Washington State Department of Transportation

Memorandum

5/30/2025

TO: WSDOT Project Development Engineers

FROM: Mark Gaines, State Design Engineer Development Division Director MG

Troy Suing, Director of Capital Program Development and Management TAS

SUBJECT: Project Delivery Memo #25-01 – Project Risk Management and Risk-Based Estimating

Purpose

This memo updates the language and requirements for comprehensive project risk management, incorporating it as a fundamental aspect of project management. It aims to support budget planning, capital programming and legislative decision-making by ensuring project estimates are defensible, relevant, and reflect WSDOT's professional understanding of risk, industry trends, market conditions, and other factors that influence costs. Additionally, project risks must be identified and managed by the engineering staff responsible for project design and development. This Project Delivery Memo provides policy in place of retired E 1053.02. This document addresses the following:

1. **Minimum Risk Management Process Required:** Based on project size.
2. **Percent not to exceed Guidance:** total estimate, management target and risk reserve.
3. **Required Documentation.**
4. **Inflation**
5. **Market Conditions**
6. **Maintain, Monitor and Update Estimates**
7. **Exceptions & Exemptions.**

Background

The Washington State Department of Transportation (WSDOT) is committed to comprehensive project risk management. All projects in the Transportation Budget must include a project estimate and a risk management plan, and both must be developed and integrated into the overall project management plan.

By accurately forecasting a range of project costs and schedule estimates, WSDOT boosts public confidence in its ability to estimate and manage expenses for large public projects.

Direction

1. Minimum Risk Management Process Required

Risk management is mandatory for all transportation capital construction projects, and employees responsible for project design, development, and delivery must actively manage project risks. Employees engaged in project design, development, and delivery must integrate risk management at every phase. This includes incorporating estimating and risk management tasks into the project plan and schedule while continuously reviewing and updating cost estimates, basis of estimates, risk strategies, and assessments. Team members must regularly communicate project costs, schedule risks, and estimates during meetings and check-ins. To ensure consistency, this should be a standing agenda item in monthly and quarterly project meetings.

Additionally, this information must be readily available on demand whenever management requests a project update. Each estimate must include an updated basis of estimate, clearly explaining modifications and highlighting major risks. This process is integral to project risk management, aiding in informed decision-making to help project engineers control scope, schedule, and budget while managing risks. The following table outlines the minimum risk management process required based on project size.

Total Project Size Includes PE, RW, CN (M = million)	Minimum Risk Management Process Required If a value engineering study is required, coordinate with risk-based estimating.
Qualitative, QL Risk Assessment	
$20 M or less	Project teams may use the Qualitative Spreadsheet or their own format as preferred. No matter the format, the following information must be included: risk name, risk description, risk trigger, classification (threat or opportunity), impact, and probability.
Quantitative, QT Risk Assessment	
$20 M to $50 M	**Risk-Based Estimating Meeting** The project team convenes to identify and assess project risks, potentially including other participants. The analysis can be qualitative, or quantitative utilizing WSDOT's Project Risk Analysis Model (PRAM). Support is available from the HQ Design Office.
$50 M to $200M	**Cost Risk Assessment (CRA)** The project team and subject matter experts collaboratively assess cost and schedule estimates, identifying risks in a structured review. These inputs feed into a Monte Carlo Analysis model that integrates cost and schedule risk. For high-risk items, independent cost estimation and input from industry experts is ***recommended***.
$200M or more	**Cost Estimate Validation Process (CEVP®)** The project team and independent subject matter experts collaboratively review and validate cost and schedule estimates, identifying risks in a structured review. These inputs feed into a Monte Carlo Analysis model that integrates cost and schedule risk. For high-risk items, independent cost estimation and input from industry experts is ***required***.

2. Probability not to Exceed Guidance

Risk-based estimate cost distributions provide valuable insights for establishing project estimates. This memo assigns the 85th percentile (P85) in Year-of-Expenditure dollars as the Project Total Estimate value and the 45th percentile as the Management Target. The difference between the P85 and P45 values represents the risk reserve. Updating project information in the Program Management system requires coordination with CPDM.

3. Use and Interpretation of Probabilistic Cost Distribution Output

Projects that undergo quantitative risk assessments with Monte Carlo analysis yield probable costs at various percentages. Known as probabilistic risk-based estimating, this method often uses "probability not to exceed" to express the likelihood that the actual cost is estimated to be at or below a specified value. Here's how to interpret and use it:

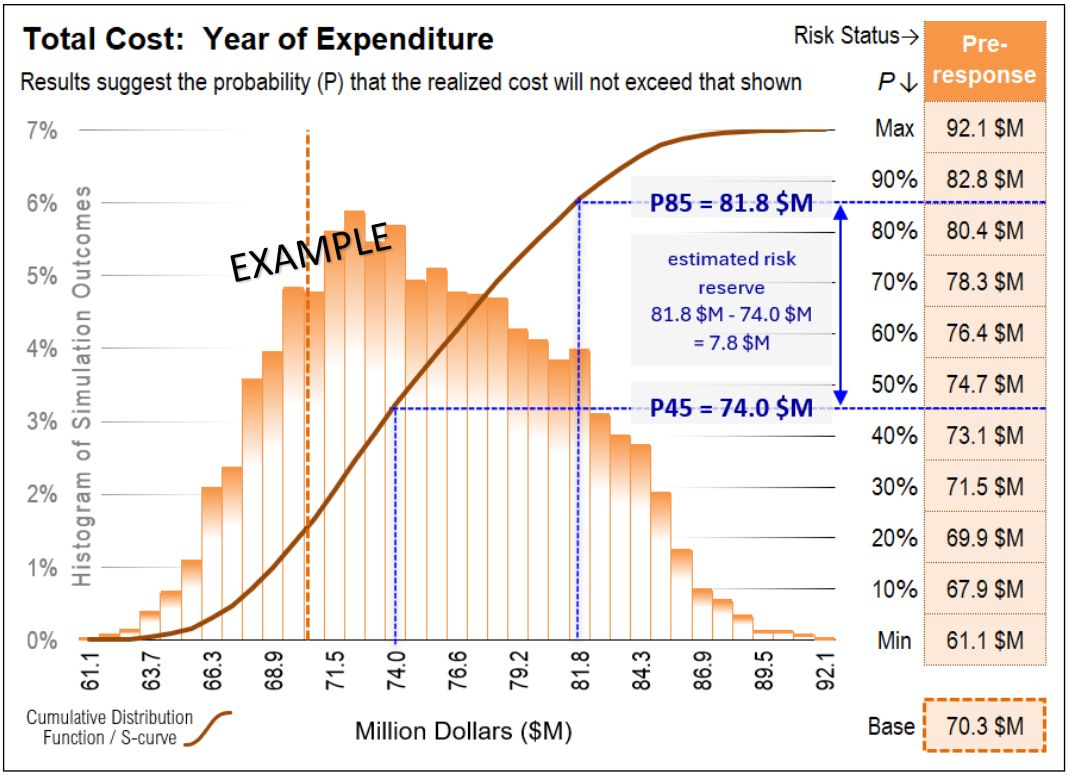
i. **Understand the Cost Distribution:** Probabilistic cost estimates are typically represented as a distribution curve, showing a range of possible costs and their associated probabilities. The curve reflects uncertainties and risks in the estimate.

ii. **Locate the Probability:** On the distribution curve, find the cumulative probability and the associated cost value. This represents the likelihood that the actual cost will not exceed the specified amount.

iii. **Interpret the Results:** See exhibit below. For example, if the cumulative probability at $81.8 million is 85%, it means there is an 85% chance that the actual cost is not going to exceed $81.8 million, and a 45% chance it is not going to exceed $74.0 million.

iv. **Communicate Effectively:** This information can help communicate the confidence level of staying under budget. For instance, you might say, "There is an 85% probability that the project cost will not exceed $81.8 million."

This approach helps inform decision-making by quantifying uncertainties and providing a clearer understanding of project cost risks. The following example illustrates the use and interpretation of probabilistic cost distribution output.



4. Required Documentation

The documentation necessary to support the current project budget or to submit a budget change request must include:

1. Latest risk report including the above output format in the one-pager, template found **here**.
2. Updated basis of estimate.
3. Updated base cost estimate.
4. Documentation of new risks identified and quantified.

5. Inflation

Inflation tables for construction, right of way, and preliminary engineering are provided by CPDM. These rates shall be used for any inflation calculations. Alternate inflation rates, including straight-line rates, may be allowed if approved by the CPDM Director. As CPDM updates its inflation tables, a review of the project's quantitative estimated cost risk profile may be necessary if the project has more than 6 months until Request for Qualifications (RFQ) for Design Build or Advertisement for Design Bid Build.

6. Market Conditions

Supply and demand play a critical role in shaping construction costs, land prices, and contractor bids. Although interconnected, inflation and market conditions are distinct concepts.

a. Market conditions describe the overall state of the construction industry at a particular time. Factors like contractor availability, competing projects, bidding climate, and economic trends can shift rapidly. If trends persist this may indicate the need to adjust inflation models.
b. To optimize project advertisement timing, project engineers and subject matter experts monitor market conditions and coordinate with CPDM to approve any changes to the advertisement date. Regional Program Managers need to incorporate this information when coordinating the advertisement of multiple contracts, especially large projects greater than $200M.
c. To enhance the understanding of cost estimates, project engineers should seek input from subject matter experts familiar with the construction market in the project area. Additionally, they should work closely with HQ PS&E Development to gather detailed insights into market conditions and associated risks.
d. As advertisement dates approach, market conditions may change. If the advertisement is scheduled within a year, it can factor in the anticipated bidding climate and the projected number of bidders.

7. Maintain, Monitor, and Update Estimates

Estimates represent a snapshot in time and must be regularly updated to reflect evolving project conditions. It is essential to document all changes to the estimate. Updates should occur at a minimum during each phase of project development, including planning, scoping, pre-design, 30%, 60%, 90%, and ad-ready stages. Each estimate update must be accompanied by an updated basis of estimate. Additionally, estimate updates are required if there are significant changes in project scope or complexity.

8. Exceptions and Exemptions

For some routine Design-Bid-Build (DBB) projects with minimal complexity and low risk, the Project Engineer may request an exemption from the risk assessment workshop requirement. There may be other circumstances that merit an exception to the above-described process. This type of request must be submitted to the Assistant State Design Engineer and either the Region Project Development Engineer or Region Engineering Manager.

Exemptions may apply to projects with very low risk that still meet a risk management threshold due to their size, for example, a large paving project.

Questions

For questions or information on how to implement this Project Delivery Memo, contact the HQ Development Division ASDE or Deputy State Design Engineer.

MG:cgs

cc: Regional Administrators

Assistant State Design Engineers

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