com) that has fairly extensive information. Overall, I-90 is least well served, with limited service along SR 542 and SR 410, and the most service along US-2. According to the developer of backpackingbybus.com, destinations along Highway 12 within the Gifford Pinchot National Forest to the south are more accessible from the Seattle area by public transit, than the four study corridors.

[6] See http://www.wta.org/

[7] See http://www.wsdot.wa.gov/walk/hike.htm

Public transit throughout the region is currently experiencing cuts in funding that are resulting in cuts to service. Expanding or adding routes to serve Forest sites will likely be difficult in the immediate future, but there are still opportunities to work with existing routes and plan for the future.

Private Transit

Private coach tours travel along all four corridors and multiple private charter services provide regular shuttle service to ski areas. Some private transit and taxi services also offer on-demand service to trailheads. During the winter, school ski programs and other groups charter buses to the ski areas. Only one of the ski areas, Crystal Mountain, currently directly charters a weekend visitor shuttle, although others promote the many independent private shuttles available.

Partnerships

Regular Forest involvement in existing groups varies by corridor but is limited, due to staffing constraints as well as limited awareness of the potential benefits to all groups of increased coordination. Each of the corridors is a designated scenic byway, either state or national, and has an associated management group with varying levels of activity. Other partners include the Chambers of Commerce, gateway towns, private recreation-focused non-profits, Tribal entities, transit agencies, and other public lands agencies. In addition, private corporations may be able to provide sponsorships or other support, especially those in the outdoor recreation industry or those with existing transit fleets.

Corridor Assessment

This section provides an initial overview and assessment of each of the four corridors, in order from north to south. Information on all of the corridors is presented in three tables: Table 9 summarizes basic administrative and visitation characteristics, Table 10 provides information on transportation characteristics, and Table 11 provides information on each ski area.

State Route 542

SR 542, designated as the Mt. Baker Scenic Byway, provides access to the Mount Baker Ski Area and ends at Artist Point, a popular summer destination which contains the Heather Meadows Recreational Area and associated Visitor Center and several trailheads. Approximately half of SR 542 visitors originate from the metropolitan region of Vancouver, British Columbia, Canada (primarily via Abbotsford and SR 547), while the other half originate from Bellingham and areas to the south. The large international (Canadian) visitation has implications for enforcement while border security changes have resulted in access issues for school and charter buses from Canada.

Heather Meadows is only accessible during the summer season, a three month period from approximately mid-July through September. Many visitors do not conduct pre-trip planning

to confirm whether the road to Heather Meadows has been plowed and is accessible (see Figure 6). Although the designated parking lot for Artist Point will fill up on any sunny weekend in August and September, there is usually capacity at the Heather Meadows Visitor Center parking lot or the upper parking lot of Mount Baker Ski Area, and these overflow lots are connected by a trail. Despite the parking availability, visitors are often inclined to park along the road rather than walk a mile or two. Thus, proximity, rather than total capacity, is an issue for visitors.

Figure 6 Terminus of Road to Heathers Meadow and typical curves along SR-542
Source: Volpe Center, June 2011

Bicycling is an increasingly popular activity on the road and although users are primarily experienced recreational cyclists, stakeholders report there are conflicts between vehicular and bicycle traffic and attribute them to the lack of bike lanes, the steep grade and number of blind curves on the road (see Figure 6), and the operation of school buses and other large vehicles. WSDOT has not received any reports of incidents. Pedestrian access between communities and other destinations, such as between Glacier and Douglas Fir Campground, is of interest and concern; although there are unofficial trails off the highway, pedestrians must use the road and narrow bridges to cross streams and rivers. Members of local communities have identified pedestrian access for the bridge over Glacier Creek as a priority.

In the winter, the Mount Baker Ski Area and the surrounding Forest are the primary draw for downhill skiing as well as backcountry snow-shoeing and skiing and informal snowplay. However, Nordic or crosscountry skiing is also popular at several sites, including Salmon Ridge Sno-park.

The Whatcom Council of Governments (COG) is a regional partner that is very active in trails, transit, and travel demand management and has identified year-round public transportation as a goal in its regional transportation plan (2007). Another important

regional entity is the Northwest Region of WSDOT. WSDOT is responsible for the reconstruction, operation and maintenance of SR 542 within the National Forest boundary. USFS retains ownership of the underlying land and is responsible for ensuring that National Forest lands and resources within and adjacent to the road corridor are managed and protected consistent with current direction and policies. WSDOT and the Mount Baker Ranger District collaborated to develop a management plan for SR 542 and WSDOT is actively examining several transportation planning issues in the region, including non-motorized access and traveler information.

U.S. Route 2

US-2, designated as the Stevens Pass Greenway, provides access to popular Forest trailheads, the Stevens Pass Ski Area, and year-round through access to popular destinations on the east-side of the Cascades, such as Leavenworth, Mission Ridge Ski Area, and Wenatchee and Lake Chelan. The primary transportation issues identified for US-2 are safety, which is actively being addressed by WSDOT, parking shortages at specific Forest destinations, and congestion.

Safety has been identified as a primary transportation issue for US-2; toward that end, WSDOT designated it as a Highway Safety Corridor and conducted a two-year study, completed in 2010, that has resulted in a number of safety improvement projects and recommendations for future projects. Two of the improvement projects that were completed were at Stevens Pass Ski Area, where a pedestrian overpass and a designated right turn lane were constructed in 2010 (see Figure 7). Another area that has safety issues is Eagle Falls, which is a popular summer destination for swimming but has no designated parking; instead, the visitors park and walk along road, creating unsafe conditions.

Figure 7 Pedestrian Overpass at Stevens Pass Ski Area
Source: Volpe Center, June 2011

Although parking shortages at specific trailheads were noted by Forest staff, these trailheads are also at capacity in terms of overcrowding and resource protection. The Forest has had success in opening and expanding new trailheads, especially in terms of installing new restrooms, to alleviate congestion elsewhere; for example, the Iron Goat Trailhead has helped reduce traffic at Deception Falls.

Weekend highway congestion was reported by stakeholders as a significant issue. Although Amtrak service runs parallel to US-2, its stops are limited to Everett and Leavenworth and the schedule is better suited to day trips from east to west (e.g., Eugene to Leavenworth or Leavenworth to Seattle).

Several private shuttles have had success, including Stevens Pass Ski Area's employee shuttle, which had to limit ridership to employees after demand exceeded capacity. The ski area has some long-term management concerns for continued operation of employee transit and is interested in exploring alternative models.

The Stevens Pass Greenway is an important entity for the corridor and is interested in working on all of the issues and opportunities noted.

Interstate 90

Interstate 90 (I-90), designated as the Mountains to Sound Greenway, provides year-round east-west access and has the highest through traffic of any of the corridors. It has some of the highest use trailheads, with a concentration of use at five trailheads that access the Alpine Lakes Wilderness, north of the highway, and underutilization at others (see Figure 8). The Forest has plans to develop additional trailheads to the south to provide alternatives.

The Summit at Snoqualmie ski area is a major winter destination; it currently does not offer any summer activities. The gravel John Wayne Pioneer Trail provides mountain biking and hiking access parallel to I-90. Road bicycle use is currently limited to the shoulders of I-90. Public transit only serves as far east as North Bend. Trucking is a significant activity on I-90 and has presented use issues along SR 906 at Exit 53 at Snoqualmie Pass, where trucks and visitors to the pass compete for parking. Further west along SR 906 at Exit 52 at Snoqualmie Pass, limited parking for backcountry activities create pedestrian access and safety issues at the underpass for I-90, especially during the winter.

The Mountains to Sound Greenway Trust is a significant partner for the I-90 corridor. It promotes public land conservation and recreation access in the landscape surrounding I-90 between Seattle and Central Washington, through both the Mount Baker-Snoqualmie and Okanogan-Wenatchee national forests. The Greenway supports long term planning efforts to meet the increasing demand for alternative transportation, including to and from recreation areas, throughout the Greenway landscape. Conceptual plans for the Middle

Fork Snoqualmie River Valley highlight the need for alternative transportation and specifically envision transit connections.

Figure 8 Trailhead and parking for Ashael Curtis Nature Trail, south of I-90
Source: Volpe Center (June 2011)

State Route 410

SR 410, designated as the Chinook Pass Scenic Byway and the Mather Memorial Parkway, does not have year-round access between the east and west, but in the summer it is one of the primary access routes to Mount Rainier National Park and areas beyond and in the winter, it provides access to the Crystal Mountain Ski Area. The Ski Area is also expanding its summer activities, including the opening of a gondola in 2011 (see Figure 9).

Mount Rainier National Park has severe parking shortage and congestion issues in the summer. The Park has studied and continues to study and explore alternative transportation options; the park currently has a parking shuttle system in place within the park. Crystal Mountain Ski Area also has parking issues, but during the winter ski season. The city of Enumclaw, the National Park Service, and USFS are actively working on developing a partnership to construct a new welcome center in Enumclaw in the near future. Part of the original proposal for the welcome center was to also create a transit center, where riders could transfer from public transit (King County Metro/Sound Transit) to a shuttle to Crystal Mountain and Mount Rainier National Park. Although the plans for the transit hub are currently on hold due to funding, there may still be the potential with the existing parking to accommodate a park and ride service.

There are several campgrounds and a couple of trailheads widely dispersed along SR 410; these destinations do not currently experience any major congestion or parking issues. The Chinook Scenic Byway nonprofit has a new website, with a map of destinations along the corridor, and has plans to do a comprehensive signage plan. There is a shoulder for road

cyclists but its width and quality is inconsistent; bicycling is becoming increasingly popular especially to train for a bicycle event that occurs annually and uses the roadway.

Figure 9 Private day tour bus and view from gondola at Crystal Mountain
Source: Volpe Center, June 2011

Conclusion

Table 2 compiles the major issues identified in this initial assessment and matches each challenge with the transportation goals identified earlier in the report and with data needs that would help further define the issue and its causes. Table 3 provides a summary of data sources and needs across all four corridors. Overall, existing data are limited but there are opportunities to improve data as determined necessary for next steps. Based on these issues and data needs, the scoping team compiled a list of potential strategies identified by previous studies, Forest staff, stakeholders, and field observations (see Table 12 in Appendix A).

Although all of the issues identified are important, this study is intended to identify which issues are priorities for the Forest, which issues can be most effectively addressed by this study, and how those issues can be addressed through additional, transportation-related activities, such as surveys, targeted feasibility studies, and identification of best practices and comparables. In some cases, there may be opportunities for entities other than the Forest – such as a local or regional government or non-profit groups – or other funding sources to address some of the issues identified. The next chapter describes the criteria which this study uses to prioritize the corridors and potential solutions to issues and what tasks are recommended for Phase II.

Table 2 Summary of Issues and Data Needs Identified

Problem Category	Corridor(s)	Issue Description	Possible Causes	Timeframe	Relevant Goals	Data Needs
Visitation Management	All (in particular SR-542 and US-2)	Safety and capacity issues related to non-skiers using ski area parking and adjacent areas	- Lack of alternative winter recreational sites - Changing demographics	Future	- Visitor experience - Access to all	- Percent of vehicles parking at ski areas being used by non-skiers - Visitor interest in snowplay and sledding - Feasibility of managing additional winter recreational sites
	All (in particular US-2 and I-90)	Overcrowded parking and trails, leading to resource damage and diminished visitor experience	- Lack of alternative trailheads - Lack of awareness of alternative trailheads - Perceived popularity of some trailheads vs. others - Lack of enforcement of illegal parking or larger group sizes	Current, to worsen in future	- Resource protection - Visitor experience	- Information on overcrowded conditions (number of vehicles, when overcrowding occurs, which trails are most overcrowded) - Information on visitor awareness of trail options
Visitation Demographics	All	Forest visitor demographics do not reflect regional demographics; certain populations are less likely to access the Forest	- Lack of transportation options or affordable options - Lack of information and awareness of opportunities - Cultural preference - Constraints on time and money - Competing activities	Current	- Access to all	- By corridor, recent information on who is and is not visiting the Forest and what their preferences and barriers (including transportation) are
Safety	US-2	High rate of collisions and fatalities.	- Dangerous driver behavior - Road conditions	Actively being addressed	- Safe transportation system	- WSDOT actively addressing

Problem Category	Corridor(s)	Issue Description	Possible Causes	Timeframe	Relevant Goals	Data Needs
Roadway Congestion and Parking	All (in particular US-2 and I-90)	Parking capacity issue at high-use trail locations throughout the Forest	- Same as visitation management			
	US-2	Eagle Falls is a popular summer swimming destination but does not have any parking so visitors park on the shoulder of the highway	- No parking or alternative way to access the falls	Current	- Safe transportation system	- Number and frequency of vehicles illegally parked - Feasibility of identifying a parking area and/or trail to site
	SR-410	Crystal Mountain Ski Area and Mount Rainier National Park both experience seasonal parking shortages where the parking capacity is less than the resource capacity	- Lack of parking - Lack of other options (e.g., transit) - Lack of traveler information on parking availability	Town of Enumclaw, Chamber of Commerce, NPS and USFS working on possible transit connection to new welcome center	- Resource protection - Visitor experience. - Coordination with others	- Number of vehicles unable to find parking - Feasibility of off-site parking and transit
Bicycle access / Safety	All (in particular SR-542 and SR-410)	Perception of dangerous conditions and vehicle and bicyclist conflicts	- No bicycle signage or pavement markings - Limited alternative, off-highway bicycle routes	Current, to worsen in future	- Safe and environmentally sound transportation system - Resource protection	- Number of bicyclists using corridors - Number and nature of bicycle accidents - Interest of visitors in bicycling
Pedestrian access	SR-542	Pedestrian access between communities and other destinations is limited	- Lack of pedestrian facilities along corridor, especially on bridges	Current	- Safe transportation system	- Identification of priority areas for investment based on safety issues, pedestrian traffic, and feasibility

Problem Category	Corridor(s)	Issue Description	Possible Causes	Timeframe	Relevant Goals	Data Needs
	I-90	Pedestrian access between parking and trailheads at the underpass at Exit 52 is limited and unsafe.	- Lack of pedestrian facilities and challenge of clearing shoulders of snow.	Current	- Safe transportation system	- Number of visitors who travel along the underpass or who would want to park at the trailheads.
Traveler information / Travel Demand Management	All (in particular SR-542 and I-90)	Visitors are not always aware of destination or transportation options	- No alternative transportation access (transit or bicycle) information or links on Forest website - No AM radio or HAR messages specific to the Forest - No real-time VMS or other communication on parking/congestion issues	Current	- Visitor experience	- How visitors currently become aware of transportation information - Feasibility and options for traveler information improvements
	SR-542	Not all visitors check to see if Glacier Public Service Center/ Artist Point/Heather Meadows is open/accessible before traveling up the SR 542 corridor	- Information is on Forest and WSDOT websites but visitors do not always check - No radio or real-time VMS along the highway to notify visitors en route	Current	- Visitor experience	- How visitors currently become aware of transportation information - Feasibility and options for traveler information improvements
Public and Private Transit	All (in particular SR-542 and US-2)	Public and private transit is not coordinated	- Lack of dialogue between stakeholders (RTPO/MPO, Forest, ski area, public and private transit providers)	Current	- Economically and environmentally sound transportation system - Coordination with others	- Service characteristics of private transit - Feasibility for coordinated, consolidated, or new transit services

Table 3 Forest-wide Data Sources and Gaps

Data Type	Existing or Future Sources	Gaps
Visitation	- Visitor Centers - Trail logbooks (collected but not analyzed) - Northwest Forest Pass - Pacific Northwest Ski Area Association Annual Visitation Spreadsheet - Forest level and raw data from the National Visitor Use Monitor Survey (2005; 2010)	- Parking use for specific trailheads and other sites - Traffic data by direction, weekend/week day, and month/season at specific sites
Visitor Demographics and Preferences	- National Visitor Use Monitor Survey (2005; 2010) - 2005 non-traditional user study	- Recent information on transportation preferences and barriers - Information on interest in snowplay/sledding
Parking occupancy	- None currently but the Forest recently purchased travel sensors for commercial monitoring and is considering the use of video cameras at trailheads for law enforcement	- Number of vehicles in parking lots over time compared to capacity and average length of stay - Number of vehicles that park illegally
Bicycle use	- City-based counts by the Washington State Bicycle and Pedestrian Documentation Project (WSDOT and Cascade Bicycle Club) (2008-2011)	- Number of bicycles using a specific highway corridor or other facilities
Transit	- Ski area and public transit agency ridership information	- Private transit ridership and services
Traffic congestion	- Limited WSDOT/RPTO LOS and other studies for highways and gateway communities	- Data for Forest-specific sites, including trailheads and ski areas
Safety	- WSDOT collision/accident data	- Data for Forest-specific sites, including trailheads and ski areas, and data for bicycle accidents

III. Recommendations for Phase II

This chapter describes how the scoping team prioritized the corridors and strategies being considered and what tasks it recommends for Phase II and why.

Corridor and Strategy Prioritization

This section describes the criteria used to inform the selection of corridors and strategies for the recommended Phase II tasks, presented in the next section.

Corridor Prioritization

The scoping team determined that it is important for actions to be taken for each corridor included in the study but that Phase II will not be able to sufficiently address all four corridors. As a result, the scoping team determined that certain corridors should be prioritized due to consideration of the following factors:

- Impact on Forest visitation and use
  - All four corridors provide distinct and important Forest experiences to the public; however, the number of visitors and the type of use has implications for the level of impact that can be achieved on a corridor for a specific strategy. Certain levels of visitation and types of uses are more conducive to transportation strategies than others and are more supportive of Forest goals (see fourth criterion).
- Partnerships/resources available
  - Partnerships, external resources, and community buy-in are often necessary for success; however, in some cases, strong partnerships may mean that there are other resources available to pursue a strategy while weak or resource-poor partnerships may indicate a need or opportunity for which targeted funding can make a difference.
- Issues/gaps
  - The corridors vary in data gaps, type and severity of issues, and the relevance of those gaps and issues to identified goals.
- Impact on goals
  - Several broad transportation goal areas were identified from a scan of relevant management documents presented in Table 8. Based on visitor characteristics and issues/gaps, each corridor varies in which and how many goal areas it could potentially address.

Table 4 qualitatively assesses these criteria for each corridor. The next section describes how this information was used to determine which corridor would be addressed by each recommended task for Phase II.

Table 4 Corridor Assessment

Corridor	Summer Visitation	Winter Visitation	Issues/Gaps	Partnerships/Resources	Goals
Common to all	Hiking, wildlife viewing, resource harvesting, camping	Backcountry skiing and snowshoeing, snowplay, sledding, and snow viewing	- Visitation demographics - site-specific parking and traffic data	- Varying relationships with WSDOT, ski areas, and scenic byway committees	- Visitor experience can benefit from improvements regionally in terms of increased travel information and options - Partnership and coordination with others
SR-542	Higher than winter but shorter time period; concentrated at Heather Meadows for short period of time and otherwise dispersed on Forest; 50% Canadian	Medium, Ski area and dispersed on Forest; 50% Canadian	- Visitor management – winter - bicycle and pedestrian access/safety - traveler information - transit	- Strong, defined corridor identity with invested, resourceful regional planning agency and other interested stakeholders - Existing local multimodal services, programs, and initiatives (bicycle, traveler information, transit)	- Local economies are very dependent on tourism due to the more remote location and eastern terminus. - The corridor has already begun the development of a multimodal transportation system
US-2	High, dispersed on Forest or concentrated in Leavenworth / east of the Cascades	High, focused on ski area or Leavenworth / east of the Cascades	- Visitor management – winter and summer - Safety - Congestion - Parking shortage	- WSDOT has an active safety improvements program ongoing	- Visitor experience impacted by safety, congestion, and parking issues but fairly dispersed on Forest
I-90	High, closest access for urban area; concentrated at specific Alpine Lakes Wilderness trailheads	High, closest access for urban area; concentrated at summit or otherwise dispersed on Forest and among sno-parks	- Visitor management – summer - Traveler information - Pedestrian access / safety	- Mountains to Sound Greenway provides a forum for corridor initiatives - There are a number of non-profit and city-based programs interested in providing programs that access the Forest	- Provides closest access to urban, high density communities, including underserved/disadvantaged - Resource protection is a significant concern due to wilderness areas and highly concentrated use of sites
SR-410	High, concentrated at Mount Rainier National Park and otherwise dispersed on Forest	Medium, terminus at Crystal Mountain and otherwise dispersed on Forest	- Parking shortage - Bicycle access/safety	- National Park Service, City of Enumclaw, and Crystal Mountain Ski Area are strong partners with invested interest in transportation improvements	- Strong interest and partnership may provide opportunity for a transportation system but limited application to dispersed recreation

Strategy Prioritization

Through the data assessment, stakeholder outreach, and interaction with Forest staff, the scoping team identified a universe of potential strategies, or tasks, that could be considered for Phase II. This project is not able to address all of these strategies. The following set of criteria was used to inform the recommendation of strategies for Phase II. Three of the four match the criteria used for the corridors, while the fourth criterion serves to further determine implementation feasibility.

- Level of anticipated impact on Forest visitation and goals
    - As indicated under the corridor criteria above, impact on Forest visitation and goals is important. The Forest is committed to working with partners on a number of fronts in the region, but priority will be given to those strategies that have a significant impact on Forest visitors and the goals of the documents presented in Table 8, in particular those for the TRIP program and the Forest itself.
- Partnerships/resources available
    - Partnerships, resources, and community support can greatly aid in the success of a strategy; however, the absence of a strong champion or funding source may reflect a need for an intervention if possible and an opportunity for the Forest to provide leadership.
- Issues/opportunities addressed
    - The issues/opportunities addressed by a strategy vary in severity, urgency, and relevance to identified goals. Needs that require a solution in the short-term should be prioritized over those needs that can be addressed at a later time; however, this does not preclude prioritizing a solution that may require significant effort and time in advance of implementation.
- Cost and feasibility
    - Strategies vary in their technical complexity, political and community support, and cost, among other implementation considerations.
    - This study is not able to cover all the data collection and planning needs identified by the Forest and stakeholders for the four corridors. The assumption for funds available for Phase II tasks, not including a survey effort, is $350,000.

The full list of possible actions to be taken, with a qualitative assessment of these criteria, is in Table 12. In addition to the criteria above, the scoping team also took into account the recommendations of the 2007 TAG report and FY2008 TRIP application that resulted in the funding of this project. The next section explains how this assessment informed the selection of the recommended tasks for Phase II.

Recommended Phase II Tasks

Table 5 lists the four recommended tasks for Phase II and which of the four corridors each would address.

Table 5 Summary of Tasks and Applicability to Corridors

Tasks / Corridors	SR-542	US-2	I-90	SR-410
1) Stakeholder and Public Outreach Strategy	X	X	X	X
2) Data Collection & Analysis	Limited	Limited	X	
3) Traveler Information Assessment	X	X	X	X
4) Transit Feasibility Assessment			X	

These tasks are consistent with the study goals and previous recommendations. Table 6 compares these tasks to the three approaches and to the tasks identified in the project's FY2008 TRIP application and 2007 TAG report.

Table 6 Comparison of Tasks to Approaches and Previous Recommendations

Phase II Task	Approach	TRIP application task(s)	TAG Report recommendation
1) Stakeholder and Public Outreach Strategy	A) Regional assessment	Partnership Assessment	Partnerships
2) Data Collection & Analysis	A) Regional assessment B) Corridor-specific	Traffic Study, Visitor Capacity Analysis, Natural Resource Condition Survey	Visitor mobility, capacity, and experience / parking and traffic congestion
3) Traveler Information Assessment	C) Planning for implementation	Marketing Assessment	ITS/traveler information, transit marketing
4) Transit Feasibility Assessment for I-90	B) Corridor-specific C) Planning for implementation	Marketing Assessment, Development of Alternatives, Economic Analysis	Transit marketing

The rationale, scope, and application to the four corridors for each of the four tasks are described below in more detail. National examples of each task are also provided. As mentioned previously, the study is not able to sufficiently address all four corridors. The scoping team determined it was important for actions to be taken for each corridor but that certain corridors should be prioritized due to the high visitation and potential for providing access to a broad spectrum of users.

1) Stakeholder and Public Outreach Strategy

This task would develop a stakeholder and public outreach strategy for the planning study and more broadly, for alternative transportation.

Rationale

The primary rationale for including this task is that it is consistent with identified goals and previous recommendations, it is essential for successful implementation of any desired change, and it provides an opportunity to identify partners to lead specific planning efforts. Both the TRIP application and TAG report identify partnerships as important, as do goals within the Forest Plan (Partnerships) and Forest Strategic Plan (Public Affairs – Partnerships) (see Table 8 in Appendix A). This study includes stakeholder engagement and partnership identification in the study goals and identifies partnerships in the transportation goals and prioritization criteria. Successful implementation of a regional transportation system is dependent on strong champions and the buy-in and support of partners, stakeholders, and the broader community. Coordination, information sharing, identification of roles, and leverage of resources among key entities would provide the Forest with the support and means to advance its goals.

Subtasks and Outcomes

The task should consist of the following components:

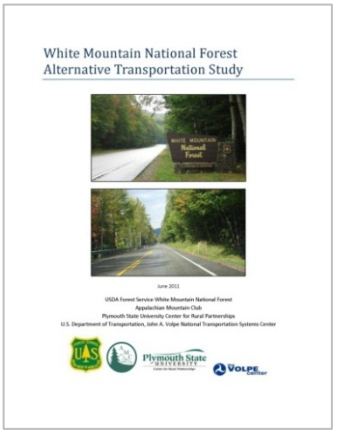
- Development and maintenance of a stakeholder list;
- Identification of stakeholder roles in project asks;
- Development and management of dissemination strategies, such as a website (see Task 3.2.1) and public meetings when appropriate, for the project;
- Assessment of current Forest coordination and participation in groups (e.g., Mountains to Sound Greenway) and recommendations for future involvement; and
- Facilitation of stakeholder meetings for each corridor to report out on the Phase I conclusions and next steps for Phase II, with a focus on the respective corridor.

Outcomes anticipated for this task include a stakeholder list, website and other dissemination materials, summary document and table of current Forest involvement, meetings, and meeting agendas, notes, and related documentation.

National Examples

One example of this type of outreach and coordination occurred with the White Mountain National Forest Alternative Transportation Study; the study worked with partners to identify actions both the Forest and others could take to achieve goals for the region, such as improving the Appalachian Mountain Club's hiker shuttle (see Figure 10).

Figure 10 Sign for Appalachian Mountain Club Hiker Shuttle and cover page (with logos) of the White Mountain National Forest Alternative Transportation Study
Source: Volpe Center



Application to Corridors

The task would include all four corridors and the meetings would provide an opportunity to clarify findings for each corridor and for the stakeholders, outside of I-90, to discuss if and how they want to coordinate moving forward, with Forest staff participation but not leadership or financial support. Items of discussion may be structure, membership, and purpose of a group and identify lead organizations and individuals that can facilitate future discussions. For the I-90 corridor, this meeting would be done in coordination with the first stakeholder outreach meeting for Task 4.

Stakeholders consistent across all four corridors are gateway communities, transit agencies, regional planning agency, scenic byway committees, WSDOT, and the ski areas. Other stakeholders include advocacy and user nonprofit groups, Tribes, and other Federal land management agencies, among others.

The stakeholders on SR-542 demonstrated the highest interest in establishing a formal coordination group. Items that could be determined at an initial meeting under this task include roles and responsibilities, purpose, and frequency of meetings. Activities to coordinate could include organization of a temporary road closure to vehicles (e.g., Ciclovia), pursuit of an off-road multi-use trail, and implementation of an education campaign to change behavior (e.g., expansion of the individualized Whatcom SmartTrip program).

For US-2, this task could include facilitation of a meeting with the Stevens Pass Greenway Scenic Byway Committee and other partners, such as WSDOT, gateway communities, Stevens Pass Ski Area, and Cascade Bicycle Club, among others. The purpose of the meetings could be to facilitate development of a clear agenda for the corridor, Forest, and

partners, with potential focus areas of bicycling, Amtrak service changes, and the future of Stevens Pass Ski Area employee transit.

For I-90, as mentioned, this task would be coordinated with Task 4. The Mountains to Sound Greenway is the most established of the scenic byway committees and provides an important and capable organizer and partner for the corridor.

For SR-410, this task would convene the City of Enumclaw, Crystal Mountain Ski Area, and Mount Rainier National Park to identify how best to pursue funding for a transit feasibility assessment and implementation plan for the following:

- Shuttle service between the Expo Center/Enumclaw Welcome Center and Crystal Mountain in the winter;
- Shuttle service between Crystal Mountain and Mount Rainier destinations in the summer; and/or
- Shuttle service between Expo Center/Enumclaw Welcome Center, Crystal Mountain, and Mount Rainier destinations in the summer.

2) Data Collection and Analysis

Phase I was able to broadly begin to identify characteristics of each corridor, assess general data gaps, and identify which gaps may be important to address to better understand the causes of existing issues and assess possible solutions. In addition, Phase I identified existing data that requires additional analysis to be useful. Consequently, the purpose of this task would be to address data gaps identified in Phase I, specifically parking occupancy and traffic data, visitor transportation preferences and challenges, and site-specific visitor capacity, and inform Tasks 3 and 4. Each of the three subtasks are described in more detail below.

Rationale

This task allows for a continuation of the regional assessment that Phase I began. It is consistent with the first study goal, to examine visitor use trends and transportation issues, as well as with the data tasks identified in the TRIP application and TAG report. The task would allow the Forest to strategically identify priorities and assess capacities within the region, focused on resource protection and visitor characteristics. The data collection and analysis would improve the Forest's understanding of its transportation issues and its assessment of potential solutions. In addition, the task would allow the Forest to explore the impacts of alternative transportation on recreation programming and resource management and consider both benefits and risks.

Subtasks and Outcomes

This section describes three subtasks focused on transportation data, visitation, and carrying capacity.

2a) Transportation Data Collection and Analysis

Phase I identified transportation data – in particular data on roadway congestion and parking occupancy – as potential major gaps in existing data. Such data are necessary to define the extent of the problems and contributing factors such that appropriate solutions can be developed and assessed.

The first step for this task would be to work with Forest staff, WFL, and WSDOT to confirm traffic data gaps, identify sites at which to collect information, and develop methodologies for data collection. For those sites that are lacking data and of interest for Tasks 3 and 4, the subtask would conduct data collection sampling efforts, such as a parking occupancy analysis and traffic counts. Table 7 indicates a preliminary list of sites for which use and parking data would be of interest based on Phase I research. Site are not listed for SR-410 because the scoping team did not identify any particular sites for which parking, congestion, or carrying capacity were considered issues outside of the ski area and national park, which collect their own data.

Table 7 Sites of Interest for Traffic and Parking Data and Analysis

Corridor	Parking Occupancy Data
SR-542	Heather Meadows
US-2	Lake Serene/Bridal Veil Falls Eagle Falls Deception Falls Iron Goat Trail
I-90	Denny Creek/Franklin Falls Snow Lake Talapus Lake Gold Creek Pond Olallie Lake Granite Mountain SR 906/Exit 52 and 53

This task would also pursue the collection of summer and winter weekend traffic data for US-2 to better understand the congestion and its impact on Forest visitor access to specific sites. In addition, Phase I identified that there is a need to work with WSDOT to reinstall the SR 542 eastern-most counter, which is currently not functioning, for year-round counts as well as the counts identified for this task.

This task should be coordinated with both the Minimum Road Analysis and Recreation Site Analysis Ranking efforts that the Forest is currently undertaking.

Outcomes anticipated for this subtask include documentation of existing site data, data collection methodology, and data collection results as well as data collection efforts in the field.

2b. Visitor Information

This subtask would consist of survey efforts along I-90 and focus groups and coordinate with others on obtaining relevant visitor information collected by others. It would collect specific information from winter and summer visitors as well as current non-visitors, including underserved populations. The Forest already has extensive information from NVUM and previous contracted efforts but this subtask would provide an opportunity to target questions related to this study and to alternative transportation.

The intent of such efforts is to understand how visitors access the Forest, who accesses the Forest, and what challenges and opportunities exist for improving access. The scoping team recommends the following types of questions:

- What barriers/constraints do you face accessing the Forest?
- How do you access the Forest?
- If you do not visit the Forest, why not and what would lead you to visit?
- In what situations would you consider using transit to access the Forest?
- How do you get information on where to go and how to get there? What would you use to get information if it existed?

The subtask would engage external stakeholders to assist with methodology and focus groups and provide supplemental information. Examples of existing groups with which to coordinate and existing methods of information collection include:

- Ski areas (ski pass holder surveys)
- Youth programs (evaluations)
- Membership associations (e.g., Mountaineers, WA Trails Association, bicycle associations, Nordic Ski groups, etc.)

Anticipated outcomes for this subtask include a survey instrument and summary results, focus meetings and documentation, and coordination meetings.

2c. Carrying Capacity Assessment

This subtask would consider carrying capacity, which encompasses the impact of different levels of visitation on natural resources, visitor experience, and infrastructure, such as parking or sewage capacity. The first step would be to convene a Forest staff working group for approximately two to three meetings or call to review the resulting information from subtasks 2a and 2b to determine which sites would and would not be appropriate to which to direct visitors, either through information (Task 3) or transit (Task 4). This group would consist of at least four Forest staff, representing engineering, resource management, recreation, and the Forest Leadership Team, as determined by the Forest. In addition, the group may determine if opportunities existed for new designations or new areas to supplement high-use areas, such as alternative snowplay areas to alleviate safety and ski parking capacity issues at ski areas. This task is considered necessary based on the data assessment conclusion that such management issues are a significant contributor to

transportation issues as well as an important consideration in evaluating the impact of a transportation solution.

Outcomes anticipated for this subtask consist of meetings to review information from other tasks, description of potential new recreation areas or designations, and documentation of carrying capacity thresholds and concerns.

National Examples

Two examples of alternative transportation planning studies that have similar data collection and analysis components are those at the Arapaho-Roosevelt National Forest in Colorado and the Bureau of Land Management's Red Rock Canyon National Recreation Area in Nevada (see Figure 11). The study for the Arapaho-Roosevelt National Forest includes a comprehensive visitor survey, sample traffic and parking data collection, and impact analysis for several sites of interest for alternative transportation. The Volpe Center is working on the study at the Red Rock Canyon National Recreation Area and conducted a parking occupancy survey this past fall of parking lots along a loop road, along which the unit is considering implementing a shuttle.

Figure 11 Map of data collection sites within the Arapaho-Roosevelt National Forest (left) and one of several parking lots at Red Rock Canyon National Recreation Area (right)
Source: Central Federal Lands Highway / Volpe Center November 2011

Applicability to Corridors

This task primarily covers I-9-0, with some focus on select sites on SR-542 and US-2. As mentioned above, SR-410 did not have any particular sites for which parking, congestion, or carrying capacity were considered issues outside of the ski area and national park, which collect their own data.

For Subtask 2A, parking occupancy information are for interest for US-2 and I-90 because parking shortages were identified as an issue for those two corridors in Phase I. Traffic count data are of interest for US-2 because of the reported impacts of congestion that effect visitor ability to access Forest sites. Heather Meadows was also included for Subtask 2A

because of its significant summer visitation and because of a specific need identified in Phase I.

For Subtask 2B, visitor preferences are of interest regionally to further the Forest's understanding of how transportation impacts visitor experience but also to inform Task 3. Visitor information for I-90 is also of specific interest for Task 4.

For Subtask 2C, the primary interest is for sites identified as having parking shortage issues and for sites to which Task 3 (traveler information) and Task 4 (transit) may direct additional visitors.

3) Traveler Information Assessment

This task would conduct an assessment of possible strategies for traveler information, with a regional approach to data availability but with implementation recommendations focused on I-90. Information from this task would be used to identify additional stakeholders and coordination efforts that may be desirable. The purpose of the task is to consider how best to (1) promote alternative transportation options and (2) provide information that will inform behavior in terms of where, when, and how visitors access the Forest to address congestion and parking issues.

Rationale

This task meets two of the study goals, is consistent with other identified goals and previous recommendations, and is anticipated to have a significant impact on visitor experience and resource protection.

The task meets the study goals to improve information about travel options and to identify options for implementation projects. The intent of this task is to provide sufficient planning to be prepared to implement a strategy (or strategies) after conducting any necessary environmental compliance and securing funding. The potential outcomes for this task are scalable in terms of complexity and funding, which would allow for some short-term implementation and phasing of other actions over time.

The task is consistent with the TAG report's recommendation to explore ITS as well as the goals of several related management documents. The Forest Strategic Plan (Public Affairs – Public Information), Forest Service Framework for Sustainable Recreation ("Provide the right information"), and America's Great Outdoors (with a focus on web-based information and communication devices) all identify provision of information as important. In addition, the promotion of alternative transportation is consistent with the Forest Service's Climate Change and Sustainable Recreation Frameworks. (See Table 8 in Appendix A).

Finally but most important, this task addresses an identified problem, has strong partnership potential, and provides benefits to the visitor. The problem of limited,

fragmented, and hidden traveler information was identified by stakeholders throughout the Forest. In addition, several stakeholders expressed interest and there are several entities that already provide information. Visitors would benefit from this task in a number of ways, including increased options and awareness of options, reduced experience with overcrowding and congestion, and enhanced educational resources.

Subtasks and Outcomes

The task would consist of the following subtasks:

- Development of goals, objectives, and performance measures (purpose, audience, scope);
- Agency and environmental scan of existing systems;
- Information gap analysis;
- Research and evaluation of dissemination methods, such as such as website, smartphone applications, brochures, and VMS and webcams; and
- Recommendations, including strategies, implementation steps, and phasing.

The task recognizes that a number of sources of information on alternative transportation options and access current exist, including but not limited to the following websites: MBSNF, Washington Trails Association, WSDOT, Ski areas, and backpackingbybus.com. The task would research comparables locally and nationally, such as the Cape Cod Smart Guide and Schuylkill River National and State Heritage Area "Plan Your Visit Wizard" website.

Important questions to be considered for any identified strategy include:

- Who would own/host it? Who would maintain it?
- How would it be funded?
- How would it be updated?
- How would it look?
- What information would it contain (scope)?

The potential outcomes for this task are scalable in terms of complexity and funding, which would allow for an initial focus on I-90, short-term implementation, and phasing of other actions over time. Potential outcomes include identification and implementation plans to pursue the following: Forest webpage updates; installation of VMS and webcams; provision of real-time information via website or smartphone application; links or new interface for ridesharing or carpooling; brochures; or a collaborative regional traveler information website.

This task would be coordinated with the MBSNF Public Affairs Office.

National Examples

There are many examples of trip planning and traveler information websites throughout the U.S., including ones that coordinate with federal land management agencies. The Boston Harbor Islands website (www.bostonharborislands.org; see Figure 12) allows users to

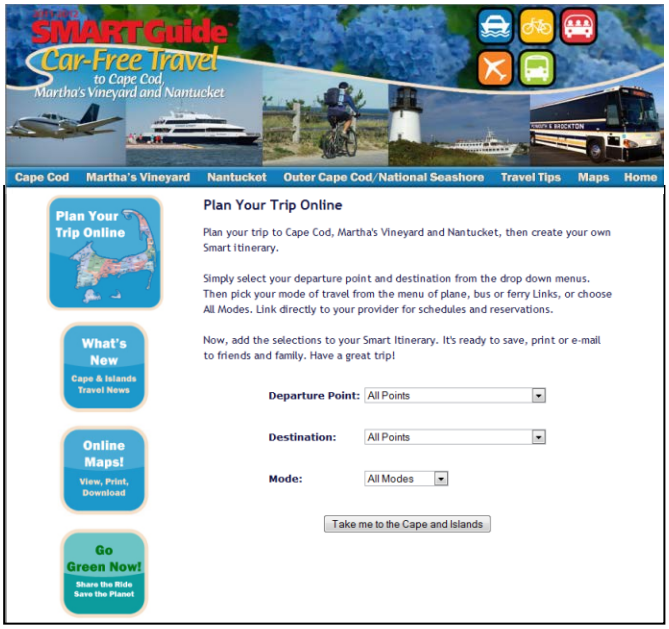
choose an activity or identify themselves as a group, boater, camper, or teacher and then provides transportation and other information. The Smart Guide for Cape Cod (www.smartguide.org; see Figure 13) allows the user to select origin, destination, and mode.

Applicability to corridors

This task is anticipated to consider all four corridors for data availability purposes but would focus implementation recommendations on I-90, while considering phasing and expansion of such strategies to the broader region over time.

Figure 12 Boston Harbor Islands website
Source: www.bostonharborislands.org

Figure 13 Cape Cod Travel Guide
Source: www.SmartGuide.org



4) Transit Feasibility Assessment for I-90

This task would conduct a transit feasibility assessment for the I-90 corridor to examine opportunities and challenges associated with new transit service from the Seattle metropolitan area to the Summit at Snoqualmie Ski Resorts and destinations in-between. Major alternatives include a Public Fixed-Route Service and Shared Bus or Van Program, which are described below. The purpose of the task is to identify and assess potential transit service for the I-90 corridor to provide convenient, affordable, and alternative access to the general public and specific disadvantaged populations. The anticipated outcome for each subtask is a summary report, with financial analyses and maps as appropriate, so that next steps in terms of necessary environmental compliance and funding proposals can begin.

Rationale

This task meets two of the study goals, is consistent with other identified goals and previous recommendations, and is anticipated to have a significant impact on visitor experience and resource protection.

The task meets the study goals to improve travel options and to identify options for implementation projects; the intent of this task is to provide sufficient planning to be prepared to implement a strategy after conducting environmental compliance and securing funding. The task meets the transportation goal of providing access to all, including underserved, disadvantaged populations. This is a goal that was identified from America's Great Outdoors, More Kids in the Woods, and other initiatives.

This task focuses on transit, rather than on another mode, such as bicycle or pedestrian, because given the scale of the corridors and the nature of the primary issues, provision of transit would have a larger impact on increasing access to the Forest. Transit can also serve visitors who may not be able to take advantage of nonmotorized access opportunities. The provision of alternative transportation is consistent with the Forest Service's Climate Change and Sustainable Recreation Frameworks.

Subtasks and Outcomes

This task consists of two separate subtasks that would evaluate two independent, distinct services: a publically-accessible, regularly scheduled, fixed route service from the Seattle metropolitan area to Forest destinations and a closed-system shared van or bus service among the Forest and public and non-profit entities to serve specific populations and support priority programs. The two subtasks nearly all the same components but differ slightly in scope and details because of the different types of service they represent. For example, a public transit service requires a service plan to identify operational characteristics such as routes, schedule, and stops that a shared van or bus program would not need.

4a) Public, fixed-route shuttle

The first subtask evaluates options for a publically-accessible, regularly scheduled, fixed route service from the Seattle metropolitan area to Forest destinations and/or gateway communities. This subtask is expected to include the following components:

- Statement of purpose and goals
- Stakeholder outreach (in coordination with Task 1)
- Comparables / peer comparison
- Market (demand) assessment
- Data collection (in coordination with Task 2A and 2B)
- Existing conditions (including a qualitative demand assessment, mapping, and assessment of potential origins and destinations)
- Route option development (in coordination with Task 2C)
- Operations and financial plan/partnership assessment (e.g., operating models, funding, vehicle selection)

As indicated, this subtask would be coordinated with the transportation data collection and visitor information subtasks for Task 2, as well as subtask 2C, Carrying Capacity Analysis, to understand the impact of transit service on visitor experience and resources at specific sites. The subtask would also consider how transit access may impact revenue from Northwest Forest passes.

4b) Shared van or bus program

The second subtask evaluates the feasibility of a closed-system shared van or bus service among the Forest and public, private, and non-profit entities to serve specific populations and support priority programs. This subtask is expected to include the following components:

- Statement of purpose and goals
- Stakeholder outreach (in coordination with Task 1)
- Comparables / peer comparison
- Existing conditions (including a qualitative demand assessment, survey of existing transit service and infrastructure, and assessment of potential destinations)
- Operations and financial plan/partnership assessment (e.g., operating and management models, funding, maintenance, reservation system)

National Examples

There are a number of examples nationally of transit systems that are operated by or serve federal land management agencies, although most of them involve the National Park Service. One of the few U.S. Forest Service units served by public transit is the White River National Forest in Colorado. The Forest partners with its local transit authority, Roaring Fork Transportation Authority, to provide a summer shuttle to the Maroon Bells Recreation Area (see Figure 14). In terms of a shared bus or vanpool, Berkshire Rides in Massachusetts shares a fleet of vans with non-profits and public agencies to provide transportation for human services, after-school, and other programs (see Figure 15).

Figure 14 White River National Forest/Maroon Bells Recreation Area Shuttle
Source: Volpe Center

Figure 15 Berkshire Rides website
Source: http://www.berkshirerides.org/

Applicability to Corridors

This task focuses on I-90 only because of the corridor's visitation characteristics, limited transit access, and interest by partners. I-90 has the closest proximity to urban areas, including underserved and disadvantaged populations, and anecdotally appears to have the highest, concentrated use, which comes into conflict with some of the existing management requirements. For example, I-90 a portal to the Alpine Lakes Wilderness Area, which is the most heavily used wilderness area in the Forest. Mountains to Sound Greenway has a strong presence on the corridor and is supportive of increasing transit and the Seattle metropolitan area has a high number of non-profits that are interested in expanding access for underserved / disadvantaged populations and specific programs.

There are reasons why other corridors were not selected instead of I-90. SR-542 already has an existing winter transit option, consisting of public-private coordination, and may have limited demand for a summer service. US-2 has a number of private transit options for the winter and does not have clear, concentrated origins for riders. SR-410 does have a

strong case for a transit service; however, the scoping team recommends that this corridor pursue separate funding for the following reasons:

- The feasibility assessment for a shuttle on this corridor would be a strong proposal on its own and it may have access to other resources.
- Direct benefit to Forest visitors (separate from the ski area) and Forest mission/priorities may be limited, especially compared to the other recommended tasks.

IV. Conclusion and Next Steps

Phase I was preceded and informed by a number of important efforts, including the 2007 TAG report and FY 2008 TRIP application. The scoping team worked to ensure consistency with those previous efforts while providing updated information, new ideas and perspectives, and a focus on understanding the issues regionally. The scoping team concluded that there are important transportation issues to be addressed, but that some of those issues are closely tied to recreation programming and resource management, thus requiring additional data collection and analysis. All of the issues are best addressed in coordination and partnership with others, and there is a need to further define roles and establish structures to ensure continued coordination in the future. For those issues that were more clearly defined, namely limited or fragmented traveler information and access barriers for certain populations, related tasks would determine feasible strategies to be implemented.

The findings and recommendations of Phase I were a result of a collaborative effort by the Phase I scoping team and were presented to the Forest Leadership Team in January 2012 for their consideration and critique and to the Forest Supervisor for approval. The report was revised accordingly. With the completion of this report, the next step will be to devise a detailed work plan and schedule for the recommended tasks and begin coordination of the Phase II team. The Forest has selected the Volpe Center to conduct Phase II, with assistance from WFLHD and West Virginia University.

Appendix A: Tables

Table 8 Relevant Documents and Transportation-Related Goals

Agency	Document Name	Relevant goals
FTA	Paul S. Sarbanes Transit in Parks (TRIP) Program	• Conserve natural, historical and cultural resources • Reduce congestion and pollution • Improve visitor mobility and accessibility • Enhance the visitor experience • Ensure access to all, including persons with disabilities
Forest / USDOT	MBSNF Transportation Assistance Group (TAG) Report (2007)	• Expand access to forest areas, especially for underserved communities • Reduce the transportation-related carbon footprint • Preserve natural resources (including wilderness areas) and open spaces
Forest	Forest Plan (1990)	• Recreation [all goals listed] o Provide a broad spectrum of recreation opportunities, with an emphasis on those opportunities which require a natural setting. o The forest will be responsive to a greater diversity of forest customers by emphasizing the needs of the very young and old, the disabled, and those of culturally and economically diverse background. ▪ Emphasis will continue towards sharing of information services with other agencies and partnerships with private outlets where possible. Emphasis will also be given to intensifying the Forest's public outreach programs to allow certain segments of the public to become more familiar with recreation opportunities on the National Forest. o Become more knowledgeable of the forest's customer. Research techniques to assure that recreation facilities, opportunities and services focus on the needs of our customers. o Encourage a sense of ownership through expanded Interpretation and Education activities; emphasize traditional values of "conservation", and market the "special places", special activities and special opportunities of the MBSNF. o Provide a full spectrum of recreation facilities (from full service resorts to trailheads) to serve all of the recreation users, providing amenities (hot water, showers, trailer dumps) where necessary and appropriate, that allow the recreating customer to enjoy the natural setting while creating a sense of quality, comfort and security. o Encourage partnerships of public and private suppliers of recreation services and facilities and administer the partnerships to ensure and enduring relationship of mutual gain. o Recreation is a co-equal partner in Multiple Use Management that is guided by the need to Regain Public Trust through Quality Management. This needs to serve as a tool to minimize conflicts between users and resources. o Professional recreation management flows from a work force with a full spectrum of career opportunities dedicated to the traditional values of conservation, demonstrating exceptional skills, providing quality service, and projecting a favorable image of the Forest Service. • Wilderness [selected goals only]

Agency	Document Name	Relevant goals
		○ Manage wilderness for the use and enjoyment of people in such a manner as will leave wilderness values unimpaired for future. ○ Wilderness is to be managed to prevent degradation. The non-degradation principle seeks to maintain each wilderness in at least as wild a condition as it was at the time of classification. ○ Provide for the protection of the area, preservation of its wilderness character through dissemination of information regarding proper use. • Soil, Water, Riparian, and Air [selected goals only] ○ Maintain the air quality over the Forest to meet Federal and State standards and protect air quality related values from pollutants generated within or downwind of the Forest. ○ Manage air pollutant generated activities to insure compliance with State and Federal Laws. • Facilities [all goals listed] ○ Build and maintain transportation system facilities to the minimum standard needed to support planned uses and activities. ○ Manage the transportation system at minimum standard necessary to provide for public safety. ○ Encourage the development and use of mass transit facilities to heavy public use areas, such as winter sports complexes. ○ Locate support facilities to provide for management efficiency, public service, and energy efficiency. ○ Utilize alternative energy sources for water and space heating. ○ Minimize adverse effects of vehicular traffic on wildlife. • Roads [all goals listed] ○ The Forest Transportation System will be planned to serve long-term multiple resource needs as provided in Management Area direction. ○ Maintain the Forest Road Management Plan. ○ Provide and manage the road system to serve the long-term resource needs and objectives of the management areas. ○ Maintain a viable transportation system in accordance with road management objectives, which will include identification of anticipated traffic needs, road closures needed for resource management, and identification and correction of road and bridge deficiencies. • Partnerships: Management of forest system lands, resources, and activities will be coordinated with appropriate local, State, Federal agencies, private landowners, Indian tribes, and interest and user groups. • Community and Human Resource Management ○ Promote human resources, civil rights, and community development within the zone of influence of the Mount Baker-Snoqualmie National Forest. The Forest will participate in human resource programs that support community and economic development. • American Indian Religious and Cultural Use Areas: Allow for access to and protection of environmental conditions and values of sites and areas important to religious and ceremonial use by recognized American Indian tribes within the planning area.

Agency	Document Name	Relevant goals
Forest	Strategic Plan (2009)	• Ecosystems: Subgoal 5 – Wildlife. Manage and restore wildlife resources of the Forest to ensure the use of these resources as a maximum benefit for the Forest, its other resources, and associated communities. • Engineering: Subgoal 1 – Transportation. Provide a safe, economically and environmentally sound transportation system and services in order to achieve program and management direction, access, and resource protection and restoration for public and administrative use. o Implement the feasibility study for Alternate Transportation to encourage the public use of intermodal systems in a sustainable and environmentally friendly manner. • Public Affairs: o Subgoal 1 - Public Information ▪ Develop positive public awareness of the Forest's role of landscape steward and conservationist ▪ Provide relevant, timely recreational information to public. ▪ Assess and improve public involvement and community relations. o Subgoal 3 – Partnerships ▪ Develop new partnerships ▪ Sustain existing partnerships ▪ Build connection between underserved urban youth population and forest environments • Recreation: o Subgoal 1: Manage and sustain recreation activities consistent with Forest niche settings ▪ Provide appropriate access and sustainable recreation opportunities ▪ Implement Rec Facilities Analysis and 5 Year Program of Work. ▪ Coordinate with engineering on road maintenance level decisions ▪ Provide more ADA accessible recreation opportunities – fully accessible developed recreation at all sites. o Subgoal 3: Provide sustainable recreation while protecting forest resources (O&M) o Subgoal 4: Gather and use data to more effectively determine and deliver recreation program. ▪ Strengthen data sources so management decisions are based on science/knowledge. ▪ Validate data needs and sources for future management decisions
USFS	Northwest Forest Plan (1994)	No directly relevant goals.
USFS	Open Space Conservation Strategy (2007)	• Support and participate in local, regional, and transportation planning to conserve open space and retain ecosystem benefits.

Agency	Document Name	Relevant goals
USFS	Strategic Framework for Responding to Climate Change: Sustainable Operations	• Reduce environmental footprint • Focus areas: Energy, water, green purchasing, fleet and transportation, water prevention and recycling, and sustainability leadership • Fleet and Transportation o Vehicles: Increase purchase of alternative fuel, hybrid, and plug-in hybrid electric vehicles when commercially available. o Petroleum Conservation: Reduce petroleum consumption in fleet vehicles by 2% annually through 2015. o Alternative Fuel Use: Increase alternative fuel consumption at least 10% annually. o Achieve zero emissions in fleet and transportation by 2015
USFS	Framework for Sustainable Recreation (2010)	• Provide a diverse range of quality natural and cultural resource based recreation opportunities in partnership with people and communities. • Implement "green" operations • Provide the right information
USFS	More Kids in the Woods Challenge Cost Program (2011)	• Connecting Kids, Families, & Adults to Healthy, Outdoor Activities Across All Landscapes. Improve long-term physical and mental health in children and adults by reconnecting an urbanizing world with outdoor experiences and active lifestyles.
USFS	Strategic Plan (2007-2012) (2007)	• Goal 4. Sustain and Enhance Outdoor Recreation Opportunities o Improve the quality and availability of outdoor recreation experiences. o Secure legal entry to national forest lands and waters. o Improve the management of off-highway vehicle use.
USDA	Strategic Plan (2010)	• Sustain and enhance outdoor recreation opportunities (Acquire and provide appropriate access to recreational opportunities.) • Ensure our national forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources. • Engage Urban America With Forest Service Programs
Federal	Let's Move Outside	• Federal land management agencies should work together along with state, Tribal and local agencies to promote and ensure access to a range of youth-appropriate activities on public lands and waters. This includes transportation to help children get to and from parks and other public lands.
Federal	America's Great Outdoors	• Simply getting there is another obstacle for many, especially youth and disadvantaged communities. Many cannot afford transportation to reach outdoor destinations and may not have parks or green spaces close to home. • Connect people with urban parks and community green spaces. • Launch a public awareness initiative to show that experiencing America's great outdoors is fun, easy, and healthy. • Provide the public with reliable and up-to-date web-based information that is easily accessible with modern communication devices. • The real or perceived costs of visiting parks and other places discourage many from going out to enjoy them. The cost of transportation, the fees, passes and permits and outdoor gear (skis, kayaks, boots, waders, etc.) that may be required present a real obstacle for young people, families and youth groups • Create more parks near and in communities, including networks of connected trails, bike paths, and greenways, and urban gardens and community "pocket parks." • Improve access to open spaces, both within cities and beyond their limits, by expanding options for public transportation and linking sidewalks and pathways to create safe routes to parks.

Table 9 Corridor Characteristics

Characteristic	SR-542	US-2	I-90	SR-410
Ranger District	Mount Baker	Skykomish	Snoqualmie	Snoqualmie
Other designation	- Mount Baker USFS and State Scenic Byway - Forest Highway	- Stevens Pass National, State, and USFS Scenic Byway - Cascade Loop Scenic Byways (Washington State) - Designated WSDOT electric highway (EV Project; West Coast Green Highway) - Forest Highway	Mountains to Sound National and State Scenic Byway	- Chinook National Scenic Byway - Mather Memorial Parkway - All American Road - Forest Highway
WSDOT District(s)	Baker	Snohomish, King, Chelan	King, South-Central	King, Southwest, Olympic, South Central
RTPO/MPO	Whatcom Council of Governments	Puget Sound Regional Council	Puget Sound Regional Council	Puget Sound Regional Council
County(ies)	Whatcom	King, Chelan, Snohomish	King, Kittitas	King, Pierce
Gateway communities	Bellingham, Deming, Kendall, Maple Falls, Glacier	Everett, Monroe, Sultan, Gold Bar, Skykomish, Leavenworth, and Wenatchee	Seattle, Issaquah, North Bend	Tacoma, Seattle, Enumclaw, Greenwater
Average annual visitation	- 38,000 (Glacier Public Service Center; estimated 30-40% Canadian) - 150-200,000 to Heathers Meadow (14,000 to Visitor Center) (summer)	18,000 (Skykomish Ranger Station)	- 18,000 (Snoqualmie Ranger Station) - 14,000 (Snoqualmie Pass Visitor Center)	- 20,000 (Enumclaw Public Service Center) - 7,818 (Silver Creek Guard Station; 2011)
Visitation – Traffic counts (Average Daily Traffic Volume, WSDOT 2010)	1,500 @ MP 33.40 (Entrance to the Forest)	4,900 @ MP 56.70 (Deception Falls Parking Lot)	31,000 @ MP 47.41 (Tinkham Road Exit 47)	1,800 @ MP 47.41 (Entrance to Forest)

Table 10 Corridor Transportation Characteristics

Transportation Characteristic	SR-542	US-2	I-90	SR-410
Traffic / visitation patterns	- Summer visitation to Heather Meadows is similar to winter (150-200,000) (August and September peak) - Weekend traffic slow through towns (e.g., Glacier) - Uni-directional traffic in winter to ski area; after the ski area lifts close at 3:30pm in winter, everyone departs the ski area, creating a backup	- Summer visitation higher than winter - Visitation concentrated on weekends year-round – "recreation rush hour" occurs Sunday afternoon westbound - Scenic driving popular but no scenic pullouts west of the pass	- Summer visitation similar to winter but congestion worst during winter bad weather (chain up) and summer Fridays and Sundays - Major congestion does not occur until west of the intersection with Interstate 405 but congestion can still occur further east - Scenic driving popular but scenic stops limited (Ashael Curtis, Snoqualmie Point)	- Summer visitation high, with dispersed recreation and congestion and parking shortages for access to Mount Rainier - Winter visitation also high, with dispersed motorized recreation focused on Forest Road 70 and parking shortages at Crystal Mountain
Road Bicycling	- Training for Ski to Sea Race (Glacier to Mount Baker) (May) - Training for Ride 542 (Glacier to Heather Meadows) (September) - Limited to no shoulder - No signage or infrastructure	- Annual Courage Classic Road Bike Tour (August) - Shoulder width and surface varies; wide shoulder on eastbound side - No signage or infrastructure	- Annual Courage Classic Road Bike Tour (August) - Some road cyclists prefer interstate to John Wayne Trail - Tinkham Road/Old Cascades Highway proposed alternative to I-90	- Annual "Ride Around Mount Rainier in One Day" (RAMROD) event (July) - Congestion and road rage - 4 foot shoulders - No signage or infrastructure
Mountain Bicycling	Proposed "Chain of Trails" Bay to Baker Trail (Bellingham to Mount Baker)	New bike park opened October 2011 at Stevens Pass Ski Area	John Wayne Pioneer Trail (gravel) (see Bus-Up 90 shuttle service below)	Limited – mountain bikes allowed at Crystal Mountain without lift use
Pedestrian Facilities	Connection to Pacific Northwest National Scenic Trail near terminus	- Overpass at Stevens Pass - Access to Pacific Crest Trail at Stevens Pass - Iron Goal Trail (parallel to 2)	- John Wayne Pioneer Trail - Access to Pacific Crest Trail at Snoqualmie Pass	Foothills Trail in Enumclaw

Transportation Characteristic	SR-542	US-2	I-90	SR-410
Traveler Information / ITS / travel demand management	- MBSNF road/trail condition information - WSDOT mountain pass road report - Smart Trips marketing and outreach program in Bellingham (15% reduction in vehicle use over 2 years)	- MBSNF road/trail condition information - WSDOT conditions website for Stevens Pass with camera feeds (email and Twitter options) - University of Washington/WSDOT traveler information website - Elevated VMS eastbound in Sultan - 2 electronic collision signs with number of days since last fatal or serious collision	- MBSNF road/trail condition information - WSDOT conditions website for Snoqualmie Pass with camera feeds (email and Twitter options) - University of Washington/WSDOT traveler information website	- MBSNF road/trail condition information - WSDOT Chinook Pass conditions website and Crystal to Greenwater conditions report
Public Transit	Whatcom Transportation Authority – regular service to Kendall; limited (one day a week), advance-request, Safety Net service to Maple Falls and Glacier	- Community Transit Everett to Gold Bar with 4 park and ride lots (Snohomish, Monroe, Sultan, Gold Bar) - Amtrak passenger service parallels U.S. 2 with station in Leavenworth (service to Everett/Seattle best suited for westbound commuters; eastbound service to Spokane) - Link Transit (Chelan-Douglass County) – seasonal service from Wenatchee to Lake Wenatchee State Park and Mission Ridge Ski Resort; previous seasonal free in-town trolley (ended September 2011) - Northwest Trailways service between Everett, Monroe, and Leavenworth with stops at Skykomish, Mount Index Road, and Stevens Pass	- King County Metro – commuter service to North Bend - Sound Transit – day, weekend, and evening service to Issaquah - Greyhound previously served the summit but eliminated stop	King County Metro – limited service to Enumclaw Mount Rainier Paradise Shuttle – offers service in July and August from Ashford (outside of the park) or from within the park (Longmire and Cougar Rock) to the Paradise area

Transportation Characteristic	SR-542	US-2	I-90	SR-410
Private Transit (Summer)	None (Baker Bus has expressed interest in serving hikers and rafters)	Trailhead shuttle services (Leavenworth Shuttle & Taxi) to Pacific Crest Trail at Stevens Pass and trailheads east of the pass available upon request from Leavenworth	- Bus-Up 90 bicycle shuttle between Rattle Snake trailhead (Cedar Falls) and Hyak trailhead for John Wayne Trail - Scenic railroad between North Bend and Snoqualmie - Trailhead shuttle services (Leavenworth Shuttle & Taxi) to Pacific Crest Trail at Snoqualmie available upon request from Leavenworth	Private summer bus tours from downtown Seattle hotels: Grayline of Seattle Mount Rainier Vistas Tour (May-October) and Evergreen Escapes Ultimate Rainier Tour (July-October)
Private transit (winter)	25-35 buses for ski school programs; regularly scheduled charter service (Baker Bus) from Bellingham	Private charters – 12+ services	- Private charters from Seattle and Issaquah (3+) - Private charter from Vancouver BC and Portland OR	- Private service chartered by Crystal Mountain on weekends to Tacoma, Seattle, and Bellevue (Express Bus); 1,200 annual ridership - 15-20 school buses for ski school

Table 11 Ski Area Characteristics

Ski Area Characteristic	SR-542	US-2	I-90	SR-410
Ski Area	Mount Baker	Stevens Pass	Summit at Snoqualmie	Crystal Mountain
3-year average annual skiers	160,000	377,000	624,000	305,000
Season	November to April	December to mid-April	December to April	October to mid-July (2011)
Origin of skiers	45% from Canada; remainder mainly from Everett and northern Seattle	90% West (North Seattle), 10% East	90% West (Seattle), 10% East	Seattle and south
Number of parking spaces	2200	2500 (including overflow) (additional parking for buses (35) and RVs (124))	5500	3500
Number of turnaway days?	None	None (2010); 8 (2003)	None	3 (2010)
Capacity limitations	- Food service/seating - Use by non-patrons	- Water/sewer	- Food/beverage service - Lifts/infrastructure - Use by non-patrons	- Parking - Use by non-patrons

Ski Area Characteristic	SR-542	US-2	I-90	SR-410
Winter activities	Downhill Skiing/Snowboarding	Downhill Skiing/Snowboarding and Nordic Skiing/snowshoeing	Downhill and Nordic skiing/snowshoeing and tubing	Downhill Skiing/Snowboarding
Summer activities	Parking for USFS and backcountry hiking/climbing	- Mountain Biking with lift access (as of 2011) - Parking for USFS hiking, including Pacific Crest National Scenic Trail	Parking for backcountry hiking	- Gondola (as of 2011) - Mountain biking allowed but no lift access
Data	Daily car counts	- Automatic lift gate counter (since 2008-9) - Weekly surveys	Regular emails and surveys to passholders	Unclear
Traveler Information and travel demand management	- Link to WSDOT road conditions website and information on private shuttle service (Baker Bus) on website	- Private charter bus information on website - Working with WSDOT on signs to direct people to overflow parking	- Information on carpooling, private charter bus options, and WSDOT road conditions available on website - Online rideshare program for employees and visitors - During January and February, Summit West premium parking ($10) free for carpools of 3+ and Summit Central has designated carpool parking	- Summer and winter private charter bus information on website
Intra-resort shuttle	No	- Yes (between Stevens Pass and Nordic Center) - Uses 4 Bluebird school buses	- Yes (between 4 resorts) - Uses 5 16-to-20 passenger buses (2 biodiesel – food oil)	- Yes (between parking and lodge) - Uses open-air trailers

Ski Area Characteristic	SR-542	US-2	I-90	SR-410
Employee shuttle	- Free - Serves 300-400 employees (not including ski instructors) - serves Bellingham, Maple Falls, and Glacier - Uses 5 15-passenger vans	- Free - Used by 70% of employees (approximately 600 out of 900) - Serves Monroe, Leavenworth, and Peshastin - Uses 4 Bluebird school buses and passenger vans	- Free - Serves 18 employees (out of 1650) in winter and 12 employees (out of 65) in summer - Serves North Bend and Cle Elum - Uses 5 16-to-20 passenger buses (2 biodiesel – food oil)	- $100 for season - Weekend only - Serves Enumclaw and Greenwater - Runs at maximum capacity (56 passengers)
Visitor shuttle	- None	- Prior to 2010, provided shuttle, but now privately operated	- None	- Charter shuttle - Weekend only - Serves Tacoma, Seattle, and Bellevue (Express Bus) - 1,200 annual ridership -
Transportation Issues	- Limited transit equipment and skilled drivers for winter conditions - Use of parking by visitors not accessing the ski area - Sledding activities in proximity to ski area parking	- Safety and congestion concerns recently addressed with pedestrian overpass and designated right-hand turn lane - Sustainability of employee transit is a concern - Parking and mountain capacity may be issue in future	- Congestion exiting I-90 - Traveler information on I-90 to indicate which parking areas are full - Use of ski area parking by visitors not accessing the ski area	- Insufficient parking for capacity of resort

Table 12 Potential Strategies Identified

Type	Mode	Corridor	Task	Issue	Impact	Cost / Implementation	Recommendation
Data collection	Bicycle	All	Calculate average bicyclists per weekend day in summer	Data gap: bicycle use	Use is likely to be relatively low for most corridors; result would inform priorities and location for improvements	Requires extensive staffing and time but likely high support from volunteers, groups, and WSDOT	Encourage WSDOT and the Cascade Bicycle Club, among other organizations, to expand counts to corridors (Task 1)
Data collection	Motorized vehicle	All	Determine traffic flow on weekends in summer and winter	Data gap: weekend traffic congestion	Would quantify congestion among corridors and temporally to further define problem but cause unlikely to be Forest-specific	Potential to be expensive and extensive effort	Prioritize specific information and work with WSDOT to develop long-term plan (Task 2)
Data collection	Motorized vehicle	All	Track parking occupancy for select trailheads, visitor centers, and other destinations	Data gap: parking use / parking shortages	Would identify which sites are used most heavily and when so that information can be provided to the public and resource capacity impacts and transit feasibility can be assessed	Potential to be expensive and extensive effort	Work with WFLHD and WSDOT to develop methodology and plan to collect data at selected sites (Task 2)
Research	All	All	Comparables / Peer Comparison	Other	Would allow MBSNF to benefit from the experience of other Forests	May be difficult to identify transferable “successful” experiences; would need to focus interest	Incorporate peer comparison into the transit and traveler information tasks (Tasks 3 and 4)

Type	Mode	Corridor	Task	Issue	Impact	Cost / Implementation	Recommendation
Traveler information / Marketing	All	All	Variety of potential actions, from developing a webpage on MBSNF website that links to various resources for transportation options to establishing a separate website, developing a smartphone application, etc.	Lack of information or awareness of information on access and transportation conditions	Would provide information for visitors on access options and recommendations about destinations and travel conditions	Scalable, with a range of costs and levels of complexity	Conduct a traveler information assessment and identify specific strategies to implement (Task 3)
Feasibility assessment	Transit	542	Assess feasibility of summer shuttle to Heather Meadows and other trails and expansion of winter shuttle	Limited access for carfree, carless, and groups	Would provide option for carfree, carless, and those interested in traveling in groups. No parking shortage or other significant issues exist so limited measurable impacts.	May have limited demand	Continue to explore as part of agenda for SR 542 stakeholder group (Task 1)
Feasibility assessment	Transit	410	Assess feasibility of shuttle between Enumclaw, Crystal Mountain, and Mount Rainier NP in summer and winter	Parking shortage (winter and summer); poor winter driving conditions	Other resources may be available, limited impact to MBSNF visitors/goals	Invested, interested partners, ongoing investment (new visitor center)	Work with partners to establish plan to pursue feasibility study – either leveraging existing funds or applying for additional funds (Task 1)
Feasibility assessment	Transit	1-90	Assess feasibility of shared transit vehicle(s) with USFS and nonprofits and weekend summer and winter shuttle from Seattle area	Parking shortages, limited access for carfree, carless, and groups	Would provide option for carfree, carless, and those interested in traveling in groups and would reduce congestion and parking shortages	Demand is unknown but high density potential origins; cost may be high; transit options are scalable; interested partners	Conduct bus shuttle feasibility study (Task 4)

Type	Mode	Corridor	Task	Issue	Impact	Cost / Implementation	Recommendation
Feasibility assessment	Transit	US-2	Assess feasibility of summer and winter shuttle to pass	Parking shortages; limited access for carfree, carless, and groups	Would provide option for carfree, carless, and those interested in traveling in groups and would reduce congestion and parking shortages	Demand is unknown and cost may be high; congestion would impact operations	Wait to pursue at this time
Feasibility assessment	Train	US-2	Assess feasibility and necessary implementation steps to shift Amtrak schedule or run additional trips Provide train option for day visitors from Everett and Seattle to Leavenworth	Negative visitor experience due to delays from congestion; limited access for carfree, carless, and groups	Would provide option for carfree, carless, and those interested in traveling in groups	May be difficult to implement and dependent on other entities; service to Leavenworth would require connection to new transit system to access MBSNF	Pursue in coordination with Stevens Pass Scenic Byway Committee (Task 1)
Signage Plan	Bicycle	542, 2, 410	Work with WSDOT and scenic byway committees on bicycle signage	Stakeholder perception of bicycle safety issue	Increase safety and promote bicycle use	Need to consider other signage and ownership and maintenance issues	Pursue in coordination with stakeholders (Task 1)
Feasibility assessment	Bicycle	410	Off-road bicycle trail	Stakeholder concern about on-road bicycle safety and appeal to broader audience	Increase safety and promote bicycle use	Unknown demand and options	Wait to pursue at this time but support in coordination efforts (Task 1)
Feasibility assessment	Bicycle	542	Off-road bicycle trail	Stakeholder concern about on-road bicycle safety and appeal to broader audience	Increase safety and promote bicycle use	Unknown demand and options	Wait to pursue at this time but support in coordination efforts (Task 1)
Feasibility assessment	Bicycle	US-2	Off-road bicycle trail	Stakeholder concern about on-road bicycle safety and appeal to broader audience	Increase safety and promote bicycle use	Unknown demand and options	Wait to pursue at this time but support in coordination efforts (Task 1)

Type	Mode	Corridor	Task	Issue	Impact	Cost / Implementation	Recommendation
Feasibility assessment	Bicycle	I-90	Alternative road bicycle option to highway or John Wayne Trail – e.g., Tinkham Road	Stakeholder concern about on-road bicycle safety and appeal to broader audience	Increase safety and promote bicycle use	Unknown demand and options	Wait to pursue at this time but support in coordination efforts (Task 1)
Feasibility Assessment	Pedestrian	I-90	Evaluate solutions for increased pedestrian safety at the underpass at exit 52	Stakeholder perception of pedestrian safety issue	Increase safety	Unknown demand and limited options	Work with WSDOT (Task 1)
Planning and design	Pedestrian	SR 542	Provide pedestrian access at Glacier Creek	Stakeholder perception of pedestrian safety issue	Increase safety and promote traveling by foot	Specific implementation project that may be able to be covered by other funding	Pursue funding separately from study
Road management plan	Multi	SR 410	Assess management options for Forest Road 70 (e.g., time separation of uses)	Perceived safety and visitor experience concerns	Improve safety and visitor experience	Focused on recreation, unknown demand, and	Wait to pursue at this time

Appendix B: Corridor Graphics

SR - 542

USFS Mount Baker Scenic Byway

MBS Ranger District
Mount Baker

WSDOT Districts
Baker

MPO/RTPO
Whatcom Council of Governments

Counties
Whatcom

Documents
- Mount Baker Highway Corridor Management Plan (1997)
- Whatcom Transportation Plan (2007)

Visitor Center
- Glacier Public Service Center: 38,000 annual visitors (estimated 30-40% Canadian)
- Heather Meadows Visitor Center 14,000 annual visitors (summer only)

Average Daily Traffic Volume (ADT)
1,500 at milepost 33.4 (2010) near forest entrance forest at Glacier Service Center

SR - 542
Alternative Transportation Facilities/Services

- Limited/no shoulder; no signage; no infrastructure
- Training for the "Ski to Sea" Race and Ride 542 event
- "Chain of Trails" Bay to Baker Trail (Bellingham to Mount Baker)

- No significant pedestrian facitilies or activity

- Whatcom Transportation Authority: regular service to Kendall; limited (one day per week), advance-request service to Maple Falls and Glacier
- Free employee shuttle (no ski instructors) serving Bellingham, Maple Falls, and Glacier
- Baker Bus - private winter shuttle

- MBSNF road/trail condition information
- WSDOT mountain pass road report
- Smart Trips marketing and outreach program in Bellingham (15% reduction in vehicle use over 2 years)

U.S. Department of Transportation

Mount Baker Ski Area

Season:	November to April
Average annual skiers:	160,000
Origin of skiers:	45% from Canada; remainder mainly from Everett and northern Seattle
Parking capacity:	2,200
Capacity limitations:	Food service/seating Use by non-skiers
Summer activities:	None

Source: Mt. Baker Ski Area

Winter terminus

Source: Volpe Center

Summer terminus

- Open for 3-4 months depending on snow-pack
- 150K - 200K visitors annually (14K to visitor center)
- Artist Ridge Trail popular hiking destination


Source: USFS

Pacific Northwest National Scenic Trail

Mount Baker Foothills Chamber of Commerce Visitor Center

Glacier Public Service Center

- Weekend traffic can be slow through town
- 38,000 annual visitors at Visitor Center

Source: Volpe Center

Douglas Fir Campground

Silver Fir Campground/ Salmon Ridge Sno-park

Gateway to SR-542

To Abbotsford, BC, Canada. Last major intersection.

WA-547

LIMITED

LIMITED

Bellingham
pop. 80,885
(14.1 mi from B'ham)

Deming
pop. 353
(14.1 mi from B'ham)

Kendall
pop. 191
(24.4 mi from B'ham)

Maple Falls
pop. 324
(27.3 mi from B'ham)

Glacier
pop. 211
(34.9 mi from B'ham)

Mt Baker Ski Area
(53.2 mi from B'ham)

Heather Meadows
(58.7 mi from B'ham)

Urban Zone — Rural/Small Town Zone — Backcountry/ Summer Hiking Zone — Backcountry/ Ski Resort Zone — Backcountry/ Summer Hiking Zone

U.S. Route 2

Stevens Pass National Scenic Byway
Cascade Loop Scenic Byways (Washington State)

MBS Ranger District
Skykomish; Wenatchee River

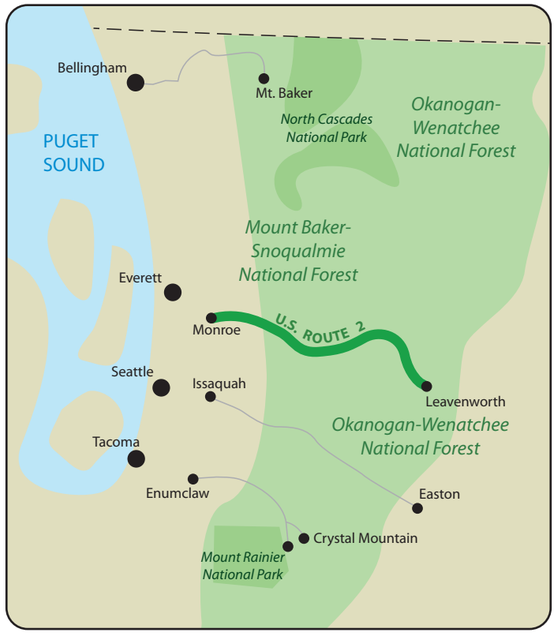
WSDOT Districts
Snohomish; King; Chelan

MPO/RTPO
Puget Sound Regional Council

Counties
King; Chelan; Snohomish

Documents
- Stevens Pass Greenway Corridor Management Plan (1999)
- Stevens Pass Ski Area Master Development Plan (2007)
- Mt. Baker-Snoqualmie Nat'l Forest - Stevens Pass Ski Area Transit Expansion Section 3039 Field Report (2003)
- WSDOT U.S. 2 Route Development Plan (2007)
- Puget Sound Regional Council Transportation 2040 (2010)

Visitor Center
Skykomish Ranger Station:
18,000 annual visitors



Average Daily Traffic Volume (ADT)
4,900 at milepost 56.7 (2010)

U.S. Route 2
Alternative Transportation Facilities/Services

- No highway signage or infrastructure
- No significant road bicycling activity
- Year-round mountain biking

- Pedestrian overpass at Stevens Pass
- Iron Goat Trail runs parallel to U.S. 2

- Community Transit: Everett to Gold Bar (commuter)
- Park-and-ride lots in Monroe, Sultan, and Gold Bar
- Link Transit: Wenatchee to Lake Wenatchee State Park and Mission Ridge Ski Resort
- Free employee shuttle serving Monroe, Leavenworth, and Wenatchee (600 employees [70%] use it)
- 12+ winter shuttles to ski area
- Northwest Trailways service between Everett, Monroe, and Leavenworth
- Shuttle between Stevens Pass and Nordic Center
- Charter services to trailheads available

- Amtrak passenger service parallels U.S. 2 with station in Leavenworth (schedule better suited for westbound commuters)

- MBSNF road/trail condition information
- WSDOT conditions website for Stevens Pass with camera feeds (email and Twitter options)
- U. of Washington/WSDOT traveler information website
- Elevated VMS in Sultan
- Two electronic collision signs indicating number of days since last fatal or serious collision

U.S. Department of Transportation

Stevens Pass Ski Area

Season:	December to mid-April
Average annual skiers:	377,000
Origin of skiers:	90% from west (North Seattle) 10% from east
Parking capacity:	2,500 auto; 35 bus; 124 RV
Capacity limitations:	Water/sewer
Summer activities:	Mountain biking with lift access Hiking

Source: Stevens Pass Ski Area

Leavenworth
- Popular year-round destination


Source: Leavenworth Chamber of Commerce

Lake Serene / Bridal Veil Falls
- Popular trailhead
- Parking and trail both at capacity


Source: Volpe Center

USFS Ranger Station
- 18,000 visitors, mainly June - Sept
- Approx. 50 visitors/day on weekends


Source: Volpe Center

Stevens Pass Pedestrian Overpass
- Allows safe crossing of Route 2 for skiers


Source: Volpe Center

Gateway to U.S. Route 2

To Everett and I-5

To Bothell, Seattle, and I-405

Monroe
pop. 17,304
(15.7 mi from Everett)

Sultan
pop. 4,651
(22.8 mi from Everett)

Gold Bar
pop. 2,075
(28.7 mi from Everett)

Eagle Falls

Money Creek Campground

Skykomish
pop. 817
(49.2 mi from Everett)

Deception Falls

Iron Goat Trail

Pacific Crest Trail

Stevens Pass Nordic Center

Lake Wenatchee

Stevens Pass
(65.2 mi from Everett)

Leavenworth
pop. 1,965
(100 mi from Everett)

To Wenatchee, Lake Chelan, Mission Ridge Ski Area

Suburban Zone → ← Rural/Small Town Zone → ← Backcountry/ Summer Hiking Zone → ← Backcountry/ Ski Resort Zone → ← Rural/ Small Town Zone

Interstate 90

Mountains to Sound Greenway National Scenic Byway

MBS Ranger District
Snoqualmie

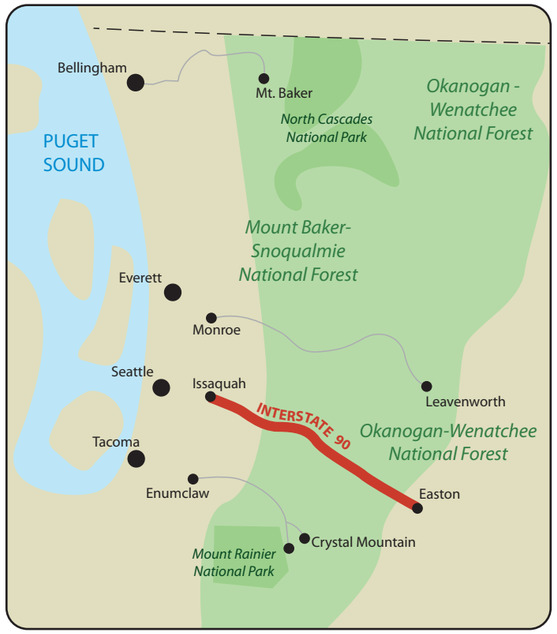
WSDOT Districts
King; South-Central

MPO/RTPO
Puget Sound Regional Council

County
King; Kittitas

Documents
- Snoqualmie Ski Area Plan (2008)
- Mountains to Sound Greenway Heritage Study (anticipated 2011)
- Mountains to Sound Greenway Implementation Plan (1998)
- Puget Sound Regional Council Transportation 2040 (2010)

Visitor Center
- Snoqualmie Ranger Station (North Bend): 18,000 annual visitors
- Snoqualmie Pass Visitor Center: 14,000 annual visitors



Average Daily Traffic Volume (ADT)
31,000 at milepost 47.41 (2010)
(near Ashael Curtis/Denny Creek)

Interstate 90
Alternative Transportation Facilities/Services

- Annual "Courage Classic Road Bike Tour" in August
- Some road cyclists prefer interstate to John Wayne Trail
- Proposal to pave Tinkham Road/Old Cascades Hwy (parallel to interstate)
- John Wayne Pioneer Trail (gravel) parallels interstate

- John Wayne Pioneer Trail (gravel)

- King County Metro: commuter service to North Bend
- Sound Transit: day, weekend, and evening service to Issaquah
- Intra-resort shuttle between base ski areas
- Free employee shuttle carries 18 passengers, serves North Bend and Cle Elum
- Multiple private ski area charters/shuttles
- Washington State Parks' Bus-Up 90 bicycle shuttle between Cedar Falls and Hyak trailheads for John Wayne Trail
- Trailhead shuttle services (Leavenworth Shuttle & Taxi) to Pacific Crest Trail at Snoqualmie Pass available upon request from Leavenworth

- Scenic railroad between North Bend and Snoqualmie

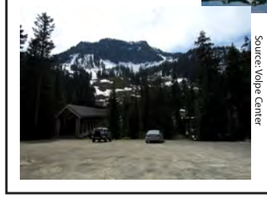
- MBSNF road/trail condition information
- WSDOT conditions website for Snoqualmie Pass with camera feeds (email and Twitter options)
- U. of Washington/WSDOT traveler information website

U.S. Department of Transportation

The Summit at Snoqualmie

Season:	December to April
Average annual skiers:	624,000
Origin of skiers:	90% West; 10% East
Parking capacity:	5,500
Capacity limitations:	Food/beverage service Lifts/infrastructure Use by non-skiers
Summer activities:	Parking for backcountry hiking

Alpine Lakes Trailheads (various locations, some with parking issues)
- Denny Creek/Franklin Falls
- Snow Lake
- Talapus Lake
- Gold Creek Pond
- Olallie Lake
- Granite Mountain



Tinkham Road
- Parallels I-90 (south of highway)
- Paving has been proposed

Denny Creek
- Busy trailhead with summer parking capacity issues

Dangerous pedestrian conditions in winter

Gateway to I-90

North Bend Ranger Station

Snoqualmie Pass Visitor Center

Pacific Crest Trail Access

Travelers Rest Rest Area

JOHN WAYNE PIONEER TRAIL

JOHN WAYNE PIONEER TRAIL

To Seattle and I-5

LIMITED

Ashael Curtis Nature Trail

Issaquah
pop. 30,434
(17.2 mi from Seattle)

North Bend
pop. 5,731
(28.9 mi from Seattle)

Snoqualmie Pass
(52.7 mi from Seattle)

Easton
pop. 478
(69.6 mi from Seattle)

Suburban Zone

Backcountry/ Summer Hiking Zone

Backcountry/ Summer Hiking Zone

Backcountry/ Ski Resort Zone

Small town/ Rural Zone

SR - 410

Chinook Scenic Byway
Mather Memorial Parkway

MBS Ranger District
Snoqualmie

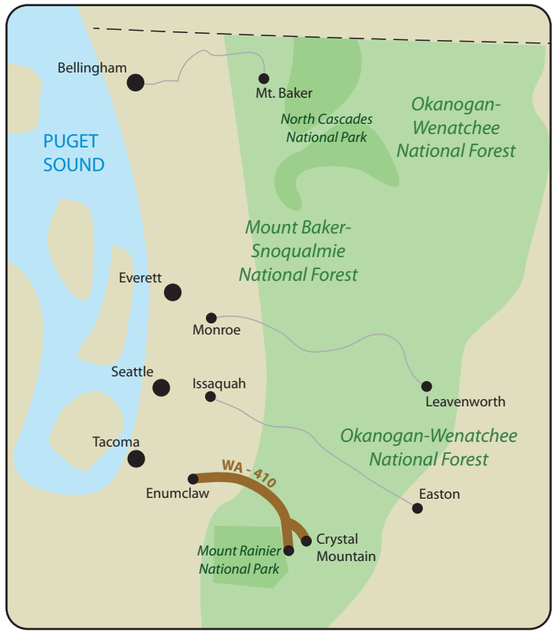
WSDOT Districts
King; Southwest; Olympic; South Central

MPO/RTPO
Puget Sound Regional Council

County
King; Pierce

Documents
- Crystal Mountain Ski Resort Expansion Master Plan and FEIS (2006)
- Mt. Rainier Transport Study (1997)
- Chinook Byways Corridors Planning and Management Guidebook (1999)
- Mt. Rainier Sect. 3029 Field Report (2001)
- Chinook Scenic Byway Charrette (2000)
- Carbon River Corridor Charrette (2003)
- Nisqually Rural Transit Feasibility Study (2007)

Visitor Center
- Enumclaw Public Service Center: 20,000 annual visitors
- Silver Creek Guard Station: 7,818 visitors in 2011 season



Average Daily Traffic Volume (ADT)
1,800 at milepost 47.41 (2010)

SR - 410
Alternative Transportation Facilities/Services

- Four foot shoulders; no other signage or infrastructure
- Annual "Ride Around Mount Rainier in One Day" (RAMROD) event

- Foothills Trail in Enumclaw

- King County Metro: limited service to Enumclaw
- Private bus tours from downtown Seattle
  - Grayline of Seattle Mount Rainier Vista Tours
  - Evergreen Escapes Ultimate Rainier Tour
- Employee shuttle ($100 per season) with service to Enumclaw and Greenwater on weekends only; 56-passenger vehicle usually operates at full capacity
- Several private shuttles and charters
- 15-20 school buses for ski school
- Mount Rainier Paradise Shuttle

- MBSNF road/trail condition information
- WSDOT Chinook Pass conditions website and Crystal to Greenwater conditions report

U.S. Department of Transportation

Crystal Mountain Ski Resort

Season:	October to mid-July (2011)
Average annual skiers:	305,000
Origin of skiers:	Seattle and south
Parking capacity:	3,500
Capacity limitations:	Parking Use by non-skiers
Summer activities:	Gondola (2011) Mountain biking (no lift access)

Private bus

Source: Volpe Center


Source: Volpe Center

Current public service center


Source: City of Enumclaw

Proposed public service center