Washington State Department of Transportation

2008 Strategic Analysis and Estimating Office
Cost Risk Estimating Management unit
Home of CEVP® and Cost Risk Assessment
January 2008

General Information

Better understanding of project risks will enable our project teams to contribute to act in the interest of the public through assessing project risk and uncertainty. Enhanced understanding of project risk and uncertainty aide in making decisions regarding project development and delivery. The projects we deliver add value to Washington State on many levels, understanding the risk associated with projects and the tolerance for risk is an integral part of project management and must be considered for effective decision making.

Estimating the cost of transportation projects is a fundamental responsibility of the Washington State Department of Transportation (WSDOT). Estimates, in order to be complete, must consider risk and uncertainty.

Efforts are underway nationwide to identify tools and techniques that will assist with producing better estimates. Traditional estimating practices tend to produce 'the number' for a project. But the single number masks the critical risk and variation assumptions made implicitly or explicitly for a particular project.

A single number estimate implies a sense of precision beyond what can be achieved during planning, scoping or early design phases.

Project Engineers, Project Managers, Business Managers and Executives must be prepared to answer three questions that are raised by the public and others about our projects. These questions are:

How much will this project cost?
How long will this project take?
Why?

WSDOT has found that the answer to these fundamental questions rests in the fact that an estimate is more accurately expressed, not as a single number, but as a range.

To determine this range, WSDOT developed a process for bringing experts together in workshops: the Cost Estimate Validation Process, CEVP®, for projects over $100 million, and subsequently the less intense Cost Risk Assessment, CRA, for projects valued between $25 million and $100 million.

"What gets us in trouble is not what we don't know. It's what we know for sure that just ain't so."
Mark Twain

Historical Timeline

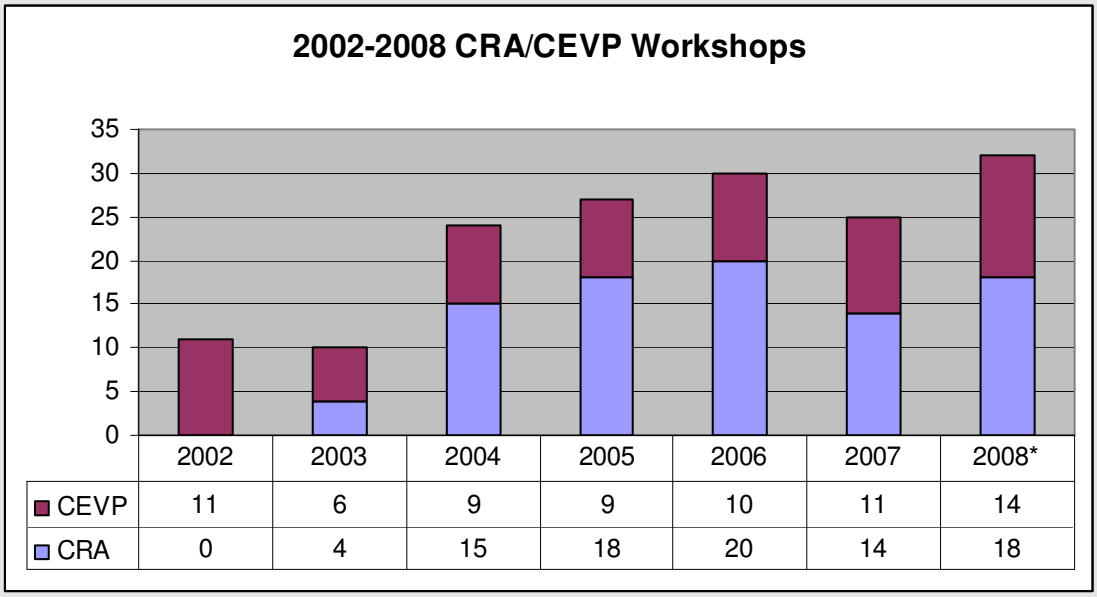
2002	2003 – 2004	2005 – 2006	2007 – 2008
WSDOT Develops CEVP®	Number of workshops and interest grows	Policy & PM Online Guide posted on web	Self-modeling spreadsheet developed
	CRA Workshop Process scaled for smaller projects.	Cost Estimate Process NCHRP Report 574	Comprehensive Workshop Guide posted on web
			Developing Project Risk Management Manual
			Project Estimating Guide posted on web
			04-Sep-2007 Exec Order 1038 Enterprise Risk Management

Comparison of CRA and CEVP® workshops	*Typical Characteristics*	
	CRA	**CEVP®**
PROJECT SIZE	$25 M to $100 M	> $100 M
WORKSHOP LENGTH	1 – 2 days	3 – 5 days
SUBJECT MATTER EXPERTS	Internal and local.	Internal and external.
TIMING ***WHEN TO HOLD WORKSHOP***	Anytime. Typically updated when design changes or other changes to the project warrant an updated CRA.	Best to start early in the process, major projects are typically updated as needed.
GENERAL	An assessment of risks with an evaluation and update of costs and schedule estimates.	An intense workshop that provides external validation of cost & schedule estimates and assesses risks.
COST RANGE OF WORKSHOPS ***CONSULTANT COSTS***	$5,000 to $40,000 AVG = $24,000	$26,000 to $108,000 AVG = $60,000

Status of Program

The program is respected and well-received and a good reminder of uncertainty in project cost and schedule estimating. Such work requires focus, dedication and humility.

Risk management and project cost and schedule estimating continue to be areas of emphasis for study, learning and continuing advancement within WSDOT.



	2002	2003	2004	2005	2006	2007	2008*
CEVP	11	6	9	9	10	11	14
CRA	0	4	15	18	20	14	18

*Forecast number of workshops for 2007 is between 26 and 36.

FIGURE 1: Workshops by Calendar Year

Interest in Risk Based Estimating continues to Grow

The National Highway Institute has developed training on project cost estimating that accounts for uncertainty and risk in project cost forecasts. NHI Course 134068 “Addressing Uncertainty in Cost Estimating”.

The FHWA Cost Estimating Guidance for Major Projects and FTA require consideration of risk and uncertainty.

Helpful Workshop Hints for Project Teams

1	Be prepared: know what it is you want to evaluate at the workshop; be able to clearly describe the scope of the project; have a well organized, up-to-date, and easy to present project schedule and cost estimate – appropriate to the level of project development.
2	Submit workshop request form ***after*** you are clear as to the project alternatives and/or scenarios you want evaluated. Allow at least 8 weeks advance notice from the time the workshop request form is submitted and when the first prep session will be held.
3	Use the Project Management Process as outlined in the WSDOT Project Management Online Guide, keep project management plan current.
4	Follow the guidance provided in the workshop guidance document posted at: http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/
5	Keep workshop attendance to a manageable size. An effective workshop has all of the necessary people present -not more than necessary. Too many people in a meeting can make it less effective, cumbersome and slow. Read the section on Pre-Workshop and Workshop Meetings in this document – particularly: Cautionary Notes Regarding Workshop Dynamics
6	Make sure the project manager and/or assistant project manager attend the workshop. It is crucial that someone able to speak from the owner's perspective be present throughout the workshop.
7	Familiarize participants with the workshop process in advance of the workshop. The Strategic Analysis and Estimating Office can provide a representative from the CREM team to provide training and orientation in advance of the workshop.

WSDOT Risk Based Estimating and Modeling Tool:

Self-Modeling Risk Management Excel spreadsheet posted at:
http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/

The Self-Modeling Risk Management Spreadsheet is a simplified self-modeling tool that project design teams can enter their project cost estimates and risks into and determine what the quantitative impacts are to the project estimate. This can be used for all projects but is primarily meant for projects that do not meet the threshold for a formal CRA/ CEVP®. It is an effective and relatively easy way for smaller, typically less complex, projects to assess risk for their projects. This tool has also been the tool of choice for combined VE-CRA workshops. One note of interest is that it has also been used for training in at least one other state department of transportation.

Benefits of CEVP® and CRA (Risk-Based Cost Estimating) Include:

- Excellent tool for development of project risk management plans
- Increased and improved communication
- Risk ranking helps the project manager know where to efforts.
- Ability to be pro-active in responding to risk and uncertainty
- Project teams receive ideas on potential response strategies for major risks.
- Project managers are better prepared for the unexpected.

Fast Facts

Common Top Risks

CEVP (most frequent cost risks)

- ***R/W***
- ***Structures***
- ***Environmental***
- ***Cost***
- ***Seismic Design Criteria***
- ***Design and/or Construction Related***
- ***Access***
- ***Stormwater***
- ***Maintenance Of Traffic***

CRA (most frequent cost risks)

- ***Environmental***
- ***Design Related***
- ***Cost***
- ***R/W***
- ***Structures***
- ***Stormwater***
- ***Seismic Design Criteria***

CEVP (most frequent schedule risks)

- ***Environmental***
- ***Permits***
- ***R/W***

CRA (most frequent schedule risks)

- ***Political***
- ***R/W***
- ***Multiple Contracts***
- ***Tribal Issues***

Summary
Added openness and transparency about what we know and do not know with regard to project estimates and schedule is a healthy thing. The CEVP® /CRA process has led to increased accountability with regard to public declarations of cost estimates and better management of resources.

What's Next?

WSDOT's commitment to project risk management continues. The Cost Risk Estimating Management efforts continue to expand the use of CEVP® and CRA as well as continuing to improve the process. We have begun use of combined CRA and Value Engineering workshops on selected projects. Work is being done to develop a risk breakdown structure, project risk management manual and a database of common risks.

For more information about CEVP® contact:
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Or visit the WSDOT CEVP® and CRA website at:
http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/

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"We may not be able to get certainty, but we can get probability…" CS Lewis