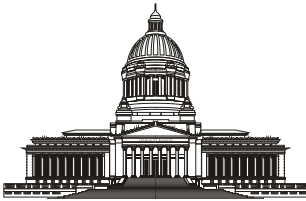


**WSDOT's
Scoping and
Cost Estimating
for Highway
Construction
Projects
Report 10-3**

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STATE OF WASHINGTON

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REPORT SUMMARY

The 2009-11 Transportation Budget directed JLARC to review how the Washington State Department of Transportation (WSDOT) develops highway construction project scope and cost estimates. Focusing on projects funded from the increased revenues provided in 2003 and 2005, JLARC compared WSDOT policies and procedures to industry guidelines and looked at actual practices used in WSDOT regions through analysis of eight case studies. Recognizing that many policies and procedures used in 2003 and 2005 have changed, or are changing, JLARC also looked at how the state is currently positioned to produce cost estimates for new highway projects.

Highway Project Cost Estimates Change

Within the Transportation Budget, the Legislature appropriates funds for specific highway projects. A highway project may not be completed for ten or more years, so the Legislature chooses whether, and at what level, to include appropriations for the same project in a series of transportation budgets.

In 2003 and 2005, the Legislature approved increases in the state fuel tax that provide additional funding for projects to preserve and improve the state's highways. JLARC estimates that 1,088 budget changes have been made to 336 preservation and improvement projects funded by these increased revenues since the Legislature approved the original project budgets, with just over three-quarters (76 percent) of project budgets changing each year.

A change in the cost estimate for a project requires legislative analysis and approval to ensure that the Transportation Budget remains balanced. One project may have its funding reduced or eliminated to pay for a cost increase in another project.

WSDOT Highway Project Scoping and Cost Estimating Align with Industry Guidelines

A substantial body of literature addresses cost overruns and cost estimating in construction projects. The National Academy of Sciences, through the Transportation Research Board and the National Cooperative Highway Research Program (NCHRP), developed detailed cost estimating guidelines aimed at the specific procedures needed to improve the accuracy of cost estimating for highway projects. JLARC used the NCHRP guidelines and other sources to evaluate whether WSDOT policies and procedures align with these industry guidelines.

WSDOT policies and procedures for cost estimating currently align with industry guidelines. In addition, for the eight case study projects, WSDOT practices in the field align with its policies and procedures.

Once WSDOT has developed the cost estimate, it may become an agency budget request. The literature JLARC reviewed recognizes the need to protect cost estimates from outside pressures. One way of evaluating that is to see if there is an easy-to-follow trail between the dollar amounts developed by the cost estimating process and the dollar amounts requested in the budget. WSDOT's current procedures, policies, and forms do not create such a trail between a cost estimate and the amount of a budget request.

JLARC recommends that WSDOT should adapt its current procedures and forms so that an easy-to-follow trail is established between the cost estimate developed by the cost estimating process and the request for funding submitted to the Legislature.

The State is Better Prepared Now to Accurately Estimate Highway Project Costs Than It Was in 2003 and 2005

Changes Made by WSDOT in Scoping and Cost Estimating Since 2003 and 2005

WSDOT has made changes in its scoping and cost estimating policies and procedures since 2003 and 2005, with some changes in process as JLARC conducted this analysis. Evidence of these changes contributed to JLARC's conclusion that WSDOT is currently following industry guidelines to increase estimate accuracy. Based on this conclusion, the state is better prepared now to accurately estimate highway construction costs than in 2003 and 2005.

For example, WSDOT has created a formal cost estimation manual; the agency now has four different tools available for estimating costs and project risks, with the complexity of the project dictating which tool to use; and WSDOT is developing distinct scoping processes for different program areas.

WSDOT is also formalizing the use of *risk reserves*. WSDOT defines risk as the probability of an uncertain event and its consequences; risk analysis creates estimates of the costs if those events occur. WSDOT is formalizing in policy the use of risk reserves to pay for risks realized during the course of delivering the project. The agency plans to include these risk reserves in project budget requests for projects \$10 million or greater. The use of risk reserves is consistent with industry guidelines in how project risk can be managed.

Other Issues to Consider to Make Cost Estimates More Accurate

In the course of synthesizing the literature, reviewing WSDOT policies and procedures, and observing practices on the ground, JLARC identified three issues to bring to the attention of policymakers as they consider the accuracy of highway project cost estimates.

Time When a transportation agency is given the time to fully understand a project's needs and risks, there is greater chance for more accuracy in a project's cost estimate.

Resources Investing more money into the scoping process may result in more accurate initial project cost estimates.

Communication Clear communication about project cost estimate uncertainty and the *reasons why an estimate has changed* is critical to maintaining stakeholder trust and building confidence in an estimate. There can be mutual confusion among legislators, legislative staff, and WSDOT about terminology such as what constitutes a "scope change." A more productive avenue may be to ask what has happened that has resulted in a change to a project cost estimate; for instance, has the project now reached a critical milestone?

Highway Project Cost Estimates Will Always Have a Level of Uncertainty

The literature provides expectations for how accurate cost estimates should be at various points in a project: the more that is known about a project and its risks, the more accurate an estimate should be. In addition, there are industry guidelines for making estimates more accurate, with WSDOT's policies and procedures following those guidelines. Nevertheless, the literature also indicates that estimates will always have a level of uncertainty. There may be an inherent tension between a more accurate cost-estimating process that takes more time and resources and includes risk reserves, and a budget process that calls for quick cost estimates for highway construction projects. Regardless of how much you know about a project and its design, estimates are always just estimates.