

Performance Audit Report

Washington State Department of Transportation Managing and Reducing Congestion in Puget Sound Report No. 1000006



October 10, 2007

Extract of first 9 pages of the complete report posted at
http://www.sao.wa.gov/PerformanceAudit/audit_reports.htm



Washington State Auditor Brian Sonntag, CGFM

A letter from State Auditor Brian Sonntag



**Brian Sonntag, CGFM
Washington State Auditor**

The 2006 Legislature directed the State Auditor's Office to conduct comprehensive performance audits of transportation-related agencies in Washington during fiscal year 2007. This performance audit report is the second of four performance audits that, collectively, will give an overview of the state transportation system.

Washington citizens overwhelmingly told us in 2006 that transportation is one of their top three priorities, along with education, health and social services. Eighty percent of the citizens we surveyed in the Puget Sound region rated congestion as their top transportation priority.

Congestion incurs incredible costs in terms of time lost due to congestion, fuel consumption, environmental costs and freight costs, which drive up consumer prices.

This report, conducted on our behalf by Talbot, Korvola and Warwick, LLP, makes it clear that congestion in the Puget Sound is a solvable problem. Many of the solutions can be addressed in the next five years and within the Department's existing resources. Other solutions will take longer and will require more significant investments.

One of the most significant findings in this report is that the Department and the Legislature must make congestion a priority and tie budgetary and other decisions to projects that will improve congestion. Citizens have identified congestion as a priority and therefore, so must the Department and the Legislature.

The Legislature is key to instituting the recommendations. Some of the recommendations in this audit report cannot happen without legislative action.

I would like to thank the firm that conducted the audit; it brought years of experience and professionalism to this audit. Talbot, Warwick and Korvola, LLP hired subject-matter experts who have internationally recognized experience in traffic and congestion management. That expertise added invaluable to the quality of the work.

Improving congestion in the Puget Sound region is an achievable goal. To do so, the Department and the Legislature must heed the recommendations in the report. Instituting those recommendations will require ongoing work and different approaches, but the end result will improve the quality of life for millions of people.

A handwritten signature in black ink, appearing to read "Brian Sonntag". The signature is fluid and cursive, with a large, stylized initial "B" and "S".

About the audit

Why did we select this audit?

In 2006, the Legislature passed a bill directing the State Auditor's Office to conduct independent, comprehensive performance audits of transportation-related agencies. The legislation, ESSB 6839, appropriated \$4 million to the Office to contract for this work between June 2006 and June 2007. The bill passed the Senate 44-2 and the House 92-6, and was signed into law by the Governor.

This audit is one of four the Office is conducting under the law. The others included in this comprehensive package are Washington State Ferries, which was released in September 2007, and the Department of Transportation's administrative operations and highway maintenance and construction management, both scheduled for release in Fall 2007.

These audits were chosen based in part on extensive outreach with citizens, including focus groups and town hall meetings, in which they identified traffic congestion and accountability for projects as their concern. During the course of these audits, our Office and the contractor met with Department of Transportation management and employees and with numerous groups and individuals wishing to share their perspective on the state's transportation system.

About the audit

This audit was conducted by Talbot, Korvola and Warwick, LLP and its subcontractors from April 2007 to October 2007 and was performed in accordance with generally accepted government performance auditing standards. The audit addressed the nine elements in Initiative 900 and the objectives outlined in the legislation to examine:

- The effectiveness of the Department of Transportation's current highway investments and infrastructure usage given current and projected highway user volume over the next five years.
- The financial and non-financial costs of any recommended improvements over the next five years.

Overall conclusion

The report states that over the next five years, taking the following actions could reduce hours of traffic delay by 15 percent to 20 percent — 12 million to 16 million hours — saving the average commuter some 10 hours of delay each year and the region some \$300 million to \$400 million in travel time and vehicle operating costs per year. In addition, the environmental and economic impacts of reduced vehicle

emissions and improved access between employees and employers could potentially reach \$300 million to \$400 million, for a total economic impact to the Puget Sound region of \$600 million to \$800 million per year.

Those actions are:

- Investments to improve vehicle flow using existing infrastructure and resources.
- Increasing efforts to have people use carpools, transit and telecommuting.
- Coordinating traffic lights on major arterials.
- Continuing to improve operational efficiency.

The audit found that in the long term:

- The ability to manage congestion will require adding new lanes of highway.
- A commitment to reducing congestion is needed from the Department and the Legislature, with goals and milestones that can be tracked. This is similar to what other states have done.
- Transportation investments — highways and transit alike — should be measured, in part, based on how many hours of delay can be reduced for each million dollars of investment.
- The Department should make reducing congestion a primary goal. While the Department has been a national leader in many aspects of congestion management, it has not identified reducing congestion as a priority. Reducing congestion would complement the Department's current primary priorities, which are:
 - Safety
 - Maintenance
 - Preservation
 - Environment
 - Economic vitality

A clear commitment to reducing congestion — after meeting safety requirements — would likely shift investment decisions.

About the auditors

Talbot, Korvola & Warwick, LLP and subcontractors Delcan Corporation and PlanB Consultancy, the firms that performed this audit, are internationally recognized for their audit and consultancy work in state, federal and international transportation. Members of the audit team have more than 200 years' cumulative experience auditing transportation systems.

Our audit authority

The complete text of Initiative 900 is available at www.sao.wa.gov/PerformanceAudit/PDFDocuments/i900.pdf.

The full text of ESSB 6839 is available at www.sao.wa.gov/PerformanceAudit/PDFDocuments/6839-S.SL.pdf.

Washington voters approved Initiative 900 in November 2005, giving the State Auditor's Office the authority to conduct independent performance audits of state and local government entities on behalf of citizens. The purpose of conducting these performance audits is to promote accountability and cost-effective uses of public resources.

Additionally, the Legislature passed Engrossed Substitute Senate Bill 6839 in 2006. The legislation required the Auditor's Office to hire contractors to conduct performance audits of transportation-related agencies.

The State Auditor's Office engaged Talbot, Korvola & Warwick, LLP to conduct this performance audit in accordance with Government Auditing Standards. Those standards require that the auditor plan and perform the audit to obtain sufficient, appropriate evidence that provides a reasonable basis for the findings and conclusions based on the audit objectives. The audit team believes that the evidence provides a reasonable basis for the findings and conclusions based on the audit objectives.

In planning the audit, the auditors gained an understanding of internal controls that relate to audit objectives. The results of the internal control work did not impact the nature, timing or extent of the audit procedures.

No privileged or confidential information was omitted in this report.

After the performance audit

Notices of public hearings are posted with the report at www.sao.wa.gov/PerformanceAudit/audit_reports.htm.

The release of this audit report triggers a series of actions by the Legislature in accordance with I-900. The appropriate committee or committees will take the following actions:

- Hold at least one public hearing within 30 days of this report's issuance to receive public testimony on the report.
- Consider the findings and recommendations contained in this report during the state budgeting process.
- Issue an annual report by July 1 detailing the Legislature's progress in responding to the State Auditor's recommendations. The report must justify any recommendations the Legislature did not respond to and detail additional corrective measures taken.

Follow-up performance audits of any state or local government entity or program may be conducted when determined necessary by the State Auditor.

Objectives

The audit was designed to determine:

1. The effectiveness of WSDOT's current highway investments and infrastructure utilizations given current and projected highway user volume over the next five years; and
2. The financial and non-financial costs of any recommended improvements over the next five years.

In particular, this audit seeks to evaluate how current highway investments and infrastructure and possible highway investments and infrastructure can:

- Minimize congestion for the greatest possible majority of highway users.
- Maximize vehicle throughput.
- Maximize highway user throughput.

Additionally, Initiative 900 directs the State Auditor's Office to address the following elements:

1. Identification of cost savings.
2. Identification of services that can be reduced or eliminated.
3. Identification of programs or services that can be transferred to the private sector.
4. Analysis of gaps or overlaps in programs or services and recommendations to correct them.
5. Feasibility of pooling the entity's information technology systems.
6. Analysis of the roles and functions of the entity and recommendations to change or eliminate roles or functions.
7. Recommendations for statutory or regulatory changes that may be necessary for the entity to properly carry out its functions.
8. Analysis of the entity's performance data, performance measures and self-assessment systems.
9. Identification of best practices.

Scope

The performance audit was conducted from April 2007 to September 2007. The auditors reviewed information relevant to program operations; specific goals; objectives; expectations; organizational charts; job descriptions; regional information; project plans and specifications; national publications and other relevant documents.

Auditors examined data on speeds, travel times, and traffic volumes for 2001 through 2006 on Interstate 5, Interstate 90, Interstate 405, State Route 520 and State Route 167 in the Puget Sound region. This review included estimates of the speed at which maximum throughput occurred, identified changes in the intensity and nature of congestion over time and compared chokepoint locations with roadway characteristics.

Recommendations

Details of these recommendations may be found beginning on Page 64 of the full report.

To the Department

- Commit to congestion management and reduction as a primary goal.
- Use all tools at its disposal to mitigate the growth in traffic congestion, recognizing the relative contributions each tool can make, its benefits and associated costs with a focus on generating maximum congestion relief.
- Reduce weaving and other traffic conflicts across the Puget Sound freeway network.
- Accelerate design and construction of new lanes and additional capacity to address the previous 20-year deficit.
- Apply congestion-related goals, objectives and benchmarks to all highway and transit-related investments.
- Elevate congestion reduction benefits in all decision-making processes.
- Better link project planning, prioritization, and programming to reflect congestion reduction goals.
- The Department (or a new regional entity) should manage traffic congestion through a system of measurable performance objectives.
- The Department (or a new regional entity) should collaborate with the Puget Sound Regional Council and local jurisdictions to implement a traffic signal coordination program for major arterials in the region.
- Deploy future high-occupancy toll lane projects aggressively if the State Route 167 pilot is successful.
- Expand the Commute Trip Reduction Program to include increased financial incentives, additional financial disincentives and regional marketing.
- Implement a telecommute program focusing on telework incentives.
- Use available technology to expand coverage of real-time traffic information to all freeways and major arterials.
- Work to fully fund operations programs that emphasize congestion management.
- Continue to improve the ramp metering system.
- Automate all freeway management tools.
- Work with Washington State Patrol to improve its current incident response system through resolution of Patrol staffing issues and an all agency after-action review process for every closure over 90 minutes.
- Complete the core high-occupancy vehicle network, with an emphasis on the Interstate 5 corridor to Tacoma.
- Consider adjusting current high-occupancy vehicle lane policy where needed in order to meet existing performance standards.
- Critically examine expensive interchanges and direct ramp access before additional investments are made in high-occupancy vehicle lanes.

To the Legislature

- Empower a single body — either the Department of Transportation or a regional transportation entity for the Puget Sound Region — to allow for a more integrated approach to planning for congestion reduction.
- Choose/identify projects based on congestion reduction rather than other agendas.
- Implement new legislation to facilitate the expansion of road pricing should the Department's high-occupancy toll lane pilot be successful.
- Review whether new legislation is required for public-private partnerships for transportation infrastructure and implement any necessary changes.

To the Department and regional transportation-related agencies

- Pursue potential enhancements to Interstate 5 through downtown Seattle.

Congestion in the Puget Sound

What is congestion?

Congestion represents the difference between the highway system performance that motorists expect and how the system actually performs. Puget Sound commuters likely have a different view of congestion than the Federal Highway Administration.

The U.S. Department of Transportation Federal Highway Administration characterizes traffic congestion as an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower — sometimes much slower — than normal or “free-flow” speeds. The Administration defines traffic congestion as travel slower than free-flow speeds and usually defines a safe free-flow speed as the speed limit.

The perception of highway congestion varies based on motorists’ expectations. An intersection that may seem congested in a rural community may not register as an annoyance in a large metropolitan area. A level of congestion that motorists expect during peak commute periods may be unacceptable if experienced on Sunday morning.

The Washington State Department of Transportation describes congestion as based on speed that reflects the maximum flow of vehicles: “Highway is at less-than-maximum-productivity because drivers are jammed at less-than-optimal spacing.” This condition occurs at 40 mph, or less than 70 percent of posted speeds.

The Department has another definition for severe congestion: “Highway is well below maximum productivity.” According to this definition, severe congestion occurs at 35 mph or at 60 percent of the posted speed.

What long-term factors have contributed to the level of congestion in the Puget Sound?

Several factors have led to the congestion that exists in the Puget Sound corridor.

Population growth

Puget Sound’s population has grown by 2 million people from 1960 to 2006. In 1960, there were 1.5 million residents in the region. In 2006, there were 3.5 million; 56 percent of that growth is from people relocating from other areas of the country.

Economy

King County has the majority of the jobs in the Puget Sound, as well as the highest home prices.

Freight movement

The Port of Seattle and the Port of Tacoma receive a great deal of freight, which must be moved via truck or train.

Drive-alone figures

Depending on the area of origin, 49 percent to 79 percent of commuters in the Puget Sound region drive alone.

As of 2007, the phenomenon of an all-day rush hour is beginning to happen across the Puget Sound region. During the morning peak period, 42 percent of traffic is below 45 miles per hour. During the afternoon peak period, that figure increases to

Congestion in the Puget Sound

48 percent. Commute periods are lengthening, creating the all-day rush hour.

Who is responsible for Puget Sound's highway system?

More than 100 entities play a role in the governance of Puget Sound's highways. A partial list includes:

- Legislature
- Washington State Department of Transportation
- Washington Transportation Commission
- Washington State Patrol
- Puget Sound Regional Council
- Regional Transportation Investment District
- Sound Transit
- Local transits, such as King County Metro, Pierce and Kitsap counties transit agencies, Everett Transit, Community Transit (Snohomish County)
- Four county governments: Snohomish, King, Pierce, Kitsap
- 82 incorporated city governments

Funding for state highways comes from federal, state and local sources. Other funding comes from fees and taxes paid by consumers, including a statewide fuel tax; sales taxes that vary by county or city; vehicle sales tax; rental car tax; and Washington State Ferry fees. The Department of Transportation also funded highways through bond sales in excess of \$1 billion for the 2005-2007 budget cycle.

2005-2007 Statewide Transportation Funds
\$6.2 billion

