

Overview

2007-2026 Highway System Plan High Benefit Low Cost

The HSP will address each of the WTP priorities as follows:

- » Definition of the issue
- » Needs & criteria used
- » Strategy to address the needs
- » Performance Measures
- » Maintenance – where applicable
- » Emergency Plan – where applicable

The Washington State Highway System Plan (HSP) is the element of Washington’s Transportation Plan (WTP) that addresses current and forecasted highway needs. The HSP plan identifies all needs consistent with the WTP; it is constrained to available revenue projections.

The Washington State Transportation Commission and Washington State Department of Transportation (WSDOT) developed goals and objectives based on agency and public input and included them in the WTP. This plan includes multiple investment options to implement these goals and objectives. The Commission requested public comment on these options and selected specific investment strategies for each set of goals and objectives.

The HSP is a living document with each biennial update building on the last and eventually covers all issues related to the state’s highway system as results from ongoing analysis become available. Updated versions are published every two years.

Starting with the WTP goals, priorities and investment guidelines adopted by the Transportation Commission, WSDOT began the process of identifying the needs, strategies, and performance measurements associated with those goals. The investment guidelines are:

- Preservation, including Maintenance & Operations
- Safety
- Economic Vitality
- Mobility
- Environmental Quality and Health

The rest of this summary will briefly touch on each of these WTP priorities, their respective needs, and WSDOT strategies for addressing these needs. The 2007-2026 HSP Update document will further expand this discussion and include constrained lists of identified needs, specific prioritized strategies for addressing them, and performance measurements to determine the effectiveness of these strategies.

I. Preservation, including Maintenance & Operations



Pavement ... need quote here

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.

In this HSP update these challenges and our preservation strategies to address them will be discussed under the following sections: Pavement, Structures, and Other Facilities.

PAVEMENT

WSDOT maintains approximately 20,000 lane 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 one of the following pavement types: flexible or rigid.

Washington uses several methods to evaluate state pavement conditions and develop a cost effective rehabilitation schedule. These methods are incorporated into the Pavement Management System used to develop a list of locations that are due for rehabilitation by year. Field investigations confirm these assessments.

STRUCTURE

WSDOT owns 3,596 structures statewide. The table in the Structures section shows these structures by type. WSDOT's policy is to maintain 95% 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



Bridges...



WSDOT safety rest areas ...

OTHER HIGHWAY ASSETS

These assets include the following elements:

- **Unstable Slopes** – 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 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 & Electrical Rehabilitation** – WSDOT is in the process of inventorying drainage systems, signals, and illumination systems. The information will be used to determine long term needs, and set priorities.

Safety

MAKING STATE HIGHWAYS SAFER

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 (see chart on p.XX) 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 result in a \$5.3 billion annual cost. 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 lead to 60% 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.

While all projects address safety, the objective of the Safety program is focused on projects 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. Accident reduction and prevention measures, using low cost fixes, being addressed on a statewide level 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



Cable median barriers prevent crossover accidents.

Run off the road accidents

- Fixed object – remove or protect vehicles from sudden stops
- Upgrade non-standard guardrail and Bridge Rail
- Guardrail infill

The WTP and this HSP update have a safety and investment target of approximately \$3.3 billion over 20 years. These funds will be expended on medium and high priority safety projects targeting risk, interstate standards, behavioral programs, pedestrian and bicycle facilities, rural two lane roads, county roads, and city streets.

Economic Vitality

ECONOMIC VITALITY IMPROVEMENTS

Freight Strategies identify highly productive investments that Washington State can make to generate overall economic prosperity and wealth to citizens in the state.

These improvements are necessary to support Washington’s role as a global gateway, our own state’s manufacturers and agricultural growers, and the state’s retail and wholesale distribution systems.

Economic vitality strategies include:

- Address freight constraints in the Interstate 5 corridor from Everett to Olympia.
- Improve Interstate 90, east of and over Snoqualmie Pass, to prevent severe weather closures.

The WTP identified \$4.5 billion for projects addressing improvement in Freight & Goods movement on the State Highway System.



Improvements to Interstate 90, east of and over Snoqualmie Pass will help prevent severe weather closures.



Freight strategies improve economic vitality.

MAJOR FACTORS CONTRIBUTING TO CONGESTION

Travel growth and unconstrained demand during peak hours have caused many of the highways in Washington State to operate less efficiently. Recurring congestion decreases roadway operation efficiency and further consumes the limited capacity of our highways (see figure 8). Non-recurring congestion resulting from weather, roadway construction, collisions, and vehicle breakdown also reduces the operating efficiency of the highway system.

As travel demand grows, the imbalance between travel demand and capacity will also grow. The excess roadway capacity in major urban areas built decades earlier has been consumed. The primary effects will be increased congestion and longer travel times, leading to reduced productivity, higher costs for goods and services, and the significant burden of time lost in people’s lives (see graph on p.XX.)



Excess roadway capacity in major urban areas, built decades earlier, has been consumed.

Mobility

CHOKEPOINTS AND BOTTLENECKS

Chokepoints are locations where recurring delay occurs because of traffic interference and/or the roadway configuration (examples: freeway interchanges; lack of left turn lanes at intersections; seasonal road closures). Bottlenecks are locations where roadways physically narrow, causing congestion (examples: reduced number of lanes; narrowing shoulders). Observed congestion must be supported with traffic data and analysis models.

Criteria for identifying chokepoints and bottlenecks:

- The congestion problem impacts the flow of mainline through traffic.
- The impact on mainline traffic flow is measured as peak hour speeds equal to or less than 70 percent of the posted speed.
- Traffic flow criteria for ramps will also be considered to determine if the congestion is caused by on/off ramp traffic.

The WTP identified funding targets for a statewide list of chokepoint and bottleneck locations. This list will be used to create strategies to address congestion in these specific locations.

INCIDENT RESPONSE

WSDOT's Incident Response Team has shown positive results in reducing non-recurrent congestion. Although the number of incidents WSDOT responded to has doubled since July 2002, the average clearance time for all incidents has remained constant.

SYSTEM EFFICIENCY

In this HSP update, recurring congestion was determined by identifying locations operating below 70% of the posted speed during the peak-hour, as shown in Figure 10. The HSP also considered areas operating efficiently during the peak-hour, 70%-85% of the posted speed (typically, the maximum throughput of vehicles on a freeway, about 2,000 vehicles per lane per hour, occurs at speeds of 42-52 miles per hour or about 70%-85% of posted speed). These conditions do not reflect the impact of congestion associated with local roads, additional impacts related to ramps, interchanges, weather, special events, construction, collisions or incidents.

Future recurring congestion and the locations projected to operate less efficiently during the peak-hour are shown in Figure 11. These projected future conditions reflect the completion of the mobility projects included in both the 2003 "Nickel" funding package and the fully funded projects included in the 2005 Revenue Package. These projections do not reflect the impact of congestion associated with local roads and additional impacts related to ramps, interchanges, weather, special events, construction, collisions or incidents (see charts on p.XX).

Implementation Plan for Mobility

The 2003 “Nickel” funding package and the 2005 funding package approved by the Washington State Legislature will generate over \$11 billion towards mobility projects over the next 16 years. This additional revenue will complete many projects and will begin or continue work on the projects listed (see Figure 12). By doing this, the Legislature sets the priority for future projects and direction for transportation investments. Therefore the completion of these projects is seen as a high priority for WSDOT’s future program.

A new approach to improve congested conditions on state corridors has been developed for inclusion in this update of the 2007-2026 HSP. There are three tiers of investment strategies that could be implemented incrementally over the life of the 20-year plan to maximize every dollar invested.

- System Operation (Healthy System)
- System Efficiency (Efficient System)
- System Expansion (Bigger System)

SYSTEM OPERATION (Healthy System)

System Operations promote a “healthy system” through continual performance measurement and monitoring to ensure capital investment decisions are made at the right time in the right locations. A healthy system also must be preserved to protect current and future assets. Another critical component of a healthy system is continual improvement in providing safer highways.

Environmental Quality & Health

ENVIRONMENTAL QUALITY IMPROVEMENTS

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 are designed to:

- Treat stormwater by removing sediments and metals
- Protect the quality of groundwater
- Control erosion of banks and reduce surface run-off
- Provide fish passage and enhance habitat connections
- Build barriers to reduce noise on neighborhoods
- Replace and improve wetland functions
- Protect cultural and historic resources
- Minimize air pollution
- Allow habitat connectivity for animals
- Provide Bicycle/Pedestrian Facilities as needed

WSDOT plans to continue investing in stand-alone environmental retrofit projects to fix problems along the existing highway system.

These projects are funded to:

- Remove culverts that keep fish from reaching upstream habitat
- Reduce highway noise in areas not addressed by past construction projects



WSDOT has removed 180 barriers and gained over 411 miles of stream habitat for fish use.



The effort to fix barriers to fish passage continues and is a high priority in the HSP.

- Treat stormwater
- Fix stretches of highway that suffer repeated flooding or streambank erosion
- Provide pedestrian crossings near schools, senior centers, and parks
- Provide bicycle connections near schools and in urban areas



Barriers such as this one constructed in Everett reduce freeway noise in neighborhoods.

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 1,500 fish passage barriers among more than six thousand stream crossings on the state-owned highways.

To date, WSDOT has removed 180 of these barriers and gained over 411 miles of stream habitat for fish use. The effort to fix barriers continues and is a high priority in the HSP.