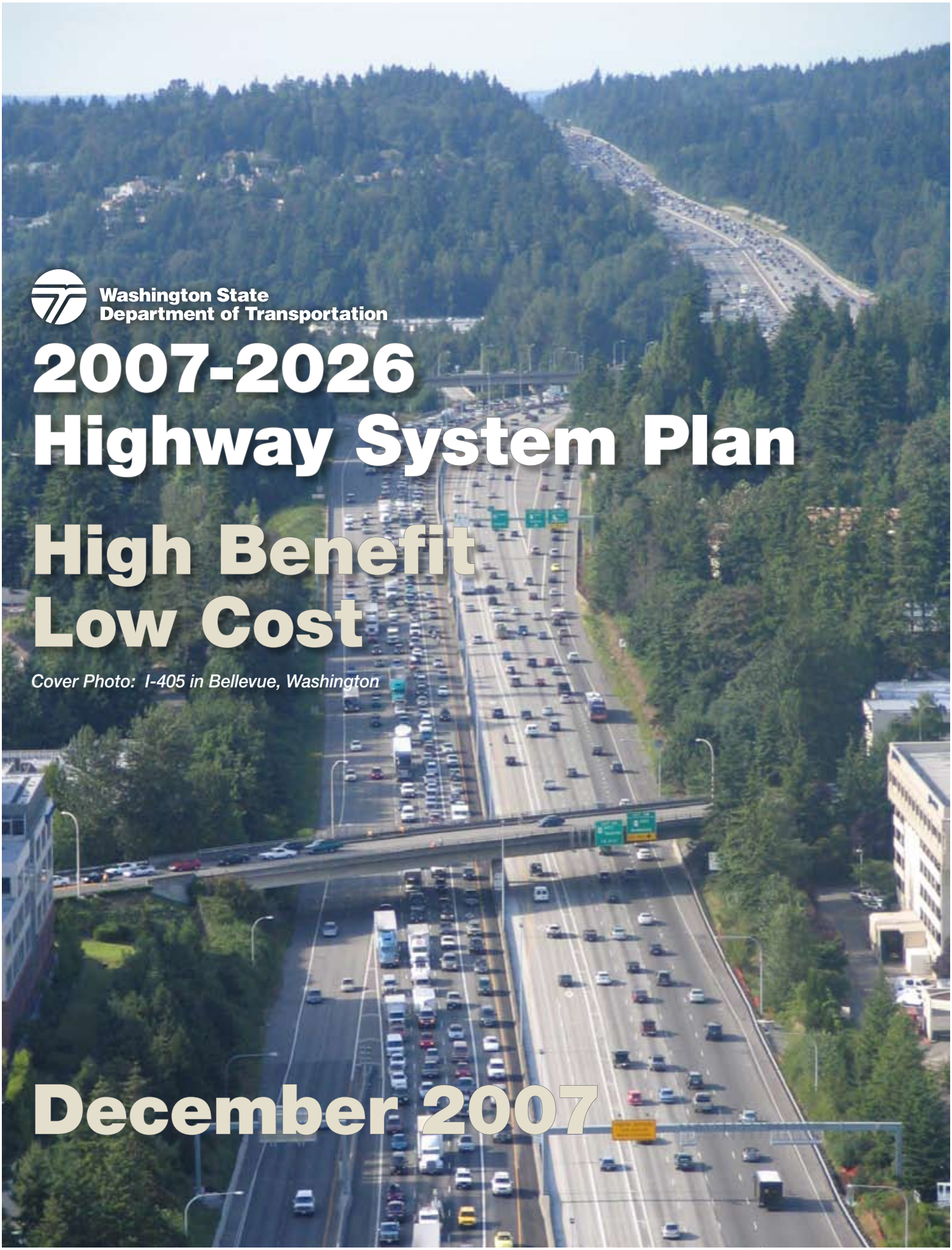

Washington State Department of Transportation

2007-2026 Highway System Plan

High Benefit Low Cost

Cover Photo: I-405 in Bellevue, Washington

December 2007

2007-2026
Highway System Plan

High Benefit
Low Cost

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December 21, 2007

FOREWORD

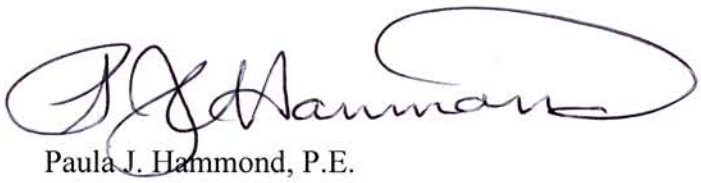
I am pleased to present the 2007-2026 Washington State Highway System Plan. The plan identifies current and forecasted state highway needs and presents strategies and performance measures to address those needs. This plan is based on the goals established by the Washington State Transportation Commission in the 2006 Washington Transportation Plan and supports the state's transportation policy goals contained in RCW 47.01.012:

- (1) *Preservation*: to maintain, preserve and extend the life and utility of prior investments in transportation systems and services;
- (2) *Safety*: to provide for and improve the safety and security of transportation customers and the transportation system;
- (3) *Mobility*: to improve the predictable movement of goods and people throughout Washington state;
- (4) *Environment*: to enhance Washington's quality of life though transportation investments that promote energy conservation, enhance healthy communities, and protect the environment; and
- (5) *Stewardship*: to continuously improve the quality, effectiveness, and efficiency of the transportation system.

This plan was developed over the last several years. It reflects the substantial transportation safety, preservation and traffic improvement investments underway as a result of the Nickel and Transportation Partnership programs enacted in 2003 and 2005. The plan also recognizes that we must do more to get the most productivity out of our state transportation system and to fight congestion by managing demand, operating our highways more efficiently and adding highway capacity strategically.

WSDOT intends to update the Highway System Plan every two years and use it as a guide in the development of the highway portion of the Capital Improvement and Preservation Program. Each update of the Highway System Plan builds upon previous plans, refining identified needs, strategies, and solutions; and covers emergent issues.

As we move forward, we hope that the Highway System Plan provides useful guidance for this and future budget development cycles.



Paula J. Hammond, P.E.
Secretary of Transportation

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Overview

Transportation affects everyone. Whether commuting to work, delivering products, taking a vacation, or running errands, our lives and livelihood depend on a safe, efficient and reliable transportation system. Washington State's population continues to grow, as does the need to move more people and freight. The Washington State Department of Transportation (WSDOT) is dedicated to providing a safer, more efficient and reliable transportation system and is committed to being good stewards of the state's transportation system.

Washington State Law, the Washington Transportation Plan and the 2007-2026 Highway System Plan

The 2007 Legislature revised and streamlined various existing state transportation goals, objectives and responsibilities, and the process by which these elements are measured and reported. Their Transportation Policy Goals for the planning, operation, performance of and investment in the state transportation system are described in Figure 1.

The goals established by the Washington State Transportation Commission in the 2006 Washington Transportation Plan (WTP) are consistent with the direction provided (see Figure 1) by the Legislature in Senate Substitute Bill 5412.

The Washington State Highway System Plan (HSP) is the element of WTP that addresses current and forecasted state highway needs based on the investment options identified in the WTP. These long-range planning documents assess current and future transportation needs through a collaborative planning process with local governments, regional planning agencies, and private transportation providers to ensure that the state's transportation network functions safely, efficiently, reliably and cost effectively. The HSP identifies all needs consistent with the policies set by the Legislature. The WTP constrains the HSP by policy, not by available or forecasted revenue.

The HSP is updated every two years, and guides WSDOT in the development and prioritization of the Capital Improvement and Preservation Program (CIPP). Each future update of the HSP, beginning with this one, builds upon the previous plan, refining identified needs, strategies and solutions; and will expand to cover emergent issues and additional locations previously unidentified. Each update also includes a "snapshot" of the most recent findings of WSDOT's continuous system-wide analysis, performance measurement and monitoring programs.

Figure 1. Transportation Policy Goals

- **Preservation:** To maintain, preserve and extend the life and utility of prior investments in transportation systems and services;
- **Safety:** To provide for and improve the safety and security of transportation customers and the transportation system;
- **Mobility:** To improve the predictable movement of goods and people throughout Washington State;
- **Environment:** To enhance Washington's quality of life through transportation investments that promotes energy conservation, enhance healthy communities and protect the environment;
- **Stewardship:** To continuously improve the quality, effectiveness and efficiency of the transportation system.

Source: RCW 47.04.280

The rest of the overview will briefly touch on each of these Legislative and WTP priorities, their respective needs, and WSDOT strategies for addressing these needs (see Figure 2). In addition, the 2007-2026 HSP update document includes constrained lists of identified congested segment needs, specific prioritized strategies for addressing them, and performance measurements to determine the effectiveness of these strategies.

Figure 2. WTP Priorities

The Highway System Plan (HSP) will address each of the Washington Transportation Plan (WTP) priorities as follows:

- Definition of the issue
- Needs and criteria used
- Strategy to address the needs
- Performance measures
- Maintenance – where applicable
- Emergency Plan – where applicable

Preservation

Use of the State highway system continues to grow while the system ages. Periodic rehabilitation is necessary in order to ensure reliable movement of people and goods essential for a vibrant economy. The challenge facing state decision makers is to strike a balance between system improvement and rehabilitation.

Pavement

WSDOT maintains approximately 7,000 miles of highway. Pavement preservation requires periodic rehabilitation to keep the driving surface smooth and prevent failure of the underlying sub-structure. WSDOT policy is to resurface specific highway segments when it is most economical to do so using either flexible or rigid pavement types.

Washington uses several methods to evaluate state pavement conditions and develop a cost effective rehabilitation schedule. These methods are incorporated into a pavement management system, which is used to develop a list of locations that are due for rehabilitation by year. Field investigations confirm these assessments.

Bridges and Structures

WSDOT owns 3,596 structures statewide. A table in the Structures section shows these structures by type. WSDOT policy is to maintain 95 percent of its bridges at a structural condition of at least fair, meaning all primary structural elements are sound.

This HSP update will include investment levels and strategies to address the bridge preservation needs in each of the following categories:

- Replacement or major rehabilitation of structurally deficient or functionally obsolete bridges
- Improving seismic strength of bridges
- Painting steel bridges
- Preserving bridge decks
- Protecting against scour
- Special bridge repair

Other Highway Assets

This section includes the following elements:

- **Slope Stabilization** – Roadside slopes that pose a risk to motorists due to falling rocks or slope failure are evaluated based on the degree of risk.
- **Rest Areas** – Rest areas are inspected every two years to determine the condition of water, sewer, buildings and site conditions. Water quality and sewage disposal have the highest priority. Buildings and site work come next.
- **Weigh Stations** – WSDOT works with the Washington State Patrol identifying facilities needed in order to weigh and inspect trucks to minimize wear and tear of Washington's pavements and bridges, improve safety and freight movement.
- **Major Drainage and Electrical Rehabilitation** – WSDOT inspects these systems as warranted. WSDOT is in the process of establishing its inventory system. These updates will enable WSDOT to be more effective at managing assets, determining long-term needs and prioritization.

Improvement

Highway Safety

Collisions cause approximately 600 fatalities each year on state, county, and city roads. Approximately 270 of those fatalities occur on the state highway system. Despite recent progress to improve safety conditions on our highways, the number of fatalities is still unacceptable and we continue to look for ways to achieve further reductions.

Fatalities and injuries on all Washington's roadways costs $5.3 billion annually. Sharply reducing fatalities and severe injuries will require more than improved vehicle and road engineering. Increased enforcement and a focus on public education are necessary to combat the greatest contributors to the problem: speeding and impaired driving. These two factors combined cause 60 percent of all traffic fatalities. Eliminating these human behaviors is essential to reach the goal of zero fatalities by 2030 as indicated in Washington State Strategic Highway Safety Plan – Target Zero.

The objective of the Safety program is reducing and preventing fatalities, decreasing the frequency and severity of disabling injuries, and minimizing the societal costs of accidents on the state highway system. Implementing these collision prevention and reduction measures not only focuses on motor vehicle drivers and passengers, but also on pedestrians and bicyclists.

Special safety initiatives are proving to be a low cost/high benefit way to make the statewide highway system safer for the traveling public. Statewide accident reduction and prevention measures, using low cost fixes include:

Crossover Accidents

- Centerline rumble strips to alert motorists
- Cable median barrier to prevent crossover accidents on multilane highways with divided medians
- Passing lanes on two way rural highways

Run-Off-the-Road Collisions

- Fixed object – remove or protect vehicles from sudden stops
- Upgrade non-standard guardrail and bridge rail
- Guardrail infill
- Shoulder rumble strips

The WTP and this HSP update have a safety and investment target of approximately $3 billion over 20 years. These funds will be expended using an incremental approach for prioritizing safety projects that target risk, interstate standards, behavioral programs, pedestrian and bicycle facilities, and rural two lane roads.

Mobility

Major Factors Contributing to Congestion

The growth in travel demand, especially during peak hours, has caused many of the urban and suburban highways in Washington State to operate less efficiently. The major factors that contribute to congestion are as follows:

- Bottlenecks
- Traffic Incidents
- Weather
- Work Zones
- Signal Timing
- Special Events
- Land Use
- Ferry Traffic
- Fluctuations in Normal Traffic

To identify highway congestion for this update the forecasted peak-hour travel speed for 2030 had to fall below 70 percent of the posted speed limit.

Mobility needs were addressed by separating strategies into three investment tiers that build upon previous work to maximize every dollar invested.

Strategies to address congestion primarily target low cost solutions that improve highway system efficiency and reduce the number of bottlenecks and chokepoints. Low cost strategies range from active traffic management, to transportation demand management, to congestion pricing.

Economic Vitality

Freight Transportation Network

The goal of freight integration in the Transportation Network Systems Plan is to provide lowest-cost freight system project proposals that support the state's economic output and associated supply chains.

Freight Transportation Network investments are intended to generate overall economic prosperity and wealth for Washington's citizens. They are focused on improving the performance of the freight system for the users and customers of the system. These improvements are necessary to support Washington's role as a global gateway, our state's manufacturers and agricultural growers, and our retail and wholesale distribution system.

Washington State's strategic investment plan in the freight transportation network is supported by the Washington Transportation Plan Freight Report, which was presented to decision-makers in 2005 and 2006. It is organized in three chapters that explain Washington's role as a gateway state, how freight transport supports Washington's regional economies, and the role of the local distribution system.

Health and the Environment

Investing in our transportation system can help address citizens' goals for a healthy environment. Environmental elements are considered part of every project's design, construction, operation and maintenance.

Highway construction projects address such environmental issues such as treating stormwater, protecting groundwater, controlling erosion, providing for fish passage, reducing noise, replacing or improving wetlands, habitat connectivity, and bicycle/pedestrian facilities.

Health and the Environment projects are stand-alone work, and include fish passage barrier removal, habitat connectivity, stormwater retrofit, chronic environmental retrofit, noise barrier retrofit, and bicycle/pedestrian facilities.

WSDOT works with Department of Fish and Wildlife (WDFW) to inventory, identify, and prioritize fish passage barriers that should be removed along the state highway system. The agencies have found 1,600 fish passage barriers among more than 6,000 stream crossings on the state-owned highways.

To date, WSDOT has removed 205 of these barriers and gained over 480 miles of stream habitat for fish use. The effort to fix barriers continues and is a high priority in the HSP.